

UNITED STATES OF AMERICA  
BEFORE THE  
FEDERAL ENERGY REGULATORY COMMISSION

Klamath River Renewal Corporation  
PacifiCorp

Project No. 14803

**AMENDED APPLICATION FOR SURRENDER OF LICENSE FOR  
MAJOR PROJECT AND REMOVAL OF PROJECT WORKS AND  
REQUEST FOR EXPEDITED REVIEW**

**EXHIBIT D.  
STATEMENT OF COSTS AND FINANCING**

**I. Interim Operations.**

The cost of interim operations of the Project will be governed by the O&M Agreement appended to this application at **Exhibit B-2**.

**II. Cost of Project Decommissioning.**

The Commission required the Renewal Corporation to provide a detailed cost estimate of implementing the Definite Decommissioning Plan in the License Amendment and Transfer Proceeding. In response, the Renewal Corporation provided its “Estimate of Project Cost” appended as Appendix P to the Definite Plan Report and included with this application as **Exhibit D-1**. This cost estimate was reviewed by the Lower Klamath Independent Board of Consultants (BOC) and further revised by the Renewal Corporation in response to the BOC’s specific recommendations.

To achieve the certainty in cost estimates required by the Commission and the BOC, the Renewal Corporation directed its contractors to prepare 60% design specifications and Guaranteed Maximum Price commitments to implement the Definite Decommissioning Plan. This work was completed in February of 2020. This information was provided to the Commission in the License Amendment and Transfer Proceeding on February 28, 2020 and is appended to this application at **Exhibit D-2**.

The Renewal Corporation’s budget for the Proposed Action is set forth below and is based on the 60% design specifications and Guaranteed Maximum Price commitments obtained from its contractors.

### Updated Project Budget as of June 2020

	June 2020 Budget	Spent To Date	Amount Remaining
Project Oversight/Administration	\$ 27,114,000	\$ 12,457,000	\$ 14,657,000
Permits and Compliance	\$ 11,883,000	\$ 7,751,000	\$ 4,132,000
Technical Support	\$ 32,453,000	\$ 25,033,000	\$ 7,420,000
Owners Representative	\$ 9,002,000	\$ 474,000	\$ 8,528,000
Progressive Design Build Contractor	\$ 225,788,000	\$ 16,015,000	\$ 209,773,000
Restoration Contractor	\$ 56,386,000	\$ 1,322,000	\$ 55,064,000
Insurance	\$ 6,476,000	\$ 238,000	\$ 6,238,000
Mitigation/LTC	\$ 41,711,000	\$ -	\$ 41,711,000
Estimate Contingency	\$ -	\$ -	\$ -
Design Contingency	\$ -	\$ -	\$ -
Post GMP Contingency	\$ 35,075,000	\$ -	\$ 35,075,000
Reserve	\$ 6,362,000	\$ -	\$ 6,362,000
<b>Total*</b>	<b>\$ 452,250,000</b>	<b>\$ 63,290,000</b>	<b>\$ 388,960,000</b>
<b>*Project Budget assumes an estimated \$2.75M of incremental accrued interest</b>			

This budget includes all costs of the Proposed Action based on the 60% design, including permitting fees, insurance, contingency and operating reserves, and all other administrative items. The contingency reserve for implementation of the Proposed Action based on this budget is over \$50 million. It consists of amounts that Kiewit and RES included in the GMP, as well as \$35.1 million retained by the Renewal Corporation. Kiewit, RES and McMillen Jacobs (the Renewal Corporation's Owner's Representative) have provided their analyses regarding the sufficiency of these reserves in February of 2020. These analyses are appended to this application at **Exhibit D-3**.

### **III. Financing Project Decommissioning.**

The Renewal Corporation's current budget estimate for the Proposed Action is \$452,250,000 at a P80 confidence interval. This is within the funding available under the KHSA, including accrued interest in trust accounts.<sup>33</sup> To address the unlikely event that costs for Facilities Removal exceed the KHSA State Cost Cap, PacifiCorp and the States have agreed in the MOA to create an additional contingency fund. This additional contingency is intended to express the full commitment by PacifiCorp and the States to dam removal. The additional contingency funding will be in the amount of \$45 million to ensure Facilities Removal will occur and be completed. The MOA signatories believe that funding for Facilities Removal beyond the KHSA State Cost Cap is unlikely to be needed, but have agreed that this additional contingency fund provides a clear and definitive commitment of resources that will ensure Facilities Removal is completed. PacifiCorp and the States will each contribute \$15 million for this additional contingency fund and share any cost overruns that may occur over this amount equally. The MOA is attached at **Exhibit D-10**.

<sup>33</sup> KHSA § 4.

The KHSA financing plan called for (a) the establishment of two non-bypassable customer surcharges, the Oregon J.C. Boyle Dam Surcharge and the Oregon Copco I and II/Iron Gate Dams Surcharge (Oregon Klamath Surcharges), providing \$184 million for the purpose of funding Project implementation; (b) the establishment of a non-bypassable customer surcharge (California Klamath Surcharge) providing \$16 million for the purpose of funding Project implementation, and (c) a bond measure, approved by the California legislature and passed by the voters in 2014 (Proposition 1 Bond Funds), providing \$249,500,000 for the purpose of funding Project implementation.<sup>34</sup>

Trust accounts were established for the purpose of holding and administering charges collected from the Oregon Klamath Surcharges and from the California Klamath Surcharge. The Oregon Klamath Surcharges have been fully collected and agreements for the disbursements of these funds and for interim funding are attached at **Exhibit D-5**. The California Klamath Surcharge has been fully collected and the agreement for the disbursements of these funds is attached at **Exhibit D-7**. These funds have been deposited and are being held in interest-bearing trust accounts. These funds are available and are being drawn upon by the Renewal Corporation to implement the Proposed Action. No further authorizations or agreements are required for the ongoing disbursement of these funds for the Proposed Action.

A trust account was established by the California Natural Resources Agency (CNRA) for the purpose of administering the Proposition 1 Bond Funds. An agreement with CNRA for the disbursements of these funds is in place and attached at **Exhibit D-8**. The bond proceeds have been deposited in an interest-bearing trust account. These funds are available and are being drawn upon by the Renewal Corporation to implement the Proposed Action. No further authorizations or agreements are required for the ongoing disbursement of these funds for the Proposed Action.

The budget includes a contingency reserve for implementation of the Proposed Action of more than \$50 million. These resources are secured and extended by a comprehensive insurance program, performance and surety bonds, indemnities and parent company guarantees. These measures are detailed in the Renewal Corporation's "Risk Management Plan" (July 2019), updated in February 2020 by the "Revised Risk and Insurance Due Diligence Report," and updated in April of 2020 by the most recent "Risk Register" provided to the Lower Klamath Project Independent Board of Consultants (BOC). These documents are appended at **Exhibit D-9**.

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<sup>34</sup> Orders of the California Public Utilities Commission (CPUC) and the Public Utility Commission of Oregon (OPUC) are attached at Exhibits D.1, D.2, D.3, D.4 and D.5 to the Initial Surrender Application. Subsequent orders implementing the financial plan under the KHSA are appended to this Amendment at **Exhibit D-4** Orders of the OPUC (January 24, 2017; May 23, 2019) and **Exhibit D-6** Orders of the CPUC (December 4, 2017; July 10, 2019).

**Exhibit D-1**  
**Estimate of Project Cost**  
**July 2019**





# Definite Plan for the Lower Klamath Project

## Appendix P –Amended Estimate of Project Costs

July 2019



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## Acronyms and Abbreviations

AR	Aquatic Resources
BOC	Board of Consultants
CA	California
CADD	Computer Aided Design and Drafting
CEQA	California Environmental Quality Act
CM	Construction Management
EIS	Environmental Impact Statement
EIR	Environmental Impact Report
ENR	Engineering News Record
FERC	Federal Energy Regulatory Commission
FTE	Full Time Equivalent
FY	Fiscal Year
GIS	Geographic Information System
GMP	Guaranteed Maximum Price
KRRC	Klamath River Renewal Corporation
KHSA	Klamath Hydroelectric Settlement Agreement
lbs	pounds
LF	Linear Feet
LVPP	Looting and Vandalism Protection Program
m <sup>3</sup>	cubic meters
MDS	Monitored Detection System
MPE	Most Probable Estimate

MW	Mega Watt
MWh	Mega Watt hour
NEPA	National Environmental Policy Act
NPDES	National Pollutant Discharge Elimination System
OC	On center
ODC	Other Direct Cost
OR	Oregon
PDB	Progressive Design-Builder
PLS	Pure live seed
QRA	Quantitative Risk Assessment
RES	Resource Environmental Solutions, LLC
SF	Square Foot
SWRCB	State Water Resource Control Board
TCP	Traditional Cultural Properties
TER	Terrestrial Resources
USACE	United States Army Corps of Engineers
USBR	United States Bureau of Reclamation
USGS	United States Geological Survey
YOC	Year of Construction

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# Chapter 1: Introduction



# 1. INTRODUCTION

This report documents the estimated project cost for the Lower Klamath Project (Project), which in addition to construction cost, includes costs for management, administration and legal support, insurance, liability transfer, environmental compliance and permitting, engineering design, procurement, mitigation and monitoring before, during and following construction, as well as construction management. The estimated project cost is based on the preliminary design presented in the Definite Plan for the Lower Klamath Project (KRRC 2018) (the Definite Plan), in addition to ongoing coordination and consultation with Project stakeholders and regulatory agencies.

## 1.1 Report Objectives

Section 7.2 of the Klamath Hydroelectric Settlement Agreement (KHSa), as amended sets forth required elements of the Definite Plan, which include:

- A detailed estimate of the actual or foreseeable costs associated with: the physical performance of Facilities Removal<sup>1</sup> consistent with the Detailed Plan; each of the tasks associated with the performance of the Klamath River Renewal Corporation's (KRRC) obligations as stated in Section 7.1; seeking and securing permits and other authorizations; and insurance, performance bond, or similar measures, as set forth in Appendix L to this Settlement;
- The KRRC's analysis demonstrating that the total cost of Facilities Removal is likely to be less than the State Cost Cap, which is the total of Customer Contribution and California Bond Funding as specified in Section 4<sup>2</sup>; and
- A detailed statement of the estimated costs of Facilities Removal.

This report addresses these elements of the KHSa and documents both the engineer's opinion of construction cost, based on the project design elements and construction plan summary provided in the Definite Plan, and the total estimated project implementation cost. In addition to reporting the estimated project costs, an estimate of a P80 contingency (defined in greater detail in Section 2.7) was prepared using a Monte Carlo analysis to account for uncertainties associated with the estimated project costs and identified project risks. The P80 contingency considered probabilities and impacts associated with risks

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<sup>1</sup> "Facilities Removal" is defined in the KHSa as the "physical removal of all or part of each of the Facilities to achieve at a minimum a free-flowing condition and volitional fish passage, site remediation and restoration, including previously inundated lands, measures to avoid or minimize adverse downstream impacts, and all associated permitting for such actions."

<sup>2</sup> The State Cost cap is \$450,000,000.

included in the amended Risk Management Plan (KRRC 2019), in addition to accounting for price uncertainty and cost of schedule impacts.

## 1.2 Project Scope

The proposed Project (also referred to as the Full Removal alternative) is described in Sections 1, 4, 5, 6 and 7 of the Definite Plan. The Project involves the physical removal of each of the four dam developments (Iron Gate, Copco No. 1 and No. 2, and J.C. Boyle) to achieve at a minimum a free-flowing condition and volitional fish passage, site remediation and restoration, including previously inundated lands, measures to avoid or minimize adverse downstream impacts, and all associated permitting for such actions. Table 1-1 provides an overview of the four dam developments. The Project is located on the Klamath River approximately 200 miles from the Pacific Ocean in the states of Oregon (OR) and California (CA) (see Figure 1-1).

While the proposed Project includes full removal of all four developments, the Definite Plan also describes a “Partial Removal” alternative which is presented for purposes of environmental review. Under the Partial Removal alternative, the objectives of free-flowing river conditions and volitional fish passage will be achieved, but portions of each dam will remain in place, along with ancillary buildings and structures such as powerhouses, foundations, tunnels, and pipes. Section 5 of the Definite Plan discusses the details of infrastructure to remain under this alternative.

Prior to removal of the dams and hydropower facilities, KRRC’s contractor will draw down the water surface elevation in each reservoir as low as possible to facilitate accumulated sediment evacuation and to create a dry work area for development removal activities. A few infrastructure modifications will be necessary to facilitate drawdown. In general, drawdown will begin on January 1 of the drawdown year, and will extend through mid-March of the same year.

Table 1-1 Existing Dam Development Overview

Dam (State)	Description	Year Built	Capacity/Average Annual Production	Max. Surface Area of Reservoir (acres)	Reservoir Storage Capacity (acre-feet)	Dam Type	Dam Height/Length (feet)
J.C. Boyle (OR)	Reservoir, dam, fish ladder, power canal, two turbines and powerhouse	1958	98 MW/ 329,000 MWh	420	3,495 (total) 1,724 (active)	Earthfill	68/ 693
Copco No. 1 (CA)	Reservoir, dam, two turbines and powerhouse	1918	20 MW/ 106,000 MWh	1,000	46,900 (total) 6,235(active)	Concrete	126/ 415
Copco No. 2 (CA)	Division dam, small impoundment, two turbines and powerhouse	1925	27 MW/ 135,000 MWh	40	73 (total) negligible (active)	Concrete	33/ 278
Iron Gate (CA)	Reservoir, dam, one turbine, powerhouse and fish hatchery	1962	18 MW/ 116,000 MWh	944	58,800 (total) 3,790 (active)	Earthfill	173/ 740

After drawdown is accomplished, remaining reservoir sediments will be stabilized to the extent feasible and dam and hydropower facility removal will begin. Full reservoir area restoration will begin after drawdown, extend throughout the year, and possibly extend into the subsequent year. Vegetation establishment could extend several years.

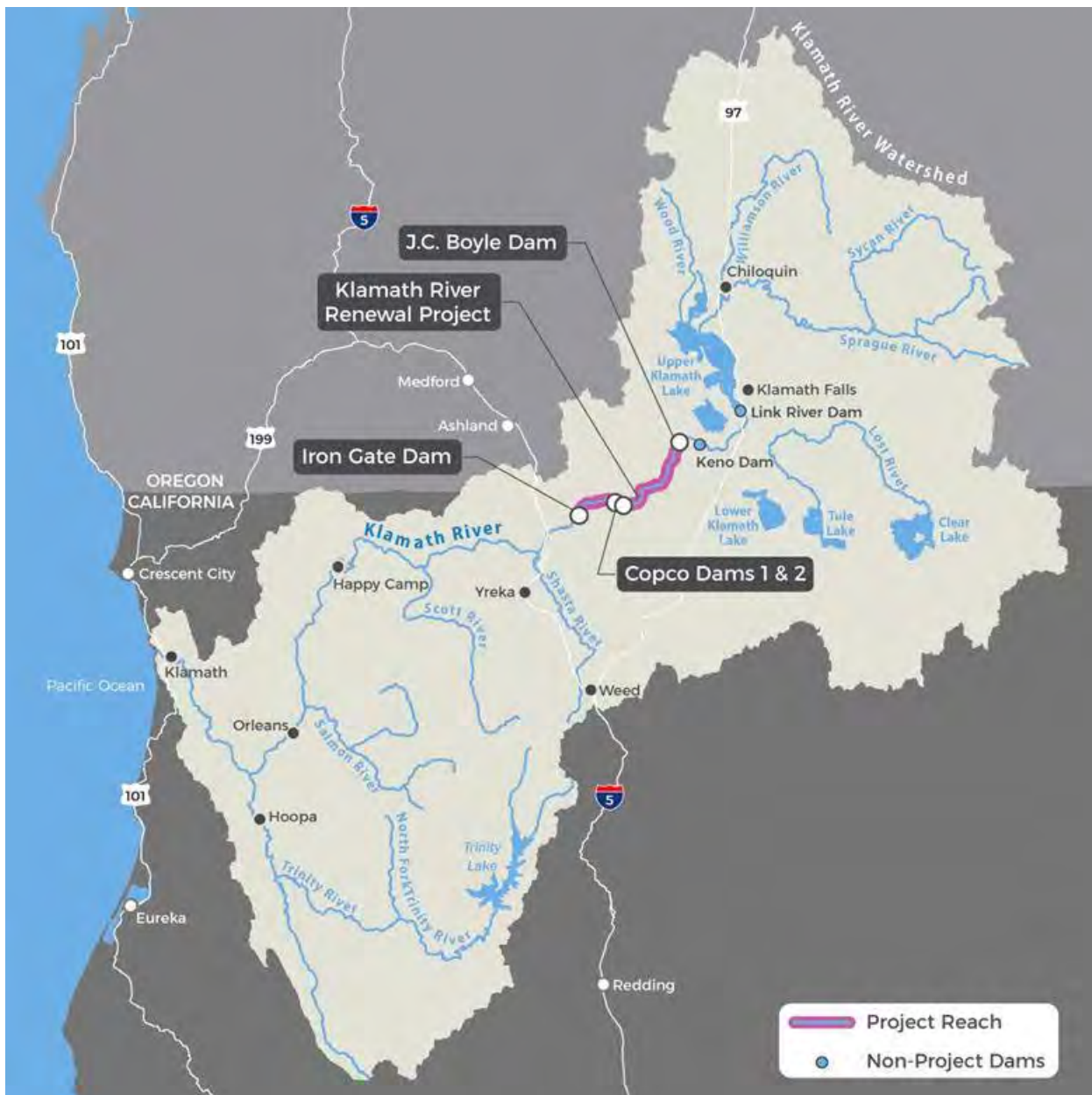


Figure 1-1 Klamath River Watershed and Facilities Locations

Other key project components include measures to reduce Project-related effects to aquatic and terrestrial resources, road and bridge improvements, relocation of the City of Yreka’s pipeline across Iron Gate Reservoir and associated diversion facility improvements, as well as demolition of various recreation facilities adjacent to the reservoirs. This estimate does not include costs associated with design and construction of any hatchery improvements associated with the Project (as described in the Definite Plan), and as per the KHSa, these will be funded separately by PacifiCorp.<sup>3</sup>

## 1.3 Changes Since Previous Estimate

This amended version of the Estimate of Project Costs report has been refined from previous versions based on several activities and input, including the following:

1. Formal and informal input from the Federal Energy Regulatory Commission (FERC) Board of Consultants (BOC): The BOC completed a review of the Definite Plan (KRRC 2018) and the associated estimate of project costs, which resulted in Letter Report No. 1 to present their findings, conclusions and recommendations. This followed their first BOC meeting of October 24, 2018, as well as the informal meeting and site visit of October 23, 2018. Matters addressed included the Definite Plan, the feasibility and cost associated with the Definite Plan, as well as the capacity of the KRRC to accept transfer of license from PacifiCorp. After receiving BOC Letter Report No. 1, additional informal cost submittals have been made to the BOC and discussions have been completed to address the BOC input of Letter Report No. 1. The KRRC believe that all BOC input has been incorporated or addressed in this amended Estimate of Project Costs report.
2. Latest Project Understanding: Over the past year, risk management strategies have been implemented, project details have been refined, and informal agency consultations have allowed a more comprehensive understanding of project components, likely permit requirements, and other mitigations required for project implementation. The estimate herein considers this updated information.
3. Input from insurance and liability transfer experts: The KRRC has contracted with insurance and risk management companies in the past year to obtain refined input into the question of project insurance and liability transfer. This input has informed the approach to insurance and risk for the Project and the associated costs and is summarized herein.
4. Input from Progressive Design-Build (PDB): The KRRC has contracted with a PDB contractor, Kiewit, to complete the final design and construction for the Project. Kiewit will complete their initial proof of concept deliverable and associated initial cost model in early July 2019. While limitations associated with these two early PDB submittals do not allow for their use as backup to the estimate

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<sup>3</sup> See Section 7.6.6 of the KHSa.

of costs provided herein, the numbers will be reviewed to confirm they are in alignment and that Kiewit is comfortable with the design and construction budgets summarize herein.

## 1.4 Limitations

The opinion of estimated project costs presented in this report is based on information in the Definite Plan, ongoing coordination and consultation with project stakeholders and regulatory agencies, and market conditions at the time of preparation of the estimate. The construction cost was estimated with the use of a combination of built-up unit prices and statistical unit prices from published and internally developed and maintained historical databases factored for location, contractor markups, and other project-specific criteria. Logic, methods, and procedures for developing costs are typical for the construction industry.

Various limitations need to be considered in the use of both built-up and statistical unit prices. These limitations include the potential for changes in technology, methods, and construction applications; the impact of short-term economic cycles; and the time-lag of reporting databases. Any estimate of unit prices is not intended to predict the outcome of hard dollar results from open and competitive bidding.

AECOM represents that the services were conducted in a manner consistent with the standard of care ordinarily applied as the state of practice in the profession, given the amount of design information available at the time of estimate preparation. No other warranties, either expressed or implied, are included or intended.

Other implementation costs presented in this report, outside of the preliminary design and construction activities, should be considered preliminary, due to the fact that:

- Permitting coordination is currently ongoing. The understanding of anticipated mitigation, monitoring and reporting requirements should be considered preliminary until feedback is received from the agencies on the draft permit applications. KRRC will obtain additional clarity on mitigation, monitoring and reporting once the California Environmental Quality Act (CEQA) and National Environmental Policy Act (NEPA) processes are complete.
- While KRRC has executed a PDB agreement for preliminary design services with Kiewit, a Guaranteed Maximum Price (GMP) agreement amendment for construction has not been executed. The GMP agreement is anticipated by February 2020.

KRRC is undertaking additional due diligence on construction costs, measures to lower construction costs, and measures to manage construction risk. These measures include risk management, negotiation of permit requirements for natural resources, and negotiation of a PDB GMP for construction. Many risks considered in the Monte Carlo analysis that deal with design and regulatory compliance will be managed or better understood when this process is completed, likely lowering the P80 contingency. These results of these inquiries will be further informed by ongoing review and recommendations of the FERC approved independent BOC for the Lower Klamath Project.

## 1.5 Results Summary

Table 1-2 below summarize the estimate of Project costs for both Full Removal and Partial Removal of the four dams.

The summary includes an estimate of the P80 contingency, which was prepared using a Monte Carlo analysis to account for uncertainties associated with the estimated project costs and identified project risks. The P80 contingency (likely final project cost in 80% of all scenarios) considered probabilities and impacts associated with risks included in the amended Risk Management Plan (KRRC 2019), in addition to accounting for price uncertainty and cost of schedule impacts. Details on these methods are described further in Section 2.7 (Quantitative Risk Assessment) of this report.

Table 1-2 Results Summary

Line Item / Cost Category	Estimate of Project Costs (Year of Construction Dollars)	
	Full Removal	Partial Removal
Project Oversight (non PDB)	40,718,000	40,718,000
Liability Transfer	35,530,000	35,530,000
Environmental Compliance (KRRC-Managed)	8,097,000	8,097,000
Technical Support	14,220,000	14,220,000
Construction Management	13,167,000	13,167,000
Progressive Design-Build Contract	237,612,000	219,150,000
Mitigation Measures	17,141,000	17,141,000
Monitoring & Reporting (KRRC)	4,406,000	4,406,000
Subtotal	370,891,000	352,429,000
Contingency	62,757,000	58,621,000
<b>TOTAL</b>	<b>433,648,000</b>	<b>411,050,000</b>

The Full Removal Estimate total with a P80 contingency is currently approximately \$16.3M below the funding cost cap of \$450M. As shown later in Section 4 (Results), the P99 (99% Confidence Level) is only slightly above the State cost cap at approximately \$452M.





## Chapter 2: Basis of Estimate

## 2. BASIS OF ESTIMATE

### 2.1 Cost Categories

For organizational purposes, the project costs have been summarized using the following cost categories:

- **Project Oversight:** Support services providing administration, project management and controls, contract management, BOC, outreach, corporate insurance and legal support.
- **Liability Transfer:** Specialty corporate indemnitor agreement for compliance and impacts to natural and cultural resources, and local impact mitigation fund for mitigation and property damage associated with downstream flooding and sediment, groundwater, reservoir rim stability.
- **Environmental Compliance and Permitting:** Environmental compliance support and permitting.
- **Technical Support:** Field studies, preliminary engineering design, vegetation test plots and initial seed collection, PDB procurement, and PDB management and design review (Owner's Representative).
- **Construction Management:** Full construction management services for implementation of all project components.
- **Progressive Design-Build Contract:**
  - + Final Design and Permitting Support: PDB field investigations, seed collection and propagation, invasive seed control, development of 30%, 60%, 90% and 100% design packages, and compliance support
  - + Project Insurance: Contractor controlled insurance package
  - + Dam removals: Sequential removal of all four dams, including dam modifications, reservoir drawdown and removal of all associated dam infrastructure (including spillways, fish ladders, intake structures, penstocks, turbine units, electrical installations, buildings) and demolition of existing recreation areas
  - + Reservoir area improvements: Removal, grading and shaping of portions of reservoir sediment, bank stability measures
  - + Reservoir area restoration: Seeding, planting, weeding, monitoring and maintenance. Hydroseeding methods include by barge along the reservoir bank, by helicopter along steep



slopes, by airplane along uneven large areas and by trailer mounted blower for areas easily accessible by truck; Monitoring, maintenance and reporting costs associated with habitat restoration are now being covered through the specialty corporate indemnitor, as described in more detail in Section 2.3.

- + Yreka water supply improvements: Improvements to the City of Yreka's water supply intake and relocation of their water supply pipeline.
- + Transportation improvements: Improvements to, or replacement of, bridges, culverts and road resurfacing to mitigate any project or construction related impact and to accommodate necessary construction traffic.
- + Recreation improvements: New recreation infrastructure (e.g., water access, day-use areas, etc.) to avoid or minimize project impacts
- + Downstream flood improvements: Improvements to existing structures and facilities to avoid or minimize adverse downstream flood-related impacts. This cost is now being covered through a local impact mitigation fund, as described in more detail in Section 2.3.
- + Public Health and Safety Fencing: Fencing around reservoirs to prevent access by the public and certain wildlife
- + Fire Management Plan: Measures to limit the impact of the Project on fire management
- + Spawning Gravel Augmentation: Aquatic resource measure to install gravel in certain portions of the Klamath River to mitigate impacts to aquatic resources
- **Anticipated Mitigation Measures:** Anticipated cultural resource measures, groundwater analysis (to support potential improvements), and downstream water supply improvements that may be required by regulatory agencies to mitigate Project-related impacts. Costs associated with actual groundwater improvements are now being covered through a local impact mitigation fund, as described in more detail in Section 2.3.
- **Monitoring and Reporting:** Baseline studies to support future aquatic resource, terrestrial resource, water quality, and sediment monitoring and reporting. Construction and post-construction monitoring and reporting are now being covered through the specialty corporate indemnitor, as described in more detail in Section 2.3.

## 2.2 Construction Procurement Approach

KRRC based estimates for the various cost categories on the executed PDB agreement with Kiewit, for construction of the dam removal work package, which includes construction access road and bridge accommodations, dam modifications, Yreka water supply improvements, dam and hydropower facility removal, recreation demolition/improvements, fire management plan implementation, spawning gravel installation, site fencing, and reservoir and other restoration. It is important to note that Kiewit is not responsible for downstream flood improvements/mitigation, groundwater improvements/mitigation or reservoir rim stability improvements/mitigation, which is being completed through management of a local impact mitigation fund, as described in more detail in Section 2.3.

Kiewit is responsible for final design of all components above, except for the Yreka water supply improvements, which are being designed by KRRC. KRRC used a qualifications-based selection approach to select Kiewit, who is currently completing field work and developing detailed design submittals.

## 2.3 Liability Transfer

Indicative pricing for liability transfer was developed by Resource Environmental Solutions, LLC (RES) and consist of two separate approaches to liability transfer. These approaches include utilization of a specialty corporate indemnitor and development and management of a local impact mitigation fund. Both approaches are discussed in detail in the amended Risk Management Plan (KRRC 2019) for the Project, and are summarized below, as they pertain to cost:

1. **Special Corporate Indemnitor:** The special corporate indemnitor (RES) will indemnify the KRRC, PacifiCorp and the States against harm associated with natural resource and cultural resource impact risks for a fee, through an indemnification agreement. This agreement will also require RES to complete all activities (monitoring, maintenance, reporting, and responding to unforeseen conditions) associated with habitat restoration and other natural resource-related permitting, CEQA and NEPA requirements, as well as cultural resource inadvertent discoveries.
2. **Local Impact Mitigation Fund:** The local impact mitigation fund would be a pool of capital independently administered by a third party following a methodology for compensating impacted parties. RES identified five key areas of property damage where insurance or indemnification was not available, and where a local impact mitigation fund would be a cost-effective solution to manage associated risks: (a) the potential for increased flooding, (b) impacts associated with the release of sediment, (c) the potential for instability around reservoir rims, (d) impacts to groundwater wells and (e) the potential for diminution in land value and similar claims.

## 2.4 Construction Pricing

The construction estimates summarized herein are intended to capture the most current pricing for materials, wages and salaries, equipment, accepted productivity standards, and typical construction

practices, procurement methods, current construction economic conditions, and site conditions for the current level of design. Detailed construction cost breakdowns for both Full Removal and Partial Removal alternatives are provided in Attachment A. Pay item cost detail worksheets, describing the calculation of individual cost estimate line items rates and prices are provided in Attachment B.

Construction cost estimates were prepared based on less than complete designs and have inherent levels of risk and uncertainties (as discussed in Section 2.7). The following sections discuss the various aspects and assumptions associated with construction pricing for the Project.

### 2.4.1 Construction Pricing - Direct Costs

Experienced construction cost estimators developed direct cost construction pricing using logic, methods, and procedures for pricing that are typical for the construction industry. Unit rates were established using input from RS Means database, Equipment Watch database and Davis Bacon Wage Determination database. Rates were further determined and validated with project data and awarded bids from similar projects including Oroville Spillway and Calaveras Dam, and other similar AECOM estimated projects including Sites Reservoir Project, Folsom Dams, Pine Flat Dam. Caltrans estimate data was also utilized to back-check unit rates and production where relationships could be determined. Overall prices were established by taking location, access and construction operation into consideration. Estimate items incorporate inefficiencies associated with breaks throughout the shifts. Benefits provided to the field staff are accounted for in the Field Overhead costs.

KRRC used the latest Davis Bacon Wage Determination for labor rates and fringes. The area used is based on Siskiyou County, CA. The Project is in a remote location which will require per diem for all employees. This consideration is included within the Field Overhead costs.

KRRC based equipment costs on the latest understanding of the equipment required to complete the work. Unit prices include equivalent/similar pieces of equipment with present day rates from Equipment Watch Blue Book and include equipment mobilization. In selecting the rates, Redding, CA was used as the nearest available location. Equipment hourly rates include fuel, which is a factored rate of \$3.00/gallon based on average retail prices from nearby gas stations. KRRC estimated equipment and material sales tax at 7.75% based on recent sales tax data in Siskiyou County.

The major features and/or items in the estimate, such as the dam modifications, dam removal, and reservoir restoration are well defined. KRRC estimated costs for these items using crew and equipment work-item analysis to develop unit costs, and then multiplied these by the quantity measurement to arrive at work item subtotals. Crew and equipment work-item analysis spreadsheets are presented in Attachment B.

KRRC used vendor quotes for materials such as gates for drawdown, pipelines, instrumentation, and hydroseeding. KRRC based costs for some of the smaller items of work within the estimate on the experience and judgment of the estimator using historical data from similar types of construction, factored for location, size, and other Project-specific criteria.

## 2.4.2 Construction General Requirements

As discussed in more detail below, the following markups were applied into the contractor's direct costs to account for general requirements:

- Markup by subcontractor, where work associated with direct costs will be performed by a subcontractor and not self-performed by PDB Contractor. The 15% markup by subcontractor is to reflect the supplemental overheads and profit incurred by the subcontractor and reflects the maximum allowable markup by subcontractor described in the PDB Contractor's Project Agreement.
- PDB Contractor's overhead, profit and risk (Project Company Fee) at 10% based on the negotiation Project Agreement with Kiewit
- Cost of PDB Contractor's Performance Bond and Payment Bond, calculated at 1% of total direct cost including markup by subcontractors and PDB Contractor overhead profit and risk.
- PDB Contractor's insurance is estimated based on indicative pricing received by Aon, which is a global professional services firm with a Commercial Risk Solutions' division that provides risk advisory, risk transfer and structured solutions to reduce the client's total cost of risk<sup>4</sup>. The specific Project insurance coverages are described in detail in the amended Risk Management Plan (KRRC 2019) and are summarized below.

### Field Overhead

Project costs necessary to support the performance of the work, but not included in the itemized estimates for the measured work scope, are included in the estimate under the term of Field Overheads. Due to the expansive geographical limits of the project, Field Overheads facilities are addressed separately as four locations - Iron Gate dam, Copco dams (combined), JC Boyle dam and a fourth location to support work associated with bridges, roads, habitat restoration and Yreka water supply improvements.

Field Overheads are categorized and captured in separate elements as listed and described below:

- OH-01 Mobilization; accounts for mobilization of permanent materials, miscellaneous loads, and equipment
- OH-02 Project Staff; salaries, burdens, salaried employee per-diems, and salary uplifts associated with project staff including the disciplines of project management and administration, quality control, construction support, engineering, safety, survey and superintendents.

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<sup>4</sup> Additional information regarding this firm may be found at <https://www.aon.com>

- OH-03 Temporary Buildings; includes bunk house trailers, office trailers, storage containers and associated mobilization, demobilization, cleaning and maintenance. For contractor and owner's representative.
- OH-04 Temporary Utilities; accounts for utilities associated with temporary facilities including power, water, telephone, internet, sewer, drinking water. Also includes job radios, garbage disposal and portable toilets.
- OH-05 Temporary Construction; temporary access roads to temporary buildings, parking and laydown areas, fences, grading and maintenance of site and access areas, fuel stations and signage. Temporary work associated directly with construction is not included in field overheads and measured separately in their own estimate line items.
- OH-06 Transportation; road runner service including driver and vehicles, crew flat boats, all-terrain vehicles and maintenance.
- OH-07 Office Supplies; including routine office supplies, photocopy and printing facilities, computers and office furniture and office storage.
- OH-08 Safety Supplies; including safety supplies and an allowance for staff safety incentives.
- OH-09 Employee Expense; project staff travel costs based on two trips per month for 10 salary employees, and travel for business activities and internal audits.
- OH-10 Contract Services; associated training costs, at \$0.50 per manhour, and photography services for project record keeping purposes.
- OH-11 Employee Living Cost; field staff per diem. Salaried staff per diems included in OH-02
- OH-12 Winter and Summer Protection; allowances for winter protection. Equipment accounted for in OH-27.
- OH-13 Quality Assurance/ Quality Control; salary for quality control technician and support staff during construction periods. Includes allowances for laboratory equipment and testing.
- OH-14 Lost Production/Overtime/Travel Time; for field staff. Additional overtime above 50 hours/week (up to 50 hours/week accounted for in construction estimate line items). Also includes for loss of production associated with daily travel. Vacation travel already accounted for in labor rates.
- OH 16 Demobilization; accounts for demobilization of permanent materials, miscellaneous loads, and equipment

- OH 18 Survey; survey materials only. Survey staff included in OH-02.
- OH 21 Small Tools; field staff small tool allowance at \$2.50 per manhour.
- OH 22 Traffic Control; water truck and erosion control.
- OH 27 Project Equipment; project staff pickup trucks, field crew pickup trucks, site equipment (1 per site) including 19-ton boom truck, all terrain forklift, tool carrier, 900 CFM compressor, electric welder, highboy trailer, crew bus (1 for entire Project), box trailer, flatbed trailers, light plants.
- OH 28 Project Labor; operators and maintenance for equipment listed on OH-27.
- OH-99 Dead Rent; cost of equipment in idle status and standby status when not performing listed construction activities. Calculated on a per equipment item basis, as listed on the pay item cost sheets.

The Cost Estimate lists amounts for each Field Overhead category and is identified separately per project site. These costs are incorporate into the estimate by allocating them to all applicable estimate construction items proportionate to their cost. A separate column is identified on the Cost Estimate to identify the distribution of Field Overhead costs over the full estimate.

### Contractor Overhead, Profit & Risk

The executed Project Agreement with Kiewit includes a Project Company Fee of 10% of the Project implementation work costs (other than the general conditions costs and the costs of the performance bond and the payment bond). The Project Company Fee is an amount attributable to profit and risk and includes consideration for all costs that Kiewit may incur in connection with or related to the Project that are not specifically compensable through the Project Agreement as Project implementation work costs.

### Subcontractor Markups

The executed Project Agreement with Kiewit includes a maximum subcontractor markup of 15%.

### Bond Markups

KRRC selected a bonding markup of 1% of direct construction cost as derived by using industry standard bond requirements on similar projects.

## 2.4.3 Quantities

Detailed quantity takeoffs made for the earthwork items (excavation, fill and erosion protection) were computer-generated (and independently checked) using the surfaces presented in the drawings, and

represent neat-line quantities. Earthwork volumes (cut, fill, balance) and other quantities are provided in Section 5 and associated figures of the Definite Plan.

#### 2.4.4 Construction Schedule

KRRC based the estimate on the construction schedule provided as Attachment C, and the construction plan described in the Definite Plan. As shown on the schedule and/or discussed in the plan, the schedule is predicated on the following:

- Construction of City of Yreka water supply improvements will be completed in 2021 (prior to drawdown) by the PDB
- Construction of downstream flood control improvements will be completed in 2021 prior to drawdown) by the PDB
- Construction of the access road improvements will be completed in 2021 (prior to drawdown) by the PDB
- An effective Date of Agreement (GMP) for the dam removal PDB on or before February 15, 2020
- Lineal and concurrent activities
- Equipment application and production
- The ability to drawdown J.C. Boyle, Copco No. 1, Copco No. 2 and Iron Gate reservoirs at the beginning of 2022
- Major earthworks and removal activities are assumed to be performed using two 10-hour shifts, six days per week
- In-stream construction window in Oregon is assumed to be from July 1 through September 30
- In-stream construction window in California is assumed to be from June 15 through October 15

The duration of many of the schedule activities are determined from the labor and equipment productivity associated with the estimate pay item sheets.

The access road, dam modification, water supply, and downstream flood control construction will be completed during an estimated 6- to 8-month period in 2021, since these activities require completion prior to drawdown and facility removal. Subsequent dam removal and associated construction will occur during 8 months of work in 2022, with restoration related construction activities likely extending through 2022. Monitoring and reporting will extend for 5 years after construction completion. KRRC will encumber funds via the liability transfer approach (see Section 2.3) for post-2027 mitigation and monitoring, as appropriate.



## 2.5 Consulting Services Pricing

Outside of construction costs, other implementation activities such as project oversight, field studies, design, permitting, mitigation measures and monitoring generally involve labor and associated other direct costs (ODCs). ODCs can include office space, travel, meals, postage, specialty reproduction, and vendor quotes for materials, supplies or services. For each of the implementation activities referenced above, KRRC developed independent estimates using standard labor rates and ODC values based on the latest understanding of the scope or work for the life of the Project. Details for each cost category are provided in Section 3. KRRC used a standard labor rate sheet for an environmental/engineering consulting firm, as shown below in Table 2-1, to develop the majority of the other implementation costs listed above. In some cases, KRRC used specialty rates to develop estimates for specialty activities such as project oversight and legal support.

Table 2-1 Environmental/Engineering Labor Rate Sheet

Labor Classification	Hourly Rate	Labor Classification	Hourly Rate
Senior Technical Advisor	\$285.00	Field Technician	\$75.00
Principal	\$285.00	Junior Field Technician	\$55.00
Project Manager	\$230.00	Certified Industrial Hygienist	\$165.00
Principal Engineer	\$200.00	Senior Data Management	\$130.00
Senior Engineer	\$180.00	Data Management	\$85.00
Engineer	\$145.00	Senior GIS/CADD/Graphics	\$120.00
Junior Engineer	\$100.00	GIS/CADD/Graphics	\$90.00
Principal Scientist/Planner	\$180.00	Technical Editor	\$105.00
Senior Scientist/Planner	\$160.00	Community Relations Specialist	\$110.00
Scientist/Planner	\$120.00	Project Controls/Procurement	\$95.00
Junior Scientist/Planner	\$95.00	Administrative Assistant	\$75.00
Senior Field Technician	\$110.00	Clerical/Support	\$65.00

The hourly rates set forth in this schedule of fees and charges were valid from January 1, 2018 through December 31, 2018. The Hourly Rates are adjusted annually on January 1 of each subsequent year. The new Schedule of Fees and Charges will apply to existing and new assignments. For work extends beyond December 31, 2018 a 3% annual escalation on hourly rates was applied.

## 2.6 Escalation

KRRC based estimates on contemporary market information at the time of estimate preparation. As such it is necessary to include escalation to account for cost increases over the duration of the Project, particularly as this Project spans multiple years. KRRC escalated each line item in the cost estimate based on scheduled construction and other implementation activities.

KRRC used an escalation rate of 4% per year. This is based on cost index references and current cost trends observed in the industry. As shown in the below Engineering News Record (ENR) Historic Cost Index (Table 2-2), the last few years have seen a consistent uptrend in escalation, including the beginning of 2018.



Considering this trend, along with other published historical data and professional judgment, it is reasonable to expect escalation to average out at around 4% per year over the duration of the Project.

Table 2-2 ENR Historic Cost Index

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL AVG	AVERAGE ANNUAL INCREASE
1990	4680	4685	4691	4693	4707	4732	4734	4752	4774	4771	4787	4777	4732	
1991	4777	4773	4772	4766	4801	4818	4854	4892	4891	4892	4896	4889	4835	2.177%
1992	4888	4884	4927	4946	4965	4973	4992	5032	5042	5052	5058	5059	4985	3.102%
1993	5071	5070	5106	5167	5262	5260	5252	5230	5255	5264	5278	5310	5210	4.514%
1994	5336	5371	5381	5405	5405	5408	5409	5424	5437	5437	5439	5439	5408	3.800%
1995	5443	5444	5435	5432	5433	5432	5484	5506	5491	5511	5519	5524	5471	1.165%
1996	5523	5532	5537	5550	5572	5597	5617	5652	5683	5719	5740	5744	5620	2.723%
1997	5765	5769	5759	5799	5837	5860	5863	5854	5851	5848	5838	5858	5826	3.665%
1998	5852	5874	5875	5883	5881	5895	5921	5929	5963	5986	5995	5991	5920	1.613%
1999	6000	5992	5986	6008	6006	6039	6076	6091	6128	6134	6127	6127	6059	2.348%
2000	6130	6160	6202	6201	6233	6238	6225	6233	6224	6259	6266	6283	6221	2.674%
2001	6281	6272	6279	6286	6288	6318	6404	6389	6391	6397	6410	6390	6343	1.961%
2002	6462	6462	6502	6480	6512	6532	6605	6592	6589	6579	6578	6563	6538	3.074%
2003	6581	6640	6627	6635	6642	6694	6695	6733	6741	6771	6794	6782	6694	2.386%
2004	6825	6862	6957	7017	7065	7109	7126	7188	7298	7314	7312	7308	7115	6.289%
2005	7297	7298	7309	7355	7398	7415	7422	7479	7540	7563	7630	7647	7446	4.652%
2006	7660	7689	7692	7695	7691	7700	7721	7722	7763	7883	7911	7888	7751	4.096%
2007	7880	7880	7856	7865	7942	7939	7959	8007	8050	8045	8092	8089	7966	2.774%
2008	8090	8094	8109	8112	8141	8185	8293	8362	8557	8623	8602	8551	8310	4.105%
2009	8549	8533	8534	8528	8574	8578	8566	8564	8586	8596	8592	8641	8570	3.081%
2010	8860	8672	8671	8677	8761	8805	8865	8858	8857	8921	8951	8952	8857	3.349%
2011	8938	8998	9011	9027	9035	9053	9080	9088	9116	9147	9173	9172	9070	2.405%
2012	9176	9198	9268	9273	9290	9291	9324	9351	9341	9376	9398	9412	9308	2.624%
2013	9437	9453	9456	9484	9516	9542	9552	9545	9552	9689	9666	9668	9547	2.564%
2014	9664	9681	9702	9750	9796	9800	9835	9846	9870	9886	9912	9936	9806	2.716%
2015	9972	9962	9972	9992	9975	10039	10037	10039	10065	10128	10092	10153	10035	2.335%
2016	10132	10181	10242	10279	10315	10337	10379	10385	10403	10434	10442	10530	10338	3.019%
2017	10542	10559	10667	10678	10692	10703	10789	10826	10823	10817	10870	10873	10737	3.856%
2018	10878	10889	10959										10909	5.520%

Base: 1913=100

The Cost Estimate includes calculation of escalation on a line-by-line basis, but the detail of the calculation is omitted from this report in the interest of brevity. The method used to calculate the amounts in the 'Escalated YOC (year of construction) Estimate' column is illustrated in Table 2-3 below. The estimate identifies the baseline year of the estimate line item ('Est. Basis' column), then escalates based on the allocation of percentages ('Escalation - Percentage per Year' columns) and outputs escalated costs per year in the columns on the far right. These are then totaled in the 'Escalated YOC Estimate' column.

Table 2-3 Cost Estimate Escalation Example (Extract)

Est ID	Cost Sheet	Heading	Description	(\$) Estimate	Escalated YOC Estimate	Escalation - Percentage per Y					Est Basis	Escalation - Cost at Year of Construction				
						19	20	21	22	23		19	20	21	22	23
41	2.001	Copco 1 Dam Removal	Furnish, Install, and Remove Barge-Mounted Crane in Reservoir	468,326	506,541		100				19	-	-	506,541	-	-
41	2.002	Copco 1 Dam Removal	Remove Sediment from Diversion Tunnel Intake to provide access	390,280	422,126		100				19	-	-	422,126	-	-
41	2.003	Copco 1 Dam Removal	Mobilize and Demob Large Crane on Right Abutment	104,387	117,421			100			19	-	-	-	117,421	-
41	2.004	Copco 1 Dam Removal	Remove Water from behind Tailrace Cofferdam	2,645	2,975			100			19	-	-	-	2,975	-
41	2.005	Copco 1 Dam Removal	Cofferdam Fill Material Production for Equipment Access	207,047	232,900			100			19	-	-	-	232,900	-
41	2.006	Copco 1 Dam Removal	Provide Dewatering behind Tailrace Cofferdam	261,629	294,297			100			19	-	-	-	294,297	-
41	2.007	Copco 1 Dam Removal	Remove Current Diversion Tunnel Plug	165,500	179,005		100				19	-	-	179,005	-	-
41	2.008	Copco 1 Dam Removal	Tailrace Cofferdam- Furnish & Unload Material	280,992	316,078			100			19	-	-	-	316,078	-
41	2.008.1	Copco 1 Dam Removal	Tailrace Cofferdam- Drive Pile	472,314	531,289			100			19	-	-	-	531,289	-
41	2.008.2	Copco 1 Dam Removal	Tailrace Cofferdam-Extract Pile	246,053	276,777			100			19	-	-	-	276,777	-
41	2.009	Copco 1 Dam Removal	Installation of 3 each 72" Blind Flanges	1,637,777	1,771,420		100				19	-	-	1,771,420	-	-
41	2.009.2	Copco 1 Dam Removal	Installation of 16.5 X 18.5 Roller Gate and Gate Structure	5,848,012	6,276,555		20	80			19	-	1,216,387	5,060,168	-	-

## 2.7 Quantitative Risk Assessment

KRRC completed a Quantitative Risk Assessment (QRA) to analyze uncertainties and risk, to be used as the basis for development of the Project contingency. The primary objective of the QRA is to provide KRRC with a confidence level for the Project contingency reserve and actionable recommendations based upon thorough research and best industry practices. The intent of QRA is to provide the Project and its stakeholder with information about the confidence levels in the present Project budget and schedule, and top project risks driving cost, so that timely, data-driven decisions can be made under the holistic umbrella of statistically-based confidence levels.

To get a comprehensive understanding of the risks, a thorough review of pertinent project documents was completed, including, but not limited to, the Definite Plan, AON's Risk and Insurance Due Diligence Report (Aon 2019), RES's Risk Transfer Plan, the Project estimate of project costs, and Project schedule through construction.

The process also involved working with the Project cost estimator to identify an account for the uncertainties and assumptions in the estimate. Several Estimate Uncertainty sessions were held and the uncertainties that are used as an input to the QRA were reached by consensus. Finally, the Project's planning and construction schedules were reviewed with the Project Team, simplified for the QRA and summarized in a Risk Fragnet.

These three elements are used as the skeleton of the Risk Model:

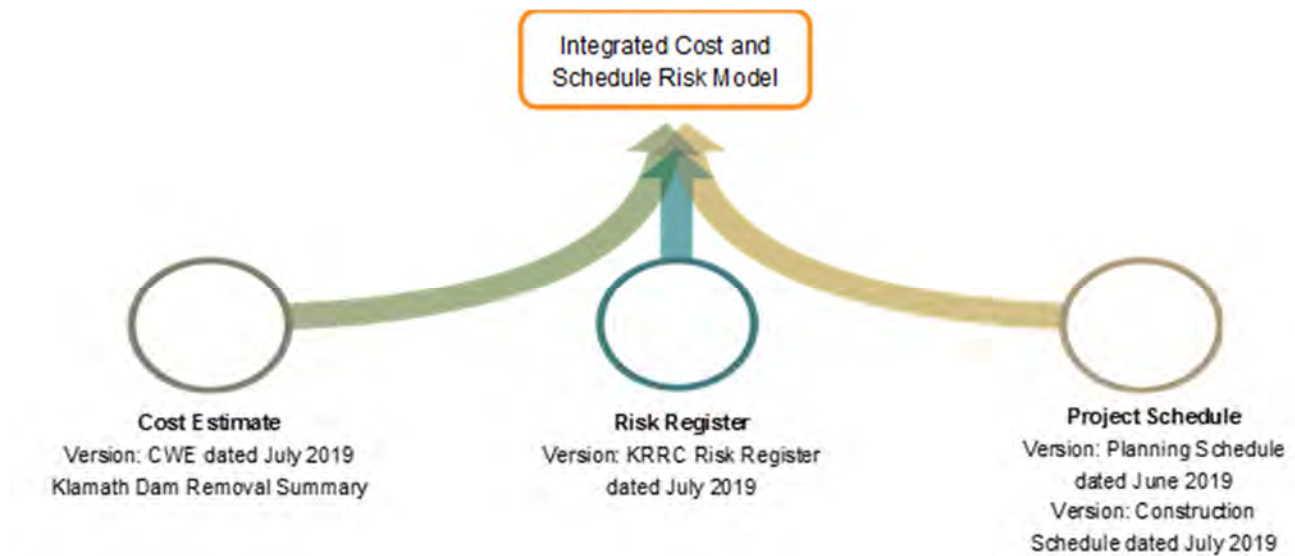


Figure 2-1 Risk Model Input Material Schematic

All collected data was used to develop an integrated cost and schedule risk model and perform a QRA. A Monte Carlo simulation was performed to develop the cumulative distributions of Project cost and schedule through which confidence levels were determined. This qualitative risk assessment was performed in compliance with the ISO 31000 Risk Management Framework. For additional details related to the QRA methodology, please refer to Attachment D.

The Monte Carlo Simulation seeks to develop a large number of randomly generated outcomes (scenarios) for cost and schedule using the risk data obtained throughout the assessment. Each of these outcomes represents a possibility that could occur. The Monte Carlo that was run for this risk assessment used 5,000 iterations of the risk set to arrive at a distribution of scenarios. These 5,000 scenarios are intended to represent an adequate set of all possible outcomes that can result from the risk data set.

Due to the unique nature of this Project and the KRRC, KRRC selected a conservative P80 to represent the appropriate level of contingency for the Project. An 80% confidence level means that of the 5,000 scenarios, 4,000 (80% x 5,000) will be less than or equal to the value selected for the cost or the schedule confidence level. Of course, 1,000 scenarios will be greater than the value at this level of confidence.

## 2.8 Ongoing Due Diligence

### 2.8.1 General

KRRC is undertaking additional due diligence on construction costs, measures to lower construction costs, and measures to manage construction risk. KRRC will complete additional engineering, manage the selected design-build contractor, establish a GMP for the work to be performed, implement its insurance programs, and enforce the Project Agreement requirements for all bid bonds, payment bonds, and the performance bond. Many risks considered in the Monte Carlo analysis that deal with design and regulatory compliance will be mitigated or better understood when this process is completed, likely lowering the contingency significantly.

### 2.8.2 Independent Board of Consultants (BOC)

The FERC approved the BOC for the Lower Klamath Project on May 22, 2018. Among other things, FERC's letter of approval included a plan and schedule to obtain BOC review of the estimate of project costs and contingency for the Full Removal alternative, adequacy of available funds for facilities removal, adequacy of the proposed contingency reserve, and adequacy of the proposed insurance and bonding arrangements. The five-member BOC includes Dan Hertel, PE (Engineering Solutions, LLC), James Borg, PE (D&H Concepts, LLC), Craig Findlay, PhD, PE, GE (Findlay Engineering, Inc.), Mary Louise Keefe, PhD (R2 Resource Consultants, Inc.), Ted Chant, PE (Chant Limited) and Steve Coombs (Risk Resources, Inc.).

The BOC completed a review of the Definite Plan (KRRC 2018) and the associated estimate of project costs, which resulted in a December 2019 Final Letter Report No. 1 to present their findings, conclusions and recommendations. This followed their first BOC meeting on October 24, 2018, as well as the informal meeting and site visit of October 23, 2018. Matters addressed included the Definite Plan, the feasibility and cost associated with the Definite Plan, as well as the capacity of the KRRC to accept transfer of license from PacifiCorp. After receiving BOC Letter Report No. 1, additional informal cost submittals have been made to the BOC and discussions have been completed to address BOC input from Letter Report No. 1. The KRRC believe that all BOC input has been incorporated or addressed in this amended Estimate of Project Costs report.

A decorative banner with a wavy, ribbon-like shape. It features a light blue upper section and a darker blue lower section, separated by a thin white line. The banner curves upwards from left to right.

## Chapter 3: Cost Category Summaries

## 3. COST CATEGORY SUMMARIES

The following sections provide detailed summaries of methods, assumptions and results of the estimate development for the various cost categories and subcategories.

### 3.1 Project Oversight

Project oversight and administration costs generally include costs associated with KRRC set-up and corporate insurance, management labor and travel, accounting and administrative support, project controls, contract management, BOC participation and facilitation, legal support, and outreach. Oversight costs exclude technical services, engineering, mitigation measures, and construction contracting. Table 3-1 summarizes estimated project costs for project oversight across the various project phases. Project oversight costs are the same for the Full and Partial Removal alternatives.

KRRC developed labor estimates for each activity using the latest understanding of management requirements in any given year, and applicable industry labor rates. KRRC developed ODCs using an understanding of actuals spent to date and requirements to continue management efforts into the future. ODCs include office space, travel, meals, postage, specialty reproduction, and vendor quotes for materials, supplies or services.

Table 3-1 Project Oversight Estimate Per Phase

Est ID		Estimate at Year of Performance								
ID	Heading/Description	FY16/17	FY17/18	FY18/19	FY19/20	FY20/21	FY21/22	FY22/23	FY23/24	Total
	<b>Project Oversight</b>									
	Compensation & Benefits									
10	Compensation & Benefits	29,017	425,830	1,100,000	1,531,000	1,607,550	1,687,928	1,329,243	1,163,088	8,873,655
	Travel and Meetings									
10	Travel and Meetings	45,223	82,607	85,000	163,000	75,000	75,000	40,000	40,000	605,830
	Professional Services									
10	CEA Services & Expenses	1,054,732	1,120,224	755,000	712,000	360,000	180,000	-	-	4,181,956
10	Legal Services; General Counsel	1,109,894	1,373,774	430,000	540,000	540,000	250,000	250,000	100,000	4,593,668
10	Legal Services; Construction Counsel	-	170,824	1,400,000	1,210,000	250,000	250,000	250,000	50,000	3,580,824
10	Legal Services; Regulatory Counsel	-	-	850,000	1,340,000	250,000	50,000	50,000	50,000	2,590,000
10	Legal Services; Corporate Transaction Counsel	-	-	300,000	200,000	100,000	50,000	50,000	50,000	750,000
10	Board of Consultants	-	-	400,000	400,000	400,000	300,000	240,000	-	1,740,000
10	Land Survey/Title Work	-	-	750,000	723,000	250,000	-	-	-	1,723,000
10	Accounting and Audit Fees	-	59,395	120,000	75,000	120,000	50,000	50,000	50,000	524,395
10	Risk Management Services	-	30,000	160,000	272,000	200,000	-	-	-	662,000
10	Communications External Services	-	130,000	242,000	54,000	-	-	-	-	426,000
10	Other Professional Fees	-	-	225,000	576,000	500,000	50,000	25,000	25,000	1,401,000
	Admin, IT, Fees									
10	Admin, IT, Fees	64,717	83,800	200,000	201,000	211,050	221,603	174,512	122,158	1,278,840
	Owner's Technical Representative (excluding Permitting, Design Reviews, Outreach)									
10	Owner's Technical Representative	-	923,136	811,067	850,000	690,000	520,000	540,000	280,000	4,614,203
	Owner's Technical Representative (Outreach only)									
10	Owner's Technical Representative	-	696,604	226,115	71,324	62,114	63,977	65,897	67,873	1,253,904

Table 3-2 summarizes average Full Time Equivalent (FTE) staffing for the various activities and line items. FTE numbers give a general understanding of how many full-time staff may be working on each activity throughout each year or phase. KRRRC calculated FTEs by dividing annual labor costs by the total working hours per year/phase and the average labor rate for each activity. FTE values for the BOC were calculated using working hours for a quarter of any given year, since BOC members are not full-time employees.

Project oversight FTEs are generally highest from 2019 through 2021, as the KRRRC will be managing numerous contracts for engineering and construction of the various project components.

Table 3-2 Project Oversight Average FTEs Per Phase

Est ID		FTEs at Year of Performance							
ID	Heading/Description	FY16/17	FY17/18	FY18/19	FY19/20	FY20/21	FY21/22	FY22/23	FY23/24
	<b>Project Oversight</b>								
	Compensation & Benefits								
10	Compensation & Benefits	0.1	1.3	3.4	4.9	5.3	5.8	4.7	4.2
	Travel and Meetings								
10	Travel and Meetings	0.1	0.3	0.3	0.5	0.2	0.3	0.1	0.1
	Professional Services								
10	CEA Services & Expenses	3.1	3.4	2.4	2.3	1.2	0.6	-	-
10	Legal Services: General Counsel	3.3	4.2	1.3	1.7	1.8	0.9	0.9	0.4
10	Legal Services: Construction Counsel	-	0.5	4.4	3.9	0.8	0.9	0.9	0.2
10	Legal Services: Regulatory Counsel	-	-	2.7	4.3	0.8	0.2	0.2	0.2
10	Legal Services: Corporate Transaction Counsel	-	-	0.9	0.6	0.3	0.2	0.2	0.2
10	Board of Consultants	-	-	1.3	1.3	1.3	1.0	0.8	-
10	Land Survey/Title Work	-	-	2.3	2.3	0.8	-	-	-
10	Accounting and Audit Fees	-	0.2	0.4	0.2	0.4	0.2	0.2	0.2
10	Risk Management Services	-	0.1	0.5	0.9	0.7	-	-	-
10	Communications External Services	-	0.4	0.8	0.2	-	-	-	-
10	Other Professional Fees	-	-	0.7	1.9	1.7	0.2	0.1	0.1
	Admin, IT, Fees								
10	Admin, IT, Fees	0.2	0.3	0.6	0.6	0.7	0.8	0.6	0.4
	Owner's Technical Representative (excluding Permitting, Design Reviews, Outreach)								
10	Owner's Technical Representative	-	2.8	2.5	2.7	2.3	1.8	1.9	1.0
	Owner's Technical Representative (Outreach only)								
10	Owner's Technical Representative	-	2.1	0.7	0.2	0.2	0.2	0.2	0.2

## 3.2 Liability Transfer

Indicative pricing for liability transfer was developed by RES and consist of two separate approaches to liability transfer. These approaches include utilization of a specialty corporate indemnitor and development and management of a local impact mitigation fund. Section 2.3 provides a summary of these two proposed liability transfer solutions, and the amended Risk Management Plan for the Project (KRRRC 2019) provides a detailed description. The total indicative pricing for these is approximately \$35.5M.

## 3.3 Environmental Compliance and Permitting

KRRRC's plan for compliance with applicable laws and regulations is provided in Section 1.3 of the Definite Plan. Cost estimates reflected in this amended Appendix P are based upon implementation of that plan, and



further assume that the license surrender order to be issued by the FERC will authorize implementation of the Definite Plan (as proposed) and will not impose any conditions that conflict with or are materially inconsistent with the Definite Plan. In addition to FERC 's surrender order (which will incorporate any conditions or requirements of the National Environmental Policy Act, California § 401 Clean Water Act Water Quality Certification, Oregon § 401 Clean Water Act Water Quality Certification, the Endangered Species Act, the Magnuson-Stevens Fishery Conservation and Management Act and the National Historic Preservation Act ). The California § 401 Clean Water Act Water Quality Certification to be issued by the California State Water Resources Control Board (SWRCB) will include and address any measures needed to comply with CEQA. This report also assumes that implementation of the Definite Plan will require a Section 404 individual permit from the United States Army Corps of Engineers (USACE), coverage under a National Pollutant Discharge Elimination System (NPDES) Construction Stormwater General Permits for construction-related stormwater discharges to surface waters in California and Oregon, and various other state and local permits, as required by applicable law. Table 3-3 summarizes estimated environmental compliance and permitting costs across the applicable project years. Environmental compliance and permitting costs are the same for the Full and Partial Removal alternatives. It should be noted that the PDB will provide some level of support for compliance, and those costs are described separately in Section 3.5.

KRRC developed labor estimates for each activity using an understanding of actuals spent to date, as well as the latest understanding of management requirements in any given year, and applicable industry labor rates. KRRC developed ODCs using an understanding of actuals spent to date and requirements to continue permitting and associated field efforts into the future. ODCs include travel, meals, and vendor quotes for materials, supplies or services.

Table 3-4 summarizes average FTE staffing for the various activities and line items. FTE numbers give a general understanding of how many full-time staff may be working on each activity throughout each year or phase. KRRC calculated FTEs by dividing annual labor costs by the total working hours per year and the average labor rate for each activity.

Environmental compliance and permitting FTEs are generally highest in 2018 while numerous biological surveys are being completed along with development of materials to support FERC.

Table 3-3 Environmental Compliance Estimate Per Year

Est ID		Estimate at Year of Performance								
ID	Heading/Description	FY16/17	FY17/18	FY18/19	FY19/20	FY20/21	FY21/22	FY22/23	FY23/24	Total
	<b>Permit Acquisition, CEQA/NEPA Support, Compliance QA During Construction</b>									
	KRRC Agency Fees and Reimbursements									
20	See breakout in Cost Estimate	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	3,992,591
	Owner's Technical Representative (Permitting)									
20	Permitting	-	961,316	1,114,541	728,267	310,000	320,000	330,000	340,000	4,104,124



Table 3-4 Environmental Compliance Average FTEs Per Year

Est ID		FTEs at Year of Performance							
ID	Heading/Description	FY16/17	FY17/18	FY18/19	FY19/20	FY20/21	FY21/22	FY22/23	FY23/24
	<b>Permit Acquisition, CEQA/NEPA Support, Compliance QA During Construction</b>								
	KRRC Agency Fees and Reimbursements - See Estimate								
20	See breakout in Cost Estimate	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	Owner's Technical Representative (Permitting)								
20	Permitting	-	2.9	3.5	2.3	1.0	1.1	1.2	1.2

## 3.4 Technical Support

Technical Support services include all activities required to complete the preliminary engineering designs, procure the PDB, and to manage and complete design reviews of PDB work. Section 2.2 describes the construction procurement approach for the Project and is a basis for the procurement estimates provided herein.

The first step in the design process was to complete the necessary field work to obtain design data to support the design analyses and drawings. This work was primarily completed in 2017 and 2018. The following activities fall into this category:

- Preliminary Engineering Site Data:
  - + Topographic/Bathymetric Surveys: Obtain updated data of topographic and reservoir bathymetric conditions at the Project
  - + Geotechnical Investigations: Obtain geologic information to evaluate reservoir rim stability and other geologic conditions to support design components
  - + Hazardous Material Investigation: Complete phase 1 hazardous material assessments for existing hydropower and other pertinent project features
  - + Biological Reconnaissance: Obtain initial understanding of existing biological conditions that may affect proposed design layout
  - + Engineering Reconnaissance: Obtain understanding of existing site facilities and infrastructure to inform design and demolition activities
  - + Groundwater Monitoring: Obtain groundwater well data adjacent to reservoirs to assess potential impacts associated with reservoir drawdown
- Vegetation Test Plots: Complete pilot studies using construction test plots to help determine ideal conditions, timing and species associated with reservoir seeding and restoration

- Initial Seed Collection & Propagation: Complete early seed collection and propagation to aid the subsequent PDB effort to provide the required seed volumes for reservoir restoration

The next step in the design process is to refine the preliminary designs based on the latest field data and input from regulatory and other stakeholders. This refined design, which is ongoing, will serve as the basis for environmental and regulatory reviews. Primary project components are listed below and described in detail in the Definite Plan.

- Dam & hydropower demolition (including existing recreation facilities)
- Reservoir area improvements
- Reservoir area restoration
- City of Yreka's pipeline relocation across Iron Gate Reservoir and associated diversion facility improvements
- Transportation improvements (road, bridge and culvert) improvements
- Recreation improvements
- Downstream flood control improvements
- Public health and safety fencing
- Implementation of fire management plan
- Spawning gravel augmentation
- Fish hatchery modification and improvements (not included in estimate since funded separately by PacifiCorp)

After preliminary design, the final engineering plans and specifications will developed by the PDB and are summarized separately in Section 3.6.1.

Table 3-5 summarizes estimated technical support costs across the applicable project years. Technical support costs are the same for the Full and Partial Removal alternatives.

KRRC developed labor estimates for each activity using the latest understanding of engineering, procurement and owner's representative requirements in any given year, and applicable industry labor rates. KRRC developed ODCs using an understanding of actuals spent to date and requirements to continue engineering and procurement efforts into the future. ODCs include travel, meals, and vendor quotes for materials, supplies or services.

Table 3-5 Engineering & Procurement Estimate Per Year

Est ID		Estimate at Year of Performance								
ID	Heading/Description	FY16/17	FY17/18	FY18/19	FY19/20	FY20/21	FY21/22	FY22/23	FY23/24	Total
	<b>Preliminary Engineering (Technical Representative)</b>									
	Technical Preparation	-	3,956,821	4,791,235	-	-	-	-	-	8,748,056
	Yreka Water Line Design	-	-	-	477,000	-	-	-	-	477,000
	<b>Construction Procurement</b>									
	Dam removal construction procurement	-	54,057	644,386	297,874	100,000	-	-	-	1,096,317
	<b>Owner's Representative (Design Oversight)</b>									
	Design reviews	-	115,243	513,831	260,000	-	-	-	-	889,074
	PDB Management	-	-	-	744,317	370,000	-	-	-	1,114,317
	Engineer of Record (Yreka Water Line)	-	-	-	-	145,000	-	-	-	145,000

Table 3-6 summarizes average FTE staffing for the various activities and line items. FTE numbers give a general understanding of how many full-time staff may be working on each activity throughout each year or phase. KRRRC calculated FTEs by dividing annual labor costs by the total working hours per year and the average labor rate for each activity.

FTEs are highest for engineering design in 2019, when multiple engineering design teams will be developing final design packages for the various project components.

Table 3-6 Engineering & Procurement FTEs Per Year

Est ID	Estimate at Year of Performance								
ID	Heading/Description	FY16/17	FY17/18	FY18/19	FY19/20	FY20/21	FY21/22	FY22/23	FY23/24
	<b>Preliminary Engineering (Technical Representative)</b>								
	Technical Preparation	-	12.0	15.0	-	-	-	-	-
	Yreka Water Line Design	-	-	-	1.5	-	-	-	-
	<b>Construction Procurement</b>								
	Dam removal construction procurement	-	0.2	2.0	1.0	0.3	-	-	-
	<b>Owner's Representative (Design Overs)</b>								
	Design reviews	-	0.3	1.6	0.8	-	-	-	-
	PDB Management	-	-	-	2.4	1.2	-	-	-
	Engineer of Record (Yreka Water Line)	-	-	-	-	0.5	-	-	-

## 3.5 Construction Management

The estimate and proposed construction management (CM) approach for the Project is based on the information available at the time of the development of this analysis and on the assumption that most Project construction will be performed under the current PDB Agreement.

KRRRC estimated construction management to support all construction commencing with mobilization in early 2021, including dam modifications and commencement of work on construction of other components such as access road and bridge work, waterline relocation and downstream flood control improvements. Support continues through reservoir drawdowns into 2022 and ramps-up in the second year of construction for the parallel demolition of dams, and reservoir area restoration.

The proposed CM approach assumes that two construction management offices located at the Iron Gate and Copco areas will be established for 2021, with a third office established in 2022 for the J.C. Boyle area. The estimate also reflects the traveling constraints between each of the sites under the prospective contracts.

The principal construction management office will be located near the existing Copco No. 1 dam, where the Senior Construction Manager is located. There will be one Assistant Construction Manager, one Administrative Assistant, and one Project Control Manager to support the Senior Construction Manager, who will be located in the Copco No. 1 dam offices. Secondary construction management offices will each be headed up by a separate Construction Manager. Costs for these facilities are included in the construction Contractor's general conditions.

Third-party inspection oversight on the PDB is an important factor in construction management of a sensitive high-visibility project such as this. Inspectors will provide oversight of Contractors' safety, quality, environmental, cultural and scope compliance. They will also make timely observations of construction progress and conditions, to support identification of potential productivity issues, and support avoidance and evaluation of potential change work.

KRRC assumed that some construction work may occur outside normal working hours and is likely required for excavation of Iron Gate dam and demolition of Copco No. 1 dam. A second shift Inspector has been included for 5 months to allow for this likelihood.

A Safety Manager and Quality Manager are included at 20 hours/month each to provide audits of contractor and construction management practices against established procedures and standards.

KRRC calculated labor costs based on applicable industry contract rates where available and escalated them at 3% annually. KRRC based all labor costs on a 40-hour work week, except for construction manager and inspector labor costs which are based on a 50-hour work week. An allowance of 20% on labor has been included to cover ODCs including travel, lodging and other remuneration associated with the remote sites.

The estimated project cost assumes that cultural resources and environmental monitoring will be required. These costs are not captured in the CM section but are included elsewhere in this estimate.

Table 3-7 Table 3-7 summarizes estimated construction management costs on a per-year basis, per labor category and shows ODCs included in the estimate. Construction management costs are the same for the Full and Partial Removal alternatives.

Table 3-8 show staff included in this estimate, where 1.00 = one FTE for one month.

Table 3-7 Construction Management Estimate Per Year

Construction Management Staff	FTEs	Hrs/Week	2021	2022	2023	Subtotal
Sr. Construction Manager	1	40	\$ 497,611	\$ 554,718	\$ 281,458	\$ 1,333,787
Assistant Construction Manager	1	50	\$ 426,109	\$ 380,047	\$ 135,004	\$ 941,160
Administrative Assistant	1	40	\$ 177,555	\$ 252,584	\$ 140,872	\$ 571,011
Project Control Engineer	1	40	\$ 340,887	\$ 346,725	\$ 150,691	\$ 838,303
Construction Manager	varies	50	\$ 1,538,675	\$ 1,302,831	\$ 481,105	\$ 3,322,612
Inspector	varies	50	\$ 963,492	\$ 1,014,729	\$ 531,337	\$ 2,509,558
Second Shift Inspector	varies	50	\$ 140,345	\$ 308,758	\$ 168,414	\$ 617,516
Scheduler	0.5	40	\$ 144,619	\$ 132,608	\$ 49,441	\$ 326,668
Safety Manager	0.5	40	\$ 170,444	\$ 156,288	\$ 58,270	\$ 385,002
Quality Manager	0.5	40	\$ 170,444	\$ 156,288	\$ 58,270	\$ 385,002
ODCs at 20%	-	-	\$ 729,292	\$ 734,162	\$ 327,680	\$ 1,791,134
<b>TOTAL</b>			<b>\$ 5,299,473</b>	<b>\$ 5,339,737</b>	<b>\$ 2,382,543</b>	<b>\$ 13,021,753</b>

Table 3-8 Construction Management FTEs Per Month

		2021												2022												2023
CONSTRUCTION MANAGEMENT		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan
Role	Responsibility																									
Iron Gate																										
Construction Manager	Dam Mods/Removal CM	0.50	0.50	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.5
Inspector	Dam Mods/Removal	-	0.25	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	-	-	-	-	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.5
Second Shift Inspector	Dam Removal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1.00	1.00	1.00	1.00	1.00	1.00	-	-	-	-
Construction Manager	Yreka Water Supply CM	0.50	0.50	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Inspector	Yreka Water Supply	-	0.50	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Inspector	Downstream Flood Improvements	-	0.25	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Inspector	Specialty Inspection	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.33	0.33	0.33	0.33	0.33	0.33	0.33	-	-	-	-
Scheduler	Schedule management	-	0.25	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.5
Safety Manager	Safety manager	-	0.25	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.5
Quality Manager	Quality manager	-	0.25	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.5
ODCs at 20%																										
Copco 1 & 2																										
Sr. Construction Manager	Overall CM Oversight	0.50	0.50	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.0
Assistant Construction Mana	Assistant to Sr. CM	-	0.50	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.5
Administrative Assistant	Main Office Admin.	-	0.50	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.0
Project Control Engineer	Project Controls Lead	-	0.50	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.5
Construction Manager	Dam Mods/Removal CM	0.50	0.50	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.5
Inspector	Dam Mods/Removal	-	0.25	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	-	-	-	-	-	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.0
Second Shift Inspector	Dam Removal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1.00	1.00	1.00	1.00	1.00	1.00	-	-	-	-
Inspector	Roads & Bridges	-	0.25	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Inspector	Specialty	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.33	0.33	0.33	0.33	0.33	0.33	0.33	-	-	-	-
ODCs at 20%																										
JC Boyle																										
Construction Manager	Site Lead Construction Manager	-	-	-	-	-	-	-	-	-	-	-	-	0.50	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.5
Administrative Assistant	Extra Admin. at Remote Site	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.50	0.50	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.5
Inspector	Dam Removal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	-
Inspector	Specialty	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.33	0.33	0.33	0.33	0.33	0.33	0.33	-	-	-	-
ODCs at 20%																										

## 3.6 Progressive Design-Build Contract

### 3.6.1 Final Design & Permitting Support

As part of the existing Agreement with Kiewit, the preliminary services scope includes the primary tasks listed below. The current allocated budget for these scope items is approximately \$18M, which was negotiated through the competitive RFP process.

- Project Management
- Project Site and Project Conditions Verification
- Permitting Support and Compliance Program
- Initial Cost Model and Schedule
- Design Criteria Report
- 30% Design Completion Documents
- 60% Design Completion Documents
- GMP Project Submittal and Supporting Cost Estimates
- 90% Design Completion Documents

Subsequent tasks for 100% design, seed collection and propagation, and invasive weed management have been estimated at approximately \$3.7M and will be negotiated with Kiewit in the coming months.

### 3.6.2 Dam Removal

The dam removal scope for Full and Partial Dam Removal alternatives is defined in Section 5 of the Definite Plan and was used as the basis for this estimate. Estimates were developed using the methods and schedule constraints summarized in Section 2.4 of this report. Escalation was applied per Section 2.6.

Pertinent assumptions from the Definite Plan are as follows:

- KRRC confirmed or updated quantities where new information was available, and as described in Section 5 of the Definite Plan.
- Estimate and schedule assumes that a second shift will be required for Copco No. 1 and Iron Gate demolition. KRRC assumed two 10-hour shifts, 5 days a week.



- Estimate and schedule assumes that work days are 8 hours per day, 6 days a week for Copco No. 2 and J.C. Boyle demolition.
- All concrete demolition debris will be hauled to onsite disposal area as described in more detail in Section 5 of the Definite Plan for Decommissioning (KRRC 2018).
- All earth work material from excavation activities will be hauled to onsite disposal area as described in more detail in Section 5 of the Definite Plan for Decommissioning (KRRC 2018).
- All concrete and earthwork demolition material will be processed during demolition activity and there is no process equipment (crusher, screener, and stacker) operated at disposal areas.
- While Kiewit will manage the entire design build process as the prime, it is assumed that subcontractors will be used for certain specialized activities.

For any electrical or transmission facility demolition that is attached to existing or future electrical facilities to remain online and under the ownership of PacifiCorp, costs associated with design and construction are assumed to be the responsibility of PacifiCorp and are not included herein.

The savings associated with the partial removal alternative is detailed in Attachment A and includes the net savings after considering maintenance costs over a 10-year period for those facilities that remain in place.

### 3.6.3 Reservoir Area Improvements

This estimate assumes that a small percentage of sediment that remains in the reservoirs after drawdown will be mechanically excavated and placed elsewhere in the proposed floodplain area. Earthwork excavation volumes within the reservoir are based on surface models from historical site surveys compared to recently collected bathymetric data. KRRC developed labor rates, equipment rates, and materials costs from a combination of actual costs from past similar projects and RS Means Heavy Civil publication. Construction cost data used from past restoration projects with similar complexity, construction techniques and size include:

1. Snake River restoration near Boise, Idaho constructed in 2016
2. Kootenai River restoration near Bonners Ferry, Idaho constructed in 2010 – 2018
3. Rogue Basin restoration near Medford, OR constructed in 2010
4. Multiple helicopter large wood placement costs throughout Oregon on projects constructed in 2010 – 2018

Unit rates and quantities associated with the various activities that make up this work can be found in Attachment A. This estimate assumes the following:

- Earth excavation and subsequent fill (or disposal) will happen at the same time so that material is handled only once and placed on-site in the final location with minor grading and compaction. KRRC based volume estimates on neat line quantities using digital surface models.
- All excavated material is suitable for in-water disposal and will be disposed of on-site.
- Estimates include equipment and road access into site, assuming 3,000 linear feet (LF) on center (OC) or 0.56 miles per site (6 sites).

KRRC proposes elements for bank stability and channel fringe complexity and will include a process-based restoration and velocity variations along bank line by adding large wood complexity for resting zone, feeding seams, cover and velocity refugia. KRRC based restoration areas and treatments on expected conditions after drawdown and may change based on actual conditions.

Areas identified for reservoir earthwork activities and engineered stability elements are described and shown in plan in Appendix H, Restoration Plan, of the Definite Plan.

### 3.6.4 Reservoir Restoration

Restoration activities can be broken into three primary categories: (1) Earthwork/engineered improvements (Section 3.6.3 above), (2) pre-drawdown activities, and (3) post drawdown activities. The following text summarizes key assumptions that are pertinent to the estimate development for the second two categories. A full description of these components can be found in Appendix H, Restoration Plan, of the Definite Plan.

Pre-drawdown activities include seed collection, seed propagation and weed eradication, as further summarized below. In addition to the work described below, KRRC assumes completion of an RFP process to select a contractor or vendor for each activity.

1. **Seed Collection:** The main component of the revegetation process will be locally eco-typic seed of native plants for four different planting zones (bank wetland, bank riparian, floodplain riparian, and upland) based on hydrology. The seed will preserve the genetic integrity of the site and provide species and genetics best suited for this specific landscape. Collection of locally eco-typic seed subsequently grown by commercial growers to produce large amounts of seed or plant material will require advanced planning and will be implemented during the pre-dam removal period. To produce 50,000 lbs of pure live seed (PLS) in each of the four growing years before the 2023 fall season (totaling 200,000 lbs.), it is assumed that 3-7 lbs. of PLS/acre of wild collected seed will produce 2,000 lbs PLS/ acre. KRRC based this estimate upon propagation rate quotes obtained from BFI Native seed and Pacific Coast Seed. Conservatively, the higher seeding rate of 7 lbs PLS/acre is assumed to be planted on 25 acres at the seed propagation farm totaling the 175 lbs PLS of seed needed each year and resulting in the expected 50,000 lbs PLS if 2,000 lbs PLS is produced per acre on 25 acres. The cost of collecting 1 pound of wild seed ranges from low \$1,000 to high \$1,800. The seed must then be cleaned, stored in climate control warehouses and in some cases pre-treated. Seed pre-treatment may include scarification, stratification, imbibition, and others. Wild

collected seed will be substantially more expensive than propagated seed due to additional cleaning costs.

2. **Seed Propagation:** In order reach the goal of 200,000 lbs. of PLS over 4 years, 25 acres of land will need to be rented to propagate collected seed (with an assumed minimal yield of 2,000 lbs PLS/acre) to produce 50,000 lbs per year. KRRC based the yield and other unit cost estimates on information received from BFI, J Herbert Stone nursery, Pacific Coast Seed and the local forest service office.
3. **Weed Eradication:** The objective will be to implement a combination of weed control techniques that minimize the extent of environmental degradation and reduce the impact of chemical inputs on humans and non-target organisms. To identify the populations of existing invasive species, a field survey will be conducted at the site, geo-locating all invasive species. Assuming 100% of the project area outside of the existing reservoirs needs to be surveyed, it will take approximately 900 hours to survey the area. For a Scientist and Principal Scientist, the estimated cost is \$135,000 plus approximately \$2,247 for gas & mileage and \$21,000 for per diems and accommodations. In the years before drawdown, KRRC assumed that 30% of the site above the water line of the reservoir (85- acres) will require invasive species eradication. KRRC based this percentage on estimates from surveys performed in 2017-2018. Once drawdown occurs, the acreage of the site with vegetation will increase along with the need for invasive species control. For two years after drawdown, KRRC assumed 300 acres to potentially require weed eradication treatment.

Post-drawdown activities include pioneer seeding, pole cutting and salvaged plant collection, revegetation in each planting zone, followed by establishment period and long-term maintenance. Each activity is further summarized below:

1. **Pioneer Seeding:** Establishing a pioneer crop on the site soon after drawdown of the reservoirs is essential to prevent erosion, development of inhospitable substrate, and invasive species from establishing at the site, and building up soil biota and structure. The pioneer seed mix is intended to take advantage of less expensive native seed. The seed generated in large amounts during propagation (overstock), and sterile non-native seed (sterile wheat and Regreen) can readily establish in the sediment and will be less of a risk if it is washed out due to spring flooding or if it freezes in the early months of the year. Once river and soil conditions have stabilized, a fall broadcast seeding will be applied including locally ecotypic, native and diverse seed stock for each planting zone. Broadcast aerial seeding will be performed from helicopter(s) and is a very cost-efficient method of application. KRRC based pricing on an estimate from Ben Timberland (Timberland Helicopters, Inc, Ashland, OR) on the hourly rate of \$950/hr. at the rate at which the operator can distribute the seed. KRRC assumed that the seed weighs on average 14 lbs/cubic foot, with a seed bucket that holds 27 cubic feet of seed, 12 minutes is assumed for each bucket. For distributing 100 lbs. PLS per acre, KRRC estimated to be 140 hours totaling 133,000 for a medium cost. The cost of seed per pound is based on cost for readily available seed from nurseries that are anticipated be working within the Project (i.e., California brome = \$8-9 per PLS).

2. **Pole Cuttings and Salvaged Plants:** The establishment of habitat will greatly accelerate with the installation of pole cuttings, as well as transplantation of salvaged plants. These plants will also help prevent erosion and add species diversity to the site. KRRC's contractor will collect pole cuttings and potentially store them, short-term, prior to installation. 'Salvaged plants' will be transplanted on site therefore their costs are not associated with contract growing and nursery care. KRRC assumed that the contractor will absorb the cost of an expected 30% mortality rate of the pole cuttings. KRRC's contractor will collect pole cuttings from areas surrounding the site. To increase the number of pole cuttings available, in the year prior to drawdown, contractors will selectively cut back pole cutting species marked for plant salvage. This will promote an ample supply of young growth that can be harvested as needed the following year. It is assumed that the harvest and installation will be simultaneous, limiting the need for storage off-site. The number of pole cuttings allotted will vary by zone. Each 100 square foot (SF) area, for both the bank riparian and bank wetland zones, will include five pole cuttings. For the floodplain riparian zone, each 100 SF area will contain one pole cutting.

### 3. Revegetation

- a) **Emergent Wetland Planting Zone:** Revegetation for emergent wetlands will be installed instream along the river's edge. This vegetation will consist of 100% salvaged plants, taken from the rim of the reservoirs. During the first year, KRRC assumes salvaged plants at 20 LF OC along the edges of the river. The following spring, once the plants have established, KRRC's contractor will harvest propagules from installed salvaged plants and will then be planted at 10 LF OC between the plants from the prior year. KRRC based cost estimates for plant layout per acre on estimates from Caltrans and RS Means.
- b) **Bank Wetland Planting Zone:** Bank wetland zones will be delineated as areas suitable for plant growth approximately between the base flow and 2-year flood event water surface elevations (Q2) of the Klamath River. These areas will consist of salvaged plants and pole cuttings. KRRC expects 50 percent of this area to be restored. KRRC's contractor will transplant salvaged plants to this zone from the existing reservoir edge. KRRC based cost estimates for this work on RS Means and Caltrans data for the operation of a backhoe with a bucket and the plantings for pole cuttings. KRRC's contractor will install pole cuttings in this initial stage of planting in the spring after drawdown. KRRC's contractor will perform plant layout for all plants by the Contractor's crews marking each planting spot with a pinflag for an overall review by a restoration ecologist. KRRC's contractor will aerial seed the pioneer crop in all zones early in the drawdown year creating fast-growing erosion control before the river stabilizes. Once the pioneer crop has grown, KRRC's contractor will either roll or mow it to help open the soil to sunlight and create a habitat for the fall broadcasting of ecotypic native seed. In the early spring of the following year, KRRC's contractor will layout and install one pole cutting per 100 SF.
- c) **Bank Riparian Planting Zone:** The Bank Riparian Zone will extend approximately from the 2-year (Q2) to the 25-year (Q25) flood water surface elevations (Q-lines) of the Klamath River. KRRC expects 50 percent of this area to be available for restoration. It will be the most critical zone for rapid re-establishment of riparian habitat, short-term stability of the channel and banks, and for

long-term establishment of an important transitional area between the riverine features and floodplain habitat areas. Planting densities within the riparian-bank areas will be variable, however, the substantial density of initial planting will be important to prevent invasion by reed canary grass (*Phalaris arundinacea*), a highly invasive non-native hybrid that is widespread around the reservoirs. The Bank Riparian zone will have a similar treatment to the Bank Wetland; with the same plant material and spacing. After drawdown, KRRC's contractor will transplant the plants from the rim of the reservoir to the river's edge. In the pioneer seeding process, KRRC's contractor will mainly apply mycorrhiza with the seed in this area. In the fall, the area will be broadcast seeded with ecotypic zone selected seed. KRRC's contractor will install an additional pole cutting in the following spring. Selected areas will be fenced off to deter deer predation and to serve as a seed bank to areas without fencing. Costs for fencing and installation is based on Caltrans data.

- d) **Floodplain Riparian Planting Zone:** Floodplain riparian zones will be delineated as those areas suitable for revegetation that occur approximately between the 25-year (Q25) and 100-year (Q100) flood water surface elevations of the Klamath River. The Riparian Floodplain Planting Zone will be planted similarly to the Bank Riparian Planting Zone; however, the plant densities will decrease, producing a decrease in plant layout costs for this zone. For each 100 SF area, there will be one pole cutting and one seed plant installation in the second year. The cost of construction/installation maintenance decreases slightly from Bank Riparian area; it will have an 18-month duration, until Plant Establishment. This section also includes emergency overhead irrigation in the high price estimate. Costs include \$60k for setup and design, \$40k/month to rent and \$30k to disassemble the irrigation system, and a 5-month rental (\$320K) and an uncertainty factor of 2 for 1,790 acres (costs pro-rated from the estimate for the Project). KRRC based costs for this on a quote from Rain for Rent for the entire site that includes design and rental of all equipment.
- e) **Uplands below Rocky Wake Zone:** The area between the upper edge of the Riparian Floodplain Planting Zone and the lower edge of the Rocky Wake Planting Zone constitutes the Uplands below the Rocky Wake Planting Zone. This area is the only formerly submerged area where upland vegetation will grow on sedimentary substrate. KRRC expects 50 percent of this area to be restored. The restoration process will be the same as for the planting zones below; mycorrhizal inoculant will be in the pioneer seed mix in the spring, broadcast seeding of the native ecotypic seed will be conducted in the fall 2022, and a final seeding in spring 2023 with deer fence, emergency irrigation, and construction/installation maintenance. However, plantings in this zone will consist of four woody plants per 100 SF. Species will include acorns, juniper berries, pine nuts fir and various shrubs. KRRC's contractor will install these plants with cocoon irrigation planters that will irrigate the plants and slowly deteriorate as the plant becomes self-sustainable. KRRC's contractor will use an auger to create a planting pit approximately 2 feet in diameter and 1 foot deep. KRRC based installation costs upon Saylor's installation cost.
- f) **Rocky Wake Planting Zone:** The Rocky Wake Planting Zone is the area of wake and wave action erosion around the edge of the existing reservoirs. Fluctuations of water level and wave action in the reservoir has eroded soil in a band or 'bathtub ring' leaving exposed rocky substrate, bedrock and areas that lack in vegetation. KRRC assumed that only 20% of this area is feasible to

restore. Soil amendments consisting of mycorrhizal inoculant will be added at the time of seeding. After the pioneer crop is broadcast seeded in the spring, the grown vegetation will be mowed or rolled in preparation for the fall broadcast seeding of the ecotypic seed. The plant selection and densities will be the same as the uplands below rocky wake zone. KRRC's contractor will place deer fence in selected areas within the zone to create areas free of deer predation. These areas will serve as seed banks for the rest of the site if predation becomes severe. Additionally, overhead irrigation is included in the high estimation cost.

- g) **Disturbed Uplands Planting Zone:** The Disturbed Uplands Planting Zone will consist of the existing developed areas proposed for demolition and recreational areas that will be removed after drawdown occurs. The revegetation schedule remains the same. However, the initial soil preparation may vary. These areas will most likely have highly compacted areas due to the existence of concrete or vehicular traffic on gravel areas. In these areas, it is assumed that 75% of the recreation area will need de-compaction. KRRC's contractor will cross rip compacted areas (before fall seeding) to a depth of 24 inches to loosen the soil and prepare it for seeding and planting. After de-compaction, KRRC expects this area to have healthy viable soils, so it is assumed that 90% of the area will be restored.
  - h) **Upland Stockpiles Planting Zone:** Upland Stockpiles Planting Zones include areas where materials from the dam removal will be deposited. The topsoil in these areas will be heavily compacted. The revegetation process for these areas will be the same as for the Disturbed Uplands Planting Zone, however, 100% of this zone will have to be de-compacted, slightly increasing it's per acre cost. KRRC based estimates for this treatment on RS Means data for \$110 to rip soil with a bulldozer.
  - i) **Undisturbed Uplands Planting Zone:** The Undisturbed Uplands Planting Zone will consist of areas above the Rocky Wake Zone that may be only minimally disturbed by the eradication of invasive exotic species. These areas will go through active weed removal for at least 3 years before drawdown. KRRC's contractor will reseed potential bare and disturbed patches resulting from invasive species eradication with a native upland seed mix via broadcasting. The majority of these areas will have existing native vegetation and only 30% is expected to need restoration.
4. **Establishment Period Maintenance:** KRRC assumes that the Project will be monitored and maintained for 5 consecutive years. Costs associated with this activity is covered by the Special Corporate Indemnitor, as summarized in Section 2.3.
5. **Long-term Maintenance:** After Establishment Period Maintenance and Monitoring, long-term monitoring is assumed to continue for 4 years. Costs associated with this activity is covered by the Special Corporate Indemnitor, as summarized in Section 2.3.

### 3.6.5 Yreka Water Supply Improvements

KRRC assumed for development of this estimate that an underground pipeline will be constructed to relocate the City of Yreka's water supply line currently crossing Iron Gate reservoir. This relocation option is discussed in detail in Section 7.5 of the Definite Plan.



The scope for relocating the Yreka waterline will involve installation of two micro-tunneling pits on either side of the Klamath River. Once these pits are fully excavated and shored, micro tunneling equipment will install a 36" steel casing below the river bed. Once the casing is installed, a new 24-inch waterline will be installed to take the place of the river crossing section of the existing water line. On either side of the Klamath River, the new pipe will be installed using an open cut excavation method. Once the waterline is completely installed, tested and active, the micro tunneling pits and the open excavation are to be backfilled with existing material. Once the backfill operation is complete, the existing waterline will be removed and recycled.

The cost estimate for the Yreka Water Supply Improvements was developed using the RS Means database with a city cost index adjustment of Redding, CA. Crew output for each operation was adjusted to account for access, location, and construction operation. KRRRC assumed that a pile and lagging wall will be used to shore micro tunneling pits and it will be installed simultaneously with the excavation operation.

### 3.6.6 Transportation Improvements

This section describes the proposed road improvements and maintenance activities that are the basis for the estimate of project costs. It is based on design information provided in Sections 5 and 7.4 of the Definite Plan. Several road, intersection, structure and culvert improvements are proposed as part of the Project to:

- Facilitate access for project-related vehicles and equipment associated with dam removal
- Provide safety measures for both public and project roads used during the dam removals
- Return roads used by project-related vehicles to the respective owners and users in an acceptable state, restoring any reduction in function attributed to the Project

The improvements will be implemented at various phases throughout the Project. Some will require completion prior to the dam removals (related to construction access), and others will be contingent on a future assessment of road elements once reservoir drawdown or hauling activities are complete (maintenance activities). There will also be some ongoing activities throughout the Project to maintain roads heavily trafficked by project construction vehicles.

Table 3-9 provides a summary of all pertinent road segments, bridges, and culverts and the associated improvements or maintenance. Table 3-10 summarizes maintenance and rehabilitation cost assumptions associated with roads being used for construction access. Section references within the table refer to the sections within the Definite Plan.



Table 3-9 Transportation Improvements

Location	Improvements (Section References to Definite Plan (KRRC 2018))	Purpose		
		Construction Access	Drawdown Related	Maintenance/ Rehabilitation
<b>J.C. Boyle</b>				
The Dalles California Highway (US97)	• Pavement rehabilitation unlikely during or post-Project (Section 5.2.2)			X
Green Springs Highway (OR66)	• Pavement rehabilitation unlikely during or post-Project (Section 5.2.2)			X
Keno Worden Road	• Pavement rehabilitation unlikely during or post-Project (Section 5.2.2)			X
Topsy Grade Road	• Potential pavement rehabilitation during or post-Project (Section 5.2.2)			X
Culvert at Unnamed Creek	• Potential sediment removal and downstream erosion protection (Section 7.4.3)		X	
J.C. Boyle Dam Access Road from OR66	• Re-grading uneven or rutted areas (Section 5.2.2)	X		
Junction of OR66 and J.C. Boyle Dam Access Road	• Intersection widening (Section 5.2.2) • Tree removal (Section 5.2.2) • Signage (Section 5.2.2)	X		
Timber Bridge	• Remove (Section 5.2.2)	X		
Power Canal Access Road	• Periodic roadway maintenance grading during construction (Section 5.2.2)	X		
J.C. Boyle Disposal Access Road	• Re-grading (Section 5.2.2) • Minor widening (Section 5.2.2)	X		
<b>Copco and Iron Gate</b>				
Copco Road (I-5 to Ager Road)	• Potential pavement rehabilitation during or post-Project (Section 5.2.2)			X
Copco Road (Ager Road to Lakeview Road)	• Potential pavement rehabilitation during or post-Project (Section 5.2.2)			X

Location	Improvements (Section References to Definite Plan (KRRC 2018))	Purpose		
		Construction Access	Drawdown Related	Maintenance/ Rehabilitation
Dry Creek Bridge	• Temporary bridge for construction access during Project (Section 5.2.2)	X		
Copco Road (Lakeview Road to Daggett Road)	• Roadway maintenance during construction (Section 5.2.2) • Potential pavement rehabilitation during or post-Project (Section 5.2.2)	X		X
Unnamed Culverts between Brush Creek and Scotch Creek	• Potential rehabilitation or replacement post-construction (Section 7.4.3)			X
Scotch Creek Culvert	• Replace (Section 7.4.3)		X	
Camp Creek Culvert	• Replace with bridge (Section 7.4.3)		X	
Jenny Creek Bridge	• Replace (Section 7.4.3)		X	
Copco Road (Daggett Road to Copco Access Road)	• Potential road surface maintenance during or post-Project (Section 5.2.2)			X
Fall Creek Bridge	• Replace (Section 5.2.2)	X		
Copco Road (Copco Access Road to Copco Road Bridge)	• Potential road surface maintenance during or post-Project (Section 5.2.2)			X
Beaver Creek and E.F. Beaver Creek Culverts	• Potential erosion protection (Section 7.4.3)		X	
Raymond Gulch Culvert	• Potential erosion protection (Section 7.4.3)		X	
Copco Road Bridge	• Potential abutment erosion protection (Section 7.4.3)		X	
Copco Access Road	• Clear, grub and regrade (Section 5.2.2) • Minor widening into hillside if possible (Section 5.2.2) • Remove after construction is complete and restore area to native vegetation	X		
Copco Cove Access	• Minor works to enable barge mobilization (Section 5.2.2)	X		

Location	Improvements (Section References to Definite Plan (KRRC 2018))	Purpose		
		Construction Access	Drawdown Related	Maintenance/ Rehabilitation
Culverts at Unnamed Creeks (Copco Lake)	• Potential erosion protection (Section 7.4.3)		X	
Ager Beswick Road	• None (Section 5.2.2)			
Mallard Cove Boat Ramp Access	• Minor works to enable barge mobilization (Section 5.2.2)	X		
Daggett Road	• Minor grading improvements (Section 5.2.2) • Potential road surface maintenance during and post-Project (Section 5.2.2)	X		X
Daggett Road Bridge	• Replace (Section 5.2.2)	X		
Lakeview Road (Copco Road to Iron Gate disposal site)	• Potential road surface maintenance during and post-Project (Section 5.2.2)			X
Lakeview Road Bridge	• Replace (Section 5.2.2)	X		
Iron Gate Powerhouse Access Road	• Signage • Potential road surface maintenance during construction (Section 5.2.2) • Remove after construction is complete and restore area to native vegetation (Section 5.2.2)	X		X
Iron Gate Left Abutment Access Road	• Remove after construction is complete and restore area to native vegetation (Section 5.2.2)	X		
Iron Gate Upstream Left Abutment Access Road	• Remove after construction is complete and restore area to native vegetation (Section 5.2.2)	X		
<b>Other Locations</b>				
Pedestrian Bridge #1	• Will likely need to be removed by KRRC (Section 7.2). Cost estimate includes demolition only.			X

Location	Improvements (Section References to Definite Plan (KRRC 2018))	Purpose		
		Construction Access	Drawdown Related	Maintenance/ Rehabilitation
Pedestrian Bridge #2	<ul style="list-style-type: none"> <li>Evaluation will be performed by KRRC to determine whether removal or replacement will be required (Section 7.2). Cost estimate includes demolition only.</li> </ul>			X

Table 3-10 Road Maintenance Assumptions

Location	Maintenance/Rehabilitation Assumptions
<b>J.C. Boyle</b>	
The Dalles California Highway (US97)	• None
Green Springs Highway (OR66)	• None
Keno Worden Road	• None
Topsy Grade Road	• Pre and post-construction 0.9 miles of 9-inch aggregate base section repair
J.C. Boyle Dam Access Road from OR66	• Pre-construction improvements include minor cut/fill, 0.25 miles of new 9-inch aggregate base section and 0.7 miles of 9-inch aggregate base section repair; Post-construction improvements include 0.6 miles of 9-inch aggregate base section repair
Power Canal Access Road	• Pre and post-construction 1.5 miles of 9-inch aggregate base section repair
Powerhouse Access Road	• None
J.C. Boyle Disposal Access Road	• Minor regrading & widening
<b>Copco and Iron Gate</b>	
Copco Road (I-5 to Ager Road)	• Post-construction 1-mile new asphalt overlay
Copco Road (Ager Road to Lakeview Road)	• Pre-construction improvements include 0.5 miles of crack sealer, and 0.75 miles of new asphalt section; Post-construction improvements include 1.0 miles of new asphalt overlay
Copco Road (Lakeview Road to Daggett Road)	• Pre-construction improvements include 1.0 mile of crack sealer, and 1.5 miles of new asphalt section; Post-construction improvements include 2.0 miles of new asphalt overlay
Copco Road (Daggett Road to Copco Access Road)	• Pre and post-construction 1.5 miles of 9-inch aggregate base section repair
Copco Road (Copco Access Road to Copco Road Bridge)	• Pre and post-construction 1.5 miles of 9-inch aggregate base section repair • Post-construction 0.25 mile overlay and minor riprap
Copco Access Road	• Pre-construction 2,500 CY cut/fill and 0.9 miles 9-inch aggregate base overlay • Remove after construction is complete and restore area to native vegetation
Ager Beswick Road	• None
Mallard Cove Boat Ramp Access	• Minor works to enable barge mobilization
Daggett Road	• None
Lakeview Road (Copco Road to Iron Gate disposal site)	• Post-construction improvements include 0.7 miles 6-inch aggregate base overlay
Iron Gate Powerhouse Access Road	• Remove after construction is complete and restore area to native vegetation

Location	Maintenance/Rehabilitation Assumptions
Iron Gate Left Abutment Access Road	<ul style="list-style-type: none"> <li>• Remove after construction is complete and restore area to native vegetation</li> </ul>
Iron Gate Upstream Left Abutment Access Road	<ul style="list-style-type: none"> <li>• Remove after construction is complete and restore area to native vegetation</li> </ul>

### 3.6.7 Recreation Plan

Costs associated with demolition of existing recreation facilities are included in the dam removal cost category. This section summarizes assumptions associated with construction of any new recreation facilities connected with the Project. Although the final recommendation for proposed recreation facilities has not been made, a list of possible improvements have been scoped for inclusion in this cost estimate.

Recreation costs were derived from itemized estimates for the various recreation facilities listed in Table 3-11. Rates and prices are derived from a combination of historical contracting information including Lake Berryessa Recreation Area Renovation project, and RS Means. Specific unit rates and quantities for the various activities involved at each site can be found in Attachment A.

Table 3-11 Proposed New Recreation Facilities

Site Name	Description
<b>River Access Sites</b>	
Keno River Access Site	The proposed Keno River Access Site would be located just downstream of Keno Dam on the river left. A river access launch site at this location would provide whitewater boating, fishing, general boating and informal shoreline recreation opportunities and mitigate Project whitewater boating and fishing impacts. The proposed river access launch (put-in) site includes an extension of the dam access road through the end of the existing Keno Camp parking area and a 10-foot wide, compacted gravel trail to a natural surface boat launch. In addition to the new access road improvements, trail, and gate, the site would include a turnaround and staging area for commercial vehicles, an information kiosk with angler box, a boat launch staging area, basalt retaining and seat wall, and basalt steps leading down the embankment to the river's edge.
Highway 66 Bridge River Access Site	The Highway 66 Bridge Crossing River Access Site would be located along the left bank of the Klamath River just south of the Highway 66 road crossing. A site at this location would provide river access for whitewater boating, fishing, general boating, and informal shoreline recreation opportunities. The proposed site includes both parking and launch facilities, and site amenities would include a paved parking area, boulders along the access road to prevent off-road driving, paved path to a universally accessible vault toilet, informational kiosk with angler box, bench, gathering area, garbage facilities, and trail down to the boat ramp.

Site Name	Description
Moonshine Falls River Access Site	The proposed Moonshine Falls River Access Site would be situated below the dam, at the power canal and south of the timber bridge crossing on the river right. A site at this location would provide whitewater boating, fishing, general boating, and picnicking/day use opportunities with upstream views of Moonshine Falls and downstream river views of the riparian corridor. The parking area would be in an area where former power canal facilities would be removed, resulting in less earthwork and disturbance needed. The parking area would include access road improvements, a paved path leading to 3 picnic sites and a universally accessible vault toilet, and garbage facilities.
Turtle Camp River Access Site	The Turtle Camp site is located along the right bank of the Klamath River within the Hell's Corner Reach of the river. Potential modifications to this site would provide a river access for whitewater and drift boating, fishing, and informal shoreline recreation opportunities. The proposed modifications to this site would include a new access road to a small parking area and formal boat launch and take-out site. Additional site amenities include paths to one picnic site, garbage facilities, a universally accessible vault toilet, information kiosk with angler box, and parking for 12 vehicles (including one space for ADA-accessible parking) and two oversized parking spaces for large vehicles and trailers.
Copco Valley River Access Site	The proposed Copco Valley River Access Site would be located on the right bank of the Klamath River in an area currently inundated by Copco Lake and near the existing Copco Cove recreation site, which would be removed during Project implementation. The proposed recreation site includes extensive parking areas for private and commercial boaters, as well as day use facilities and a boat launch.
Copco No. 2 Powerhouse River Access Site	The proposed Copco No. 2 Powerhouse River Access Site would be located on the river left on the south end of the existing powerhouse area near the maintenance buildings. The site would contain parking areas for 12-24 vehicles (including one space for ADA-accessible parking), 2 pull-through trailer parking spaces, an information kiosk with angler box, garbage facilities, and universally accessible vault toilet.
Camp Creek River Access Point	The Camp Creek River Access Site would be located on the right bank of the Klamath River in an existing user created area above and within the area currently inundated by Iron Gate Reservoir, near the existing Iron Gate Dispersed Site 3. Site amenities would include a trailhead and information kiosk with angler box, garbage facilities, universally accessible vault toilet, paved trail to 5 picnic sites, and compacted gravel surface trail to 2 river access areas. The parking area and picnic sites would be located on an existing hill while the trail to the river and 2 river access areas would be located within the reservoir drawdown area along the banks of the historic river channel.
Iron Gate Hatchery River Access Site	The Iron Gate Hatchery Day Use Area is an existing recreation site located downstream of the Iron Gate Dam and includes an undeveloped boat launch. The site would include a large parking area for 48 vehicles (including 2 spaces for ADA-accessible parking) and 4 vehicles with trailers and a boat launch. The site would also include infill vegetation, universally accessible vault toilet, garbage facilities, a beach, and an information kiosk with angler box.

### 3.6.8 Downstream Flood Control Improvements

Costs associated with mitigating potential flooding impacts to downstream properties are included in the budget allocated to the Local Impact Mitigation Fund, as described above in Section 2.3, so are not included here.



### 3.6.9 Public Health and Safety Measures

The estimate includes costs for cattle exclusion fencing at reservoir sites where the former reservoirs will no longer be able to serve as a natural barrier to livestock, and for the protection of revegetation efforts against damage. Fencing will likely be four-wire fence with metal T-posts at 12 LF intervals.

Fencing quantities have been determined from a detailed analysis of fencing lengths in GIS, focused on fencing the reservoir restoration areas while avoiding fencing along portions of the perimeter with steep topography above the reservoir, forest and housing. As the scope is developed further, additional definition may be obtained by considering where fences might need to tie into property boundary fences (if they exist) or where steep topography just below the reservoir surface might act as a barrier.

### 3.6.10 Fire Management Plan

The Fire Management Plan is currently being developed through close coordination with the various agencies listed below in Table 3-12.

Table 3-12 Fire Protection Agencies

Agency Name	Federal/State/Local	Jurisdiction
USDA Forest Service	Federal	National Forests, federally managed land
Bureau of Land Management	Federal	BLM lands, federally managed land
Cal Fire	State of California	State Resource Lands, California
Oregon Department of Forestry	State of Oregon	State Resource Lands, Oregon, BLM land in Klamath River Canyon
Klamath County Fire District	Local, County of Klamath	Unincorporated County Lands and the City of Klamath Falls
Colestine Rural Fire District	Local, County of Jackson	County Fire District in Jackson County, Oregon
Siskiyou County Fire Protection Districts: Copco Lake, Hornbrook, Montague, South Yreka, Tulelake, Etna, Ft. Jones, Weed	Local, County	Unincorporated County Lands throughout Siskiyou County, California
Mount Shasta Fire Department	Local, City of Mount Shasta	Mt. Shasta Municipal Boundaries
Yreka Fire Department	Local, City of Yreka	City of Yreka Municipal Boundaries

Kiewit will designate the Safety Officer, who will be available and on-call 24 hours a day, 7 days a week in the event of a fire. The Safety Officer will be the primary on-site communication linkage to ODF and Cal Fire foresters and will be responsible for managing all on-site fire prevention and suppression documentation, including the contact information of local emergency services, such as local fire departments and hospitals. The Safety Officer will be responsible for instructing other workers in the required fire prevention and suppression measures, including the use of fire suppression equipment and the protocols in the event of a

fire, and for communicating current fire hazards and any changes in prevention and suppression methods on a daily basis.

Proposed management resources that were accounted for in the estimate herein include the following:

- **Monitored Detection System (MDS):** The MDS is a powerful tool for rapidly detecting and locating wildfires. MDS cameras are proposed to be added to existing fire lookouts on Paradise Craggy, CA and Parker Mountain, OR and a MDS monitoring center at the CFSU headquarters in Yreka.
- **Chipper:** A chipper-dump bed trailer combo and a truck to haul it, previously owned and maintained by CFSU could provide frequent and consistent assistance with defensible space to the local community.
- **Pressurized Hydrant System:** The water supply for the existing pressurized hydrant system at Copco Lake is maintained by Copco dams. The system would be retrofitted to function without the dams.
- **Boat Launches:** These are accounted for in the proposed recreation features discussed above.
- **Tactical Water Tenders:** An opportunity to improve local department first response effectiveness is the addition of tactical water tenders, which have the capability to pump and store water, then transport it to rugged and remote areas in the rural Basin.
- **Aerial River Access Points:** In-channel locations that meet the requirements for helicopter drafting, will need to be developed and maintained in the former reservoirs specifically for fire suppression following the removal of the dams.

### 3.6.11 Spawning Gravel Implementation

To mitigate impacts to aquatic resource spawning habitat, approximately \$4 million in gravel augmentation will be completed at appropriate locations along the Klamath River. The actual amount necessary is likely less and will be based on surveys completed after drawdown.

## 3.7 Anticipated Mitigation Measures

The following sections summarize cost assumptions associated with anticipated regulatory mitigation measures for groundwater wells, downstream water intakes and cultural resources.

### 3.7.1 Groundwater Analysis

Groundwater well improvements adjacent to the reservoirs may be necessary if reservoir drawdown has a negative impact on existing well water levels. Costs associated with groundwater improvements are covered within the proposed Local Impact Mitigation Fund, as summarized in Section 2.3, so improvement costs are

not accounted for here. However, analysis to support a better understanding of likely impacts is currently underway and is the basis for this estimate.

The current estimates assume public outreach will be completed with relevant property owners, and subsequent installation and monitoring of up to five (5) new 60-foot deep, 3-inch diameter monitoring wells will be completed. Well drilling costs assume PVC casing and hard rock geology. Wells will be monitored monthly for water level and water quality constituents over a 3-year period.

### 3.7.2 Downstream Water Supply

Sediment buildup during reservoir drawdown may affect some downstream water supply intakes. The KRRC will excavate affected intakes as needed, to clear them of aggraded sediment materials, and provide temporary settling basins or groundwater wells if potable water supply is impacted. Jetting and vacuum technologies such as those used for cleaning storm drains and sewers will be used to remove sediment at intakes. Temporary settling basins may also be used to remove silt and sediment prior to the primary treatment performed by the water right holder. Table 3-13 summarizes the elements included in the estimate of Project Costs for downstream water supply.

There are approximately 50 water diversions off the Klamath River that could be affected. The United States Bureau of Reclamation (USBR) believed between 7 and 18 intakes would require maintenance. As some intakes have been added after the 2012 EIS/R, this estimate is based on the higher end of the range of the most probable number of intakes that could require maintenance actions.

In some cases, where diversions are used primarily for irrigation, the KRRC may need to pay for lost or damaged crops. Water rights holders reported alfalfa and pasture as the majority crop types irrigated with the diverted water during the drawdown period. In 2012, the average return for alfalfa produced in Siskiyou County was approximately \$1,200 per acre, where the average yield was approximately 6 tons per acre (UCCE 2012). Assuming all 129 acres will be affected, the cost will be approximately \$154,800.

Supplying livestock with water requires providing a stock water tank and water. A 500-gallon stock water tank is included in the estimate.

Table 3-13 Assumptions For Downstream Water Supply

Cost Level	Elements Included in Cost Estimate
Most Probable Estimate (MPE)	Intake excavation for 18 intakes Water supply for domestic use for 8 water rights (claimed or registered rights with reported diversions) Temporary settling basins at 18 intakes Temporary groundwater wells at 18 intakes
Direct Crop Loss Mitigation	Payment for lost hay crops on 129 acres of irrigated lands.
Stock watering	Provide 500-gallon water tank and 1,500 gallons of water per month.

References:

- UCCE (University of California Cooperative Extension). 2012. Sample Costs to Establish and Produce Alfalfa Hay – Intermountain Siskiyou County, Scott Valley- Mixed Irrigation. Accessed February 27, 2018. Available at: [https://coststudyfiles.ucdavis.edu/uploads/cs\\_public/a6/b3/a6b35d9d-bd82-495c-86b1-1987dd6154ae/alfalfa\\_im\\_scott2012.pdf](https://coststudyfiles.ucdavis.edu/uploads/cs_public/a6/b3/a6b35d9d-bd82-495c-86b1-1987dd6154ae/alfalfa_im_scott2012.pdf)
- County Road 67 Sediment Trap Maintenance Pilot Project 2013-2014, Douglas County CO. CH2M, Denver CO. Available at: [http://www.vactor.com/Portals/0/PDF/hxx/HXX\\_Brochure\\_WEB\\_11.16.pdf](http://www.vactor.com/Portals/0/PDF/hxx/HXX_Brochure_WEB_11.16.pdf)
- League of Oregon Cities and the Community Planning Workshop at the University of Oregon. Water, Wastewater and Stormwater Rate Survey. March 2015.
- Raftelis Financial Consultants, Inc. and California-Nevada Section of the American Water Works Association. 2015 California-Nevada Water and Wastewater Rate Survey.

### 3.7.3 Cultural Resources

Cultural resources mitigation and protective measures may be required during drawdown, throughout the dam removal and reservoir restoration durations, and post-construction. Activities will likely involve short- and long-term cultural site monitoring, inadvertent discovery of cultural resources, among others. Additional information about the potential scope of activities is available in Appendix L of the Definite Plan.

Site monitoring and resolution of inadvertent discoveries of cultural resources and human remains will follow protocols established during agency and tribal consultations, as documented in the Historic, Cultural, and Tribal Resources Management Plan discussed in Appendix L of the Definite Plan, as well as actions developed and approved during consultations under Section 106 and agreed to during consultations with California-recognized tribes.

The cultural resource mitigation and protective measures estimate is based on the following assumptions associated with agency and tribal outreach, drawdown and post-drawdown surveys/inspections, curation fees, discovery contingencies and associated protection and mitigation measures.

#### Agency and Tribal Outreach

During the two-year construction period starting with reservoir drawdown, management of cultural resources and associated mitigation will require ongoing agency and tribal outreach, consultation, and meeting attendance.

Post-construction, long-term cultural resources management and monitoring activities are estimated for a 3-year period, and based on the Historic, Cultural, and Tribal Resources Management Plan.

#### Drawdown Surveys

Archaeological and cultural inventories are planned for the J.C. Boyle, Copco No. 1, Copco No. 2, and Iron Gate reservoir zones during (1) the course of drawdown activities, and (2) post-drawdown reservoir areas as soon as surface conditions permit. Cost assumptions associated with each are listed below:

- **Drawdown Shoreline Survey:** To the extent possible, and in consideration of safety factors, periodic pedestrian archaeological inventory will be conducted along the reservoir shorelines as drawdown occurs. The principal goal of this shoreline survey is to identify and reduce looting and disturbances of known and currently unknown cultural resources. Inventory methods for this shoreline survey are still under development but may include low-elevation aerial surveys (e.g., drones, helicopter) or barge surveys, if feasible, that target areas subject to slumping or those that are not sufficiently dried to allow safe access via foot-traffic and survey vehicles. Three 2-person teams consisting of one archaeologist and one tribal monitor will conduct the shoreline inventory at each reservoir (J.C. Boyle, Copco No. 1 and 2, and Iron Gate). The estimate allows for weekly reconnaissance for six people for a 2-month period before the post-drawdown pedestrian inventory of the reservoir areas can begin.
- **Post-drawdown Reservoir Survey:** Archaeological inventory will be conducted of the post-drawdown reservoir areas after water has receded and soils have sufficiently dried to allow for pedestrian survey. Based on current estimates, the former reservoir footprints encompass a total of 2,275 acres. Archaeological pedestrian inventory will focus on reservoir areas covered by 0-4 feet of sediment, where water-induced erosion has the greatest potential to reveal buried archaeological deposits. The 0-4-foot sediment area is estimated as encompassing about 1,500 acres. Selected deep probing may be used in areas of high archaeological sensitivity that exceed sediment depth of 4 feet. Using a standard rate of 25 acres per person per day, the 1,500-acre survey will require approximately 60 person/days to complete. Assuming an average of one site per every 50 acres inventoried, 30 archaeological sites would require recordation, which in turn will require an additional 60 person/days of effort.

## Construction Surveys

Construction cultural resource monitoring is associated with implementation of the reservoir restoration plan during 2022 and 2023. The restoration plan involves removal of some portion of the remaining reservoir sediments to re-expose some high value pre-inundation river terraces. The Klamath River corridor and its associated terraces are areas of high archaeological and tribal resource sensitivity, and any subsurface disturbances associated with exposing the pre-inundation landscape (within approx. 5 vertical feet) will minimally require cultural resources monitoring.

Two teams comprised of archaeologists and tribal monitors will participate during any reservoir restoration actions. The estimate allows for monitoring for four people for a period of one year (FY 2022-2023). If cultural resources are inadvertently discovered during the restoration area monitoring activity, their recordation and evaluation will continue under Discovery Contingencies (see below).

## Post-Construction Surveys

Post-construction cultural resources management and monitoring reflects compliance with mitigation of tribal cultural impacts. It will be developed in the Historic, Cultural and Tribal Resources Management Plan and will require ongoing consultation with affected tribes, including meetings to identify site-specific

mitigation as new sites are exposed or discovered. Requirements include needs for additional survey; development and implementation of a Looting and Vandalism Protection Program (LVPP), including long-term monitoring and site documentation; tribal issue facilitation; and long-term assistance with implementation of the Programmatic Agreement. These requirements are expected to include efforts beyond those covered under more routine agency and tribal consultation.

The LVPP provisions for archaeological and tribal monitoring are estimated to occur for a maximum of 3 years following completion of ground disturbance activities. Monitoring frequency is currently estimated at quarterly. The estimate for LVPP monitoring allows for two, 2-person crews, comprised of one archaeologist and one tribal monitor, for a 2-week period every quarter, for a total of 12 quarters. Additional non-field related costs are included for ongoing agency and tribal consultation and meetings.

### Curation Fees

Curation fees have been included in the estimate for artifacts recovered during phase II and phase III fieldwork. As currently estimated, archaeological investigations involve excavation of 120 m<sup>3</sup> for phase II efforts and 200 m<sup>3</sup> for phase III efforts, for a total of 320 m<sup>3</sup>. The estimate allows for permanent curation of archaeological materials recovered during the phase II and phase III programs as 1 archive box per 2 m<sup>3</sup> of excavated sediment, for 160 archive boxes. An additional 250 boxes may be required for discovery contingencies, for an estimated project total of 410 boxes. At an average of \$500/ft<sup>3</sup> (2018 price quote from Oregon Museum of Natural and Cultural History), the curation of 410 archive boxes of cultural materials is estimated at \$205,000 excluding escalation. Curation support labor for final artifact and paperwork preparation is estimated at an average of 4 hours per archive box.

### Inadvertent Discovery Contingencies

Two types of inadvertent discovery contingencies are anticipated during project implementation, including unanticipated exposure of archaeological resources and human remains. For purposes of this cost estimate, it is assumed that up to 160 discoveries (60 archaeological materials and 100 human remains) may occur in both short-term and long-term contexts. Additional information is provided below:

- **Archaeological Resources:** It is anticipated that up to 30 new archaeological resources may be discovered during inventory of the former reservoir areas. Stabilization and/or recovery work (excavation) may be required at the anticipated sites to reduce project-related effects, particularly those related to erosion. In addition, ground disturbances associated with the reservoir restoration actions may expose archaeological components when reservoir sediments are removed, and the pre-inundation landscape is exposed. The estimate allows for discovery, stabilization, and/or recovery work of up to an additional 30 new archaeological resources associated with restoration actions. The estimate allows a per unit rate of \$30,000 per resource for stabilization and/or recovery work for each of the 60 newly identified archaeological resources, to include recordation, archaeological excavation, analysis, and reporting.



- **Human Remains:** Drawdown, dam removal, and post-dam removal activities have the potential to expose human burials within the former reservoir areas, as well as in downriver contexts where elevated water levels and subsequent bank erosion may occur. The estimate allows a per resource rate of \$15,000 for recovery of 100 human remain locations. Discovery, removal, and/or relocation of human remains will require investigation and recovery by a 4-person team, comprised of one field supervisor (archaeologist or physical anthropologist), two archaeological technicians, and one tribal monitor for a period of two days in the field. Archaeological materials recovered from discovery situations will require reporting, analysis and curation.

### Traditional Cultural Properties Reserve Fund

Current agency and tribal consultation efforts have not yet addressed issues related to mitigation of impacts to Traditional Cultural Properties (TCPs). Therefore, a conservative reserve fund of \$1,000,000 has been estimated for this possibility.

## 3.8 Monitoring & Reporting

### 3.8.1 Aquatic Resource Measures

Measures to benefit aquatic resources (AR) have been developed through coordination with state and federal regulatory agencies and have been incorporated into the Project. Aquatic resource activities will take place prior to, during, and after dam removal and are based on Appendix I of the Definite Plan. Costs associated with implementation of ARs (during and post-construction) will be covered by the Specialty Corporate Indemnitor as described in Section 2.3, so are not included here. Baseline field studies to inform the ARs are included, most of which align with previously completed work (actuals).

### 3.8.2 Terrestrial Resource Measures

Measures to benefit terrestrial resources (TER) have been developed through coordination with state and federal regulatory agencies and have been incorporated into the Project. Terrestrial resource activities will take place prior to, during, and after dam removal and are based on Appendix J of the Definite Plan. Costs associated with implementation of TERs (during and post-construction) will be covered by the Specialty Corporate Indemnitor as described in Section 2.3, so are not included here. Baseline surveys completed to date (actuals) and pre-construction surveys for nesting birds, eagles, and Western Pond Turtle (WPT), as well as bat mitigation features are included in this estimate.

### 3.8.3 Water Quality Monitoring

Water quality monitoring was estimated to include monitoring at up to ten main stem stations along the Klamath River. Eight of these are existing United States Geological Survey (USGS) stations, while two will be new stations. Existing stations have been upgraded with equipment to meet the project objectives, and associated costs are included herein.



All sites were equipped with a multi-parameter sonde to measure temperature, pH, dissolved oxygen, specific conductance and turbidity. In addition, all sites except Keno were equipped with a high-range turbidity sensor and side-looking acoustic profiler (for acoustic attenuation and backscatter measurements). A TSS and NTU laboratory relationship study was conducted using sediment samples collected from the reservoirs.

Analysis and reporting of data will be according to USGS guidelines. The primary final products of the monitoring network will be 15-minute time series of stage, discharge, temperature, pH, dissolved oxygen, specific conductance, turbidity, acoustic attenuation, acoustic backscatter, and suspended-sediment concentration (SSC, potentially discriminating between silt/clay and sand), and suspended-sediment flux.

This estimate includes monitoring completed prior to the start of construction. Rates and prices are based on a USGS proposal submitted in March 2018. Water quality monitoring and reporting during and post construction will be covered by the Specialty Corporate Indemnitor as described in Section 2.3, so are not included here.



## Chapter 4: Results

## 4. RESULTS

The following sections provide a summary of the results of the cost analyses described above. Detailed construction cost breakdowns for both Full Removal and Partial Removal alternatives are provided in Attachment A. Pay item cost detail worksheets, describing the calculation of individual cost estimate line items rates and prices are provided in Attachment B.

In addition to the estimated project cost results, a full range of results from the Monte Carlo analysis are provided in Section 4.2.

### 4.1 Total Cost Summary

Table 4-1 provides a summary of the estimate of project costs for Full and Partial Removal alternatives, respectively. As described in Section 4.2 below, a P80 risk contingency has been included in the estimates. As the detailed design advances toward final construction drawings and specifications, the pre-GMP portion of the contingency will decrease to near zero. While the post-GMP contingency may decrease as more field data and information becomes available, some level of construction contingency will persist throughout the construction phase.

Based on the Full Removal project estimate summarized below, the Project has adequate funding to implement all Project activities, with an approximately \$16.4M reserve (difference between \$450M funding ceiling and implementation estimate). The estimate includes over \$62.7M in risk contingency, as well as accounting for liability transfer and specialty insurance, both of which are beyond what is typically required or needed for successful project approval and implementation. The liability transfer and insurance, as well as the current reserve funds, will better protect all parties against possible cost overruns related to uncontrollable circumstances and other risks.

**Table 4-1 Results Summary - Full and Partial Removal**

Line Item / Cost Category		Estimate of Project Costs (Year of Construction Dollars)	
		Full Removal	Partial Removal
Project Oversight (non PDB)		40,718,000	40,718,000
10	Project Oversight	38,799,000	38,799,000
11	Corporate Insurance	1,919,000	1,919,000
Liability Transfer		35,530,000	35,530,000
15	Liability Transfer	35,530,000	35,530,000
Environmental Compliance (KRRC-Managed)		8,097,000	8,097,000
20	Permit Acquisition, CEQA/NEPA Support, Compliance QA During Construction	8,097,000	8,097,000
Technical Support		14,220,000	14,220,000
30	Preliminary Engineering (Technical Representative)	9,225,000	9,225,000
31	Vegetation Test Plots, Seed Collection, Seed Prop.	1,896,000	1,896,000
32	Construction Procurement	1,096,000	1,096,000
33	Owner's Representative (Design Oversight)	2,003,000	2,003,000
Construction Management		13,167,000	13,167,000
34	Construction Management	13,167,000	13,167,000
Progressive Design-Build Contract		237,612,000	219,150,000
40	Final Design & Permitting Support (PDB)	21,799,000	21,799,000
40A	Project Insurance	6,989,000	6,989,000
41	Dam Removals	97,751,000	79,289,000
42	Reservoir Area Improvements	21,779,000	21,779,000
43	Reservoir Area Restoration	32,821,000	32,821,000
44	Yreka Water Line Replacement	6,060,000	6,060,000
45	Transportation Improvements	32,717,000	32,717,000
46	Recreation Improvements	6,481,000	6,481,000
48	Public Health And Safety Fencing	2,665,000	2,665,000
49	Fire Management Plan	3,006,000	3,006,000
49A	Spawning Gravel Augmentation	5,544,000	5,544,000
Mitigation Measures		17,141,000	17,141,000
51	Groundwater Analysis	391,000	391,000
52	Downstream Water Supply/Rights	1,135,000	1,135,000
53	Cultural Resources	15,615,000	15,615,000
Monitoring & Reporting (KRRC)		4,406,000	4,406,000
61	Aquatic Resource Measures	288,000	288,000
62	Terrestrial Resources Measures	3,305,000	3,305,000
63	Baseline Water Quality Monitoring	813,000	813,000
Subtotal		370,891,000	352,429,000
Contingency (P80)		62,757,000	58,621,000
Estimate Uncertainty		9,474,000	8,687,000
Pre-GMP Contingency		18,208,000	17,209,000
Post GMP Contingency		35,075,000	32,725,000
<b>TOTAL</b>		<b>433,648,000</b>	<b>411,050,000</b>

## 4.2 Quantitative Risk Assessment Results

The QRA results show that the total project cost for Full Removal may range from \$401 million to \$452 million (see Table 4-2). At an 80% confidence level, the total project cost for Full Removal is approximately \$434 million, leaving approximately \$16M in cash reserve (up to funding limit). Given these calculations, there is over 95% probability of the current funding limit (\$450M) being maintained, as shown in Figure 4-1.

Table 4-2 QRA Results Summary (Full Removal)

	Risk Assessment				
	Optimistic <sup>[1]</sup>	80% C.L.	90% C.L.	95% C.L.	Pessimistic <sup>[2]</sup>
Project Implementation Cost	\$370,891,000	\$370,891,000	\$370,891,000	\$370,891,000	\$370,891,000
Contingency					
Pre-GMP Risk Contingency	\$6,093,000	\$18,208,000	\$19,435,000	\$21,378,000	\$24,020,000
Estimate Uncertainty	\$8,260,000	\$9,474,000	\$10,134,000	\$10,214,000	\$10,318,000
Post-GMP Risk Contingency	\$15,367,000	\$35,075,000	\$37,494,000	\$39,794,000	\$47,116,000
<b>Total</b>	<b>\$400,611,000</b>	<b>\$433,648,000</b>	<b>\$437,954,000</b>	<b>\$442,277,000</b>	<b>\$452,345,000</b>

<sup>[1]</sup> 1% Confidence Level

<sup>[2]</sup> 99% Confidence Level

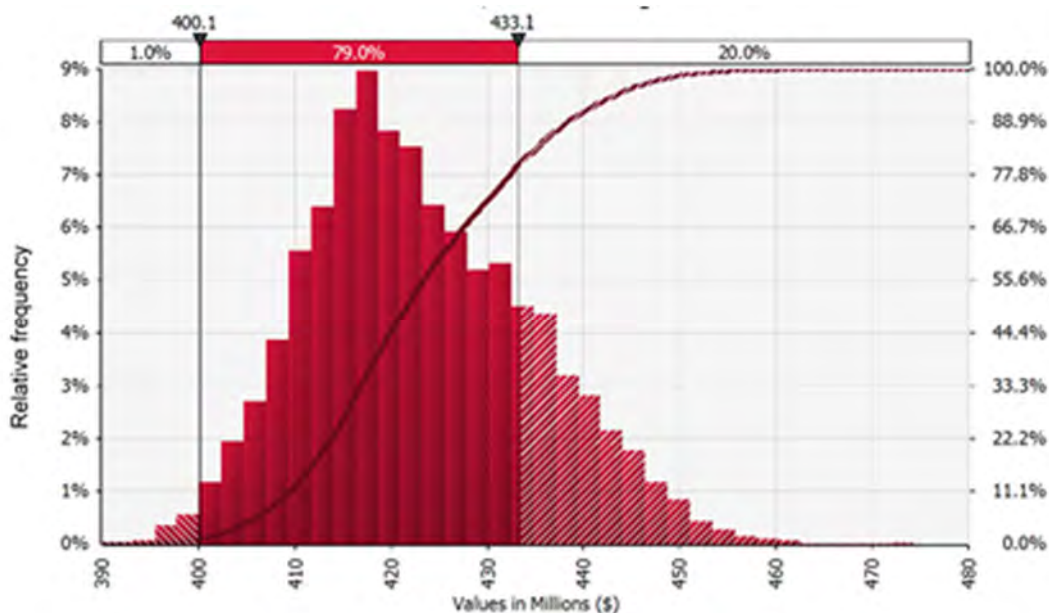


Figure 4-1 Relative Frequency of Total Project Cost (Full Removal)

Further breakdown on the QRA results for the optimistic, P80 and pessimistic scenarios are shown in Table 4-3 below.

Table 4-3 QRA Results Breakdown (Full Removal)

	Risk Assessment		
	Optimistic <sup>[1]</sup>	80% C.L.	Pessimistic <sup>[2]</sup>
Project Implementation Cost	\$370,891,000	\$370,891,000	\$370,891,000
Contingency			
<b>Cost Estimate Uncertainty</b>	<b>\$8,260,000</b>	<b>\$9,474,000</b>	<b>\$10,318,000</b>
Progressive Design Build	\$5,712,000	\$5,850,000	\$6,288,000
Soft Costs	\$208,000	\$1,912,000	\$2,247,000
Mitigations & Monitoring	\$2,340,000	\$1,656,000	\$1,703,000
Insurance	-	\$56,000	\$80,000
<b>Risk Register</b>	<b>\$13,356,000</b>	<b>\$20,329,000</b>	<b>\$26,750,000</b>
Pre-GMP Contingency	\$6,093,000	\$7,601,000	\$10,133,000
Post-GMP Contingency	\$7,263,000	\$12,728,000	\$16,617,000
<b>Cost of Schedule Delay</b>	<b>\$8,103,000</b>	<b>\$32,955,000</b>	<b>\$44,386,000</b>
Escalation - Start of Construction	-	\$10,607,000	\$13,887,000
Impact Cost - PDB	\$4,244,000	\$14,589,000	\$19,934,000
Impact Cost - Soft Cost	\$3,859,000	\$7,759,000	\$10,565,000
<b>Total</b>	<b>\$400,611,000</b>	<b>\$433,648,000</b>	<b>\$452,345,000</b>

<sup>[1]</sup> 1% Confidence Level

<sup>[2]</sup> 99% Confidence Level

Impacts to schedule are also quantified as part of the QRA and are utilized in determination of schedule related costs increases associated with certain risks. Table 4-4 below summarizes schedule impacts for the optimistic, P50, P80 and pessimistic scenarios from the QRA.

Table 4-4 QRA Schedule Results Summary (Full Removal)

	Risk Assessment - Schedule			
	Optimistic <sup>[1]</sup>	50% C.L.	80% C.L.	Pessimistic <sup>[2]</sup>
FERC Surrender Order Date	Sep-20	Jan-21	Feb-22	Aug-22
Construction Start Date	Apr-21	Jul-21	Jul-22	Feb-23
Construction Substantial Completion	Feb-23	Apr-24	Mar-25	Mar-26

<sup>[1]</sup> 1% Confidence Level

<sup>[2]</sup> 99% Confidence Level

A similar assessment was completed for the Partial Removal alternative and the results are summarized in Table 4-5 below. For Partial Removal, there is over 99% probability of the current funding limit (\$450M) being maintained.

Table 4-5 QRA Results Summary (Partial Removal)

	Risk Assessment				
	Optimistic <sup>[1]</sup>	80% C.L.	90% C.L.	95% C.L.	Pessimistic <sup>[2]</sup>
Project Implementation Cost	\$352,429,000	\$352,429,000	\$352,429,000	\$352,429,000	\$352,429,000
Contingency					
Pre-GMP Risk Contingency	\$6,969,000	\$17,209,000	\$19,391,000	\$21,022,000	\$23,151,000
Estimate Uncertainty	\$5,755,000	\$8,687,000	\$9,520,000	\$9,990,000	\$10,005,000
Post-GMP Risk Contingency	\$15,487,000	\$32,725,000	\$35,986,000	\$37,876,000	\$43,379,000
<b>Total</b>	<b>\$380,640,000</b>	<b>\$411,050,000</b>	<b>\$417,326,000</b>	<b>\$421,317,000</b>	<b>\$428,964,000</b>

<sup>[1]</sup> 1% Confidence Level

<sup>[2]</sup> 99% Confidence Level



A decorative banner with a wavy, ribbon-like shape. It has a light blue upper section and a darker blue lower section, separated by a thin white line. The banner curves upwards at both ends.

## Chapter 5: References

## 5. REFERENCES

Aon, 2019. Risk and Insurance Due Diligence Report, Klamath River Renewal Project, July 2019.

KRRC 2018. Definite Plan for the Lower Klamath Project, Klamath River Renewal Corporation, June 2018.

KRRC 2019. Amended Appendix A - Risk Management Plan, to the Definite Plan for the Lower Klamath Project, Klamath River Renewal Corporation, July 2019.

UCCE 2012. University of California Cooperative Extension – Sample Costs to Establish and Produce Alfalfa Hay, Intermountain – Siskiyou County.

## Attachment A    Cost Estimate

# FULL REMOVAL ESTIMATE

# KRRC Cost Estimate - Full Removal

July 2019

Est ID	Cost Sheet	Heading	Description	Qty	Unit	(\$) Rate	(\$) Direct Cost	15% MU by Sub	10% PDB OH&P	1% Bonds	Field Overhead	(\$) Estimate	Escalated YOC Estimate
		<b>PROJECT OVERSIGHT</b>											
		<b>Project Oversight</b>											
		Compensation & Benefits											
10	-	Compensation & Benefits		1.00	EA	8,873,655	8,873,655	-	-	-	-	8,873,655	8,873,655
		Travel and Meetings											
10	-	Travel and Meetings		1.00	EA	605,830	605,830	-	-	-	-	605,830	605,830
		Professional Services											
10	-	CEA Services & Expenses	CEA Services & Expenses	1.00	EA	4,181,956	4,181,956	-	-	-	-	4,181,956	4,181,956
10	-	Legal Services	General Counsel	1.00	EA	4,593,668	4,593,668	-	-	-	-	4,593,668	4,593,668
10	-	Legal Services	Construction Counsel	1.00	EA	3,580,824	3,580,824	-	-	-	-	3,580,824	3,580,824
10	-	Legal Services	Regulatory Counsel (inc. Perkins Coie)	1.00	EA	2,590,000	2,590,000	-	-	-	-	2,590,000	2,590,000
10	-	Legal Services	Corporate-Transaction Counsel	1.00	EA	750,000	750,000	-	-	-	-	750,000	750,000
10	-	Board of Consultants	Board of Consultants	1.00	EA	1,740,000	1,740,000	-	-	-	-	1,740,000	1,740,000
10	-	Land Survey/Title Work	Land Survey/Title Work	1.00	EA	1,723,000	1,723,000	-	-	-	-	1,723,000	1,723,000
10	-	Accounting and Audit Fees	Accounting and Audit Fees	1.00	EA	524,395	524,395	-	-	-	-	524,395	524,395
10	-	Risk Management Services	Risk Management Services	1.00	EA	662,000	662,000	-	-	-	-	662,000	662,000
10	-	Communications External Services	Communications External Services	1.00	EA	426,000	426,000	-	-	-	-	426,000	426,000
10	-	Other Professional Fees	Yurok Wildlife Program Retirement Plan Svcs RLF TransTec etc. (N	1.00	EA	1,401,000	1,401,000	-	-	-	-	1,401,000	1,401,000
		Admin, IT, Fees											
10	-	Admin, IT, Fees	Admin, IT, Fees	1.00	EA	1,278,840	1,278,840	-	-	-	-	1,278,840	1,278,840
		<b>Owner's Technical Representative (excluding Permitting, Design Reviews, Outreach)</b>											
10	-	Project Management (1.1, 1.3-1.5)	AECOM FY17/18 Planning	1.00	YR	923,136	923,136	-	-	-	-	923,136	923,136
10	-	Project Management (1.1, 1.3-1.5)	AECOM FY18/19 Planning	1.00	YR	811,067	811,067	-	-	-	-	811,067	811,067
10	-	Project Management (1.1, 1.3-1.5)	AECOM FY19/20 Prelim Services	1.00	YR	850,000	850,000	-	-	-	-	850,000	850,000
10	-	Project Management (1.1, 1.3-1.5)	AECOM FY20/21 Prelim Services / Dam Mods	1.00	YR	690,000	690,000	-	-	-	-	690,000	690,000
10	-	Project Management (1.1, 1.3-1.5)	AECOM FY21/22 Dam Mods / Dam Removal	1.00	YR	520,000	520,000	-	-	-	-	520,000	520,000
10	-	Project Management (1.1, 1.3-1.5)	AECOM FY22/23 Dam Removal & Restoration	1.00	YR	540,000	540,000	-	-	-	-	540,000	540,000
10	-	Project Management (1.1, 1.3-1.5)	AECOM FY23/24+ Post Construction	1.00	YR	280,000	280,000	-	-	-	-	280,000	280,000
		<b>Owner's Technical Representative (Outreach only)</b>											
10	-	Outreach (1.2)	AECOM FY17/18 Planning	1.00	YR	696,604	696,604	-	-	-	-	696,604	696,604
10	-	Outreach (1.2)	AECOM FY18/19 Planning	1.00	YR	226,115	226,115	-	-	-	-	226,115	226,115
10	-	Outreach (1.2)	AECOM FY19/20 Prelim Services	1.00	YR	71,324	71,324	-	-	-	-	71,324	71,324
10	-	Outreach (1.2)	AECOM FY20/21 Prelim Services / Dam Mods	1.00	YR	62,114	62,114	-	-	-	-	62,114	62,114
10	-	Outreach (1.2)	AECOM FY21/22 Dam Mods / Dam Removal	1.00	YR	63,977	63,977	-	-	-	-	63,977	63,977
10	-	Outreach (1.2)	AECOM FY22/23 Dam Removal & Restoration	1.00	YR	65,897	65,897	-	-	-	-	65,897	65,897
10	-	Outreach (1.2)	AECOM FY23/24+ Post Construction	1.00	YR	67,873	67,873	-	-	-	-	67,873	67,873
		<b>Insurances (KRRC)</b>											
11	-	Corporate Insurance	Corporate Insurance	1.00	EA	719,007	719,007	-	-	-	-	719,007	719,007
11	-	Contractor's Pollution Liability / Pollution Legal Liability	Contractor's Pollution Liability / Pollution Legal Liability	1.00	EA	1,200,000	1,200,000	-	-	-	-	1,200,000	1,200,000
		<b>Libality Transfer</b>		1.00	LS	35,530,000	35,530,000	-	-	-	-	35,530,000	35,530,000
		<b>ENVIRONMENTAL COMPLIANCE (KRRC MANAGED)</b>											
		<b>Permit Acquisition, CEQA/NEPA Support, Compliance QA During</b>											
		KRRC Agency Fees and Reimbursements											
20	-	Army Corps of Engineers	Generally, no charge.	1.00	EA	-	-	-	-	-	-	-	-
20	-	California State Water Resources Control Board (SWRCB)	401 Certification	1.00	EA	174,000	174,000	-	-	-	-	174,000	174,000
20	-	California State Water Resources Control Board (SWRCB)	Still Water Sciences	1.00	EA	3,203,228	3,203,228	-	-	-	-	3,203,228	3,203,228
20	-	California State Water Resources Control Board (SWRCB)	NPDES Stormwater Program	1.00	EA	4,852	4,852	-	-	-	-	4,852	4,852
20	-	California Dept of Fish and Wildlife (CDFW) Permit Reviews	Streambed alteration agreement	1.00	EA	19,126	19,126	-	-	-	-	19,126	19,126
20	-	California Dept of Fish and Wildlife (CDFW) Permit Reviews	California Endangered Species Act (CESA)	1.00	EA	31,963	31,963	-	-	-	-	31,963	31,963
20	-	Division of Safety of Dams (DSOD) Filing Fees	Filing Fees	1.00	EA	426,000	426,000	-	-	-	-	426,000	426,000
20	-	Federal Energy Regulatory Commission (FERC)	National Environmental Policy Act (NEPA)	1.00	EA	-	-	-	-	-	-	-	-
20	-	Oregon Dept Environmental Quality (ODEQ)	Generally	1.00	EA	130,000	130,000	-	-	-	-	130,000	130,000
20	-	Oregon Dept Environmental Quality (ODEQ)	NPDES Stormwater Program	1.00	EA	2,130	2,130	-	-	-	-	2,130	2,130
20	-	Oregon Dept State Lands (ODSL)	Permit	1.00	EA	1,292	1,292	-	-	-	-	1,292	1,292
		<b>Owner's Technical Representative (Permitting)</b>											
20	-	Permitting (4.1, 4.3-4.5)	AECOM FY17/18 Planning	1.00	YR	961,316	961,316	-	-	-	-	961,316	961,316
20	-	Permitting (4.1, 4.3-4.5)	AECOM FY18/19 Planning	1.00	YR	1,114,541	1,114,541	-	-	-	-	1,114,541	1,114,541
20	-	Permitting (4.1, 4.3-4.5)	AECOM FY19/20 Prelim Services	1.00	YR	728,267	728,267	-	-	-	-	728,267	728,267
20	-	Permitting (4.1, 4.3-4.5)	AECOM FY20/21 Prelim Services / Dam Mods	1.00	YR	310,000	310,000	-	-	-	-	310,000	310,000
20	-	Permitting (4.1, 4.3-4.5)	AECOM FY21/22 Dam Mods / Dam Removal	1.00	YR	320,000	320,000	-	-	-	-	320,000	320,000
20	-	Permitting (4.1, 4.3-4.5)	AECOM FY22/23 Dam Removal & Restoration	1.00	YR	330,000	330,000	-	-	-	-	330,000	330,000
20	-	Permitting (4.1, 4.3-4.5)	AECOM FY23/24+ Post Construction	1.00	YR	340,000	340,000	-	-	-	-	340,000	340,000
		<b>TECHNICAL SUPPORT</b>											
		<b>Preliminary Engineering (Technical Representative)</b>											

# KRRC Cost Estimate - Full Removal

July 2019

Est ID	Cost Sheet	Heading	Description	Qty	Unit	(\$) Rate	(\$) Direct Cost	15% MU by Sub	10% PDB OH&P	1% Bonds	Field Overhead	(\$) Estimate	Escalated YOC Estimate
30	-	Technical Preparation (2.1-2.4, 2.7, 2.8, 3.1-3.7)	AECOM FY17/18 Planning	1.00	YR	3,956,821	3,956,821	-	-	-	-	3,956,821	3,956,821
30	-	Technical Preparation (2.1-2.4, 2.7, 2.8, 3.1-3.7)	AECOM FY18/19 Planning	1.00	YR	4,791,235	4,791,235	-	-	-	-	4,791,235	4,791,235
30	-	AECOM Yreka Water Line Design (3.3)	AECOM FY19/20 Prelim Services	1.00	YR	477,000	477,000	-	-	-	-	477,000	477,000
30	-	AECOM Hatchery Design (3.7)	AECOM FY19/20 Prelim Services - excluded from scope	1.00	YR	-	-	-	-	-	-	-	-
		<b>Vegetation Test Plots, Seed Collection, Seed Propagation</b>											
		Vegetation Test Plot											
31	-	Vegetation Test Plot (KRRC/Hanford)	Chain-link fence, 7 LF high	404	LF	65	26,260	-	-	-	-	26,260	26,260
31	-	Vegetation Test Plot (KRRC/Hanford)	Chain-link fence gate, 7LF high x 10LF long	1.00	EA	3,260	3,260	-	-	-	-	3,260	3,260
31	-	Vegetation Test Plot (KRRC/Hanford)	Bank Wetland planting beds	8.00	EA	2,000	16,000	-	-	-	-	16,000	16,000
31	-	Vegetation Test Plot (KRRC/Hanford)	Bank Riparian planting beds	8.00	EA	2,000	16,000	-	-	-	-	16,000	16,000
31	-	Vegetation Test Plot (KRRC/Hanford)	Floodplain Riparian planting beds	8.00	EA	2,000	16,000	-	-	-	-	16,000	16,000
31	-	Vegetation Test Plot (KRRC/Hanford)	Uplands planting beds	8.00	EA	2,400	19,200	-	-	-	-	19,200	19,200
31	-	Vegetation Test Plot (KRRC/Hanford)	Irrigation system	1.00	EA	39,880	39,880	-	-	-	-	39,880	39,880
31	-	Vegetation Test Plot (KRRC/Hanford)	Irrigation lines, including trench and backfill	1,000	LF	9	9,000	-	-	-	-	9,000	9,000
31	-	Vegetation Test Plot (KRRC/Hanford)	Planting bed irrigation lines and nozzles	32.00	EA	450	14,400	-	-	-	-	14,400	14,400
31	-	Vegetation Test Plot (KRRC/Hanford)	Pressure supply line	100	LF	25	2,500	-	-	-	-	2,500	2,500
31	-	Vegetation Test Plot (KRRC/Hanford)	Electrical Supply	1.00	EA	27,013	27,013	-	-	-	-	27,013	27,013
31	-	Vegetation Test Plot (KRRC/Hanford)	Equip to backfill planting beds	1.00	EA	7,520	7,520	-	-	-	-	7,520	7,520
31	-	Vegetation Test Plot (KRRC/Hanford)	Negotiated Cost Saving	1.00	EA	-7,487	(7,487)	-	-	-	-	(7,487)	(7,487)
31	-	Vegetation Test Plot (KRRC/Hanford)	Site restoration	1.00	EA	100,000	100,000	-	-	-	-	100,000	100,000
31	-	Vegetation Test Plot	2019 Maintenance w/2-man crew, one 12-hr day ea. visit to 3 sites, r	1.00	YR	27,360	27,360	-	-	-	-	27,360	28,454
31	-	Vegetation Test Plot	2020 Maintenance w/2-man crew, one 12-hr day ea. visit to 3 sites, r	1.00	YR	27,360	27,360	-	-	-	-	27,360	29,593
		Native Seed Collection											
31	-	Native Seed Collection (KRRC/PCS)	2018 Seed collection, preparation, storage	117	LB	1,334	155,726	-	-	-	-	155,726	155,726
		Seed Propagation											
31	-	Seed Propagation (KRRC/BFI)	Phase 1 Scope 2019-2021	7,055	LB	75	529,569	-	-	-	-	529,569	529,569
31	-	Seed Propagation (KRRC/S&S)	Phase 1 Scope 2019-2021	1,462	LB	260	380,012	-	-	-	-	380,012	380,012
31	-	Seed Propagation (KRRC/BFI)	Phase 3 Scope 2019-2021	23,055	LB	21	483,127	-	-	-	-	483,127	483,127
		<b>Construction Procurement</b>											
32	-	Dam Removal Procurement (5.1-5.5)	AECOM FY17/18 Dam Removal Procurement	1.00	YR	54,057	54,057	-	-	-	-	54,057	54,057
32	-	Dam Removal Procurement (5.1-5.5)	AECOM FY18/19 Dam Removal Procurement	1.00	YR	644,386	644,386	-	-	-	-	644,386	644,386
32	-	Dam Removal Procurement (5.1-5.5)	AECOM FY19/20 Dam Removal Procurement	1.00	YR	297,874	297,874	-	-	-	-	297,874	297,874
32	-	Dam Removal Procurement (5.1-5.5)	AECOM FY20/21 Prelim Services / Dam Mods	1.00	YR	100,000	100,000	-	-	-	-	100,000	100,000
		<b>Owner's Representative (Design Oversight)</b>											
33	-	Design Reviews (6.1)	AECOM FY17/18 Planning	1.00	YR	-	-	-	-	-	-	-	-
33	-	Design Reviews (6.1)	AECOM FY18/19 Planning	1.00	YR	115,243	115,243	-	-	-	-	115,243	115,243
33	-	Design Reviews (6.1)	AECOM FY19/20 Prelim Services	1.00	YR	513,831	513,831	-	-	-	-	513,831	513,831
33	-	Design Reviews (6.1)	AECOM FY20/21 Prelim Services / Dam Mods	1.00	YR	260,000	260,000	-	-	-	-	260,000	260,000
33	-	PDB Management (6.2)	AECOM FY19/20 Prelim Services	1.00	YR	744,317	744,317	-	-	-	-	744,317	744,317
33	-	PDB Management (6.2)	AECOM FY20/21 Prelim Services / Dam Mods	1.00	YR	370,000	370,000	-	-	-	-	370,000	370,000
34	-	Engineer of Record (Yreka Water Supply)	AECOM FY20/21 Prelim Services / Dam Mods	1.00	YR	145,000	145,000	-	-	-	-	145,000	145,000
		<b>Construction Management</b>											
34	-	Construction Management	AECOM FY20/21	1.00	YR	2,342,278	2,342,278	-	-	-	-	2,342,278	2,342,278
34	-	Construction Management	AECOM FY21/22	1.00	YR	5,914,390	5,914,390	-	-	-	-	5,914,390	5,914,390
34	-	Construction Management	AECOM FY22/23	1.00	YR	4,765,085	4,765,085	-	-	-	-	4,765,085	4,765,085
		<b>PROGRESSIVE DESIGN-BUILD CONTRACT</b>											
		<b>Final Design &amp; Permitting Support (PDB)</b>											
		Engineering (PDB)											
40	-	Engineering (PDB)	Project Management	1.00	EA	3,830,881	3,830,881	-	-	-	-	3,830,881	3,830,881
40	-	Engineering (PDB)	Site & Conditions Verification	1.00	EA	1,859,749	1,859,749	-	-	-	-	1,859,749	1,859,749
40	-	Engineering (PDB)	Initial Cost Model and Schedule	1.00	EA	49,880	49,880	-	-	-	-	49,880	49,880
40	-	Engineering (PDB)	Design Criteria Report	1.00	EA	281,328	281,328	-	-	-	-	281,328	281,328
40	-	Engineering (PDB)	30% Design Completion Documents	1.00	EA	4,335,923	4,335,923	-	-	-	-	4,335,923	4,335,923
40	-	Engineering (PDB)	60% Design Completion Documents	1.00	EA	4,113,785	4,113,785	-	-	-	-	4,113,785	4,113,785
40	-	Engineering (PDB)	GMP Project Submittal	1.00	EA	168,080	168,080	-	-	-	-	168,080	168,080
40	-	Engineering (PDB)	90% Design Completion Documents	1.00	EA	2,396,186	2,396,186	-	-	-	-	2,396,186	2,396,186
40	-	Engineering (PDB)	Seed Collection & Propagation (included in 43 for now)	1.00	EA	-	-	-	-	-	-	-	-
40	-	Engineering (PDB)	100% Design Completion Documents	1.00	EA	1,797,140	1,797,140	-	-	-	-	1,797,140	1,797,140
40	-	Engineering (PDB)	Allowance for extended project schedule	1.00	EA	1,915,441	1,915,441	-	-	-	-	1,915,441	1,915,441
		Permit Acquisition (PDB)											
40	-	Permit Acquisition (PDB)	Permitting Support and Compliance Program	1.00	EA	1,051,068	1,051,068	-	-	-	-	1,051,068	1,051,068
		<b>CCIP Insurance</b>											
40A	-	Insurances (PDB)	Builder's risk	1.00	EA	488,750	488,750	-	-	-	-	488,750	488,750
40A	-	Insurances (PDB)	CCIP	1.00	EA	6,500,000	6,500,000	-	-	-	-	6,500,000	6,500,000

# KRRC Cost Estimate - Full Removal

July 2019

Est ID	Cost Sheet	Heading	Description	Qty	Unit	(\$) Rate	(\$) Direct Cost	15% MU by Sub	10% PDB OH&P	1% Bonds	Field Overhead	(\$) Estimate	Escalated YOC Estimate
40A	-	Insurances (PDB)	Commercial Auto (corporate programs)	1.00	EA	-	-	-	-	-	-	-	-
40A	-	Insurances (PDB)	Professional liability (use of corporate policy)	1.00	EA	-	-	-	-	-	-	-	-
40A	-	Insurances (PDB)	Watercraft and aircraft liability TBD	1.00	EA	-	-	-	-	-	-	-	-
		<b>Field Overheads (to be distributed over the following PDB Sections)</b>											
		Copco 1 & 2											
NA	-	Copco 1 & 2	OH 01 Mobilization	1.00	LS	100,000	100,000	-	-	-	NA	100,000	-
NA	-	Copco 1 & 2	OH 02 Project Staff	1.00	LS	310,375	310,375	-	31,038	3,414	NA	344,827	-
NA	-	Copco 1 & 2	OH 03 Temporary Buildings	1.00	LS	173,000	173,000	-	-	1,730	NA	174,730	-
NA	-	Copco 1 & 2	OH 04 Temporary Utilities	1.00	LS	184,000	184,000	-	-	1,840	NA	185,840	-
NA	-	Copco 1 & 2	OH 05 Temporary Construction	1.00	LS	935,420	935,420	-	-	9,354	NA	944,774	-
NA	-	Copco 1 & 2	OH 06 Transportation	1.00	LS	-	-	-	-	-	NA	-	-
NA	-	Copco 1 & 2	OH 07 Office Supplies	1.00	LS	16,500	16,500	-	-	165	NA	16,665	-
NA	-	Copco 1 & 2	OH 08 Safety Supplies	1.00	LS	107,773	107,773	-	-	1,078	NA	108,851	-
NA	-	Copco 1 & 2	OH 09 Employee Expense	1.00	LS	-	-	-	-	-	NA	-	-
NA	-	Copco 1 & 2	OH 10 Contract Services	1.00	LS	53,887	53,887	-	-	539	NA	54,425	-
NA	-	Copco 1 & 2	OH 11 Employee Living Cost	1.00	LS	600,000	600,000	-	60,000	6,600	NA	666,600	-
NA	-	Copco 1 & 2	OH 12 Winter and Summer Protection	1.00	LS	50,000	50,000	-	-	500	NA	50,500	-
NA	-	Copco 1 & 2	OH 13 Quality Assurance/ Quality Control	1.00	LS	50,000	50,000	-	5,000	550	NA	55,550	-
NA	-	Copco 1 & 2	OH 14 Lost Production/Overtime/Travel Time	1.00	LS	459,113	459,113	-	45,911	5,050	NA	510,075	-
NA	-	Copco 1 & 2	OH 16 Demobilization	1.00	LS	90,000	90,000	-	-	900	NA	90,900	-
NA	-	Copco 1 & 2	OH 18 Survey	1.00	LS	75,000	75,000	-	-	750	NA	75,750	-
NA	-	Copco 1 & 2	OH 21 Small Tools	1.00	LS	269,433	269,433	-	-	2,694	NA	272,127	-
NA	-	Copco 1 & 2	OH 22 Traffic Control	1.00	LS	200,272	200,272	-	-	2,003	NA	202,275	-
NA	-	Copco 1 & 2	OH 27 Project Equipment	1.00	LS	724,904	724,904	-	72,490	7,974	NA	805,368	-
NA	-	Copco 1 & 2	OH 28 Project Labor	1.00	LS	60,228	60,228	-	6,023	663	NA	66,913	-
NA	-	Copco 1 & 2	OH 99 Dead Rent	1.00	LS	640,117	640,117	-	64,012	7,041	NA	711,170	-
		Iron Gate											
NA	-	Iron Gate	OH 01 Mobilization	1.00	LS	300,000	300,000	-	-	3,000	NA	303,000	-
NA	-	Iron Gate	OH 02 Project Staff	1.00	LS	2,463,153	2,463,153	-	246,315	27,095	NA	2,736,563	-
NA	-	Iron Gate	OH 03 Temporary Buildings	1.00	LS	970,000	970,000	-	-	9,700	NA	979,700	-
NA	-	Iron Gate	OH 04 Temporary Utilities	1.00	LS	354,500	354,500	-	-	3,545	NA	358,045	-
NA	-	Iron Gate	OH 05 Temporary Construction	1.00	LS	1,063,040	1,063,040	-	-	10,630	NA	1,073,670	-
NA	-	Iron Gate	OH 06 Transportation	1.00	LS	377,040	377,040	-	-	3,770	NA	380,810	-
NA	-	Iron Gate	OH 07 Office Supplies	1.00	LS	53,000	53,000	-	-	530	NA	53,530	-
NA	-	Iron Gate	OH 08 Safety Supplies	1.00	LS	69,721	69,721	-	-	697	NA	70,418	-
NA	-	Iron Gate	OH 09 Employee Expense	1.00	LS	34,000	34,000	-	3,400	374	NA	37,774	-
NA	-	Iron Gate	OH 10 Contract Services	1.00	LS	54,861	54,861	-	-	549	NA	55,410	-
NA	-	Iron Gate	OH 11 Employee Living Cost	1.00	LS	600,000	600,000	-	60,000	6,600	NA	666,600	-
NA	-	Iron Gate	OH 12 Winter and Summer Protection	1.00	LS	50,000	50,000	-	-	500	NA	50,500	-
NA	-	Iron Gate	OH 13 Quality Assurance/ Quality Control	1.00	LS	220,000	220,000	-	22,000	2,420	NA	244,420	-
NA	-	Iron Gate	OH 14 Lost Production/Overtime/Travel Time	1.00	LS	297,011	297,011	-	29,701	3,267	NA	329,979	-
NA	-	Iron Gate	OH 16 Demobilization	1.00	LS	270,000	270,000	-	-	2,700	NA	272,700	-
NA	-	Iron Gate	OH 18 Survey	1.00	LS	75,000	75,000	-	-	750	NA	75,750	-
NA	-	Iron Gate	OH 21 Small Tools	1.00	LS	174,303	174,303	-	-	1,743	NA	176,046	-
NA	-	Iron Gate	OH 22 Traffic Control	1.00	LS	608,656	608,656	-	-	6,087	NA	614,743	-
NA	-	Iron Gate	OH 27 Project Equipment	1.00	LS	1,697,004	1,697,004	-	169,700	18,667	NA	1,885,371	-
NA	-	Iron Gate	OH 28 Project Labor	1.00	LS	381,920	381,920	-	38,192	4,201	NA	424,313	-
NA	-	Iron Gate	OH 99 Dead Rent	1.00	LS	403,446	403,446	-	40,345	4,438	NA	448,229	-
		JC Boyle											
NA	-	JC Boyle	OH 01 Mobilization	1.00	LS	250,000	250,000	-	-	2,500	NA	252,500	-
NA	-	JC Boyle	OH 02 Project Staff	1.00	LS	1,297,328	1,297,328	-	129,733	14,271	NA	1,441,332	-
NA	-	JC Boyle	OH 03 Temporary Buildings	1.00	LS	634,000	634,000	-	-	6,340	NA	640,340	-
NA	-	JC Boyle	OH 04 Temporary Utilities	1.00	LS	230,900	230,900	-	-	2,309	NA	233,209	-
NA	-	JC Boyle	OH 05 Temporary Construction	1.00	LS	731,236	731,236	-	-	7,312	NA	738,548	-
NA	-	JC Boyle	OH 06 Transportation	1.00	LS	238,224	238,224	-	-	2,382	NA	240,606	-
NA	-	JC Boyle	OH 07 Office Supplies	1.00	LS	33,800	33,800	-	-	338	NA	34,138	-
NA	-	JC Boyle	OH 08 Safety Supplies	1.00	LS	60,000	60,000	-	-	600	NA	60,600	-
NA	-	JC Boyle	OH 09 Employee Expense	1.00	LS	26,000	26,000	-	-	260	NA	26,260	-
NA	-	JC Boyle	OH 10 Contract Services	1.00	LS	42,000	42,000	-	-	420	NA	42,420	-
NA	-	JC Boyle	OH 11 Employee Living Cost	1.00	LS	360,000	360,000	-	36,000	3,960	NA	399,960	-
NA	-	JC Boyle	OH 12 Winter and Summer Protection	1.00	LS	50,000	50,000	-	-	500	NA	50,500	-
NA	-	JC Boyle	OH 13 Quality Assurance/ Quality Control	1.00	LS	161,600	161,600	-	16,160	1,778	NA	179,538	-
NA	-	JC Boyle	OH 14 Lost Production/Overtime/Travel Time	1.00	LS	255,600	255,600	-	25,560	2,812	NA	283,972	-
NA	-	JC Boyle	OH 16 Demobilization	1.00	LS	225,000	225,000	-	-	2,250	NA	227,250	-



# KRRC Cost Estimate - Full Removal

July 2019

Est ID	Cost Sheet	Heading	Description	Qty	Unit	(\$) Rate	(\$) Direct Cost	15% MU by Sub	10% PDB OH&P	1% Bonds	Field Overhead	(\$) Estimate	Escalated YOC Estimate
NA	-	JC Boyle	OH 18 Survey	1.00	LS	75,000	75,000	-	-	750	NA	75,750	-
NA	-	JC Boyle	OH 21 Small Tools	1.00	LS	150,000	150,000	-	-	1,500	NA	151,500	-
NA	-	JC Boyle	OH 22 Traffic Control	1.00	LS	319,825	319,825	-	-	3,198	NA	323,023	-
NA	-	JC Boyle	OH 27 Project Equipment	1.00	LS	939,094	939,094	-	93,909	10,330	NA	1,043,333	-
NA	-	JC Boyle	OH 28 Project Labor	1.00	LS	178,556	178,556	-	17,856	1,964	NA	198,376	-
NA	-	JC Boyle	OH 99 Dead Rent	1.00	LS	352,335	352,335	-	35,233	3,876	NA	391,444	-
		Bridges, Roads, Veg, Waterline											
NA	-	Bridges, Roads, Veg, Waterline	OH 01 Mobilization	1.00	LS	250,000	250,000	-	-	2,500	NA	252,500	-
NA	-	Bridges, Roads, Veg, Waterline	OH 02 Project Staff	1.00	LS	861,953	861,953	-	86,195	9,481	NA	957,630	-
NA	-	Bridges, Roads, Veg, Waterline	OH 03 Temporary Buildings	1.00	LS	477,000	477,000	-	-	4,770	NA	481,770	-
NA	-	Bridges, Roads, Veg, Waterline	OH 04 Temporary Utilities	1.00	LS	144,000	144,000	-	-	1,440	NA	145,440	-
NA	-	Bridges, Roads, Veg, Waterline	OH 05 Temporary Construction	1.00	LS	429,628	429,628	-	-	4,296	NA	433,924	-
NA	-	Bridges, Roads, Veg, Waterline	OH 06 Transportation	1.00	LS	134,112	134,112	-	-	1,341	NA	135,453	-
NA	-	Bridges, Roads, Veg, Waterline	OH 07 Office Supplies	1.00	LS	25,700	25,700	-	-	257	NA	25,957	-
NA	-	Bridges, Roads, Veg, Waterline	OH 08 Safety Supplies	1.00	LS	60,000	60,000	-	-	600	NA	60,600	-
NA	-	Bridges, Roads, Veg, Waterline	OH 09 Employee Expense	1.00	LS	20,000	20,000	-	2,000	220	NA	22,220	-
NA	-	Bridges, Roads, Veg, Waterline	OH 10 Contract Services	1.00	LS	36,000	36,000	-	-	360	NA	36,360	-
NA	-	Bridges, Roads, Veg, Waterline	OH 11 Employee Living Cost	1.00	LS	180,000	180,000	-	-	1,800	NA	181,800	-
NA	-	Bridges, Roads, Veg, Waterline	OH 12 Winter and Summer Protection	1.00	LS	50,000	50,000	-	-	500	NA	50,500	-
NA	-	Bridges, Roads, Veg, Waterline	OH 13 Quality Assurance/ Quality Control	1.00	LS	101,000	101,000	-	10,100	1,111	NA	112,211	-
NA	-	Bridges, Roads, Veg, Waterline	OH 14 Lost Production/Overtime/Travel Time	1.00	LS	255,600	255,600	-	25,560	2,812	NA	283,972	-
NA	-	Bridges, Roads, Veg, Waterline	OH 16 Demobilization	1.00	LS	225,000	225,000	-	-	2,250	NA	227,250	-
NA	-	Bridges, Roads, Veg, Waterline	OH 18 Survey	1.00	LS	75,000	75,000	-	-	750	NA	75,750	-
NA	-	Bridges, Roads, Veg, Waterline	OH 21 Small Tools	1.00	LS	150,000	150,000	-	-	1,500	NA	151,500	-
NA	-	Bridges, Roads, Veg, Waterline	OH 22 Traffic Control	1.00	LS	240,746	240,746	-	-	2,407	NA	243,153	-
NA	-	Bridges, Roads, Veg, Waterline	OH 27 Project Equipment	1.00	LS	543,492	543,492	-	54,349	5,978	NA	603,820	-
NA	-	Bridges, Roads, Veg, Waterline	OH 28 Project Labor	1.00	LS	114,576	114,576	-	11,458	1,260	NA	127,294	-
		Dam Removals											
		Drawdown control & monitoring											
41	-	Drawdown control & monitoring		1.00	LS	1,012,800	1,012,800	-	101,280	11,141	included	1,125,221	1,265,720
		Copco 1 Dam Removal											
41	2.001	Copco 1 Dam Removal	Furnish, Install, and Remove Barge-Mounted Crane in Reservoir for	1.00	Is	358,915	358,915	-	35,891	3,948	69,571	468,326	506,541
41	2.002	Copco 1 Dam Removal	Remove Sediment from Diversion Tunnel Intake to provide access	1,000	CY	299	299,102	-	29,910	3,290	57,977	390,280	422,126
41	2.003	Copco 1 Dam Removal	Mobilize and Demob Large Crane on Right Abutment	1.00	LS	80,000	80,000	-	8,000	880	15,507	104,387	117,421
41	2.004	Copco 1 Dam Removal	Remove Water from behind Tailrace Cofferdam	200,000	GAL	0	2,027	-	203	22	393	2,645	2,975
41	2.005	Copco 1 Dam Removal	Cofferdam Fill Material Production for Equipment Access	4,000	CY	40	158,677	-	15,868	1,745	30,757	207,047	232,900
41	2.006	Copco 1 Dam Removal	Provide Dewatering behind Tailrace Cofferdam	1.00	LS	200,507	200,507	-	20,051	2,206	38,866	261,629	294,297
41	2.007	Copco 1 Dam Removal	Remove Current Diversion Tunnel Plug	195	cy	650	126,836	-	12,684	1,395	24,585	165,500	179,005
41	2.008	Copco 1 Dam Removal	Tailrace Coffe Dam- Furnish & Unload Material	25.00	LD	8,614	215,346	-	21,535	2,369	41,742	280,992	316,078
41	2.008.1	Copco 1 Dam Removal	Tailrace Coffe Dam- Drive Pile	12,080	SF	30	361,972	-	36,197	3,982	70,164	472,314	531,289
41	2.008.2	Copco 1 Dam Removal	Tailrace Coffe Dam-Extract Pile	12,080	SF	16	188,570	-	18,857	2,074	36,552	246,053	276,777
41	2.009	Copco 1 Dam Removal	Installation of 3 each 72" Blind Flanges	38,000	LBS	33	1,255,158	-	125,516	13,807	243,297	1,637,777	1,771,420
41	2.009.2	Copco 1 Dam Removal	Installation of 16.5 X 18.5 Roller Gate and Gate Structure	1.00	LS	4,481,794	4,481,794	-	448,179	49,300	868,739	5,848,012	6,276,555
41	2.009.3	Copco 1 Dam Removal	Removal of 16.5 X 18.5 Roller Gate and Gate Structure	300	CY	662	198,699	-	19,870	2,186	38,515	259,270	291,643
41	2.010	Copco 1 Dam Removal	Remove Concrete Dam down to Elev. 2463.5	36,000	cy	129	4,636,534	-	463,653	51,002	898,734	6,049,923	6,805,341
41	2.011	Copco 1 Dam Removal	Remove Concrete Intake Structure on Right Abutment	16,400	cy	144	2,361,194	-	236,119	25,973	457,688	3,080,974	3,465,677
41	2.012	Copco 1 Dam Removal	Remove Structural Steel from Spillway	55,000	LBS	1	73,760	-	7,376	811	14,297	96,245	108,262
41	2.013	Copco 1 Dam Removal	Install Diversion Tunnel Plugs	30.00	CY	3,278	98,349	-	9,835	1,082	19,064	128,330	144,354
41	2.014	Copco 1 Dam Removal	Remove Diversion Tunnel Control Structure Concrete	350	CY	995	348,092	-	34,809	3,829	67,473	454,203	491,266
41	2.015	Copco 1 Dam Removal	Remove & Dispose of Hand Rails at dam	11,000	LBS	0	4,986	-	499	55	967	6,506	7,037
41	2.016	Copco 1 Dam Removal	Remove & Dispose of Radial Gates	140,500	LBS	1	93,906	-	9,391	1,033	18,202	122,532	132,531
41	2.017	Copco 1 Dam Removal	Remove & Dispose Radial Gate Stop logs	18,000	LBS	0	5,104	-	510	56	989	6,660	7,204
41	2.018	Copco 1 Dam Removal	Remove & Dispose Stop log hoist, track and supports	26,000	LBS	0	9,809	-	981	108	1,901	12,799	13,843
41	2.019	Copco 1 Dam Removal	Remove & Dispose of 3 sections of 23' of 72" Dia. steel lining (emb	54,000	LBS	4	228,843	-	22,884	2,517	44,358	298,603	322,969
41	2.020	Copco 1 Dam Removal	Remove & Dispose of 3 - 72" butterfly valves (embedded)	55,000	LBS	4	207,267	-	20,727	2,280	40,176	270,449	292,518
41	2.021	Copco 1 Dam Removal	Remove & Dispose of 3 - 72" flapper valves with remote mechanical	78,000	LBS	2	151,723	-	15,172	1,669	29,410	197,974	214,128
41	2.022	Copco 1 Dam Removal	Remove & Dispose of Spillway gate motor & control panel	1.00	EA	5,354	5,354	-	535	59	1,038	6,986	7,556
41	2.023	Copco 1 Dam Removal	Remove & Dispose Distribution equipment, panelboards	1.00	EA	5,839	5,839	-	584	64	1,132	7,619	8,571
41	2.024	Copco 1 Dam Removal	Remove Powerhouse Concrete down to top of rock under the Power	3,100	CY	170	527,781	-	52,778	5,806	102,304	688,668	774,658
41	2.025	Copco 1 Dam Removal	Remove Powerhouse Structural Steel	110,000	LBS	1	62,180	-	6,218	684	12,053	81,135	91,266
41	2.026	Copco 1 Dam Removal	Remove & Dispose of 2 - Governor Oil Systems	38,000	LBS	1	37,584	-	3,758	413	7,285	49,041	55,164
41	2.027	Copco 1 Dam Removal	Remove & Dispose of Cooling water and bearing oil systems	11,000	LBS	1	11,189	-	1,119	123	2,169	14,600	16,423
41	2.028	Copco 1 Dam Removal	Remove & Dispose of 4 - Horizontal Tandem Francis Turbines	452,000	LBS	1	226,133	-	22,613	2,487	43,833	295,067	331,910
41	2.029	Copco 1 Dam Removal	Remove & Dispose of 2 - 40 Ton indoor cranes	140,000	LBS	0	60,442	-	6,044	665	11,716	78,868	88,715

# KRRC Cost Estimate - Full Removal

July 2019

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41	2.030	Copco 1 Dam Removal	Remove & Dispose of Compressed Air System	1,000	LBS	1	1,371	-	137	15	266	1,789	2,013
41	2.031	Copco 1 Dam Removal	Remove & Dispose of 2 - CO2 Systems	3,100	LBS	1	2,795	-	279	31	542	3,647	4,102
41	2.032	Copco 1 Dam Removal	Remove & Dispose of Plant Water and Fire Protection	2,600	LBS	1	2,302	-	230	25	446	3,004	3,379
41	2.033	Copco 1 Dam Removal	Remove & Dispose of Transformer Oil Fire Protection	5,400	LBS	1	5,879	-	588	65	1,139	7,671	8,628
41	2.034	Copco 1 Dam Removal	Remove & Dispose of Unwatering Piping	27,000	LBS	0	8,994	-	899	99	1,743	11,736	13,201
41	2.035	Copco 1 Dam Removal	Remove & Dispose of Drainage Piping	5,000	LBS	0	1,810	-	181	20	351	2,362	2,656
41	2.035a	Copco 1 Dam Removal	Remove petroleum products from mechanical equipment	1,250	GAL	3	3,313	-	331	36	642	4,322	4,862
41	2.036	Copco 1 Dam Removal	Remove & Dispose of Horizontal AC Generator, Indoor Open Frame	2.00	EA	67,269	134,538	-	13,454	1,480	26,079	175,550	197,470
41	2.037	Copco 1 Dam Removal	Remove & Dispose of Excitation equipment for 12.5 MVA Generator	1.50	EA	7,271	10,907	-	1,091	120	2,114	14,231	16,008
41	2.038	Copco 1 Dam Removal	Remove & Dispose of Surge protection equip. for 12.5 MVA Generator	2.00	EA	2,257	4,515	-	451	50	875	5,891	6,627
41	2.039	Copco 1 Dam Removal	Remove & Dispose of Neutral grounding equip. for 12.5 MVA Generator	2.00	EA	1,937	3,874	-	387	43	751	5,054	5,685
41	2.040	Copco 1 Dam Removal	Remove & Dispose of Generator Switchgear, 5kV-includes unit breakers	1.00	EA	16,056	16,056	-	1,606	177	3,112	20,950	23,566
41	2.041	Copco 1 Dam Removal	Remove & Dispose of Station Service Switchgear, 600 volt - (5 sections)	1.00	EA	9,002	9,002	-	900	99	1,745	11,746	13,213
41	2.042	Copco 1 Dam Removal	Remove & Dispose of Unit and plant control switchboard	1.00	EA	4,364	4,364	-	436	48	846	5,695	6,406
41	2.043	Copco 1 Dam Removal	Remove & Dispose of Battery System	1.00	EA	14,110	14,110	-	1,411	155	2,735	18,411	20,710
41	2.044	Copco 1 Dam Removal	Remove & Dispose of Raceways, Conduit and Cable	1.00	EA	12,596	12,596	-	1,260	139	2,442	16,435	18,488
41	2.045	Copco 1 Dam Removal	Remove & Dispose of Msc. power & control boards	1.00	EA	5,030	5,030	-	503	55	975	6,563	7,383
41	2.046	Copco 1 Dam Removal	Remove & Dispose of Step-up Transformers, indoor, oil-filled, 1-phase	3.00	EA	32,682	98,045	-	9,804	1,078	19,005	127,933	143,907
41	2.047	Copco 1 Dam Removal	Remove & Dispose of Step-up Transformers, indoor, oil-filled, 1-phase	3.00	EA	32,682	98,045	-	9,804	1,078	19,005	127,933	143,907
41	2.048	Copco 1 Dam Removal	Remove & Dispose of Seven 40-Ton Travelling Crane motors - hoist	1.00	EA	2,965	2,965	-	297	33	575	3,869	4,352
41	2.049	Copco 1 Dam Removal	Remove & Dispose of 40-Ton Travelling Crane control equipment	1.00	EA	2,931	2,931	-	293	32	568	3,825	4,302
41	2.050	Copco 1 Dam Removal	Remove & Dispose of 40-Ton Travelling Crane Festoon Cable	1.00	EA	1,394	1,394	-	139	15	270	1,819	2,046
41	2.051	Copco 1 Dam Removal	Remove & Dispose of Four 15-Ton Overhead Crane Motors - hoist	1.00	EA	682	682	-	68	8	132	891	1,002
41	2.052	Copco 1 Dam Removal	Remove & Dispose of 15-Ton Overhead Crane control equipment	1.00	EA	899	899	-	90	10	174	1,174	1,320
41	2.053	Copco 1 Dam Removal	Remove & Dispose of 15-Ton Overhead Crane Festoon Cable	1.00	EA	1,408	1,408	-	141	15	273	1,837	2,066
41	2.053a	Copco 1 Dam Removal	Remove petroleum products from mechanical equipment	10,500	GAL	4	38,124	-	3,812	419	7,390	49,745	55,956
41	2.054	Copco 1 Dam Removal	Remove & Dispose of 69kV circuit breakers, oil filled, PCB	2.00	EA	1,966	3,931	-	393	43	762	5,130	5,770
41	2.055	Copco 1 Dam Removal	Remove & Dispose of 69kV disconnect switches, group-operated	2.00	EA	1,966	3,931	-	393	43	762	5,130	5,770
41	2.056	Copco 1 Dam Removal	Remove & Dispose of 60-foot wood poles	12.00	EA	1,010	12,119	-	1,212	133	2,349	15,814	17,788
41	2.057	Copco 1 Dam Removal	Remove & Dispose of 30-foot wood cross arms	24.00	EA	251	6,017	-	602	66	1,166	7,851	8,831
41	2.058	Copco 1 Dam Removal	Remove & Dispose of 69-kV insulator strings	12.00	EA	226	2,715	-	272	30	526	3,543	3,985
41	2.059	Copco 1 Dam Removal	[PacifiCorp Cover] Remove & Dispose of Transmission Line No. 3	-	-	-	-	-	-	-	-	-	-
41	2.060	Copco 1 Dam Removal	[PacifiCorp Cover] Remove & Dispose of Transmission Line No. 15	-	-	-	-	-	-	-	-	-	-
41	2.061	Copco 1 Dam Removal	Remove & Dispose of Transmission Line No. 26-1	0.07	MLE	28,438	1,991	-	199	22	386	2,598	2,922
41	2.062	Copco 1 Dam Removal	Remove & Dispose of Transmission Line No. 26-2	0.07	MLE	28,438	1,991	-	199	22	386	2,598	2,922
41	2.063	Copco 1 Dam Removal	Remove gate house #1 from top of dam	720	SF	15	10,965	-	1,096	121	2,125	14,307	16,093
41	2.064	Copco 1 Dam Removal	Remove gate house #2 from top of dam	690	SF	16	10,817	-	1,082	119	2,097	14,114	15,876
41	2.065	Copco 1 Dam Removal	Remove Concrete Items associated with 10 ft. diam. Penstocks, rebar	1,050	cy	91	95,337	-	9,534	1,049	18,480	124,400	139,933
41	2.066	Copco 1 Dam Removal	Plug 14-foot diameter penstock with concrete	38.00	CY	3,331	126,594	-	12,659	1,393	24,539	165,185	185,810
41	2.067	Copco 1 Dam Removal	Remove & Dispose of 8 screens	18,000	LBS	1	19,893	-	1,989	219	3,856	25,957	29,199
41	2.068	Copco 1 Dam Removal	Remove & Dispose of 8 Water Gates	18,000	LBS	1	18,499	-	1,850	203	3,586	24,138	27,152
41	2.069	Copco 1 Dam Removal	Remove & Dispose of 3 - 30" Dia. x 25' stand pipes	6,000	LBS	1	4,966	-	497	55	963	6,480	7,289
41	2.070	Copco 1 Dam Removal	Remove & Dispose of 14' Dia. penstock pipe	256,000	LBS	1	353,199	-	35,320	3,885	68,463	460,867	518,413
41	2.071	Copco 1 Dam Removal	Remove & Dispose of 10' Dia. penstock pipe	270,000	LBS	1	282,769	-	28,277	3,110	54,811	368,967	415,038
41	2.081	Copco 1 Dam Removal	Site work - Clear and Grub Disposal Area	4.00	AC	5,226	20,904	-	2,090	230	4,052	27,277	30,683
41	2.082	Copco 1 Dam Removal	Site work - Concrete Processing and Soil Cover for Disposal Area	12,000	cy	17	206,327	-	20,633	2,270	39,994	269,223	302,839
41	2.085	Copco 1 Dam Removal	Access/Haul Road Improvements - Soil Excavation	1,600	cy	16	24,822	-	2,482	273	4,811	32,388	36,433
41	2.089	Copco 1 Dam Removal	Mallard Cove - Concrete total	106	CY	161	17,079	-	1,708	188	3,311	22,285	25,068
41	2.090	Copco 1 Dam Removal	Mallard Cove - 25'x5' Dock made of composite decking and poly floor	1.00	EA	2,146	2,146	-	215	24	416	2,800	3,150
41	2.091	Copco 1 Dam Removal	Mallard Cove - 20'x5' Gangway w/ aluminum grate and railings	1.00	EA	1,987	1,987	-	199	22	385	2,593	2,916
41	2.092	Copco 1 Dam Removal	Mallard Cove - Signs to be removed and hauled away	6.00	EA	114	684	-	68	8	133	892	1,004
41	2.093	Copco 1 Dam Removal	Mallard Cove - Wood plank tables to be removed and hauled away	8.00	EA	83	667	-	67	7	129	870	979
41	2.094	Copco 1 Dam Removal	Mallard Cove - Parking area to be regraded	2.50	AC	5,059	12,647	-	1,265	139	2,451	16,502	18,563
41	2.095	Copco 1 Dam Removal	Copco Cove - Concrete Total	84.00	CY	173	14,517	-	1,452	160	2,814	18,943	21,308
41	2.096	Copco 1 Dam Removal	Copco Cove - Dock abutment railing made of 2.5" dia. steel pipe	1.00	EA	1,327	1,327	-	133	15	257	1,732	1,948
41	2.097	Copco 1 Dam Removal	Copco Cove - Signs to be removed and hauled away	6.00	EA	290	1,740	-	174	19	337	2,271	2,554
41	2.098	Copco 1 Dam Removal	Copco Cove - Wood plank tables to be removed and hauled away	2.00	EA	167	334	-	33	4	65	435	490
41	2.099	Copco 1 Dam Removal	Copco Cove - Regrade	2.30	AC	5,368	12,347	-	1,235	136	2,393	16,111	18,122
41	2.100	Copco 1 Dam Removal	Diversion Tunnel Lining (Reinforced Shotcrete)	1.00	LS	228,613	228,613	-	22,861	2,515	44,314	298,303	335,550
41	5.006	Copco 1 Dam Removal	Remove Frame dead end structures 60-80 ft high @ Switchyard	4.00	EA	11,850	47,402	-	4,740	521	9,188	61,852	69,575
41	5.007	Copco 1 Dam Removal	Remove Power Circuit Breakers 69KV @ Switchyard	2.00	EA	6,116	12,233	-	1,223	135	2,371	15,962	17,955
41	5.008	Copco 1 Dam Removal	Remove Disconnect Switches @ Switchyard	4.00	EA	8,710	34,841	-	3,484	383	6,753	45,462	51,138
41	5.009	Copco 1 Dam Removal	Remove all associated auxiliary equipment @ Switchyard (Allowance)	1.00	LS	53,473	53,473	-	5,347	588	10,365	69,774	78,486
41	5.010	Copco 1 Dam Removal	Remove Distribution lines 69 Kv between Copco 1 Switchyard and H	6.00	EA	3,307	19,841	-	1,984	218	3,846	25,889	29,122

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July 2019

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41	5.011	Copco 1 Dam Removal	Remove Distribution Poles 2.4 Kv between Copco#1 HE Plant and C	8.00	EA	1,795	14,359	-	1,436	158	2,783	18,736	21,076
41	5.012	Copco 1 Dam Removal	Remove "Production Poles" in general area Copco#1	7.00	EA	3,600	25,200	-	2,520	277	4,885	32,882	36,988
41	5.013	Copco 1 Dam Removal	Remove "Village Houses Distribution Poles" near dam (assumed 10	10.00	EA	2,433	24,333	-	2,433	268	4,717	31,751	35,715
41	5.014	Copco 1 Dam Removal	Remove 69 KV Distribution line 1.6 miles (30 poles)	30.00	EA	4,195	125,842	-	12,584	1,384	24,393	164,203	184,706
41	5.015	Copco 1 Dam Removal	[PacifiCorp Cover] Remove Transmission conductors on poles 1X/0	-	-	-	-	-	-	-	-	-	-
41	5.016	Copco 1 Dam Removal	[PacifiCorp Cover] Remove Transmission conductors 1.3 miles Cop	-	-	-	-	-	-	-	-	-	-
41	5.034	Copco 1 Dam Removal	Remove Maintenance Building, North & South Residence	6,030	SF	14	84,565	-	8,457	930	16,392	110,344	124,122
41	3.001	Copco 2 Dam Removal	Right Side Coffe Dam- Furnish & Unload Material	20.00	LD	2,009	40,187	-	4,019	442	7,790	52,437	58,985
41	3.001.1	Copco 2 Dam Removal	Right Side Coffe Dam- Drive Pile	7,500	SF	28	210,113	-	21,011	2,311	40,728	274,164	308,397
41	3.001.2	Copco 2 Dam Removal	Right Side Coffe Dam- Extract Pile	7,500	SF	9	64,691	-	6,469	712	12,539	84,411	94,951
41	3.002	Copco 2 Dam Removal	Access Trestle- Furnish & Unload Material	78.00	LD	6,266	488,720	-	48,872	5,376	94,732	637,700	717,326
41	3.002.1	Copco 2 Dam Removal	Access Trestle- Drive Pile	1,120	LF	179	200,090	-	20,009	2,201	38,785	261,085	293,686
41	3.002.2	Copco 2 Dam Removal	Access Trestle - Fabricate Trestle Platform	8,000	SF	12	98,807	-	9,881	1,087	19,152	128,927	145,025
41	3.002.3	Copco 2 Dam Removal	Access Trestle - Remove Trestle Platform	8,000	SF	6	48,606	-	4,861	535	9,422	63,423	71,343
41	3.002.4	Copco 2 Dam Removal	Access Trestle- Extract Pile	1,120	LF	53	59,316	-	5,932	652	11,498	77,397	87,061
41	3.002.5	Copco 2 Dam Removal	Access Trestle- Load & Hauloff Material	78.00	LD	1,856	144,768	-	14,477	1,592	28,062	188,899	212,486
41	3.003	Copco 2 Dam Removal	Provide Dewatering behind Cofferdams	1.00	LS	178,729	178,729	-	17,873	1,966	34,644	233,212	262,332
41	3.004	Copco 2 Dam Removal	Remove Water from behind Cofferdams	241,000	GAL	0	5,679	-	568	62	1,101	7,410	8,335
41	3.005	Copco 2 Dam Removal	Left Side Coffe Dam- Furnish & Unload Material	15.00	LD	6,989	104,841	-	10,484	1,153	20,322	136,800	153,882
41	3.005.1	Copco 2 Dam Removal	Left Side Coffe Dam- Drive Pile	7,500	SF	28	210,113	-	21,011	2,311	40,728	274,164	308,397
41	3.005.2	Copco 2 Dam Removal	Left Side Coffe Dam- Extract Pile	7,500	SF	7	50,691	-	5,069	558	9,826	66,143	74,402
41	3.005.3	Copco 2 Dam Removal	Left Side Coffe Dam- Load & Hauloff Material	15.00	LD	1,158	17,372	-	1,737	191	3,367	22,668	25,499
41	3.006	Copco 2 Dam Removal	Coffe Dam Backfill allowance	1.00	LS	50,000	50,000	-	5,000	550	9,692	65,242	73,388
41	3.007	Copco 2 Dam Removal	Provide Dewatering behind left Side Cofferdam	1.00	LS	89,445	89,445	-	8,945	984	17,338	116,711	131,284
41	3.008	Copco 2 Dam Removal	Remove Water from behind Cofferdams	36,000	GAL	0	4,602	-	460	51	892	6,005	6,755
41	3.009	Copco 2 Dam Removal	Remove Water from behind Tailrace Cofferdam	400,000	GAL	0	9,919	-	992	109	1,923	12,943	14,559
41	3.010	Copco 2 Dam Removal	Provide Dewatering behind Tailrace Cofferdam	1.00	LS	54,620	54,620	-	5,462	601	10,587	71,270	80,169
41	3.011	Copco 2 Dam Removal	Tailrace Coffe Dam- Furnish & Unload Material	10.00	LD	6,918	69,180	-	6,918	761	13,410	90,268	101,540
41	3.011.1	Copco 2 Dam Removal	Tailrace Coffe Dam - Drive Pile	5,400	SF	35	187,260	-	18,726	2,060	36,298	244,344	274,854
41	3.011.2	Copco 2 Dam Removal	Tailrace Coffe Dam - Extract Pile	5,400	SF	7	38,177	-	3,818	420	7,400	49,815	56,035
41	3.014	Copco 2 Dam Removal	Remove Concrete in Dam	4,430	cy	169	746,509	-	74,651	8,212	144,701	974,072	1,095,699
41	3.015	Copco 2 Dam Removal	Remove concrete equipment slab from top of embankment wing dam	5.00	CY	365	1,827	-	183	20	354	2,384	2,682
41	3.016	Copco 2 Dam Removal	Remove Concrete Wing wall	240	CY	184	44,193	-	4,419	486	8,566	57,664	64,864
41	3.017	Copco 2 Dam Removal	Right Abutment Removal - Random Fill	1,510	CY	21	31,726	-	3,173	349	6,150	41,398	46,567
41	3.018	Copco 2 Dam Removal	Right Abutment Removal - Remove Hand Placed Riprap	5,400	SF	2	9,895	-	989	109	1,918	12,911	14,523
41	3.019	Copco 2 Dam Removal	Right Abutment Removal - Gunite Curtain Wall	180	CY	191	34,421	-	3,442	379	6,672	44,913	50,521
41	3.020	Copco 2 Dam Removal	Remove & Dispose - Hand rails and Light Poles	5,000	LBS	1	3,825	-	382	42	741	4,991	5,614
41	3.021	Copco 2 Dam Removal	Remove & Dispose - Radial Gates and Hoists	66,000	LBS	1	38,356	-	3,836	422	7,435	50,048	56,298
41	3.022	Copco 2 Dam Removal	Remove & Dispose - 5-Radial Gate Stoplogs & Slots (steel)	95,800	LBS	0	34,294	-	3,429	377	6,648	44,748	50,336
41	3.023	Copco 2 Dam Removal	Remove & Dispose - Spillway intake gate motor & control panel	1.00	EA	1,347	1,347	-	135	15	261	1,758	1,977
41	3.024	Copco 2 Dam Removal	Remove & Dispose - Spillway radial gate motor & control panel	1.00	EA	1,347	1,347	-	135	15	261	1,758	1,977
41	3.025	Copco 2 Dam Removal	Remove & Dispose - Spillway trashrake motor, festoon cable & cont	1.00	EA	558	558	-	56	6	108	728	819
41	3.026	Copco 2 Dam Removal	Remove & Dispose - Distribution equipment, panelboards	1.00	EA	4,889	4,889	-	489	54	948	6,379	7,175
41	3.027	Copco 2 Dam Removal	Remove Copper Shingles from Roof of Powerhouse	7,000	SF	2	12,790	-	1,279	141	2,479	16,689	18,773
41	3.028	Copco 2 Dam Removal	Remove Powerhouse Concrete down to spring-line of turbine	1,110	cy	146	161,932	-	16,193	1,781	31,389	211,295	237,678
41	3.029	Copco 2 Dam Removal	Remove Structural Steel items associated with Powerhouse	220,000	LBS	1	141,804	-	14,180	1,560	27,487	185,031	208,134
41	3.030	Copco 2 Dam Removal	Remove Control House Concrete	30.00	CY	261	7,834	-	783	86	1,519	10,222	11,499
41	3.031	Copco 2 Dam Removal	Remove Control House Structural Steel Items	3,500	LBS	1	2,785	-	278	31	540	3,633	4,087
41	3.032	Copco 2 Dam Removal	Remove Shop Building	4,300	SF	17	73,655	-	7,365	810	14,277	96,107	108,108
41	3.033	Copco 2 Dam Removal	Remove & Dispose - 2 - Governor oil systems	38,000	LBS	1	22,355	-	2,235	246	4,333	29,169	32,812
41	3.034	Copco 2 Dam Removal	Remove & Dispose - Cooling water and bearing oil systems	13,300	LBS	1	6,852	-	685	75	1,328	8,941	10,057
41	3.035	Copco 2 Dam Removal	Remove & Dispose - Oil / Water separator tank and piping	2,700	LBS	0	1,338	-	134	15	259	1,745	1,963
41	3.036	Copco 2 Dam Removal	Remove & Dispose - 12 - Cast Iron Columns	54,000	LBS	0	17,472	-	1,747	192	3,387	22,797	25,644
41	3.037	Copco 2 Dam Removal	Remove & Dispose - 2 - Francis Turbines	660,000	LBS	1	333,413	-	33,341	3,668	64,628	435,049	489,371
41	3.038	Copco 2 Dam Removal	Remove & Dispose - 2 - 40 Ton indoor cranes	140,000	LBS	1	86,374	-	8,637	950	16,742	112,704	126,777
41	3.039	Copco 2 Dam Removal	Remove & Dispose - Compressed Air Systems	1,000	LBS	1	1,227	-	123	14	238	1,602	1,802
41	3.040	Copco 2 Dam Removal	Remove & Dispose - 2 - CO2 Systems	2,100	LBS	1	2,266	-	227	25	439	2,957	3,326
41	3.041	Copco 2 Dam Removal	Remove & Dispose - Plant Water and Fire Protection	3,100	LBS	1	2,970	-	297	33	576	3,875	4,359
41	3.042	Copco 2 Dam Removal	Remove & Dispose - Transformer Oil Fire Protection	6,500	LBS	1	4,289	-	429	47	831	5,596	6,295
41	3.043	Copco 2 Dam Removal	Remove & Dispose - Unwatering Piping	32,000	LBS	0	15,367	-	1,537	169	2,979	20,051	22,555
41	3.044	Copco 2 Dam Removal	Remove & Dispose - Drainage Piping	10,000	LBS	1	8,231	-	823	91	1,595	10,740	12,081
41	3.044a	Copco 2 Dam Removal	Remove & Dispose - Petroleum Products from Mechanical Equip.	3,300	GAL	5	15,652	-	1,565	172	3,034	20,424	22,974
41	3.044b	Copco 2 Dam Removal	Remove & Dispose - Remove Petroleum Products at or near the Poy	3,300	GAL	5	15,652	-	1,565	172	3,034	20,424	22,974

# KRRC Cost Estimate - Full Removal

July 2019

Est ID	Cost Sheet	Heading	Description	Qty	Unit	(\$) Rate	(\$) Direct Cost	15% MU by Sub	10% PDB OH&P	1% Bonds	Field Overhead	(\$) Estimate	Escalated YOC Estimate
41	3.045	Copco 2 Dam Removal	Remove & Dispose - AC Generator, Indoor Vertical	2.00	EA	65,757	131,514	-	13,151	1,447	25,492	171,604	193,031
41	3.046	Copco 2 Dam Removal	Remove & Dispose - Excitation equipment for 15 MVA Generator	2.00	EA	7,007	14,013	-	1,401	154	2,716	18,285	20,568
41	3.047	Copco 2 Dam Removal	Remove & Dispose - Surge protection equip. for 15 MVA Generator	2.00	EA	1,882	3,764	-	376	41	730	4,911	5,524
41	3.048	Copco 2 Dam Removal	Remove & Dispose - Neutral grounding equip. for 15 MVA Generator	2.00	EA	1,750	3,499	-	350	38	678	4,566	5,136
41	3.049	Copco 2 Dam Removal	Remove & Dispose - Generator Switchgear, 7.2kV-includes unit breakers	1.00	EA	11,215	11,215	-	1,122	123	2,174	14,634	16,461
41	3.050	Copco 2 Dam Removal	Remove & Dispose - Station Service Switchgear, 600-volt (5 sections)	1.00	EA	10,051	10,051	-	1,005	111	1,948	13,114	14,752
41	3.051	Copco 2 Dam Removal	Remove & Dispose - Unit and plant control switchboard	1.00	EA	5,714	5,714	-	571	63	1,108	7,456	8,388
41	3.052	Copco 2 Dam Removal	Remove & Dispose - Battery system	1.00	EA	8,584	8,584	-	858	94	1,664	11,201	12,600
41	3.053	Copco 2 Dam Removal	Remove & Dispose - Raceways, Conduit and Cable	1.00	EA	14,077	14,077	-	1,408	155	2,729	18,368	20,661
41	3.054	Copco 2 Dam Removal	Remove & Dispose - Msc. Power & Control Boards	1.00	EA	2,952	2,952	-	295	32	572	3,852	4,333
41	3.055	Copco 2 Dam Removal	Remove & Dispose - 7 - 40-Ton Travelling Crane motors-hoist (2-300 lbs)	1.00	EA	2,485	2,485	-	248	27	482	3,242	3,647
41	3.056	Copco 2 Dam Removal	Remove & Dispose - 40-Ton Travelling Crane control equipment	1.00	EA	3,672	3,672	-	367	40	712	4,791	5,389
41	3.057	Copco 2 Dam Removal	Remove & Dispose - 40-Ton Travelling Crane Festoon Cable	1.00	EA	1,653	1,653	-	165	18	320	2,157	2,426
41	3.058a	Copco 2 Dam Removal	Remove Oil from Oil-Filled Step-up Transformers	23,000	GAL	0	10,581	-	1,058	116	2,051	13,807	15,531
41	3.061	Copco 2 Dam Removal	Remove Intake Structure Concrete	1,650	cy	195	322,442	-	32,244	3,547	62,501	420,735	473,270
41	3.062	Copco 2 Dam Removal	Remove Concrete Items associated with 16-foot I.D. Wood Stave Pipe	1,310	cy	100	131,584	-	13,158	1,447	25,506	171,696	193,134
41	3.063	Copco 2 Dam Removal	Place Concrete Plugs for Tunnels	100	cy	1,537	153,652	-	15,365	1,690	29,783	200,491	225,525
41	3.064	Copco 2 Dam Removal	Remove Concrete Items associated with Penstocks D/S from Tunnel	3,500	cy	132	460,672	-	46,067	5,067	89,295	601,102	676,158
41	3.065	Copco 2 Dam Removal	Remove & Dispose of Caterpillar Gate (steel)	50,000	LBS	1	33,075	-	3,307	364	6,411	43,157	48,546
41	3.066	Copco 2 Dam Removal	Remove & Dispose of Trash rack and trash rake (steel)	86,000	LBS	0	37,773	-	3,777	416	7,322	49,287	55,442
41	3.067	Copco 2 Dam Removal	Remove & Dispose of Stop Logs and slots for intake (steel)	220,000	LBS	1	120,510	-	12,051	1,326	23,359	157,246	176,880
41	3.068	Copco 2 Dam Removal	Remove & Dispose of Wood Staves Soaked in Creosote	1,100,000	LBS	1	646,878	-	64,688	7,116	125,389	844,070	949,464
41	3.069	Copco 2 Dam Removal	Remove & Dispose of Cradles (steel)	290,000	LBS	1	159,276	-	15,928	1,752	30,874	207,829	233,779
41	3.070	Copco 2 Dam Removal	Remove & Dispose of Bands (steel) Hauling Only	463,000	LBS	0	142,543	-	14,254	1,568	27,630	185,995	209,219
41	3.071	Copco 2 Dam Removal	Remove & Dispose of Penstock after bifurcation to butterfly valves	860,000	LBS	1	684,003	-	68,400	7,524	132,585	892,513	1,003,956
41	3.072	Copco 2 Dam Removal	Remove & Dispose of Bifurcated vent pipes and support structure	19,500	LBS	0	8,451	-	845	93	1,638	11,027	12,404
41	3.073	Copco 2 Dam Removal	Remove & Dispose of 2 - 138" Butterfly valves	148,000	LBS	1	145,180	-	14,518	1,597	28,141	189,436	213,090
41	5.017	Copco 2 Dam Removal	[PacifiCorp Cover] Disconnect and remove MV Transformers 115 KV	-	-	-	-	-	-	-	-	-	-
41	5.018	Copco 2 Dam Removal	[PacifiCorp Cover] Disconnect and remove Medium Voltage Circuit Breakers	-	-	-	-	-	-	-	-	-	-
41	5.019	Copco 2 Dam Removal	[PacifiCorp Cover] Disconnect and remove MV Transformers 12 KV	-	-	-	-	-	-	-	-	-	-
41	5.020	Copco 2 Dam Removal	[PacifiCorp Cover] Disconnect and remove cable connection between	-	-	-	-	-	-	-	-	-	-
41	5.021	Copco 2 Dam Removal	[PacifiCorp Cover] Remove all associated auxiliary equipment @ Substation	-	-	-	-	-	-	-	-	-	-
41	5.022	Copco 2 Dam Removal	Demolish overhead transmission line and structure 69 KV Copco#1	5.00	Mies	106,556	532,781	-	53,278	5,861	103,273	695,192	781,997
41	5.023	Copco 2 Dam Removal	Demolish transmission conductor from existing structure pole. Structure	1.50	Mies	7,132	10,698	-	1,070	118	2,074	13,960	15,703
41	5.024	Copco 2 Dam Removal	Remove structures between pole 2/007 and Iron Gate	6.00	EA	3,334	20,006	-	2,001	220	3,878	26,104	29,364
41	5.035	Copco 2 Dam Removal	Copco Village Building Demolition	31,680	SF	12	390,782	-	39,078	4,299	75,748	509,907	573,576
41	4.001	Iron Gate Dam Removal	Furnish, Install, and Remove Barge-Mounted Crane in Reservoir	1.00	Is	151,386	151,386	-	15,139	1,665	102,161	270,351	292,411
41	4.002	Iron Gate Dam Removal	Furnish, Install, and Remove Temporary Air Vent Hose from Barge to	1.00	LS	19,694	19,694	-	1,969	217	13,290	35,169	38,039
41	4.003	Iron Gate Dam Removal	Remove Reinforced Concrete Ring Located D/S of Closure Gate and	46.00	CY	332	15,257	-	1,526	168	10,296	27,247	29,471
41	4.004	Iron Gate Dam Removal	Remove Reinforced Concrete Stoplog Structure	6.00	CY	998	5,986	-	599	66	4,040	10,691	11,563
41	4.005	Iron Gate Dam Removal	Remove Water from behind Tailrace Cofferdam	300,000	GAL	0	4,988	-	499	55	3,366	8,908	10,021
41	4.006	Iron Gate Dam Removal	Provide Dewatering behind Tailrace Cofferdam for removal of Power	1.00	LS	25,776	25,776	-	2,578	284	17,394	46,031	51,779
41	4.007	Iron Gate Dam Removal	Tailrace Coffe Dam- Furnish & Unload Material	20.00	LD	8,671	173,413	-	17,341	1,908	117,026	309,687	348,356
41	4.007.1	Iron Gate Dam Removal	Tailrace Coffe Dam- Drive Pile	7,840	SF	32	254,723	-	25,472	2,802	171,898	454,895	511,695
41	4.007.2	Iron Gate Dam Removal	Tailrace Coffe Dam-Extract Pile	7,840	SF	16	124,240	-	12,424	1,367	83,842	221,873	249,577
41	4.010	Iron Gate Dam Removal	Upstream Cofferdam to be Removed in the Wet	10,000	cy	17	169,960	-	16,996	1,870	114,696	303,522	341,421
41	4.011	Iron Gate Dam Removal	Remove 9' dia. hinged blind flange	19,000	LBS	3	60,734	-	6,073	668	40,986	108,462	117,312
41	4.012	Iron Gate Dam Removal	Remove 18" plug valve and 7' of 18" drainage pipe	2,620	LBS	2	5,708	-	571	63	3,852	10,194	11,026
41	4.013.1	Iron Gate Dam Removal	Installation of 15.5w X 16.5t Roller Gate and Gate Structure	1.00	LS	3,791,300	3,791,300	-	379,130	41,704	2,558,523	6,770,657	7,266,811
41	4.013.2	Iron Gate Dam Removal	Remove Existing Sluice Gate and Grating by divers	110,000	LBS	3	295,107	-	29,511	3,246	199,150	527,014	570,109
41	4.013.3	Iron Gate Dam Removal	Remove New Roller Gate Structure	300	CY	424	127,339	-	12,734	1,401	85,934	227,408	255,803
41	4.014	Iron Gate Dam Removal	Remove Concrete in Observation Platform, Crest Wall and Wall Ext	780	cy	106	82,743	-	8,274	910	55,838	147,765	166,216
41	4.015	Iron Gate Dam Removal	Remove Concrete in Diversion Tunnel Intake Structure	715	cy	102	73,038	-	7,304	803	49,289	130,434	146,721
41	4.016	Iron Gate Dam Removal	Remove Concrete in Diversion Tunnel Gate Tower	650	CY	75	48,738	-	4,874	536	32,891	87,039	97,907
41	4.017	Iron Gate Dam Removal	Remove Steel Footbridge to Gate Tower	13,000	LBS	1	9,365	-	937	103	6,320	16,725	18,813
41	4.018	Iron Gate Dam Removal	Remove Concrete in Diversion Tunnel Footbridge Abutment	39.00	CY	133	5,183	-	518	57	3,498	9,256	10,011
41	4.019	Iron Gate Dam Removal	Place Concrete Plugs for Diversion Tunnel	86.00	CY	2,770	238,186	-	23,819	2,620	160,738	425,363	478,475
41	4.020	Iron Gate Dam Removal	Remove Concrete Closure Gates in Gate Tower	85.00	CY	409	34,758	-	3,476	382	23,456	62,073	67,138
41	4.021	Iron Gate Dam Removal	Remove Upstream Riprap (10' thick upstream side of Dam)	92,400	cy	6	574,262	-	57,426	6,317	387,536	1,025,541	1,153,594
41	4.022	Iron Gate Dam Removal	Remove Downstream Riprap	23,400	cy	6	150,090	-	15,009	1,651	101,287	268,036	301,504
41	4.023	Iron Gate Dam Removal	Dam Fill Excavation to Spillway	270,000	cy	6	1,643,543	-	164,354	18,079	1,109,129	2,935,105	3,301,594
41	4.023.1	Iron Gate Dam Removal	Dam Fill Excavation to Disposal Site	761,159	cy	4	3,151,693	-	315,169	34,669	2,126,890	5,628,421	6,331,208
41	4.024	Iron Gate Dam Removal	Cutoff Wall Concrete Demolition	2,440	cy	73	177,701	-	17,770	1,955	119,920	317,346	356,971

# KRRC Cost Estimate - Full Removal

July 2019

Est ID	Cost Sheet	Heading	Description	Qty	Unit	(\$) Rate	(\$) Direct Cost	15% MU by Sub	10% PDB OH&P	1% Bonds	Field Overhead	(\$) Estimate	Escalated YOC Estimate
41	4.025	Iron Gate Dam Removal	Earth Fill Crest Raise Demolition	13,000	cy	13	163,229	-	16,323	1,796	110,153	291,501	327,899
41	4.026	Iron Gate Dam Removal	Sheetpile Crest Raise Demolition	800	lf	286	229,123	-	22,912	2,520	154,622	409,178	460,269
41	4.027	Iron Gate Dam Removal	Remove 5 Reservoir Monitoring Wells	5.00	EA	2,204	11,018	-	1,102	121	7,435	19,676	22,133
41	4.028	Iron Gate Dam Removal	Remove and Dispose of Trash Sluice Gate - 10 ft x 9 ft H	4,500	LB	1	4,999	-	500	55	3,373	8,927	10,042
41	4.029	Iron Gate Dam Removal	Remove and Dispose of Intake Structure	72,000	LBS	1	54,179	-	5,418	596	36,562	96,754	108,835
41	4.031	Iron Gate Dam Removal	Remove and Dispose of Hoist Stem - 6" Dia. Sch 160' x150'	7,500	LBS	1	6,866	-	687	76	4,634	12,262	13,794
41	4.032	Iron Gate Dam Removal	Remove and Dispose of Air Vent Pipe - 8" Dia. Sch 40 x160'	4,650	LBS	1	5,834	-	583	64	3,937	10,419	11,720
41	4.034	Iron Gate Dam Removal	Remove and Dispose of Air Vent Pipe - 12" Dia. Sch 40 x560'	30,250	LBS	0	14,525	-	1,453	160	9,802	25,940	29,178
41	4.035	Iron Gate Dam Removal	Remove and Dispose of Outlet Works Stop Logs	2,670	LB	1	2,966	-	297	33	2,002	5,297	5,958
41	4.036	Iron Gate Dam Removal	Remove and Dispose of Hydraulic Pump Motor (10 HP est) & control	1.00	EA	457	457	-	46	5	309	817	919
41	4.037	Iron Gate Dam Removal	Remove and Dispose of Distribution Equipment, Junction Boxes	1.00	EA	2,222	2,222	-	222	24	1,499	3,967	4,463
41	4.038	Iron Gate Dam Removal	Remove and Dispose of Power Cable and 4" Conduit from Penstock	800	LF	17	13,560	-	1,356	149	9,151	24,217	27,241
41	4.039	Iron Gate Dam Removal	Remove Powerhouse Concrete down to spring-line of turbine	5,200	cy	156	812,563	-	81,256	8,938	548,350	1,451,108	1,632,299
41	4.040	Iron Gate Dam Removal	Remove and Dispose of Turbine Unit	344,058	LBS	0	163,016	-	16,302	1,793	110,010	291,121	327,472
41	4.041	Iron Gate Dam Removal	Remove and Dispose of Draft Tube Bulkheads	16,500	LBS	0	7,630	-	763	84	5,149	13,627	15,328
41	4.042	Iron Gate Dam Removal	Remove and Dispose of Crane	24,000	LBS	1	12,659	-	1,266	139	8,543	22,608	25,431
41	4.043	Iron Gate Dam Removal	Remove and Dispose of Governor	20,310	LBS	0	8,144	-	814	90	5,496	14,543	16,359
41	4.044	Iron Gate Dam Removal	Remove and Dispose of Bearing Oil System and Cooling Water Sys	9,182	LBS	1	6,479	-	648	71	4,372	11,571	13,016
41	4.045	Iron Gate Dam Removal	Remove and Dispose of CO2 Systems	2,568	LBS	1	1,851	-	185	20	1,249	3,305	3,718
41	4.046	Iron Gate Dam Removal	Remove and Dispose of Plant Water and Fire Protection System	9,182	LBS	1	6,479	-	648	71	4,372	11,571	13,016
41	4.047	Iron Gate Dam Removal	Remove and Dispose of Oil Sump Pumps	2,000	LBS	1	1,682	-	168	19	1,135	3,004	3,379
41	4.048	Iron Gate Dam Removal	Remove and Dispose of Pumps	22,000	LBS	1	14,988	-	1,499	165	10,115	26,766	30,109
41	4.049	Iron Gate Dam Removal	Remove and Dispose of Exposed Piping Around the Plant	19,291	LBS	1	13,278	-	1,328	146	8,961	23,713	26,674
41	4.050	Iron Gate Dam Removal	Remove and Dispose of Unwatering Piping	19,291	LBS	1	13,034	-	1,303	143	8,796	23,277	26,184
41	4.051	Iron Gate Dam Removal	Remove and Dispose of Drainage Piping	9,518	LBS	1	6,573	-	657	72	4,436	11,739	13,204
41	4.052	Iron Gate Dam Removal	Remove and Dispose of Transformer Oil and Fire Protection Pipes	9,182	LBS	1	8,633	-	863	95	5,826	15,418	17,343
41	4.053	Iron Gate Dam Removal	Remove and Dispose of Compressed Air System	1,450	LBS	1	1,145	-	114	13	773	2,045	2,300
41	4.053a	Iron Gate Dam Removal	Remove & Dispose - Petroleum Products from Mechanical Equip.	1,100	GAL	3	2,996	-	300	33	2,022	5,351	6,019
41	4.054	Iron Gate Dam Removal	Remove and Dispose of AC Generator, Outdoor Horizontal	1.00	EA	67,376	67,376	-	6,738	741	45,468	120,323	135,347
41	4.055	Iron Gate Dam Removal	Remove and Dispose of Excitation equipment for 18.975 MVA Gene	1.00	EA	2,263	2,263	-	226	25	1,527	4,042	4,547
41	4.056	Iron Gate Dam Removal	Remove and Dispose of Surge protection equip. for 18.975 MVA Ge	1.00	EA	2,989	2,989	-	299	33	2,017	5,337	6,004
41	4.057	Iron Gate Dam Removal	Remove and Dispose of Neutral grounding equip. for 18.975 MVA G	1.00	EA	2,738	2,738	-	274	30	1,847	4,889	5,500
41	4.058	Iron Gate Dam Removal	Remove and Dispose of Station Service Switchgear, 600 volt - (5 se	1.00	EA	5,178	5,178	-	518	57	3,494	9,247	10,401
41	4.059	Iron Gate Dam Removal	Remove and Dispose of Unit and plant control switchboard	1.00	EA	21,611	21,611	-	2,161	238	14,584	38,594	43,412
41	4.060	Iron Gate Dam Removal	Remove and Dispose of Battery System - assume 60 batteries, char	1.00	EA	7,115	7,115	-	712	78	4,802	12,706	14,293
41	4.061	Iron Gate Dam Removal	Remove and Dispose of Raceways, Bus, Conduit and Cable	1.00	EA	9,279	9,279	-	928	102	6,262	16,570	18,639
41	4.062	Iron Gate Dam Removal	Remove and Dispose of Unit and plant control switchboard	1.00	EA	2,918	2,918	-	292	32	1,969	5,212	5,862
41	4.063	Iron Gate Dam Removal	Remove and Dispose of Unit and plant control switchboard	1.00	EA	6,566	6,566	-	657	72	4,431	11,727	13,191
41	4.064	Iron Gate Dam Removal	Remove and Dispose of Unit and plant control switchboard	1.00	EA	1,010	1,010	-	101	11	682	1,804	2,029
41	4.065	Iron Gate Dam Removal	Remove and Dispose of Vertical Motors, outdoor, (480V, 100 HP est	4.00	EA	784	3,136	-	314	35	2,117	5,601	6,301
41	4.066	Iron Gate Dam Removal	Remove and Dispose of Transformer (3 phase, 300 kVA, 6600/480V	1.00	EA	4,954	4,954	-	495	54	3,343	8,847	9,952
41	4.067	Iron Gate Dam Removal	Remove and Dispose of Step-up Transformer, outdoor, oil-filled, 3-p	1.00	EA	37,331	37,331	-	3,733	411	25,192	66,667	74,991
41	4.068	Iron Gate Dam Removal	Remove and Dispose of Lattice steel structure, with 69-kV disconn	1.00	EA	7,870	7,870	-	787	87	5,311	14,054	15,809
41	4.069	Iron Gate Dam Removal	Remove and Dispose of Generator Switchgear, outdoor, 7.2kV inclu	1.00	EA	22,734	22,734	-	2,273	250	15,342	40,598	45,668
41	4.070	Iron Gate Dam Removal	Remove and Dispose of Single Phase Pole Transformers (25 kVA e	3.00	EA	2,254	6,763	-	676	74	4,564	12,078	13,586
41	4.071	Iron Gate Dam Removal	Remove Concrete in Penstock Intake Structure	460	cy	106	48,666	-	4,867	535	32,842	86,910	97,762
41	4.072	Iron Gate Dam Removal	Remove Concrete in Penstock Encasement	710	cy	104	73,588	-	7,359	809	49,660	131,416	147,825
41	4.073	Iron Gate Dam Removal	Remove Concrete in 3 Penstock Anchors and 7 Penstock Supports	3,110	cy	96	298,491	-	29,849	3,283	201,434	533,057	599,617
41	4.074	Iron Gate Dam Removal	Remove Steel Footbridge to Intake Structure	11,000	LBS	1	10,829	-	1,083	119	7,308	19,338	21,753
41	4.075	Iron Gate Dam Removal	Remove Concrete in Intake Structure Footbridge Abutment	5.00	cy	876	4,378	-	438	48	2,955	7,819	8,795
41	4.076	Iron Gate Dam Removal	Remove and Dispose of Intake Structure	131,630	LBS	1	114,162	-	11,416	1,256	77,041	203,875	229,331
41	4.077	Iron Gate Dam Removal	Remove and Dispose of Gate Hoist Stem - 6" Sch160x40'	1,800	LB	1	1,999	-	200	22	1,349	3,571	4,017
41	4.078	Iron Gate Dam Removal	Remove and Dispose of Water Fill line- 12" Dia STD x 27'	1,350	LB	1	1,500	-	150	16	1,012	2,678	3,012
41	4.079	Iron Gate Dam Removal	Remove and Dispose of Air Vent - 12" Dia STD x 32'	1,600	LB	1	1,777	-	178	20	1,199	3,174	3,570
41	4.080	Iron Gate Dam Removal	Remove and Dispose of Gage Wells	2,612	LB	1	2,901	-	290	32	1,958	5,182	5,829
41	4.081	Iron Gate Dam Removal	Remove and Dispose of Penstock Vent - 46" Dia, 0.25" Thick x 60'	7,440	LBS	1	9,834	-	983	108	6,636	17,562	19,755
41	4.082	Iron Gate Dam Removal	Remove and Dispose of Penstock - 12' Dia, 0.25" Thick x 698'	294,428	LBS	1	306,205	-	30,621	3,368	206,640	546,833	615,113
41	4.083	Iron Gate Dam Removal	Remove and Dispose of Bypass Outlet - 96" Dia, 0.25" Thick x 50'	12,800	LBS	1	12,702	-	1,270	140	8,572	22,683	25,516
41	4.084	Iron Gate Dam Removal	Remove and Dispose of Outlet Valve on bypass outlet - 66" Dia.	18,000	LBS	2	39,904	-	3,990	439	26,929	71,262	80,160
41	4.085	Iron Gate Dam Removal	Remove and Dispose Overhead trolley Crane Motor (4hp est) & Cont	1.00	EA	1,307	1,307	-	131	14	882	2,334	2,625
41	4.086	Iron Gate Dam Removal	Remove and Dispose Distribution equipment, Junction Boxes	1.00	EA	3,267	3,267	-	327	36	2,205	5,835	6,563
41	4.087	Iron Gate Dam Removal	Remove and Dispose Power Cable and Conduit	1.00	EA	24,880	24,880	-	2,488	274	16,790	44,431	49,979
41	4.097	Iron Gate Dam Removal	Clear and Grub Disposal Area	29.00	AC	3,593	104,203	-	10,420	1,146	70,320	186,089	209,325
41	4.101	Iron Gate Dam Removal	Remove Building No. 2	800	SF	14	11,235	-	1,123	124	7,582	20,064	22,569

# KRRC Cost Estimate - Full Removal

July 2019

Est ID	Cost Sheet	Heading	Description	Qty	Unit	(\$) Rate	(\$) Direct Cost	15% MU by Sub	10% PDB OH&P	1% Bonds	Field Overhead	(\$) Estimate	Escalated YOC Estimate
41	4.102	Iron Gate Dam Removal	Remove Building No. 3	1,088	SF	14	15,192	-	1,519	167	10,252	27,130	30,517
41	4.103	Iron Gate Dam Removal	Remove Concrete in Fish Ladder	1,240	cy	103	127,646	-	12,765	1,404	86,141	227,956	256,419
41	4.104	Iron Gate Dam Removal	Remove Concrete in Holding Ponds #1 thru #6	1,380	CY	99	135,964	-	13,596	1,496	91,754	242,810	273,128
41	4.105	Iron Gate Dam Removal	Remove Concrete in Fish Facility Items	1,200	CY	98	118,134	-	11,813	1,299	79,721	210,968	237,310
41	4.106	Iron Gate Dam Removal	Remove Miscellaneous Metalwork in Fish Facilities	12,000	LBS	1	8,390	-	839	92	5,662	14,984	16,855
41	4.107	Iron Gate Dam Removal	Remove Concrete Associated with 30" Dia. water supply line	80.00	CY	69	5,512	-	551	61	3,720	9,843	11,072
41	4.108	Iron Gate Dam Removal	Remove Concrete in Aerator Structure	65.00	CY	74	4,835	-	483	53	3,263	8,634	9,712
41	4.109	Iron Gate Dam Removal	Remove Wood in Aerator Structure	6,000	LB	1	5,489	-	549	60	3,704	9,802	11,026
41	4.110	Iron Gate Dam Removal	Remove Structural Steel in Aerator Structure	2,500	LB	1	2,777	-	278	31	1,874	4,959	5,579
41	4.111	Iron Gate Dam Removal	Remove Asphalt Pavement	3,900	SF	6	21,573	-	2,157	237	14,558	38,526	43,336
41	4.112	Iron Gate Dam Removal	Remove Restroom Building near Aerator Structure	340	SF	14	4,761	-	476	52	3,213	8,502	9,564
41	4.113	Iron Gate Dam Removal	Remove Storage Shed near Aerator Structure	90.00	SF	15	1,334	-	133	15	900	2,383	2,680
41	4.114	Iron Gate Dam Removal	Remove Toe Drain Pipe	260	LF	13	3,257	-	326	36	2,198	5,817	6,544
41	4.115	Iron Gate Dam Removal	Remove Toe Drain Manhole	25.00	LF	65	1,634	-	163	18	1,102	2,917	3,282
41	4.116	Iron Gate Dam Removal	Berm Removal	53,000	cy	4	196,609	-	19,661	2,163	132,680	351,112	394,953
41	4.117	Iron Gate Dam Removal	Remove and Dispose of Intake Structures Trashracks	5,000	LB	1	4,901	-	490	54	3,307	8,752	9,845
41	4.118	Iron Gate Dam Removal	Remove and Dispose of Pipe Conduit, 30" Dia. x 0.25" Thick x 960'	76,640	LBS	1	56,828	-	5,683	625	38,350	101,486	114,158
41	4.119	Iron Gate Dam Removal	Remove and Dispose of Sluice Gate Valve, 30" Dia.	3,000	LB	1	3,332	-	333	37	2,249	5,951	6,694
41	4.120	Iron Gate Dam Removal	Remove and Dispose of Sluice Gate Stem, 2" Dia. Sch160x45'	360	LB	1	400	-	40	4	270	714	803
41	4.121	Iron Gate Dam Removal	Remove and Dispose of Butterfly Valve, 30" Dia.	2,435	LB	1	2,705	-	270	30	1,825	4,830	5,434
41	4.122	Iron Gate Dam Removal	Remove and Dispose of Piping- 30-in. Dia. x 0.25 thick x 90'	7,200	LBS	0	2,581	-	258	28	1,742	4,609	5,185
41	4.123	Iron Gate Dam Removal	Remove and Dispose of Piping- 24-in. Dia. x 0.25 thick x 248'	15,872	LBS	0	5,035	-	503	55	3,398	8,991	10,114
41	4.124	Iron Gate Dam Removal	Remove and Dispose of Piping- 20-in. Dia. x 0.25 thick x 85'	4,505	LBS	0	1,763	-	176	19	1,190	3,149	3,542
41	4.125	Iron Gate Dam Removal	Remove and Dispose of Piping- 18-in. Dia. x 0.25 thick x 432'	29,088	LBS	0	10,646	-	1,065	117	7,184	19,012	21,386
41	4.126	Iron Gate Dam Removal	Remove and Dispose of Piping- 16-in. Dia. x 0.25 thick x 166'	6,972	LBS	0	2,566	-	257	28	1,732	4,583	5,155
41	4.127	Iron Gate Dam Removal	Remove and Dispose of Piping- 12-in. Dia. x 0.25 thick x 64'	2,176	LBS	0	1,047	-	105	12	707	1,870	2,103
41	4.128	Iron Gate Dam Removal	Remove and Dispose of Piping- 10-in. Dia. x 0.25 thick x 69'	1,932	LBS	1	1,019	-	102	11	688	1,820	2,048
41	4.129	Iron Gate Dam Removal	Remove and Dispose of Piping- 8-in. Dia. x 0.25 thick x 30'	3,588	LBS	0	971	-	97	11	655	1,733	1,950
41	4.130	Iron Gate Dam Removal	Remove and Dispose of Piping- 3-in. Dia. x STD x 30'	1,088	LBS	1	706	-	71	8	476	1,260	1,418
41	4.131	Iron Gate Dam Removal	Remove and Dispose of Gate Valves	21,792	LBS	0	9,221	-	922	101	6,223	16,468	18,524
41	4.132	Iron Gate Dam Removal	Remove and Dispose of Basin #1	2,880	LBS	1	2,577	-	258	28	1,739	4,602	5,177
41	4.133	Iron Gate Dam Removal	Remove and Dispose of Basin #2	3,660	LBS	1	3,365	-	337	37	2,271	6,010	6,761
41	4.134	Iron Gate Dam Removal	Remove and Dispose of Basin #3	2,880	LBS	2	6,871	-	687	76	4,637	12,271	13,804
41	4.135	Iron Gate Dam Removal	Remove and Dispose of Basin #4	3,580	LBS	2	6,871	-	687	76	4,637	12,271	13,804
41	4.136	Iron Gate Dam Removal	Remove and Dispose of Basin #5	1,440	LBS	5	6,871	-	687	76	4,637	12,271	13,804
41	4.137	Iron Gate Dam Removal	Remove and Dispose of Basin #6	1,440	LBS	5	6,871	-	687	76	4,637	12,271	13,804
41	4.138	Iron Gate Dam Removal	Remove and Dispose of Holding Tank	7,400	LBS	1	9,281	-	928	102	6,263	16,574	18,643
41	4.139	Iron Gate Dam Removal	Remove and Dispose of Misc.: Motors, control panels, cables, cond	1.00	EA	1,960	1,960	-	196	22	1,323	3,501	3,938
41	4.140	Iron Gate Dam Removal	Wanaka Springs - Concrete Total	28.00	CY	274	7,674	-	767	84	5,179	13,705	15,416
41	4.141	Iron Gate Dam Removal	Wanaka Springs - Double Pipe Railings	60.00	LF	52	3,136	-	314	35	2,117	5,601	6,301
41	4.142	Iron Gate Dam Removal	Wanaka Springs - Wood picnic tables to be removed and hauled	5.00	EA	131	653	-	65	7	441	1,167	1,313
41	4.143	Iron Gate Dam Removal	Wanaka Springs - 25'x5' Wooden floating dock	125	SF	26	3,267	-	327	36	2,205	5,835	6,563
41	4.144	Iron Gate Dam Removal	Wanaka Springs - Regrade	2.50	AC	5,925	14,812	-	1,481	163	9,996	26,452	29,755
41	4.145	Iron Gate Dam Removal	Wanaka Springs - Signs to be removed and hauled away	3.00	EA	392	1,176	-	118	13	794	2,100	2,363
41	4.146	Iron Gate Dam Removal	Wanaka Springs - 15'x5' Gangplank with Railings	75.00	SF	26	1,960	-	196	22	1,323	3,501	3,938
41	4.147	Iron Gate Dam Removal	Juniper Point - Concrete Total	19.00	CY	297	5,644	-	564	62	3,809	10,080	11,339
41	4.148	Iron Gate Dam Removal	Juniper Point - 2, 4x4 Toilet Vaults	32.00	SF	131	4,182	-	418	46	2,822	7,468	8,401
41	4.149	Iron Gate Dam Removal	Juniper Point - Wood picnic tables to be removed and hauled	8.00	EA	131	1,045	-	105	12	706	1,867	2,100
41	4.150	Iron Gate Dam Removal	Juniper Point - Signs to be removed and hauled away	4.00	EA	392	1,568	-	157	17	1,058	2,801	3,150
41	4.151	Iron Gate Dam Removal	Juniper Point - Dock pile railing	50.00	LF	52	2,614	-	261	29	1,764	4,668	5,250
41	4.152	Iron Gate Dam Removal	Juniper Point - 50'x5' Composite dock with poly floats	250	SF	22	5,568	-	557	61	3,758	9,944	11,185
41	4.153	Iron Gate Dam Removal	Juniper Point - 20'x5' Composite gangplank with railings	100	SF	26	2,614	-	261	29	1,764	4,668	5,250
41	4.155	Iron Gate Dam Removal	Juniper Point - Regrade to Natural Contour	2.00	AC	6,654	13,308	-	1,331	146	8,981	23,766	26,733
41	4.156	Iron Gate Dam Removal	Camp Creek - Concrete Total	110	CY	116	12,756	-	1,276	140	8,608	22,779	25,624
41	4.157	Iron Gate Dam Removal	Camp Creek - 180'Lx16'Wx8'D Earth jetty to remove and/or regrade	855	CY	92	78,402	-	7,840	862	52,909	140,014	157,497
41	4.158	Iron Gate Dam Removal	Camp Creek - Well house 10'x16' concrete block building	160	SF	14	2,253	-	225	25	1,520	4,023	4,525
41	4.159	Iron Gate Dam Removal	Camp Creek - 2, 20'x5' Composite decking gangplanks	200	SF	26	5,227	-	523	58	3,528	9,335	10,501
41	4.160	Iron Gate Dam Removal	Camp Creek - 2, 20'x5' Floating composite w/ aluminum frame	200	SF	26	5,227	-	523	58	3,528	9,335	10,501
41	4.161	Iron Gate Dam Removal	Camp Creek - Concrete block double toilet bldg 10'x16'	160	SF	14	2,253	-	225	25	1,520	4,023	4,525
41	4.162	Iron Gate Dam Removal	Camp Creek - Dump stations and approx. 2000 gal buried	1.00	EA	3,027	3,027	-	303	33	2,043	5,406	6,081
41	4.163	Iron Gate Dam Removal	Camp Creek - Power poles and lines	3.00	EA	2,563	7,690	-	769	85	5,190	13,734	15,448
41	4.164	Iron Gate Dam Removal	Camp Creek - Remove waterlines and 3 faucets and regrade	600	LF	7	3,921	-	392	43	2,646	7,001	7,876
41	4.166	Iron Gate Dam Removal	Camp Creek - Steel pipe/plank picnic tables to be removed and hauled	5.00	EA	131	653	-	65	7	441	1,167	1,313
41	4.167	Iron Gate Dam Removal	Camp Creek - Relocate concrete tables	12.00	EA	131	1,568	-	157	17	1,058	2,801	3,150

# KRRC Cost Estimate - Full Removal

July 2019

Est ID	Cost Sheet	Heading	Description	Qty	Unit	(\$) Rate	(\$) Direct Cost	15% MU by Sub	10% PDB OH&P	1% Bonds	Field Overhead	(\$) Estimate	Escalated YOC Estimate
41	4.168	Iron Gate Dam Removal	Camp Creek - Regrade	4.00	AC	3,961	15,844	-	1,584	174	10,692	28,295	31,828
41	4.169	Iron Gate Dam Removal	Camp Creek - Signs to be removed and hauled away	7.00	EA	392	2,744	-	274	30	1,852	4,901	5,513
41	4.170	Iron Gate Dam Removal	Dutch Creek - 50'x3' Dock Concrete Abutment	22.00	CY	345	7,582	-	758	83	5,117	13,540	15,231
41	4.171	Iron Gate Dam Removal	Dutch Creek - Double Pipe Railing	100	LF	52	5,227	-	523	58	3,528	9,335	10,501
41	4.172	Iron Gate Dam Removal	Mmor Cove - Concrete Total	89.00	CY	89	7,924	-	792	87	5,347	14,151	15,918
41	4.173	Iron Gate Dam Removal	Mmor Cove - 10'x16' Toilet Vault	160	SF	14	2,253	-	225	25	1,520	4,023	4,525
41	4.174	Iron Gate Dam Removal	Mmor Cove - 2, 30'x5' Composite Gangplanks w/ aluminum	300	SF	16	4,867	-	487	54	3,285	8,692	9,778
41	4.175	Iron Gate Dam Removal	Mmor Cove - Double pipe railings on dock	80.00	LF	52	4,182	-	418	46	2,822	7,468	8,401
41	4.177	Iron Gate Dam Removal	Mmor Cove - Regrade site	3.00	AC	6,654	19,962	-	1,996	220	13,471	35,648	40,100
41	4.178	Iron Gate Dam Removal	Mmor Cove - Signs to be removed and hauled away	7.00	EA	392	2,744	-	274	30	1,852	4,901	5,513
41	4.179	Iron Gate Dam Removal	Overlook Point - 1 concrete picnic table base	1.00	CY	392	392	-	39	4	265	700	788
41	4.180	Iron Gate Dam Removal	Overlook Point - Steel frame table to be removed and hauled away	1.00	EA	131	131	-	13	1	88	233	263
41	4.181	Iron Gate Dam Removal	Overlook Point - Regrade steep access road and site to natural contours	0.50	AC	6,654	3,327	-	333	37	2,245	5,941	6,683
41	4.182	Iron Gate Dam Removal	Long Gulch - 80'x25'x4" Concrete boat ramp to be removed	25.00	CY	291	7,270	-	727	80	4,906	12,983	14,604
41	4.183	Iron Gate Dam Removal	Long Gulch - Remove picnic tables (steel frames with planks) and h	2.00	EA	131	261	-	26	3	176	467	525
41	4.184	Iron Gate Dam Removal	Long Gulch - Regrade ramp area to natural contours, rip, reseed	0.05	AC	32,671	1,634	-	163	18	1,102	2,917	3,282
41	4.185	Iron Gate Dam Removal	Concrete Lining Installation for Diversion Tunnel	1.00	LS	1,116,948	1,116,948	-	111,695	12,286	753,762	1,994,692	2,243,757
41	5.025	Iron Gate Dam Removal	Remove Distribution Poles near Iron Gate Hydro Plant	5.00	EA	1,732	8,659	-	866	95	5,843	15,463	17,394
41	5.026	Iron Gate Dam Removal	Remove 69KV/6.6KV Transformer @Substation	1.00	EA	2,319	2,319	-	232	26	1,565	4,142	4,659
41	5.027	Iron Gate Dam Removal	Remove 6.6KV Power Circuit Breaker @Substation	1.00	EA	3,396	3,396	-	340	37	2,292	6,065	6,822
41	5.028	Iron Gate Dam Removal	Remove Generator @Substation	1.00	EA	14,304	14,304	-	1,430	157	9,653	25,545	28,735
41	5.029	Iron Gate Dam Removal	Remove all auxiliary equipment @Substation (Allowance)	1.00	LS	30,514	30,514	-	3,051	336	20,592	54,493	61,297
41	5.030	Iron Gate Dam Removal	[PacifiCorp Cover] New Connection @Iron Gate Hatchery from Pacific	-	-	-	-	-	-	-	-	-	-
41	5.036	Iron Gate Dam Removal	Removal Of Residence Building (Spillway Bank)	7,707	SF	14	107,307	-	10,731	1,180	72,415	191,634	215,562
41	1.001	JC Boyle Dam Removal	Removal of Diversion Conduit Bulkheads	14.00	CY	1,567	21,933	-	2,193	241	13,011	37,379	42,046
41	1.002	JC Boyle Dam Removal	Remove Water from behind Tailrace Cofferdam	500,000	GAL	0	4,729	-	473	52	2,805	8,059	9,065
41	1.003	JC Boyle Dam Removal	Provide Dewatering behind Tailrace Cofferdam	1.00	LS	67,996	67,996	-	6,800	748	40,335	115,879	130,348
41	1.004	JC Boyle Dam Removal	Removal of Diversion Conduit Bulkheads	14.00	CY	1,567	21,933	-	2,193	241	13,011	37,379	42,046
41	1.005	JC Boyle Dam Removal	Remove Spillway Concrete	2,100	CY	73	154,015	-	15,402	1,694	91,362	262,473	295,246
41	1.006	JC Boyle Dam Removal	Remove Monorail Structural Steel Components	15,000	LBS	0	5,765	-	577	63	3,420	9,825	11,052
41	1.007	JC Boyle Dam Removal	Remove Fish Ladder Concrete	1,820	CY	94	170,333	-	17,033	1,874	101,042	290,283	326,529
41	1.008	JC Boyle Dam Removal	Remove Gravity Dam Section Concrete	600	CY	95	57,056	-	5,706	628	33,845	97,234	109,375
41	1.009	JC Boyle Dam Removal	Remove Timber Equipment Ramp on left side of Dam	10,500	LBS	0	3,990	-	399	44	2,367	6,800	7,649
41	1.010	JC Boyle Dam Removal	Remove Pressure-Treated Lumber from Footbridge around Intake St	3,600	SF	6	20,282	-	2,028	223	12,031	34,564	38,880
41	1.011	JC Boyle Dam Removal	Remove Storage Shed located on access road	4,480	SF	14	61,644	-	6,164	678	36,567	105,054	118,171
41	1.012	JC Boyle Dam Removal	Remove Warehouse, North Residence, and South Residence Near	8,965	SF	15	138,237	-	13,824	1,521	82,002	235,583	264,999
41	1.013	JC Boyle Dam Removal	Remove Fire System Control Bldg. on left abutment	520	SF	15	7,623	-	762	84	4,522	12,992	14,614
41	1.014	JC Boyle Dam Removal	Remove Dam Communication Bldg. on left abutment	490	SF	13	6,454	-	645	71	3,828	10,999	12,372
41	1.015	JC Boyle Dam Removal	Remove Concrete Slab on left abutment for former Control House	6.00	CY	698	4,185	-	419	46	2,483	7,132	8,023
41	1.016	JC Boyle Dam Removal	Remove 4'x5' Metal Hatch on top of Concrete Pull Box on left abutme	1.00	CY	1,749	1,749	-	175	19	1,038	2,981	3,353
41	1.017	JC Boyle Dam Removal	Remove Reservoir Level Gauge House on Dam Crest	24.00	SF	139	3,338	-	334	37	1,980	5,688	6,399
41	1.018	JC Boyle Dam Removal	Downstream Riprap	2,200	CY	14	30,909	-	3,091	340	18,335	52,674	59,252
41	1.019	JC Boyle Dam Removal	Upstream Riprap	1,300	CY	17	21,837	-	2,184	240	12,954	37,214	41,861
41	1.020	JC Boyle Dam Removal	Miscellaneous Excavation (Dam Earth Section)	132,500	CY	7	942,102	-	94,210	10,363	558,857	1,605,533	1,806,006
41	1.021	JC Boyle Dam Removal	Cutoff Wall Concrete Demolition	70.00	CY	126	8,829	-	883	97	5,237	15,046	16,925
41	1.022	JC Boyle Dam Removal	Cutoff Wall Anchors	285	EA	19	5,322	-	532	59	3,157	9,069	10,202
41	1.023	JC Boyle Dam Removal	Remove & Dispose Hand Rails and Light Poles	5,000	LBS	1	3,917	-	392	43	2,324	6,675	7,509
41	1.024	JC Boyle Dam Removal	Remove & Dispose Spillway Radial Gates and Hoists	124,000	LBS	0	52,024	-	5,202	572	30,861	88,659	99,729
41	1.025	JC Boyle Dam Removal	Remove & Dispose Stop Logs and Slots (steel)	92,000	LBS	0	40,649	-	4,065	447	24,113	69,274	77,924
41	1.026	JC Boyle Dam Removal	Remove & Dispose of 24" Slide Gate at Entrance to Fish Ladder Str	4,200	LBS	1	5,442	-	544	60	3,228	9,275	10,433
41	1.026a	JC Boyle Dam Removal	Remove petroleum products from Red Bam Area	1,600	GAL	12	18,961	-	1,896	209	11,248	32,313	36,348
41	1.027	JC Boyle Dam Removal	Remove & Dispose of Spillway gate motor & control panel	1.00	EA	1,151	1,151	-	115	13	683	1,962	2,207
41	1.028	JC Boyle Dam Removal	Remove & Dispose of Distribution equipment, panelboards	1.00	EA	3,726	3,726	-	373	41	2,210	6,350	7,143
41	1.029	JC Boyle Dam Removal	Remove Powerhouse Concrete down to Elevation 3324.0	1,500	CY	234	351,185	-	35,118	3,863	208,324	598,490	673,220
41	1.030	JC Boyle Dam Removal	Remove Structural Steel Item associated with Powerhouse	94,000	LBS	1	52,405	-	5,241	576	31,087	89,310	100,461
41	1.031	JC Boyle Dam Removal	Remove Warehouse near Powerhouse	5,060	SF	15	75,002	-	7,500	825	44,491	127,818	143,778
41	1.032	JC Boyle Dam Removal	Remove & Dispose of 2 - Governor oil systems	52,500	LBS	1	50,951	-	5,095	560	30,224	86,831	97,673
41	1.033	JC Boyle Dam Removal	Remove & Dispose of Cooling water and bearing oil systems	6,500	LBS	1	7,395	-	740	81	4,387	12,603	14,177
41	1.034	JC Boyle Dam Removal	Remove & Dispose of 2 - Francis Turbines	560,000	LBS	0	261,076	-	26,108	2,872	154,871	444,927	500,482
41	1.035	JC Boyle Dam Removal	Remove & Dispose of 150 Ton crane	240,000	LBS	0	102,116	-	10,212	1,123	60,575	174,026	195,756
41	1.036	JC Boyle Dam Removal	Remove & Dispose of Compressed Air systems	1,100	LBS	1	965	-	96	11	572	1,644	1,850
41	1.037	JC Boyle Dam Removal	Remove & Dispose of 2 - CO2 systems	6,600	LBS	1	4,520	-	452	50	2,681	7,702	8,664
41	1.038	JC Boyle Dam Removal	Remove & Dispose of Plant Water and Fire Protection	3,100	LBS	1	1,632	-	163	18	968	2,782	3,129



# KRRC Cost Estimate - Full Removal

July 2019

Est ID	Cost Sheet	Heading	Description	Qty	Unit	(\$) Rate	(\$) Direct Cost	15% MU by Sub	10% PDB OH&P	1% Bonds	Field Overhead	(\$) Estimate	Escalated YOC Estimate
41	1.039	JC Boyle Dam Removal	Remove & Dispose of Transformer Oil Fire Protection	6,500	LBS	1	3,781	-	378	42	2,243	6,444	7,248
41	1.040	JC Boyle Dam Removal	Remove & Dispose of Unwatering Piping	33,000	LBS	0	15,783	-	1,578	174	9,362	26,897	30,255
41	1.041	JC Boyle Dam Removal	Remove & Dispose of Drainage Piping	10,000	LBS	1	5,255	-	525	58	3,117	8,956	10,074
41	1.042	JC Boyle Dam Removal	Remove & Dispose of 2-Oil Sump pumps	2,000	LBS	1	2,053	-	205	23	1,218	3,499	3,936
41	1.043	JC Boyle Dam Removal	Remove & Dispose of Draft Tube Bulk Head Gates and Hoists at the	65,000	LBS	0	23,704	-	2,370	261	14,061	40,396	45,440
41	1.043a	JC Boyle Dam Removal	Remove petroleum products from Mechanical Equipment	2,700	GAL	12	33,278	-	3,328	366	19,740	56,712	63,793
41	1.044	JC Boyle Dam Removal	Remove & Dispose of Outdoor Vertical AC Generator, Unit 1: 53 MW	2.00	EA	52,105	104,211	-	10,421	1,146	61,818	177,596	199,771
41	1.045	JC Boyle Dam Removal	Remove & Dispose of Excitation equipment for 53/50 MVA Generator	2.00	EA	10,372	20,744	-	2,074	228	12,306	35,352	39,767
41	1.046	JC Boyle Dam Removal	Remove & Dispose of Surge protection equip. for 53/50 MVA Generator	2.00	EA	5,719	11,438	-	1,144	126	6,785	19,492	21,926
41	1.047	JC Boyle Dam Removal	Remove & Dispose of Neutral grounding equip. for 53/50 MVA Generator	2.00	EA	2,259	4,517	-	452	50	2,680	7,699	8,660
41	1.048	JC Boyle Dam Removal	Remove & Dispose of Generator Switchgear, 15kV - (6 sections)	1.00	EA	14,213	14,213	-	1,421	156	8,431	24,221	27,246
41	1.049	JC Boyle Dam Removal	Remove & Dispose of Station Service Switchgear, 600 volt - (5 sections)	1.00	EA	7,794	7,794	-	779	86	4,623	13,282	14,941
41	1.050	JC Boyle Dam Removal	Remove & Dispose of Unit and plant control switchboard	1.00	EA	4,117	4,117	-	412	45	2,442	7,016	7,892
41	1.051	JC Boyle Dam Removal	Remove & Dispose - Battery system	1.00	EA	6,515	6,515	-	652	72	3,865	11,103	12,489
41	1.052	JC Boyle Dam Removal	Remove & Dispose of Raceways, Conduit and Cable	1.00	EA	9,227	9,227	-	923	101	5,473	15,724	17,688
41	1.053	JC Boyle Dam Removal	Remove & Dispose of Msc. power & control boards	1.00	EA	8,287	8,287	-	829	91	4,916	14,123	15,886
41	1.054	JC Boyle Dam Removal	Remove & Dispose of 5 Gantry Crane motors - hoist (50Hp*), aux hoist	1.00	EA	851	851	-	85	9	505	1,450	1,631
41	1.055	JC Boyle Dam Removal	Remove & Dispose of Gantry Crane control equipment (3 cubicles)	1.00	EA	2,503	2,503	-	250	28	1,485	4,285	4,798
41	1.056	JC Boyle Dam Removal	Remove & Dispose of Conduit and Cable	1.00	EA	5,957	5,957	-	596	66	3,534	10,152	11,420
41	1.057	JC Boyle Dam Removal	Remove & Dispose of Exterior Lighting	1.00	EA	7,198	7,198	-	720	79	4,270	12,267	13,798
41	1.058	JC Boyle Dam Removal	Remove & Dispose of Transmission Line No. 59	1.66	Mie	27,223	45,191	-	4,519	497	26,807	77,014	86,630
41	1.059	JC Boyle Dam Removal	Remove & Dispose of Transmission Line No. 98	0.24	Mie	21,481	5,155	-	516	57	3,058	8,786	9,883
41	1.060	JC Boyle Dam Removal	Remove & Dispose of Transmission Line No. 58	1.66	Mie	20,644	34,269	-	3,427	377	20,328	58,401	65,693
41	1.061	JC Boyle Dam Removal	Remove Intake Structure Concrete	1,610	CY	169	272,772	-	27,277	3,000	161,809	464,860	522,904
41	1.062	JC Boyle Dam Removal	Remove Fish Screen Building	2,010	SF	22	44,683	-	4,468	492	26,506	76,149	85,657
41	1.063	JC Boyle Dam Removal	Remove 24" Steel Fish Discharge Pipe	37,978	LBS	0	8,563	-	856	94	5,080	14,594	16,416
41	1.064	JC Boyle Dam Removal	Remove Concrete Items associated with the 14-ft-diameter Steel Pipe	1,100	CY	112	122,740	-	12,274	1,350	72,810	209,174	235,293
41	1.065	JC Boyle Dam Removal	Remove Open Concrete Flume	26,300	CY	106	2,794,622	-	279,462	30,741	1,657,777	4,762,603	5,357,280
41	1.065.1	JC Boyle Dam Removal	Power Canal Backfill	63,519	CY	6	366,379	-	36,638	4,030	217,337	624,384	702,348
41	1.065.2	JC Boyle Dam Removal	Power Canal Backfill Trucking From Disposal Site	39,144	CY	6	244,385	-	24,439	2,688	144,970	416,482	468,486
41	1.066	JC Boyle Dam Removal	Remove Structural Steel items associated with Forebay Trash Rack	11,500	LBS	0	2,492	-	249	27	1,478	4,247	4,777
41	1.067	JC Boyle Dam Removal	Remove Forebay Concrete	2,520	CY	105	265,124	-	26,512	2,916	157,272	451,824	508,241
41	1.068	JC Boyle Dam Removal	Place Concrete Plugs at Tunnel Portals	75.00	CY	2,160	161,972	-	16,197	1,782	96,083	276,034	310,501
41	1.069	JC Boyle Dam Removal	Remove Concrete Items associated with Penstocks D/S from Tunnel	1,800	CY	105	189,288	-	18,929	2,082	112,286	322,585	362,864
41	1.070	JC Boyle Dam Removal	Remove Head gate Control Building at Flume Entrance	500	SF	16	7,975	-	798	88	4,731	13,591	15,288
41	1.071	JC Boyle Dam Removal	Remove Fore bay Spillway Gate House	610	SF	15	9,315	-	931	102	5,525	15,874	17,856
41	1.072	JC Boyle Dam Removal	Remove Fore bay Control Building	560	SF	22	12,082	-	1,208	133	7,167	20,591	23,162
41	1.074	JC Boyle Dam Removal	Remove Insulated Generator Building next to Fore bay Control Building	90.00	SF	17	1,565	-	157	17	929	2,668	3,001
41	1.075	JC Boyle Dam Removal	Remove Fixed Wheel Gate (Gate, Frame, and Hoist)	55,000	LBS	0	20,109	-	2,011	221	11,929	34,270	38,549
41	1.076	JC Boyle Dam Removal	Remove Trash rack and trash rake (steel)	75,000	LBS	0	35,538	-	3,554	391	21,081	60,565	68,127
41	1.077	JC Boyle Dam Removal	Remove Stop Logs and Slots (steel)	136,000	LBS	0	57,720	-	5,772	635	34,240	98,367	110,649
41	1.078	JC Boyle Dam Removal	Remove Traveling Water Screen	124,000	LBS	0	48,607	-	4,861	535	28,834	82,837	93,180
41	1.079	JC Boyle Dam Removal	Remove Fish By-Pass and Supports (steel)	610,000	lb	0	146,159	-	14,616	1,608	86,702	249,085	280,187
41	1.080	JC Boyle Dam Removal	Remove Gates and Hoists	18,500	LBS	0	6,285	-	628	69	3,728	10,710	12,047
41	1.081	JC Boyle Dam Removal	Remove Trash rack and trash rake (steel)	47,249	LBS	0	21,336	-	2,134	235	12,657	36,361	40,901
41	1.082	JC Boyle Dam Removal	Remove stop Logs and slots (steel)	37,069	LBS	1	20,925	-	2,092	230	12,413	35,660	40,113
41	1.083	JC Boyle Dam Removal	Remove & Dispose 14' Diversion Pipe	484,200	LBS	1	650,032	-	65,003	7,150	385,601	1,107,786	1,246,108
41	1.083.1	JC Boyle Dam Removal	Remove & Dispose 9'-6" to 10'-6" Penstocks	953,250	LBS	1	770,240	-	77,024	8,473	456,908	1,312,645	1,476,547
41	1.084	JC Boyle Dam Removal	Remove & Dispose Surge Tank (steel)	79,000	LBS	1	61,152	-	6,115	673	36,276	104,216	117,229
41	1.085	JC Boyle Dam Removal	Remove & Dispose 2 - 108" Butterfly valves	148,000	LBS	1	78,546	-	7,855	864	46,594	133,858	150,572
41	1.086	JC Boyle Dam Removal	Remove & Dispose Gate, Stem and Frame	28,000	LBS	1	20,823	-	2,082	229	12,352	35,486	39,917
41	1.087	JC Boyle Dam Removal	Remove & Dispose of Steel Transition Manifolds on Upstream and Downstream	250,000	LBS	0	87,446	-	8,745	962	51,873	149,026	167,634
41	1.087a	JC Boyle Dam Removal	Remove petroleum products from Mechanical Equipment	380	GAL	18	6,860	-	686	75	4,069	11,691	13,151
41	1.088	JC Boyle Dam Removal	Install and Remove Temporary Access Roads for Penstock Demo	2.00	Mie	84,017	168,035	-	16,803	1,848	99,679	286,365	322,122
41	1.097	JC Boyle Dam Removal	Clear and Grub Disposal Area (Embankment)	10.00	AC	3,151	31,509	-	3,151	347	18,691	53,698	60,403
41	1.098	JC Boyle Dam Removal	Clear and Grub, 40' width for Haul Roads	2.40	AC	3,183	7,639	-	764	84	4,531	13,018	14,643
41	1.103	JC Boyle Dam Removal	Soil/ Rock Cover Relocation For Concrete Rubble at Scour Hole	13,000	CY	17	220,690	-	22,069	2,428	130,914	376,100	423,061
41	1.103.1	JC Boyle Dam Removal	Rock/Soil Cover Placement Over Concrete Rubble at Scour Hole	13,000	CY	6	73,673	-	7,367	810	43,703	125,554	141,231
41	1.107	JC Boyle Dam Removal	Process Demolished Concrete for Scour Hole	55,900	CY	12	657,398	-	65,740	7,231	389,970	1,120,339	1,260,229
41	1.107.1	JC Boyle Dam Removal	Haul Road Construction for Scour Hole Backfill	10,000	CY	25	247,780	-	24,778	2,726	146,984	422,268	474,994
41	1.107.2	JC Boyle Dam Removal	Backfilling Scour Hole With Processed Concrete	55,900	CY	4	245,052	-	24,505	2,696	145,366	417,619	469,764
41	1.107.3	JC Boyle Dam Removal	Scour Hole Backfill Haul Road Restoration	3,540	CY	32	114,590	-	11,459	1,260	67,975	195,284	219,668
41	1.108	JC Boyle Dam Removal	Topsy Recreational Area - Concrete total	68.00	CY	77	5,222	-	522	57	3,098	8,900	10,011
41	1.109	JC Boyle Dam Removal	Topsy Recreational Area - 6'x80' Floating dock made of lumber and	1.00	EA	6,727	6,727	-	673	74	3,990	11,464	12,895

# KRRC Cost Estimate - Full Removal

July 2019

Est ID	Cost Sheet	Heading	Description	Qty	Unit	(\$) Rate	(\$) Direct Cost	15% MU by Sub	10% PDB OH&P	1% Bonds	Field Overhead	(\$) Estimate	Escalated YOC Estimate
41	1.110	JC Boyle Dam Removal	Topsy Recreational Area - 5'x20' Walkway leading to hex fishing platform	200	SF	7	1,487	-	149	16	882	2,534	2,851
41	1.111	JC Boyle Dam Removal	Topsy Recreational Area - Regrade to natural contour	300	SF	7	2,109	-	211	23	1,251	3,595	4,044
41	1.112	JC Boyle Dam Removal	Pioneer Park - Picnic tables to be removed and hauled away	12.00	EA	153	1,831	-	183	20	1,086	3,121	3,510
41	1.113	JC Boyle Dam Removal	Pioneer Park - 12 Concrete fire rings	5.00	CY	89	444	-	44	5	263	756	851
41	1.114	JC Boyle Dam Removal	Pioneer Park - Portable toilets to be removed and hauled away	2.00	EA	105	210	-	21	2	124	357	402
41	1.115	JC Boyle Dam Removal	Pioneer Park - Signs to be removed and hauled away	6.00	EA	115	687	-	69	8	408	1,172	1,318
41	1.116	JC Boyle Dam Removal	Pioneer Park - Dumpster to be removed and hauled away	1.00	EA	1,126	1,126	-	113	12	668	1,919	2,158
41	1.118	JC Boyle Dam Removal	Pioneer Park - Regrade to natural contour	0.50	AC	8,438	4,219	-	422	46	2,503	7,190	8,088
41	5.000	JC Boyle Dam Removal	Remove Frame dead end structures 60-80 ft high	2.00	EA	10,715	21,430	-	2,143	236	12,713	36,522	41,082
41	5.001	JC Boyle Dam Removal	Remove (incl foundation) and Save Transformers 230KV	2.00	EA	3,058	6,117	-	612	67	3,628	10,424	11,726
41	5.002	JC Boyle Dam Removal	Remove (incl foundation) and Save Power Circuit Breakers 230KV	2.00	EA	3,909	7,818	-	782	86	4,637	13,323	14,986
41	5.003	JC Boyle Dam Removal	[PacifiCorp Cover] Substation Tie Structure 230KV	-	-	-	-	-	-	-	-	-	-
41	5.004	JC Boyle Dam Removal	Remove Chain Link Fence	601	LF	17	10,206	-	1,021	112	6,054	17,394	19,566
41	5.005	JC Boyle Dam Removal	Demolish overhead distribution 2.5 miles (30-45 poles)	45.00	EA	1,764	79,376	-	7,938	873	47,086	135,272	152,163
41	5.032	JC Boyle Dam Removal	[PacifiCorp Cover] Install 230KV strain transmission structures outside	-	-	-	-	-	-	-	-	-	-
41	5.033	JC Boyle Dam Removal	Upstream Cofferdam to be Removed in the Wet	14,450	CY	16	238,147	-	23,815	2,620	141,269	405,851	456,527
		<b>Reservoir Area Improvements</b>											
		<b>Copco 1 &amp; 2</b>											
42	-	Tributary Connectivity	Removal of sediment and similar obstructions to ensure volitional flow	7.00	EA	119,000	833,000	-	83,300	9,163	39,165	964,628	1,085,075
42	-	Wetlands, Floodplain and Off-channel Habitat Features Site 1 (11.2	Equipment & road access into site	3,000	LF	25	75,000	-	7,500	825	3,526	86,851	97,696
42	-	Wetlands, Floodplain and Off-channel Habitat Features Site 1 (11.2	Grading and shaping of floodplain sediments (no export)	81,367	CY	8	650,936	-	65,094	7,160	30,605	753,795	847,917
42	-	Wetlands, Floodplain and Off-channel Habitat Features Site 1 (11.2	Floodplain roughness for 50% of area	5.60	AC	30,000	168,000	-	16,800	1,848	7,899	194,547	218,839
42	-	Site 2 (25.5 acres)	Equipment & road access into site	3,000	LF	25	75,000	-	7,500	825	3,526	86,851	97,696
42	-	Site 2 (25.5 acres)	Grading and shaping of floodplain sediments (no export)	164,252	CY	8	1,314,016	-	131,402	14,454	61,781	1,521,653	1,711,652
42	-	Site 2 (25.5 acres)	Floodplain roughness for 50% of area	12.75	AC	30,000	382,500	-	38,250	4,208	17,984	442,941	498,249
42	-	Site 3 (13.9 acres)	Equipment & road access into site	3,000	LF	25	75,000	-	7,500	825	3,526	86,851	97,696
42	-	Site 3 (13.9 acres)	Grading and shaping of floodplain sediments (no export)	78,556	CY	8	628,448	-	62,845	6,913	29,548	727,753	818,623
42	-	Site 3 (13.9 acres)	Floodplain roughness for 50% of area	6.95	AC	30,000	208,500	-	20,850	2,294	9,803	241,446	271,594
42	-	Site 4 (10.5 acres)	Equipment & road access into site	3,000	LF	25	75,000	-	7,500	825	3,526	86,851	97,696
42	-	Site 4 (10.5 acres)	Grading and shaping of floodplain sediments (no export)	50,600	CY	8	404,800	-	40,480	4,453	19,032	468,765	527,297
42	-	Site 4 (10.5 acres)	Floodplain roughness for 50% of area	5.25	AC	30,000	157,500	-	15,750	1,733	7,405	182,388	205,161
42	-	Site 5 (4.2 acres)	Equipment & road access into site	3,000	LF	25	75,000	-	7,500	825	3,526	86,851	97,696
42	-	Site 5 (4.2 acres)	Grading and shaping of floodplain sediments (no export)	20,267	CY	8	162,136	-	16,214	1,783	7,623	187,756	211,200
42	-	Site 5 (4.2 acres)	Floodplain roughness for 50% of area	2.10	AC	30,000	63,000	-	6,300	693	2,962	72,955	82,065
42	-	Site 6 (5.3 acres)	Equipment & road access into site	3,000	LF	25	75,000	-	7,500	825	3,526	86,851	97,696
42	-	Site 6 (5.3 acres)	Grading and shaping of floodplain sediments (no export)	17,148	CY	8	137,184	-	13,718	1,509	6,450	158,861	178,697
42	-	Site 6 (5.3 acres)	Floodplain roughness for 50% of area	2.65	AC	30,000	79,500	-	7,950	875	3,738	92,062	103,558
42	-	Bank Stability and Channel Fringe Complexity	Bank Stability and Channel Fringe ComplexityDevelop process-based	2,500	LF	253	632,500	-	63,250	6,958	29,738	732,446	823,902
42	-	Large Wood Habitat Features	Ground-Based Placement	20.00	EA	27,990	559,800	-	55,980	6,158	26,320	648,258	729,202
42	-	Large Wood Habitat Features	Helicopter Placement (@ 50 members staged and placed per site)	8.00	EA	57,000	456,000	-	45,600	5,016	21,440	528,056	593,991
42	-	Habitat Restoration at dam footprint	Grading and shaping of floodplain sediments (no export)	8.00	EA	46,875	375,000	-	37,500	4,125	17,631	434,256	488,479
		<b>Iron Gate</b>											
42	-	Tributary Connectivity	Removal of sediment and similar obstructions to ensure volitional flow	5.00	EA	119,000	595,000	-	59,500	6,545	27,975	689,020	775,054
42	-	Site 1 (14.2 acres)	Equipment & road access into site	3,000	LF	25	75,000	-	7,500	825	3,526	86,851	97,696
42	-	Site 1 (14.2 acres)	Grading and shaping of floodplain sediments (no export)	60,000	CY	8	480,000	-	48,000	5,280	22,568	555,848	625,253
42	-	Site 1 (14.2 acres)	Floodplain roughness for 50% of area	7.10	AC	30,000	213,000	-	21,300	2,343	10,015	246,658	277,456
42	-	Site 2 (5.8 acres)	Equipment & road access into site	3,000	LF	25	75,000	-	7,500	825	3,526	86,851	97,696
42	-	Site 2 (5.8 acres)	Grading and shaping of floodplain sediments (no export)	19,000	CY	8	152,000	-	15,200	1,672	7,147	176,019	197,997
42	-	Site 2 (5.8 acres)	Floodplain roughness for 50% of area	2.90	AC	30,000	87,000	-	8,700	957	4,090	100,747	113,327
42	-	Site 3 (23.1 acres)	Equipment & road access into site	2,000	LF	25	50,000	-	5,000	550	2,351	57,901	65,131
42	-	Site 3 (23.1 acres)	Grading and shaping of floodplain sediments (no export)	95,000	CY	8	760,000	-	76,000	8,360	35,733	880,093	989,985
42	-	Site 3 (23.1 acres)	Floodplain roughness for 75% of area	17.30	AC	30,000	519,000	-	51,900	5,709	24,402	601,011	676,055
42	-	Bank Stability and Channel Fringe Complexity	Develop process-based restoration and velocity variations along bar	1,000	LF	253	253,000	-	25,300	2,783	11,895	292,978	329,561
42	-	Large Wood Habitat Features	Ground-Based Placement	20.00	EA	27,990	559,800	-	55,980	6,158	26,320	648,258	729,202
42	-	Large Wood Habitat Features	Helicopter Placement (@ 50 members staged and placed per site)	4.00	EA	57,000	228,000	-	22,800	2,508	10,720	264,028	296,995
42	-	Habitat Restoration at dam footprint	Grading and shaping of floodplain sediments (no export)	8.00	EA	31,250	250,000	-	25,000	2,750	11,754	289,504	325,653
		<b>JC Boyle</b>											
42	-	Tributary Connectivity	Removal of sediment and similar obstructions to ensure volitional flow	2.00	EA	119,000	238,000	-	23,800	2,618	11,190	275,608	310,021
42	-	Site 1 (3.3 acres)	Equipment & road access into site	500	LF	25	12,500	-	1,250	138	588	14,475	16,283
42	-	Site 1 (3.3 acres)	Grading and shaping of floodplain sediments (no export)	37,000	CY	8	296,000	-	29,600	3,256	13,917	342,773	385,573
42	-	Site 1 (3.3 acres)	Floodplain roughness for 50% of area	1.65	AC	30,000	49,500	-	4,950	545	2,327	57,322	64,479
42	-	Site 2 (43.8 acres)	Equipment & road access into site	500	LF	25	12,500	-	1,250	138	588	14,475	16,283
42	-	Site 2 (43.8 acres)	Grading and shaping of floodplain sediments (no export)	35,000	CY	8	280,000	-	28,000	3,080	13,165	324,245	364,731
42	-	Site 2 (43.8 acres)	Floodplain roughness for 50% of area	21.90	AC	30,000	657,000	-	65,700	7,227	30,890	760,817	855,816

# KRRC Cost Estimate - Full Removal

July 2019

Est ID	Cost Sheet	Heading	Description	Qty	Unit	(\$) Rate	(\$) Direct Cost	15% MU by Sub	10% PDB OH&P	1% Bonds	Field Overhead	(\$) Estimate	Escalated YOC Estimate
42	-	Site 3 (65.8 acres)	Equipment & road access into site	500	LF	25	12,500	-	1,250	138	588	14,475	16,283
42	-	Site 3 (65.8 acres)	Grading and shaping of floodplain sediments (no export)	53,000	CY	8	424,000	-	42,400	4,664	19,935	490,999	552,307
42	-	Site 3 (65.8 acres)	Floodplain roughness for 30% of area	20.00	AC	30,000	600,000	-	60,000	6,600	28,210	694,810	781,567
42	-	Site 4 (21.3 acres)	Equipment & road access into site	500	LF	25	12,500	-	1,250	138	588	14,475	16,283
42	-	Site 4 (21.3 acres)	Grading and shaping of floodplain sediments (no export)	17,000	CY	8	136,000	-	13,600	1,496	6,394	157,490	177,155
42	-	Site 4 (21.3 acres)	Floodplain roughness for 50% of area	10.65	AC	30,000	319,500	-	31,950	3,515	15,022	369,986	416,184
42	-	Bank Stability and Channel Fringe Complexity	Develop process-based restoration and velocity variations along bank	2,000	LF	253	506,000	-	50,600	5,566	23,790	585,956	659,121
42	-	Large Wood Habitat Features	Ground-Based Placement	30.00	EA	27,990	839,700	-	83,970	9,237	39,480	972,387	1,093,803
42	-	Large Wood Habitat Features	Helicopter Placement (50 members staged and placed per site)	2.00	EA	57,000	114,000	-	11,400	1,254	5,360	132,014	148,498
42	-	Habitat Restoration at dam footprint	Grading and shaping of floodplain sediments (no export)	8.00	EA	31,250	250,000	-	25,000	2,750	11,754	289,504	325,653
		<b>Reservoir Area Restoration</b>											
		Native Seed Collection											
43	-	Native Seed Collection	2019 Seed collection, preparation, storage	175	LB	1,233	215,783	32,367	24,815	2,730	10,145	285,840	297,274
43	-	Native Seed Collection	2020 Seed collection, preparation, storage	175	LB	1,233	215,783	32,367	24,815	2,730	10,145	285,840	309,165
43	-	Native Seed Collection	2021 Seed collection, preparation, storage	175	LB	1,233	215,783	32,367	24,815	2,730	10,145	285,840	321,531
		Seed Propagation											
43	-	Seed Propagation	PDB Scope 2019	434	LB	85	37,008	5,551	4,256	468	1,740	49,024	50,984
43	-	Seed Propagation	PDB Scope 2020	4,343	LB	85	370,082	55,512	42,559	4,682	17,400	490,235	530,239
43	-	Seed Propagation	PDB Scope 2021	38,651	LB	85	3,293,731	494,060	378,779	41,666	154,860	4,363,095	4,907,889
		Weed Eradication											
43	-	Weed Eradication	2019 Weed Eradication	85.00	AC	2,826	240,217	36,033	27,625	3,039	11,294	318,208	330,936
43	-	Weed Eradication	2020 Weed Eradication	68.00	AC	2,826	192,174	28,826	22,100	2,431	9,035	254,566	275,339
43	-	Weed Eradication	2021 Weed Eradication (Dam Mods)	54.40	AC	2,826	153,739	23,061	17,680	1,945	7,228	203,653	229,082
43	-	Weed Eradication	2022 Weed Eradication (Drawdown & Dam Removal)	300	AC	2,826	847,826	127,174	97,500	10,725	39,862	1,123,087	1,313,853
43	-	Weed Eradication	[LTC Cover] 2023 Weed Eradication	-	-	-	-	-	-	-	-	-	-
43	-	Weed Eradication	[LTC Cover] 2024 Weed Eradication	-	-	-	-	-	-	-	-	-	-
43	-	Weed Eradication	[LTC Cover] 2025 Weed Eradication	-	-	-	-	-	-	-	-	-	-
43	-	Weed Eradication	[LTC Cover] 2026 Weed Eradication	-	-	-	-	-	-	-	-	-	-
43	-	Weed Eradication	[LTC Cover] 2027 Weed Eradication	-	-	-	-	-	-	-	-	-	-
43	-	Weed Eradication	[LTC Cover] 2028 Weed Eradication	-	-	-	-	-	-	-	-	-	-
		Pioneer Seeding											
43	-	Pioneer Seeding	2022 Pioneer Seed	2,500	AC	52	130,435	19,565	15,000	1,650	6,133	172,783	202,131
43	-	Pioneer Seeding	2022 Pioneer Seed	250,000	LB	7	1,739,130	260,870	200,000	22,000	81,768	2,303,768	2,695,083
		Container Plant Growing											
43	-	Container Plant Growing	2022 and 2023 Pole Cuttings Collection and Short-Term Storage	335,463	EA	3	875,121	131,268	100,639	11,070	41,145	1,159,243	1,383,274
		<b>Emergent Wetland Restoration</b>											
43	-	Emergent Wetland	2022 Planting Layout	4.40	AC	261	1,148	172	132	15	54	1,520	1,779
43	-	Emergent Wetland	2022 Transplant/Salvage Ex. Wetland Plants backhoe bucket; Root	4,792	EA	10	49,999	7,500	5,750	632	2,351	66,232	77,483
43	-	Emergent Wetland	2023 Root Division Transplants from 1st Yr Transplants (1 plant/10	4,792	EA	13	62,499	9,375	7,187	791	2,939	82,791	100,727
43	-	Emergent Wetland	2022- 2023 Construction/Installation Period Maintenance (Assumed	4.40	AC	4,783	21,043	3,157	2,420	266	989	27,876	34,593
		<b>Bank Wetland Restoration</b>											
43	-	Bank Wetland	2022 Transplant/Salvage Ex. Plants with backhoe or frontloader buc	8,480	EA	10	88,408	13,261	10,167	1,118	4,157	117,111	137,003
43	-	Bank Wetland	2022 Fall Planting Layout	19.45	AC	261	5,074	761	584	64	239	6,721	7,863
43	-	Bank Wetland	2022 Soil Preparation (Rolling, Ripping, Tilling, Finish Grading, Am	19.45	AC	65	1,268	190	146	16	60	1,680	1,966
43	-	Bank Wetland	2022 Fall Broadcast Seeding of Riparian Native Seed (40 lbs PLS/a	19.45	AC	217	4,228	634	486	53	199	5,601	6,552
43	-	Bank Wetland	2023 Planting Layout	19.45	AC	261	5,074	761	584	64	239	6,721	8,177
43	-	Bank Wetland	2022 & 2023 Installation of Pole Cuttings (4/100SF Harvested by Co	42,362	EA	4	165,765	24,865	19,063	2,097	7,794	219,583	262,019
43	-	Bank Wetland	2022-2023 Construction/Installation Period Maintenance (Assumed	19.45	AC	4,783	93,022	13,953	10,698	1,177	4,374	123,223	147,036
		<b>Bank Riparian Restoration</b>											
43	-	Bank Riparian	2022 Transplant/Salvage Ex. Plants with backhoe bucket, with Root	45,693	EA	10	476,357	71,454	54,781	6,026	22,397	631,014	738,197
43	-	Bank Riparian	2022 Soil Amendments (Mycorrhiza)	105	AC	48	5,012	752	576	63	236	6,639	7,767
43	-	Bank Riparian	2023 Fall Planting Layout	105	AC	261	27,339	4,101	3,144	346	1,285	36,215	44,061
43	-	Bank Riparian	2022 Soil Preparation (Rolling, Ripping, Tilling, Finish Grading, Am	105	AC	65	6,835	1,025	786	86	321	9,054	10,592
43	-	Bank Riparian	2022 Fall Broadcast Seeding of Riparian Native Seed (40 lbs PLS/a	105	AC	217	22,783	3,417	2,620	288	1,071	30,179	35,306
43	-	Bank Riparian	2022 & 2023 Installation of Pole Cuttings (4/100SF in 2021 and	228,254	EA	4	893,169	133,975	102,714	11,299	41,994	1,183,152	1,411,803
43	-	Bank Riparian	2022 Deer fence 6' high chainlink with two strands at 7' and 8' in Se	10,480	LF	33	346,296	51,944	39,824	4,381	16,282	458,726	536,645
43	-	Bank Riparian	2028 Deer Fence Removal	10,480	LF	6	60,784	9,118	6,990	769	2,858	80,519	119,187
43	-	Bank Riparian	2023 Irrigation	105	AC	3,913	410,087	61,513	47,160	5,188	19,281	543,229	660,921
43	-	Bank Riparian	2022-2023 Construction/Installation Period Maintenance (Assumed	105	AC	4,783	501,217	75,183	57,640	6,340	23,566	663,946	792,257
		<b>Floodplain Riparian Restoration</b>											
43	-	Floodplain Riparian	2022 Soil Preparation (Rolling,Tilling, Finish Grading,)	149	AC	65	9,714	1,457	1,117	123	457	12,868	15,054
43	-	Floodplain Riparian	2022 Amendments (mycorrhizal inoculant to be mixed with seed)	149	AC	48	7,124	1,069	819	90	335	9,437	11,039
43	-	Floodplain Riparian	2023 Spring Planting Layout	149	AC	391	58,285	8,743	6,703	737	2,740	77,208	93,935
43	-	Floodplain Riparian	2022 Fall seeding with Mechanical Power/Sling Seeder and Rake/H	149	AC	217	32,380	4,857	3,724	410	1,522	42,893	50,179

# KRRC Cost Estimate - Full Removal

July 2019

Est ID	Cost Sheet	Heading	Description	Qty	Unit	(\$) Rate	(\$) Direct Cost	15% MU by Sub	10% PDB OH&P	1% Bonds	Field Overhead	(\$) Estimate	Escalated YOC Estimate
43	-	Floodplain Riparian	2022 Installation of Pole Cuttings (1/100SF Harvested by Contract G	64,942	EA	4	253,889	38,083	29,197	3,212	11,937	336,318	393,444
43	-	Floodplain Riparian	2023 Seed Planting Installation	64,942	EA	4	253,889	38,083	29,197	3,212	11,937	336,318	409,182
43	-	Floodplain Riparian	2022 Deer fence 6' high chainlink with two strands at 7' and 8' in Sel	14,895	LF	33	492,183	73,827	56,601	6,226	23,141	651,978	762,722
43	-	Floodplain Riparian	2028 Deer Fence Removal	14,895	LF	6	86,391	12,959	9,935	1,093	4,062	114,439	169,398
43	-	Floodplain Riparian	2022-2023 Construction/Installation Period Maintenance (Assumed	149	AC	4,000	595,800	89,370	68,517	7,537	28,013	789,236	941,761
		<b>Uplands below Rocky Wake Zone Restoration</b>											
43	-	Uplands below Rocky Wake Zone	2022 Soil Preparation (Rolling, Ripping, Tilling, Finish Grading, Am	662	AC	61	40,314	6,047	4,636	510	1,895	53,402	62,473
43	-	Uplands below Rocky Wake Zone	20212Soil Amendments (mycorrhizal inoculant)	662	AC	48	31,675	4,751	3,643	401	1,489	41,959	49,086
43	-	Uplands below Rocky Wake Zone	2023 Spring Planting Layout 2nd Year	662	AC	174	115,183	17,277	13,246	1,457	5,416	152,579	185,635
43	-	Uplands below Rocky Wake Zone	2022 Seeding with Mechanical Power/Sling Seeder and Rake/Harro	662	AC	217	143,978	21,597	16,558	1,821	6,769	190,723	223,119
43	-	Uplands below Rocky Wake Zone	2023 Seeded Woody Plants with Cocoon Irrigation	2,649	AC	16	41,466	6,220	4,769	525	1,950	54,928	66,829
43	-	Uplands below Rocky Wake Zone	2022 Deer fence 6' high chainlink with two strands at 7' and 8' in Sel	66,230	LF	33	2,188,470	328,270	251,674	27,684	102,895	2,898,993	3,391,412
43	-	Uplands below Rocky Wake Zone	2028 Deer Fence Removal	66,230	LF	6	384,134	57,620	44,175	4,859	18,061	508,850	753,222
43	-	Uplands below Rocky Wake Zone	2022-2023 Construction/Installation Period Maintenance (Assumed	662	AC	4,000	2,649,200	397,380	304,658	33,512	124,557	3,509,307	4,187,501
		<b>Rocky Wake Zone Restoration</b>											
43	-	Rocky Wake Zone	2022 Amendments (mycorrhizal inoculant)	42.62	AC	48	2,038	306	234	26	96	2,700	3,159
43	-	Rocky Wake Zone	2023 Spring Planting Layout 2nd Year	42.62	AC	174	7,412	1,112	852	94	348	9,819	11,946
43	-	Rocky Wake Zone	2022 Soil Preparation (Rolling, Tilling, Finish Grading, Amending)	42.62	AC	65	2,780	417	320	35	131	3,682	4,307
43	-	Rocky Wake Zone	2022 Seeding with Mechanical Power/Sling Seeder and Rake/Harro	42.62	AC	217	9,265	1,390	1,066	117	436	12,273	14,358
43	-	Rocky Wake Zone	2023 Seeded Woody Plants with Cocoon Irrigation	170	AC	16	2,668	400	307	34	125	3,535	4,301
43	-	Rocky Wake Zone	2022 Deer fence 6' high chainlink with two strands at 7' and 8' in Sel	4,262	LF	33	140,831	21,125	16,196	1,782	6,621	186,555	218,242
43	-	Rocky Wake Zone	2028 Deer fence Removal	4,262	LF	6	24,720	3,708	2,843	313	1,162	32,745	48,471
43	-	Rocky Wake Zone	2022-2023 Construction/Installation Period Maintenance (Assumed	42.62	AC	4,000	170,480	25,572	19,605	2,157	8,015	225,829	269,472
		<b>Disturbed Uplands above RWZ Restoration</b>											
43	-	Disturbed Uplands above RWZ	2022 Cross-rip compacted areas to 24" depth with bulldozer (assume	122	AC	96	11,673	1,751	1,342	148	549	15,463	18,090
43	-	Disturbed Uplands above RWZ	2022 Soil Preparation (Rolling, Tilling, Finish Grading, Amending)	122	AC	65	7,959	1,194	915	101	374	10,543	12,334
43	-	Disturbed Uplands above RWZ	2022 Seeding with Mechanical Power/Sling Seeder and Rake/Harro	122	AC	217	26,530	3,980	3,051	336	1,247	35,144	41,113
43	-	Disturbed Uplands above RWZ	2022 Deer fence 6' high chainlink with two strands at 7' and 8' in Sel	12,204	LF	33	403,263	60,489	46,375	5,101	18,960	534,189	624,925
43	-	Disturbed Uplands above RWZ	2028 Deer fence removal	12,204	LF	6	70,783	10,617	8,140	895	3,328	93,764	138,794
43	-	Disturbed Uplands above RWZ	2022-2023 Construction/Installation Period Maintenance (Assumed	122	AC	4,000	488,160	73,224	56,138	6,175	22,952	646,649	771,618
		<b>Upland Stockpiles Restoration</b>											
43	-	Upland Stockpiles	2022 Cross-rip compacted areas to 24" depth with bulldozer (assume	48.83	AC	109	5,308	796	610	67	250	7,031	8,225
43	-	Upland Stockpiles	2022 Soil Preparation (Rolling, Tilling, Finish Grading, Amending)	48.83	AC	65	3,185	478	366	40	150	4,218	4,935
43	-	Upland Stockpiles	2022 Seeding with Mechanical Power/Sling Seeder and Rake/Harro	48.83	AC	217	10,615	1,592	1,221	134	499	14,062	16,450
43	-	Upland Stockpiles	2022 Deer fence 6' high chainlink with two strands at 7' and 8' in Sel	4,883	LF	33	161,351	24,203	18,555	2,041	7,586	213,737	250,042
43	-	Upland Stockpiles	2028 Deer fence removal	4,883	AC	0	283	42	33	4	13	375	555
43	-	Upland Stockpiles	2022-2023 Construction/Installation Period Maintenance (Assumed	48.83	AC	4,000	195,320	29,298	22,462	2,471	9,183	258,734	308,736
		<b>Undisturbed Uplands Restoration</b>											
43	-	Undisturbed Uplands	2022 Seeding of weed removal areas w/mech. power/sling seeder a	44.46	AC	217	9,665	1,450	1,112	122	454	12,803	14,978
43	-	Undisturbed Uplands	2022-2023 Construction/Installation Period Maintenance (Assumed	44.46	AC	4,000	177,840	26,676	20,452	2,250	8,361	235,579	281,106
		<b>Yreka Water Line Replacement</b>											
44	-	Yreka Water Line Replacement	Site work	1.00	LS	504,490	504,490	75,673	58,016	6,382	23,719	668,281	722,813
44	-	Yreka Water Line Replacement	Microtunnel	703	LF	4,176	2,935,920	440,388	337,631	37,139	138,037	3,889,116	4,206,468
44	-	Yreka Water Line Replacement	Steel Pipe Line	1,053	LF	749	789,064	118,360	90,742	9,982	37,099	1,045,247	1,130,539
		<b>Transportation Improvements</b>											
		<b>Bridges - Lakeview</b>											
45	-	Bridges - Lakeview	Sheet Pile Cofferdam For Center Footer	2,400	SF	35	84,187	-	8,419	926	3,958	97,490	105,445
45	-	Bridges - Lakeview	Earth Work Cofferdam Construction for side footers	1,186	LCY	14	16,810	-	1,681	185	790	19,467	21,055
45	-	Bridges - Lakeview	Backfill, structural, common earth, 105 H.P. dozer, 50' haul, from exi	89.00	LCY	37	3,288	-	329	36	155	3,808	4,118
45	-	Bridges - Lakeview	Structure Excavation (Rock) Drilling and blasting rock, boulders, und	107	BCY	170	18,239	-	1,824	201	858	21,120	22,844
45	-	Bridges - Lakeview	Structure Excavation (Type D)	1,122	BCY	19	20,933	-	2,093	230	984	24,241	26,219
45	-	Bridges - Lakeview	Structure Excavation (Bridge)	159	BCY	54	8,560	-	856	94	402	9,913	10,722
45	-	Bridges - Lakeview	Prestressed concrete piles, square, 40' long, 24" square, priced usi	480	VLFT	150	72,233	-	7,223	795	3,396	83,646	90,472
45	-	Bridges - Lakeview	18" Diameter 40' Long Tie Down Anchor Installation	480	VLFT	93	44,433	-	4,443	489	2,089	51,454	55,653
45	-	Bridges - Lakeview	Piling special costs, pre-augering for Pile and Tie Down Anchor	960	LF	289	277,047	-	27,705	3,048	13,026	320,825	347,005
45	-	Bridges - Lakeview	Mobilization, 150 ton, set up and remove crane, with pile leads and	2.00	EA	20,847	41,694	-	4,169	459	1,960	48,282	52,222
45	-	Bridges - Lakeview	A736 Barrier Wall	536	LF	360	193,165	-	19,317	2,125	9,082	223,689	241,942
45	-	Bridges - Lakeview	Expansion joint, neoprene, liquid, 1" x 2", cold applied	46.00	LF	41	1,907	-	191	21	90	2,208	2,388
45	-	Bridges - Lakeview	Columns Structural Concrete includes forms, Grade 60 rebar, concr	172	CY	1,802	309,970	-	30,997	3,410	14,574	358,951	388,241
45	-	Bridges - Lakeview	Deck Structural concrete, in place, includes forms, Grade 60 rebar, c	168	CY	1,068	179,469	-	17,947	1,974	8,438	207,828	224,787
45	-	Bridges - Lakeview	Footer Structural concrete, footing, reinforced, includes forms(4 uses	448	CY	388	173,996	-	17,400	1,914	8,181	201,491	217,932
45	-	Bridges - Lakeview	Approach Slab Structural concrete, in place, 6" thick, includes form	17.00	CY	268	4,562	-	456	50	215	5,283	5,715
45	-	Bridges - Lakeview	Precast 36" I-Girder 65'	8.00	EA	26,947	215,579	-	21,558	2,371	10,136	249,645	270,016
45	-	Bridges - Lakeview	Precast 36" I-Girder 48'	8.00	EA	33,484	267,873	-	26,787	2,947	12,595	310,201	335,514

# KRRC Cost Estimate - Full Removal

July 2019

Est ID	Cost Sheet	Heading	Description	Qty	Unit	(\$) Rate	(\$) Direct Cost	15% MU by Sub	10% PDB OH&P	1% Bonds	Field Overhead	(\$) Estimate	Escalated YOC Estimate
45	-	Bridges - Lakeview	Bridge Demolition	3,917	SF	53	207,758	-	20,776	2,285	9,768	240,587	260,219
45	-	Bridges - Lakeview Paving	Roadway Excavation	510	CY	36	18,449	-	1,845	203	867	21,364	23,107
45	-	Bridges - Lakeview Paving	Imported Borrow	2,510	CY	41	102,146	-	10,215	1,124	4,803	118,287	127,939
45	-	Bridges - Lakeview Paving	Hot Mix Asphalt (Type A)	450	TON	118	52,904	-	5,290	582	2,487	61,264	66,263
45	-	Bridges - Lakeview Paving	Class 2 Aggregate Base	330	CY	59	19,398	-	1,940	213	912	22,464	24,297
45	-	Bridges - Lakeview Paving	Midwest Guardrail System	200	LF	37	7,345	-	735	81	345	8,506	9,200
45	-	Bridges - Lakeview Paving	Transition Railing (Type WB-31)	4.00	EA	3,617	14,470	-	1,447	159	680	16,756	18,123
45	-	Bridges - Lakeview Paving	Alternative Flared Terminal System	2.00	EA	1,809	3,617	-	362	40	170	4,189	4,531
45	-	Bridges - Lakeview Paving	Temporary Reinforced Silt Fence	600	LF	7	4,113	-	411	45	193	4,763	5,152
45	-	Bridges - Lakeview Paving	Temporary Fence (Type ESA)	300	LF	5	1,365	-	136	15	64	1,580	1,709
45	-	Bridges - Lakeview Paving	Temporary Construction Entrance	2.00	EA	3,892	7,783	-	778	86	366	9,013	9,749
45	-	Bridges - Lakeview Paving	Water Pollution Control	0.10	%	192,897	19,290	-	1,929	212	907	22,338	24,161
45	-	Bridges - Lakeview Paving	Roadside Sign - One Post	2.00	EA	244	488	-	49	5	23	566	612
45	-	Bridges - Lakeview Paving	Reset Roadside Sign	4.00	EA	271	1,085	-	109	12	51	1,257	1,359
45	-	Bridges - Lakeview Paving	Relocate Roadside Sign	2.00	EA	90	181	-	18	2	9	209	227
45	-	Bridges - Lakeview Paving	Thermoplastic Traffic Stripe	660	LF	1	513	-	51	6	24	594	643
45	-	Bridges - Lakeview Paving	Type III Barricade	4.00	EA	248	992	-	99	11	47	1,149	1,243
45	-	Bridges - Lakeview Paving	Traffic Control System	20.00	Days	904	18,087	-	1,809	199	850	20,945	22,654
45	-	Bridges - Lakeview Paving	Temporary Railing (Type K)	300	LF	43	12,751	-	1,275	140	600	14,766	15,971
45	-	Bridges - Fall Creek											
45	-	Bridges - Fall Creek	Structure Excavation (Bridge)	499	BCY	54	26,865	-	2,687	296	1,263	31,110	33,649
45	-	Bridges - Fall Creek	A736 Barrier Wall	100	LF	360	36,038	-	3,604	396	1,694	41,733	45,138
45	-	Bridges - Fall Creek	Columns/Walls Structural Concrete includes forms, Grade 60 rebar,	111	CY	1,802	200,039	-	20,004	2,200	9,405	231,649	250,551
45	-	Bridges - Fall Creek	Deck Structural concrete, in place, includes forms, Grade 60 rebar,	31.00	CY	1,068	33,116	-	3,312	364	1,557	38,349	41,479
45	-	Bridges - Fall Creek	Footer Structural concrete, footing, reinforced, includes forms(4 uses	86.00	CY	388	33,401	-	3,340	367	1,570	38,679	41,835
45	-	Bridges - Fall Creek	Approach Slab Structural concrete, in place, 6" thick, includes forms	22.00	CY	268	5,904	-	590	65	278	6,837	7,395
45	-	Bridges - Fall Creek	Bridge Demolition	720	SF	53	38,189	-	3,819	420	1,796	44,223	47,832
45	-	Bridges - Fall Creek Paving	Roadway Excavation	720	CY	36	26,045	-	2,605	286	1,225	30,161	32,622
45	-	Bridges - Fall Creek Paving	Imported Borrow	2,380	CY	41	96,856	-	9,686	1,065	4,554	112,160	121,313
45	-	Bridges - Fall Creek Paving	Hot Mix Asphalt (Type A)	230	TON	118	27,040	-	2,704	297	1,271	31,313	33,868
45	-	Bridges - Fall Creek Paving	Class 2 Aggregate Base	170	CY	59	9,993	-	999	110	470	11,572	12,516
45	-	Bridges - Fall Creek Paving	Midwest Guardrail System	100	LF	37	3,673	-	367	40	173	4,253	4,600
45	-	Bridges - Fall Creek Paving	Transition Railing (Type WB-31)	4.00	EA	3,617	14,470	-	1,447	159	680	16,756	18,123
45	-	Bridges - Fall Creek Paving	Alternative Flared Terminal System	2.00	EA	1,809	3,617	-	362	40	170	4,189	4,531
45	-	Bridges - Fall Creek Paving	Relocate Gate	1.00	EA	90	90	-	9	1	4	105	113
45	-	Bridges - Fall Creek Paving	Temporary Reinforced Silt Fence	400	LF	7	2,742	-	274	30	129	3,175	3,434
45	-	Bridges - Fall Creek Paving	Temporary Fence (Type ESA)	400	LF	5	1,820	-	182	20	86	2,107	2,279
45	-	Bridges - Fall Creek Paving	Temporary Hydroseed	280	SQYD	8	2,335	-	233	26	110	2,704	2,924
45	-	Bridges - Fall Creek Paving	Rolled Erosion Control / Jute Mesh	280	SQYD	15	4,208	-	421	46	198	4,873	5,271
45	-	Bridges - Fall Creek Paving	Temporary Fiber Roll	375	LF	7	2,747	-	275	30	129	3,181	3,441
45	-	Bridges - Fall Creek Paving	Temporary Construction Entrance	2.00	EA	3,892	7,783	-	778	86	366	9,013	9,749
45	-	Bridges - Fall Creek Paving	Water Pollution Control	0.10	%	159,934	15,993	-	1,599	176	752	18,521	20,032
45	-	Bridges - Fall Creek Paving	Temporary Traffic Stripe	500	LF	1	543	-	54	6	26	628	680
45	-	Bridges - Fall Creek Paving	Thermoplastic Traffic Stripe	275	LF	1	214	-	21	2	10	248	268
45	-	Bridges - Fall Creek Paving	Type III Barricade	2.00	EA	248	496	-	50	5	23	574	621
45	-	Bridges - Fall Creek Paving	Traffic Control System	50.00	Days	904	45,217	-	4,522	497	2,126	52,362	56,635
45	-	Bridges - Fall Creek Paving	Temporary Railing (Type K)	200	LF	43	8,501	-	850	94	400	9,844	10,647
45	-	Bridges - Daggett Road											
45	-	Bridges - Daggett Road	Sheet Pile Cofferdam For Footers	7,200	SF	35	252,561	-	25,256	2,778	11,875	292,470	316,336
45	-	Bridges - Daggett Road	Backfill, structural, common earth, 105 H.P. dozer, 50' haul, from exi	91.00	LCY	37	3,362	-	336	37	158	3,893	4,211
45	-	Bridges - Daggett Road	Structure Excavation (Rock) Drilling and blasting rock, boulders, und	107	BCY	170	18,239	-	1,824	201	858	21,120	22,844
45	-	Bridges - Daggett Road	Structure Excavation (Type D)	1,535	BCY	19	28,638	-	2,864	315	1,346	33,164	35,870
45	-	Bridges - Daggett Road	Structure Excavation (Bridge)	171	BCY	54	9,206	-	921	101	433	10,661	11,531
45	-	Bridges - Daggett Road	Prestressed concrete piles, square, 40' long, 24" square, priced usi	480	VLFT	150	72,233	-	7,223	795	3,396	83,646	90,472
45	-	Bridges - Daggett Road	18" Diameter 40' Long Tie Down Anchor Installation	480	VLFT	93	44,433	-	4,443	489	2,089	51,454	55,653
45	-	Bridges - Daggett Road	Piling special costs, pre-augering for Pile and Tie Down Anchor	960	LF	289	277,047	-	27,705	3,048	13,026	320,825	347,005
45	-	Bridges - Daggett Road	Mobilization, 150 ton, set up and remove crane, with pile leads and	2.00	EA	20,847	41,694	-	4,169	459	1,960	48,282	52,222
45	-	Bridges - Daggett Road	A736 Barrier Wall	530	LF	360	191,003	-	19,100	2,101	8,980	221,185	239,233
45	-	Bridges - Daggett Road	Expansion joint, neoprene, liquid, 1" x 2", cold applied	46.00	LF	41	1,907	-	191	21	90	2,208	2,388
45	-	Bridges - Daggett Road	Columns Structural Concrete includes forms, Grade 60 rebar, concre	157	CY	1,802	282,938	-	28,294	3,112	13,303	327,647	354,383
45	-	Bridges - Daggett Road	Deck Structural concrete, in place, includes forms, Grade 60 rebar,	167	CY	1,068	178,401	-	17,840	1,962	8,388	206,591	223,449
45	-	Bridges - Daggett Road	Footer Structural concrete, footing, reinforced, includes forms(4 uses	448	CY	388	173,996	-	17,400	1,914	8,181	201,491	217,932
45	-	Bridges - Daggett Road	Approach Slab Structural concrete, in place, 6" thick, includes forms	17.00	CY	268	4,562	-	456	50	215	5,283	5,715
45	-	Bridges - Daggett Road	Precast 36" I-Girder 65'	8.00	EA	26,947	215,579	-	21,558	2,371	10,136	249,645	270,016

# KRRC Cost Estimate - Full Removal

July 2019

Est ID	Cost Sheet	Heading	Description	Qty	Unit	(\$) Rate	(\$) Direct Cost	15% MU by Sub	10% PDB OH&P	1% Bonds	Field Overhead	(\$) Estimate	Escalated YOC Estimate
45	-	Bridges - Daggett Road	Precast 36" I-Girder 48'	8.00	EA	33,484	267,873	-	26,787	2,947	12,595	310,201	335,514
45	-	Bridges - Daggett Road	Bridge Demolition	3,262	SF	53	173,016	-	17,302	1,903	8,135	200,356	216,705
45	-	Bridges - Daggett Road Paving	Roadway Excavation	1,500	CY	36	54,261	-	5,426	597	2,551	62,835	67,962
45	-	Bridges - Daggett Road Paving	Imported Borrow	5,500	CY	41	223,826	-	22,383	2,462	10,524	259,194	280,345
45	-	Bridges - Daggett Road Paving	Hot Mx Asphalt (Type A)	1,240	TON	118	145,781	-	14,578	1,604	6,854	168,817	182,592
45	-	Bridges - Daggett Road Paving	Class 2 Aggregate Base	920	CY	59	54,080	-	5,408	595	2,543	62,626	67,736
45	-	Bridges - Daggett Road Paving	Remove Base and Surfacing	9,485	SF	5	51,466	-	5,147	566	2,420	59,599	64,462
45	-	Bridges - Daggett Road Paving	Midwest Guardrail System	200	LF	37	7,345	-	735	81	345	8,506	9,200
45	-	Bridges - Daggett Road Paving	Transition Railing (Type WB-31)	4.00	EA	3,617	14,470	-	1,447	159	680	16,756	18,123
45	-	Bridges - Daggett Road Paving	Alternative Flared Terminal System	2.00	EA	1,809	3,617	-	362	40	170	4,189	4,531
45	-	Bridges - Daggett Road Paving	Temporary Reinforced Silt Fence	1,000	LF	7	6,855	-	685	75	322	7,938	8,586
45	-	Bridges - Daggett Road Paving	Temporary Fence (Type ESA)	1,000	LF	5	4,549	-	455	50	214	5,268	5,698
45	-	Bridges - Daggett Road Paving	Temporary Hydroseed	1,200	SQYD	8	10,006	-	1,001	110	470	11,587	12,532
45	-	Bridges - Daggett Road Paving	Rolled Erosion Control / Jute Mesh	1,200	SQYD	15	18,036	-	1,804	198	848	20,886	22,591
45	-	Bridges - Daggett Road Paving	Temporary Fiber Roll	1,100	LF	7	8,058	-	806	89	379	9,331	10,092
45	-	Bridges - Daggett Road Paving	Temporary Construction Entrance	1.00	EA	3,892	3,892	-	389	43	183	4,507	4,874
45	-	Bridges - Daggett Road Paving	Water Pollution Control	0.10	%	529,414	52,941	-	5,294	582	2,489	61,307	66,310
45	-	Bridges - Daggett Road Paving	Roadside Sign - One Post	1.00	EA	244	244	-	24	3	11	283	306
45	-	Bridges - Daggett Road Paving	Remove Roadside Sign	2.00	EA	90	181	-	18	2	9	209	227
45	-	Bridges - Daggett Road Paving	Reset Roadside Sign	2.00	EA	271	543	-	54	6	26	628	680
45	-	Bridges - Daggett Road Paving	Thermoplastic Traffic Stripe	2,020	LF	1	1,571	-	157	17	74	1,819	1,968
45	-	Bridges - Daggett Road Paving	Type III Barricade	2.00	EA	248	496	-	50	5	23	574	621
45	-	Bridges - Daggett Road Paving	Traffic Control System	15.00	Days	904	13,565	-	1,357	149	638	15,709	16,991
45	-	Bridges - Daggett Road Paving	Temporary Railing (Type K)	120	LF	43	5,101	-	510	56	240	5,906	6,388
		Bridges - Dry Creek											
45	-	Bridges - Dry Creek	Temporary Bridge	1,015	SF	186	188,425	-	18,842	2,073	8,859	218,199	236,004
45	-	Bridges - Dry Creek Paving	Roadway Excavation	700	CY	36	25,322	-	2,532	279	1,191	29,323	31,716
45	-	Bridges - Dry Creek Paving	Imported Borrow	1,000	CY	41	40,696	-	4,070	448	1,913	47,126	50,972
45	-	Bridges - Dry Creek Paving	Hot Mx Asphalt (Type A)	600	TON	118	70,539	-	7,054	776	3,317	81,685	88,351
45	-	Bridges - Dry Creek Paving	Class 2 Aggregate Base	380	CY	59	22,337	-	2,234	246	1,050	25,867	27,978
45	-	Bridges - Dry Creek Paving	Midwest Guardrail System	100	LF	37	3,673	-	367	40	173	4,253	4,600
45	-	Bridges - Dry Creek Paving	Transition Railing (Type WB-31)	4.00	EA	3,617	14,470	-	1,447	159	680	16,756	18,123
45	-	Bridges - Dry Creek Paving	Alternative Flared Terminal System	2.00	EA	1,809	3,617	-	362	40	170	4,189	4,531
45	-	Bridges - Dry Creek Paving	Temporary Reinforced Silt Fence	400	LF	7	2,742	-	274	30	129	3,175	3,434
45	-	Bridges - Dry Creek Paving	Temporary Fence (Type ESA)	400	LF	5	1,820	-	182	20	86	2,107	2,279
45	-	Bridges - Dry Creek Paving	Temporary Hydroseed	550	SQYD	8	4,586	-	459	50	216	5,311	5,744
45	-	Bridges - Dry Creek Paving	Rolled Erosion Control / Jute Mesh	550	SQYD	15	8,267	-	827	91	389	9,573	10,354
45	-	Bridges - Dry Creek Paving	Temporary Fiber Roll	1,000	LF	7	7,325	-	733	81	344	8,483	9,175
45	-	Bridges - Dry Creek Paving	Temporary Construction Entrance	2.00	EA	3,892	7,783	-	778	86	366	9,013	9,749
45	-	Bridges - Dry Creek Paving	Water Pollution Control	0.10	%	158,894	15,889	-	1,589	175	747	18,400	19,902
45	-	Bridges - Dry Creek Paving	Thermoplastic Traffic Stripe	650	LF	1	506	-	51	6	24	585	633
45	-	Bridges - Dry Creek Paving	Portable Changeable Message Signs	2.00	EA	2,713	5,426	-	543	60	255	6,283	6,796
45	-	Bridges - Dry Creek Paving	Type III Barricade	2.00	EA	248	496	-	50	5	23	574	621
45	-	Bridges - Dry Creek Paving	Traffic Control System	20.00	Days	904	18,087	-	1,809	199	850	20,945	22,654
45	-	Bridges - Dry Creek Paving	Temporary Railing (Type K)	200	LF	43	8,501	-	850	94	400	9,844	10,647
45	-	Bridges - Dry Creek Temp Detour	Roadway Excavation	1,200	CY	36	43,409	-	4,341	477	2,041	50,268	54,370
45	-	Bridges - Dry Creek Temp Detour	Ditch Excavation	40.00	CY	32	1,266	-	127	14	60	1,466	1,586
45	-	Bridges - Dry Creek Temp Detour	Imported Borrow	1,620	CY	41	65,927	-	6,593	725	3,100	76,345	82,574
45	-	Bridges - Dry Creek Temp Detour	Hot Mx Asphalt (Type A)	530	TON	118	62,310	-	6,231	685	2,930	72,156	78,043
45	-	Bridges - Dry Creek Temp Detour	Class 2 Aggregate Base	400	CY	59	23,513	-	2,351	259	1,106	27,228	29,450
45	-	Bridges - Dry Creek Temp Detour	Midwest Guardrail System	100	LF	37	3,673	-	367	40	173	4,253	4,600
45	-	Bridges - Dry Creek Temp Detour	Transition Railing (Type WB-31)	4.00	EA	3,617	14,470	-	1,447	159	680	16,756	18,123
45	-	Bridges - Dry Creek Temp Detour	Alternative Flared Terminal System	2.00	EA	1,809	3,617	-	362	40	170	4,189	4,531
45	-	Bridges - Dry Creek Temp Detour	Temporary Reinforced Silt Fence	400	LF	7	2,742	-	274	30	129	3,175	3,434
45	-	Bridges - Dry Creek Temp Detour	Temporary Fence (Type ESA)	400	LF	5	1,820	-	182	20	86	2,107	2,279
45	-	Bridges - Dry Creek Temp Detour	Temporary Hydroseed	320	SQYD	8	2,668	-	267	29	125	3,090	3,342
45	-	Bridges - Dry Creek Temp Detour	Rolled Erosion Control / Jute Mesh	320	SQYD	15	4,810	-	481	53	226	5,570	6,024
45	-	Bridges - Dry Creek Temp Detour	Temporary Fiber Roll	400	LF	7	2,930	-	293	32	138	3,393	3,670
45	-	Bridges - Dry Creek Temp Detour	Temporary Construction Entrance	2.00	EA	3,892	7,783	-	778	86	366	9,013	9,749
45	-	Bridges - Dry Creek Temp Detour	Water Pollution Control	0.10	%	196,424	19,642	-	1,964	216	924	22,746	24,602
45	-	Bridges - Dry Creek Temp Detour	Construction Area Signs	1.00	LS	1,739	1,739	-	174	19	82	2,014	2,178
45	-	Bridges - Dry Creek Temp Detour	Temporary Traffic Stripe	620	LF	1	673	-	67	7	32	779	843
45	-	Bridges - Dry Creek Temp Detour	Type III Barricade	2.00	EA	248	496	-	50	5	23	575	621
45	-	Bridges - Dry Creek Temp Detour	Traffic Control System	5.00	Days	904	4,522	-	452	50	213	5,236	5,664



# KRRC Cost Estimate - Full Removal

July 2019

Est ID	Cost Sheet	Heading	Description	Qty	Unit	(\$) Rate	(\$) Direct Cost	15% MU by Sub	10% PDB OH&P	1% Bonds	Field Overhead	(\$) Estimate	Escalated YOC Estimate
45	-	Bridges - Dry Creek Temp Detour	Temporary Railing (T type K)	160	LF	43	6,801	-	680	75	320	7,875	8,518
		Bridges - Camp Creek											
45	-	Bridges - Camp Creek	Earth Work Cofferdam Construction for side footers	1,186	LCY	14	16,810	-	1,681	185	790	19,467	21,055
45	-	Bridges - Camp Creek	Backfill, structural, common earth, 105 H.P. dozer, 50' haul, from ex	420	LCY	37	15,517	-	1,552	171	730	17,969	19,435
45	-	Bridges - Camp Creek	Structure Excavation (Bridge)	585	BCY	54	31,495	-	3,150	346	1,481	36,472	39,448
45	-	Bridges - Camp Creek	Steel piles, "H" Sections, 50' long, HP14 X 89, excludes mobilization	1,400	VLFT	78	108,773	-	10,877	1,197	5,114	125,961	136,239
45	-	Bridges - Camp Creek	Piling special costs, pre-augering for Pile	1,400	LF	289	404,027	-	40,403	4,444	18,996	467,870	506,048
45	-	Bridges - Camp Creek	Mobilization, 150 ton, set up and remove crane, with pile leads and	2.00	EA	20,847	41,694	-	4,169	459	1,960	48,282	52,222
45	-	Bridges - Camp Creek	A736 Barrier Wall	444	LF	360	160,010	-	16,001	1,760	7,523	185,294	200,414
45	-	Bridges - Camp Creek	Expansion joint, neoprene, liquid, 1" x 2", cold applied	50.00	LF	41	2,072	-	207	23	97	2,400	2,596
45	-	Bridges - Camp Creek	Columns Structural Concrete includes forms, Grade 60 rebar, concrete	132	CY	1,802	237,884	-	23,788	2,617	11,185	275,474	297,953
45	-	Bridges - Camp Creek	Deck Structural concrete, in place, includes forms, Grade 60 rebar, 4	139	CY	1,068	148,489	-	14,849	1,633	6,981	171,953	185,985
45	-	Bridges - Camp Creek	Footer Structural concrete, footing, reinforced, includes forms(4 uses	162	CY	388	62,918	-	6,292	692	2,958	72,860	78,806
45	-	Bridges - Camp Creek	Approach Slab Structural concrete, in place, 6" thick, includes forms	19.00	CY	268	5,099	-	510	56	240	5,905	6,387
45	-	Bridges - Camp Creek	Precast 36" I-Girder 67'	4.00	EA	26,947	107,790	-	10,779	1,186	5,068	124,822	135,008
45	-	Bridges - Camp Creek	Precast 36" I-Girder 53'	8.00	EA	33,484	267,873	-	26,787	2,947	12,595	310,201	335,514
45	-	Bridges - Camp Creek Paving	Roadway Excavation	12,270	CY	36	443,854	-	44,385	4,882	20,869	513,990	555,932
45	-	Bridges - Camp Creek Paving	Ditch Excavation	200	CY	32	6,330	-	633	70	298	7,331	7,929
45	-	Bridges - Camp Creek Paving	Midwest Guardrail System	400	LF	37	14,690	-	1,469	162	691	17,012	18,400
45	-	Bridges - Camp Creek Paving	Transition Railing (T type WB-31)	4.00	EA	3,617	14,470	-	1,447	159	680	16,756	18,123
45	-	Bridges - Camp Creek Paving	Alternative Flared Terminal System	2.00	EA	1,809	3,617	-	362	40	170	4,189	4,531
45	-	Bridges - Camp Creek Paving	Temporary Reinforced Silt Fence	400	LF	7	2,742	-	274	30	129	3,175	3,434
45	-	Bridges - Camp Creek Paving	Temporary Fence (Type ESA)	400	LF	5	1,820	-	182	20	86	2,107	2,279
45	-	Bridges - Camp Creek Paving	Temporary Hydroseed	160	SQYD	8	1,334	-	133	15	63	1,545	1,671
45	-	Bridges - Camp Creek Paving	Roller Erosion Control / Jute Mesh	160	SQYD	15	2,405	-	240	26	113	2,785	3,012
45	-	Bridges - Camp Creek Paving	Temporary Fiber Roll	225	LF	7	1,648	-	165	18	77	1,909	2,064
45	-	Bridges - Camp Creek Paving	Temporary Construction Entrance	2.00	EA	3,892	7,783	-	778	86	366	9,013	9,749
45	-	Bridges - Camp Creek Paving	Water Pollution Control	0.10	%	450,184	45,018	-	4,502	495	2,117	52,132	56,386
45	-	Bridges - Camp Creek Paving	Roadside Sign - One Post	8.00	EA	244	1,953	-	195	21	92	2,262	2,447
45	-	Bridges - Camp Creek Paving	Thermoplastic Traffic Stripe	810	LF	1	630	-	63	7	30	730	789
45	-	Bridges - Camp Creek Paving	Type III Barricade	2.00	EA	248	496	-	50	5	23	574	621
45	-	Bridges - Camp Creek Paving	Traffic Control System	20.00	Days	904	18,087	-	1,809	199	850	20,945	22,654
45	-	Bridges - Camp Creek Paving	Temporary Railing (Type K)	300	LF	43	12,751	-	1,275	140	600	14,766	15,971
45	-	Bridges - Camp Creek Temp Culvert	Roadway Excavation	100	CY	36	3,617	-	362	40	170	4,189	4,531
45	-	Bridges - Camp Creek Temp Culvert	Ditch Excavation	150	CY	32	4,748	-	475	52	223	5,498	5,947
45	-	Bridges - Camp Creek Temp Culvert	Imported Borrow	3,500	CY	41	142,435	-	14,243	1,567	6,697	164,942	178,401
45	-	Bridges - Camp Creek Temp Culvert	Cleaning & Grubbing	5,000	LS	1	4,522	-	452	50	213	5,236	5,664
45	-	Bridges - Camp Creek Temp Culvert	Hot Mix Asphalt (Type A)	470	TON	118	55,256	-	5,526	608	2,598	63,987	69,208
45	-	Bridges - Camp Creek Temp Culvert	Class 2 Aggregate Base	235	CY	59	13,814	-	1,381	152	649	15,997	17,302
45	-	Bridges - Camp Creek Temp Culvert	Rock Slope Protection (Class?) Method B	15.00	CY	90	1,357	-	136	15	64	1,571	1,699
45	-	Bridges - Camp Creek Temp Culvert	Rock Slope Protection Fabric Class 8	45.00	SQYD	9	412	-	41	5	19	477	516
45	-	Bridges - Camp Creek Temp Culvert	36" Alternative Pipe Culvert	300	LF	236	70,924	-	7,092	780	3,335	82,132	88,834
45	-	Bridges - Camp Creek Temp Culvert	Temporary Reinforced Silt Fence	600	LF	7	4,113	-	411	45	193	4,763	5,152
45	-	Bridges - Camp Creek Temp Culvert	Temporary Fence (Type ESA)	600	LF	5	2,729	-	273	30	128	3,161	3,419
45	-	Bridges - Camp Creek Temp Culvert	Temporary Hydroseed	630	SQYD	8	5,253	-	525	58	247	6,083	6,579
45	-	Bridges - Camp Creek Temp Culvert	Roller Erosion Control / Jute Mesh	630	SQYD	15	9,469	-	947	104	445	10,965	11,860
45	-	Bridges - Camp Creek Temp Culvert	Temporary Fiber Roll	1,190	LF	7	8,717	-	872	96	410	10,094	10,918
45	-	Bridges - Camp Creek Temp Culvert	Temporary Concrete Washout	2,000	LS	1	1,809	-	181	20	85	2,094	2,265
45	-	Bridges - Camp Creek Temp Culvert	Temporary Construction Entrance	2.00	EA	3,892	7,783	-	778	86	366	9,013	9,749
45	-	Bridges - Camp Creek Temp Culvert	Water Pollution Control	0.10	%	297,084	29,708	-	2,971	327	1,397	34,403	37,210
45	-	Bridges - Camp Creek Temp Culvert	Construction Area Signs	1.00	LS	1,739	1,739	-	174	19	82	2,014	2,178
45	-	Bridges - Camp Creek Temp Culvert	Temporary Traffic Stripe	650	LF	1	705	-	71	8	33	817	884
45	-	Bridges - Camp Creek Temp Culvert	Type III Barricade	2.00	EA	248	496	-	50	5	23	575	621
45	-	Bridges - Camp Creek Temp Culvert	Traffic Control System	10.00	Days	904	9,043	-	904	99	425	10,472	11,327
45	-	Bridges - Camp Creek Temp Culvert	Temporary Railing (T type K)	600	LF	43	25,503	-	2,550	281	1,199	29,532	31,942
		Bridges - Jenny Creek											
45	-	Bridges - Jenny Creek	Sheet Pile Cofferdam For Center Footer	2,400	SF	35	84,187	-	8,419	926	3,958	97,490	105,445
45	-	Bridges - Jenny Creek	Earth Work Cofferdam Construction for side footers	1,186	LCY	14	16,810	-	1,681	185	790	19,467	21,055
45	-	Bridges - Jenny Creek	Backfill, structural, common earth, 105 H.P. dozer, 50' haul, from ex	142	LCY	37	5,246	-	525	58	247	6,075	6,571
45	-	Bridges - Jenny Creek	Structure Excavation (Type D)	320	BCY	19	5,970	-	597	66	281	6,914	7,478
45	-	Bridges - Jenny Creek	Structure Excavation (Bridge)	209	BCY	54	11,252	-	1,125	124	529	13,030	14,093
45	-	Bridges - Jenny Creek	Steel piles, "H" Sections, 50' long, HP14 X 89, excludes mobilization	2,640	VLFT	78	205,115	-	20,511	2,256	9,644	237,526	256,908
45	-	Bridges - Jenny Creek	Piling special costs, pre-augering for Pile and Tie Down Anchor	2,640	LF	289	761,880	-	76,188	8,381	35,821	882,269	954,262
45	-	Bridges - Jenny Creek	Mobilization, 150 ton, set up and remove crane, with pile leads and	2.00	EA	20,847	41,694	-	4,169	459	1,960	48,282	52,222



# KRRC Cost Estimate - Full Removal

July 2019

Est ID	Cost Sheet	Heading	Description	Qty	Unit	(\$) Rate	(\$) Direct Cost	15% MU by Sub	10% PDB OH&P	1% Bonds	Field Overhead	(\$) Estimate	Escalated YOC Estimate
45	-	Bridges - Jenny Creek	A736 Barrier Wall	776	LF	360	279,657	-	27,966	3,076	13,149	323,848	350,274
45	-	Bridges - Jenny Creek	Expansion joint, neoprene, liquid, 1" x 2", cold applied	58.00	LF	41	2,404	-	240	26	113	2,784	3,011
45	-	Bridges - Jenny Creek	Columns Structural Concrete includes forms, Grade 60 rebar, concrete	174	CY	1,802	313,575	-	31,357	3,449	14,743	363,125	392,756
45	-	Bridges - Jenny Creek	Deck Structural concrete, in place, includes forms, Grade 60 rebar, 4	317	CY	1,068	338,641	-	33,864	3,725	15,922	392,152	424,152
45	-	Bridges - Jenny Creek	Footer Structural concrete,footing, reinforced, includes forms(4 uses	281	CY	388	109,136	-	10,914	1,200	5,131	126,381	136,694
45	-	Bridges - Jenny Creek	Approach Slab Structural concrete, in place, 6" thick, includes forms	22.00	CY	268	5,904	-	590	65	278	6,837	7,395
45	-	Bridges - Jenny Creek	Precast 61" Bulb Tee 73'	8.00	EA	44,308	354,467	-	35,447	3,899	16,666	410,478	443,973
45	-	Bridges - Jenny Creek	Precast 61" Bulb Tee 100'	8.00	EA	71,962	575,698	-	57,570	6,333	27,067	666,668	721,068
45	-	Bridges - Jenny Creek	Bridge Demolition	3,102	SF	53	164,530	-	16,453	1,810	7,736	190,529	206,076
45	-	Bridges - Jenny Creek Paving	Roadway Excavation	30,000	CY	36	1,085,217	-	108,522	11,937	51,023	1,256,700	1,359,247
45	-	Bridges - Jenny Creek Paving	Ditch Excavation	210	CY	32	6,647	-	665	73	313	7,697	8,325
45	-	Bridges - Jenny Creek Paving	Imported Borrow	35,000	CY	41	1,424,348	-	142,435	15,668	66,968	1,649,419	1,784,011
45	-	Bridges - Jenny Creek Paving	Hot Mx Asphalt (Type A)	600	TON	118	70,539	-	7,054	776	3,317	81,685	88,351
45	-	Bridges - Jenny Creek Paving	Class 2 Aggregate Base	370	CY	59	21,750	-	2,175	239	1,023	25,186	27,242
45	-	Bridges - Jenny Creek Paving	Midwest Guardrail System	200	LF	37	7,345	-	735	81	345	8,506	9,200
45	-	Bridges - Jenny Creek Paving	Transition Railing (Type WB-31)	4.00	EA	3,617	14,470	-	1,447	159	680	16,756	18,123
45	-	Bridges - Jenny Creek Paving	Alternative Flared Terminal System	2.00	EA	1,809	3,617	-	362	40	170	4,189	4,531
45	-	Bridges - Jenny Creek Paving	Temporary Reinforced Silt Fence	400	LF	7	2,742	-	274	30	129	3,175	3,434
45	-	Bridges - Jenny Creek Paving	Temporary Fence (Type ESA)	400	LF	5	1,820	-	182	20	86	2,107	2,279
45	-	Bridges - Jenny Creek Paving	Temporary Hydroseed	1,770	SQYD	8	14,758	-	1,476	162	694	17,090	18,485
45	-	Bridges - Jenny Creek Paving	Rolled Erosion Control / Jute Mesh	1,770	SQYD	15	26,604	-	2,660	293	1,251	30,807	33,321
45	-	Bridges - Jenny Creek Paving	Temporary Fiber Roll	2,490	LF	7	18,240	-	1,824	201	858	21,122	22,846
45	-	Bridges - Jenny Creek Paving	Temporary Concrete Washout	2,000	LS	1	1,809	-	181	20	85	2,094	2,265
45	-	Bridges - Jenny Creek Paving	Temporary Construction Entrance	2.00	EA	3,892	7,783	-	778	86	366	9,013	9,749
45	-	Bridges - Jenny Creek Paving	Water Pollution Control	0.10	%	2,608,501	260,850	-	26,085	2,869	12,264	302,069	326,718
45	-	Bridges - Jenny Creek Paving	Roadside Sign - One Post	8.00	EA	244	1,953	-	195	21	92	2,262	2,447
45	-	Bridges - Jenny Creek Paving	Construction Area Signs	2,000	LS	1	1,809	-	181	20	85	2,094	2,265
45	-	Bridges - Jenny Creek Paving	Thermoplastic Traffic Stripe	1,000	LF	1	778	-	78	9	37	901	974
45	-	Bridges - Jenny Creek Paving	Type III Barricade	2.00	EA	248	496	-	50	5	23	574	621
45	-	Bridges - Jenny Creek Paving	Traffic Control System	20.00	Days	904	18,087	-	1,809	199	850	20,945	22,654
45	-	Bridges - Jenny Creek Paving	Temporary Railing (Type K)	300	LF	43	12,751	-	1,275	140	600	14,766	15,971
		Bridges - Other											
45	-	Bridges - Pedestrian Bridge	Bridge Demolition Ped Bridge #1	800	SF	53	42,432	-	4,243	467	1,995	49,137	53,147
45	-	Bridges - Camp Ground	Bridge Demolition Ped Bridge Campground	800	SF	53	42,432	-	4,243	467	1,995	49,137	53,147
45	-	Bridges - JC Boyle	Bridge Demolition Timber JC Boyle	1,800	SF	53	95,472	-	9,547	1,050	4,489	110,558	119,580
		Culverts - Beaver Creek (Copco Rd)											
45	-	Culverts - Beaver Creek (Copco Rd)	Roadway Excavation	3,000	CY	36	108,522	-	10,852	1,194	5,102	125,670	135,925
45	-	Culverts - Beaver Creek (Copco Rd)	Imported Borrow	2,500	CY	41	101,739	-	10,174	1,119	4,783	117,816	127,429
45	-	Culverts - Beaver Creek (Copco Rd)	Rock Slope Protection Class III, Method B	250	CY	90	22,609	-	2,261	249	1,063	26,181	28,318
45	-	Culverts - Beaver Creek (Copco Rd)	Rock Slope Protection Fabric Class 8	700	SQYD	2	1,746	-	175	19	82	2,021	2,186
45	-	Culverts - Beaver Creek (Copco Rd)	60" CORRUGATED STEEL PIPE (.138" THICK)	80.00	LF	244	19,534	-	1,953	215	918	22,621	24,466
45	-	Culverts - Beaver Creek (Copco Rd)	Temporary Reinforced Silt Fence	600	LF	7	4,113	-	411	45	193	4,763	5,152
45	-	Culverts - Beaver Creek (Copco Rd)	Temporary Fence (Type ESA)	600	LF	5	2,729	-	273	30	128	3,161	3,419
45	-	Culverts - Beaver Creek (Copco Rd)	Water Pollution Control	0.10	%	188,953	18,895	-	1,890	208	888	21,881	23,667
45	-	Culverts - Beaver Creek (Copco Rd)	Construction Area Signs	1.00	LS	522	522	-	52	6	25	604	653
45	-	Culverts - Beaver Creek (Copco Rd)	Traffic Control System	1.00	LS	8,696	8,696	-	870	96	409	10,070	10,891
45	-	Culverts - Beaver Creek (Copco Rd)	Temporary Railing (Type K)	80.00	LF	33	2,642	-	264	29	124	3,059	3,309
45	-	Culverts - Beaver Creek (Copco Rd)	Replace and Reconstruct 60-inch Culvert No.1 at Beaver Creek	1.00	LS	13,043	13,043	-	1,304	143	613	15,105	16,337
45	-	Culverts - Beaver Creek (Copco Rd)	Replace and Reconstruct 60-inch Culvert No.2 at Beaver Creek	1.00	LS	13,043	13,043	-	1,304	143	613	15,105	16,337
		Culverts - Raymond Gulch (Copco Rd)											
45	-	Culverts - Raymond Gulch (Copco Rd)	Rock Slope Protection Class III, Method B	150	CY	90	13,565	-	1,357	149	638	15,709	16,991
45	-	Culverts - Raymond Gulch (Copco Rd)	Rock Slope Protection Fabric Class 8	400	SQYD	2	997	-	100	11	47	1,155	1,249
45	-	Culverts - Raymond Gulch (Copco Rd)	Temporary Reinforced Silt Fence	600	LF	7	4,113	-	411	45	193	4,763	5,152
45	-	Culverts - Raymond Gulch (Copco Rd)	Temporary Fence (Type ESA)	600	LF	5	2,729	-	273	30	128	3,161	3,419
45	-	Culverts - Raymond Gulch (Copco Rd)	Water Pollution Control	0.10	%	14,563	1,456	-	146	16	68	1,686	1,824
45	-	Culverts - Raymond Gulch (Copco Rd)	Traffic Control System	1.00	LS	870	870	-	87	10	41	1,007	1,089
45	-	Culverts - Raymond Gulch (Copco Rd)	60-inch Culvert at Raymond Gulch	1.00	LS	8,696	8,696	-	870	96	409	10,070	10,891
		Culverts - Patricia Avenue											
45	-	Culverts - Patricia Avenue	Rock Slope Protection Class III, Method B	150	CY	90	13,565	-	1,357	149	638	15,709	16,991
45	-	Culverts - Patricia Avenue	Rock Slope Protection Fabric Class 8	400	SQYD	2	997	-	100	11	47	1,155	1,249
45	-	Culverts - Patricia Avenue	Water Pollution Control	0.10	%	14,563	1,456	-	146	16	68	1,686	1,824
45	-	Culverts - Patricia Avenue	Traffic Control System	1.00	LS	870	870	-	87	10	41	1,007	1,089
		Culverts - Topsy Grade											
45	-	Culverts - Topsy Grade	Trench Excavation	275	CY	10	2,858	-	286	31	134	3,309	3,579

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July 2019

Est ID	Cost Sheet	Heading	Description	Qty	Unit	(\$) Rate	(\$) Direct Cost	15% MU by Sub	10% PDB OH&P	1% Bonds	Field Overhead	(\$) Estimate	Escalated YOC Estimate
45	-	Culverts - Topsy Grade	Clearing & Grubbing	1.00	LS	1,739	1,739	-	174	19	82	2,014	2,178
45	-	Culverts - Topsy Grade	Rock Slope Protection Class III, Method B	800	CY	90	72,348	-	7,235	796	3,402	83,780	90,616
45	-	Culverts - Topsy Grade	Rock Slope Protection Fabric Class 8	2,350	SQYD	2	5,860	-	586	64	276	6,786	7,340
45	-	Culverts - Topsy Grade	24" CORRUGATED STEEL PIPE (.138" THICK)	200	LF	19	3,740	-	374	41	176	4,331	4,684
45	-	Culverts - Topsy Grade	Temporary Reinforced Silt Fence	1,000	LF	7	6,855	-	685	75	322	7,938	8,586
45	-	Culverts - Topsy Grade	Temporary Fence (Type ESA)	1,000	LF	5	4,549	-	455	50	214	5,268	5,698
45	-	Culverts - Topsy Grade	Water Pollution Control	0.10	%	86,544	8,654	-	865	95	407	10,022	10,840
45	-	Culverts - Topsy Grade	Traffic Control System	1.00	LS	4,348	4,348	-	435	48	204	5,035	5,446
		Culverts - JC Boyle Unnamed											
45	-	Culverts - JC Boyle Unnamed	Rock Slope Protection Class III, Method B	115	CY	90	10,400	-	1,040	114	489	12,043	13,026
45	-	Culverts - JC Boyle Unnamed	Rock Slope Protection Fabric Class 8	350	SQYD	2	873	-	87	10	41	1,011	1,093
45	-	Culverts - JC Boyle Unnamed	Water Pollution Control	0.10	%	11,273	1,127	-	113	12	53	1,305	1,412
45	-	Culverts - JC Boyle Unnamed	Traffic Control System	1.00	LS	870	870	-	87	10	41	1,007	1,089
45	-	Culverts - JC Boyle Unnamed	Copco Road at Unnamed Creek Culvert No. 1	1.00	LS	13,043	13,043	-	1,304	143	613	15,105	16,337
45	-	Culverts - JC Boyle Unnamed	Copco Road at Unnamed Creek Culvert No. 2	1.00	LS	13,043	13,043	-	1,304	143	613	15,105	16,337
45	-	Culverts - JC Boyle Unnamed	6'x6'x34' Box Culvert installation	1.00	LS	13,043	13,043	-	1,304	143	613	15,105	16,337
		Culverts - Scotch Creek (Copco Rd)											
45	-	Culverts - Scotch Creek (Copco Rd)	Roadway Excavation	3,000	CY	36	108,522	-	10,852	1,194	5,102	125,670	135,925
45	-	Culverts - Scotch Creek (Copco Rd)	Ditch Excavation	10.00	CY	32	317	-	32	3	15	367	396
45	-	Culverts - Scotch Creek (Copco Rd)	Imported Borrow	3,000	CY	41	122,087	-	12,209	1,343	5,740	141,379	152,915
45	-	Culverts - Scotch Creek (Copco Rd)	Hot Mx Asphalt (Type A)	170	TON	118	19,986	-	1,999	220	940	23,144	25,033
45	-	Culverts - Scotch Creek (Copco Rd)	Class 2 Aggregate Base	120	CY	59	7,054	-	705	78	332	8,169	8,835
45	-	Culverts - Scotch Creek (Copco Rd)	Rock Slope Protection Class III, Method B	5.00	CY	90	452	-	45	5	21	524	566
45	-	Culverts - Scotch Creek (Copco Rd)	Rock Slope Protection Fabric Class 8	12.00	SQYD	2	30	-	3	0	1	35	37
45	-	Culverts - Scotch Creek (Copco Rd)	Structural Concrete, Box Culvert	10.00	CY	4,373	43,725	-	4,373	481	2,056	50,635	54,766
45	-	Culverts - Scotch Creek (Copco Rd)	Midwest Guardrail System	400	LF	37	14,690	-	1,469	162	691	17,012	18,400
45	-	Culverts - Scotch Creek (Copco Rd)	Alternative Flared Terminal System	2.00	EA	1,809	3,617	-	362	40	170	4,189	4,531
45	-	Culverts - Scotch Creek (Copco Rd)	Temporary Reinforced Silt Fence	400	LF	7	2,742	-	274	30	129	3,175	3,434
45	-	Culverts - Scotch Creek (Copco Rd)	Temporary Fence (Type ESA)	400	LF	5	1,820	-	182	20	86	2,107	2,279
45	-	Culverts - Scotch Creek (Copco Rd)	Temporary Hydroseed	220	SQYD	8	1,834	-	183	20	86	2,124	2,298
45	-	Culverts - Scotch Creek (Copco Rd)	Rolled Erosion Control / Jute Mesh	220	SQYD	15	3,307	-	331	36	155	3,829	4,142
45	-	Culverts - Scotch Creek (Copco Rd)	Temporary Fiber Roll	450	LF	7	3,296	-	330	36	155	3,817	4,129
45	-	Culverts - Scotch Creek (Copco Rd)	Temporary Construction Entrance	2.00	EA	3,892	7,783	-	778	86	366	9,013	9,749
45	-	Culverts - Scotch Creek (Copco Rd)	Water Pollution Control	0.10	%	302,173	30,217	-	3,022	332	1,421	34,992	37,847
45	-	Culverts - Scotch Creek (Copco Rd)	Construction Area Signs	1.00	LS	2,174	2,174	-	217	24	102	2,517	2,723
45	-	Culverts - Scotch Creek (Copco Rd)	Thermoplastic Traffic Stripe	200	LF	1	156	-	16	2	7	180	195
45	-	Culverts - Scotch Creek (Copco Rd)	Traffic Control System	1.00	LS	8,696	8,696	-	870	96	409	10,070	10,891
45	-	Culverts - Scotch Creek (Copco Rd)	Temporary Railing (Type K)	200	LF	33	6,604	-	660	73	311	7,648	8,272
45	-	Culverts - Scotch Creek Temp (Copco Rd)	Roadway Excavation	550	CY	36	19,896	-	1,990	219	935	23,039	24,920
45	-	Culverts - Scotch Creek Temp (Copco Rd)	Ditch Excavation	10.00	CY	32	317	-	32	3	15	367	396
45	-	Culverts - Scotch Creek Temp (Copco Rd)	Imported Borrow	2,300	CY	41	93,600	-	9,360	1,030	4,401	108,390	117,235
45	-	Culverts - Scotch Creek Temp (Copco Rd)	Hot Mx Asphalt (Type A)	510	TON	118	59,958	-	5,996	660	2,819	69,433	75,098
45	-	Culverts - Scotch Creek Temp (Copco Rd)	Class 2 Aggregate Base	380	CY	59	22,337	-	2,234	246	1,050	25,867	27,978
45	-	Culverts - Scotch Creek Temp (Copco Rd)	Rock Slope Protection (Class?) Method B	10.00	CY	90	904	-	90	10	43	1,047	1,133
45	-	Culverts - Scotch Creek Temp (Copco Rd)	Rock Slope Protection Fabric Class 8	30.00	SQYD	9	275	-	27	3	13	318	344
45	-	Culverts - Scotch Creek Temp (Copco Rd)	36" Alternative Pipe Culvert	250	LF	236	59,104	-	5,910	650	2,779	68,443	74,028
45	-	Culverts - Scotch Creek Temp (Copco Rd)	Temporary Reinforced Silt Fence	300	LF	7	2,056	-	206	23	97	2,381	2,576
45	-	Culverts - Scotch Creek Temp (Copco Rd)	Temporary Fence (Type ESA)	300	LF	5	1,365	-	136	15	64	1,580	1,709
45	-	Culverts - Scotch Creek Temp (Copco Rd)	Temporary Hydroseed	590	SQYD	8	4,919	-	492	54	231	5,697	6,162
45	-	Culverts - Scotch Creek Temp (Copco Rd)	Rolled Erosion Control / Jute Mesh	590	SQYD	15	8,868	-	887	98	417	10,269	11,107
45	-	Culverts - Scotch Creek Temp (Copco Rd)	Temporary Fiber Roll	450	LF	7	3,296	-	330	36	155	3,817	4,129
45	-	Culverts - Scotch Creek Temp (Copco Rd)	Temporary Concrete Washout	2,000	LS	1	1,809	-	181	20	85	2,094	2,265
45	-	Culverts - Scotch Creek Temp (Copco Rd)	Temporary Construction Entrance	2.00	EA	3,892	7,783	-	778	86	366	9,013	9,749
45	-	Culverts - Scotch Creek Temp (Copco Rd)	Water Pollution Control	0.10	%	256,392	25,639	-	2,564	282	1,205	29,691	32,113
45	-	Culverts - Scotch Creek Temp (Copco Rd)	Construction Area Signs	1.00	LS	1,739	1,739	-	174	19	82	2,014	2,178
45	-	Culverts - Scotch Creek Temp (Copco Rd)	Temporary Traffic Stripe	520	LF	1	564	-	56	6	27	653	707
45	-	Culverts - Scotch Creek Temp (Copco Rd)	Type III Barricade	2.00	EA	248	496	-	50	5	23	575	621
45	-	Culverts - Scotch Creek Temp (Copco Rd)	Traffic Control System	10.00	Days	904	9,043	-	904	99	425	10,472	11,327
45	-	Culverts - Scotch Creek Temp (Copco Rd)	Temporary Railing (Type K)	55.06	LF	386	21,252	-	2,125	234	999	24,610	26,619
		Paving											
45	-	Paving - Lakeview Disposal Access Road	Pre: none; Post: 0.7 miles 6" AB overlay (no drainage improvements)	1.00	EA	147,826	147,826	22,174	17,000	1,870	6,950	195,820	229,082
45	-	Paving - Copco 1 Dam Access	Pre: 2500CY roadway excavation, 0.9 miles 9" AB overlay (no drainage)	1.00	EA	217,391	217,391	32,609	25,000	2,750	10,221	287,971	323,928
45	-	Paving - Copco Rd from Copco 1 access to Copco Bridge	Pre: 1 mile 9" AB repair; Post: 1 mile 9" AB repair, 0.2 mile HMA overlay	1.00	EA	276,522	276,522	41,478	31,800	3,498	13,001	366,299	421,926
45	-	Paving - Copco 1 Ager Beswick Rd Barge Access	Pre: minor excavation and 9" AB section; Post: none	1.00	EA	52,174	52,174	7,826	6,000	660	2,453	69,113	77,743

# KRRC Cost Estimate - Full Removal

July 2019

Est ID	Cost Sheet	Heading	Description	Qty	Unit	(\$) Rate	(\$) Direct Cost	15% MU by Sub	10% PDB OH&P	1% Bonds	Field Overhead	(\$) Estimate	Escalated YOC Estimate
45	-	Paving - US 97 Dalles CA Hwy	Pre: none; Post: none (high only)	1.00	EA	-	-	-	-	-	-	-	-
45	-	Paving - OR 66 Green Springs hwy	Pre: none; Post: none (high only)	1.00	EA	-	-	-	-	-	-	-	-
45	-	Paving - JC Boyle Keno Worden	Pre: none; Post: none (high only)	1.00	EA	-	-	-	-	-	-	-	-
45	-	Paving - Topsy Grade Rd	Pre: 0.9 mile 9" AB repair; Post: 0.9 mile 9" AB repair	1.00	EA	765,217	765,217	114,783	88,000	9,680	35,978	1,013,658	1,163,032
45	-	Paving - JC Boyle Dam Access Rd (2,940 ft to dam toe)	Pre: minor excavation; 0.25 mile new 9" AB, 0.7 mile 9" AB repair; post: 1.5 mile 9" AB repair; no guardrail	1.00	EA	291,304	291,304	43,696	33,500	3,685	13,696	385,881	441,009
45	-	Paving - JC Boyle Power Canal Access Rd	Pre: 1.5 mile 9" AB repair; post: 1.5 mile 9" AB repair; no guardrail	1.00	EA	375,652	375,652	56,348	43,200	4,752	17,662	497,614	570,943
45	-	Paving - JC Boyle Powerhouse Access Rd	Pre: none; Post: none (high only)	1.00	EA	-	-	-	-	-	-	-	-
45	-	Paving - Copco Rd I5 to Ager Rd	Pre: none; Post: 1 mile new asphalt overlay	1.00	EA	947,826	947,826	142,174	109,000	11,990	44,564	1,255,554	1,468,820
45	-	Paving - Copco Rd Ager Rd to Lakeview Rd	Pre: 0.5 miles crack sealer, 0.75 miles new asphalt; Post: 1 miles new asphalt	1.00	EA	1,413,043	1,413,043	211,957	162,500	17,875	66,437	1,871,812	2,156,066
45	-	Paving - Copco Rd to Lakeview Rd to Dagget Rd	Pre: 1 mile crack sealer, 1.5 miles new asphalt; Post: 2 miles new asphalt	1.00	EA	2,591,304	2,591,304	388,696	298,000	32,780	121,835	3,432,615	3,953,894
45	-	Paving - Copco Rd Daggett Rd to Copco 1 Access Rd	Pre: 1.5 mile 9" AB repair; Post: 1.5 mile 9" AB repair, no guardrail	1.00	EA	375,652	375,652	56,348	43,200	4,752	17,662	497,614	570,943
		<b>Recreation Improvements</b>											
		<b>KENO Alt A</b>											
46	-	KENO Alt A	Natural Launch Road - Gravel fill, 4" gravel depth & Finish Grading	210	SY	26	5,534	830	636	70	260	7,331	7,929
46	-	KENO Alt A	Improved Commercial Access Road - gravel fill, 8" gravel depth, exc	1,069	SY	42	44,579	6,687	5,127	564	2,096	59,052	63,871
46	-	KENO Alt A	Clearing & grubbing, cut & chip light trees, to 6" diameter	210	SY	2	517	78	59	7	24	685	741
46	-	KENO Alt A	Boulder Retaining Wall - Grading and Finish Grading Slopes	45.00	SY	36	1,598	240	184	20	75	2,117	2,290
46	-	KENO Alt A	Boulder Retaining Wall 2'X2'X2' 8CF or 1200lbs per boulder	60.00	ton	680	40,786	6,118	4,690	516	1,918	54,028	58,437
46	-	KENO Alt A	Access Gate - Fence, chain link industrial, double swing gates, 8' h	3.00	Opng	2,586	7,759	1,164	892	98	365	10,278	11,117
46	-	KENO Alt A	Boulder Retaining Wall geo-grid soil reinforcement for segmental bl	397	SF	3	1,102	165	127	14	52	1,460	1,579
46	-	KENO Alt A	Stone Retaining Wall geo-grid soil reinforcement for segmental blo	919	SF	2	1,790	269	206	23	84	2,371	2,565
46	-	KENO Alt A	Timber Retaining wall - timber, 6" x 8"	100	LF	52	5,234	785	602	66	246	6,933	7,499
46	-	KENO Alt A	Stone Retaining Wall - retaining wall, cut stone, 6' to 10' high, 2' thi	919	SF	148	135,724	20,359	15,608	1,717	6,381	179,789	194,460
46	-	KENO Alt A	Bulletin board/ Kiosk - prefabricated, wood frame, 1/4" cork, 4' x 8'	2.00	EA	963	1,926	289	221	24	91	2,551	2,759
		<b>HWY 66 Bridge</b>											
46	-	HWY 66 Bridge	Boat Ramp - Fine grading, finish grading, small area, to be paved w	1,025	SY	11	11,513	1,727	1,324	146	541	15,251	16,495
46	-	HWY 66 Bridge	Boat Ramp - Fill, gravel fill, compacted, under floor slabs, 4" deep	9,317	SF	2	22,830	3,425	2,625	289	1,073	30,242	32,710
46	-	HWY 66 Bridge	Boat Ramp - C.I.P. concrete forms, slab on grade, edge, wood, 7" to	280	sfca	116	32,423	4,863	3,729	410	1,524	42,950	46,454
46	-	HWY 66 Bridge	Boat Ramp - Expansion joint, premolded, bituminous fiber, 1/2" x 6"	2,050	LF	2	3,236	485	372	41	152	4,287	4,636
46	-	HWY 66 Bridge	Boat Ramp - Reinforcing steel, in place, columns, #3 to #7, A615, c	34,950	lb	2	62,545	9,382	7,193	791	2,941	82,851	89,612
46	-	HWY 66 Bridge	Boat Ramp - Structural concrete, ready mix, heavyweight, 4500 psi, s	233	CY	246	57,300	8,595	6,590	725	2,694	75,903	82,097
46	-	HWY 66 Bridge	Boat Ramp - Structural concrete, placing, slab on grade, pumped, o	233	CY	79	18,342	2,751	2,109	232	862	24,297	26,280
46	-	HWY 66 Bridge	Boat Ramp - Concrete finishing, fresh concrete flatwork, floors, basi	9,317	SF	1	9,778	1,467	1,124	124	460	12,953	14,010
46	-	HWY 66 Bridge	Boat Ramp - Concrete surface treatment, curing, sprayed membrane	93.20	Csf	33	3,120	468	359	39	147	4,133	4,470
46	-	HWY 66 Bridge	Boat Ramp - Vapor retarders, building paper, polyethylene vapor bar	93.20	sq	27	2,518	378	290	32	118	3,336	3,608
46	-	HWY 66 Bridge	Gravel Trail - Gravel fill, 4" gravel depth & Finish Grading	1,543	SY	26	40,659	6,099	4,676	514	1,912	53,860	58,255
46	-	HWY 66 Bridge	Gravel Beach - Gravel fill, 4" gravel depth & Finish Grading	837	SY	26	22,056	3,308	2,536	279	1,037	29,217	31,601
46	-	HWY 66 Bridge	Planting beds preparation, backfill planting pit, on site topsoil, skid	100	CY	71	7,140	1,071	821	90	336	9,458	10,230
46	-	HWY 66 Bridge	Clearing & grubbing, cut & chip light trees, to 6" diameter	18,611	SY	2	45,783	6,867	5,265	579	2,153	60,647	65,596
46	-	HWY 66 Bridge	Boat Ramp Cofferd Dam - Dewatering, pumping 8 hours, attended 2 h	60.00	days	1,283	76,955	11,543	8,850	973	3,618	101,940	110,258
46	-	HWY 66 Bridge	Boulder Retaining Wall - Grading and Finish Grading Slopes	109	SY	36	3,871	581	445	49	182	5,128	5,546
46	-	HWY 66 Bridge	Gravel Trail - Backfill, in 8" layers, spreading, small dozer, includes	390	L.C.Y.	3	1,007	151	116	13	47	1,334	1,443
46	-	HWY 66 Bridge	Paved Access Road - Backfill, in 8" layers, spreading, small dozer, s	1,595	L.C.Y.	3	4,118	618	474	52	194	5,455	5,900
46	-	HWY 66 Bridge	Gravel Trail - Excavating with Dozer fill to be used onsite	300	B.C.Y.	4	1,090	164	125	14	51	1,444	1,562
46	-	HWY 66 Bridge	Paved Access Road - Excavating with Dozer fill to be used onsite	1,227	B.C.Y.	4	4,457	669	513	56	210	5,904	6,386
46	-	HWY 66 Bridge	Gabion Wall - Structural excavation for minor structures, bank meas	106	B.C.Y.	25	2,637	396	303	33	124	3,493	3,778
46	-	HWY 66 Bridge	Boat Ramp Cofferd Dam - Rip-rap and rock lining, random, broken stor	60.00	ton	143	8,555	1,283	984	108	402	11,333	12,257
46	-	HWY 66 Bridge	Boat Ramp Cofferd Dam - Placing 1 ton supersack for coffer dam 3 rd	60.00	ton	311	18,658	2,799	2,146	236	877	24,716	26,732
46	-	HWY 66 Bridge	Boulder Retaining Wall 2'X2'X2' 8CF or 1200lbs per boulder	215	ton	680	146,151	21,923	16,807	1,849	6,872	193,601	209,399
46	-	HWY 66 Bridge	Boat Ramp Cofferd Dam - Synthetic erosion control, jute mesh, 100 S	647	SY	3	1,638	246	188	21	77	2,170	2,347
46	-	HWY 66 Bridge	Docks, floating, recreational, prefabricated galvanized steel with pol	796	SF	75	59,463	8,919	6,838	752	2,796	78,769	85,196
46	-	HWY 66 Bridge	Gravel Trail - Base course drainage layers, aggregate base course fd	1,543	SY	6	9,918	1,488	1,141	125	466	13,138	14,210
46	-	HWY 66 Bridge	Gravel Trail - Base course drainage layers, prepare and roll sub-bas	1,543	SY	2	3,634	545	418	46	171	4,814	5,207
46	-	HWY 66 Bridge	Paved Access Road - Base course drainage layers, prepare and rol	4,416	SY	2	10,399	1,560	1,196	132	489	13,775	14,899
46	-	HWY 66 Bridge	Gravel Beach - Base course drainage layers, prepare and roll sub-ba	837	SY	2	1,971	296	227	25	93	2,611	2,824
46	-	HWY 66 Bridge	Paved Access Road - Asphaltic concrete paving, parking lots & driv	39,747	SF	4	174,748	26,212	20,096	2,211	8,216	231,483	250,372
46	-	HWY 66 Bridge	Parking Lot - Pavement markings, parking stall, thermoplastic, white	16.00	Stall	432	6,912	1,037	795	87	325	9,156	9,903
46	-	HWY 66 Bridge	Parking Lot - Pavement markings, street letters and numbers	20.00	SF	9	173	26	20	2	8	229	248
46	-	HWY 66 Bridge	Boulder Retaining Wall geo-grid soil reinforcement for segmental bl	980	SF	3	2,720	408	313	34	128	3,603	3,897
46	-	HWY 66 Bridge	Timber Retaining wall - timber, 6" x 8"	273	LF	52	14,289	2,143	1,643	181	672	18,928	20,473
46	-	HWY 66 Bridge	Gabion retaining walls, stone filled gabions, stone delivered, galva	106	LF	369	39,092	5,864	4,496	495	1,838	51,784	56,009
46	-	HWY 66 Bridge	Parking Lot - Precast concrete parking bumpers, wheel stops, preca	16.00	EA	289	4,624	694	532	58	217	6,125	6,625
46	-	HWY 66 Bridge	Site seating, park benches, precast concrete, with backs, wood rails	1.00	EA	1,936	1,936	290	223	24	91	2,565	2,774
46	-	HWY 66 Bridge	Parking Lot - Handicap Sign - Signs, stock signs, reflectorized, 18"x	2.00	EA	107	214	32	25	3	10	283	307

# KRRC Cost Estimate - Full Removal

July 2019

Est ID	Cost Sheet	Heading	Description	Qty	Unit	(\$) Rate	(\$) Direct Cost	15% MU by Sub	10% PDB OH&P	1% Bonds	Field Overhead	(\$) Estimate	Escalated YOC Estimate
46	-	HWY 66 Bridge	Parking Lot - Handicap Sign - Signs, 10'-0", add to above for steel post	2.00	EA	57	114	17	13	1	5	151	163
46	-	HWY 66 Bridge	Soil preparation, mulching, redwood nuggets, 3" deep, hand spread	667	SY	7	4,895	734	563	62	230	6,484	7,013
46	-	HWY 66 Bridge	Planting beds preparation, excavate planting pit, heavy soil or clay,	100	CY	15	1,513	227	174	19	71	2,004	2,168
46	-	HWY 66 Bridge	Trees Planted in prepared Beds	60.00	EA	588	35,305	5,296	4,060	447	1,660	46,767	50,584
46	-	HWY 66 Bridge	Shrubs Planted in prepared Beds	133	EA	129	17,133	2,570	1,970	217	806	22,696	24,547
46	-	HWY 66 Bridge	Entry Sign	1.00	EA	963	963	144	111	12	45	1,276	1,380
46	-	HWY 66 Bridge	Vaulted Toilet and Pay Station - Comfort stations, prefab, stock, with	335	SF	226	75,628	11,344	8,697	957	3,556	100,182	108,357
		Below JC Boyle											
46	-	Below JC Boyle	Gravel Trail - Gravel fill, 4" gravel depth & Finish Grading	357	SY	26	9,407	1,411	1,082	119	442	12,461	13,478
46	-	Below JC Boyle	Gravel Trail Boat Launch Area - Gravel fill, 4" gravel depth & Finish	193	SY	26	5,086	763	585	64	239	6,737	7,287
46	-	Below JC Boyle	Parking Lot - gravel fill, 8" gravel depth, excl surfacing	1,198	SY	43	51,339	7,701	5,904	649	2,414	68,007	73,556
46	-	Below JC Boyle	Improved Commercial Access Road - gravel fill, 8" gravel depth, excl	3,245	SY	42	135,322	20,298	15,562	1,712	6,362	179,257	193,884
46	-	Below JC Boyle	Boat Launch Area Wooden Boat Slide	418	SF	6	2,653	398	305	34	125	3,514	3,801
46	-	Below JC Boyle	Planting beds preparation, backfill planting pit, on site topsoil, skid	50.00	CY	71	3,570	536	411	45	168	4,729	5,115
46	-	Below JC Boyle	Clearing & grubbing, cut & chip light trees, to 6" diameter	4,628	SY	2	11,385	1,708	1,309	144	535	15,081	16,312
46	-	Below JC Boyle	Gravel Trail - Backfill, in 8" layers, spreading, small dozer, includes	91.00	L.C.Y.	3	235	35	27	3	11	311	337
46	-	Below JC Boyle	Gravel Trail - Excavating with Dozer fill to be used onsite	70.00	B.C.Y.	4	254	38	29	3	12	336	364
46	-	Below JC Boyle	Parking Lot - Excavating with Dozer fill to be used onsite	366	B.C.Y.	4	1,329	199	153	17	62	1,760	1,904
46	-	Below JC Boyle	Boat Launch Area Gabion Wall - Structural excavation for minor stru	179	B.C.Y.	25	4,453	668	512	56	209	5,899	6,380
46	-	Below JC Boyle	Boulder Retaining Wall 2'X2'X2' 8CF or 1200lbs per boulder	71.00	ton	680	48,264	7,240	5,550	611	2,269	63,934	69,151
46	-	Below JC Boyle	Gravel Trail - Base course drainage layers, aggregate base course f	357	SY	6	2,295	344	264	29	108	3,040	3,288
46	-	Below JC Boyle	Parking Lot - Base course drainage layers, aggregate base course f	1,198	SY	6	7,701	1,155	886	97	362	10,201	11,034
46	-	Below JC Boyle	Gravel Trail Boat Launch Area - Base course drainage layers, aggreg	193	SY	6	1,241	186	143	16	58	1,644	1,778
46	-	Below JC Boyle	Gravel Trail - Base course drainage layers, prepare and roll sub-bas	357	SY	2	841	126	97	11	40	1,114	1,205
46	-	Below JC Boyle	Parking Lot - Base course drainage layers, prepare and roll sub-bas	1,198	SY	2	2,821	423	324	36	133	3,737	4,042
46	-	Below JC Boyle	Gravel Trail Boat Launch Area - Base course drainage layers, prepa	193	SY	2	455	68	52	6	21	603	652
46	-	Below JC Boyle	Parking Lot - Pavement markings, parking stall, thermoplastic, white	15.00	Stall	432	6,480	972	745	82	305	8,584	9,284
46	-	Below JC Boyle	Parking Lot - Pavement markings, street letters and numbers	50.00	SF	9	433	65	50	5	20	574	620
46	-	Below JC Boyle	Boat Launch Area - Gabion retaining walls, stone filled gabions, sto	268	LF	172	46,100	6,915	5,302	583	2,167	61,067	66,050
46	-	Below JC Boyle	Parking Lot - Precast concrete parking bumpers, wheel stops, preca	15.00	EA	289	4,335	650	499	55	204	5,742	6,211
46	-	Below JC Boyle	Site seating, park benches, precast concrete, with backs, wood rails	3.00	EA	1,936	5,807	871	668	73	273	7,692	8,320
46	-	Below JC Boyle	Parking Lot - Handicap Sign - Signs, stock signs, reflectorized, 18"x	2.00	EA	107	214	32	25	3	10	283	307
46	-	Below JC Boyle	Parking Lot - Handicap Sign - Signs, 10'-0", add to above for steel po	2.00	EA	57	114	17	13	1	5	151	163
46	-	Below JC Boyle	Soil preparation, mulching, redwood nuggets, 3" deep, hand spread	89.00	SY	7	653	98	75	8	31	865	936
46	-	Below JC Boyle	Planting beds preparation, excavate planting pit, heavy soil or clay,	50.00	CY	15	757	114	87	10	36	1,003	1,085
46	-	Below JC Boyle	Trees Planted in prepared Beds	8.00	EA	588	4,707	706	541	60	221	6,235	6,744
46	-	Below JC Boyle	Shrubs Planted in prepared Beds	41.00	EA	129	5,281	792	607	67	248	6,996	7,566
46	-	Below JC Boyle	Stairs - Stair tread nosing insert, cast aluminum, abrasive surface, 3	12.00	EA	121	1,450	218	167	18	68	1,921	2,078
46	-	Below JC Boyle	Stairs - Structural concrete, in place, stairs (3500 psi), 3'-6" wide, fre	48.00	LF	53	2,551	383	293	32	120	3,379	3,655
46	-	Below JC Boyle	Stairs - Railing, commercial, wall rail, steel pipe, painted, 1-1/2" dia	17.00	LF	30	518	78	60	7	24	686	742
46	-	Below JC Boyle	Stairs - Railing, industrial, welded, steel pipe, 2 rails, 3'-6" high, pos	18.00	LF	60	1,082	162	124	14	51	1,433	1,550
46	-	Below JC Boyle	Entry Sign	1.00	EA	963	963	144	111	12	45	1,276	1,380
46	-	Below JC Boyle	Vaulted Toilet and Pay Station - Comfort stations, prefab, stock, with	335	SF	226	75,628	11,344	8,697	957	3,556	100,182	108,357
		Turtle Camp											
46	-	Turtle Camp	Gravel Trail - Gravel fill, 4" gravel depth & Finish Grading	148	SY	26	3,900	585	449	49	183	5,166	5,588
46	-	Turtle Camp	Parking Lot - gravel fill, 8" gravel depth, excl surfacing	580	SY	43	24,855	3,728	2,858	314	1,169	32,925	35,611
46	-	Turtle Camp	Access Road - gravel fill, 8" gravel depth, excl surfacing	710	SY	43	30,426	4,564	3,499	385	1,431	40,304	43,593
46	-	Turtle Camp	Improved Commercial Access Road - gravel fill, 8" gravel depth, excl	2,641	SY	42	110,135	16,520	12,666	1,393	5,178	145,892	157,797
46	-	Turtle Camp	Planting beds preparation, backfill planting pit, on site topsoil, skid	30.00	CY	71	2,142	321	246	27	101	2,837	3,069
46	-	Turtle Camp	Clearing & grubbing, cut & chip light trees, to 6" diameter	1,692	SY	2	4,162	624	479	53	196	5,513	5,963
46	-	Turtle Camp	Gravel Trail - Backfill, in 8" layers, spreading, small dozer, includes	39.00	L.C.Y.	3	101	15	12	1	5	134	145
46	-	Turtle Camp	Gravel Trail - Excavating with Dozer fill to be used onsite	30.00	B.C.Y.	4	109	16	13	1	5	144	156
46	-	Turtle Camp	Parking Lot - Excavating with Dozer fill to be used onsite	177	B.C.Y.	4	643	96	74	8	30	852	921
46	-	Turtle Camp	Access Road - Excavating with Dozer fill to be used onsite	217	B.C.Y.	4	788	118	91	10	37	1,044	1,129
46	-	Turtle Camp	Gravel Trail - Base course drainage layers, aggregate base course f	148	SY	6	951	143	109	12	45	1,260	1,363
46	-	Turtle Camp	Parking Lot - Base course drainage layers, aggregate base course f	580	SY	6	3,728	559	429	47	175	4,938	5,341
46	-	Turtle Camp	Access Road - Base course drainage layers, aggregate base course f	710	SY	6	4,564	685	525	58	215	6,046	6,539
46	-	Turtle Camp	Gravel Trail - Base course drainage layers, prepare and roll sub-bas	148	SY	2	349	52	40	4	16	462	500
46	-	Turtle Camp	Parking Lot - Base course drainage layers, prepare and roll sub-bas	580	SY	2	1,366	205	157	17	64	1,809	1,957
46	-	Turtle Camp	Access Road - Base course drainage layers, prepare and roll sub-ba	710	SY	2	1,672	251	192	21	79	2,215	2,396
46	-	Turtle Camp	Parking Lot - Pavement markings, parking stall, thermoplastic, white	10.00	Stall	432	4,320	648	497	55	203	5,723	6,190
46	-	Turtle Camp	Parking Lot - Pavement markings, street letters and numbers	25.00	SF	9	217	33	25	3	10	287	311
46	-	Turtle Camp	Timber Retaining wall - timber, 6" x 8"	130	LF	52	6,804	1,021	782	86	320	9,013	9,748
46	-	Turtle Camp	Parking Lot - Precast concrete parking bumpers, wheel stops, preca	10.00	EA	289	2,890	434	332	37	136	3,828	4,141

# KRRC Cost Estimate - Full Removal

July 2019

Est ID	Cost Sheet	Heading	Description	Qty	Unit	(\$) Rate	(\$) Direct Cost	15% MU by Sub	10% PDB OH&P	1% Bonds	Field Overhead	(\$) Estimate	Escalated YOC Estimate
46	-	Turtle Camp	Site seating, park benches, precast concrete, with backs, wood rails	1.00	EA	1,936	1,936	290	223	24	91	2,565	2,774
46	-	Turtle Camp	Parking Lot - Handicap Sign - Signs, stock signs, reflectorized, 18" x 24"	2.00	EA	107	214	32	25	3	10	283	307
46	-	Turtle Camp	Parking Lot - Handicap Sign - Signs, 10'-0", add to above for steel post	2.00	EA	57	114	17	13	1	5	151	163
46	-	Turtle Camp	Soil preparation, mulching, redwood nuggets, 3" deep, hand spread	133	SY	7	976	146	112	12	46	1,293	1,398
46	-	Turtle Camp	Planting beds preparation, excavate planting pit, heavy soil or clay, 1' deep	89.00	CY	15	1,347	202	155	17	63	1,784	1,930
46	-	Turtle Camp	Trees Planted in prepared Beds	12.00	EA	588	7,061	1,059	812	89	332	9,353	10,117
46	-	Turtle Camp	Bulletin Board	2.00	EA	963	1,926	289	221	24	91	2,551	2,759
46	-	Turtle Camp	Vaulted Toilet and Pay Station - Comfort stations, prefab, stock, with	335	SF	226	75,628	11,344	8,697	957	3,556	100,182	108,357
46	-	Camp Creek											
46	-	Camp Creek	Gravel Trail - Gravel fill, 4" gravel depth & Finish Grading	1,440	SY	26	37,945	5,692	4,364	480	1,784	50,264	54,366
46	-	Camp Creek	Parking Lot - gravel fill, 8" gravel depth, excl surfacing	867	SY	43	37,154	5,573	4,273	470	1,747	49,217	53,233
46	-	Camp Creek	Clearing & grubbing, cut & chip light trees, to 6" diameter	2,820	SY	2	6,937	1,041	798	88	326	9,189	9,939
46	-	Camp Creek	Gravel Trail - Backfill, structural, common earth, 55 H.P. wheeled loader	806	L.C.Y.	20	16,028	2,404	1,843	203	754	21,232	22,964
46	-	Camp Creek	Compaction, riding, vibrating roller, 4 passes, 6" lifts	620	E.C.Y.	8	4,962	744	571	63	233	6,573	7,109
46	-	Camp Creek	Gravel Trail - Excavating with Dozer fill to be used onsite	352	B.C.Y.	8	2,910	437	335	37	137	3,855	4,169
46	-	Camp Creek	Gravel Trail - Slope for Trail Excavating with Dozer fill to be used onsite	268	B.C.Y.	22	5,820	873	669	74	274	7,710	8,339
46	-	Camp Creek	Parking Lot - Excavating with Dozer fill to be used onsite	265	B.C.Y.	4	963	144	111	12	45	1,276	1,380
46	-	Camp Creek	Gravel Trail- Base course drainage layers, aggregate base course for	1,440	SY	6	9,256	1,388	1,064	117	435	12,261	13,262
46	-	Camp Creek	Parking Lot - Base course drainage layers, aggregate base course for	345	SY	6	2,218	333	255	28	104	2,938	3,178
46	-	Camp Creek	Gravel Trail - Base course drainage layers, prepare and roll sub-base	1,440	SY	2	3,391	509	390	43	159	4,492	4,858
46	-	Camp Creek	Parking Lot - Base course drainage layers, prepare and roll sub-base	867	SY	2	2,042	306	235	26	96	2,705	2,926
46	-	Camp Creek	Parking Lot - Pavement markings, parking stall, thermoplastic, white	8.00	Stall	432	3,456	518	397	44	162	4,578	4,952
46	-	Camp Creek	Parking Lot - Pavement markings, street letters and numbers	25.00	SF	9	217	33	25	3	10	287	311
46	-	Camp Creek	Timber Retaining wall - timber, 6" x 8"	209	LF	52	10,939	1,641	1,258	138	514	14,491	15,673
46	-	Camp Creek	Parking Lot - Precast concrete parking bumpers, wheel stops, precast	8.00	EA	289	2,312	347	266	29	109	3,063	3,313
46	-	Camp Creek	Site seating, park benches, precast concrete, with backs, wood rails	5.00	EA	1,936	9,678	1,452	1,113	122	455	12,820	13,866
46	-	Camp Creek	Parking Lot - Handicap Sign - Signs, stock signs, reflectorized, 18" x 24"	2.00	EA	107	214	32	25	3	10	283	307
46	-	Camp Creek	Parking Lot - Handicap Sign - Signs, 10'-0", add to above for steel post	2.00	EA	57	114	17	13	1	5	151	163
46	-	Camp Creek	Bulletin Board	2.00	EA	963	1,926	289	221	24	91	2,551	2,759
46	-	Camp Creek	Vaulted Toilet and Pay Station - Comfort stations, prefab, stock, with	335	SF	226	75,628	11,344	8,697	957	3,556	100,182	108,357
46	-	Copco Valley Day Use											
46	-	Copco Valley Day Use	Gravel Trail - Gravel fill, 4" gravel depth & Finish Grading	2,771	SY	26	73,018	10,953	8,397	924	3,433	96,725	104,617
46	-	Copco Valley Day Use	Parking Lot - gravel fill, 8" gravel depth, excl surfacing	8,222	SY	43	352,346	52,852	40,520	4,457	16,566	466,741	504,827
46	-	Copco Valley Day Use	Planting beds preparation, backfill planting pit, on site topsoil, skid	517	CY	71	36,912	5,537	4,245	467	1,735	48,896	52,886
46	-	Copco Valley Day Use	Clearing & grubbing, cut & chip light trees, to 6" diameter	30,890	SY	2	75,989	11,398	8,739	961	3,573	100,660	108,874
46	-	Copco Valley Day Use	Access Road/ Trail - Backfill, structural, common earth, 55 H.P. wheeled loader	2,741	L.C.Y.	81	223,079	33,462	25,654	2,822	10,488	295,505	319,619
46	-	Copco Valley Day Use	Access Road/ Trail - Compaction, riding, vibrating roller, 4 passes, 6" lifts	2,109	E.C.Y.	8	16,879	2,532	1,941	214	794	22,359	24,184
46	-	Copco Valley Day Use	Gravel Trail- Base course drainage layers, aggregate base course for	2,771	SY	6	17,811	2,672	2,048	225	837	23,594	25,519
46	-	Copco Valley Day Use	Parking Lot - Base course drainage layers, aggregate base course for	8,222	SY	6	52,850	7,928	6,078	669	2,485	70,009	75,721
46	-	Copco Valley Day Use	Parking Lot - Base course drainage layers, prepare and roll sub-base	867	SY	2	2,042	306	235	26	96	2,705	2,926
46	-	Copco Valley Day Use	Gravel Trail - Base course drainage layers, prepare and roll sub-base	2,771	SY	2	6,526	979	750	83	307	8,645	9,350
46	-	Copco Valley Day Use	Parking Lot - Base course drainage layers, prepare and roll sub-base	8,222	SY	2	19,362	2,904	2,227	245	910	25,648	27,741
46	-	Copco Valley Day Use	Parking Lot - Pavement markings, parking stall, thermoplastic, white	10.00	Stall	432	4,320	648	497	55	203	5,723	6,190
46	-	Copco Valley Day Use	Parking Lot - Pavement markings, street letters and numbers	25.00	SF	9	217	33	25	3	10	287	311
46	-	Copco Valley Day Use	Gabion retaining walls, stone filled gabions, stone delivered, galvanized	30.00	LF	273	8,196	1,229	943	104	385	10,857	11,743
46	-	Copco Valley Day Use	Parking Lot - Precast concrete parking bumpers, wheel stops, precast	10.00	EA	289	2,890	434	332	37	136	3,828	4,141
46	-	Copco Valley Day Use	Site seating, park benches, precast concrete, with backs, wood rails	6.00	EA	1,936	11,614	1,742	1,336	147	546	15,385	16,640
46	-	Copco Valley Day Use	Parking Lot - Handicap Sign - Signs, stock signs, reflectorized, 18" x 24"	2.00	EA	107	214	32	25	3	10	283	307
46	-	Copco Valley Day Use	Parking Lot - Handicap Sign - Signs, 10'-0", add to above for steel post	2.00	EA	57	114	17	13	1	5	151	163
46	-	Copco Valley Day Use	Soil preparation, mulching, redwood nuggets, 3" deep, hand spread	2,435	SY	7	17,870	2,681	2,055	226	840	23,672	25,603
46	-	Copco Valley Day Use	Planting beds preparation, excavate planting pit, heavy soil or clay, 1' deep	150	CY	15	2,270	341	261	29	107	3,007	3,252
46	-	Copco Valley Day Use	Trees Planted in prepared Beds	279	EA	588	164,167	24,625	18,879	2,077	7,719	217,467	235,212
46	-	Copco Valley Day Use	Bulletin Board	2.00	EA	963	1,926	289	221	24	91	2,551	2,759
46	-	Copco Valley Day Use	Vaulted Toilet and Pay Station - Comfort stations, prefab, stock, with	335	SF	226	75,628	11,344	8,697	957	3,556	100,182	108,357
46	-	Copco 2 PH Alt 1											
46	-	Copco 2 PH Alt 1	Gravel Trail - Gravel fill, 4" gravel depth & Finish Grading	722	SY	26	19,025	2,854	2,188	241	894	25,202	27,258
46	-	Copco 2 PH Alt 1	Planting beds preparation, backfill planting pit, on site topsoil, skid	164	CY	71	11,709	1,756	1,347	148	551	15,511	16,776
46	-	Copco 2 PH Alt 1	Gravel Trail - Backfill, in 8" layers, spreading, small dozer, includes	195	L.C.Y.	3	503	75	58	6	24	666	721
46	-	Copco 2 PH Alt 1	Paved Access Road - Backfill, in 8" layers, spreading, small dozer, includes	1,441	L.C.Y.	3	3,720	558	428	47	175	4,928	5,330
46	-	Copco 2 PH Alt 1	Gravel Trail - Excavating with Dozer fill to be used onsite	150	B.C.Y.	4	545	82	63	7	26	722	781
46	-	Copco 2 PH Alt 1	Paved Access Road - Excavating with Dozer fill to be used onsite	1,108	B.C.Y.	4	4,025	604	463	51	189	5,332	5,767
46	-	Copco 2 PH Alt 1	Docks, floating, recreational, prefabricated galvanized steel with pol	796	SF	75	59,463	8,919	6,838	752	2,796	78,769	85,196
46	-	Copco 2 PH Alt 1	Gravel Trail- Base course drainage layers, aggregate base course for	722	SY	6	4,641	696	534	59	218	6,148	6,649
46	-	Copco 2 PH Alt 1	Gravel Trail - Base course drainage layers, prepare and roll sub-base	722	SY	2	1,700	255	196	22	80	2,252	2,436

# KRRC Cost Estimate - Full Removal

July 2019

Est ID	Cost Sheet	Heading	Description	Qty	Unit	(\$) Rate	(\$) Direct Cost	15% MU by Sub	10% PDB OH&P	1% Bonds	Field Overhead	(\$) Estimate	Escalated YOC Estimate
46	-	Copco 2 PH Alt 1	Paved Access Road - Base course drainage layers, prepare and roll	3,990	SY	2	9,396	1,409	1,081	119	442	12,447	13,462
46	-	Copco 2 PH Alt 1	Paved Access Road - Asphaltic concrete paving, parking lots & driv	35,914	SF	4	157,896	23,684	18,158	1,997	7,424	209,160	226,227
46	-	Copco 2 PH Alt 1	Parking Lot - Pavement markings, parking stall, thermoplastic, white	10.00	Stall	432	4,320	648	497	55	203	5,723	6,190
46	-	Copco 2 PH Alt 1	Parking Lot - Pavement markings, street letters and numbers	25.00	SF	9	217	33	25	3	10	287	311
46	-	Copco 2 PH Alt 1	Parking Lot - Precast concrete parking bumpers, wheel stops, precast	10.00	EA	289	2,890	434	332	37	136	3,828	4,141
46	-	Copco 2 PH Alt 1	Site seating, park benches, precast concrete, with backs, wood rails	3.00	EA	1,936	5,807	871	668	73	273	7,692	8,320
46	-	Copco 2 PH Alt 1	Parking Lot - Handicap Sign - Signs, stock signs, reflectorized, 18"x	2.00	EA	107	214	32	25	3	10	283	307
46	-	Copco 2 PH Alt 1	Parking Lot - Handicap Sign - Signs, 10'-0", add to above for steel po	2.00	EA	57	114	17	13	1	5	151	163
46	-	Copco 2 PH Alt 1	Soil preparation, mulching, redwood nuggets, 3" deep, hand spread	986	SY	7	7,236	1,085	832	92	340	9,585	10,367
46	-	Copco 2 PH Alt 1	Planting beds preparation, excavate planting pit, heavy soil or clay,	60.00	CY	15	908	136	104	11	43	1,203	1,301
46	-	Copco 2 PH Alt 1	Trees Planted in prepared Beds	113	EA	588	66,491	9,974	7,646	841	3,126	88,078	95,266
46	-	Copco 2 PH Alt 1	Vaulted Toilet and Pay Station - Comfort stations, prefab, stock, wit	335	SF	226	75,628	11,344	8,697	957	3,556	100,182	108,357
		Iron Gate Hatchery Rec Area											
46	-	Iron Gate Hatchery Rec Area	Gravel Trail - Gravel fill, 4" gravel depth & Finish Grading	773	SY	26	20,369	3,055	2,342	258	958	26,982	29,184
46	-	Iron Gate Hatchery Rec Area	Planting beds preparation, backfill planting pit, on site topsoil, skid	572	CY	71	40,838	6,126	4,696	517	1,920	54,097	58,511
46	-	Iron Gate Hatchery Rec Area	Gravel Trail - Backfill, in 8" layers, spreading, small dozer, includes	195	L.C.Y.	3	503	75	58	6	24	666	721
46	-	Iron Gate Hatchery Rec Area	Paved Access Road - Backfill, in 8" layers, spreading, small dozer, i	1,434	L.C.Y.	3	3,702	555	426	47	174	4,904	5,304
46	-	Iron Gate Hatchery Rec Area	Gravel Trail - Excavating with Dozer fill to be used onsite	150	B.C.Y.	4	545	82	63	7	26	722	781
46	-	Iron Gate Hatchery Rec Area	Paved Access Road - Excavating with Dozer fill to be used onsite	1,103	B.C.Y.	4	4,006	601	461	51	188	5,307	5,740
46	-	Iron Gate Hatchery Rec Area	Docks, floating, recreational, prefabricated galvanized steel with pol	796	SF	75	59,463	8,919	6,838	752	2,796	78,769	85,196
46	-	Iron Gate Hatchery Rec Area	Gravel Trail - Base course drainage layers, aggregate base course fo	773	SY	6	4,969	745	571	63	234	6,582	7,119
46	-	Iron Gate Hatchery Rec Area	Gravel Trail - Base course drainage layers, prepare and roll sub-bas	773	SY	2	1,820	273	209	23	86	2,411	2,608
46	-	Iron Gate Hatchery Rec Area	Paved Access Road - Base course drainage layers, prepare and roll	3,970	SY	2	9,349	1,402	1,075	118	440	12,384	13,395
46	-	Iron Gate Hatchery Rec Area	Paved Access Road - Asphaltic concrete paving, parking lots & driv	35,734	SF	4	157,105	23,566	18,067	1,987	7,387	208,112	225,094
46	-	Iron Gate Hatchery Rec Area	Parking Lot - Pavement markings, parking stall, thermoplastic, white	32.00	Stall	432	13,824	2,074	1,590	175	650	18,312	19,806
46	-	Iron Gate Hatchery Rec Area	Parking Lot - Pavement markings, street letters and numbers	25.00	SF	9	217	33	25	3	10	287	311
46	-	Iron Gate Hatchery Rec Area	Timber Retaining wall - timber, 6" x 8"	183	LF	52	9,578	1,437	1,101	121	450	12,688	13,723
46	-	Iron Gate Hatchery Rec Area	Parking Lot - Precast concrete parking bumpers, wheel stops, precast	32.00	EA	289	9,248	1,387	1,064	117	435	12,251	13,250
46	-	Iron Gate Hatchery Rec Area	Site seating, park benches, precast concrete, with backs, wood rails	2.00	EA	1,936	3,871	581	445	49	182	5,128	5,546
46	-	Iron Gate Hatchery Rec Area	Parking Lot - Handicap Sign - Signs, stock signs, reflectorized, 18"x	2.00	EA	107	214	32	25	3	10	283	307
46	-	Iron Gate Hatchery Rec Area	Parking Lot - Handicap Sign - Signs, 10'-0", add to above for steel po	2.00	EA	57	114	17	13	1	5	151	163
46	-	Iron Gate Hatchery Rec Area	Soil preparation, mulching, redwood nuggets, 3" deep, hand spread	3,433	SY	7	25,194	3,779	2,897	319	1,185	33,374	36,097
46	-	Iron Gate Hatchery Rec Area	Planting beds preparation, excavate planting pit, heavy soil or clay,	165	CY	15	2,497	375	287	32	117	3,308	3,578
46	-	Iron Gate Hatchery Rec Area	Trees Planted in prepared Beds	309	EA	588	181,819	27,273	20,909	2,300	8,549	240,850	260,503
46	-	Iron Gate Hatchery Rec Area	Bulletin Board	2.00	EA	963	1,926	289	221	24	91	2,551	2,759
46	-	Iron Gate Hatchery Rec Area	Vaulted Toilet and Pay Station - Comfort stations, prefab, stock, wit	335	SF	226	75,628	11,344	8,697	957	3,556	100,182	108,357
		Downstream Flood Control Improvements											
47	-	Downstream Flood Control Improvements	[Stakeholder Cover] Downstream Flood Control Improvements				-	-	-	-	-	-	-
		Public Health and Safety Fencing											
48	-	Public Health and Safety Fencing	Cattle exclusion fencing	182,160	LF	10	1,870,885	280,633	215,152	23,667	87,963	2,478,299	2,665,476
		Fire Management Planning											
49	-	Fire Management Planning	Current estimate for Fire Management	3.00	EA	800,000	2,400,000	-	240,000	26,400	112,840	2,779,240	3,006,026
		Spawning Gravel Augmentation											
		Vegetation Maintenance & Monitoring											
49A	-	Establishment Maintenance & Monitoring	[LTC Cover] 2024 Monitoring monthly from November 1 through April	-	-	-	-	-	-	-	-	-	-
49A	-	Establishment Maintenance & Monitoring	[LTC Cover] 2024 Maintenance	-	-	-	-	-	-	-	-	-	-
49A	-	Long Term Maintenance & Monitoring	[LTC Cover] 2025 Monitoring bi-monthly from Nov. 1 through April 1 a	-	-	-	-	-	-	-	-	-	-
49A	-	Long Term Maintenance & Monitoring	[LTC Cover] 2025 Maintenance (assuming 80% of the restored areas	-	-	-	-	-	-	-	-	-	-
49A	-	Long Term Maintenance & Monitoring	[LTC Cover] 2026 Monitoring once from November 1 through April 1 a	-	-	-	-	-	-	-	-	-	-
49A	-	Long Term Maintenance & Monitoring	[LTC Cover] 2026 Maintenance (assuming 60% of the restored areas	-	-	-	-	-	-	-	-	-	-
49A	-	Long Term Maintenance & Monitoring	[LTC Cover] 2027 Monitoring bi-monthly from April 1 through Novemb	-	-	-	-	-	-	-	-	-	-
49A	-	Long Term Maintenance & Monitoring	[LTC Cover] 2027 Maintenance (assuming 40% of the restored areas	-	-	-	-	-	-	-	-	-	-
49A	-	Long Term Maintenance & Monitoring	[LTC Cover] 2028 Monitoring spring and fall (2 visits per year)	-	-	-	-	-	-	-	-	-	-
49A	-	Long Term Maintenance & Monitoring	[LTC Cover] 2028 Maintenance (assuming 20% of the restored areas	-	-	-	-	-	-	-	-	-	-
		Mainstem spawning (AR-1)											
49A	-	Mainstem spawning (AR-1)	Confluence Area Maintenance (downstream tribs)	1,350	HR	55	74,250	11,138	8,539	939	3,491	98,357	112,850
49A	-	Mainstem spawning (AR-1)	Confluence Area Maintenance (upstream tribs)	600	HR	55	33,000	4,950	3,795	417	1,552	43,714	50,156
49A	-	Mainstem spawning (AR-1)	Spawning Gravel Augmentation	16,132	CY	217	3,506,957	526,043	403,300	44,363	164,886	4,645,549	5,225,610
49A	-	Mainstem spawning (AR-1)	Laborer (30 days)	200	HR	70	14,000	2,100	1,610	177	658	18,545	20,861
49A	-	Mainstem spawning (AR-1)	200 Class Excavator (30 days)	360	HR	250	90,000	13,500	10,350	1,139	4,232	119,220	134,106
		Wetland Mitigation (TER-5)											
49A	-	Wetland Mitigation (TER-5)	[LTC Cover] Compensatory migration in Oregon	-	-	-	-	-	-	-	-	-	-
49A	-	Wetland Mitigation (TER-5)	[LTC Cover] Wetland migration monitoring	-	-	-	-	-	-	-	-	-	-
49A	-	Wetland Mitigation (TER-5)	[LTC Cover] Reporting and regulatory compliance	-	-	-	-	-	-	-	-	-	-



# KRRC Cost Estimate - Full Removal

July 2019

Est ID	Cost Sheet	Heading	Description	Qty	Unit	(\$) Rate	(\$) Direct Cost	15% MU by Sub	10% PDB OH&P	1% Bonds	Field Overhead	(\$) Estimate	Escalated YOC Estimate
<b>MITIGATION MEASURES</b>													
<b>Groundwater Analysis</b>													
51	-	Groundwater Analysis	AECOM FY17/18 Planning	1.00	YR	43,222	43,222	-	-	-	-	43,222	43,222
51	-	Groundwater Analysis	AECOM FY18/19 Planning	1.00	YR	204,120	204,120	-	-	-	-	204,120	204,120
51	-	Groundwater Analysis	AECOM FY19/20 Preliminary Services - Coordination & Outreach	1.00	YR	16,000	16,000	-	-	-	-	16,000	16,320
51	-	Groundwater Analysis	Outreach to well owners - meetings	10.00	EA	8,700	87,000	-	-	-	-	87,000	92,361
51	-	Groundwater Analysis	Outreach to well owners - followup calls	1.00	LS	33,000	33,000	-	-	-	-	33,000	35,033
51	-	Groundwater Analysis	[Stakeholder Cover] Drill and install new monitoring wells	-	-	-	-	-	-	-	-	-	-
51	-	Groundwater Analysis	[Stakeholder Cover] Water level monitoring of new wells - modification	-	-	-	-	-	-	-	-	-	-
51	-	Groundwater Analysis	[Stakeholder Cover] Water level monitoring of new wells - monitoring	-	-	-	-	-	-	-	-	-	-
51	-	Groundwater Analysis	[Stakeholder Cover] WQ laboratory analytical testing (per well)	-	-	-	-	-	-	-	-	-	-
51	-	Groundwater Analysis	[Stakeholder Cover] Well replacements	-	-	-	-	-	-	-	-	-	-
51	-	Groundwater Analysis	[Stakeholder Cover] Well abandonment	-	-	-	-	-	-	-	-	-	-
51	-	Groundwater Analysis	[Stakeholder Cover] Temporary water supply	-	-	-	-	-	-	-	-	-	-
51	-	Groundwater Analysis	[Stakeholder Cover] Permitting and Reporting	-	-	-	-	-	-	-	-	-	-
<b>Downstream Water Supply/Rights</b>													
52	-	Downstream Water Supply/Rights	Hay production	3,379	T	175	591,357	-	-	-	-	591,357	678,500
52	-	Downstream Water Supply/Rights	Water supply for domestic use for water rights	1.00	LS	8,666	8,666	-	-	-	-	8,666	9,943
52	-	Downstream Water Supply/Rights	Sediment removal at intakes	254	CY	500	126,999	-	-	-	-	126,999	145,714
52	-	Downstream Water Supply/Rights	Groundwater wells - domestic	9.00	EA	10,000	90,000	-	-	-	-	90,000	103,263
52	-	Downstream Water Supply/Rights	Groundwater wells - municipal	1.00	EA	100,000	100,000	-	-	-	-	100,000	114,736
52	-	Downstream Water Supply/Rights	Sediment basin	39.00	EA	1,852	72,222	-	-	-	-	72,222	82,865
<b>Cultural Resources</b>													
<b>Actuals</b>													
53	-	Cultural Resources	AECOM FY17/18 Cultural Resources, AECOM	1.00	YR	1,080,880	1,080,880	-	-	-	-	1,080,880	1,080,880
53	-	Cultural Resources	AECOM FY18/19 Cultural Resources, AECOM	1.00	YR	1,453,410	1,453,410	-	-	-	-	1,453,410	1,453,410
<b>2019 H1 Support</b>													
53	-	Cultural Resources Tasks	Generally	6.00	MO	168,958	1,013,750	-	-	-	-	1,013,750	1,013,750
<b>2019 H2 Support</b>													
53	-	Task management	Principal Scientist/Planner	208	HR	900	187,200	-	-	-	-	187,200	194,688
53	-	Task 1.2A Agency consultation	Principal Scientist/Planner	83.20	HR	180	14,976	-	-	-	-	14,976	15,575
53	-	Task 1.2A Agency consultation	Senior Scientist/Planner	41.60	HR	160	6,656	-	-	-	-	6,656	6,922
53	-	Task 1.2B Tribal consultation and work plans	Principal Scientist/Planner	256	HR	180	46,080	-	-	-	-	46,080	47,923
53	-	Task 1.2B Tribal consultation and work plans	Senior Scientist/Planner	128	HR	160	20,480	-	-	-	-	20,480	21,299
53	-	Task 1.2B Tribal consultation and work plans	Technical Editor	16.00	HR	105	1,680	-	-	-	-	1,680	1,747
53	-	Task 1.2B Tribal consultation and work plans	GIS/CADD/Graphics	24.00	HR	90	2,160	-	-	-	-	2,160	2,246
53	-	Submerged Resources Report	Preparation costs	1.00	EA	2,160	2,160	-	-	-	-	2,160	2,160
<b>2020 H2 Support</b>													
53	-	Task 1.2B Tribal consultation and work plans	Monthly working group meetings	10.00	MO	29,800	298,000	-	-	-	-	298,000	309,920
53	-	Task 1.2B Tribal consultation and work plans	Monthly tribal meetings	10.00	MO	15,200	152,000	-	-	-	-	152,000	158,080
<b>2021-2024 Support</b>													
53	-	Task management	Principal Scientist/Planner	1,040	HR	180	187,200	-	-	-	-	187,200	219,227
53	-	Task 1.2A Agency consultation	Principal Scientist/Planner	416	HR	180	74,880	-	-	-	-	74,880	87,691
53	-	Task 1.2A Agency consultation	Senior Scientist/Planner	208	HR	160	33,280	-	-	-	-	33,280	38,974
53	-	Task 1.2B Tribal consultation and work plans	Principal Scientist/Planner	1,280	HR	180	230,400	-	-	-	-	230,400	269,817
53	-	Task 1.2B Tribal consultation and work plans	Senior Scientist/Planner	640	HR	160	102,400	-	-	-	-	102,400	119,919
53	-	Task 1.2B Tribal consultation and work plans	Technical Editor	80.00	HR	105	8,400	-	-	-	-	8,400	9,837
53	-	Task 1.2B Tribal consultation and work plans	GIS/CADD/Graphics	120	HR	90	10,800	-	-	-	-	10,800	12,648
53	-	Task 2.6L Curation	Principal Scientist/Planner	80.00	HR	180	14,400	-	-	-	-	14,400	16,754
53	-	Task 2.6L Curation	Scientist/Planner	1,640	HR	120	196,800	-	-	-	-	196,800	228,971
53	-	Task 2.6L Curation	Curation	410	EA	500	205,000	-	-	-	-	205,000	238,512
53	-	Task 2.6L Curation	Other direct costs	1.00	SUM	5,000	5,000	-	-	-	-	5,000	5,817
53	-	Task 2.6M Arch fieldwork - Drawdown shoreline survey	Principal Scientist/Planner	200	HR	180	36,000	-	-	-	-	36,000	40,495
53	-	Task 2.6M Arch fieldwork - Drawdown shoreline survey	Senior Scientist/Planner	290	HR	160	46,400	-	-	-	-	46,400	52,194
53	-	Task 2.6M Arch fieldwork - Drawdown shoreline survey	Scientist/Planner	1,180	HR	120	141,600	-	-	-	-	141,600	159,281
53	-	Task 2.6M Arch fieldwork - Drawdown shoreline survey	Technical Editor	40.00	HR	105	4,200	-	-	-	-	4,200	4,724
53	-	Task 2.6M Arch fieldwork - Drawdown shoreline survey	Junior Scientist/Planner	10.00	HR	95	950	-	-	-	-	950	1,069
53	-	Task 2.6M Arch fieldwork - Drawdown shoreline survey	GIS/CADD/Graphics	100	HR	90	9,000	-	-	-	-	9,000	10,124
53	-	Task 2.6M Arch fieldwork - Drawdown shoreline survey	Tribal monitor subcontract	149	DA	617	91,933	-	-	-	-	91,933	103,412
53	-	Task 2.6M Arch fieldwork - Drawdown shoreline survey	Travel and per diem	1.00	SUM	35,858	35,858	-	-	-	-	35,858	40,335
53	-	Task 2.6M Arch fieldwork - Post drawdown survey	Principal Scientist/Planner	200	HR	180	36,000	-	-	-	-	36,000	42,115
53	-	Task 2.6M Arch fieldwork - Post drawdown survey	Senior Scientist/Planner	98.00	HR	160	15,680	-	-	-	-	15,680	18,343
53	-	Task 2.6M Arch fieldwork - Post drawdown survey	Scientist/Planner	972	HR	120	116,640	-	-	-	-	116,640	136,452
53	-	Task 2.6M Arch fieldwork - Post drawdown survey	Technical Editor	40.00	HR	105	4,200	-	-	-	-	4,200	4,913



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July 2019

Est ID	Cost Sheet	Heading	Description	Qty	Unit	(\$) Rate	(\$) Direct Cost	15% MU by Sub	10% PDB OH&P	1% Bonds	Field Overhead	(\$) Estimate	Escalated YOC Estimate
53	-	Task 2.6M Arch fieldwork - Post drawdown survey	Junior Scientist/Planner	20.00	HR	95	1,900	-	-	-	-	1,900	2,223
53	-	Task 2.6M Arch fieldwork - Post drawdown survey	GIS/CADD/Graphics	120	HR	90	10,800	-	-	-	-	10,800	12,634
53	-	Task 2.6M Arch fieldwork - Post drawdown survey	Field Technician	768	HR	75	57,600	-	-	-	-	57,600	67,384
53	-	Task 2.6M Arch fieldwork - Post drawdown survey	Tribal monitor subcontract	77.00	DA	648	49,884	-	-	-	-	49,884	58,358
53	-	Task 2.6M Arch fieldwork - Post drawdown survey	Travel and per diem	1.00	SUM	30,900	30,900	-	-	-	-	30,900	36,149
53	-	Task 2.6N Discoveries - Burial recovery	Human remains	100	EA	15,000	1,500,000	-	-	-	-	1,500,000	1,756,624
53	-	Task 2.6N Discoveries - Burial recovery	Other direct costs	1.00	SUM	500	500	-	-	-	-	500	586
53	-	Task 2.6N Discoveries - Arch resources	Archaeological unit cost	60.00	EA	30,000	1,800,000	-	-	-	-	1,800,000	2,107,949
53	-	Task 2.6N Discoveries - Arch resources	Other direct costs	1.00	SUM	500	500	-	-	-	-	500	586
53	-	Task 2.6O Short-term monitoring FY 2021-2022	Principal Scientist/Planner	240	HR	180	43,200	-	-	-	-	43,200	49,566
53	-	Task 2.6O Short-term monitoring FY 2021-2022	Senior Scientist/Planner	1,808	HR	160	289,280	-	-	-	-	289,280	331,909
53	-	Task 2.6O Short-term monitoring FY 2021-2022	Scientist/Planner	1,928	HR	120	231,360	-	-	-	-	231,360	265,454
53	-	Task 2.6O Short-term monitoring FY 2021-2022	Technical Editor	40.00	HR	105	4,200	-	-	-	-	4,200	4,819
53	-	Task 2.6O Short-term monitoring FY 2021-2022	Junior Scientist/Planner	40.00	HR	95	3,800	-	-	-	-	3,800	4,360
53	-	Task 2.6O Short-term monitoring FY 2021-2022	GIS/CADD/Graphics	120	HR	90	10,800	-	-	-	-	10,800	12,392
53	-	Task 2.6O Short-term monitoring FY 2021-2022	Field Technician	7,680	HR	75	576,000	-	-	-	-	576,000	660,880
53	-	Task 2.6O Short-term monitoring FY 2021-2022	Tribal monitor subcontract	452	EA	617	278,884	-	-	-	-	278,884	319,981
53	-	Task 2.6O Short-term monitoring FY 2021-2022	Other direct costs	1.00	SUM	127,984	127,984	-	-	-	-	127,984	146,844
53	-	Task 2.6O Short-term monitoring FY 2023-2025	Principal Scientist/Planner	240	HR	180	43,200	-	-	-	-	43,200	54,690
53	-	Task 2.6O Short-term monitoring FY 2023-2025	Senior Scientist/Planner	1,176	HR	160	188,160	-	-	-	-	188,160	238,205
53	-	Task 2.6O Short-term monitoring FY 2023-2025	Scientist/Planner	1,536	HR	120	184,320	-	-	-	-	184,320	233,343
53	-	Task 2.6O Short-term monitoring FY 2023-2025	Technical Editor	40.00	HR	105	4,200	-	-	-	-	4,200	5,317
53	-	Task 2.6O Short-term monitoring FY 2023-2025	Junior Scientist/Planner	40.00	HR	95	3,800	-	-	-	-	3,800	4,811
53	-	Task 2.6O Short-term monitoring FY 2023-2025	GIS/CADD/Graphics	230	HR	90	20,700	-	-	-	-	20,700	26,206
53	-	Task 2.6O Short-term monitoring FY 2023-2025	Field Technician	7,680	HR	75	576,000	-	-	-	-	576,000	729,198
53	-	Task 2.6O Short-term monitoring FY 2023-2025	Tribal monitor subcontract	294	EA	648	190,468	-	-	-	-	190,468	241,126
53	-	Task 2.6O Short-term monitoring FY 2023-2025	Other direct costs	1.00	SUM	57,448	57,448	-	-	-	-	57,448	72,727
53	-	TCP Project allowance	TCP Project allowance	1.00	SUM	1,000,000	1,000,000	-	-	-	-	1,000,000	1,000,000
53	-	Cultural resources allowance	Allowance for additional discoveries (reconciled with risk log)	1.00	SUM	1,000,000	1,000,000	-	-	-	-	1,000,000	1,000,000
		<b>MONITORING &amp; REPORTING (KRRC)</b>											
		<b>Aquatic Resource Measures</b>											
		Mainstem spawning (AR-1)											
61	-	Mainstem spawning (AR-1)	Tributary confluence monitoring (passage)	1,080	HR	86	93,000	-	-	-	-	93,000	106,705
61	-	Mainstem spawning (AR-1)	[inc in PDB] Confluence Area Maintenance (downstream tribs)	1,350	HR	-	-	-	-	-	-	-	-
61	-	Mainstem spawning (AR-1)	[inc in PDB] Confluence Area Maintenance (upstream tribs)	600	HR	-	-	-	-	-	-	-	-
61	-	Mainstem spawning (AR-1)	[LTC Cover] Mainstem Spawning Gravel Survey	-	-	-	-	-	-	-	-	-	-
61	-	Mainstem spawning (AR-1)	[LTC Cover] Tributary Spawning Gravel Survey	-	-	-	-	-	-	-	-	-	-
61	-	Mainstem spawning (AR-1)	[LTC Cover] Reporting and Coordination	-	-	-	-	-	-	-	-	-	-
61	-	Mainstem spawning (AR-1)	[inc in PDB] Spawning Gravel Augmentation	16,132	CY	-	-	-	-	-	-	-	-
61	-	Mainstem spawning (AR-1)	[inc in PDB] Laborer (30 days)	200	HR	-	-	-	-	-	-	-	-
61	-	Mainstem spawning (AR-1)	[inc in PDB] 200 Class Excavator (30 days)	360	HR	-	-	-	-	-	-	-	-
		Juvenile outmigration (AR-2)											
61	-	Juvenile outmigration (AR-2)	[LTC Cover] Tributary Confluence Monitoring (Passage)	-	-	-	-	-	-	-	-	-	-
61	-	Juvenile outmigration (AR-2)	[LTC Cover] Tributary Confluence Monitoring (WQ)	-	-	-	-	-	-	-	-	-	-
61	-	Juvenile outmigration (AR-2)	[LTC Cover] 2019 Mainstem Winter Seining Recon	-	-	-	-	-	-	-	-	-	-
61	-	Juvenile outmigration (AR-2)	[LTC Cover] 2020 Mainstem Winter Seining (Coho) (3.3)	-	-	-	-	-	-	-	-	-	-
61	-	Juvenile outmigration (AR-2)	[LTC Cover] Fish Transport (1 Truck)	-	-	-	-	-	-	-	-	-	-
61	-	Juvenile outmigration (AR-2)	[LTC Cover] Fish Rescue and relo Crew	-	-	-	-	-	-	-	-	-	-
61	-	Juvenile outmigration (AR-2)	[LTC Cover] Fish Transport (2 Trucks)	-	-	-	-	-	-	-	-	-	-
61	-	Juvenile outmigration (AR-2)	[LTC Cover] Reporting and Coordination	-	-	-	-	-	-	-	-	-	-
61	-	Juvenile outmigration (AR-2)	[LTC Cover] Miscellaneous Equipment	-	-	-	-	-	-	-	-	-	-
61	-	Juvenile outmigration (AR-2)	[LTC Cover] H2O Monitoring Equipment	-	-	-	-	-	-	-	-	-	-
61	-	Juvenile outmigration (AR-2)	[LTC Cover] H2O Monitoring Equipment	-	-	-	-	-	-	-	-	-	-
61	-	Juvenile outmigration (AR-2)	[LTC Cover] Technician Equipment	-	-	-	-	-	-	-	-	-	-
61	-	Juvenile outmigration (AR-2)	[LTC Cover] Transport Vehicle Rental (\$300/day for 21 days)	-	-	-	-	-	-	-	-	-	-
61	-	Juvenile outmigration (AR-2)	[LTC Cover] Transport Vehicle Operational Cost (\$0.75/mi)	-	-	-	-	-	-	-	-	-	-
		Sucker rescue and relo plan (AR-6)											
61	-	Sucker rescue and relo plan (AR-6)	Sucker Recapture Study (Spring and Fall) (3.3)	1,680	HR	83	140,000	-	-	-	-	140,000	145,675
61	-	Sucker rescue and relo plan (AR-6)	[LTC Cover] Sucker Salvage	-	-	-	-	-	-	-	-	-	-
61	-	Sucker rescue and relo plan (AR-6)	[LTC Cover] Sucker Transport (1 Truck)	-	-	-	-	-	-	-	-	-	-
61	-	Sucker rescue and relo plan (AR-6)	[LTC Cover] Reporting and Coordination	-	-	-	-	-	-	-	-	-	-
61	-	Sucker rescue and relo plan (AR-6)	[LTC Cover] Boat Electrofisher	-	-	-	-	-	-	-	-	-	-
61	-	Sucker rescue and relo plan (AR-6)	[LTC Cover] Boats (2 boats)	-	-	-	-	-	-	-	-	-	-
61	-	Sucker rescue and relo plan (AR-6)	[LTC Cover] Technician Equipment	-	-	-	-	-	-	-	-	-	-

KRRC Cost Estimate - Full Removal

July 2019

Est ID	Cost Sheet	Heading	Description	Qty	Unit	(\$) Rate	(\$) Direct Cost	15% MU by Sub	10% PDB OH&P	1% Bonds	Field Overhead	(\$) Estimate	Escalated YOC Estimate
61	-	Sucker rescue and relo plan (AR-6)	[LTC Cover] Tagging Equipment	-	-	-	-	-	-	-	-	-	-
61	-	Sucker rescue and relo plan (AR-6)	[LTC Cover] Transport Vehicle Rental (\$300/day)	-	-	-	-	-	-	-	-	-	-
61	-	Sucker rescue and relo plan (AR-6)	[LTC Cover] Transport Vehicle Operational Cost (\$0.75/mi)	-	-	-	-	-	-	-	-	-	-
	-	Freshwater mussel relo (AR-7)											
61	-	Freshwater mussel relo (AR-7)	Freshwater Mussel Reconnaissance	400	HR	89	35,600	-	-	-	-	35,600	35,600
61	-	Freshwater mussel relo (AR-7)	[LTC Cover] Mussel Salvage and relo	-	-	-	-	-	-	-	-	-	-
61	-	Freshwater mussel relo (AR-7)	[LTC Cover] Mussel Transport (1 Truck)	-	-	-	-	-	-	-	-	-	-
61	-	Freshwater mussel relo (AR-7)	[LTC Cover] Reporting and Coordination	-	-	-	-	-	-	-	-	-	-
61	-	Freshwater mussel relo (AR-7)	[LTC Cover] Miscellaneous Equipment	-	-	-	-	-	-	-	-	-	-
61	-	Freshwater mussel relo (AR-7)	[LTC Cover] Diving Gear	-	-	-	-	-	-	-	-	-	-
61	-	Freshwater mussel relo (AR-7)	[LTC Cover] Technician Equipment	-	-	-	-	-	-	-	-	-	-
61	-	Freshwater mussel relo (AR-7)	[LTC Cover] Transport Vehicle Rental (\$300/day)	-	-	-	-	-	-	-	-	-	-
61	-	Freshwater mussel relo (AR-7)	[LTC Cover] Transport Vehicle Operational Cost (\$0.75/mi)	-	-	-	-	-	-	-	-	-	-
		<b>Terrestrial Resource Measures</b>											
		Biological Monitoring - Generally											
62	-	Biological Monitoring (2.5, 4.2)	AECOM FY17/18 Planning (AQ & TER)	1.00	YR	656,078	656,078	-	-	-	-	656,078	656,078
62	-	Biological Monitoring (2.5, 4.2)	AECOM FY18/19 Planning (AW & TER)	1.00	YR	954,937	954,937	-	-	-	-	954,937	954,937
62	-	Biological Monitoring (4.2)	AECOM FY19/20 Prelim Services - Coordination	1.00	YR	64,000	64,000	-	-	-	-	64,000	64,000
62	-	Biological Monitoring (4.2)	AECOM FY20/21 Prelim Services / Dam Mods	1.00	YR	66,000	66,000	-	-	-	-	66,000	66,000
62	-	Biological Monitoring (4.2)	[LTC Cover] AECOM FY21/22 Dam Mods / Dam Removal - Coordination	-	-	-	-	-	-	-	-	-	-
62	-	Biological Monitoring (4.2)	[LTC Cover] AECOM FY22/23 Dam Removal & Restoration - Coordination	-	-	-	-	-	-	-	-	-	-
62	-	Biological Monitoring (4.2)	[LTC Cover] AECOM FY23/24+ Post Construction - Coordination	-	-	-	-	-	-	-	-	-	-
		Habitat restoration plan (TER-1)											
62	-	Habitat restoration plan (TER-1)	Included in vegetation restoration	-	-	-	-	-	-	-	-	-	-
		Nesting Bird Surveys (TER-2)											
62	-	Nesting Bird Surveys (TER-2)	[LTC Cover] Osprey nest platform management - Contractor	-	-	-	-	-	-	-	-	-	-
62	-	Nesting Bird Surveys (TER-2)	[LTC Cover] Osprey nest platform management	-	-	-	-	-	-	-	-	-	-
62	-	Nesting Bird Surveys (TER-2)	[LTC Cover] Osprey nest exclusion monitoring	-	-	-	-	-	-	-	-	-	-
62	-	Nesting Bird Surveys (TER-2)	[LTC Cover] Osprey nest regulatory compliance and reporting	-	-	-	-	-	-	-	-	-	-
		Nesting Bird Surveys (TER-2)											
62	-	Nesting Bird Surveys (TER-2)	AECOM Bio Monitoring (2.5, 4.2) FY19/20 Prelim Services - NSO	1.00	YR	37,080	37,080	-	-	-	-	37,080	37,822
62	-	Nesting Bird Surveys (TER-2)	AECOM Bio Monitoring (2.5, 4.2) FY19/20 Prelim Services - Nesting	1.00	YR	266,208	266,208	-	-	-	-	266,208	271,532
62	-	Nesting Bird Surveys (TER-2)	[LTC Cover] Cliff swallow nest management - Contractor	-	-	-	-	-	-	-	-	-	-
62	-	Nesting Bird Surveys (TER-2)	[LTC Cover] Cliff swallow nest management	-	-	-	-	-	-	-	-	-	-
62	-	Nesting Bird Surveys (TER-2)	[LTC Cover] Cliff swallow nest exclusion monitoring	-	-	-	-	-	-	-	-	-	-
62	-	Nesting Bird Surveys (TER-2)	[LTC Cover] Biological monitoring, nest site monitoring	-	-	-	-	-	-	-	-	-	-
62	-	Nesting Bird Surveys (TER-2)	[LTC Cover] Biological monitoring, construction site monitoring & w	-	-	-	-	-	-	-	-	-	-
62	-	Nesting Bird Surveys (TER-2)	[LTC Cover] Compliance reporting	-	-	-	-	-	-	-	-	-	-
62	-	Nesting Bird Surveys (TER-2)	[LTC Cover] Post construction special status species monitoring	-	-	-	-	-	-	-	-	-	-
62	-	Nesting Bird Surveys (TER-2)	[LTC Cover] Post construction special status regulatory compliance	-	-	-	-	-	-	-	-	-	-
		Bald and Golden Eagle (TER-3)											
62	-	Bald and Golden Eagle (TER-3)	AECOM Bio Monitoring (2.5, 4.2) FY19/20 Prelim Services	1.00	YR	Included	Included	-	-	-	-	-	-
62	-	Bald and Golden Eagle (TER-3)	Project Management/Task Oversight	1.00	EA	38,800	38,800	-	-	-	-	38,800	44,552
62	-	Bald and Golden Eagle (TER-3)	1 pre-construction survey in the early breeding season the year before	1.00	EA	49,819	49,819	-	-	-	-	49,819	53,884
62	-	Bald and Golden Eagle (TER-3)	1 pre-construction survey within 2 weeks prior to construction	1.00	EA	71,819	71,819	-	-	-	-	71,819	77,679
62	-	Bald and Golden Eagle (TER-3)	Pre-construction surveys (3x/year) if construction start is delayed from	1.00	HR	191,457	191,457	-	-	-	-	191,457	191,457
62	-	Bald and Golden Eagle (TER-3)	Eagle Avoidance and Minimization Plan	1.00	EA	28,560	28,560	-	-	-	-	28,560	29,131
62	-	Bald and Golden Eagle (TER-3)	[LTC Cover] Biological monitoring during construction	-	-	-	-	-	-	-	-	-	-
62	-	Bald and Golden Eagle (TER-3)	[LTC Cover] Reporting (1x/year for 5 years)	-	-	-	-	-	-	-	-	-	-
62	-	Bald and Golden Eagle (TER-3)	[LTC Cover] Meetings (agency, internal team, etc.)	-	-	-	-	-	-	-	-	-	-
62	-	Bald and Golden Eagle (TER-3)	USFWS take permit/Eagle Conservation Plan	1.00	HR	-	Risk Log	-	-	-	-	-	-
62	-	Bald and Golden Eagle (TER-3)	Post-Construction Eagle Surveys (3x/year for 5 years, only req'd if the	1.00	HR	-	Risk Log	-	-	-	-	-	-
		Special Status Plants (TER-4)											
62	-	Special Status Plants (TER-4)	AECOM Bio Monitoring (2.5, 4.2) FY19/20 Prelim Services	1.00	YR	56,208	56,208	-	-	-	-	56,208	57,332
62	-	Special Status Plants (TER-4)	[LTC Cover] Relo and monitoring - additional 2019 work (extended s	-	-	-	-	-	-	-	-	-	-
62	-	Special Status Plants (TER-4)	[LTC Cover] Relo and monitoring	-	-	-	-	-	-	-	-	-	-
		Wetland Mitigation (TER-5)											
62	-	Wetland Mitigation (TER-5)	[inc in PDB] Compensatory migration in Oregon	1.00	EA	-	-	-	-	-	-	-	-
62	-	Wetland Mitigation (TER-5)	[inc in PDB] Wetland migration monitoring	1.00	EA	-	-	-	-	-	-	-	-
62	-	Wetland Mitigation (TER-5)	[inc in PDB] Reporting and regulatory compliance	1.00	EA	-	-	-	-	-	-	-	-
		Western Pond Turtle (TER-7)											
62	-	Western Pond Turtle (TER-7)	AECOM Bio Monitoring (2.5, 4.2) FY19/20 Prelim Services	1.00	YR	-	Included	-	-	-	-	-	-
62	-	Western Pond Turtle (TER-7)	Wetland creation in Oregon - approximately 0.5 acres	1.00	EA	21,000	21,000	-	-	-	-	21,000	21,937
62	-	Western Pond Turtle (TER-7)	Investigation of turtle population - 1 additional year	1.00	EA	52,500	52,500	-	-	-	-	52,500	54,844

KRRC Cost Estimate - Full Removal

July 2019

Est ID	Cost Sheet	Heading	Description	Qty	Unit	(\$) Rate	(\$) Direct Cost	15% MJ by Sub	10% PDB OH&P	1% Bonds	Field Overhead	(\$) Estimate	Escalated YOC Estimate
62	-	Western Pond Turtle (TER-7)	Capture and relo of turtles	1.00	EA	36,750	36,750	-	-	-	-	36,750	39,749
62	-	Western Pond Turtle (TER-7)	Relo of turtles to Klamath	1.00	EA	21,000	21,000	-	-	-	-	21,000	23,622
62	-	Western Pond Turtle (TER-7)	Monitoring	1.00	EA	42,000	42,000	-	-	-	-	42,000	48,126
62	-	Western Pond Turtle (TER-7)	Reporting and Regulatory Compliance	1.00	EA	26,250	26,250	-	-	-	-	26,250	28,436
		Special Status Bats (TER-6)											
62	-	Special Status Bats (TER-6)	AECOM Bio Monitoring (2.5, 4.2) FY19/20 Prelim Services	1.00	YR	-	Included	-	-	-	-	-	-
62	-	Special Status Bats (TER-6)	Pre-Demolition Exclusion Oversight	1.00	EA	112,790	112,790	-	-	-	-	112,790	122,056
62	-	Special Status Bats (TER-6)	Bat Management Plan (Final)	1.00	EA	22,300	22,300	-	-	-	-	22,300	23,147
62	-	Special Status Bats (TER-6)	Re-assess Structures within One Year Prior to Drawdown	1.00	EA	22,500	22,500	-	-	-	-	22,500	24,336
62	-	Special Status Bats (TER-6)	Biological Monitoring	1.00	EA	119,080	119,080	-	-	-	-	119,080	139,378
62	-	Special Status Bats (TER-6)	Agency Coordination/Meetings	1.00	EA	50,770	50,770	-	-	-	-	50,770	54,919
62	-	Special Status Bats (TER-6)	Design Replacement Roosts	1.00	EA	38,800	38,800	-	-	-	-	38,800	39,731
62	-	Special Status Bats (TER-6)	[inc in PDB] Construction of Replacement Roosts	1.00	EA	-	-	-	-	-	-	-	-
62	-	Special Status Bats (TER-6)	Construction of Replacement Roosts	1.00	EA	128,000	128,000	19,200	14,720	1,619	6,018	169,557	179,866
62	-	Special Status Bats (TER-6)	[LTC Cover] Monitor Installation of Replacement Roosts	-	-	-	-	-	-	-	-	-	-
62	-	Special Status Bats (TER-6)	[LTC Cover] Post-Construction Monitoring of Replacement Roosts	-	-	-	-	-	-	-	-	-	-
		Baseline Water Quality Monitoring											
		Field installation & equipment											
63	-	Field installation & equipment	AECOM Water Monitoring (3.3) FY19/20 Prelim Services	1.00	YR	50,956	50,956	-	-	-	-	50,956	51,975
63	-	Field installation & equipment	Keno	1.00	EA	58,000	58,000	-	-	-	-	58,000	58,000
63	-	Field installation & equipment	JC Boyle	1.00	EA	151,000	151,000	-	-	-	-	151,000	151,000
63	-	Field installation & equipment	Copco	1.00	EA	86,000	86,000	-	-	-	-	86,000	86,000
63	-	Field installation & equipment	Iron Gate	1.00	EA	74,000	74,000	-	-	-	-	74,000	74,000
63	-	Field installation & equipment	Walker Bridge	1.00	EA	77,000	77,000	-	-	-	-	77,000	77,000
63	-	Field installation & equipment	Seiad Valley	1.00	EA	62,000	62,000	-	-	-	-	62,000	62,000
63	-	Field installation & equipment	Orleans	1.00	EA	64,000	64,000	-	-	-	-	64,000	64,000
63	-	Field installation & equipment	Klamath	1.00	EA	59,000	59,000	-	-	-	-	59,000	59,000
63	-	Field installation & equipment	Shasta	1.00	EA	65,000	65,000	-	-	-	-	65,000	65,000
63	-	Field installation & equipment	Scott	1.00	EA	65,000	65,000	-	-	-	-	65,000	65,000
END								-	-	-		-	-

# PARTIAL REMOVAL ADJUSTMENTS

Cost Sh.	Line Item/Category	Esc YOC Estimate Ddt (Excl. FO)	Esc YOC Remediation Estimate	Est 2019 Annual Maint Rate	Esc from 2022 10 Year Maint Estimate	Esc YOC Actionable Savings	Comments
	<b>Copco No. 1 Facility Removal</b>	<b>\$ (6,640,263)</b>	<b>\$ 182,790</b>	<b>\$ 12,500</b>	<b>\$ 168,815</b>	<b>\$ (6,242,241)</b>	
	Penstocks	\$ (1,650,377)	\$ 70,304	\$ 6,500	\$ 87,784	\$ (1,486,093)	
2.019	Remove & Dispose of 3 sections of 23' of 72" Dia. steel lining (embedded)	\$ (274,991)	\$ 21,632	\$ 2,000	\$ 27,010	\$ (226,349)	Repair; 10-yr repair
2.020	Remove & Dispose of 3 - 72" butterfly valves (embedded)	\$ (249,063)	\$ 5,408	\$ 500	\$ 6,753	\$ (236,903)	Repair; 10-yr repair
2.066	Remove Concrete Items associated with 10 ft. diam. Penstocks. reinf. Concrete	\$ (119,145)	-	-	-	\$ (119,145)	No remediation; minimal annual maint.
2.065	Plug 14-foot diameter penstock with concrete	\$ (158,208)	-	-	-	\$ (158,208)	No remediation; minimal annual maint.
2.067	Remove & Dispose of 8 screens	\$ (24,861)	-	-	-	\$ (24,861)	No remediation; minimal annual maint.
2.068	Remove & Dispose of 8 Water Gates	\$ (23,118)	-	-	-	\$ (23,118)	No remediation; minimal annual maint.
2.070	Remove & Dispose of 14" Dia. penstock pipe	\$ (441,401)	\$ 21,632	\$ 2,000	\$ 27,010	\$ (392,759)	Repair; 10-yr repair
2.071	Remove & Dispose of 10" Dia. penstock pipe	\$ (353,383)	\$ 21,632	\$ 2,000	\$ 27,010	\$ (304,740)	Repair; 10-yr repair
	<b>Powerhouse Intake Structure</b>	<b>\$ (2,950,840)</b>	<b>\$ 12,979</b>	<b>\$ 2,000</b>	<b>\$ 27,010</b>	<b>\$ (2,910,851)</b>	
2.011	Remove Concrete Intake Structure on Right Abutment	\$ (2,950,840)	\$ 12,979	\$ 2,000	\$ 27,010	\$ (2,910,851)	Remove lead paint and fence; standard annual building maint.
	<b>Diversion Control Structure</b>	<b>\$ (418,287)</b>	<b>\$ 12,979</b>	<b>\$ 2,000</b>	<b>\$ 27,010</b>	<b>\$ (378,287)</b>	
2.014	Remove Diversion Tunnel Control Structure Concrete	\$ (418,287)	\$ 12,979	\$ 2,000	\$ 27,010	\$ (378,287)	Remove lead paint and fence; standard annual building maint.
	<b>Powerhouse (incl. mech &amp; elect. equipment)</b>	<b>\$ (1,620,759)</b>	<b>\$ 86,528</b>	<b>\$ 2,000</b>	<b>\$ 27,010</b>	<b>\$ (1,487,011)</b>	
2.024	Remove Powerhouse Concrete down to top of rock under the Powerhouse	\$ (659,581)	\$ 86,528	\$ 2,000	\$ 27,010	\$ (546,042)	Remove lead paint and asbesthos. fence bulding and new roof. annual building maint.
2.025	Remove Powerhouse Structural Steel	\$ (77,708)	-	-	-	\$ (77,708)	No remediation; no maint.
2.028	Remove & Dispose of 4 - Horizontal Tandem Francis Turbines	\$ (282,604)	-	-	-	\$ (282,604)	Remediation and maint. covered in building costs
2.029	Remove & Dispose of 2 - 40 Ton indoor cranes	\$ (75,536)	-	-	-	\$ (75,536)	Remediation and maint. covered in building costs
2.034	Remove & Dispose of Unwateing Piping	\$ (11,240)	-	-	-	\$ (11,240)	Remediation and maint. covered in building costs
2.036	Remove & Dispose of Horizontal AC Generator, Indoor Open Frame	\$ (168,135)	-	-	-	\$ (168,135)	Remediation and maint. covered in building costs
2.037	Remove & Dispose of Excitation equipment for 12.5 MVA Generator	\$ (20,065)	-	-	-	\$ (20,065)	Remediation and maint. covered in building costs
2.040	Remove & Dispose of Generator Switchgear, 5kV-includes unit breakers	\$ (11,250)	-	-	-	\$ (11,250)	Remediation and maint. covered in building costs
2.041	Remove & Dispose of Station Service Switchgear, 600 volt - (5 sections)	\$ (15,741)	-	-	-	\$ (15,741)	Remediation and maint. covered in building costs
2.044	Remove & Dispose of Raceways, Conduit and Cable	\$ (122,529)	-	-	-	\$ (122,529)	Remediation and maint. covered in building costs
2.046	Remove & Dispose of Step-up Transformers, indoor, oil-filled, 1-phase, 5000kVA	\$ (122,529)	-	-	-	\$ (122,529)	Remediation and maint. covered in building costs
2.047	Remove & Dispose of Step-up Transformers, indoor, oil-filled, 1-phase, 4165kVA	\$ (122,529)	-	-	-	\$ (122,529)	Remediation and maint. covered in building costs
	<b>Copco No. 2 Facility Removal</b>	<b>\$ (3,824,448)</b>	<b>\$ 118,976</b>	<b>\$ 9,000</b>	<b>\$ 121,547</b>	<b>\$ (3,550,548)</b>	
	<b>Power Penstock Intake Structure and Gate</b>	<b>\$ (642,108)</b>	<b>\$ 10,816</b>	<b>\$ 2,000</b>	<b>\$ 27,010</b>	<b>\$ (604,282)</b>	
3.061	Remove Intake Structure Concrete	\$ (402,964)	\$ 10,816	\$ 2,000	\$ 27,010	\$ (365,138)	Fence; annual maint. added
3.065	Remove & Dispose of Caterpillar Gate (steel)	\$ (41,334)	-	-	-	\$ (41,334)	Remediation and maint. covered in structure costs
3.066	Remove & Dispose of Trash rack and trash rake (steel)	\$ (47,206)	-	-	-	\$ (47,206)	Remediation and maint. covered in structure costs
3.067	Remove & Dispose of Stop Logs and slots for intake (steel)	\$ (150,604)	-	-	-	\$ (150,604)	Remediation and maint. covered in structure costs
	<b>Tunnel Portals</b>	<b>\$ (164,444)</b>	<b>\$ -</b>	<b>\$ 1,000</b>	<b>\$ 13,505</b>	<b>\$ (150,938)</b>	
3.062	Remove Concrete Items associated with 16-foot I.D. Wood Slave Pipe	\$ (164,444)	-	\$ 1,000	\$ 13,505	\$ (150,938)	No remediation; minimal maint.
	<b>Concrete Pipe Cradles</b>	<b>\$ (164,444)</b>	<b>\$ -</b>	<b>\$ 1,000</b>	<b>\$ 13,505</b>	<b>\$ (150,938)</b>	
3.062	Remove Concrete Items associated with 16-foot I.D. Wood Slave Pipe	\$ (164,444)	-	\$ 1,000	\$ 13,505	\$ (150,938)	No remediation; minimal maint.
	<b>Steel Penstock, Supports, Anchors</b>	<b>\$ (1,622,524)</b>	<b>\$ 21,632</b>	<b>\$ 3,000</b>	<b>\$ 40,516</b>	<b>\$ (1,560,376)</b>	
3.064	Remove Concrete Items associated with Penstocks D/S from Tunnel No. 2	\$ (575,713)	\$ 21,632	\$ 1,000	\$ 13,505	\$ (562,207)	No remediation; minimal maint.
3.071	Remove & Dispose of Penstock after bifurcation to butterfly valves	\$ (894,815)	\$ 21,632	\$ 2,000	\$ 27,010	\$ (866,173)	Repair; annual maint. added
3.072	Remove & Dispose of Bifurcated vent pipes and support structure	\$ (10,561)	-	-	-	\$ (10,561)	Included in line item above
3.073	Remove & Dispose of 2 - 138" Butterfly valves	\$ (181,435)	-	-	-	\$ (181,435)	No remediation; no maint.
	<b>Powerhouse</b>	<b>\$ (1,230,929)</b>	<b>\$ 86,528</b>	<b>\$ 2,000</b>	<b>\$ 27,010</b>	<b>\$ (1,084,011)</b>	
3.027	Remove Copper Shingles from Roof of Powerhouse	\$ (15,984)	-	-	-	\$ (15,984)	Included in line item below
3.028	Remove Powerhouse Concrete down to spring-line of turbine	\$ (202,371)	\$ 86,528	\$ 2,000	\$ 27,010	\$ (88,832)	Remove lead paint and asbesthos. fence bulding and new roof. annual building maint.
3.029	Remove Structural Steel items associated with Powerhouse	\$ (177,215)	-	-	-	\$ (177,215)	Remediation and maint. covered in building costs
3.036	Remove & Dispose - 12 - Cast Iron Columns	\$ (21,835)	-	-	-	\$ (21,835)	Remediation and maint. covered in building costs
3.037	Remove & Dispose - 2 - Francis Turbines	\$ (416,674)	-	-	-	\$ (416,674)	Remediation and maint. covered in building costs
3.038	Remove & Dispose - 2 - 40 Ton indoor cranes	\$ (107,943)	-	-	-	\$ (107,943)	Remediation and maint. covered in building costs
3.043	Remove & Dispose - Unwateing Piping	\$ (19,204)	-	-	-	\$ (19,204)	Remediation and maint. covered in building costs
3.044	Remove & Dispose - Drainage Piping	\$ (10,286)	-	-	-	\$ (10,286)	Remediation and maint. covered in building costs
3.045	Remove & Dispose - AC Generator, Indoor Vertical	\$ (164,356)	-	-	-	\$ (164,356)	Remediation and maint. covered in building costs
3.046	Remove & Dispose - Excitation equipment for 15 MVA Generator	\$ (17,513)	-	-	-	\$ (17,513)	Remediation and maint. covered in building costs
3.049	Remove & Dispose - Generator Switchgear, 7.2kV-includes unit breakers	\$ (14,016)	-	-	-	\$ (14,016)	Remediation and maint. covered in building costs
3.050	Remove & Dispose - Station Service Switchgear, 600-volt (5 sections)	\$ (12,561)	-	-	-	\$ (12,561)	Remediation and maint. covered in building costs
3.053	Remove & Dispose - Raceways, Conduit and Cable	\$ (17,592)	-	-	-	\$ (17,592)	Remediation and maint. covered in building costs
	<b>Iron Gate Facility Removal</b>	<b>\$ (1,472,669)</b>	<b>\$ 86,528</b>	<b>\$ 2,000</b>	<b>\$ 27,010</b>	<b>\$ (1,306,084)</b>	
	<b>Powerhouse</b>	<b>\$ (1,472,669)</b>	<b>\$ 86,528</b>	<b>\$ 2,000</b>	<b>\$ 27,010</b>	<b>\$ (1,306,084)</b>	
4.039	Remove Powerhouse Concrete down to spring-line of turbine	\$ (1,015,479)	\$ 86,528	\$ 2,000	\$ 27,010	\$ (901,941)	Remove lead paint and asbesthos. fence bulding and new roof. annual building maint.
4.04	Remove and Dispose of Turbine Unit	-	-	-	-	\$ (203,725)	Remediation and maint. covered in building costs
4.042	Remove and Dispose of Crane	\$ (15,821)	-	-	-	\$ (15,821)	Remediation and maint. covered in building costs
4.043	Remove and Dispose of Governor	\$ (10,177)	-	-	-	\$ (10,177)	Remediation and maint. covered in building costs
4.048	Remove and Dispose of Pumps	\$ (18,731)	-	-	-	\$ (18,731)	Remediation and maint. covered in building costs
4.049	Remove and Dispose of Exposed Piping Around the Plant	\$ (16,594)	-	-	-	\$ (16,594)	Remediation and maint. covered in building costs
4.05	Remove and Dispose of Unwateing Piping	\$ (16,289)	-	-	-	\$ (16,289)	Remediation and maint. covered in building costs
4.054	Remove and Dispose of AC Generator, Outdoor Horizontal	\$ (84,202)	-	-	-	\$ (84,202)	Remediation and maint. covered in building costs
4.059	Remove and Dispose of Unit and plant control switchboard	\$ (27,008)	-	-	-	\$ (27,008)	Remediation and maint. covered in building costs
4.061	Remove and Dispose of Raceways, Bus, Conduit and Cable	\$ (11,596)	-	-	-	\$ (11,596)	Remediation and maint. covered in building costs
	<b>J. C. Boyle Facility Removal</b>	<b>\$ (7,835,051)</b>	<b>\$ 163,322</b>	<b>\$ 30,000</b>	<b>\$ 378,147</b>	<b>\$ (7,363,376)</b>	
	<b>Steel Pipeline and Support</b>	<b>\$ (962,587)</b>	<b>\$ 12,979</b>	<b>\$ 2,000</b>	<b>\$ 27,010</b>	<b>\$ (922,598)</b>	
1.083.1	Remove & Dispose Penstocks and bifurcation (steel)	\$ (962,587)	\$ 12,979	\$ 2,000	\$ 27,010	\$ (922,598)	

KRRC Cost Estimate - Line Item Adjustments for Partial Removal

July 2019

Cost Sh.	Line Item/Category	Esc YOC Estimate Ddt (Excl. FO)	Esc YOC Remediation Estimate	Est 2019 Annual Maint Rate	Esc from 2022 10 Year Maint Estimate	Esc YOC Actionable Savings	Comments
	Canal Intake (Screen) Structure	\$ (834,506)	\$ 12,979	\$ 4,000	\$ 54,021	\$ (767,506)	
1.061	Remove Intake Structure Concrete	\$ (340,890)	\$ -	\$ 2,000	\$ 27,010	\$ (313,880)	No remediation; annual maint. for entire structure
1.062	Remove Fish Screen Building	\$ (55,841)	\$ 12,979	\$ 2,000	\$ 27,010	\$ (15,852)	Remove lead paint and fence; standard annual building maint.
	Left Concrete Gravity Section	\$ (136,319)	\$ -	\$ 2,000	\$ 27,010	\$ (109,308)	
1.008	Remove Gravity Dam Section Concrete	\$ (71,304)	\$ -	\$ 2,000	\$ 27,010	\$ (44,293)	No remediation. Annual maint. added.
	Canal Headgate Structure	\$ (153,392)	\$ -	\$ 1,000	\$ 13,505	\$ (139,886)	
1.064	Remove Concrete Items associated with the 14-ft-diameter Steel Pipe	\$ (153,392)	\$ -	\$ 1,000	\$ 13,505	\$ (139,886)	Covers all the conc associated with the penstock from the dam ot the canal, inc head gate
	Power Canal (Flume)	\$ (4,255,793)	\$ -	\$ 5,000	\$ 67,526	\$ (4,188,267)	
1.065	Remove Open Concrete Flume	\$ (3,492,506)	\$ -	\$ -	\$ 67,526	\$ (3,424,980)	No remediation. Annual maint. added
	Powerhouse (Incl. mech & elect. equipment)	\$ (1,117,198)	\$ 54,080	\$ 2,000	\$ 27,010	\$ (1,009,009)	
1.029	Remove Powerhouse Concrete down to Elevation 3324.0	\$ (438,884)	\$ 54,080	\$ 2,000	\$ 27,010	\$ (357,794)	Remove lead paint and asbestos, and fence buidng; annual building maint.
	Buildings	\$ (375,257)	\$ 83,283	\$ 14,000	\$ 189,073	\$ (226,802)	
1.011	Remove Storage Shed located on access road	\$ (77,038)	\$ 11,898	\$ 2,000	\$ 27,010	\$ (38,130)	Remove lead paint and fence; standard annual building maint.
1.012	Remove Warehouse, North & South Residence (Red Barn) Near Dam Access Road	\$ (172,758)	\$ 11,898	\$ 2,000	\$ 27,010	\$ (133,850)	Remove lead paint and fence; standard annual building maint.
1.031	Remove Warehouse near Powerhouse	\$ (93,731)	\$ 11,898	\$ 2,000	\$ 27,010	\$ (54,823)	Remove lead paint and fence; standard annual building maint.
	<b>TOTAL PARTIAL REMOVAL SAVINGS</b>	<b>\$ (19,772,431)</b>	<b>\$ 551,616</b>	<b>\$ 53,500</b>	<b>\$ 695,520</b>	<b>\$ (18,462,247)</b>	

## Attachment B   Pay Item Cost Detail Worksheets



# **COPCO 1 DAM REMOVAL**

PAY ITEM COST DETAIL WORKSHEET

2.001 Furnish, Install, and Remove Barge-Mounted Crane in Reservoir for Dam Removal

PAY ITEM INFORMATION									
PAY ITEM NUMBER	:	2.001	Project	:	KRRP - Copco 1				
Description	:	Furnish, Install, and Remove Barge-Mounted Crane in Reservoir for Dam Removal	Group	:	D07				
Quantity	:	1.00	Is	:					
Daily Production	:	0.05	Is per	:	10	hour shift	Project #	:	2
Work Days	:	20.0	Days	:	Estimator : Eric Jones				
Unit Price	:	\$358,914.90	per Is	:	Probable Low Cost Parameter	0.055	Total Cost	:	\$323,023
Total Cost	:	\$358,915		:	Probable High Cost Parameter	0.0375	Unit Price Per Is	:	\$323,023.41
									\$448,643.63

CREW COSTS										
Description	Active Idle	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Labor Foreman	Active	1.00	20.0	10	200.00	L	\$58.87	incl. in rate	incl. in rate	\$11,774.40
Laborer	Active	2.00	20.0	10	400.00	L	\$51.07	incl. in rate	incl. in rate	\$20,429.20
Equipment Operator (crane)	Active	1.00	20.0	10	200.00	L	\$81.60	incl. in rate	incl. in rate	\$16,319.60
Equipment Operator (oiler)	Active	1.00	20.0	10	200.00	L	\$73.43	incl. in rate	incl. in rate	\$14,685.00
Tugboat Captain	Active	1.00	20.0	10	200.00	L	\$77.37	incl. in rate	incl. in rate	\$15,474.80
Tugboat Hand	Active	1.00	20.0	10	200.00	L	\$67.06	incl. in rate	incl. in rate	\$13,411.20
Barge Operator	Active	1.00	20.0	10	200.00	L	\$79.13	incl. in rate	incl. in rate	\$15,826.80
Barge, Deck Engineer, Winch Operator	Active	1.00	20.0	10	200.00	L	\$79.13	incl. in rate	incl. in rate	\$15,826.80
Crawler Crane (270tn)	Active	2.00	20.0	10	400.00	E	\$454.10	incl. in rate	incl. in rate	\$181,640.00
Labor Hours					1800	TOTAL LABOR				\$123,747.80
Equipment Hours					400	TOTAL EQUIPMENT				\$181,640.00

MATERIAL COSTS						
Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost
						TOTAL MATERIAL
						\$0.00

SUBCONTRACT COSTS						
Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount	
Barge Rental 3 Months	3.00	month	1.000	3.00	\$9,600.00	\$28,800.00
Tug Boat Rental 3 Months	3.00	month	1.000	3.00	\$3,550.00	\$10,650.00
						\$0.00
						\$0.00
						TOTAL SUBCONTRACTS
						\$39,450.00

SUMMARY OF COSTS									
Labor Cost	\$123,747.80	Labor Burden @	0.0%	\$0.00					\$123,747.80
Material Cost	\$0.00	Material Tax @	7.75%	\$0.00					\$0.00
Equipment Cost	\$181,640.00	Equipment Tax @	7.75%	\$14,077.10					\$195,717.10
Subcontractors	\$39,450.00								\$39,450.00
DIRECT COST SUBTOTALS		\$344,838		\$14,077			DIRECT COST SUBTOTALS		\$358,915
Additional Pay Item Notes :									

## 2.002 Remove Sediment from Diversion Tunnel Intake to provide access

<p><b>Additional Pay Item Notes :</b></p> <p>Operation is estimated using a dredge to remove material off of existing diversion structure. Divers will be used to locate structure and guide dredging operation. Due to the depth of the diversion structure the divers are expected to be able to work roughly 20 mins at a time. To account for this restriction more divers have been added to the operation to ensure the operation can be covered the entire shift. One barge will be used for support equipment and another barge will be used to load out material. Material will be hauled to shore and loaded in dump trucks. Slurry will be captured in temporary tanks and removed from the site using a Sludge Tanker Truck.</p>	
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### 2.003 Mobilize and Demob Large Crane on Right Abutment

PAY ITEM NUMBER	2.003	Project	KRRP - Copco 1		
Description	Mobilize and Demob Large Crane on Right Abutment	Group	D10		
Quantity	1.00 LS				
Daily Production	1.00 LS per 10 hour shift	Project #	2		
Work Days	1.0 Days	Estimator	Eric Jones	LS per	Total Cost
Unit Price	\$80,000.00 per LS	Probable Low Cost Parameter	1.15	\$68,000	Unit Price Per LS
Total Cost	\$80,000	Probable High Cost Parameter	0.85	\$92,000	\$92,000.00

Description	Active Idle	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Labor Hours					0	TOTAL LABOR				\$0.00
Equipment Hours					0	TOTAL EQUIPMENT				\$0.00

Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost
TOTAL MATERIAL						\$0.00

Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount
Crane Mobilization	1	EA		\$40,000.00	\$40,000.00
Crane Demobilization	1	EA		\$40,000.00	\$40,000.00
					\$0.00
					\$0.00
TOTAL SUBCONTRACTS					\$80,000.00

Labor Cost	\$0.00	Labor Burden @	0.0%		\$0.00
Material Cost	\$0.00	Material Tax @	7.75%	\$0.00	\$0.00
Equipment Cost	\$0.00	Equipment Tax @	7.75%	\$0.00	\$0.00
Subcontractors	\$80,000.00				\$80,000.00
<b>DIRECT COST SUBTOTALS</b>	<b>\$80,000</b>			<b>\$0</b>	<b>DIRECT COST SUBTOTALS</b>
					<b>\$80,000</b>
<b>Additional Pay Item Notes :</b>					
<p>This payitem is to account for the mobilization and demobilization of crane on right abutment. The unit rates are high than typical charges due to the access roads restricting truck access.</p>					

## 2.004 Remove Water from behind Tailrace Cofferdam

PAY ITEM NUMBER	:	2.004	Project	:	KRRP - Copco 1
Description	:	Remove Water from behind Tailrace Cofferdam	Group	:	D02
Quantity	:	200,000.00 GAL			
Daily Production	:	191,400.00 GAL per	10	hour shift	
Work Days	:	1.0 Days	Project #	:	2
Unit Price	:	\$0.01 per GAL	Estimator	:	Eric Jones
Total Cost	:	\$2.027	Probable Low Cost Parameter	:	210540
			Probable High Cost Parameter	:	162690
					\$1,824
					\$0.01
					\$2,331
					\$0.01

Description	Active Idle	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Labor Foreman	Active	1.00	1.0	10	10.00	L	\$58.87	incl. in rate	incl. in rate	\$588.72
Laborer	Active	2.00	1.0	10	20.00	L	\$51.07	incl. in rate	incl. in rate	\$1,021.46
Pump, Trash Pump, 6"+	Active	1.00	1.0	24	24.00	E	\$16.11	incl. in rate	incl. in rate	\$386.64
Intake and Discharge Hose, 6" 20' lengths	Active	5.00	1.0	24	120.00		\$5.00	incl. in rate	incl. in rate	\$600.00
Labor Hours					30	TOTAL LABOR				\$1,610.18
Equipment Hours					24	TOTAL EQUIPMENT				\$386.64

Description	Item	Order	Conversion	Order	Order	Material
	Quantity	Unit	Factor / Waste	Quantity	Price	Cost
TOTAL MATERIAL						\$0.00

Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount
TOTAL SUBCONTRACTS					\$0.00

Summary of Costs				
Labor Cost	\$1,610.18	Labor Burden @	0.0%	\$1,610.18
Material Cost	\$0.00	Material Tax @	7.75%	\$0.00
Equipment Cost	\$386.64	Equipment Tax @	7.75%	\$29.96
Subcontractors	\$0.00			\$0.00
<b>DIRECT COST SUBTOTALS</b>	<b>\$1,997</b>		<b>\$30</b>	<b>DIRECT COST SUBTOTALS \$2,027</b>

Figured you would have 1 foreman with a truck and 2 laborers managing pump for gas and other maintenance. Figured 100' of discharge pipe. Based on a 3" pump being to pump 153,120 gallons per shift it will take 1.3 days to dewater area.

## 2.005 Cofferdam Fill Material Production for Equipment Access

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## Details

Production Per Hour	Hours	Overall Production
	33	8
		20
		660

<b>Cycle Time</b>	
<b>Load Time</b> (Load Time Minutes / 60mins)	0.08
<b>Haul Time</b> (Haul Distance / Haul Speed)	0.10
<b>Dump Time</b> (Dump Time Minutes / 60 Mins)	0.08
<b>Return Time</b> (Haul Distance / Return Speed)	0.05
<b>Hours Per Cycle</b>	0.31
<b>Efficiency Factor</b> (Night Work, Traffic Restrictions, Coffee Breaks, ECT)	80%
<b>Actual Hours Per Cycle</b> (Hours per Cycle / Efficiency Factor)	0.39
<b>Number of Cycles</b> ( Bulk CY/ (Haul Vehicle Cap X # of Haul Vehicles)	235
<b>Total Number of Haul Hours</b> ( Actual Cycle Hours X Number of Cycles)	91.65
<b>Loads Per Hour</b> (Number of Cycles / Total Number of Haul Hours)	2.56
<b>Number of Haul Days</b>	4.5825

This payitem is an allowance to produce and place fill material for the Copco 1 cofferdam. The material production is assumed to be on site. This material will be placed behind the combi sheet pile coffer dam wall to provide access for equipment during the dam demolition operation. The Quantity was based on a foot print of 5334sf of working space at 20 foot depth of material to which is the expected to allow access from the powerhouse area.



## 2.006 Provide Dewatering behind Tailrace Cofferdam

PAY ITEM NUMBER	:	2.006	Project	:	KRRP - Copco 1
Description	:	Provide Dewatering behind Tailrace Cofferdam	Group	:	D02
Quantity	:	1.00 LS			
Daily Production	:	1.00 LS per 10	hour shift	Project #	: 2
Work Days	:	1.0 Days	Estimator	:	Eric Jones
Unit Price	:	\$200,506.60 per LS	LS per	:	1.1
Total Cost	:	\$200,507	Probable Low Cost Parameter	:	\$180,456
			Probable High Cost Parameter	:	\$240,608
					Unit Price Per LS
					\$180,455.94
					\$240,607.93

Description	Active Idle	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Labor Foreman (out)	Active	1.00	23.0	8	184.00	L	\$58.87	incl. in rate	incl. in rate	\$10,832.45
Laborer	Active	3.00	46.0	10	1,380.00	L	\$51.07	incl. in rate	incl. in rate	\$70,480.74
Pump, Trash Pump, 6"+	Active	3.00	92.0	24	6,624.00	E	\$16.11	incl. in rate	incl. in rate	\$106,712.64
Truck, Pickup (4x4, 3/4tn)	Active	1.00	23.0	10	230.00	E	\$16.99	incl. in rate	incl. in rate	\$3,907.70
Intake and Discharge Hose, 3" (20' lengths)	Active	5.00	92.0	24	11,040.00		\$2.50	incl. in rate	incl. in rate	\$27,600.00
Labor Hours					1564	TOTAL LABOR				\$81,313.19
Equipment Hours					6854	TOTAL EQUIPMENT				\$110,620.34

Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price		Material Cost
TOTAL MATERIAL							\$0.00

Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount
					\$0.00
					\$0.00
					\$0.00
					\$0.00
TOTAL SUBCONTRACTS					\$0.00

Labor Cost	\$81,313.19	Labor Burden @	0.0%		\$81,313.19
Material Cost	\$0.00	Material Tax @	7.75%	\$0.00	\$0.00
Equipment Cost	\$110,620.34	Equipment Tax @	7.75%	\$8,573.08	\$119,193.42
Subcontractors	\$0.00				\$0.00
<b>DIRECT COST SUBTOTALS</b>	<b>\$191,934</b>			<b>\$8,573</b>	<b>DIRECT COST SUBTOTALS \$200,507</b>

3 pumps will be used 1 day, 1 night, and 1 back up on hand to ensure the dewatering continues during maintenance. 3 laborers to be used half of the pump time of 3 months to maintain pump (gas/maintenance). 1.5 laborers during the day and 1.5 laborers during the night shift. (1 laborer will be doing a split shift). 1 foreman 1/4 of the time to manage laborer and coordinate reposition of pumps. 100' of discharge pipe used for the entire duration of operation.

PAY ITEM INFORMATION									
PAY ITEM NUMBER	:	2.007			Project	:	KRRP - Copco 1		
Description	:	Remove Current Diversion Tunnel Plug			Group	:	D02		
Quantity	:	195.00 cy							
Daily Production	:	15.00 cy per		10	hour shift	Project #	:	2	
Work Days	:	13.0 Days			Estimator	:	Eric Jones	cy per	Total Cost
Unit Price	:	\$650.44 per cy			Probable Low Cost Parameter		16.5	\$114,152	Unit Price Per cy
Total Cost	:	\$126,836			Probable High Cost Parameter		12	\$152,203	\$585.40
								\$780.53	

CREW COSTS										
Description	Active Idle	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Labor Foreman	Active	1.00	13.0	10	130.00	L	\$58.87	incl. in rate	incl. in rate	\$7,653.36
Laborer	Active	5.00	13.0	10	650.00	L	\$51.07	incl. in rate	incl. in rate	\$33,197.45
Equipment Operator (medium)	Active	2.00	13.0	10	260.00	L	\$72.34	incl. in rate	incl. in rate	\$18,807.36
Truck Driver (heavy)	Active	1.00	13.0	10	130.00	L	\$75.72	incl. in rate	incl. in rate	\$9,844.12
Barge Operator	Active	1.00	13.0	10	130.00	L	\$79.13	incl. in rate	incl. in rate	\$10,287.42
Barge, Deck Engineer, Winch Operator	Active	1.00	13.0	10	130.00	L	\$79.13	incl. in rate	incl. in rate	\$10,287.42
Barge, Sectional, 20'x10'	Active	2.00	13.0	10	260.00	E	\$6.89	incl. in rate	incl. in rate	\$1,791.40
Loader, FE Rubber Tire (3.5cy)	Active	1.00	13.0	10	130.00	E	\$63.11	incl. in rate	incl. in rate	\$8,204.30
Truck, On-Highway Dump (6x4, 12cy)	Active	1.00	13.0	10	130.00	E	\$57.41	incl. in rate	incl. in rate	\$7,463.30
Air Compressor 600 CFM	Active	2.00	13.0	10	260.00	E	\$60.25	incl. in rate	incl. in rate	\$15,665.00
Pavement Breakers 60lbs	Active	6.00	13.0	10	780.00	E	\$1.27	incl. in rate	incl. in rate	\$990.60
					Labor Hours	1430			TOTAL LABOR	\$90,077.13
					Equipment Hours	1560			TOTAL EQUIPMENT	\$34,114.60

MATERIAL COSTS						
Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost
						TOTAL MATERIAL
						\$0.00

SUBCONTRACT COSTS					
Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount
					\$0.00
					\$0.00
					\$0.00
					\$0.00
					TOTAL SUBCONTRACTS
					\$0.00

SUMMARY OF COSTS									
Labor Cost	\$90,077.13	Labor Burden @	0.0%	\$0.00					\$90,077.13
Material Cost	\$0.00	Material Tax @	7.75%	\$0.00					\$0.00
Equipment Cost	\$34,114.60	Equipment Tax @	7.75%	\$2,643.88					\$36,758.48
Subcontractors	\$0.00								\$0.00
DIRECT COST SUBTOTALS	\$124,192			\$2,644				DIRECT COST SUBTOTALS	\$126,836
Additional Pay Item Notes :									

There will be two barges used to support the demolition of the concrete plug. One barge will manage the equipment and one will be used for material hauling. It is expected that the concrete plug will demolished with pavement breaks with the support from a skid steer. Blasting was not used to demolish this item to avoid damaging the tunnel.

### PAY ITEM INFORMATION

Project	:	KRRP - Copco 1		
Group	:	D02		
Project #	:	2		
Estimator	:	Michael Barba	LD per	Total Cost
Probable Low Cost Parameter		5.75		Unit Price Per LD
Probable High Cost Parameter		4	\$183,044	\$7,321.77
			\$258,416	\$10,336.62

Description	Active Idle	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Labor Foreman	Active	1.00	5.0	10	50.00	L	\$58.87	incl. in rate	incl. in rate	\$2,943.60
Laborer	Active	1.00	5.0	10	50.00	L	\$51.07	incl. in rate	incl. in rate	\$2,553.65
Equipment Operator (medium)	Active	1.00	5.0	10	50.00	L	\$72.34	incl. in rate	incl. in rate	\$3,616.80
Equipment Operator (crane)	Active	1.00	5.0	10	50.00	L	\$81.60	incl. in rate	incl. in rate	\$4,079.90
Crawler Crane (130tn)	Active	1.00	5.0	10	50.00	E	\$262.91	incl. in rate	incl. in rate	\$13,145.50
Loader, FE Rubber Tire (5.25cy)	Active	1.00	5.0	10	50.00	E	\$76.00	incl. in rate	incl. in rate	\$3,800.00
Pile Driver	Active	2.00	5.0	10	100.00	L	\$78.56	incl. in rate	incl. in rate	\$7,856.00
Labor Hours					300	TOTAL LABOR				\$21,049.95
Equipment Hours					100	TOTAL EQUIPMENT				\$16,945.50

Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost
						\$0.00
24" Combi Pipe Pile (.5" thick wall X 40' long 31 each c	1,240.00	VLF	1.060	1,314.40	\$25.00	\$32,860.00
Sheet Pile AZ-13 12080 SF	114,760.00	Lbs	1.060	121,645.60	\$0.50	\$60,822.80
Rigging Allowance (10% of Material Cost)	1.00	AL	1.000	1.00	\$9,368.28	\$9,368.28
TOTAL MATERIAL						\$103,051.08

Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount
Load Allowance	25	LD		\$1,000.00	\$25,000.00
Crane Mobilization	1	LS		\$40,000.00	\$40,000.00
					\$0.00
					\$0.00
			TOTAL SUBCONTRACTS		\$65,000.00

Labor Cost	\$21,049.95	Labor Burden @	0.0%	\$0.00		\$21,049.95
Material Cost	\$103,051.08	Material Tax @	7.75%	\$7,986.46		\$111,037.54
Equipment Cost	\$16,945.50	Equipment Tax @	7.75%	\$1,313.28		\$18,258.78
Subcontractors	\$65,000.00					\$65,000.00
<b>DIRECT COST SUBTOTALS</b>	<b>\$206,047</b>			<b>\$9,300</b>	<b>DIRECT COST SUBTOTALS</b>	<b>\$215,346</b>
<b>Additional Pay Item Notes :</b>						
Figuring that the crane mobilization will cost more due to restricted access.						

### 2.008 Tailrace Cofferd Dam- Drive Pile

PAY ITEM NUMBER	:	2.008	Project	:	KRRP - Copco 1
Description	:	Tailrace Cofferdam- Drive Pile	Group	:	D02
Quantity	:	12,080.00 SF			
Daily Production	:	700.00 SF per	10	hour shift	
Work Days	:	17.3	Days		
Unit Price	:	\$29.96	per SF		
Total Cost	:	\$361,972			
			Project #	:	2
			Estimator	:	Michael Barba
				SF per	Total Cost
			Probable Low Cost Parameter	805	\$307,676
			Probable High Cost Parameter	525	\$452,464
					Unit Price Per SF
					\$25.47
					\$37.46

Description	Active Idle	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Labor Foreman	Active	1.00	17.3	10	173.00	L	\$58.87	incl. in rate	incl. in rate	\$10,184.86
Laborer	Active	3.00	17.3	10	519.00	L	\$51.07	incl. in rate	incl. in rate	\$26,506.89
Equipment Operator (crane)	Active	1.00	17.3	10	173.00	L	\$81.60	incl. in rate	incl. in rate	\$14,116.45
Equipment Operator (oiler)	Active	1.00	17.3	10	173.00	L	\$73.43	incl. in rate	incl. in rate	\$12,702.53
Vibratory Hammer & Extractor	Active	1.00	17.3	10	173.00	E	\$94.14	incl. in rate	incl. in rate	\$16,286.22
Welder	Active	1.00	17.3	10	173.00	E	\$7.84	incl. in rate	incl. in rate	\$1,356.32
Crawler Crane (130tn)	Active	1.00	17.3	10	173.00	E	\$262.91	incl. in rate	incl. in rate	\$45,483.43
Pile Driver	Active	4.00	17.3	10	692.00	L	\$78.56	incl. in rate	incl. in rate	\$54,363.52
D36 Hammer 36X100' Leads	Active	1.00	17.3	10	173.00	E	\$102.44	incl. in rate	incl. in rate	\$17,722.12
Labor Hours					1730	TOTAL LABOR				\$117,874.24
Equipment Hours					692	TOTAL EQUIPMENT				\$80,848.09

Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost
						\$0.00
PDA Allowance	1.00	AL	1.000	1.00	\$15,000.00	\$15,000.00
Welding materials Allowance (10% of Labor)	1.00	AL	1.000	1.00	\$11,787.42	\$11,787.42
TOTAL MATERIAL						\$26,787.42

Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount
Predrilling for Pipe Pile (20' deep at 31 locations)	620	VLFT		\$126.00	\$78,120.00
Predrilling Equipment Mob and Demob	1	LS		\$50,000.00	\$50,000.00
TOTAL SUBCONTRACTS					\$128,120.00

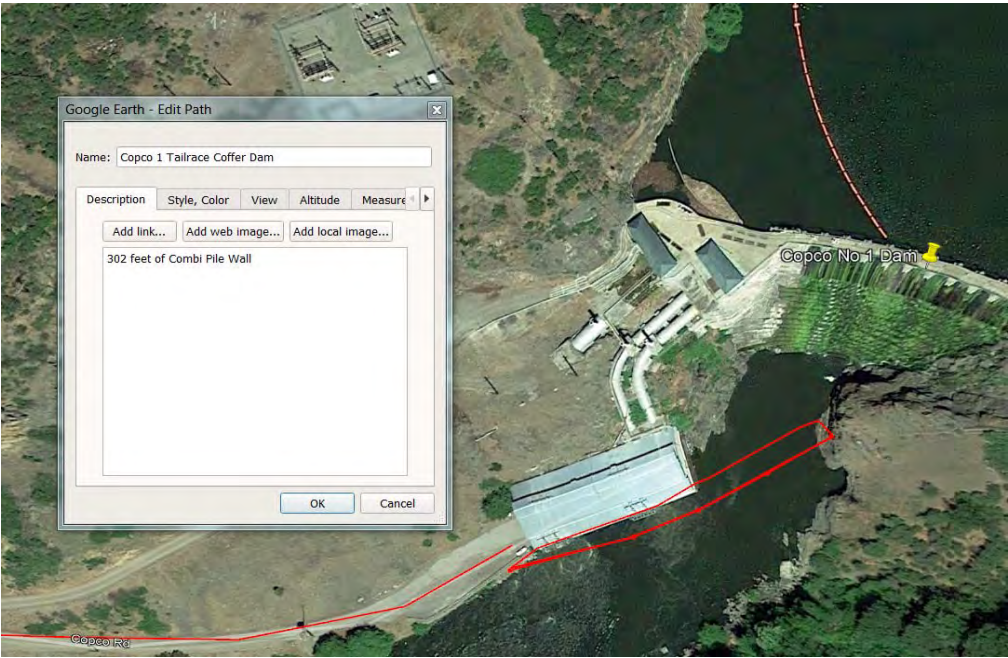
Labor Cost		\$117,874.24	Labor Burden @	0.0%	\$0.00		\$117,874.24
Material Cost		\$26,787.42	Material Tax @	7.75%	\$2,076.03		\$28,863.45
Equipment Cost		\$80,848.09	Equipment Tax @	7.75%	\$6,265.73		\$87,113.82
Subcontractors		\$128,120.00					\$128,120.00
<b>DIRECT COST SUBTOTALS</b>		<b>\$353,630</b>			<b>\$8,342</b>	<b>DIRECT COST SUBTOTALS</b>	<b>\$361,972</b>
Additional Pay Item Notes :							

2.008 Tailrace Coffor Dam- Drive Pile

Details

High Cost Factors		Low Cost Factors	
Bad Weather	0%	No Bad Weather	0%
Gas Price Increase	10%	Gas Price Decrease	10%
Unforeseen Contaminated Mats/ Access Issues	15%	No Unforeseen Contaminated Mats/ Access Issues	5%
	25%		15%

Production Per Hour	Hours	Efficiency Factor (Access, Activity, Qty, High Rebar Density, Breaks, Ect)	Overall Production	
	1500	8	70%	8400
	100	10	70%	700



## PAY ITEM INFORMATION

PAY ITEM NUMBER	:	2.008	Project	:	KRRP - Copco 1
Description	:	Tailrace Coffe Dam-Extract Pile	Group	:	D02
Quantity	:	12,080.00 SF			
Daily Production	:	1,050.00 SF per 10 hour shift	Project #	:	2
Work Days	:	11.5 Days	Estimator	:	Michael Barba
Unit Price	:	\$15.61 per SF	Probable Low Cost Parameter		SF per 1207.5
Total Cost	:	\$188,570	Probable High Cost Parameter		Total Cost \$160,285
					Unit Price Per SF \$13.27
					\$226,284 \$18.73

## CREW COSTS

Description	Active Idle	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Labor Foreman	Active	1.00	11.5	10	115.00	L	\$58.87	incl. in rate	incl. in rate	\$6,770.28
Laborer	Active	3.00	11.5	10	345.00	L	\$51.07	incl. in rate	incl. in rate	\$17,620.19
Equipment Operator (crane)	Active	1.00	11.5	10	115.00	L	\$81.60	incl. in rate	incl. in rate	\$9,383.77
Equipment Operator (oiler)	Active	1.00	11.5	10	115.00	L	\$73.43	incl. in rate	incl. in rate	\$8,443.88
Vibratory Hammer & Extractor	Active	1.00	11.5	10	115.00	E	\$94.14	incl. in rate	incl. in rate	\$10,826.10
Welder	Active	1.00	11.5	10	115.00	E	\$7.84	incl. in rate	incl. in rate	\$901.60
Crawler Crane (130tn)	Active	1.00	11.5	10	115.00	E	\$262.91	incl. in rate	incl. in rate	\$30,234.65
Pile Driver	Active	4.00	11.5	10	460.00	L	\$78.56			\$36,137.60
Labor Hours					1150	TOTAL LABOR				\$78,355.71
Equipment Hours					345	TOTAL EQUIPMENT				\$41,962.35

## MATERIAL COSTS

Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost
						TOTAL MATERIAL
						\$0.00

## SUBCONTRACT COSTS

Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount
Load Allowance	25	LD		\$1,000.00	\$25,000.00
Crane Demobilization	1	LS		\$40,000.00	\$40,000.00
					\$0.00
					\$0.00
					TOTAL SUBCONTRACTS
					\$65,000.00

## SUMMARY OF COSTS

Labor Cost	\$78,355.71	Labor Burden @	0.0%	\$0.00		\$78,355.71
Material Cost	\$0.00	Material Tax @	7.75%	\$0.00		\$0.00
Equipment Cost	\$41,962.35	Equipment Tax @	7.75%	\$3,252.08		\$45,214.43
Subcontractors	\$65,000.00					\$65,000.00
DIRECT COST SUBTOTALS	\$185,318			\$3,252	DIRECT COST SUBTOTALS	\$188,570
Additional Pay Item Notes :						

PAY ITEM COST DETAIL WORKSHEET

2.009 Installation of 3 each 72" Blind Flanges

PAY ITEM INFORMATION									
PAY ITEM NUMBER	:	2.009	Project		:	KRRP - Copco 1			
Description	:	Installation of 3 each 72" Blind Flanges		Group		:	D02		
Quantity	:	38,000.00	LBS						
Daily Production	:	5,000.00	LBS per	20	hour shift				
Work Days	:	7.6	Days	Project #		:	2		
Unit Price	:	\$33.03	per LBS	Estimator		:	Mihaela Tomulescu	LBS per	Total Cost
Total Cost	:	\$1,255,158	Probable Low Cost Parameter			5750	\$1,066,884	\$28.08	
			Probable High Cost Parameter			3500	\$1,631,706	\$42.94	

CREW COSTS										
Description	Active	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Labor Foreman	Active	1.00	7.6	20	152.00	L	\$58.87	incl. in rate	incl. in rate	\$8,948.54
Laborer	Active	3.00	7.6	20	456.00	L	\$51.07	incl. in rate	incl. in rate	\$23,289.29
Equipment Operator (crane)	Active	1.00	7.6	20	152.00	L	\$81.60	incl. in rate	incl. in rate	\$12,402.90
Diver, Wet	Active	6.00	7.6	20	912.00	L	\$142.66	incl. in rate	incl. in rate	\$130,105.01
Diver, Tender	Active	3.00	7.6	20	456.00	L	\$92.77	incl. in rate	incl. in rate	\$42,304.94
Barge Operator	Active	1.00	7.6	20	152.00	L	\$79.13	incl. in rate	incl. in rate	\$12,028.37
Barge, Deck Engineer, Winch Operator	Active	1.00	7.6	20	152.00	L	\$79.13	incl. in rate	incl. in rate	\$12,028.37
Barge, Sectional, 40'x10', includes ramp	Active	2.00	7.6	20	304.00	E	\$17.71	incl. in rate	incl. in rate	\$5,383.84
Gas Welding Machine	Active	2.00	7.6	20	304.00	E	\$2.88	incl. in rate	incl. in rate	\$874.60
Crawler Crane (270tn)	Active	1.00	7.6	20	152.00	E	\$454.10	incl. in rate	incl. in rate	\$69,023.20
					Labor Hours	2432	TOTAL LABOR		\$241,107.42	
					Equipment Hours	760	TOTAL EQUIPMENT		\$75,281.64	

MATERIAL COSTS						
Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost
Furnish 3 each 72" Blind Flanges	38,000.00	LBS	1.000	38,000.00	\$22.00	\$836,000.00
Welding structural steel in field, cost per welder, 8# per ton, 1/8" dia, type 6011, incl 1 operating engineer	19.00	ton	1.000	19.00	\$18.85	\$358.15
Cutting, steel, to 1/4" thick, by hand, incl prep, torch cutting & grinding, excl staging (assumed qty)	1,000.00	lf	1.000	1,000.00	\$20.00	\$20,000.00
Exothermic weld, 4/0 wire to 1" ground rod (assumed qty)	100.00	ea	1.000	100.00	\$10.25	\$1,025.00
Exothermic weld, to building steel, 4/0 wire (assumed qty)	100.00	ea	1.000	100.00	\$10.25	\$1,025.00
TOTAL MATERIAL						\$858,408.15

SUBCONTRACT COSTS					
Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount
	8.00	EA	1.000	8.00	\$1,000.00
TOTAL SUBCONTRACTS					\$8,000.00

SUMMARY OF COSTS						
Labor Cost	\$241,107.42	Labor Burden @	0.0%	\$0.00		\$241,107.42
Material Cost	\$858,408.15	Material Tax @	7.75%	\$66,526.63		\$924,934.78
Equipment Cost	\$75,281.64	Equipment Tax @	7.75%	\$5,834.33		\$81,115.97
Subcontractors	\$8,000.00					\$8,000.00
DIRECT COST SUBTOTALS	\$1,182,797			\$72,361	DIRECT COST SUBTOTALS	\$1,255,158

Additional Pay Item Notes :

This pay item is to account for the installation of the 3 blind flanges in the place of the 3 flapper gates on the diversion tunnel. Due to the depth of the structure there will need to be a total of 6 divers so 2 each can alternate every 20 mins to install the blind flanges. Production has been reduced to account for the inefficiency due to the allowed underwater duration. Due to this being considered in channel work restricted by the California in water work permits it will be double shifted in the schedule.

PAY ITEM COST DETAIL WORKSHEET

2.009.2 Installation of 16.5 X 18.5 Roller Gate and Gate Structure

PAY ITEM INFORMATION									
PAY ITEM NUMBER	:	2.009.2	Project	:	KRRP - Copco 1				
Description	:	Installation of 16.5 X 18.5 Roller Gate and Gate Structure	Group	:	D02				
Quantity	:	1.00 LS							
Daily Production	:	0.03 LS per	20	hour shift	Project #	:	2		
Work Days	:	40.0 Days			Estimator	:	Mihaela Tomulescu	LS per	Total Cost
Unit Price	:	\$4,481,793.76 per LS			Probable Low Cost Parameter		0.02875	\$3,809,525	Unit Price Per LS
Total Cost	:	\$4,481,794			Probable High Cost Parameter		0.0175	\$5,826,332	\$5,826,331.89

CREW COSTS										
Description	Active Idle	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Labor Foreman	Active	1.00	40.0	20	800.00	L	\$58.87	incl. in rate	incl. in rate	\$47,097.60
Laborer	Active	3.00	40.0	20	2,400.00	L	\$51.07	incl. in rate	incl. in rate	\$122,575.20
Carpenter Foreman (out)	Active	1.00	40.0	20	800.00	L	\$85.49	incl. in rate	incl. in rate	\$68,393.60
Carpenters	Active	4.00	40.0	20	3,200.00	L	\$85.49	incl. in rate	incl. in rate	\$273,574.40
Equipment Operator (crane)	Active	1.00	40.0	20	800.00	L	\$81.60	incl. in rate	incl. in rate	\$65,278.40
Steelworker	Active	2.00	40.0	20	1,600.00	L	\$78.10	incl. in rate	incl. in rate	\$124,960.00
Barge Operator	Active	1.00	40.0	20	800.00	L	\$79.13	incl. in rate	incl. in rate	\$63,307.20
Barge, Deck Engineer, Winch Operator	Active	1.00	40.0	20	800.00	L	\$79.13	incl. in rate	incl. in rate	\$63,307.20
Electrician	Active	2.00	40.0	20	1,600.00	L	\$55.80	incl. in rate	incl. in rate	\$89,284.80
Crawler Crane (270tn)	Active	1.00	40.0	20	800.00	E	\$454.10	incl. in rate	incl. in rate	\$363,280.00
Barge, Sectional, 40'x10', includes ramp	Active	1.00	40.0	20	800.00	E	\$17.71	incl. in rate	incl. in rate	\$14,168.00
Conc Pump (small)	Active	1.00	3.0	20	60.00	E	\$121.58	incl. in rate	incl. in rate	\$7,294.80
Equipment Operator (light)	Active	1.00	3.0	20	60.00	L	\$71.39	incl. in rate	incl. in rate	\$4,283.40
					Labor Hours	12860	TOTAL LABOR		\$922,061.80	
					Equipment Hours	1660	TOTAL EQUIPMENT		\$384,742.80	

MATERIAL COSTS						
Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost
quote from JM Works)	1.00	LS	1.000	1.00	\$2,331,511.00	\$2,331,511.00
1/8" dia, type 6011, incl 1 operating engineer	55.00	ton	1.000	55.00	\$250.00	\$13,750.00
Consumables 10% labor (saw blades, drill bits, etc)	1.00	LS	1.000	1.00	\$92,206.18	\$92,206.18
Material	10%	%	1.000	0.10	\$2,331,511.00	\$233,151.10
Concrete Material Forms and Reinforcement Allowance	25%	%	1.000	0.25	\$922,061.80	\$230,515.45
Rock Anchor Dowel Allowance for Tunnel and Bulkhead	10%	%	1.000	0.10	\$922,061.80	\$92,206.18
TOTAL MATERIAL						\$2,901,133.73

SUBCONTRACT COSTS					
Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount
	40.00	EA	1.000	40.00	\$480.00
					\$19,200.00
					\$0.00
TOTAL SUBCONTRACTS					\$19,200.00

SUMMARY OF COSTS					
Labor Cost	\$922,061.80	Labor Burden @	0.0%	\$0.00	\$922,061.80
Material Cost	\$2,901,133.73	Material Tax @	7.75%	\$224,837.86	\$3,125,971.59
Equipment Cost	\$384,742.80	Equipment Tax @	7.75%	\$29,817.57	\$414,560.37
Subcontractors	\$19,200.00				\$19,200.00
DIRECT COST SUBTOTALS	\$4,227,138			\$254,655	DIRECT COST SUBTOTALS \$4,481,794
Additional Pay Item Notes :					

It is expected that small sectional barges will need to be mobilized into area to allow equipment to access diversion tunnel. Expecting barges to be small sectionals similar to a flexi float system due to the hauling restrictions due to the size of the haul road. Concrete pump is expected to be used 3 days to accommodate pouring concrete. This activity has been double shifted with two 10 hours shifts due to the restrictions from the California in water work permit.



### 2.009.3 Removal of 16.5 X 18.5 Roller Gate and Gate Structure

Crane will be used to remove gate material as it became free from gate structure. Estimated 300 CY of concrete to be removed and the production reflected are adjusted to account for other items that need to be removed in regards to the gate. It is expected there will be access to this area by the tailrace cofferdam. This item is double shifted with two 10 hour shifts due to the California in water work restrictions.

## PAY ITEM INFORMATION

PAY ITEM NUMBER	: 2.010	Project	: KRRP - Copco 1
Description	: Remove Concrete Dam down to Elev. 2463.5	Group	: D07
Quantity	: 36,000.00 cy		
Daily Production	: 380.00 cy per 20 hour shift	Project #	: 2
Work Days	: 94.7 Days	Estimator	: Eric Jones
Unit Price	: \$128.79 per cy	Probable Low Cost Parameter	418
Total Cost	: \$4,636,534	Probable High Cost Parameter	304
			Total Cost
			Unit Price Per cy
			\$4,172,881
			\$115.91
			\$5,563,841
			\$154.55

## CREW COSTS

Description	Active	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Hydraulic Excavator (2.5cy)	Active	1.00	94.7	20	1,894.00	E	\$205.40	incl. in rate	incl. in rate	\$389,027.60
Hydraulic Excavator (5.0cy)	Active	1.00	94.7	20	1,894.00	E	\$276.50	incl. in rate	incl. in rate	\$523,691.00
Loader, FE Rubber Tire (5.25cy)	Active	1.00	94.7	20	1,894.00	E	\$76.00	incl. in rate	incl. in rate	\$143,944.00
Truck, On-Highway Dump (6x4, 12cy)	Active	2.00	47.1	20	1,885.20	E	\$57.41	incl. in rate	incl. in rate	\$108,229.33
Hydraulic Impact Breaker Attachment (5k+ ft-lb)	Active	1.00	94.7	20	1,894.00	E	\$63.28	incl. in rate	incl. in rate	\$119,852.32
Hydraulic Thumbs/Shear Attachment	Active	1.00	94.7	20	1,894.00	E	\$24.92	incl. in rate	incl. in rate	\$47,198.48
Crawler Crane (270tn)	Active	1.00	47.4	20	947.00	E	\$454.10	incl. in rate	incl. in rate	\$430,032.70
Labor Foreman	Active	1.00	94.7	20	1,894.00	L	\$58.87	incl. in rate	incl. in rate	\$111,503.57
Laborer	Active	6.00	94.7	20	11,364.00	L	\$51.07	incl. in rate	incl. in rate	\$580,393.57
Equipment Operator (medium)	Active	4.00	94.7	20	7,576.00	L	\$72.34	incl. in rate	incl. in rate	\$548,017.54
Equipment Operator (crane)	Active	1.00	47.4	20	947.00	L	\$81.60	incl. in rate	incl. in rate	\$77,273.31
Truck Driver (heavy)	Active	2.00	47.1	20	1,885.20	L	\$66.92	incl. in rate	incl. in rate	\$126,165.12
Drilling and Blasting Operator	Active	3.00	94.7	20	5,682.00	L	\$48.70	incl. in rate	incl. in rate	\$276,694.93
Air Track Drill 4"	Active	1.00	94.7	20	1,894.00	E	\$160.98	incl. in rate	incl. in rate	\$304,896.12
Clamshell Bucket 3.5CY	Active	1.00	47.4	20	947.00	E	\$13.29	incl. in rate	incl. in rate	\$12,585.63
Acetylene Torches	Active	4.00	94.7	20	7,576.00	E	\$0.44	incl. in rate	incl. in rate	\$3,333.44
Kobelco SK260LC-10 Ex With CP100 Magnet	Active	1.00	94.7	20	1,894.00	E	\$89.29	incl. in rate	incl. in rate	\$169,115.26
Labor Hours					29,348	TOTAL LABOR				\$1,720,048.04
Equipment Hours					24,613	TOTAL EQUIPMENT				\$2,251,905.88

## MATERIAL COSTS

Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost
Consumables (5% labor)	1.00	LS	1.000	1.00	\$86,002.40	\$86,002.40
Blasting Material	36,000.00	CY	1.050	37,800.00	\$5.56	\$210,243.60
Drill Bit Wear Allowance (10% of Drilling Eq)	1.00	LS	1.000	1.00	\$30,489.61	\$30,489.61
TOTAL MATERIAL						\$326,735.61

## SUBCONTRACT COSTS

Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount
Concrete Saw Cutting	1	LS	Cost per Mob	\$30,000.00	\$30,000.00
Hauling cost to Yreka Transfer 40 Miles	270.00	Loads	300 lbs per CY	\$400.00	\$108,000.00
					\$0.00
					\$0.00
TOTAL SUBCONTRACTS					\$138,000.00

## SUMMARY OF COSTS

Labor Cost	\$1,720,048.04	Labor Burden @	0.0%	\$0.00	\$1,720,048.04
Material Cost	\$326,735.61	Material Tax @	7.75%	\$25,322.01	\$352,057.62
Equipment Cost	\$2,251,905.88	Equipment Tax @	7.75%	\$174,522.71	\$2,426,428.59
Subcontractors	\$138,000.00				\$138,000.00
DIRECT COST SUBTOTALS	\$4,436,690			\$199,845	DIRECT COST SUBTOTALS
					\$4,636,534

Additional Pay Item Notes :

### Details

**Other Notes**  
Demolition of the concrete dam is by a combination of blasting and hydraulic breakers. The material is expected to fall to the down stream side near the power house coffer dam. Equipment will be staged at bottom to process and prepare material for hauling. Hauling is expected to be 80% efficient after accounting the narrow and steep haul routes, staff breaks, hauling at night, ect. A concrete sawing subcontractor is expected to periodically be used during the demo process and an allowance has been used to account for the cost. It is expected that the demolition activity will have reduced production due to the strength of concrete and the amount of overforce reinforcement embedded with in the concrete. A 270ton crane will be used to support the demolition operation for half of the duration. A larger crane has been used due to the expectation of needing to lift equipment or materials at a larger radius. It is expected that a combination of torches and excavator shears will be used to cut through steel items as necessary. This item is to be double shifted with two 10 hour shifts to account for the California in water work restrictions

## 2.011 Remove Concrete Intake Structure on Right Abutment

SUMMARY OF COSTS						
Labor Cost	\$812,461.62	Labor Burden @	0.0%	\$0.00	Included in hourly labor rate.	\$812,461.62
Material Cost	\$150,309.39	Material Tax @	7.75%	\$11,648.98		\$161,958.37
Equipment Cost	\$1,273,293.64	Equipment Tax @	7.75%	\$98,680.26		\$1,371,973.89
Subcontractors	\$14,800.00					\$14,800.00
DIRECT COST SUBTOTALS	\$2,250,865		\$110,329		DIRECT COST SUBTOTALS	\$2,361,194
Additional Pay Item Notes :						

2.011 Remove Concrete Intake Structure on Right Abutment				
Details				
High Cost Factors		Low Cost Factors		
Bad Weather	0%	No Bad Weather		0%
Gas Price Increase	10%	Gas Price Decrease		10%
Unforeseen Contaminated Mats/ Access Issues	10%	No Unforeseen Contaminated Mats/ Access Issues		5%
	20%			15%
Production Per Hour	Hours	Efficiency Factor (Access, Activity, Qty, High Rebar Density, Breaks, Ect)		Overall Production
	38	8	50%	152.00
		20	50%	380.00
Haul Notes		Excavator Loading Production per shift		
CY	16,400.00	CY per Hour		21
Swell Factor	60%	CY Bucket Size		2.50
Bulk CY	26240	Buckets Per Hour		8
Haul Vehicle 60% Capacity (2 tons per CY)	7.2	# of Excavators		1.00
# of Haul Vehicles	2	CY per Hour (5 CY Bucket)		21
Load Time (Includes Spot Time, Maneuver Time, & Loading) (Minutes)		5 CY Per Hour Ideal Production Per 8 Hour Shift		95
Dump Time (Includes Spot Time, Maneuver Time, & Unloading) Minutes)		Efficient Compared to Ideal Production		22%
Haul Speed (Loaded MPH)	5.00	Inefficiencies Compared to Ideal Production		78%
Return Speed (Unloaded MPH)	10.00			
Haul Distance (Miles)	0.50			
Shift Length (Hours)	20			
Cycle Time		Breaker Production		
Load Time (Load Time Minutes / 60mins)	0.08	Hydraulic Hammer CY per Hour		19.00
Haul Time (Haul Distance / Haul Speed)	0.10	# of Hammers		2
Dump Time (Dump Time Minutes / 60 Mins)	0.05	CY per Hour		9.5
Return Time (Haul Distance / Return Speed)	0.05	CY per Hour Back Check		9.5
Hours Per Cycle	0.28	32CY per HR per 8hr shift (Ideal prod)		3200%
Efficiency Factor (night Work, Traffic Restrictions, Coffee Breaks, ECT)	80%	Efficient Compared to Ideal Production		30%
Actual Hours Per Cycle (Hours per Cycle / Efficiency Factor)	0.35	Inefficiencies Compared to Ideal Production		0.703125
Number of Cycles( Bulk CY/(Haul Vehicle Cap X # of Haul Vehicles)	1822			
Total Number of Haul Hours ( Actual Cycle Hours X Number of Cycles)	637.7			
Loads Per Hour (Number of Cycles / Total Number of Haul Hours)	2.86			
Number of Haul Days	32			
		Drilling and Blasting Production per shift		
		Drilling and Blasting CY per Hour		19
		# of Drills		1.00
		CY per Hour		19
		38CY per HR per 8hr shift (Ideal prod)		19
		Efficient Compared to Ideal Production		38
		Inefficiencies Compared to Ideal Production		50%
				50%
Other Notes				

### 2.012 Remove Structural Steel from Spillway

**Additional Pay Item Notes :**

The structural steel at the spillway of Copco 1 will be demolished from the reservoir side using a crane and a barge. There will be a 130 crane on the barge supporting the crew of steel workers and laborers cutting the members with torches. There will be two barges 1 supporting the crane operation and one transporting material to load out site. A 80 ton hydraulic crane and a loader will off load the demolished structural steel. There will be two load of at 20 tons a load that will be hauled to Yreka recycle facility.

### 2.013 Install Diversion Tunnel Plugs

PAY ITEM NUMBER	:	2.013	Project	:	KRRP - Copco 1			
Description	:	Install Diversion Tunnel Plugs	Group	:	D02			
Quantity	:	30.00 CY						
Daily Production	:	6.00 CY per	20	hour shift	Project #	:	2	
Work Days	:	5.0 Days			Estimator	:	Eric Jones	
Unit Price	:	\$3,278.31 per CY			CY per		Total Cost	
Total Cost	:	\$98,349			Probable Low Cost Parameter	6.6	\$88,514	
					Probable High Cost Parameter	5.1	\$113,102	
							Unit Price Per CY	
							\$2,950.48	
							\$3,770.05	

Description	Active Idle	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Carpenter Foreman (out)	Active	1.00	5.0	20	100.00	L	\$85.49	incl. in rate	incl. in rate	\$8,549.20
Carpenters	Active	2.00	5.0	20	200.00	L	\$85.49	incl. in rate	incl. in rate	\$17,098.40
Conc Pump (small)	Active	1.00	1.3	20	25.00	E	\$121.58	incl. in rate	incl. in rate	\$3,039.50
Carpenters, Journeyman	Active	2.00	5.0	20	200.00	L	\$77.54	incl. in rate	incl. in rate	\$15,507.80
Equipment Operator (crane)	Active	1.00	2.5	20	50.00	L	\$81.60	incl. in rate	incl. in rate	\$4,079.90
Equipment Operator (light)	Active	1.00	1.3	20	25.00	L	\$69.19	incl. in rate	incl. in rate	\$1,729.75
Hydraulic Crane (80tn)	Active	1.00	2.5	20	50.00	E	\$197.66	incl. in rate	incl. in rate	\$9,883.00
Steelworker	Active	3.00	2.0	20	120.00	L	\$78.16	incl. in rate	incl. in rate	\$9,378.60
Labor Hours					695	TOTAL LABOR				\$56,343.65
Equipment Hours					75	TOTAL EQUIPMENT				\$12,922.50

Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost
Concrete	30.00	cy	1.100	33.00	\$159.23	\$5,254.59
Reinforcement (At 90lbs per CY)	1.35	Ton	1.100	1.49	\$1,000.00	\$1,485.00
Formwork Allowance (20% of Labor)	1.00	LS	1.100	1.10	\$11,268.73	\$12,395.60
Consumables (10% of Equip & Labor)	1.00	LS	1.000	1.00	\$6,926.62	\$6,926.62
TOTAL MATERIAL						\$26,061.81

Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount
TOTAL SUBCONTRACTS					\$0.00

Labor Cost	\$56,343.65	Labor Burden @	0.0%			\$56,343.65
Material Cost	\$26,061.81	Material Tax @	7.75%	\$2,019.79		\$28,081.60
Equipment Cost	\$12,922.50	Equipment Tax @	7.75%	\$1,001.49		\$13,923.99
Subcontractors	\$0.00					\$0.00
<b>DIRECT COST SUBTOTALS</b>	<b>\$95,328</b>			<b>\$3,021</b>	<b>DIRECT COST SUBTOTALS</b>	<b>\$98,349</b>
<b>Additional Pay Item Notes :</b>						
<div>See production notes</div>						

## 2.013 Install Diversion Tunnel Plugs

### Details

High Cost Factors		Low Cost Factors	
Bad Weather	0%	No Bad Weather	0%
Gas Price Increase	5%	Gas Price Decrease	5%
Unforeseen Contaminated Mats/ Access Issues	10%	No Unforeseen Contaminated Mats/ Access Issues	5%
	15%		10%

Production Per Hour	Hours	Overall Production
	0.3	8
		2.4
	20	6

#### Production & Sequence Notes

The Plug is expected to be formed in two sections. The inner section will be formed and braced off of the tunnel walls. After the inner form (set form) is installed the face form will be built similar to the set form by bracing off of the tunnel walls. To ensure consolidation a high slump small aggregate mix will be used and concrete vibrators will have access through the Bat opening block out at the top. One 5 man crew will be used to construct the formwork, place the concrete, and strip the form work. One crew of 3 rodbusters will be used to tie and brace reinforcement. Expected duration is 5 days to form the plug , 2 days to reinforce the plug, 1 days to pour the plug, and 2 days to strip the plug. Crane will be used 1/2 of time to support crew by flying material close to plug location. A small pump will be used to install concrete. Please note the production is adjusted to account for the duration as listed above. This item will be double shifted with 2 10 hour shifts due to the California in water work restriction.

#### Other Notes



## 2.014 Remove Diversion Tunnel Control Structure Concrete

SUMMARY OF COSTS				
Labor Cost	\$234,008.19	Labor Burden @	0.0%	\$234,008.19
Material Cost	\$0.00	Material Tax @	7.75%	\$0.00
Equipment Cost	\$59,102.87	Equipment Tax @	7.75%	\$4,580.47
Subcontractors	\$50,400.00			
<b>DIRECT COST SUBTOTALS</b>	<b>\$343,511</b>		<b>\$4,580</b>	<b>DIRECT COST SUBTOTALS</b>
<b>Additional Pay Item Notes :</b>				
Please see sequence notes.				

2.014 Remove Diversion Tunnel Control Structure Concrete  
Details

High Cost Factors		Low Cost Factors	
Bad Weather	0%	No Bad Weather	0%
Gas Price Increase	10%	Gas Price Decrease	10%
Unforeseen Contaminated Mats/ Access Issues	10%	No Unforeseen Contaminated Mats/ Access Issues	0%
	20%		10%

Production Per Hour	Hours	Overall Production	
	3	8	24
		20	60

<u>Crew Notes</u>		
	350.00 CY	60.00 CY per Day
	7.2 CY per Truck	
	49 # of loads	
	5.80 # of days	
	8 Loads per Day	12 Excavator Buckets 5CY
	2.00 # of trucks	
	4.19 # of loads per Shift Per truck	
	48.61 Back Check CY	
	350.00 Back Check CY	
<u>Other Notes</u>		
This activity is to remove the existing diversion control structure.This will need to be removed before the drawdown period begins due to the existing valves restricting the required flow rates for the draw down. Due to the depth of the valves and similar to payitem 2.002, divers performing the demolition activity will only be able to spend 20 mins at a time to demolish the structure. The demolished material will be loaded out with a clamshell bucket.This item will be double shifted with two 10 hours shifts due to the California in water work restrictions.		
<u>Production and Sequence notes</u>		
Barge	Barge will be used to support entire operation	
Crawler Crane	Crane will be used to bucket demolished material out of the reservoir	
Chipping Hammers	Chipping hammers will break up the structure	
Divers	Divers will be operating the chipping hammers during the demolition process	
Diver Tender	Tenders are required for each diver	
Truck	Trucks are anticipated to be used half of the time once there is enough material to load out	
Wire Saw	Expect to use wire saw on some of the structure	

## PAY ITEM INFORMATION

PAY ITEM NUMBER	: 2.015	Project	: KRRP - Copco 1
Description	: Remove & Dispose of Hand Rails at dam	Group	: D10
Quantity	: 11,000.00 LBS		
Daily Production	: 13,750.00 LBS per 10 hour shift	Project #	: 2
Work Days	: 0.8 Days	Estimator	: Mihaela Tomulescu
Unit Price	: \$0.45 per LBS	Probable Low Cost Parameter	LBS per 15812.5
Total Cost	: \$4,986	Probable High Cost Parameter	Total Cost \$4,238
			Unit Price Per LBS \$0.39
			\$5,983 \$0.54

## CREW COSTS

Description	Active Idle	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Labor Foreman	Active	1.00	0.8	10	8.00	L	\$58.87	incl. in rate	incl. in rate	\$470.98
Laborer	Active	3.00	0.8	10	24.00	L	\$51.07	incl. in rate	incl. in rate	\$1,225.75
Steelworker	Active	2.00	0.8	10	16.00	L	\$78.10	incl. in rate	incl. in rate	\$1,249.60
Equipment Operator (medium)	Active	1.00	0.8	10	8.00	L	\$72.34	incl. in rate	incl. in rate	\$578.69
Loader, FE Rubber Tire (3.5cy)	Active	1.00	0.8	10	8.00	E	\$63.11	incl. in rate	incl. in rate	\$504.88

Labor Hours 56  
Equipment Hours 8

TOTAL LABOR \$3,525.02  
TOTAL EQUIPMENT \$504.88

## MATERIAL COSTS

Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost
Consumables 5% labor (saw blades, drill bits, etc)	1.00	LS	1.000	1.00	\$176.25	\$176.25

TOTAL MATERIAL \$176.25

## SUBCONTRACT COSTS

Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount
Hazardous waste cleanup/pickup/disposal, solid pickup, bulk material, maximum (10%)	0.55	ton	1.000	0.55	\$327.25
Hauling cost to Yreka Transfer 40 Miles	1.00	Loads	20 tons a load	\$400.00	\$400.00

TOTAL SUBCONTRACTS \$727.25

## SUMMARY OF COSTS

Labor Cost	\$3,525.02	Labor Burden @	0.0%	\$0.00	\$3,525.02
Material Cost	\$176.25	Material Tax @	7.75%	\$13.66	\$189.91
Equipment Cost	\$504.88	Equipment Tax @	7.75%	\$39.13	\$544.01
Subcontractors	\$727.25				\$727.25
<b>DIRECT COST SUBTOTALS</b>	<b>\$4,933</b>			<b>\$53</b>	<b>DIRECT COST SUBTOTALS \$4,986</b>

## Additional Pay Item Notes :

During the removal of the structural steel of the spillway the handrails will be removed. This estimate accounts for the labor and the hauling of material but equipment is accounted for in pay item 2.012.

## 2.016 Remove & Dispose of Radial Gates

PAY ITEM NUMBER	:	2.016	Project	:	KRRP - Copco 1		
Description	:	Remove & Dispose of Radial Gates	Group	:	D03		
Quantity	:	140,500.00 LBS					
Daily Production	:	28,000.00 LBS per	10	hour shift	Project #	:	2
Work Days	:	5.0 Days			Estimator	:	Mihaela Tomulescu
Unit Price	:	\$0.67 per LBS			LBS per		30800
Total Cost	:	\$93,906			Probable Low Cost Parameter		\$84,515
					Probable High Cost Parameter		\$117,382
							\$0.60
							\$0.84

Description	Active Idle	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Labor Foreman	Active	1.00	5.0	10	50.00	L	\$58.87	incl. in rate	incl. in rate	\$2,943.60
Laborer	Active	3.00	5.0	10	150.00	L	\$51.07	incl. in rate	incl. in rate	\$7,660.95
Steelworker	Active	2.00	5.0	10	100.00	L	\$78.10	incl. in rate	incl. in rate	\$7,810.00
Equipment Operator (crane)	Active	2.00	5.0	10	100.00	L	\$81.60	incl. in rate	incl. in rate	\$8,159.80
Equipment Operator (medium)	Active	1.00	5.0	10	50.00	L	\$72.34	incl. in rate	incl. in rate	\$3,616.80
Barge Operator	Active	2.00	5.0	10	100.00	L	\$79.13	incl. in rate	incl. in rate	\$7,913.40
Barge, Deck Engineer, Winch Operator	Active	2.00	5.0	10	100.00	L	\$79.13	incl. in rate	incl. in rate	\$7,913.40
Crawler Crane (130tn)	Active	1.00	5.0	10	50.00	E	\$262.91	incl. in rate	incl. in rate	\$13,145.50
Barge (400T)	Active	2.00	5.0	10	100.00	E	\$99.50	incl. in rate	incl. in rate	\$9,950.00
Hydraulic Crane (80tn)	Active	1.00	5.0	10	50.00	E	\$197.66	incl. in rate	incl. in rate	\$9,883.00
Loader, FE Rubber Tire (5,25cy)	Active	1.00	5.0	10	50.00	E	\$76.00	incl. in rate	incl. in rate	\$3,800.00
					Labor Hours	650	TOTAL LABOR			\$46,017.95
					Equipment Hours	250	TOTAL EQUIPMENT			\$36,778.50

Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost
Consumables 5% labor (saw blades, drill bits, etc)	1.00	ls	1.000	1.00	\$2,300.90	\$2,300.90
TOTAL MATERIAL						\$2,300.90

Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount
Hazardous waste cleanup/pickup/disposal, solid pickup, bulk material, maximum (10%)					
	7.03	ton	1.000	7.03	\$595.00
Hauling cost to Yreka Transfer 40 Miles	4.00	Loads	20 tons a load		\$400.00
TOTAL SUBCONTRACTS					\$5,779.88

Labor Cost	\$46,017.95	Labor Burden @	0.0%	\$0.00	\$46,017.95
Material Cost	\$2,300.90	Material Tax @	7.75%	\$178.32	\$2,479.22
Equipment Cost	\$36,778.50	Equipment Tax @	7.75%	\$2,850.33	\$39,628.83
Subcontractors	\$5,779.88				\$5,779.88
<b>DIRECT COST SUBTOTALS</b>	<b>\$90,877</b>			<b>\$3,029</b>	<b>\$93,906</b>
<b>Additional Pay Item Notes :</b>					
13 radial gates, wall and soleplates and 3-hoists, by barge and crane. Assumed contains paint with heavy metals 10% of the total lbs, 34 miles from Copco lake to Yreka transfer recycling.					

### 2.017 Remove & Dispose Radial Gate Stop logs

PAY ITEM NUMBER	:	2.017	Project	:	KRRP - Copco 1
Description	:	Remove & Dispose Radial Gate Stop logs	Group	:	D03
Quantity	:	18,000.00 LBS			
Daily Production	:	18,000.00 LBS per	10	hour shift	
Work Days	:	1.0 Days	Project #	:	2
Unit Price	:	\$0.28 per LBS	Estimator	:	Mihaela Tomulescu
Total Cost	:	\$5,104	LBS per		19800
			Total Cost		\$4,594
			Probable Low Cost Parameter		\$0.26
			Probable High Cost Parameter		13500
					\$6,381
					\$0.35

Description	Active Idle	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Labor Foreman	Active	1.00	1.0	10	10.00	L	\$58.87	incl. in rate	incl. in rate	\$588.72
Laborer	Active	3.00	1.0	10	30.00	L	\$51.07	incl. in rate	incl. in rate	\$1,532.19
Steelworker	Active	3.00	1.0	10	30.00	L	\$78.10	incl. in rate	incl. in rate	\$2,343.00
Labor Hours					70	TOTAL LABOR				\$4,463.91
Equipment Hours					0	TOTAL EQUIPMENT				\$0.00

MATERIAL COSTS						
Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost
Consumables 5% labor (saw blades, drill bits, etc)	1.00	LS	1.000	1.00	\$223.20	\$223.20
TOTAL MATERIAL						\$223.20

Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount
Hauling cost to Yreka Transfer 40 Miles	1.00	Loads	20 tons a load	\$400.00	\$400.00
TOTAL SUBCONTRACTS					\$400.00

Labor Cost	\$4,463.91	Labor Burden @	0.0%	\$0.00			\$4,463.91
Material Cost	\$223.20	Material Tax @	7.75%	\$17.30			\$240.49
Equipment Cost	\$0.00	Equipment Tax @	7.75%	\$0.00			\$0.00
Subcontractors	\$400.00						\$400.00
DIRECT COST SUBTOTALS	\$5,087			\$17		DIRECT COST SUBTOTALS	\$5,104

The stop logs will be removed with the same equipment from payitem 2.016.

## 2.018 Remove & Dispose Stop log hoist, track and supports

2.018

PAY ITEM COST DETAIL WORKSHEET

2.019 Remove & Dispose of 3 sections of 23' of 72" Dia. steel lining (embedded)

PAY ITEM INFORMATION									
PAY ITEM NUMBER	:	2.019	Project	:	KRRP - Copco 1				
Description	:	Remove & Dispose of 3 sections of 23' of 72" Dia. steel lining (embedded)	Group	:	D03				
Quantity	:	54,000.00 LBS							
Daily Production	:	10,850.00 LBS per	10	hour shift	Project #	:	2		
Work Days	:	5.0 Days			Estimator	:	Mihaela Tomulescu	LBS per	Total Cost
Unit Price	:	\$4.24 per LBS			Probable Low Cost Parameter			12477.5	\$194,517
Total Cost	:	\$228,843			Probable High Cost Parameter			8680	\$274,612
									Unit Price Per LBS
									\$3.60
									\$5.09

CREW COSTS										
Description	Active Idle	# In crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Labor Foreman	Active	1.00	5.0	10	50.00	L	\$58.87	incl. in rate	incl. in rate	\$2,943.60
Laborer	Active	3.00	5.0	10	150.00	L	\$51.07	incl. in rate	incl. in rate	\$7,660.95
Equipment Operator (crane)	Active	2.00	5.0	10	100.00	L	\$81.60	incl. in rate	incl. in rate	\$8,159.80
Diver, Wet	Active	8.00	5.0	10	400.00	L	\$142.66	incl. in rate	incl. in rate	\$57,063.60
Diver, Tender	Active	8.00	5.0	10	400.00	L	\$92.77	incl. in rate	incl. in rate	\$37,109.60
Barge Operator	Active	2.00	5.0	10	100.00	L	\$79.13	incl. in rate	incl. in rate	\$7,913.40
Barge, Deck Engineer, Winch Operator	Active	2.00	5.0	10	100.00	L	\$79.13	incl. in rate	incl. in rate	\$7,913.40
Barge, Sectional, 40'x10', includes ramp	Active	2.00	5.0	10	100.00	E	\$17.71	incl. in rate	incl. in rate	\$1,771.00
Crawler Crane (270tn)	Active	2.00	5.0	10	100.00	E	\$454.10	incl. in rate	incl. in rate	\$45,410.00
Hydraulic Crane (80tn)	Active	1.00	5.0	10	50.00	E	\$197.66	incl. in rate	incl. in rate	\$9,883.00
Labor Hours					1300	TOTAL LABOR				\$128,764.35
Equipment Hours					250	TOTAL EQUIPMENT				\$57,064.00

MATERIAL COSTS						
Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost
Consumables 15% labor (saw blades, drill bits, etc)	1.00	LS	1.000	1.00	\$19,314.65	\$19,314.65
Selective demolition, torch cutting, steel, 1" thick plate (assumed qty)	1,000.00	LF	1.000	1,000.00	\$0.85	\$850.00
TOTAL MATERIAL						\$20,164.65

SUBCONTRACT COSTS					
Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount
Hazardous waste cleanup/pickup/disposal, solid pickup, bulk material, maximum (100%)	27.00	ton	1.000	27.00	\$16,065.00
Hauling cost to Yreka Transfer 40 Miles	2.00	Loads	20 tons a load	\$400.00	\$800.00
TOTAL SUBCONTRACTS					\$16,865.00

SUMMARY OF COSTS					
Labor Cost	\$128,764.35	Labor Burden @	0.0%	\$0.00	\$128,764.35
Material Cost	\$20,164.65	Material Tax @	7.75%	\$1,562.76	\$21,727.41
Equipment Cost	\$57,064.00	Equipment Tax @	7.75%	\$4,422.46	\$61,486.46
Subcontractors	\$16,865.00				\$16,865.00
DIRECT COST SUBTOTALS	\$228,858			\$5,985	DIRECT COST SUBTOTALS
					\$228,843

Additional Pay Item Notes :

This is to remove sections of 72" line in the diversion tunnel on the reservoir side. This operation has to occur before the draw down due to the existing openings of the diversion tunnel being to small to allow for the require flow rates during the drawdown period. Detail on crews and productions are listed on the next page.

2.019 Remove & Dispose of 3 sections of 23' of 72" Dia. steel lining (embedded)

Details

High Cost Factors		Low Cost Factors	
Bad Weather	0%	No Bad Weather	0%
Gas Price Increase	10%	Gas Price Decrease	10%
Unforeseen Contaminated Mats/ Access Issues	10%	No Unforeseen Contaminated Mats/ Access Issues	5%
	20%		15%

Production Per Hour	Hours	Efficiency Factor (Access, Activity, Qty, High Rebar Density, Breaks, Ect)	Overall Production
	1550	8	8680
	1550	10	10850

Pay Items Notes

Crew is expected to remove the steel lining just after demolishing the existing intake structure. The operation will have to be done underwater and due to the depth of the lining divers will only be able to spend 20 mins at the location of the lining. To account for the restricted working time, extra divers have been added to rotate during the demolition process. It is expected the equipment used will be the same as the demolition operation from pay item 2.012. There will be a barge for the crane and there will be a barge to place the demolished steel lining. The lining will be off loaded at shore with a 80 ton crane which is expected to be used only half of the duration. This operations is restricted by the in water work permits from California. This operation could be double shifted if necessary to work in the permit window. The estimate currently shows a single shift 5 days a week 10 hours a day.



## 2.02 Remove & Dispose of 3 - 72" butterfly valves (embedded)

SUMMARY OF COSTS				
Labor Cost	\$131,339.64	Labor Burden @	0.0%	\$0.00
Material Cost	\$13,133.96	Material Tax @	7.75%	\$1,017.88
Equipment Cost	\$55,070.82	Equipment Tax @	7.75%	\$4,267.99
Subcontractors	\$2,436.25			
<b>DIRECT COST SUBTOTALS</b>	<b>\$201,981</b>		<b>\$5,286</b>	<b>DIRECT COST SUBTOTALS</b>
<b>Additional Pay Item Notes :</b>				
This pay items accounts for removing the 72" valves that are shown to be in the existing diversion structure. These will be removed with the same crew that is removing the steel lining (pay item 2.019).				

PAY ITEM INFORMATION									
PAY ITEM NUMBER	:	2.021	Project	:	KRRP - Copco 1				
Description	:	Remove & Dispose of 3 - 72" flapper valves with remote mechanical	Group	:	D03				
Quantity	:	78,000.00 LBS	Project #	:	2	LBS per	Total Cost	Unit Price Per LBS	
Daily Production	:	21,000.00 LBS per	Estimator	:	Mihaela Tomulescu	23100	\$136,551	\$1.75	
Work Days	:	3.7 Days	Probable Low Cost Parameter	:					
Unit Price	:	\$1.95 per LBS	Probable High Cost Parameter	:		17850	\$174,481	\$2.24	
Total Cost	:	\$151,723							

CREW COSTS										
Description	Active	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Labor Foreman	Active	1.00	3.7	10	37.00	L	\$58.87	incl. in rate	incl. in rate	\$2,178.26
Laborer	Active	3.00	3.7	10	111.00	L	\$51.07	incl. in rate	incl. in rate	\$5,669.10
Equipment Operator (crane)	Active	2.00	3.7	10	74.00	L	\$81.60	incl. in rate	incl. in rate	\$6,038.25
Diver, Wet	Active	8.00	3.7	10	296.00	L	\$142.66	incl. in rate	incl. in rate	\$42,227.06
Diver, Tender	Active	8.00	3.7	10	296.00	L	\$92.77	incl. in rate	incl. in rate	\$27,461.10
Barge Operator	Active	2.00	3.7	10	74.00	L	\$79.13	incl. in rate	incl. in rate	\$5,855.92
Barge, Deck Engineer, Winch Operator	Active	2.00	3.7	10	74.00	L	\$79.13	incl. in rate	incl. in rate	\$5,855.92
Barge, Sectional, 40'x10', includes ramp	Active	2.00	3.7	10	74.00	E	\$17.71	incl. in rate	incl. in rate	\$1,310.54
Crawler Crane (270tn)	Active	2.00	3.7	10	74.00	E	\$454.10	incl. in rate	incl. in rate	\$33,603.40
Hydraulic Crane (50tn)	Active	1.00	3.7	10	37.00	E	\$136.20	incl. in rate	incl. in rate	\$5,039.40
					Labor Hours	962	TOTAL LABOR			\$95,285.62
					Equipment Hours	185	TOTAL EQUIPMENT			\$39,953.34

MATERIAL COSTS						
Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost
Consumables 10% labor (saw blades, drill bits, etc)	1.00	LS	1.000	1.00	\$9,528.56	\$9,528.56
TOTAL MATERIAL						\$9,528.56

SUBCONTRACT COSTS					
Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount
Hazardous waste cleanup/pickup/disposal, solid pickup, bulk material, maximum (10%)	3.90	ton	1.000	3.90	\$595.00
Hauling cost to Yreka Transfer 40 Miles	2.00	Loads	20 tons a load	\$400.00	\$800.00
TOTAL SUBCONTRACTS					\$3,120.50

SUMMARY OF COSTS						
Labor Cost	\$95,285.62	Labor Burden @	0.0%	\$0.00		\$95,285.62
Material Cost	\$9,528.56	Material Tax @	7.75%	\$738.46		\$10,267.03
Equipment Cost	\$39,953.34	Equipment Tax @	7.75%	\$3,096.38		\$43,049.72
Subcontractors	\$3,120.50					\$3,120.50
DIRECT COST SUBTOTALS	\$147,888			\$3,835	DIRECT COST SUBTOTALS	\$151,723
Additional Pay Item Notes :						

This payitem is to remove the 72" flapper gates on the existing diversion structure. It is expected that the same crew demolishing the rest of the structure, lining, and valves will remove these gates. As for the other related pays to the existing diversion structure , this work item is also time restricted due to the depth of the structure and the working in the California in water work permit limitations. Removing the gates is expected to have a better production than the other related demolition items.

### 2.022 Remove & Dispose of Spillway gate motor & control panel

PAY ITEM NUMBER	:	2.022	Project	:	KRRP - Copco 1
Description	:	Remove & Dispose of Spillway gate motor & control panel	Group	:	D03
Quantity	:	1.00 EA			
Daily Production	:	1.00 EA per	10	hour shift	
Work Days	:	1.0	Days		
Unit Price	:	\$5,354.22 per EA	Estimator	:	Mihaela Tomulescu
Total Cost	:	\$5,354	Probable Low Cost Parameter	:	EA per 1.1 \$4,819 \$4,818.80
			Probable High Cost Parameter	:	0.85 \$6,157 \$6,157.35

Description	Active Idle	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Labor Foreman	Active	1.00	1.0	10	10.00	L	\$58.87	incl. in rate	incl. in rate	\$588.72
Laborer	Active	2.00	1.0	10	20.00	L	\$51.07	incl. in rate	incl. in rate	\$1,021.46
Electrician	Active	1.00	1.0	10	10.00	L	\$55.80	incl. in rate	incl. in rate	\$558.03
Labor Hours					40	TOTAL LABOR				\$2,168.21
Equipment Hours					0	TOTAL EQUIPMENT				\$0.00

Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost
Consumables 0.5% labor ( Side Cutter, Sharp- Nose Pliers, Sharp Tip Tweezers PCB Clamp, etc)	11.93	LS	1.000	11.93	\$216.82	\$2,585.62
TOTAL MATERIAL						\$2,585.62

Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount
Hauling cost to Yreka Transfer 40 Miles	1.00	Loads	Allowance	\$400.00	\$400.00
TOTAL SUBCONTRACTS					\$400.00

Labor Cost	\$2,168.21	Labor Burden @	0.0%	\$0.00		\$2,168.21
Material Cost	\$2,585.62	Material Tax @	7.75%	\$200.39		\$2,786.01
Equipment Cost	\$0.00	Equipment Tax @	7.75%	\$0.00		\$0.00
Subcontractors	\$400.00					\$400.00
<b>DIRECT COST SUBTOTALS</b>	<b>\$5,154</b>			<b>\$200</b>	<b>DIRECT COST SUBTOTALS</b>	<b>\$5,354</b>
<b>Additional Pay Item Notes :</b>						

### 2.023 Remove & Dispose Distribution equipment. panelboards

PAY ITEM INFORMATION									
PAY ITEM NUMBER	:	2 023	Project	:	KRRP - Copco 1				
Description	:	Remove & Dispose Distribution equipment, panelboards	Group	:	D05				
Quantity	:	1.00 EA							
Daily Production	:	0.63 EA per	10	hour shift	Project #	:	2		
Work Days	:	1.6 Days			Estimator	:	Mihaela Tomulescu	EA per	Total Cost
Unit Price	:	\$5,839.35 per EA			Probable Low Cost Parameter		0.6875	\$5,255	\$5,255.42
Total Cost	:	\$5,839			Probable High Cost Parameter		0.5	\$7,007	\$7,007.22

CREW COSTS										
Description	Active Idle	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Electrician Foreman	Active	1.00	1.6	10	16.00	L	\$55.80	incl. in rate	incl. in rate	\$892.85
Electrician	Active	1.00	1.6	10	16.00	L	\$55.80	incl. in rate	incl. in rate	\$892.85
Equipment Operator (crane)	Active	1.00	1.6	10	16.00	L	\$81.60	incl. in rate	incl. in rate	\$1,305.57
Hydraulic Crane (50tn)	Active	1.00	1.6	10	16.00	E	\$136.20	incl. in rate	incl. in rate	\$2,179.20
Labor Hours					48	TOTAL LABOR				\$3,091.26
Equipment Hours					16	TOTAL EQUIPMENT				\$2,179.20

MATERIAL COSTS						
Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost
Consumables 0.5% labor ( Side Cutter, Sharp-Nose Pliers, Sharp Tip Tweezers PCB Clamp, etc)	0.00	LS	1.000	0.00	\$154.56	\$0.00
TOTAL MATERIAL						\$0.00

SUBCONTRACT COSTS					
Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount
Hauling cost to Yreka Transfer 40 Miles	1.00	Loads	Allowance	\$400.00	\$400.00
TOTAL SUBCONTRACTS					\$400.00

PAY ITEM INFORMATION									
PAY ITEM NUMBER	:	2.024	Project		: KRRP - Copco 1				
Description	:	Remove Powerhouse Concrete down to top of rock under the Powerhouse	Group		: D07				
Quantity	:	3,100.00	cy						
Daily Production	:	133.00	cy per	10	hour shift	Project #	:	2	
Work Days	:	23.3	Days			Estimator	:	Eric Jones	cy per
Unit Price	:	\$170.25	per cy			Probable Low Cost Parameter		146.3	Total Cost
Total Cost	:	\$527,781				Probable High Cost Parameter		106.4	\$475,003
									Unit Price Per cy
									\$204.30

CREW COSTS										
Description	Active Idle	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Labor Foreman	Active	1.00	23.3	10	233.00	L	\$58.87	incl. in rate	incl. in rate	\$13,717.18
Laborer	Active	3.00	23.3	10	699.00	L	\$51.07	incl. in rate	incl. in rate	\$35,700.03
Equipment Operator (medium)	Active	2.00	23.3	10	466.00	L	\$72.34	incl. in rate	incl. in rate	\$33,708.58
Truck Driver (heavy)	Active	1.00	24.1	10	241.20	L	\$66.92	incl. in rate	incl. in rate	\$16,142.07
Air Compressor 900 cfm	Active	1.00	23.3	10	233.00	E	\$38.87	incl. in rate	incl. in rate	\$9,056.46
Air Tool, Chipping Hammer	Active	2.00	23.3	10	466.00	E	\$2.23	incl. in rate	incl. in rate	\$1,039.18
Generator, Small Generator, 10 - 15 kW	Active	1.00	23.3	10	233.00	E	\$7.04	incl. in rate	incl. in rate	\$1,640.32
Hydraulic Excavator (5.0cy)	Active	1.00	23.3	10	233.00	E	\$276.50	incl. in rate	incl. in rate	\$64,424.50
Hydraulic Excavator (2.5cy)	Active	1.00	23.3	10	233.00	E	\$205.40	incl. in rate	incl. in rate	\$47,858.20
Hydraulic Impact Breaker Attachment (5k+ ft-lb)	Active	1.00	23.3	10	233.00	E	\$63.28	incl. in rate	incl. in rate	\$14,744.24
Hydraulic Thumbs/Shear Attachment	Active	1.00	23.3	10	233.00	E	\$24.92	incl. in rate	incl. in rate	\$5,806.36
Truck, On-Highway Dump (6x4, 12cy)	Active	1.00	24.1	10	241.20	E	\$57.41	incl. in rate	incl. in rate	\$13,847.29
Kobelco SK260LC-10 Ex W/ith CP100 Magnet	Active	1.00	23.3	10	233.00	E	\$89.29	incl. in rate	incl. in rate	\$20,804.57
Drilling and Blasting Operator	Active	3.00	23.3	10	699.00	L	\$48.70	incl. in rate	incl. in rate	\$34,038.97
Air Track Drill 4"	Active	1.00	23.3	10	233.00	E	\$160.98	incl. in rate	incl. in rate	\$37,508.34
Hydraulic Crane (50tn)	Active	1.00	5.8	10	58.25	E	\$134.32	incl. in rate	incl. in rate	\$7,824.14
Labor Hours					2,338	TOTAL LABOR		\$133,306.82		
Equipment Hours					2,629	TOTAL EQUIPMENT		\$224,553.60		

MATERIAL COSTS						
Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost
Consumables (5% labor)	1.00	LS	1.000	1.00	\$6,665.34	\$6,665.34
Blasting Material	16,400.00	CY	1.050	17,220.00	\$5.56	\$95,777.64
Drill Bit Wear Allowance (20% of Drilling Eq)	1.00	LS	1.000	1.00	\$6,807.79	\$6,807.79
TOTAL MATERIAL						\$109,250.77

SUBCONTRACT COSTS					
Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount
Concrete Saw Cutting	1	AL	Allowance	\$20,000.00	\$20,000.00
Hauling cost to Yreka Transfer 40 Miles	12.00	Loads	150lbs per CY	\$400.00	\$4,800.00
Selective demolition, torch cutting, steel, 1" thick plate	1.00	AL	Allowance	10,000.00	\$10,000.00
TOTAL SUBCONTRACTS					\$34,800.00

SUMMARY OF COSTS					
Labor Cost	\$133,306.82	Labor Burden @	0.0%	\$0.00	Included in hourly labor rate.
Material Cost	\$109,250.77	Material Tax @	7.75%	\$8,466.94	
Equipment Cost	\$224,553.60	Equipment Tax @	7.75%	\$17,402.90	
Subcontractors	\$34,800.00				
DIRECT COST SUBTOTALS	\$501,911		\$25,870	DIRECT COST SUBTOTALS	\$527,781

Additional Pay Item Notes :	
See detail sheet for crew and production notes	

## Details

Production Per Hour	Hours	Efficiency Factor (Access, Activity, Qty, High Rebar Density, Breaks, Etc)	Overall Production
	38	8	106.40
		10	133.00

Cycle Time	Breaker Production	
Load Time (Load Time Minutes / 60mins)	0.08	
Haul Time (Haul Distance / Haul Speed)	0.10	Hydraulic Hammer CY per Hour
Dump Time (Dump Time Minutes / 60 Mins)	0.05	# of Hammers
Return Time (Haul Distance / Return Speed)	0.05	CY per Hour
Hours Per Cycle	0.28	CY per Hour Back Check
Efficiency Factor (Night Work, Traffic Restrictions, Coffee Breaks, ECT)	80%	32CY per HR per 8hr shift (Ideal prod)
Actual Hours per Cycle (Hours per Cycle / Efficiency Factor)	0.35	Efficient Compared to Ideal Production
Number of Cycles( Bulk CY / Haul Vehicle Cap X # of Haul Vehicles)	689	Inefficiencies Compared to Ideal Production
Total Number of Haul Hours ( Actual Cycle Hours X Number of Cycles)	241.15	
Loads Per Hour (Number of Cycles / Total Number of Haul Hours)	2.86	
Number of Haul Days	24	



This estimate presents that the power house concrete will be demolished by using a combination of blasting and concrete breakers/ Crushers. A CPM 100 crusher attachment with a magnet option will be used to help sort reinforcement for the demolished concrete. Smaller haul trucks will have to be used due to the small haul route to power house area. It is expected that the power house concrete will have dense reinforcement and other embedded items and the efficiency has been reduced to account for the time it will take for extra processing time. Steel cutting and a crane have been added for 25 of the time to account for removing the draft tube as the concrete demolition progresses.

PAY ITEM INFORMATION									
PAY ITEM NUMBER	:	2.025	Project	:	KRRP - Copco 1				
Description	:	Remove Powerhouse Structural Steel	Group	:	D10				
Quantity	:	110,000.00 LBS							
Daily Production	:	19,000.00 LBS per	10	hour shift	Project #	:	2		
Work Days	:	5.8 Days			Estimator	:	Mihaela Tomulescu	LBS per	Total Cost
Unit Price	:	\$0.57 per LBS			Probable Low Cost Parameter			21850	\$52,853
Total Cost	:	\$62,180			Probable High Cost Parameter			15200	\$74,616
									Unit Price Per LBS
									\$0.48
									\$0.68

CREW COSTS										
Description	Active Idle	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Labor Foreman	Active	1.00	5.8	10	58.00	L	\$58.87	incl. in rate	incl. in rate	\$3,414.58
Laborer	Active	3.00	5.8	10	174.00	L	\$51.07	incl. in rate	incl. in rate	\$8,886.70
Steelworker	Active	2.00	5.8	10	116.00	L	\$78.10	incl. in rate	incl. in rate	\$9,059.60
Equipment Operator (crane)	Active	1.00	5.8	10	58.00	L	\$81.60	incl. in rate	incl. in rate	\$4,732.68
Equipment Operator (medium)	Active	1.00	5.8	10	58.00	L	\$72.34	incl. in rate	incl. in rate	\$4,195.49
Crawler Crane (130tn)	Active	1.00	5.8	10	58.00	E	\$262.91	incl. in rate	incl. in rate	\$15,248.78
Loader, FE Rubber Tire (5.25cy)	Active	1.00	5.8	10	58.00	E	\$76.00	incl. in rate	incl. in rate	\$4,408.00
					Labor Hours	464			TOTAL LABOR	\$30,289.05
					Equipment Hours	116			TOTAL EQUIPMENT	\$19,656.78

MATERIAL COSTS						
Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost
Consumables 10% labor (saw blades, drill bits, etc)	1.00	LS	1.000	1.00	\$3,028.91	\$3,028.91
						TOTAL MATERIAL
						\$3,028.91

SUBCONTRACT COSTS					
Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount
Hazardous waste cleanup/pickup/disposal, solid pickup, bulk material, maximum (10%)	5.50	ton	1.000	5.50	\$595.00
Hauling cost to Yreka Transfer 40 Miles	3.00	Loads	20 tons a load		\$400.00
(assumption)	3,500.00	LF	1.000	3,500.00	\$0.85
					TOTAL SUBCONTRACTS
					\$7,447.50

SUMMARY OF COSTS					
Labor Cost	\$30,289.05	Labor Burden @	0.0%	\$0.00	\$30,289.05
Material Cost	\$3,028.91	Material Tax @	7.75%	\$234.74	\$3,263.65
Equipment Cost	\$19,656.78	Equipment Tax @	7.75%	\$1,523.40	\$21,180.18
Subcontractors	\$7,447.50				\$7,447.50
DIRECT COST SUBTOTALS	\$60,422			\$1,758	DIRECT COST SUBTOTALS
					\$62,180
Additional Pay Item Notes :					

## PAY ITEM INFORMATION

PAY ITEM NUMBER	: 2.026	Project	: KRRP - Copco 1
Description	: Remove & Dispose of 2 - Governor Oil Systems	Group	: D03
Quantity	: 38,000.00 LBS		
Daily Production	: 18,000.00 LBS per 10 hour shift	Project #	: 2
Work Days	: 2.1 Days	Estimator	: Mihaela Tomulescu
Unit Price	: \$0.99 per LBS	LBS per	19800
Total Cost	: \$37,584	Probable Low Cost Parameter	\$33,825
		Probable High Cost Parameter	\$46,980
			Unit Price Per LBS \$0.89
			\$1.24

## CREW COSTS

Description	Active Idle	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Electrician Foreman	Active	1.00	2.1	10	21.00	L	\$55.80	incl. in rate	incl. in rate	\$1,171.86
Electrician	Active	1.00	2.1	10	21.00	L	\$55.80	incl. in rate	incl. in rate	\$1,171.86
Ironworkers	Active	4.00	2.1	10	84.00	L	\$78.16	incl. in rate	incl. in rate	\$6,565.02
Hydraulic Excavator (5.0cy)	Active	1.00	2.1	10	21.00	E	\$276.50	incl. in rate	incl. in rate	\$5,806.50
Hydraulic Crane (80tn)	Active	1.00	2.1	10	21.00	E	\$197.66	incl. in rate	incl. in rate	\$4,150.86
Equipment Operator (medium)	Active	1.00	2.1	10	21.00	L	\$72.34	incl. in rate	incl. in rate	\$1,519.06
Equipment Operator (crane)	Active	1.00	2.1	10	21.00	L	\$81.60	incl. in rate	incl. in rate	\$1,713.56
					Labor Hours	168	TOTAL LABOR			\$12,141.36
					Equipment Hours	42	TOTAL EQUIPMENT			\$9,957.36

## MATERIAL COSTS

Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost
Consumables 10% labor (saw blades, drill bits, etc)	1.00	LS	1.000	1.00	\$1,214.14	\$1,214.14
TOTAL MATERIAL						\$1,214.14

## SUBCONTRACT COSTS

Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount
Hazardous waste cleanup/pickup/disposal, solid pickup, bulk material, maximum	19.00	ton	1.000	19.00	\$595.00
Hauling cost to Yreka Transfer 40 Miles (assumption)	1.00	Loads	20 tons a load	\$400.00	\$400.00
	2,000.00	LF	1.000	2,000.00	\$0.85
TOTAL SUBCONTRACTS					\$13,405.00

## SUMMARY OF COSTS

Labor Cost	\$12,141.36	Labor Burden @	0.0%	\$0.00	\$12,141.36
Material Cost	\$1,214.14	Material Tax @	7.75%	\$94.10	\$1,308.23
Equipment Cost	\$9,957.36	Equipment Tax @	7.75%	\$771.70	\$10,729.06
Subcontractors	\$13,405.00				\$13,405.00
DIRECT COST SUBTOTALS	\$36,718			\$866	DIRECT COST SUBTOTALS

Additional Pay Item Notes :

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PAY ITEM COST DETAIL WORKSHEET

2.027 Remove & Dispose of Cooling water and bearing oil systems

PAY ITEM INFORMATION									
PAY ITEM NUMBER	:	2.027	Project	:	KRRP - Copco 1				
Description	:	Remove & Dispose of Cooling water and bearing oil systems	Group	:	D03				
Quantity	:	11,000.00 LBS							
Daily Production	:	13,750.00 LBS per	10	hour shift	Project #	:	2		
Work Days	:	0.8 Days	Estimator	:	Mihaela Tomulescu	LBS per		Total Cost	Unit Price Per LBS
Unit Price	:	\$1.02 per LBS	Probable Low Cost Parameter			15125		\$10,070	\$0.92
Total Cost	:	\$11,189	Probable High Cost Parameter			11000		\$13,427	\$1.22

CREW COSTS										
Description	Active Idle	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Labor Foreman	Active	1.00	0.8	10	8.00	L	\$58.87	incl. in rate	incl. in rate	\$470.98
Laborer	Active	1.00	0.8	10	8.00	L	\$51.07	incl. in rate	incl. in rate	\$408.58
Steelworker	Active	1.00	0.8	10	8.00	L	\$78.10	incl. in rate	incl. in rate	\$624.80
Loader, FE Rubber Tire (8.6cy)	Active	1.00	0.8	10	8.00	E	\$225.40	incl. in rate	incl. in rate	\$1,803.20
Truck Driver (light)	Active	1.00	0.8	10	8.00	L	\$65.82	incl. in rate	incl. in rate	\$526.59
Truck, Off-Road, Articulated Rear, 20cy	Active	1.00	0.8	10	8.00	E	\$117.28	incl. in rate	incl. in rate	\$938.24
Equipment Operator (light)	Active	1.00	0.8	10	8.00	L	\$69.19	incl. in rate	incl. in rate	\$553.52
					Labor Hours	40	TOTAL LABOR			\$2,584.47
					Equipment Hours	16	TOTAL EQUIPMENT			\$2,741.44

MATERIAL COSTS						
Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost
Consumables 10% labor (saw blades, drill bits, etc)	1.00	LS	1.000	1.00	\$258.45	\$258.45
						TOTAL MATERIAL
						\$258.45

SUBCONTRACT COSTS						
Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount	
Hazardous waste cleanup/pickup/disposal, solid pickup, bulk material, maximum	5.50	ton	1.000	5.50	\$595.00	\$3,272.50
Hauling cost to Yreka Transfer 40 Miles (assumption)	1.00	Loads	20 tons a load	\$400.00		\$400.00
	2,000.00	LF	1.000	2,000.00	\$0.85	\$1,700.00
						\$0.00
						TOTAL SUBCONTRACTS
						\$5,372.50

SUMMARY OF COSTS						
Labor Cost	\$2,584.47	Labor Burden @	0.0%	\$0.00		\$2,584.47
Material Cost	\$258.45	Material Tax @	7.75%	\$20.03		\$278.48
Equipment Cost	\$2,741.44	Equipment Tax @	7.75%	\$212.46		\$2,953.90
Subcontractors	\$5,372.50					\$5,372.50
DIRECT COST SUBTOTALS	\$10,957			\$232	DIRECT COST SUBTOTALS	\$11,189
Additional Pay Item Notes :						

Used RS Means : Pipe, metal pipe, to 1-1/2" diam., selective demolition, 4040 LF of 1 1/2" oil pipes at 2.72 Lbs. Used 1 Forman, 2 Steelworkers to cut the pipes and 3 Laborers to load the pipes in the truck. The cooling and lubrication systems for the Hydroelectric Barge turbine, speed increaser and generator will be a combination of water and oil. These systems will be isolated from the water passages so that no contamination of passing water will occur. The following is a list of hazardous materials, substances, chemicals, and wastes normally found at a hydropower facility that may require disposal actions if not recycled or reused for their intended purpose:

1. Polychlorinated Biphenyls (PCBs)
2. Asbestos
3. Paint/abrasive blast grit (red lead paint)
4. Oil
5. Mercury
6. Antifreeze
7. Halogenated and non-halogenated solvents
8. Greases
9. Pesticides (includes herbicides, insecticides, and wood preservatives)
10. Petroleum contaminated
11. Chlorinated fluorocarbons (CFCs) Freon/Halon
12. Gasoline/diesel (includes product and sludge in tanks)
13. Batteries (includes acid)
14. Water treatment sludge (septic tanks/wastewater treatment).
15. Based on the hazardous materials above assumed hazardous waste 100% of the total lbs.

## PAY ITEM COST DETAIL WORKSHEET

## 2.028 Remove &amp; Dispose of 4 - Horizontal Tandem Francis Turbines

## PAY ITEM INFORMATION

PAY ITEM NUMBER	: 2.028	Project	: KRRP - Copco 1
Description	: Remove & Dispose of 4 - Horizontal Tandem Francis Turbines	Group	: D03
Quantity	: 452,000.00 LBS		
Daily Production	: 28,000.00 LBS per 10 hour shift	Project #	: 2
Work Days	: 16.1 Days	Estimator	: Mihaela Tomulescu
Unit Price	: \$0.50 per LBS	Probable Low Cost Parameter	LBS per 30800
Total Cost	: \$226,133	Probable High Cost Parameter	22400
			Total Cost \$203,520
			Unit Price Per LBS \$0.45
			\$0.60

## CREW COSTS

Description	Active Idle	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Labor Foreman	Active	1.00	16.1	10	161.00	L	\$58.87	incl. in rate	incl. in rate	\$9,478.39
Laborer	Active	3.00	16.1	10	483.00	L	\$51.07	incl. in rate	incl. in rate	\$24,668.26
Electrician Foreman	Active	1.00	16.1	10	161.00	L	\$55.80	incl. in rate	incl. in rate	\$8,984.28
Electrician	Active	2.00	16.1	10	322.00	L	\$55.80	incl. in rate	incl. in rate	\$17,968.57
Steelworker	Active	2.00	16.1	10	322.00	L	\$78.10	incl. in rate	incl. in rate	\$25,148.20
Millwright	Active	2.00	16.1	10	322.00	L	\$82.04	incl. in rate	incl. in rate	\$26,416.24
Equipment Operator (medium)	Active	1.00	16.1	10	161.00	L	\$72.34	incl. in rate	incl. in rate	\$11,646.10
Equipment Operator (crane)	Active	2.00	16.1	10	322.00	L	\$81.60	incl. in rate	incl. in rate	\$26,274.56
Hydraulic Crane (50tn)	Active	1.00	16.1	10	161.00	E	\$136.20	incl. in rate	incl. in rate	\$21,928.20
Loader, FE Rubber Tire (3.5cy)	Active	1.00	16.1	10	161.00	E	\$63.11	incl. in rate	incl. in rate	\$10,160.71
Labor Hours					2,254	TOTAL LABOR				\$150,584.59
Equipment Hours					322	TOTAL EQUIPMENT				\$32,088.91

## MATERIAL COSTS

Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost
Consumables 10% labor (saw blades, drill bits, etc)	1.00	LS	1.000	1.00	\$15,058.46	\$15,058.46
						TOTAL MATERIAL
						\$15,058.46

## SUBCONTRACT COSTS

Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount
Hazardous waste cleanup/pickup/disposal, solid pickup, bulk material, maximum	22.60	ton	1.000	22.60	\$595.00
Hauling cost to Yreka Transfer 40 Miles (assumption)	12.00	Loads	20 tons a load	\$800.00	\$9,600.00
	2,000.00	LF	1.000	2,000.00	\$0.85
					\$1,700.00
					\$0.00
					TOTAL SUBCONTRACTS
					\$24,747.00

## SUMMARY OF COSTS

Labor Cost	\$150,584.59	Labor Burden @	0.0%	\$0.00	\$150,584.59
Material Cost	\$15,058.46	Material Tax @	7.75%	\$1,167.03	\$16,225.49
Equipment Cost	\$32,088.91	Equipment Tax @	7.75%	\$2,486.89	\$34,575.80
Subcontractors	\$24,747.00				\$24,747.00
DIRECT COST SUBTOTALS	\$222,479			\$3,654	DIRECT COST SUBTOTALS
					\$226,133

## Additional Pay Item Notes :

Working crew will disconnect power and take care of the temporary electrical power they need at the site. Then the crew will open the engine side panels, and remove the nacelle access panels. Disconnect the engine thermocouple leads at the terminal board. Before disconnecting any lines all fuel, oil, and hydraulic fluid valves are closed. Plug all lines as they are disconnected to prevent entrance of foreign material. Remove the clamps securing the bleed-air ducts at the firewall. Then, disconnect the electrical connector plugs, engine breather and vent lines, and fuel, oil, and hydraulic lines. Disconnect the engine power lever and propeller control rods or cables. Remove the covers from the lift points, attach the sling, and remove slack from the cables using a suitable hoist. The sling must be adjusted to position. Remove the engine mount bolts. The engine is ready to be removed. Move the engine forward, out of the nacelle structure, until it clears the and then lower into position on the stand, and secure it prior to removing the engine sling. The crew will then cut it into pieces the big parts for disposal. Per load price is more expensive due to potential permits or more smaller loads due to haul route restrictions.

PAY ITEM INFORMATION									
PAY ITEM NUMBER	:	2.029	Project	:	KRRP - Copco 1				
Description	:	Remove & Dispose of 2 - 40 Ton indoor cranes	Group	:	D10				
Quantity	:	140,000.00 LBS							
Daily Production	:	30,000.00 LBS per	10	hour shift	Project #	:	2		
Work Days	:	4.7 Days			Estimator	:	Mihaela Tomulescu	LBS per	Total Cost
Unit Price	:	\$0.43 per LBS			Probable Low Cost Parameter			34500	\$51,376
Total Cost	:	\$60,442			Probable High Cost Parameter			24000	\$72,531
									Unit Price Per LBS
									\$0.37
									\$0.52

CREW COSTS										
Description	Active Idle	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Labor Foreman	Active	1.00	4.7	10	47.00	L	\$58.87	incl. in rate	incl. in rate	\$2,766.98
Laborer	Active	3.00	4.7	10	141.00	L	\$51.07	incl. in rate	incl. in rate	\$7,201.29
Ironworkers	Active	3.00	4.7	10	141.00	L	\$78.16	incl. in rate	incl. in rate	\$11,019.86
Equipment Operator (medium)	Active	1.00	4.7	10	47.00	L	\$72.34	incl. in rate	incl. in rate	\$3,399.79
Equipment Operator (crane)	Active	1.00	4.7	10	47.00	L	\$81.60	incl. in rate	incl. in rate	\$3,835.11
Crawler Crane (130tn)	Active	1.00	4.7	10	47.00	E	\$262.91	incl. in rate	incl. in rate	\$12,356.77
Hydraulic Excavator (2.5cy)	Active	1.00	4.7	10	47.00	E	\$205.40	incl. in rate	incl. in rate	\$9,653.80
Labor Hours					423	TOTAL LABOR				\$28,223.03
Equipment Hours					94	TOTAL EQUIPMENT				\$22,010.57

MATERIAL COSTS						
Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost
Consumables 5% labor (saw blades, drill bits, etc)	1.00	LS	1.000	1.00	\$1,411.15	\$1,411.15
TOTAL MATERIAL						\$1,411.15

SUBCONTRACT COSTS					
Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount
Hazardous waste cleanup/pickup/disposal, solid pickup, bulk material, maximum (5% of total weight)					
	3.50	ton	1.000	3.50	\$595.00
Hauling cost to Yreka Transfer 40 Miles	4.00	Loads	20 tons a load		\$800.00
plate (assumption)	2,000.00	LF	1.000	2,000.00	\$0.85
TOTAL SUBCONTRACTS					\$6,982.50

SUMMARY OF COSTS						
Labor Cost	\$28,223.03	Labor Burden @	0.0%	\$0.00		\$28,223.03
Material Cost	\$1,411.15	Material Tax @	7.75%	\$109.36		\$1,520.52
Equipment Cost	\$22,010.57	Equipment Tax @	7.75%	\$1,705.82		\$23,716.39
Subcontractors	\$6,982.50					\$6,982.50
DIRECT COST SUBTOTALS	\$58,627			\$1,815	DIRECT COST SUBTOTALS	\$60,442
Additional Pay Item Notes :						

## 2.03 Remove & Dispose of Compressed Air System

PAY ITEM NUMBER	:	2.030	Project	:	KRRP - Copco 1
Description	:	Remove & Dispose of Compressed Air System	Group	:	D04
Quantity	:	1,000.00 LBS			
Daily Production	:	7,500.00 LBS per	10 hour shift	Project #	: 2
Work Days	:	0.1 Days	Estimator	:	Mihaela Tomulescu
Unit Price	:	\$1.37 per LBS	LBS per	Total Cost	Unit Price Per LBS
Total Cost	:	\$1,371	Probable Low Cost Parameter	8250	\$1,234 \$1.23
			Probable High Cost Parameter	6375	\$1,577 \$1.58

Description	Active Idle	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Labor Foreman	Active	1.00	0.1	10	1.00	L	\$58.87	incl. in rate	incl. in rate	\$58.87
Laborer	Active	3.00	0.1	10	3.00	L	\$51.07	incl. in rate	incl. in rate	\$153.22
Steelworker	Active	2.00	0.1	10	2.00	L	\$78.10	incl. in rate	incl. in rate	\$156.20
Equipment Operator (medium)	Active	1.00	0.1	10	1.00	L	\$72.34	incl. in rate	incl. in rate	\$72.34
Loader, FE Rubber Tire (5.25cy)	Active	1.00	0.1	10	1.00	E	\$76.00	incl. in rate	incl. in rate	\$76.00
Labor Hours					7	TOTAL LABOR				\$440.63
Equipment Hours					1	TOTAL EQUIPMENT				\$76.00

Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost
Consumables 5% labor (saw blades, drill bits, etc)	1.00	LS	1.000	1.00	\$22.03	\$22.03
TOTAL MATERIAL						\$22.03

Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount	
Hauling cost to Yreka Transfer 40 Miles	1.00	Loads	20 tons a load	\$400.00	\$400.00	
Selective demolition, torch cutting, steel, 1" thick plate (assumption)	500.00	LF	1,000	500.00	\$0.85	\$425.00
TOTAL SUBCONTRACTS					\$825.00	

Labor Cost	\$440.63	Labor Burden @	0.0%	\$0.00		\$440.63
Material Cost	\$22.03	Material Tax @	7.75%	\$1.71		\$23.74
Equipment Cost	\$76.00	Equipment Tax @	7.75%	\$5.89		\$81.89
Subcontractors	\$825.00					\$825.00
<b>DIRECT COST SUBTOTALS</b>	<b>\$1,364</b>			<b>\$8</b>	<b>DIRECT COST SUBTOTALS</b>	<b>\$1,371</b>
<b>Additional Pay Item Notes :</b>						

## PAY ITEM INFORMATION

PAY ITEM NUMBER	: 2.031	Project	: KRRP - Copco 1
Description	: Remove & Dispose of 2 - CO2 Systems	Group	: D03
Quantity	: 3,100.00 LBS		
Daily Production	: 7,500.00 LBS per 10 hour shift	Project #	: 2
Work Days	: 0.4 Days	Estimator	: Mihaela Tomulescu
Unit Price	: \$0.90 per LBS	Probable Low Cost Parameter	LBS per 8250
Total Cost	: \$2,795	Probable High Cost Parameter	6375
		Total Cost	\$2,515
		Unit Price Per LBS	\$0.81
			\$1.04

## CREW COSTS

Description	Active Idle	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Labor Foreman	Active	1.00	0.4	10	4.00	L	\$58.87	incl. in rate	incl. in rate	\$235.49
Laborer	Active	2.00	0.4	10	8.00	L	\$51.07	incl. in rate	incl. in rate	\$408.58
Steelworker	Active	2.00	0.4	10	8.00	L	\$78.10	incl. in rate	incl. in rate	\$624.80
Equipment Operator (medium)	Active	1.00	0.4	10	4.00	L	\$72.34	incl. in rate	incl. in rate	\$289.34
Loader, FE Rubber Tire (5.25cy)	Active	1.00	0.4	10	4.00	E	\$76.00	incl. in rate	incl. in rate	\$304.00
Labor Hours					24	TOTAL LABOR				\$1,558.22
Equipment Hours					4	TOTAL EQUIPMENT				\$304.00

## MATERIAL COSTS

Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost
Consumables 5% labor (saw blades, drill bits, etc)	1.00	LS	1.000	1.00	\$77.91	\$77.91
						TOTAL MATERIAL
						\$77.91

## SUBCONTRACT COSTS

Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount
Hauling cost to Yreka Transfer 40 Miles	1.00	Loads	20 tons a load	\$400.00	\$400.00
Selective demolition, torch cutting, steel, 1" thick plate (assumption)	500.00	LF	1.000	500.00	\$0.85
					TOTAL SUBCONTRACTS
					\$825.00

## SUMMARY OF COSTS

Labor Cost	\$1,558.22	Labor Burden @	0.0%	\$0.00	\$1,558.22
Material Cost	\$77.91	Material Tax @	7.75%	\$6.04	\$83.95
Equipment Cost	\$304.00	Equipment Tax @	7.75%	\$23.56	\$327.56
Subcontractors	\$825.00				\$825.00
DIRECT COST SUBTOTALS	\$2,765			\$30	DIRECT COST SUBTOTALS
					\$2,795

Additional Pay Item Notes :

## PAY ITEM INFORMATION

PAY ITEM NUMBER	: 2.032	Project	: KRRP - Copco 1
Description	: Remove & Dispose of Plant Water and Fire Protection	Group	: D05
Quantity	: 2,600.00 LBS		
Daily Production	: 7,500.00 LBS per 10 hour shift	Project #	: 2
Work Days	: 0.3 Days	Estimator	: Mihaela Tomulescu
Unit Price	: \$0.89 per LBS	Probable Low Cost Parameter	LBS per 8250
Total Cost	: \$2,302	Probable High Cost Parameter	6000
		Total Cost	\$2,072
		Unit Price Per LBS	\$0.80
			\$1.06

## CREW COSTS

Description	Active Idle	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Labor Foreman	Active	1.00	0.3	10	3.00	L	\$58.87	incl. in rate	incl. in rate	\$176.62
Laborer	Active	2.00	0.3	10	6.00	L	\$51.07	incl. in rate	incl. in rate	\$306.44
Steelworker	Active	2.00	0.3	10	6.00	L	\$78.10	incl. in rate	incl. in rate	\$468.60
Equipment Operator (medium)	Active	1.00	0.3	10	3.00	L	\$72.34	incl. in rate	incl. in rate	\$217.01
Loader, FE Rubber Tire (5.25cy)	Active	1.00	0.3	10	3.00	E	\$76.00	incl. in rate	incl. in rate	\$228.00
					Labor Hours	18			TOTAL LABOR	\$1,168.66
					Equipment Hours	3			TOTAL EQUIPMENT	\$228.00

## MATERIAL COSTS

Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost
Consumables 5% labor (saw blades, drill bits, etc)	1.00	LS	1.000	1.00	\$58.43	\$58.43
						TOTAL MATERIAL
						\$58.43

## SUBCONTRACT COSTS

Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount
Hauling cost to Yreka Transfer 40 Miles	1.00	Loads	20 tons a load	\$400.00	\$400.00
Selective demolition, torch cutting, steel, 1" thick plate (assumption)	500.00	LF	1.000	\$0.85	\$425.00
					TOTAL SUBCONTRACTS
					\$825.00

## SUMMARY OF COSTS

Labor Cost	\$1,168.66	Labor Burden @	0.0%	\$0.00	\$1,168.66
Material Cost	\$58.43	Material Tax @	7.75%	\$4.53	\$62.96
Equipment Cost	\$228.00	Equipment Tax @	7.75%	\$17.67	\$245.67
Subcontractors	\$825.00				\$825.00
DIRECT COST SUBTOTALS	\$2,280			\$22	DIRECT COST SUBTOTALS
					\$2,302

Additional Pay Item Notes :

## PAY ITEM INFORMATION

PAY ITEM NUMBER	: 2.033	Project	: KRRP - Copco 1
Description	: Remove & Dispose of Transformer Oil Fire Protection	Group	: D05
Quantity	: 5,400.00 LBS		
Daily Production	: 7,500.00 LBS per 10 hour shift	Project #	: 2
Work Days	: 0.7 Days	Estimator	: Mihaela Tomulescu
Unit Price	: \$1.09 per LBS	Probable Low Cost Parameter	LBS per 8250
Total Cost	: \$5,879	Probable High Cost Parameter	6000
		Total Cost	\$5,291
		Unit Price Per LBS	\$0.98
			\$1.31

## CREW COSTS

Description	Active Idle	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Labor Foreman	Active	1.00	0.7	10	7.00	L	\$58.87	incl. in rate	incl. in rate	\$412.10
Laborer	Active	2.00	0.7	10	14.00	L	\$51.07	incl. in rate	incl. in rate	\$715.02
Steelworker	Active	2.00	0.7	10	14.00	L	\$78.10	incl. in rate	incl. in rate	\$1,093.40
Equipment Operator (medium)	Active	1.00	0.7	10	7.00	L	\$72.34	incl. in rate	incl. in rate	\$506.35
Loader, FE Rubber Tire (5.25cy)	Active	1.00	0.7	10	7.00	E	\$76.00	incl. in rate	incl. in rate	\$532.00
Labor Hours					42	TOTAL LABOR				\$2,726.88
Equipment Hours					7	TOTAL EQUIPMENT				\$532.00

## MATERIAL COSTS

Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost
Consumables 5% labor (saw blades, drill bits, etc)	1.00	LS	1.000	1.00	\$136.34	\$136.34
						TOTAL MATERIAL
						\$136.34

## SUBCONTRACT COSTS

Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount
Hazardous waste cleanup/pickup/disposal, solid pickup, bulk material, maximum	2.70	ton	1.000	2.70	\$595.00
Hauling cost to Yreka Transfer 40 Miles	1.00	Loads	20 tons a load		\$400.00
plate (assumption)	500.00	LF	1.000	500.00	\$0.85
					TOTAL SUBCONTRACTS
					\$2,431.50

## SUMMARY OF COSTS

Labor Cost	\$2,726.88	Labor Burden @	0.0%	\$0.00	\$2,726.88
Material Cost	\$136.34	Material Tax @	7.75%	\$10.57	\$146.91
Equipment Cost	\$532.00	Equipment Tax @	7.75%	\$41.23	\$573.23
Subcontractors	\$2,431.50				\$2,431.50
DIRECT COST SUBTOTALS	\$5,827			\$52	DIRECT COST SUBTOTALS
					\$5,879

Additional Pay Item Notes :

PAY ITEM INFORMATION									
PAY ITEM NUMBER	:	2.034	Project	:	KRRP - Copco 1				
Description	:	Remove & Dispose of Unwatering Piping	Group	:	D05				
Quantity	:	27,000.00 LBS							
Daily Production	:	22,500.00 LBS per	10	hour shift	Project #	:	2		
Work Days	:	1.2 Days			Estimator	:	Mihaela Tomulescu	LBS per	Total Cost
Unit Price	:	\$0.33 per LBS			Probable Low Cost Parameter			25875	\$7,645
Total Cost	:	\$8,994			Probable High Cost Parameter			16875	\$11,243
									Unit Price Per LBS
									\$0.28
									\$0.42

CREW COSTS										
Description	Active Idle	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Labor Foreman	Active	1.00	1.2	10	12.00	L	\$58.87	incl. in rate	incl. in rate	\$706.46
Laborer	Active	2.00	1.2	10	24.00	L	\$51.07	incl. in rate	incl. in rate	\$1,225.75
Steelworker	Active	2.00	1.2	10	24.00	L	\$78.10	incl. in rate	incl. in rate	\$1,874.40
Equipment Operator (medium)	Active	1.00	1.2	10	12.00	L	\$72.34	incl. in rate	incl. in rate	\$868.03
Loader, FE Rubber Tire (5.25cy)	Active	1.00	1.2	10	12.00	E	\$76.00	incl. in rate	incl. in rate	\$912.00
Labor Hours					72	TOTAL LABOR				\$4,674.65
Equipment Hours					12	TOTAL EQUIPMENT				\$912.00

MATERIAL COSTS						
Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost
Consumables 10% labor (saw blades, drill bits, etc)	1.00	LS	1.000	1.00	\$467.46	\$467.46
						TOTAL MATERIAL
						\$467.46

SUBCONTRACT COSTS					
Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount
Hazardous waste cleanup/pickup/disposal, solid pickup, bulk material, maximum (25% from total weight)					
	3.38	ton	1.000	3.38	\$595.00
					\$2,008.13
Hauling cost to Yreka Transfer 40 Miles (assumption)	1.00	Loads	20 tons a load		\$400.00
	500.00	LF	1.000	500.00	\$0.85
					\$425.00
					TOTAL SUBCONTRACTS
					\$2,833.13

SUMMARY OF COSTS									
Labor Cost	\$4,674.65	Labor Burden @	0.0%	\$0.00					\$4,674.65
Material Cost	\$467.46	Material Tax @	7.75%	\$36.23					\$503.69
Equipment Cost	\$912.00	Equipment Tax @	7.75%	\$70.68					\$982.68
Subcontractors	\$2,833.13								\$2,833.13
DIRECT COST SUBTOTALS	\$8,887			\$107				DIRECT COST SUBTOTALS	\$8,994
Additional Pay Item Notes :									



## PAY ITEM INFORMATION

PAY ITEM NUMBER	: 2.035	Project	: KRRP - Copco 1
Description	: Remove & Dispose of Drainage Piping	Group	: D05
Quantity	: 5,000.00 LBS		
Daily Production	: 22,500.00 LBS per 10 hour shift	Project #	: 2
Work Days	: 0.2 Days	Estimator	: Mihaela Tomulescu
Unit Price	: \$0.36 per LBS	Probable Low Cost Parameter	LBS per 25875
Total Cost	: \$1,810	Probable High Cost Parameter	Total Cost \$1,538
			Unit Price Per LBS \$0.31
			\$0.45

## CREW COSTS

Description	Active Idle	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Labor Foreman	Active	1.00	0.2	10	2.00	L	\$58.87	incl. in rate	incl. in rate	\$117.74
Laborer	Active	2.00	0.2	10	4.00	L	\$51.07	incl. in rate	incl. in rate	\$204.29
Steelworker	Active	2.00	0.2	10	4.00	L	\$78.10	incl. in rate	incl. in rate	\$312.40
Equipment Operator (medium)	Active	1.00	0.2	10	2.00	L	\$72.34	incl. in rate	incl. in rate	\$144.67
Loader, FE Rubber Tire (5.25cy)	Active	1.00	0.2	10	2.00	E	\$76.00	incl. in rate	incl. in rate	\$152.00
Labor Hours					12	TOTAL LABOR				\$779.11
Equipment Hours					2	TOTAL EQUIPMENT				\$152.00

## MATERIAL COSTS

Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost
Consumables 5% labor (saw blades, drill bits, etc)	1.00	LS	1.000	1.00	\$38.96	\$38.96
						TOTAL MATERIAL
						\$38.96

## SUBCONTRACT COSTS

Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount
Hauling cost to Yreka Transfer 40 Miles	1.00	Loads	20 tons a load		\$400.00
plate (assumption)	500.00	LF	1.000	500.00	\$425.00
					TOTAL SUBCONTRACTS
					\$825.00

## SUMMARY OF COSTS

Labor Cost	\$779.11	Labor Burden @	0.0%	\$0.00	\$779.11
Material Cost	\$38.96	Material Tax @	7.75%	\$3.02	\$41.97
Equipment Cost	\$152.00	Equipment Tax @	7.75%	\$11.78	\$163.78
Subcontractors	\$825.00				\$825.00
DIRECT COST SUBTOTALS	\$1,795			\$15	DIRECT COST SUBTOTALS
					\$1,810

## Additional Pay Item Notes :

1370 LF of 1 \* drainage pipes at 3.66 Lbs. Used 1 Loader and 1 Forman, 1 Steelworkers to cut the pipes and 1 Laborers to load the pipes in the truck.



PAY ITEM INFORMATION									
PAY ITEM NUMBER	:	2.036	Project	:	KRRP - Copco 1				
Description	:	Remove & Dispose of Horizontal AC Generator, Indoor Open Frame	Group	:	D04				
Quantity	:	2.00 EA	Project #	:	2	Estimator	:	Mihaela Tomulescu	EA per
Daily Production	:	0.40 EA per	Probable Low Cost Parameter	:	0.46	Total Cost	:	\$114,357	Unit Price Per EA
Work Days	:	5.0 Days	Probable High Cost Parameter	:	0.32	\$161,446	:	\$80,722.82	
Unit Price	:	\$67,269.02 per EA							
Total Cost	:	\$134,538							

CREW COSTS										
Description	Active Idle	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Crawler Crane (270tn)	Active	1.00	5.0	10	50.00	E	\$454.10	incl. in rate	incl. in rate	\$22,705.00
Electrician	Active	4.00	5.0	10	200.00	L	\$55.80	incl. in rate	incl. in rate	\$11,160.60
Equipment Operator (oiler)	Active	1.00	5.0	10	50.00	L	\$73.43	incl. in rate	incl. in rate	\$3,671.25
Equipment Operator (crane)	Active	1.00	5.0	10	50.00	L	\$81.60	incl. in rate	incl. in rate	\$4,079.90
Steelworker	Active	5.00	5.0	10	250.00	L	\$78.10	incl. in rate	incl. in rate	\$19,525.00
Loader, FE Rubber Tire (8.6cy)	Active	2.00	5.0	10	100.00	E	\$225.40	incl. in rate	incl. in rate	\$22,540.00
Labor Foreman	Active	1.00	5.0	10	50.00	L	\$58.87	incl. in rate	incl. in rate	\$2,943.60
Welder	Active	3.00	5.0	10	150.00	E	\$7.84	incl. in rate	incl. in rate	\$1,176.00
Gas Welding Machine	Active	3.00	5.0	10	150.00	E	\$2.88	incl. in rate	incl. in rate	\$431.55
Truck Driver (heavy)	Active	4.00	5.0	10	200.00	L	\$75.72	incl. in rate	incl. in rate	\$15,144.80
Truck, Flatbed (4x4, 10,000 gvw)	Active	4.00	5.0	10	200.00	E	\$27.09	incl. in rate	incl. in rate	\$5,418.00
Electrician Foreman	Active	1.00	5.0	10	50.00	L	\$55.80	incl. in rate	incl. in rate	\$2,790.15
					Labor Hours	850			TOTAL LABOR	\$59,315.30
					Equipment Hours	650			TOTAL EQUIPMENT	\$52,270.55

MATERIAL COSTS							
Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost	
Consumables 10% labor (saw blades, drill bits, etc)	1.00	LS	1.000	1.00	\$5,931.53	\$5,931.53	
TOTAL MATERIAL							\$5,931.53

SUBCONTRACT COSTS						
Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount	
Disposal fee (for 115 tons)	115	tons	1.000	115.00	\$74.00	\$8,510.00
Hauling cost to Yreka Transfer 40 Miles	10.00	Loads	20 tons a load	\$400.00		\$4,000.00
TOTAL SUBCONTRACTS						\$12,510.00

SUMMARY OF COSTS						
Labor Cost	\$59,315.30	Labor Burden @	0.0%	\$0.00		\$59,315.30
Material Cost	\$5,931.53	Material Tax @	7.75%	\$459.69		\$6,391.22
Equipment Cost	\$52,270.55	Equipment Tax @	7.75%	\$4,060.97		\$56,321.52
Subcontractors	\$12,510.00					\$12,510.00
DIRECT COST SUBTOTALS	\$130,027			\$4,511	DIRECT COST SUBTOTALS	\$134,538
Additional Pay Item Notes :						

PAY ITEM INFORMATION									
PAY ITEM NUMBER	:	2.037	Project	:	KRRP - Copco 1				
Description	:	Remove & Dispose of Excitation equipment for 12.5 MVA Generator	Group	:	D04				
Quantity	:	1.50 EA							
Daily Production	:	1.88 EA per	10	hour shift	Project #	:	2		
Work Days	:	0.8	Days		Estimator	:	Mihaela Tomulescu	EA per	Total Cost
Unit Price	:	\$7,271.14	per EA		Probable Low Cost Parameter			2.15625	\$9,271
Total Cost	:	\$10,907			Probable High Cost Parameter			1.40625	\$13,633
									Unit Price Per EA
									\$6,180.47
									\$9,088.92

CREW COSTS										
Description	Active Idle	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Electrician Foreman	Active	1.00	0.8	10	8.00	L	\$55.80	incl. in rate	incl. in rate	\$446.42
Electrician	Active	1.00	0.8	10	8.00	L	\$55.80	incl. in rate	incl. in rate	\$446.42
Laborer	Active	2.00	0.8	10	16.00	L	\$51.07	incl. in rate	incl. in rate	\$817.17
Loader, FE Rubber Tire (8.6cy)	Active	1.00	0.8	10	8.00	E	\$225.40	incl. in rate	incl. in rate	\$1,803.20
Hydraulic Crane (120tn)	Active	1.00	0.8	10	8.00	E	\$242.08	incl. in rate	incl. in rate	\$1,936.64
Welder	Active	1.00	0.8	10	8.00	E	\$7.84	incl. in rate	incl. in rate	\$62.72
Gas Welding Machine	Active	1.00	0.8	10	8.00	E	\$2.88	incl. in rate	incl. in rate	\$23.02
Equipment Operator (medium)	Active	1.00	0.8	10	8.00	L	\$72.34	incl. in rate	incl. in rate	\$578.69
Equipment Operator (crane)	Active	1.00	0.8	10	8.00	L	\$81.60	incl. in rate	incl. in rate	\$652.78
Labor Hours					48	TOTAL LABOR				\$2,941.49
Equipment Hours					32	TOTAL EQUIPMENT				\$3,825.58

MATERIAL COSTS						
Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost
Consumables 5% labor (saw blades, drill bits, etc)	1.00	LS	1.000	1.00	\$147.07	\$147.07
Selective demolition, torch cutting, steel, 1" thick plate (assumed qty)	2,500.00	LF	1.000	2,500.00	\$0.85	\$2,125.00
TOTAL MATERIAL						\$2,272.07

SUBCONTRACT COSTS					
Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount
Hazardous waste cleanup/pickup/disposal, solid pickup, bulk material, maximum	1.00	ton	1.000	1.00	\$595.00
Hauling cost to Yreka Transfer 40 Miles	2.00	Loads		\$400.00	\$800.00
TOTAL SUBCONTRACTS					\$1,395.00

SUMMARY OF COSTS						
Labor Cost	\$2,941.49	Labor Burden @	0.0%	\$0.00		\$2,941.49
Material Cost	\$2,272.07	Material Tax @	7.75%	\$176.09		\$2,448.16
Equipment Cost	\$3,825.58	Equipment Tax @	7.75%	\$296.48		\$4,122.06
Subcontractors	\$1,395.00					\$1,395.00
DIRECT COST SUBTOTALS	\$10,434			\$473	DIRECT COST SUBTOTALS	\$10,907
Additional Pay Item Notes :						
Production based on 1 Forman, 1 Electrician, 1 Welder to cut to remove the electrical equipment and 1 laborer to haul. Equipment used 1 Loader and 1 Crane for disposal. Assumed 2 sections, weight 1000LBS.						



PAY ITEM COST DETAIL WORKSHEET

2.039 Remove & Dispose of Neutral grounding equip. for 12.5 MVA Generator

PAY ITEM INFORMATION									
PAY ITEM NUMBER	:	2.039	Project	:	KRRP - Copco 1				
Description	:	Remove & Dispose of Neutral grounding equip. for 12.5 MVA Generator	Group	:	D04				
Quantity	:	2.00 EA							
Daily Production	:	2.50 EA per	10	hour shift	Project #	:	2		
Work Days	:	0.8	Days		Estimator	:	Mihaela Tomulescu	EA per	Total Cost
Unit Price	:	\$1,936.75	per EA		Probable Low Cost Parameter		2.75	\$3,486	Unit Price Per EA
Total Cost	:	\$3,874			Probable High Cost Parameter		2.125	\$4,455	\$2,227.26

CREW COSTS										
Description	Active Idle	# In crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Electrician Foreman	Active	1.00	0.8	10	8.00	L	\$55.80	incl. in rate	incl. in rate	\$446.42
Electrician	Active	1.00	0.8	10	8.00	L	\$55.80	incl. in rate	incl. in rate	\$446.42
Laborer	Active	2.00	0.8	10	16.00	L	\$51.07	incl. in rate	incl. in rate	\$817.17
Loader, FE Rubber Tire (3.5cy)	Active	2.00	0.8	10	16.00	E	\$63.11	incl. in rate	incl. in rate	\$1,009.76
Equipment Operator (light)	Active	1.00	0.8	10	8.00	L	\$69.19	incl. in rate	incl. in rate	\$553.52
Labor Hours					40	TOTAL LABOR				\$2,263.54
Equipment Hours					16	TOTAL EQUIPMENT				\$1,009.76

MATERIAL COSTS						
Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost
Consumables 5% labor (saw blades, drill bits, etc)	1.00	LS	1.000	1.00	\$113.18	\$113.18
						TOTAL MATERIAL
						\$113.18

SUBCONTRACT COSTS					
Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount
Hauling cost to Yreka Transfer 40 Miles	1.00	Loads		\$400.00	\$400.00
					TOTAL SUBCONTRACTS
					\$400.00

SUMMARY OF COSTS									
Labor Cost	\$2,263.54	Labor Burden @	0.0%	\$0.00					\$2,263.54
Material Cost	\$113.18	Material Tax @	7.75%	\$8.77					\$121.95
Equipment Cost	\$1,009.76	Equipment Tax @	7.75%	\$78.26					\$1,088.02
Subcontractors	\$400.00								\$400.00
DIRECT COST SUBTOTALS	\$3,786			\$87				DIRECT COST SUBTOTALS	\$3,874
Additional Pay Item Notes :									
Assumption for Crew R3: 1 Forman, 1 Electrician, 1 Ironworker and 1 welder to cut rods, to remove the electrical equipment and 1 laborer to haul in the truck.									

## PAY ITEM COST DETAIL WORKSHEET

## 2.04 Remove &amp; Dispose of Generator Switchgear, 5kV-includes unit breakers

PAY ITEM INFORMATION									
PAY ITEM NUMBER	:	2.040	Project	:	KRRP - Copco 1				
Description	:	Remove & Dispose of Generator Switchgear, 5kV-includes unit breakers	Group	:	D04				
Quantity	:	1.00 EA	Project #	:	2	Estimator	:	Mihaela Tomulescu	EA per
Daily Production	:	1.25 EA per	10	hour shift		Probable Low Cost Parameter		1.375	Total Cost
Work Days	:	0.8 Days				Probable High Cost Parameter		1.0625	\$14,450
Unit Price	:	\$16,055.58 per EA							Unit Price Per EA
Total Cost	:	\$16,056							\$18,464
									\$14,450.02
									\$18,463.92

CREW COSTS										
Description	Active	# in	Days	Hours	Total	L/E	Hourly	Hrly oper.	Burden	Labor / Equipment
	Idle	crew	Worked	/day	Hours		Rate	Cost	Rate	Cost
Electrician Foreman	Active	3.00	0.8	10	24.00	L	\$55.80	incl. in rate	incl. in rate	\$1,339.27
Electrician	Active	12.00	0.8	10	96.00	L	\$55.80	incl. in rate	incl. in rate	\$5,357.09
Laborer	Active	6.00	0.8	10	48.00	L	\$51.07	incl. in rate	incl. in rate	\$2,451.50
Loader, FE Rubber Tire (8.6cy)	Active	1.00	0.8	10	8.00	E	\$225.40	incl. in rate	incl. in rate	\$1,803.20
Hydraulic Crane (120tn)	Active	1.00	0.8	10	8.00	E	\$242.08	incl. in rate	incl. in rate	\$1,936.64
Welder	Active	1.00	0.8	10	8.00	E	\$7.84	incl. in rate	incl. in rate	\$62.72
Gas Welding Machine	Active	1.00	0.8	10	8.00	E	\$2.88	incl. in rate	incl. in rate	\$23.02
Equipment Operator (medium)	Active	1.00	0.8	10	8.00	L	\$72.34	incl. in rate	incl. in rate	\$578.69
Equipment Operator (crane)	Active	1.00	0.8	10	8.00	L	\$81.60	incl. in rate	incl. in rate	\$652.78
					Labor Hours	184	TOTAL LABOR		\$10,379.34	
					Equipment Hours	32	TOTAL EQUIPMENT		\$3,825.58	

MATERIAL COSTS							
Description	Item	Order	Conversion	Order	Order		Material
	Quantity	Unit	Factor / Waste	Quantity	Price		Cost
Consumables 5% labor (saw blades, drill bits, etc)	1.00	LS	1.000	1.00	\$518.97		\$518.97
Selective demolition, torch cutting, steel, 1" thick plate (assumed qty)	0.00	LF	1.000	0.00	\$0.85		\$0.00
TOTAL MATERIAL							\$518.97

SUBCONTRACT COSTS							
Description	Quantity	Units	Notes / Company	Unit Price			Contract or Quote Amount
Hazardous waste cleanup/pickup/disposal, solid pickup, bulk material, maximum	1.00	ton	1.000	1.00	\$595.00		\$595.00
Hauling cost to Yreka Transfer 40 Miles	1.00	Loads		\$400.00			\$400.00
TOTAL SUBCONTRACTS							\$995.00

SUMMARY OF COSTS							
Labor Cost	\$10,379.34	Labor Burden @	0.0%	\$0.00			\$10,379.34
Material Cost	\$518.97	Material Tax @	7.75%	\$40.22			\$559.19
Equipment Cost	\$3,825.58	Equipment Tax @	7.75%	\$296.48			\$4,122.06
Subcontractors	\$995.00						\$995.00
DIRECT COST SUBTOTALS	\$15,719			\$337		DIRECT COST SUBTOTALS	\$16,056
Additional Pay Item Notes :							

Used 3 Crews (2 sections each weight around 800 LBS per crew) formed of 1 Foreman, 3 Electrician, 2 laborer to haul with the crane in the truck. Assumed containing hazardous waste that will be disposed at 34 miles away from the construction site to Yreka Transfer Recycling . In normal circumstances, decontaminated residual components could be accepted at landfill sites but Polychlorinated biphenyl, otherwise known as PCB, is a synthetic chemical that is widely used for industrial and commercial use as dielectric fluid in transformers and capacitors because of its high resistance to decomposition, low electrical conductivity, low flammability and high heat capacity. Transformer repair, reconditioning and retro-filling facilities are the major industry sectors that contributes to the spread of PCB contamination. Types of PCB Wastes:

- o PCB-based dielectric fluids removed from transformers and other equipment
- o PCB-based heat transfer and hydraulic fluids Metallic solid wastes
- o PCB equipment such as capacitors, transformers, **switchgears**, circuit breakers, heat transfer systems, etc.
- o Contaminated components removed from electrical equipment such as windings;
- o PCB-contaminated containers and equipment such as metal drums, tanks, pumps, metal filters, etc.

PAY ITEM COST DETAIL WORKSHEET

2.041 Remove & Dispose of Station Service Switchgear, 600 volt - (5 sections)

PAY ITEM INFORMATION

PAY ITEM NUMBER	: 2.041	Project	: KRRP - Copco 1			
Description	: Remove & Dispose of Station Service Switchgear, 600 volt - (5 sections)	Group	: D05			
Quantity	: 1.00 EA	Project #	: 2			
Daily Production	: 1.25 EA per	Estimator	: Mihaela Tomulescu			
Work Days	: 0.8 Days	Probable Low Cost Parameter	EA per	Total Cost	Unit Price Per EA	
Unit Price	: \$9,001.85 per EA	Probable High Cost Parameter	1.375	\$8,102	\$8,101.67	
Total Cost	: \$9,002		1.0625	\$10,352	\$10,352.13	

CREW COSTS

Description	Active Idle	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Electrician Foreman	Active	3.00	0.8	10	24.00	L	\$55.80	incl. in rate	incl. in rate	\$1,339.27
Electrician	Active	6.00	0.8	10	48.00	L	\$55.80	incl. in rate	incl. in rate	\$2,678.54
Laborer	Active	4.00	0.8	10	32.00	L	\$51.07	incl. in rate	incl. in rate	\$1,634.34
Loader, FE Rubber Tire (8.6cy)	Active	1.00	0.8	10	8.00	E	\$225.40	incl. in rate	incl. in rate	\$1,803.20
Equipment Operator (medium)	Active	1.00	0.8	10	8.00	L	\$72.34	incl. in rate	incl. in rate	\$578.69
Welder	Active	1.00	0.8	10	8.00	E	\$7.84	incl. in rate	incl. in rate	\$62.72
Gas Welding Machine	Active	1.00	0.8	10	8.00	E	\$2.88	incl. in rate	incl. in rate	\$23.02
Labor Hours					112	TOTAL LABOR				\$6,230.84
Equipment Hours					24	TOTAL EQUIPMENT				\$1,888.94

MATERIAL COSTS

Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost
Consumables 5% labor (saw blades, drill bits, etc)	1.00	LS	1.000	1.00	\$311.54	\$311.54
TOTAL MATERIAL						\$311.54

SUBCONTRACT COSTS

Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount
Hauling cost to Yreka Transfer 40 Miles	1.00	Loads		\$400.00	\$400.00
TOTAL SUBCONTRACTS					\$400.00

SUMMARY OF COSTS

Labor Cost	\$6,230.84	Labor Burden @	0.0%	\$0.00		\$6,230.84
Material Cost	\$311.54	Material Tax @	7.75%	\$24.14		\$335.69
Equipment Cost	\$1,888.94	Equipment Tax @	7.75%	\$146.39		\$2,035.33
Subcontractors	\$400.00					\$400.00
DIRECT COST SUBTOTALS	\$8,831			\$171	DIRECT COST SUBTOTALS	\$9,002
Additional Pay Item Notes :						

Additional Pay Item Notes :

Used 3 Crews (2 sections each, weight around 800lbs per crew) formed of 1 Foreman, 2 Electrician, 1welder to cut, 2 laborer to haul with the loader in the truck. Assumed containing hazardous waste that will be disposed . Calculated 34 miles from Copco 1 to Yreka Transfer Recycling.





PAY ITEM INFORMATION									
PAY ITEM NUMBER	:	2.043	Project	:	KRRP - Copco 1				
Description	:	Remove & Dispose of Battery System	Group	:	D05				
Quantity	:	1.00 EA							
Daily Production	:	0.41 EA per	10	hour shift	Project #	:	2		
Work Days	:	2.4	Days		Estimator	:	Mihaela Tomulescu	EA per	Total Cost
Unit Price	:	\$14,109.87	per EA		Probable Low Cost Parameter			0.45375	\$12,699
Total Cost	:	\$14,110			Probable High Cost Parameter			0.350625	\$16,226
									Unit Price Per EA
									\$12,698.89
									\$16,226.35

CREW COSTS										
Description	Active Idle	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Labor Foreman	Active	1.00	2.4	10	24.00	L	\$58.87	incl. in rate	incl. in rate	\$1,412.93
Electrician	Active	1.00	2.4	10	24.00	L	\$55.80	incl. in rate	incl. in rate	\$1,339.27
Equipment Operator (light)	Active	1.00	2.4	10	24.00	L	\$69.19	incl. in rate	incl. in rate	\$1,660.56
Loader, FE Rubber Tire (8.6cy)	Active	1.00	2.4	10	24.00	E	\$225.40	incl. in rate	incl. in rate	\$5,409.60
Laborer	Active	2.00	2.4	10	48.00	L	\$51.07	incl. in rate	incl. in rate	\$2,451.50
Welder	Active	1.00	2.4	10	24.00	E	\$7.84	incl. in rate	incl. in rate	\$188.16
Gas Welding Machine	Active	1.00	2.4	10	24.00	E	\$2.88	incl. in rate	incl. in rate	\$69.05
					Labor Hours	120	TOTAL LABOR			\$6,864.26
					Equipment Hours	72	TOTAL EQUIPMENT			\$5,666.81

MATERIAL COSTS						
Description	Item Quantity	Order Unit	onversion ctor / Waste	Order Quantity	Order Price	Material Cost
Consumables 10% labor (saw blades, drill bits, etc)	1.00	LS	1.000	1.00	\$686.43	\$686.43
						TOTAL MATERIAL
						\$686.43

SUBCONTRACT COSTS					
Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount
Hauling cost to Yreka Transfer 40 Miles	1.00	Loads		\$400.00	\$400.00
					TOTAL SUBCONTRACTS
					\$400.00

SUMMARY OF COSTS						
Labor Cost	\$6,864.26	Labor Burden @	0.0%	\$0.00		\$6,864.26
Material Cost	\$686.43	Material Tax @	7.75%	\$53.20		\$739.62
Equipment Cost	\$5,666.81	Equipment Tax @	7.75%	\$439.18		\$6,105.99
Subcontractors	\$400.00					\$400.00
DIRECT COST SUBTOTALS	\$13,617			\$492	DIRECT COST SUBTOTALS	\$14,110
Additional Pay Item Notes :						
Assuming 3 days of work disposing around 60 batteries, racks and supports. Using Crews E-19 for metals demolition, E-12 and E-25 for cutting steel and A-3H for equipment disposal, B-34A for hauling.						



## PAY ITEM INFORMATION

PAY ITEM NUMBER	: 2.045	Project	: KRRP - Copco 1
Description	: Remove & Dispose of Misc. power & control boards	Group	: D05
Quantity	: 1.00 EA		
Daily Production	: 1.25 EA per 10 hour shift	Project #	: 2
Work Days	: 0.8 Days	Estimator	: Mihaela Tomulescu
Unit Price	: \$5,030.08 per EA	Probable Low Cost Parameter	EA per 1.375 Total Cost \$4,527 Unit Price Per EA \$4,527.08
Total Cost	: \$5,030	Probable High Cost Parameter	1.0625 \$5,785 \$5,784.60

## CREW COSTS

Description	Active Idle	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Labor Foreman	Active	1.00	0.8	10	8.00	L	\$58.87	incl. in rate	incl. in rate	\$470.98
Electrician	Active	1.00	0.8	10	8.00	L	\$55.80	incl. in rate	incl. in rate	\$446.42
Laborer	Active	2.00	0.8	10	16.00	L	\$51.07	incl. in rate	incl. in rate	\$817.17
Loader, FE Rubber Tire (8.6cy)	Active	1.00	0.8	10	8.00	E	\$225.40	incl. in rate	incl. in rate	\$1,803.20
Equipment Operator (medium)	Active	1.00	0.8	10	8.00	L	\$72.34	incl. in rate	incl. in rate	\$578.69
Labor Hours					40	TOTAL LABOR				\$2,313.26
Equipment Hours					8	TOTAL EQUIPMENT				\$1,803.20

## MATERIAL COSTS

Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost
Consumables 15% labor (saw blades, drill bits, etc)	1.00	LS	1.000	1.00	\$346.99	\$346.99
						TOTAL MATERIAL
						\$346.99

## SUBCONTRACT COSTS

Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount
Hauling cost to Yreka Transfer 40 Miles	1.00	Loads		\$400.00	\$400.00
					TOTAL SUBCONTRACTS
					\$400.00

## SUMMARY OF COSTS

Labor Cost	\$2,313.26	Labor Burden @	0.0%	\$0.00	\$2,313.26
Material Cost	\$346.99	Material Tax @	7.75%	\$26.89	\$373.88
Equipment Cost	\$1,803.20	Equipment Tax @	7.75%	\$139.75	\$1,942.95
Subcontractors	\$400.00				\$400.00
DIRECT COST SUBTOTALS	\$4,863			\$167	DIRECT COST SUBTOTALS
					\$5,030

## Additional Pay Item Notes :

Assumption for removal of 3' x 2' x 9" boards - 10 each using R3 electrical crew and laborers for hauling with the loader.

PAY ITEM COST DETAIL WORKSHEET

2.046 Remove & Dispose of Step-up Transformers, indoor, oil-filled, 1-phase, 5000kVA

PAY ITEM INFORMATION									
PAY ITEM NUMBER	:	2.046	Project : KRRP - Copco 1						
Description	:	Remove & Dispose of Step-up Transformers, indoor, oil-filled, 1-phase, 5000kVA	Group : D05						
Quantity	:	3.00 EA	Project # : 2						
Daily Production	:	0.60 EA per	10	hour shift	Estimator	:	Mihaela Tomulescu	EA per	0.66
Work Days	:	5.0	Days		Probable Low Cost Parameter			Total Cost	\$88,240
Unit Price	:	\$32,681.62	per EA		Probable High Cost Parameter			Unit Price Per EA	\$29,413.46
Total Cost	:	\$98,045							
									\$112,752
									\$37,583.86

CREW COSTS										
Description	Active Idle	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Electrician Foreman	Active	3.00	5.0	10	150.00	L	\$55.80	incl. in rate	incl. in rate	\$8,370.45
Electrician	Active	3.00	5.0	10	150.00	L	\$55.80	incl. in rate	incl. in rate	\$8,370.45
Laborer	Active	6.00	5.0	10	300.00	L	\$51.07	incl. in rate	incl. in rate	\$15,321.90
Hydraulic Excavator (6.0cy)	Active	1.00	5.0	10	50.00	E	\$324.12	incl. in rate	incl. in rate	\$16,206.00
Crawler Crane (130tn)	Active	1.00	5.0	10	50.00	E	\$262.91	incl. in rate	incl. in rate	\$13,145.50
Equipment Operator (medium)	Active	1.00	5.0	10	50.00	L	\$72.34	incl. in rate	incl. in rate	\$3,616.80
Equipment Operator (crane)	Active	1.00	5.0	10	50.00	L	\$81.60	incl. in rate	incl. in rate	\$4,079.90
Truck, Utility, with Man-Basket	Active	3.00	5.0	10	150.00	E	\$31.90	incl. in rate	incl. in rate	\$4,785.00
					Labor Hours	700				\$39,759.50
					Equipment Hours	250				\$34,136.50
								TOTAL LABOR		
								TOTAL EQUIPMENT		

MATERIAL COSTS						
Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost
Consumables 5% labor	1.00	LS	1.000	1.00	\$1,987.98	\$1,987.98
						TOTAL MATERIAL
						\$1,987.98

SUBCONTRACT COSTS					
Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount
Hauling cost to Yreka Transfer 40 Miles	1.00	Loads		\$400.00	\$400.00
Remove oil from oil-filled step-up transformer (allowance for oil containers, filters, etc)	1 EA		1.000	\$13,000.00	\$13,000.00
Forklift crew, all-terrain forklift, 45' lift, 35' reach, 9000 lb. capacity, weekly use	1 week		1.000	\$5,961.23	\$5,961.23
					TOTAL SUBCONTRACTS
					\$19,361.23

SUMMARY OF COSTS					
Labor Cost	\$39,759.50	Labor Burden @	0.0%	\$0.00	\$39,759.50
Material Cost	\$1,987.98	Material Tax @	7.75%	\$154.07	\$2,142.04
Equipment Cost	\$34,136.50	Equipment Tax @	7.75%	\$2,645.58	\$36,782.08
Subcontractors	\$19,361.23				\$19,361.23
DIRECT COST SUBTOTALS	\$95,245			\$2,800	DIRECT COST SUBTOTALS
					\$98,045
Additional Pay Item Notes :					

Weight and dimensions of the transformers have particular importance so transport vehicles must be adequate. A considerable proportion of the weight is due to the oil, so the direct consequence is that the big transformers have to be transported empty. During transport the transformers are filled either by dry air or nitrogen. Because of transportation, the auxiliaries have to be removed. For this reason the collaboration with all the people involved in the project is essential. AECOM best assumption for a 5000 kVA, 2300/72000 volt transformer removal- - 3 crew R3 formed of 1 Foreman, 1 Electricians, 1 Utility man-bracket truck, 1 crane for disposal of each transformer in the truck and 2 laborer's to remove the auxiliaries and the pad (1 excavator).

PAY ITEM COST DETAIL WORKSHEET

2.047 Remove & Dispose of Step-up Transformers, indoor, oil-filled, 1-phase, 4165kVA

PAY ITEM INFORMATION

PAY ITEM NUMBER	2.047	Project	KRRP - Copco 1		
Description	Remove & Dispose of Step-up Transformers, indoor, oil-filled, 1-phase, 4165kVA	Group	D05		
Quantity	3.00 EA	Project #	2		
Daily Production	0.60 EA per 10 hour shift	Estimator	Mihaela Tomulescu		
Work Days	5.0 Days	Probable Low Cost Parameter	EA per	Total Cost	Unit Price Per EA
Unit Price	\$32,681.62 per EA	Probable High Cost Parameter	0.66	\$88,240	\$29,413.46
Total Cost	\$98,045			\$112,752	\$37,583.86

CREW COSTS

Description	Active Idle	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Electrician Foreman	Active	3.00	5.0	10	150.00	L	\$55.80	incl. in rate	incl. in rate	\$8,370.45
Electrician	Active	3.00	5.0	10	150.00	L	\$55.80	incl. in rate	incl. in rate	\$8,370.45
Laborer	Active	6.00	5.0	10	300.00	L	\$51.07	incl. in rate	incl. in rate	\$15,321.90
Hydraulic Excavator (6.0cy)	Active	1.00	5.0	10	50.00	E	\$324.12	incl. in rate	incl. in rate	\$16,206.00
Crawler Crane (130tn)	Active	1.00	5.0	10	50.00	E	\$262.91	incl. in rate	incl. in rate	\$13,145.50
Equipment Operator (medium)	Active	1.00	5.0	10	50.00	L	\$72.34	incl. in rate	incl. in rate	\$3,616.80
Equipment Operator (crane)	Active	1.00	5.0	10	50.00	L	\$81.60	incl. in rate	incl. in rate	\$4,079.90
Truck, Utility, with Man-Basket	Active	3.00	5.0	10	150.00	E	\$31.90	incl. in rate	incl. in rate	\$4,785.00
Labor Hours					700	TOTAL LABOR				\$39,759.50
Equipment Hours					250	TOTAL EQUIPMENT				\$34,136.50

MATERIAL COSTS

Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost
Consumables 5% labor	1.00	LS	1.000	1.00	\$1,987.98	\$1,987.98
						TOTAL MATERIAL
						\$1,987.98

SUBCONTRACT COSTS

Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount
Hauling cost to Yreka Transfer 40 Miles	1.00	Loads		\$400.00	\$400.00
Remove oil from oil-filled step-up transformer (allowance for oil containers, filters, etc)	1 EA		1.000	\$13,000.00	\$13,000.00
Forklift crew, all-terrain forklift, 45' lift, 35' reach, 9000 lb. capacity, weekly use	1 week		1.000	\$5,961.23	\$5,961.23
					TOTAL SUBCONTRACTS
					\$19,361.23

SUMMARY OF COSTS

Labor Cost	\$39,759.50	Labor Burden @	0.0%	\$0.00	\$39,759.50
Material Cost	\$1,987.98	Material Tax @	7.75%	\$154.07	\$2,142.04
Equipment Cost	\$34,136.50	Equipment Tax @	7.75%	\$2,645.58	\$36,782.08
Subcontractors	\$19,361.23				\$19,361.23
DIRECT COST SUBTOTALS	\$95,245			\$2,800	DIRECT COST SUBTOTALS
					\$98,045

Additional Pay Item Notes :

Weight and dimensions of the transformers have particular importance so transport vehicles must be adequate. A considerable proportion of the weight is due to the oil, so the direct consequence is that the big transformers have to be transported empty. During transport the transformers are filled either by dry air or nitrogen. Because of transportation, the auxiliaries have to be removed. For this reason the collaboration with all the people involved in the project is essential. AECOM best assumption for a 4165 kVA, 2300/72000 volt transformer removal- 3 crew R3 formed of 1 Foreman, 1 Electricians, 1 Utility man-bracket truck, 1 crane for disposal of each transformer in the truck and 2 laborer's to remove the auxiliaries and the pad (1 excavator).

## PAY ITEM INFORMATION

PAY ITEM NUMBER	: 2.048	Project	: KRRP - Copco 1
Description	: Remove & Dispose of Seven 40-Ton Travelling Crane motors - hoist	Group	: D11
Quantity	: 1.00 EA		
Daily Production	: 2.50 EA per 10 hour shift	Project #	: 2
Work Days	: 0.4 Days	Estimator	: Mihaela Tomulescu
Unit Price	: \$2,965.11 per EA	Probable Low Cost Parameter	2.75 \$2,669 \$2,668.60
Total Cost	: \$2,965	Probable High Cost Parameter	2.125 \$3,410 \$3,409.88

## CREW COSTS

Description	Active Idle	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Truck, Off-Road, Articulated Rear, 20cy	Active	1.00	0.4	10	4.00	E	\$117.28	incl. in rate	incl. in rate	\$469.12
Hydraulic Crane (80tn)	Active	1.00	0.4	10	4.00	E	\$197.66	incl. in rate	incl. in rate	\$790.64
Laborer	Active	1.00	0.4	10	4.00	L	\$51.07	incl. in rate	incl. in rate	\$204.29
Equipment Operator (crane)	Active	1.00	0.4	10	4.00	L	\$81.60	incl. in rate	incl. in rate	\$326.39
Truck Driver (heavy)	Active	1.00	0.4	10	4.00	L	\$75.72	incl. in rate	incl. in rate	\$302.90
Steelworker	Active	1.00	0.4	10	4.00	L	\$78.10	incl. in rate	incl. in rate	\$312.40
Labor Hours					16	TOTAL LABOR				\$1,145.98
Equipment Hours					8	TOTAL EQUIPMENT				\$1,259.76

## MATERIAL COSTS

Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost
Consumables 5% labor (saw blades, drill bits, etc)	1.00	LS	1.000	1.00	\$57.30	\$57.30
						TOTAL MATERIAL
						\$57.30

## SUBCONTRACT COSTS

Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount
Hauling cost to Yreka Transfer 40 Miles	1.00	Loads		\$400.00	\$400.00
					\$0.00
					\$0.00
					TOTAL SUBCONTRACTS
					\$400.00

## SUMMARY OF COSTS

Labor Cost	\$1,145.98	Labor Burden @	0.0%	\$0.00	\$1,145.98
Material Cost	\$57.30	Material Tax @	7.75%	\$4.44	\$61.74
Equipment Cost	\$1,259.76	Equipment Tax @	7.75%	\$97.63	\$1,357.39
Subcontractors	\$400.00				\$400.00
DIRECT COST SUBTOTALS	\$2,863			\$102	DIRECT COST SUBTOTALS
					\$2,965

## Additional Pay Item Notes :

Assumed removal of hoist, hoist trolley, gantry: 1 Steelworker and 1 Laborers to load the overhead crane motors in the truck using the crane.









## PAY ITEM INFORMATION

PAY ITEM NUMBER	: 2.052	Project	: KRRP - Copco 1
Description	: Remove & Dispose of 15-Ton Overhead Crane control equipment	Group	: D11
Quantity	: 1.00 EA		
Daily Production	: 3.75 EA per 10 hour shift	Project #	: 2
Work Days	: 0.3 Days	Estimator	: Mihaela Tomulescu
Unit Price	: \$899.38 per EA	Probable Low Cost Parameter	EA per 4.125 Total Cost \$809 Unit Price Per EA \$809.44
Total Cost	: \$899	Probable High Cost Parameter	3.1875 \$1,034 \$1,034.28

## CREW COSTS

Description	Active Idle	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Laborer	Active	2.00	0.3	10	6.00	L	\$51.07	incl. in rate	incl. in rate	\$306.44
Electrician	Active	1.00	0.3	10	3.00	L	\$55.80	incl. in rate	incl. in rate	\$167.41
Labor Hours					9	TOTAL LABOR				\$473.85
Equipment Hours					0	TOTAL EQUIPMENT				\$0.00

## MATERIAL COSTS

Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost
Consumables 5% labor (saw blades, drill bits, etc)	1.00	LS	1.000	1.00	\$23.69	\$23.69
						TOTAL MATERIAL
						\$23.69

## SUBCONTRACT COSTS

Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount
Hauling cost to Yreka Transfer 40 Miles	1.00	Loads		\$400.00	\$400.00
					TOTAL SUBCONTRACTS
					\$400.00

## SUMMARY OF COSTS

Labor Cost	\$473.85	Labor Burden @	0.0%	\$0.00	\$473.85
Material Cost	\$23.69	Material Tax @	7.75%	\$1.84	\$25.53
Equipment Cost	\$0.00	Equipment Tax @	7.75%	\$0.00	\$0.00
Subcontractors	\$400.00				\$400.00
DIRECT COST SUBTOTALS	\$898			\$2	DIRECT COST SUBTOTALS
					\$899

## Additional Pay Item Notes :

Assumed 1 cubicule: 1 Laborers and 1 Electrician. Using the same truck, loader, crane as the ones used to load at the end of the day the overhead crane cable and motors.



### 2.053a Remove petroleum products from mechanical equipments

CREW COSTS										
Description	Active Idle	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Labor Foreman	Active	1.00	2.1	10	21.00	L	\$58.87	incl. in rate	incl. in rate	\$1,236.31
Laborer	Active	2.00	2.1	10	42.00	L	\$51.07	incl. in rate	incl. in rate	\$2,145.07
Labor Hours					63	TOTAL LABOR				\$3,381.38
Equipment Hours					0	TOTAL EQUIPMENT				\$0.00

SUBCONTRACT COSTS						
Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount	
Hazardous waste cleanup/pickup/disposal, liquid pickup, vacuum truck, stainless steel tank, 5000 gallons, minimum charge, 4 hours, 2 compartment	128.00	hour	RSM Means 028120101260	\$270.00	\$34,560.00	
TOTAL SUBCONTRACTS					\$34,560.00	

Petroleum-based products, ranging from fuel oil and hydraulic fluid to lubricating greases and oils, are found throughout every type of power generating plant or system. Lubrication supports bearings and moving parts in all sorts of equipment: pumps, conveyors, feeders, scrubbers, cranes, turbines, and more. A good oil/water separation system will result in a flow of concentrated waste oil to a collection area and a flow of oil-free water ready for secondary processing or discharge. Once an oil layer has been separated from free water, it must be removed for recycling or disposal. Many plants use one or more of these oil removal methods, but each has costly limitations:

1. Absorbent materials. Absorbent mats or materials are frequently used to dam up and absorb excess oils and greases resulting from accidents or the routine operation of machinery. These materials are very effective for preventing the spread of a source leak and very efficient in terms of oil pickup. Yet, their use on large volumes of waste oil results in multiple, recurring costs that can make them impractical as an everyday solution:
  - the costs of the materials themselves
  - the labor costs for ordering, stocking, application, and removal
  - the costs of used-media collection, disposal, or re-processing/recycling.
2. Manually operated "slotted pipes." Many separators feature a "slotted pipe," a pipe located near the top of the vessel that has a horizontal opening. Oil is removed by turning the horizontal opening downward until it meets the floating oil layer, which drains through the pipe to a collection receptacle. These pipes work well on thick layers of oil, but cannot drain off a sheen of oil without draining off a large amount of water as well.

AECOM assumed the best is Vacuum truck removal method. Used a crew formed of 1 Foreman, 5 Laborers to takeout the petroleum waste, 1 Electrician to unplug the power and to assure the temporary power at the construction site. Vacuum-equipped tank trucks are used to remove waste oil from collection points at plants so that it can be transported to recycling or disposal locations. If the waste oil has been thoroughly separated, highly concentrated, and stored in an appropriate receptacle, this service can be used very efficiently. However, vacuum disposal units are often used to pump oil layers directly off of water. This results in the intake of a significant amount free water along with the waste oil – and a significantly higher cost.

PAY ITEM COST DETAIL WORKSHEET

2.054 Remove & Dispose of 69kV circuit breakers, oil filled, PCB

PAY ITEM INFORMATION

PAY ITEM NUMBER	: 2.054	Project	: KRRP - Copco 1
Description	: Remove & Dispose of 69kV circuit breakers, oil filled, PCB	Group	: D05
Quantity	: 2.00 EA		
Daily Production	: 2.50 EA per 10 hour shift	Project #	: 2
Work Days	: 0.8 Days	Estimator	: Mihaela Tomulescu
Unit Price	: \$1,965.57 per EA	EA per	2.75
Total Cost	: \$3,931	Probable Low Cost Parameter	\$3,538
		Probable High Cost Parameter	\$4,324
		Unit Price Per EA	\$1,769.02
			\$2,162.13

CREW COSTS

Description	Active Idle	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Labor Foreman	Active	1.00	0.8	10	8.00	L	\$58.87	incl. in rate	incl. in rate	\$470.98
Electrician	Active	1.00	0.8	10	8.00	L	\$55.80	incl. in rate	incl. in rate	\$446.42
Hydraulic Crane (35tn)	Active	1.00	0.8	10	8.00	E	\$117.77	incl. in rate	incl. in rate	\$942.16
Equipment Operator (crane)	Active	1.00	0.8	10	8.00	L	\$81.60	incl. in rate	incl. in rate	\$652.78
Laborer	Active	2.00	0.8	10	16.00	L	\$51.07	incl. in rate	incl. in rate	\$817.17
					Labor Hours	40				TOTAL LABOR
					Equipment Hours	8				TOTAL EQUIPMENT
										\$2,387.35
										\$942.16

MATERIAL COSTS

Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost
Consumables 5% labor (saw blades, drill bits, etc)	1.00	LS	1.000	1.00	\$119.37	\$119.37
						TOTAL MATERIAL
						\$119.37

SUBCONTRACT COSTS

Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount
Hauling cost to Yreka Transfer 40 Miles	1.00	Loads		\$400.00	\$400.00
					TOTAL SUBCONTRACTS
					\$400.00

SUMMARY OF COSTS

Labor Cost	\$2,387.35	Labor Burden @	0.0%	\$0.00	\$2,387.35
Material Cost	\$119.37	Material Tax @	7.75%	\$9.25	\$128.62
Equipment Cost	\$942.16	Equipment Tax @	7.75%	\$73.02	\$1,015.18
Subcontractors	\$400.00				\$400.00
DIRECT COST SUBTOTALS	\$3,849			\$82	DIRECT COST SUBTOTALS
					\$3,931

Additional Pay Item Notes :

Production is based off of RSMs using Crew formed of 1 Forman, 1 Electrician, 1 Crane. Considered 1 laborer to help loading circuit breakers from the switchyard in the truck for saving it in the designated place.

PAY ITEM INFORMATION									
PAY ITEM NUMBER	:	2.055			Project	:	KRRP - Copco 1		
Description	:	Remove & Dispose of 69kV disconnect switches, group-operated			Group	:	D05		
Quantity	:	2.00 EA							
Daily Production	:	2.50 EA per		10	hour shift	Project #	:	2	
Work Days	:	0.8		Days		Estimator	:	Mihaela Tomulescu	
Unit Price	:	\$1,965.57 per EA					EA per	Total Cost	Unit Price Per EA
Total Cost	:	\$3,931				Probable Low Cost Parameter	2.75	\$3,538	\$1,769.02
						Probable High Cost Parameter	2.25	\$4,324	\$2,162.13

CREW COSTS										
Description	Active Idle	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Labor Foreman (out)	Active	1.00	0.8	10	8.00	L	\$58.87	incl. in rate	incl. in rate	\$470.98
Electrician	Active	1.00	0.8	10	8.00	L	\$55.80	incl. in rate	incl. in rate	\$446.42
Hydraulic Crane (35tn)	Active	1.00	0.8	10	8.00	E	\$117.77	incl. in rate	incl. in rate	\$942.16
Equipment Operator (crane)	Active	1.00	0.8	10	8.00	L	\$81.60	incl. in rate	incl. in rate	\$652.78
Laborer	Active	2.00	0.8	10	16.00	L	\$51.07	incl. in rate	incl. in rate	\$817.17
					Labor Hours	40	TOTAL LABOR			\$2,387.35
					Equipment Hours	8	TOTAL EQUIPMENT			\$942.16

MATERIAL COSTS						
Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost
Consumables 5% labor (saw blades, drill bits, etc)	1.00	LS	1.000	1.00	\$119.37	\$119.37
TOTAL MATERIAL						\$119.37

SUBCONTRACT COSTS					
Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount
Hauling cost to Yreka Transfer 40 Miles	1.00	Loads		\$400.00	\$400.00
TOTAL SUBCONTRACTS					\$400.00

SUMMARY OF COSTS						
Labor Cost	\$2,387.35	Labor Burden @	0.0%	\$0.00		\$2,387.35
Material Cost	\$119.37	Material Tax @	7.75%	\$9.25		\$128.62
Equipment Cost	\$942.16	Equipment Tax @	7.75%	\$73.02		\$1,015.18
Subcontractors	\$400.00					\$400.00
DIRECT COST SUBTOTALS	\$3,849			\$82	DIRECT COST SUBTOTALS	\$3,931
Additional Pay Item Notes :						
Production is based off of RSMs using Crew formed of 1 Foreman, 1 Electrician,1Crane. Considered 1 laborer to help loading circuit breakers from the switchyard in the truck for saving it in the designated place.						

### 2.056 Remove & Dispose of 60-foot wood poles

SUMMARY OF COSTS					
Labor Cost	\$5,493.98	Labor Burden @	0.0%	\$0.00	\$5,493.98
Material Cost	\$331.58	Material Tax @	7.75%	\$25.70	\$367.28
Equipment Cost	\$3,960.93	Equipment Tax @	7.75%	\$306.97	\$4,267.90
Subcontractors	\$2,000.00				\$2,000.00
<b>DIRECT COST SUBTOTALS</b>	<b>\$11,786</b>		<b>\$333</b>	<b>DIRECT COST SUBTOTALS</b>	<b>\$12,119</b>
<b>Additional Pay Item Notes :</b>					
<p>Production is based off of RSMs using Crew R3 (1 Forman and 1 Electrician,1 Crane and 1 man-basket truck to help untie the line. Considered 2 laborer and 1 Vibratory Hammer for demolish the pole foundation, helping placing poles in a designated place and loading them in the truck for disposal. This process includes filling in pole locations with gravel, clean fill and topsoil.</p>					







PAY ITEM INFORMATION									
PAY ITEM NUMBER	:	2.059	Project	:	KRRP - Copco 1				
Description	:	Remove & Dispose of Transmission Line No. 3	Group	:	D05				
Quantity	:	1.66 MILE							
Daily Production	:	0.63 MILE per	10	hour shift	Project #	:	2		
Work Days	:	2.7	Days		Estimator	:	Mihaela Tomulescu	MILE per	Total Cost
Unit Price	:	\$21,636.41	per MILE		Probable Low Cost Parameter		0.71875	\$30,529	Unit Price Per MILE
Total Cost	:	\$35,916			Probable High Cost Parameter		0.46875	\$44,896	\$27,045.51

CREW COSTS										
Description	Active Idle	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Electrician Foreman	Active	1.00	2.7	10	26.60	L	\$55.80	incl. in rate	incl. in rate	\$1,484.36
Electrician	Active	2.00	2.7	10	53.20	L	\$55.80	incl. in rate	incl. in rate	\$2,968.72
Truck, Utility, with Man-Basket	Active	2.00	2.7	10	53.20	E	\$31.90	incl. in rate	incl. in rate	\$1,697.08
Laborer	Active	2.00	2.7	10	53.20	L	\$51.07	incl. in rate	incl. in rate	\$2,717.08
Hydraulic Excavator (2.5cy)	Active	1.00	2.7	10	26.60	E	\$205.40	incl. in rate	incl. in rate	\$5,463.64
Hydraulic Crane (80tn)	Active	1.00	2.7	10	26.60	E	\$197.66	incl. in rate	incl. in rate	\$5,257.76
Equipment Operator (crane)	Active	1.00	2.7	10	26.60	L	\$81.60	incl. in rate	incl. in rate	\$2,170.51
Equipment Operator (light)	Active	1.00	2.7	10	26.60	L	\$69.19	incl. in rate	incl. in rate	\$1,840.45
Hydraulic Impact Breaker Attachment (5k+ ft-lb)	Active	1.00	2.7	10	26.60	E	\$63.28	incl. in rate	incl. in rate	\$1,683.25
					Labor Hours	186.2	TOTAL LABOR			\$11,181.12
					Equipment Hours	133	TOTAL EQUIPMENT			\$14,101.72

MATERIAL COSTS						
Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost
Consumables 5% labor (saw blades, drill bits, etc)	1.00	LS	1.000	1.00	\$559.06	\$559.06
Topsoil placement and grading, loam or topsoil, F.E. loader, 1-1/2 C.Y., remove and stockpile on site, spread from pile to rough finish grade	31.00	CY	1.000	31.00	\$4.74	\$146.94
TOTAL MATERIAL						\$706.00

SUBCONTRACT COSTS					
Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount
Rent trailer with cable pulling rig, for high voltage line work - Rent per day	2.66	days		\$3,000.00	\$7,980.00
Hauling cost to Yreka Transfer 40 Miles	2.00	Loads	1 mile per load	\$400.00	\$800.00
TOTAL SUBCONTRACTS					\$8,780.00

SUMMARY OF COSTS						
Labor Cost	\$11,181.12	Labor Burden @	0.0%	\$0.00		\$11,181.12
Material Cost	\$706.00	Material Tax @	7.75%	\$54.71		\$760.71
Equipment Cost	\$14,101.72	Equipment Tax @	7.75%	\$1,092.88		\$15,194.61
Subcontractors	\$8,780.00					\$8,780.00
DIRECT COST SUBTOTALS	\$34,769			\$1,148	DIRECT COST SUBTOTALS	\$35,916
Additional Pay Item Notes :						

When a transmission line is decommissioned and is not converted to another use, the decommissioning typically includes the removal of all infrastructure if it is no longer required, or has reached end-of-life conditions. Removed parts will be re-used, recycled or disposed. Production is based off of RSMs using Crew B-1C and B-3 ( 1 Foreman, 2 laborer, 1 Excavator & 1 crane for lift, position and load in the truck, 1 Hydraulic rock-splitting/rock-drilling equipment to break equipment foundations and concrete for demo :2 Electrician,, 1 utility truck to access poles, string conductor, modify structure arms, provide guard structures, etc. Crews may be working simultaneously along the project alignment and substations, hydro plant and switchyard. Transmission line poles or structures are 60 feet tall. There are several different kinds of transmission structures. Transmission structures are constructed of wood. They can be single-poled or multi-poled. They can be single-circuited, carrying one set of transmission lines or double-circuited with two sets of lines. Pole height and load capacity limitations determine the distance between poles (span length) either on the basis of ground clearance or ability to support heavy wind and ice loads. Assumed average span between structures to be 275 feet so for 1.66 miles of overhead transmission we will have approximately 31 structures. In areas where single-pole structures are preferred, weak or wet soils may require concrete foundations for support. Where a transmission line must cross a street or slightly change direction, larger angle structures or guy wires may be required. Poles with guy wires impact a much larger area. Angle structures are usually more than double the diameter of other steel poles. They are made of steel, usually five to six feet in diameter, and have a large concrete base. The base may be buried ten or more feet below the ground surface. The diameter of the pole and the depth the base is buried depends on the condition of the soils and the voltage of the line. Assumed the structures are disposed to Yreka recycling, 36 miles away. This estimate is made as the best AECOM assumption, as actual pricing would occur during the detailed engineering and construction bid process.

## 2.060 Remove & Dispose of Transmission Line No. 15

PAY ITEM NUMBER	:	2.060	Project	:	KRRP - Copco 1		
Description	:	Remove & Dispose of Transmission Line No. 15	Group	:	D05		
Quantity	:	1.33 MILE					
Daily Production	:	0.63 MILE per	10	hour shift			
Work Days	:	2.1	Days	Project #	:	2	
Unit Price	:	\$21,748.55	per MILE	Estimator	:	Mihaela Tomulescu	
Total Cost	:	\$28,926		Probable Low Cost Parameter	:	0.71875	\$24,587
				Probable High Cost Parameter	:	0.46875	\$36,157
							\$27,185.68

Description	Active Idle	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Electrician Foreman	Active	1.00	2.1	10	21.30	L	\$55.80	incl. in rate	incl. in rate	\$1,188.60
Electrician	Active	2.00	2.1	10	42.60	L	\$55.80	incl. in rate	incl. in rate	\$2,377.21
Truck, Utility, with Man-Basket	Active	2.00	2.1	10	42.60	E	\$31.90	incl. in rate	incl. in rate	\$1,358.94
Laborer	Active	2.00	2.1	10	42.60	L	\$51.07	incl. in rate	incl. in rate	\$2,175.71
Hydraulic Excavator (2.5cy)	Active	1.00	2.1	10	21.30	E	\$205.40	incl. in rate	incl. in rate	\$4,375.02
Hydraulic Crane (80tn)	Active	1.00	2.1	10	21.30	E	\$197.66	incl. in rate	incl. in rate	\$4,210.16
Equipment Operator (crane)	Active	1.00	2.1	10	21.30	L	\$81.60	incl. in rate	incl. in rate	\$1,738.04
Equipment Operator (light)	Active	1.00	2.1	10	21.30	L	\$69.19	incl. in rate	incl. in rate	\$1,473.75
Hydraulic Impact Breaker Attachment (5k+ ft-lb)	Active	1.00	2.1	10	21.30	E	\$63.28	incl. in rate	incl. in rate	\$1,347.86
Labor Hours					149.1	TOTAL LABOR				\$8,953.31
Equipment Hours					106.5	TOTAL EQUIPMENT				\$11,291.98

Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost
Consumables 5% labor (saw blades, drill bits, etc)	1.00	LS	1.000	1.00	\$447.67	\$447.67
Topsoil placement and grading, loam or topsoil, F.E. loader, 1-1/2 C.Y., remove and stockpile on site, spread from pile to rough finish grade	26.00	CY	1.000	26.00	\$4.74	\$123.24
TOTAL MATERIAL						\$570.91

Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount
Rent trailer with cable pulling rig, for high voltage line work - Rent per day	2.13	days		\$3,000.00	\$6,390.00
Hauling cost to Yreka Transfer 40 Miles	2.00	Loads	1 mile per load	\$400.00	\$800.00
TOTAL SUBCONTRACTS					\$7,190.00

Labor Cost	\$8,953.31	Labor Burden @	0.0%	\$0.00		\$8,953.31
Material Cost	\$570.91	Material Tax @	7.75%	\$44.25		\$615.15
Equipment Cost	\$11,291.98	Equipment Tax @	7.75%	\$875.13		\$12,167.11
Subcontractors	\$7,190.00					\$7,190.00
<b>DIRECT COST SUBTOTALS</b>	<b>\$28,006</b>			<b>\$919</b>	<b>DIRECT COST SUBTOTALS</b>	<b>\$28,926</b>

When a transmission line is decommissioned and is not converted to another use, the decommissioning typically includes the removal of all infrastructure if it is no longer required, or has reached end-of-life conditions. Removed parts will be re-used, recycled or disposed. Production is based off of RSMS using Crew B-1C and B-3 ( 1 Foreman, 2 laborer, 1 Excavator & 1 crane for lift, position and load in the truck, 1 Hydraulic rock-splitting/rock-drilling equipment to break equipment foundations and concrete for demo 2 Electrician,, 1 utility truck to access poles, string conductor, modify structure arms, provide guard structures, etc. Crews may be working simultaneously along the project alignment and substations, hydro plant and switchyard. Transmission line poles or structures are 60 feet tall. There are several different kinds of transmission structures. Transmission structures are constructed of wood. They can be single-poled or multi-poled. They can be single-circuit, carrying one set of transmission lines or double-circuited with two sets of lines. Pole height and load capacity limitations determine the distance between poles (span length) either on the basis of ground clearance or ability to support heavy wind and ice loads. Assumed average span between structures to be 275 feet so for 1.33 miles of overhead transmission we will have approximately 26 structures. In areas where single-pole structures are preferred, weak or wet soils may require concrete foundations for support. Where a transmission line must cross a street or slightly change direction, larger angle structures or guy wires may be required. Poles with guy wires impact a much larger area. Angle structures are usually more than double the diameter of other steel poles. They are made of steel, usually five to six feet in diameter, and have a large concrete base. The base may be buried ten or more feet below the ground surface. The diameter of the pole and the depth the base is buried depends on the condition of the soils and the voltage of the line. Assumed the structures are disposed to Yreka recycling, 36 miles away. This estimate is made as the best AECOM assumption, as actual pricing would occur during the detailed engineering and construction bid process.

PAY ITEM INFORMATION									
PAY ITEM NUMBER	:	2.061	Project	:	KRRP - Copco 1				
Description	:	Remove & Dispose of Transmission Line No. 26-1	Group	:	D05				
Quantity	:	0.07 MILE							
Daily Production	:	0.63 MILE per	10	hour shift	Project #	:	2		
Work Days	:	0.1 Days			Estimator	:	Mihaela Tomulescu	MILE per	Total Cost
Unit Price	:	\$28,438.33 per MILE			Probable Low Cost Parameter		0.71875	\$1,692	Unit Price Per MILE
Total Cost	:	\$1,991			Probable High Cost Parameter		0.46875	\$2,488	\$35,547.91

CREW COSTS										
Description	Active Idle	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Electrician Foreman	Active	1.00	0.1	10	1.10	L	\$55.80	incl. in rate	incl. in rate	\$61.38
Electrician	Active	2.00	0.1	10	2.20	L	\$55.80	incl. in rate	incl. in rate	\$122.77
Truck, Utility, with Man-Basket	Active	2.00	0.1	10	2.20	E	\$31.90	incl. in rate	incl. in rate	\$70.18
Laborer	Active	2.00	0.1	10	2.20	L	\$51.07	incl. in rate	incl. in rate	\$112.36
Hydraulic Excavator (2.5cy)	Active	1.00	0.1	10	1.10	E	\$205.40	incl. in rate	incl. in rate	\$225.94
Hydraulic Crane (80tn)	Active	1.00	0.1	10	1.10	E	\$197.66	incl. in rate	incl. in rate	\$217.43
Equipment Operator (crane)	Active	1.00	0.1	10	1.10	L	\$81.60	incl. in rate	incl. in rate	\$89.76
Equipment Operator (light)	Active	1.00	0.1	10	1.10	L	\$69.19	incl. in rate	incl. in rate	\$76.11
Hydraulic Impact Breaker Attachment (3k-4k ft-lb)	Active	2.00	0.1	10	2.20	E	\$36.81	incl. in rate	incl. in rate	\$80.98
Labor Hours					7.7	TOTAL LABOR				\$462.38
Equipment Hours					6.6	TOTAL EQUIPMENT				\$594.53

MATERIAL COSTS						
Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost
Consumables 5% labor (saw blades, drill bits, etc)	1.00	LS	1.000	1.00	\$23.12	\$23.12
Topsoil placement and grading, loam or topsoil, F.E. loader, 1-1/2 C.Y., remove and stockpile on site, spread from pile to rough finish grade	26.00	CY	1.000	26.00	\$4.74	\$123.24
TOTAL MATERIAL						\$146.36

SUBCONTRACT COSTS					
Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount
Rent trailer with cable pulling rig, for high voltage line work - Rent per day	0.11	days		\$3,000.00	\$330.00
Hauling cost to Yreka Transfer 40 Miles	1.00	Loads	1 mile per load	\$400.00	\$400.00
TOTAL SUBCONTRACTS					\$730.00

SUMMARY OF COSTS					
Labor Cost	\$462.38	Labor Burden @	0.0%	\$0.00	\$462.38
Material Cost	\$146.36	Material Tax @	7.75%	\$11.34	\$157.70
Equipment Cost	\$594.53	Equipment Tax @	7.75%	\$46.08	\$640.60
Subcontractors	\$730.00				\$730.00
DIRECT COST SUBTOTALS	\$1,933		\$57		DIRECT COST SUBTOTALS
					\$1,991

Additional Pay Item Notes :

When a transmission line is decommissioned and is not converted to another use, the decommissioning typically includes the removal of all infrastructure if it is no longer required, or has reached end-of-life conditions. Removed parts will be re-used, recycled or disposed. Production is based off of RSMs using Crew B-1C and B-3 ( 1 Foreman, 2 laborer, 1 Excavator & 1 crane for lift, position and load in the truck, 1 Hydraulic rock-splitting/rock-drilling equipment to break equipment foundations and concrete for demo 2 Electrician,, 1 utility truck to access poles, string conductor, modify structure arms, provide guard structures, etc. Crews may be working simultaneously along the project alignment and substations, hydro plant and switchyard. Transmission line poles or structures are 60 feet tall. There are several different kinds of transmission structures. Transmission structures are constructed of wood. They can be single-poled or multi-poled. They can be single-circuted, carrying one set of transmission lines or double-circuted with two sets of lines. Pole height and load capacity limitations determine the distance between poles (span length) either on the basis of ground clearance or ability to support heavy wind and ice loads. Assumed average span between structures to be 275 feet so for 0.07 miles of overhead transmission we will have approximately 2 structures. In areas where single-pole structures are preferred, weak or wet soils may require concrete foundations for support. Where a transmission line must cross a street or slightly change direction, larger angle structures or guy wires may be required. Poles with guy wires impact a much larger area. Angle structures are usually more than double the diameter of other steel poles. They are made of steel, usually five to six feet in diameter, and have a large concrete base. The base may be buried ten or more feet below the ground surface. The diameter of the pole and the depth the base is buried depends on the condition of the soils and the voltage of the line. Assumed the structures are disposed to Yreka recycling, 36 miles away. This estimate is made as the best AECOM assumption, as actual pricing would occur during the detailed engineering and construction bid process.

PAY ITEM INFORMATION									
PAY ITEM NUMBER	:	2.062	Project	:	KRRP - Copco 1				
Description	:	Remove & Dispose of Transmission Line No. 26-2	Group	:	D05				
Quantity	:	0.07 MILE							
Daily Production	:	0.63 MILE per	10	hour shift	Project #	:	2		
Work Days	:	0.1	Days		Estimator	:	Mihaela Tomulescu	MILE per	Total Cost
Unit Price	:	\$28,438.33	per MILE		Probable Low Cost Parameter		0.71875	\$1,692	Unit Price Per MILE
Total Cost	:	\$1,991			Probable High Cost Parameter		0.46875	\$2,488	\$35,547.91

CREW COSTS										
Description	Active Idle	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Electrician Foreman	Active	1.00	0.1	10	1.10	L	\$55.80	incl. in rate	incl. in rate	\$61.38
Electrician	Active	2.00	0.1	10	2.20	L	\$55.80	incl. in rate	incl. in rate	\$122.77
Truck, Utility, with Man-Basket	Active	2.00	0.1	10	2.20	E	\$31.90	incl. in rate	incl. in rate	\$70.18
Laborer	Active	2.00	0.1	10	2.20	L	\$51.07	incl. in rate	incl. in rate	\$112.36
Hydraulic Excavator (2.5cy)	Active	1.00	0.1	10	1.10	E	\$205.40	incl. in rate	incl. in rate	\$225.94
Hydraulic Crane (80tn)	Active	1.00	0.1	10	1.10	E	\$197.66	incl. in rate	incl. in rate	\$217.43
Equipment Operator (crane)	Active	1.00	0.1	10	1.10	L	\$81.60	incl. in rate	incl. in rate	\$89.76
Equipment Operator (light)	Active	1.00	0.1	10	1.10	L	\$69.19	incl. in rate	incl. in rate	\$76.11
Hydraulic Impact Breaker Attachment (3k-4k ft-lb)	Active	2.00	0.1	10	2.20	E	\$36.81	incl. in rate	incl. in rate	\$80.98
					Labor Hours	7.7			TOTAL LABOR	\$462.38
					Equipment Hours	6.6			TOTAL EQUIPMENT	\$594.53

MATERIAL COSTS						
Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost
Consumables 5% labor (saw blades, drill bits, etc)	1.00	LS	1.000	1.00	\$23.12	\$23.12
F.E. loader, 1-1/2 C.Y., remove and stockpile on	26.00	CY	1.000	26.00	\$4.74	\$123.24
						TOTAL MATERIAL
						\$146.36

SUBCONTRACT COSTS					
Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount
Rent trailer with cable pulling rig, for high voltage					
line work - Rent per day	0.11	days		\$3,000.00	\$330.00
Hauling cost to Yreka Transfer 40 Miles	1.00	Loads	1 mile per load	\$400.00	\$400.00
					TOTAL SUBCONTRACTS
					\$730.00

SUMMARY OF COSTS						
Labor Cost	\$462.38	Labor Burden @	0.0%	\$0.00		\$462.38
Material Cost	\$146.36	Material Tax @	7.75%	\$11.34		\$157.70
Equipment Cost	\$594.53	Equipment Tax @	7.75%	\$46.08		\$640.60
Subcontractors	\$730.00					\$730.00
DIRECT COST SUBTOTALS	\$1,933			\$57	DIRECT COST SUBTOTALS	\$1,991
Additional Pay Item Notes :						

When a transmission line is decommissioned and is not converted to another use, the decommissioning typically includes the removal of all infrastructure if it is no longer required, or has reached end-of-life conditions. Removed parts will be re-used, recycled or disposed. Production is based off of RSMs using Crew B-1C and B-3 ( 1 Foreman, 2 laborer, 1 Excavator & 1 crane for lift, position and load in the truck, 1 Hydraulic rock-splitting/rock-drilling equipment to break equipment foundations and concrete for demo 2 Electrician,, 1 utility truck to access poles, string conductor, modify structure arms, provide guard structures, etc. Crews may be working simultaneously along the project alignment and substations, hydro plant and switchyard. Transmission line poles or structures are 60 feet tall. There are several different kinds of transmission structures. Transmission structures are constructed of wood. They can be single-poled or multi-poled. They can be single-circuited, carrying one set of transmission lines or double-circuited with two sets of lines. Pole height and load capacity limitations determine the distance between poles (span length) either on the basis of ground clearance or ability to support heavy wind and ice loads. Assumed average span between structures to be 275 feet so for 0.07 miles of overhead transmission we will have approximately 2 structures. In areas where single-pole structures are preferred, weak or wet soils may require concrete foundations for support. Where a transmission line must cross a street or slightly change direction, larger angle structures or guy wires may be required. Poles with guy wires impact a much larger area. Angle structures are usually more than double the diameter of other steel poles. They are made of steel, usually five to six feet in diameter, and have a large concrete base. The base may be buried ten or more feet below the ground surface. The diameter of the pole and the depth the base is buried depends on the condition of the soils and the voltage of the line. Assumed the structures are disposed to Yreka recycling, 36 miles away. This estimate is made as the best AECOM assumption, as actual pricing would occur during the detailed engineering and construction bid process.

**2.063 Remove gate house #1 from top of dam**

PAY ITEM NUMBER	2.063	Project	KRRP - Copco 1		
Description	Remove gate house #1 from top of dam	Group	D11		
Quantity	720.00 SF				
Daily Production	1,125.00 SF per	10	hour shift		
Work Days	0.6	Days			
Unit Price	\$15.23 per SF				
Total Cost	\$10,965				
		Project #	2		
		Estimator	Eric Jones	SF per	Total Cost
		Probable Low Cost Parameter		1293.75	\$9,320
		Probable High Cost Parameter		843.75	\$13,706
					Unit Price Per SF
					\$12.94
					\$19.04

Description	Active Idle	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Labor Foreman	Active	1.00	0.6	10	6.00	L	\$58.87	incl. in rate	incl. in rate	\$353.23
Laborer	Active	4.00	0.6	10	24.00	L	\$51.07	incl. in rate	incl. in rate	\$1,225.75
Equipment Operator (medium)	Active	2.00	0.6	10	12.00	L	\$72.34	incl. in rate	incl. in rate	\$868.03
Hydraulic Excavator (5.0cy)	Active	1.00	0.6	10	6.00	E	\$276.50	incl. in rate	incl. in rate	\$1,659.00
Loader, FE Rubber Tire (3.5cy)	Active	1.00	0.6	10	6.00	E	\$63.11	incl. in rate	incl. in rate	\$378.66
Labor Hours					42	TOTAL LABOR				\$2,447.02
Equipment Hours					12	TOTAL EQUIPMENT				\$2,037.66

Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost
TOTAL MATERIAL						\$0.00

Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount
Dump Fee Conversion (SFXH* 33/27)	106	CY			
Conversion CY to Tons (2 tons per CY)	53.00	tons	Klamath County Landfill	\$74.00	\$3,922.00
Hauling cost to Yreka Transfer 40 Miles	6.00	Loads	18 CY per load	\$400.00	\$2,400.00
TOTAL SUBCONTRACTS					\$6,322.00

Labor Cost	\$2,447.02	Labor Burden @	0.0%		\$2,447.02
Material Cost	\$0.00	Material Tax @	7.75%	\$0.00	\$0.00
Equipment Cost	\$2,037.66	Equipment Tax @	7.75%	\$157.92	\$2,195.58
Subcontractors	\$6,322.00				\$6,322.00
<b>DIRECT COST SUBTOTALS</b>	<b>\$10,807</b>			<b>\$158</b>	<b>DIRECT COST SUBTOTALS \$10,965</b>
<b>Additional Pay Item Notes :</b>					

**2.064 Remove gate house #2 from top of dam**

PAY ITEM NUMBER	:	2.064	Project	:	KRRP - Copco 1
Description	:	Remove gate house #2 from top of dam	Group	:	D11
Quantity	:	690.00 SF			
Daily Production	:	1,125.00 SF per	Project #	:	2
Work Days	:	0.6 Days	Estimator	:	Eric Jones
Unit Price	:	\$15.68 per SF	Probable Low Cost Parameter	:	1293.75
Total Cost	:	\$10,817	Probable High Cost Parameter	:	843.75
					Total Cost
					Unit Price Per SF
					\$9,194
					\$13.32
					\$13,521
					\$19.60

Description	Active Idle	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Labor Foreman	Active	1.00	0.6	10	6.00	L	\$58.87	incl. in rate	incl. in rate	\$353.23
Laborer	Active	4.00	0.6	10	24.00	L	\$51.07	incl. in rate	incl. in rate	\$1,225.75
Equipment Operator (medium)	Active	2.00	0.6	10	12.00	L	\$72.34	incl. in rate	incl. in rate	\$868.03
Hydraulic Excavator (5.0cy)	Active	1.00	0.6	10	6.00	E	\$276.50	incl. in rate	incl. in rate	\$1,659.00
Loader, FE Rubber Tire (3.5cy)	Active	1.00	0.6	10	6.00	E	\$63.11	incl. in rate	incl. in rate	\$378.66
Labor Hours					42	TOTAL LABOR				\$2,447.02
Equipment Hours					12	TOTAL EQUIPMENT				\$2,037.66

Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost
TOTAL MATERIAL						\$0.00

Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount
Dump Fee Coverage (SFXH* 33/27)	101	CY			
Conversion CY to Tons (2 tons per CY)	51.00	tons	Klamath County LandFill	\$74.00	\$3,774.00
Hauling cost to Yreka Transfer 40 Miles	6.00	Loads	18 CY per load	\$400.00	\$2,400.00
TOTAL SUBCONTRACTS					\$6,174.00

Labor Cost	\$2,447.02	Labor Burden @	0.0%		\$2,447.02
Material Cost	\$0.00	Material Tax @	7.75%	\$0.00	\$0.00
Equipment Cost	\$2,037.66	Equipment Tax @	7.75%	\$157.92	\$2,195.58
Subcontractors	\$6,174.00				\$6,174.00
<b>DIRECT COST SUBTOTALS</b>	<b>\$10,659</b>			<b>\$158</b>	<b>DIRECT COST SUBTOTALS \$10,817</b>
<b>Additional Pay Item Notes :</b>					





2.065 Remove Concrete Items associated with 10 ft. diam. Penstocks, reinf. Concrete

Details

High Cost Factors			Low Cost Factors		
Bad Weather	0%		No Bad Weather		0%
Gas Price Increase	10%		Gas Price Decrease		10%
Unforeseen Contaminated Mats/ Access Issues	5%		No Unforeseen Contaminated Mats/ Access Issues		5%
	15%				15%
CY Per Hour Demolished	Hours	Efficiency Factor (Access, Activity, Qty, High Rebar Density, Breaks, Ect)	Overall Production		
	32	8	40%		102.40
		10	40%		128.00
Haul Notes					
	Excavator Loading Production per shift				
CY	1,050.00	CY per Hour			20.57
Swell Factor	0.60	CY Bucket Size			2.50
Bulk CY	1,680.00	Buckets Per Hour			8.23
Haul Vehicle 60% Capacity (2 tons per CY)	7.20	# of Excavators			1.00
# of Haul Vehicles	1.00	CY per Hour (2.5 CY Bucket)			20.57
Load Time (Includes Spot Time, Maneuver Time, & Loading) (Minutes)	5.00	CY Per Hour Ideal Production Per 8 Hour Shift			95.00
Dump Time (Includes Spot Time, Maneuver Time, & Unloading) Minutes)	3.00	Efficient Compared to Ideal Production			22%
Haul Speed (Loaded MPH)	5.00	Inefficiencies Compared to Ideal Production			78%
Return Speed (Unloaded MPH)	10.00				
Haul Distance (Miles)	0.50				
Shift Length (Hours)	10.00				
Cycle Time					
	Breaker Production				
Load Time (Load Time Minutes / 60mins)	0.08	Hydraulic Hammer CY per Hour			12.8
Haul Time (Haul Distance / Haul Speed)	0.10	# of Hammers			1.00
Dump Time (Dump Time Minutes / 60 Mins)	0.05	CY per Hour			12.8
Return Time (Haul Distance / Return Speed)	0.05	CY per Hour Back Check			12.8
Hours Per Cycle	0.28	32CY per HR per 8hr shift (Ideal prod)			32
Efficiency Factor (Night Work, Traffic Restrictions, Coffee Breaks, ECT)	90%	Efficient Compared to Ideal Production			40%
Actual Hours Per Cycle (Hours per Cycle / Efficiency Factor)	0.35	Inefficiencies Compared to Ideal Production			60%
Number of Cycles/ Bulk CY (Haul Vehicle Cap X # of Haul Vehicles)	233				
Total Number of Haul Hours (Actual Cycle Hours X Number of Cycles)	81.55				
Loads Per Hour (Number of Cycles / Total Number of Haul Hours)	2.86				
Number of Haul Days	8.155				

Other Notes

This payitem is to remove the concrete items associated with the penstock. The efficiency of the operations has been reduced to account for access issues. It is expected that majority of concrete will be process during the demolition process and the steel will be divided with a magnet attachment on a concrete crusher. 1 operator will operate crusher and 1 operator will operate excavator loading trucks.

## 2.066 Plug 14-foot diameter penstock with concrete

PAY ITEM NUMBER	:	2.066	Project	:	KRRP - Copco 1
Description	:	Plug 14-foot diameter penstock with concrete	Group	:	D03
Quantity	:	38.00 CY			
Daily Production	:	3.00 CY per	10	hour shift	
Work Days	:	12.7 Days	Project #	:	2
Unit Price	:	\$3,331.43 per CY	Estimator	:	Eric Jones
Total Cost	:	\$126,594	CY per	:	
			Total Cost	:	\$113,935
			Unit Price Per CY	:	\$2,998.28
			Probable Low Cost Parameter	:	3.3
			Probable High Cost Parameter	:	2.55
				:	\$145,583
				:	\$3,831.14

Description	Active Idle	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Carpenter Foreman (out)	Active	1.00	12.7	10	127.00	L	\$85.49	incl. in rate	incl. in rate	\$10,857.48
Carpenters	Active	2.00	12.7	10	254.00	L	\$85.49	incl. in rate	incl. in rate	\$21,714.97
Carpenters, Journeyman	Active	2.00	12.7	10	254.00	L	\$77.54	incl. in rate	incl. in rate	\$19,694.91
Equipment Operator (crane)	Active	2.00	6.4	10	127.00	L	\$81.60	incl. in rate	incl. in rate	\$10,362.95
Equipment Operator (light)	Active	2.00	2.0	10	40.00	L	\$69.19	incl. in rate	incl. in rate	\$2,767.60
Hydraulic Crane (80tn)	Active	1.00	6.4	10	63.50	E	\$197.66	incl. in rate	incl. in rate	\$12,551.41
Conc Pump (small)	Active	1.00	2.0	10	20.00	E	\$121.58	incl. in rate	incl. in rate	\$2,431.60
Steelworker	Active	2.00	5.0	10	100.00	L	\$78.16	incl. in rate	incl. in rate	\$7,815.50
Welder, Portable	Active	1.00	12.7	10	127.00	E	\$7.84	incl. in rate	incl. in rate	\$995.36
Labor Hours					902	TOTAL LABOR				\$73,213.40
Equipment Hours					210.5	TOTAL EQUIPMENT				\$15,978.37

Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost
Concrete	38.00	CY	1.100	41.80	\$159.23	\$6,655.81
Reinforcement (At 90lbs per CY)	1.71	Ton	1.100	1.88	\$1,000.00	\$1,881.00
Formwork Allowance (20% of Labor)	1.00	LS	1.100	1.10	\$14,642.68	\$16,106.95
Consumables (10% of Equip & Labor)	1.00	LS	1.000	1.00	\$8,919.18	\$8,919.18
<b>TOTAL MATERIAL</b>						<b>\$33,562.94</b>

Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount
TOTAL SUBCONTRACTS					\$0.00

Labor Cost	\$73,213.40	Labor Burden @	0.0%			\$73,213.40
Material Cost	\$33,562.94	Material Tax @	7.75%	\$2,601.13		\$36,164.07
Equipment Cost	\$15,978.37	Equipment Tax @	7.75%	\$1,238.32		\$17,216.70
Subcontractors	\$0.00					\$0.00
<b>DIRECT COST SUBTOTALS</b>	<b>\$122,755</b>			<b>\$3,839</b>	<b>DIRECT COST SUBTOTALS</b>	<b>\$126,594</b>

8 man crew will construct plug in the dry rough 5 days of construction to plug each side for a total of 10 days. Expect 6" pump will be needed day and night entire duration to control water during construction of plugs.

2.066 Plug 14-foot diameter penstock with concrete Details			
High Cost Factors		Low Cost Factors	
Bad Weather	0%	No Bad Weather	0%
Gas Price Increase	5%	Gas Price Decrease	5%
Unforeseen Contaminated Mats/ Access Issues	10%	No Unforeseen Contaminated Mats/ Access Issues	5%
	15%		10%

Production Per Hour	Hours	Overall Production	
	0.3	8	2.4
		10	3

Production & Sequence Notes

The Plug is expected to be formed in two sections. The inner section will be formed and braced off of the tunnel walls. After the inner form (set form) is installed the face form will be built similar to the set form by bracing off of the tunnel walls. To ensure consolidation a high slump small aggregate mix will be used and concrete vibrators will have access through the Bat opening block out at the top. One 5 man crew will be used to construct the formwork, place the concrete, and strip the form work. One crew of 3 rodbusters will be used to tie and brace reinforcement. Expected duration is 5 days to form the plug , 2 days to reinforce the plug, 1 days to pour the plug, and 2 days to strip the plug. Crane will be used 1/2 of time to support crew by flying material close to plug location. A small pump will be used to install concrete. Please note the production is adjusted to account for the duration as listed above.

Other Notes

PAY ITEM INFORMATION									
PAY ITEM NUMBER	:	2.067			Project	:	KRRP - Copco 1		
Description	:	Remove & Dispose of 8 screens			Group	:	D03		
Quantity	:	18,000.00 LBS							
Daily Production	:	22,500.00 LBS per		10	hour shift	Project #	:	2	
Work Days	:	0.8 Days			Estimator	:	Mihaela Tomulescu		
Unit Price	:	\$1.11 per LBS			Probable Low Cost Parameter		LBS per	Total Cost	Unit Price Per LBS
Total Cost	:	\$19,893			Probable High Cost Parameter		24750	\$17,904	\$0.99
							18000	\$23,872	\$1.33

CREW COSTS										
Description	Active Idle	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Labor Foreman	Active	1.00	0.8	10	8.00	L	\$58.87	incl. in rate	incl. in rate	\$470.98
Laborer	Active	4.00	0.8	10	32.00	L	\$51.07	incl. in rate	incl. in rate	\$1,634.34
Crawler Crane (270tn)	Active	2.00	0.8	10	16.00	E	\$454.10	incl. in rate	incl. in rate	\$7,265.60
Equipment Operator (medium)	Active	2.00	0.8	10	16.00	L	\$72.34	incl. in rate	incl. in rate	\$1,157.38
Welder	Active	2.00	0.8	10	16.00	E	\$7.84	incl. in rate	incl. in rate	\$125.44
Gas Welding Machine	Active	2.00	0.8	10	16.00	E	\$2.88	incl. in rate	incl. in rate	\$46.03
Electrician	Active	1.00	0.8	10	8.00	L	\$55.80	incl. in rate	incl. in rate	\$446.42
Steelworker	Active	6.00	0.8	10	48.00	L	\$78.10	incl. in rate	incl. in rate	\$3,748.80
Truck, Flatbed (4x4, 10,000 gvw)	Active	4.00	0.8	10	32.00	E	\$27.09	incl. in rate	incl. in rate	\$866.88
Truck Driver (heavy)	Active	4.00	0.8	10	32.00	L	\$75.72	incl. in rate	incl. in rate	\$2,423.17
					Labor Hours	144			TOTAL LABOR	\$9,881.08
					Equipment Hours	80			TOTAL EQUIPMENT	\$8,303.95

MATERIAL COSTS						
Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost
Consumables 10% labor (saw blades, drill bits, etc)	1.00	LS	1.000	1.00	\$988.11	\$988.11
						TOTAL MATERIAL
						\$988.11

SUBCONTRACT COSTS				
Description	Quantity	Units	Notes / Company	Unit Price
				Contract or Quote Amount
				TOTAL SUBCONTRACTS
				\$0.00

SUMMARY OF COSTS						
Labor Cost	\$9,881.08	Labor Burden @	0.0%	\$0.00		\$9,881.08
Material Cost	\$988.11	Material Tax @	7.75%	\$76.58		\$1,064.69
Equipment Cost	\$8,303.95	Equipment Tax @	7.75%	\$643.56		\$8,947.51
Subcontractors	\$0.00					\$0.00
DIRECT COST SUBTOTALS	\$19,173			\$720	DIRECT COST SUBTOTALS	\$19,893
Additional Pay Item Notes :						
Production based on crew 1 Foreman, 2 Steelworkers and 1 Welder to cut and attach hooks to the gate for disposal, 4 Laborers to rigging wire rope slings, 1 Electrician to provide power for tools, 1 Truck for 2 screens. Assuming 1 day of work.						

## 2.068 Remove & Dispose of 8 Water Gates

**Additional Pay Item Notes :**

Production based on crew 1 Forman, 2 Steelworkers and 1 Welder to cut and attach hooks to the gate for disposal, 4 Laborers to rigging wire rope slings, 1 Electrician to provide power for tools, 1 Truck for 2 gates.  
Assuming 1 day of work.

PAY ITEM INFORMATION									
PAY ITEM NUMBER	:	2.069	Project	:	KRRP - Copco 1				
Description	:	Remove & Dispose of 3 - 30" Dia. x 25' stand pipes	Group	:	D03				
Quantity	:	6,000.00 LBS							
Daily Production	:	7,500.00 LBS per	10	hour shift	Project #	:	2		
Work Days	:	0.8 Days			Estimator	:	Mihaela Tomulescu	LBS per	Total Cost
Unit Price	:	\$0.83 per LBS			Probable Low Cost Parameter			8250	\$4,469
Total Cost	:	\$4,966			Probable High Cost Parameter			6000	\$5,959
									Unit Price Per LBS
									\$0.74
									\$0.99

CREW COSTS										
Description	Active Idle	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Hydraulic Crane (35tn)	Active	1.00	0.8	10	8.00	E	\$117.77	incl. in rate	incl. in rate	\$942.16
Laborer	Active	2.00	0.8	10	16.00	L	\$51.07	incl. in rate	incl. in rate	\$817.17
Truck Driver (light)	Active	1.00	0.8	10	8.00	L	\$65.82	incl. in rate	incl. in rate	\$526.59
Truck, Flatbed (4x4, 10,000 gvw)	Active	1.00	0.8	10	8.00	E	\$27.09	incl. in rate	incl. in rate	\$216.72
Labor Foreman	Active	1.00	0.8	10	8.00	L	\$58.87	incl. in rate	incl. in rate	\$470.98
Equipment Operator (crane)	Active	1.00	0.8	10	8.00	L	\$81.60	incl. in rate	incl. in rate	\$652.78
Steelworker	Active	2.00	0.8	10	16.00	L	\$78.10	incl. in rate	incl. in rate	\$1,249.60
					Labor Hours	56			TOTAL LABOR	\$3,717.12
					Equipment Hours	16			TOTAL EQUIPMENT	\$1,158.88

MATERIAL COSTS						
Description	Item	Order	Conversion	Order	Order	Material
						TOTAL MATERIAL
						\$0.00

SUBCONTRACT COSTS					
Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount
					TOTAL SUBCONTRACTS
					\$0.00

SUMMARY OF COSTS									
Labor Cost	\$3,717.12	Labor Burden @	0.0%	\$0.00					\$3,717.12
Material Cost	\$0.00	Material Tax @	7.75%	\$0.00					\$0.00
Equipment Cost	\$1,158.88	Equipment Tax @	7.75%	\$89.81					\$1,248.69
Subcontractors	\$0.00								\$0.00
DIRECT COST SUBTOTALS	\$4,876			\$90				DIRECT COST SUBTOTALS	\$4,966

Additional Pay Item Notes :									
Crew formed of 2 Steelworker to cut the pipes and 2 Laborers that will use the crane to load the pipe in the truck.									

PAY ITEM INFORMATION									
PAY ITEM NUMBER	:	2.071	Project	:	KRRP - Copco 1				
Description	:	Remove & Dispose of 10' Dia. penstock pipe	Group	:	D03				
Quantity	:	270,000.00 LBS	Project #	:	2				
Daily Production	:	30,300.00 LBS per	Estimator	:	Mihaela Tomulescu				
Work Days	:	8.9 Days	10	:	hour shift				
Unit Price	:	\$1.05 per LBS	Probable Low Cost Parameter	:	34845	LBS per	Total Cost	:	Unit Price Per LBS
Total Cost	:	\$282,769	Probable High Cost Parameter	:	22725	\$353,461		:	\$0.89
									\$1.31

CREW COSTS										
Description	Active	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Labor Foreman	Active	1.00	8.9	10	89.00	L	\$58.87	incl. in rate	incl. in rate	\$5,239.61
Laborer	Active	4.00	8.9	10	356.00	L	\$51.07	incl. in rate	incl. in rate	\$18,181.99
Steelworker	Active	2.00	8.9	10	178.00	L	\$78.10	incl. in rate	incl. in rate	\$13,901.80
Equipment Operator (crane)	Active	2.00	8.9	10	178.00	L	\$81.60	incl. in rate	incl. in rate	\$14,524.44
Equipment Operator (medium)	Active	2.00	8.9	10	178.00	L	\$72.34	incl. in rate	incl. in rate	\$12,875.81
Crawler Crane (90tn)	Active	1.00	8.9	10	89.00	E	\$211.22	incl. in rate	incl. in rate	\$18,798.58
Crawler Crane (270tn)	Active	1.00	8.9	10	89.00	E	\$454.10	incl. in rate	incl. in rate	\$40,414.90
Loader, FE Rubber Tire (5.25cy)	Active	1.00	8.9	10	89.00	E	\$76.00	incl. in rate	incl. in rate	\$6,764.00
Hydraulic Excavator (5.0cy)	Active	1.00	8.9	10	89.00	E	\$276.50	incl. in rate	incl. in rate	\$24,608.50
Boomlift (JLG 60')	Active	2.00	8.9	10	178.00	E	\$52.87	incl. in rate	incl. in rate	\$9,410.86
Acetylene Torches	Active	4.00	8.9	10	356.00	E	\$0.47	incl. in rate	incl. in rate	\$167.32
Air Compressor 600 cfm	Active	2.00	8.9	10	178.00	E	\$21.74	incl. in rate	incl. in rate	\$3,869.72
Generator, Small Generator, 10 - 15 kW	Active	2.00	8.9	10	178.00	E	\$7.04	incl. in rate	incl. in rate	\$1,253.12
Hepa Vac System	Active	4.00	8.9	10	356.00	E	\$0.47	incl. in rate	incl. in rate	\$167.32
					Labor Hours	979	TOTAL LABOR		\$64,723.65	
					Equipment Hours	1602	TOTAL EQUIPMENT		\$105,454.32	

MATERIAL COSTS						
Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost
Consumables 20% labor (saw blades, drill bits, torch gas, etc)	1.00	LS	1.000	1.00	\$12,944.73	\$12,944.73
HEPA Vac Systems For Grinders	4.00	EA	1.000	4.00	\$1,000.00	\$4,000.00
Handheld Grinders	4.00	EA	1.000	4.00	\$250.00	\$1,000.00
TOTAL MATERIAL						\$17,944.73

SUBCONTRACT COSTS					
Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount
Access Allowance at Klamath River	1	AL		\$50.00	\$50.00
Hazardous waste cleanup/pickup/disposal, solid pickup, bulk material, maximum (10% of total)	13.50	ton		\$595.00	\$8,032.50
Hauling Disposal Cost	45.00	Loads	20 tons a load	\$600.00	\$27,000.00
Shoring Allowance	1	AL		\$50,000.00	\$50,000.00
TOTAL SUBCONTRACTS					\$85,082.50

SUMMARY OF COSTS					
Labor Cost	\$64,723.65	Labor Burden @	0.0%	\$0.00	\$64,723.65
Material Cost	\$17,944.73	Material Tax @	7.75%	\$1,390.72	\$19,335.45
Equipment Cost	\$105,454.32	Equipment Tax @	7.75%	\$8,172.71	\$113,627.03
Subcontractors	\$85,082.50				\$85,082.50
DIRECT COST SUBTOTALS	\$273,205			\$9,563	DIRECT COST SUBTOTALS \$282,769

Additional Pay Item Notes :					
This pay item is to demolish penstock and haul off site. This activity is expected to be 60% efficient to account for prepping sections of the pipe for cutting due to coating, staff breaks, equipment maintenance, temp shoring, equipment repositioning, haul road adjustment, and ect. Currently we are expecting to have 14 each 20K lb loads of penstock. Each pipe length is expected to be roughly 21' long. A 90 ton crawler crane will be rigged to the 21' long cut pipe and once cut it will track near loading location. 130 ton crawler crane will be used as a support crane / hold crane for the adjacent pipe section. A shoring allowance has been added for potential sag areas depending where the penstock is cut. Hauling is expected to cost more than typical disposal hauling due to the access restrictions and potential hauling permits.					



2.071 Remove & Dispose of 10' Dia. penstock pipe  
Details

High Cost Factors			Low Cost Factors		
Bad Weather		0%	No Bad Weather		0%
Gas Price Increase		10%	Gas Price Decrease		10%
Unforeseen Contaminated Mats/ Access Issues		15%	No Unforeseen Contaminated Mats/ Access Issues		5%
25%			15%		

Production Per Hour	Hours	Efficiency Factor (Access, Activity, Qty, High Rebar Density, Breaks, Ect)	Overall Production	
	5,000.00	8	60%	24000
	5,050.00	10	60%	30300

Total Lbs	270,000.00			
Assumed Pipe Thickness is 3/4" thick	0.75			
10' diameter pipe				
Lbs per ft	957		20000	20.89864159
Total LF	282.13			
Each Piece at 20k length	21			
Number of pieces	14.00			

**2.070 Remove & Dispose of 14' Dia. penstock pipe**

Additional Pay Item Notes :	
<p>This pay item is to demolish penstock and haul off site. This activity is expected to be 60% efficient to account for prepping sections of the pipe for cutting due to coating, staff breaks, equipment maintenance, temp shoring, equipment repositioning, haul road adjustment, and ect. Currently we are expecting to have 13 each 20K lb loads of penstock. Each pipe length is expected to be roughly 21' long. A 90 ton crawler crane will be rigged to the 21' long cut pipe and once cut it will track near loading location. 130 ton crawler crane will be used as a support crane / hold crane for the adjacent pipe section. A shoring allowance has been added for potential sag areas depending where the penstock is cut. Hauling is expected to cost more than typical disposal hauling due to the access restrictions and potential hauling permits.</p>	

2.070 Remove & Dispose of 14' Dia. penstock pipe  
Details

High Cost Factors			Low Cost Factors		
Bad Weather	0%		No Bad Weather	0%	
Gas Price Increase	10%		Gas Price Decrease	10%	
Unforeseen Contaminated Mats/ Access Issues	10%		No Unforeseen Contaminated Mats/ Access Issues	5%	
20%			15%		

Production Per Hour	Hours	Efficiency Factor (Access, Activity, Qty, High Rebar Density, Breaks, Ect)	Overall Production
5,000.00	8	60%	24000
5,050.00	10	60%	30300

Total Lbs	256,000.00		
Assumed Pipe Thickness is 3/4" thick	0.75		
14" diameter pipe			
lbs per ft	1350	20000	15
Total LF	190.00		
Each Piece at 36k length	15		
Number of pieces	13.00		

### 2.081 Site work - Clear and Grub Disposal Area

PAY ITEM NUMBER	:	2.081	Project	:	KRRP - Copco 1
Description	:	Site work - Clear and Grub Disposal Area	Group	:	D12
Quantity	:	4.00 AC			
Daily Production	:	2.00 AC per	10	hour shift	
Work Days	:	2.0 Days	Project #	:	2
Unit Price	:	\$5,226.11 per AC	Estimator	:	Eric Jones
Total Cost	:	\$20,904	Probable Low Cost Parameter	:	2.3
			Probable High Cost Parameter	:	1.6
					Total Cost
					Unit Price Per AC
					\$17,769
					\$4,442.19
					\$25,085
					\$6,271.33

Description	Active Idle	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Labor Foreman	Active	1.00	2.0	10	20.00	L	\$58.87	incl. in rate	incl. in rate	\$1,177.44
Laborer	Active	4.00	2.0	10	80.00	L	\$51.07	incl. in rate	incl. in rate	\$4,085.84
Equipment Operator (medium)	Active	2.00	2.0	10	40.00	L	\$72.34	incl. in rate	incl. in rate	\$2,893.44
Truck Driver (heavy)	Active	2.00	2.0	10	40.00	L	\$66.92	incl. in rate	incl. in rate	\$2,676.96
Loader, FE Rubber Tire (5.25cy)	Active	1.00	2.0	10	20.00	E	\$76.00	incl. in rate	incl. in rate	\$1,520.00
Truck, On-Highway Dump (6x4, 12cy)	Active	2.00	2.0	10	40.00	E	\$57.41	incl. in rate	incl. in rate	\$2,296.40
Hydraulic Excavator (5.0cy)	Active	1.00	2.0	10	20.00	E	\$276.50	incl. in rate	incl. in rate	\$5,530.00
Chipper 600HP up to 22" diameter	Active	3.00	2.0	10	60.00		\$57.91			\$3,474.60
Labor Hours					180	TOTAL LABOR				\$10,833.68
Equipment Hours					80	TOTAL EQUIPMENT				\$9,346.40

Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost
TOTAL MATERIAL						\$0.00

Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount
TOTAL SUBCONTRACTS					\$0.00

Labor Cost	\$10,833.68	Labor Burden @	0.0%			\$10,833.68
Material Cost	\$0.00	Material Tax @	7.75%	\$0.00		\$0.00
Equipment Cost	\$9,346.40	Equipment Tax @	7.75%	\$724.35		\$10,070.75
Subcontractors	\$0.00					\$0.00
<b>DIRECT COST SUBTOTALS</b>	<b>\$20,180</b>			<b>\$724</b>	<b>DIRECT COST SUBTOTALS</b>	<b>\$20,904</b>

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PAY ITEM INFORMATION									
PAY ITEM NUMBER	:	2.082			Project	:	KRRP - Copco 1		
Description	:	Sitework - Concrete Processing and Soil Cover for Disposal Area			Group	:	D12		
Quantity	:	12,000.00	cy						
Daily Production	:	700.00	cy per	10	hour shift	Project #	:	2	
Work Days	:	17.1	Days			Estimator	:	Michael Barba	cy per
Unit Price	:	\$17.19	per cy			Probable Low Cost Parameter		770	Total Cost
Total Cost	:	\$206,327				Probable High Cost Parameter		630	Unit Price Per cy
									\$185,694
									\$15.47
									\$18.91

CREW COSTS										
Description	Active Idle	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Hydraulic Excavator (2.5cy)	Active	1.00	17.1	10	171.00	E	\$205.40	incl. in rate	incl. in rate	\$35,123.40
Labor Foreman	Active	1.00	17.1	10	171.00	L	\$58.87	incl. in rate	incl. in rate	\$10,067.11
Laborer	Active	3.00	17.1	10	513.00	L	\$51.07	incl. in rate	incl. in rate	\$26,200.45
Equipment Operator (medium)	Active	4.00	17.1	10	684.00	L	\$72.34	incl. in rate	incl. in rate	\$49,477.82
Dozer (235hp)(CATD7)	Active	1.00	17.1	10	171.00	E	\$171.07	incl. in rate	incl. in rate	\$29,252.97
Grader, 180hp, 13' blade	Active	1.00	17.1	10	171.00	E	\$84.69	incl. in rate	incl. in rate	\$14,481.99
Terex Track Crusher	Active	1.00	17.1	10	171.00	E	\$103.99	incl. in rate	incl. in rate	\$17,781.72
Kobelco SK260LC-10 Ex With CP100 Magnet	Active	1.00	17.1	10	171.00	E	\$89.29	incl. in rate	incl. in rate	\$15,268.59
					Labor Hours	1368	TOTAL LABOR			\$85,745.39
					Equipment Hours	855	TOTAL EQUIPMENT			\$111,908.67

MATERIAL COSTS						
Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost
						TOTAL MATERIAL
						\$0.00

SUBCONTRACT COSTS					
Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount
					TOTAL SUBCONTRACTS
					\$0.00

SUMMARY OF COSTS						
Labor Cost	\$85,745.39	Labor Burden @	0.0%	\$0.00		\$85,745.39
Material Cost	\$0.00	Material Tax @	7.75%	\$0.00		\$0.00
Equipment Cost	\$111,908.67	Equipment Tax @	7.75%	\$8,672.92		\$120,581.59
Subcontractors	\$0.00					\$0.00
DIRECT COST SUBTOTALS	\$197,654			\$8,673	DIRECT COST SUBTOTALS	\$206,327
Additional Pay Item Notes :						
Please see details sheet						

## 2.082 Sitework - Concrete Processing and Soil Cover for Disposal Area

## Details

High Cost Factors			Low Cost Factors		
Bad Weather	0%		No Bad Weather		0%
Gas Price Increase	10%		Gas Price Decrease		10%
Unforeseen Contaminated Mats/ Access Issues	0%		No Unforeseen Contaminated Mats/ Access Issues		0%
	10%				10%
Production Per Hour	Hours	Efficiency Factor (Access, Activity, Qty, High Rebar Density, Breaks, Etc.)	Overall Production		
	100	8	70%		560
		10	70%		700
Track Crusher Production		Excavator Loading Production per shift			
CY per Hour	70.00	CY per Hour			70.00
Lbs per Hour (4050lbs per CF)	283,500.00	CY Bucket Size			2.50
Tons per Hour	142	Buckets Per Hour			28
# of Crushers	1.00	# of Excavators			1.00
Tons per hour	142	CY per Hour			70
Tons Per Hour Ideal Production Per 8 Hour Shift	300	Ideal Production			95
Efficient Compared to Ideal Production	47%	Efficient Compared to Ideal Production			74%
Inefficiencies Compared to Ideal Production	53%	Inefficiencies Compared to Ideal Production			26%
		Excavator Crusher Production			
		Hydraulic Hammer CY per Hour			70
		# of Hammers			1.00
		CY per Hour			70
		CY per Hour Back Check			70
		Ideal Production			150
		Efficient Compared to Ideal Production			47%
		Inefficiencies Compared to Ideal Production			53%

## Other Notes

This estimate is to account for extra processing of the demolished concrete related to Copco 1and spreading soil over disposal area. The estimate Estimate currently reflects using three pieces of equipment to support operation; a Kobelco excavator with a CP100 crusher/ Magnet attachment, a Terex Track Crusher with a magnetic over belt, rebar deflector, and a rip stop belt, and a 2.5CY excavator. The Kobelco with the CP100 crusher will break concrete into manageable pieces for the 5CY excavator to load into the Crusher. The CP100 crusher will have a magnet attachment to remove any lose reinforcement. The crusher production is expected to drive the operations duration and the overall operation is expected to be 70% efficient to account for equipment maintenance, staff breaks, equipment repositioning, etc.. Reinforcement haul off has been accounted for in the other concrete demolition items. The soil cover material is expected to come from stripping the topsoil at the disposal area. The soil cover operation will be completed using a dozer and a grader.

PAY ITEM INFORMATION									
PAY ITEM NUMBER	:	2.085	Project	:	KRRP - Copco 1				
Description	:	Access/Haul Road Improvements - Soil Excavation	Group	:	D16				
Quantity	:	1,600.00	cy						
Daily Production	:	1,250.00	cy per	10	hour shift	Project #	:	2	
Work Days	:	1.3	Days			Estimator	:	Michael Barba	cy per
Unit Price	:	\$15.51	per cy			Probable Low Cost Parameter		1437.5	Total Cost
Total Cost	:	\$24,822				Probable High Cost Parameter		1000	\$29,786
									Unit Price Per cy
									\$13.19
									\$18.62

CREW COSTS										
Description	Active Idle	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Dozer (310hp)(CATD8)	Active	2.00	1.3	10	26.00	E	\$195.72	incl. in rate	incl. in rate	\$5,088.72
Hydraulic Excavator (5.0cy)	Active	1.00	1.3	10	13.00	E	\$276.50	incl. in rate	incl. in rate	\$3,594.50
Loader, FE Rubber Tire (5.25cy)	Active	2.00	1.3	10	26.00	E	\$76.00	incl. in rate	incl. in rate	\$1,976.00
Truck, Off-Road, Articulated Rear, 20cy	Active	2.00	1.3	10	26.00	E	\$117.28	incl. in rate	incl. in rate	\$3,049.28
Equipment Operator (medium)	Active	4.00	1.3	10	52.00	L	\$72.34	incl. in rate	incl. in rate	\$3,761.47
Equipment Operator (light)	Active	1.00	1.3	10	13.00	L	\$69.19	incl. in rate	incl. in rate	\$899.47
Truck Driver (heavy)	Active	2.00	1.3	10	26.00	L	\$75.72	incl. in rate	incl. in rate	\$1,968.82
Laborer	Active	4.00	1.3	10	52.00	L	\$51.07	incl. in rate	incl. in rate	\$2,655.80
Labor Foreman	Active	1.00	1.3	10	13.00	L	\$58.87	incl. in rate	incl. in rate	\$765.34
					Labor Hours	156			TOTAL LABOR	\$10,050.90
					Equipment Hours	91			TOTAL EQUIPMENT	\$13,708.50

MATERIAL COSTS						
Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost
						TOTAL MATERIAL
						\$0.00

SUBCONTRACT COSTS					
Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount
					TOTAL SUBCONTRACTS
					\$0.00

SUMMARY OF COSTS						
Labor Cost	\$10,050.90	Labor Burden @	0.0%	\$0.00		\$10,050.90
Material Cost	\$0.00	Material Tax @	7.75%	\$0.00		\$0.00
Equipment Cost	\$13,708.50	Equipment Tax @	7.75%	\$1,062.41		\$14,770.91
Subcontractors	\$0.00					\$0.00
DIRECT COST SUBTOTALS	\$23,759			\$1,062	DIRECT COST SUBTOTALS	\$24,822
Additional Pay Item Notes :						

This estimate is to improve existing and new haul roads to provide access to Copco1. This is mainly for grading/ creating dirt haul roads.

### 2.089 Mallard Cove - Concrete total

PAY ITEM NUMBER	:	2.089	Project	:	KRRP - Copco 1
Description	:	Mallard Cove - Concrete total	Group	:	D16
Quantity	:	106.00 CY			
Daily Production	:	53.00 CY per	10	hour shift	
Work Days	:	2.0 Days	Project #	:	2
Unit Price	:	\$161.12 per CY	Estimator	:	Eric Jones
Total Cost	:	\$17,079	Probable Low Cost Parameter	:	60.95
			Probable High Cost Parameter	:	45.05
					Total Cost
					Unit Price Per CY
					\$14,517
					\$136.96
					\$185.29

Description	Active Idle	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Hydraulic Excavator (5.0cy)	Active	1.00	2.0	10	20.00	E	\$276.50	incl. in rate	incl. in rate	\$5,530.00
Loader, FE Rubber Tire (5.25cy)	Active	1.00	2.0	10	20.00	E	\$76.00	incl. in rate	incl. in rate	\$1,520.00
Truck, On-Highway Dump (6x4, 12cy)	Active	1.00	2.0	10	20.00	E	\$57.41	incl. in rate	incl. in rate	\$1,148.20
Hydraulic Impact Breaker Attachment (3k-4k ft-lb)	Active	1.00	2.0	10	20.00	E	\$36.81	incl. in rate	incl. in rate	\$736.20
Truck Driver (heavy)	Active	1.00	2.0	10	20.00	L	\$66.92	incl. in rate	incl. in rate	\$1,338.48
Labor Foreman	Active	1.00	2.0	10	20.00	L	\$58.87	incl. in rate	incl. in rate	\$1,177.44
Laborer	Active	2.00	2.0	10	40.00	L	\$51.07	incl. in rate	incl. in rate	\$2,042.92
Equipment Operator (medium)	Active	2.00	2.0	10	40.00	L	\$72.34	incl. in rate	incl. in rate	\$2,893.44
Labor Hours					120	TOTAL LABOR				\$7,452.28
Equipment Hours					80	TOTAL EQUIPMENT				\$8,934.40

Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price		Material Cost
TOTAL MATERIAL							\$0.00

Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount
TOTAL SUBCONTRACTS					\$0.00

Labor Cost	\$7,452.28	Labor Burden @	0.0%			\$7,452.28
Material Cost	\$0.00	Material Tax @	7.75%	\$0.00		\$0.00
Equipment Cost	\$8,934.40	Equipment Tax @	7.75%	\$692.42		\$9,626.82
Subcontractors	\$0.00					\$0.00
<b>DIRECT COST SUBTOTALS</b>	<b>\$16,387</b>			<b>\$692</b>	<b>DIRECT COST SUBTOTALS</b>	<b>\$17,079</b>

Excavator with breaker will be used to break up concrete and loader will be used to load the haul truck. The duration is a total of two days to account for mobilizing the demo equipment.



**2.090 Mallard Cove - 25'x5' Dock made of composite decking and poly floats**

[illegible]

Description	Active Idle	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Hydraulic Crane (50tn)	Active	1.00	0.4	10	4.00	E	\$136.20	incl. in rate	incl. in rate	\$544.80
Truck, Pickup (4x4, 3/4tn)	Active	1.00	0.4	10	4.00	E	\$16.99	incl. in rate	incl. in rate	\$67.96
Truck Driver (heavy)	Active	1.00	0.4	10	4.00	L	\$66.92	incl. in rate	incl. in rate	\$267.70
Equipment Operator (crane)	Active	1.00	0.4	10	4.00	L	\$81.60	incl. in rate	incl. in rate	\$326.39
Labor Foreman	Active	1.00	0.4	10	4.00	L	\$58.87	incl. in rate	incl. in rate	\$235.49
Laborer	Active	2.00	0.4	10	8.00	L	\$51.07	incl. in rate	incl. in rate	\$408.58
Truck, On-Highway Dump (6x4, 12cy)	Active	1.00	0.4	10	4.00	E	\$57.41	incl. in rate	incl. in rate	\$229.64
Labor Hours					20	TOTAL LABOR				\$1,238.16
Equipment Hours					12	TOTAL EQUIPMENT				\$842.40

Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost
TOTAL MATERIAL						\$0.00

Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount
TOTAL SUBCONTRACTS					\$0.00

Labor Cost	\$1,238.16	Labor Burden @	0.0%			\$1,238.16
Material Cost	\$0.00	Material Tax @	7.75%	\$0.00		\$0.00
Equipment Cost	\$842.40	Equipment Tax @	7.75%	\$65.29		\$907.69
Subcontractors	\$0.00					\$0.00
<b>DIRECT COST SUBTOTALS</b>	<b>\$2,081</b>			<b>\$65</b>	<b>DIRECT COST SUBTOTALS</b>	<b>\$2,146</b>

**Additional Pay Item Notes :**

**2.091 Mallard Cove - 20'x5' Gangway w/ aluminum grate and railings**

PAY ITEM NUMBER	:	2.091	Project	:	KRRP - Copco 1
Description	:	Mallard Cove - 20'x5' Gangway w/ aluminum grate and railings	Group	:	D16
Quantity	:	1.00 EA			
Daily Production	:	2.50 EA per	10	hour shift	
Work Days	:	0.4	Days		
Unit Price	:	\$1,986.96	per EA		
Total Cost	:	\$1,987			
			Project #	:	2
			Estimator	:	Eric Jones
			Probable Low Cost Parameter	:	2.875
			Probable High Cost Parameter	:	2.125
					EA per
					Total Cost
					Unit Price Per EA
					\$1,689.91
					\$2,285.00

Description	Active Idle	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Hydraulic Crane (50tn)	Active	1.00	0.4	10	4.00	E	\$136.20	incl. in rate	incl. in rate	\$544.80
Truck, Flatbed (4x4, 10,000 gvw)	Active	1.00	0.4	10	4.00	E	\$32.06	incl. in rate	incl. in rate	\$128.24
Truck, Pickup (4x4, 3/4tn)	Active	1.00	0.4	10	4.00	E	\$16.99	incl. in rate	incl. in rate	\$67.96
Equipment Operator (light)	Active	1.00	0.4	10	4.00	L	\$69.19	incl. in rate	incl. in rate	\$276.76
Labor Foreman	Active	1.00	0.4	10	4.00	L	\$58.87	incl. in rate	incl. in rate	\$235.49
Laborer	Active	2.00	0.4	10	8.00	L	\$51.07	incl. in rate	incl. in rate	\$408.58
Truck Driver (heavy)	Active	1.00	0.4	10	4.00	L	\$66.92	incl. in rate	incl. in rate	\$267.70
Labor Hours					20	TOTAL LABOR				\$1,188.53
Equipment Hours					12	TOTAL EQUIPMENT				\$741.00

Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost
TOTAL MATERIAL						\$0.00

Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount
TOTAL SUBCONTRACTS					\$0.00

Labor Cost	\$1,188.53	Labor Burden @	0.0%			\$1,188.53
Material Cost	\$0.00	Material Tax @	7.75%	\$0.00		\$0.00
Equipment Cost	\$741.00	Equipment Tax @	7.75%	\$57.43		\$798.43
Subcontractors	\$0.00					\$0.00
<b>DIRECT COST SUBTOTALS</b>	<b>\$1,930</b>			<b>\$57</b>	<b>DIRECT COST SUBTOTALS</b>	<b>\$1,987</b>

This based on crane already being near location of the dock, 1 50ton crane to lift gangway and place on truck, 1 flat bed truck hauling all day to dispose of material, 2 laborers will be used to disassemble the gangway and rig gangway to crane, Foreman with truck will oversee operation.

### 2.092 Mallard Cove - Signs to be removed and hauled away

PAY ITEM NUMBER	:	2.092	Project	:	KRRP - Copco 1
Description	:	Mallard Cove - Signs to be removed and hauled away	Group	:	D16
Quantity	:	6.00 EA			
Daily Production	:	30.00 EA per	10	hour shift	
Work Days	:	0.2 Days	Project #	:	2
Unit Price	:	\$114.00 per EA	Estimator	:	Eric Jones
Total Cost	:	\$684	Probable Low Cost Parameter	:	EA per 33 \$616 Unit Price Per EA \$102.60
			Probable High Cost Parameter	:	27 \$752 \$125.40

Description	Active Idle	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Loader, FE Rubber Tire (5.25cy)	Active	1.00	0.2	10	2.00	E	\$76.00	incl. in rate	incl. in rate	\$152.00
Truck, Pickup (4x4, 3/4tn)	Active	1.00	0.2	10	2.00	E	\$16.99	incl. in rate	incl. in rate	\$33.98
Equipment Operator (medium)	Active	1.00	0.2	10	2.00	L	\$72.34	incl. in rate	incl. in rate	\$144.67
Labor Foreman	Active	1.00	0.2	10	2.00	L	\$58.87	incl. in rate	incl. in rate	\$117.74
Laborer	Active	2.00	0.2	10	4.00	L	\$51.07	incl. in rate	incl. in rate	\$204.29
Welder, Portable	Active	1.00	0.2	10	2.00	E	\$7.84	incl. in rate	incl. in rate	\$15.68
Labor Hours					8	TOTAL LABOR				\$466.71
Equipment Hours					6	TOTAL EQUIPMENT				\$201.66

Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost
TOTAL MATERIAL						\$0.00

Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount
TOTAL SUBCONTRACTS					\$0.00

Summary of Costs				
Labor Cost	\$466.71	Labor Burden @	0.0%	\$466.71
Material Cost	\$0.00	Material Tax @	7.75%	\$0.00
Equipment Cost	\$201.66	Equipment Tax @	7.75%	\$15.63
Subcontractors	\$0.00			\$0.00
<b>DIRECT COST SUBTOTALS</b>	<b>\$668</b>		<b>\$16</b>	<b>DIRECT COST SUBTOTALS \$684</b>

Based on a 4 man crew removing signs with loader, material is expected to be loaded on either the gangway truck or the dock truck for disposal. This operation is expected to happen with the pay item 93.
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**2.093 Mallard Cove - Wood plank tables to be removed and hauled away**

2.093

### 2.094 Mallard Cove - Parking area to be regraded

PAY ITEM NUMBER	:	2.094	Project	:	KRRP - Copco 1
Description	:	Mallard Cove - Parking area to be regraded	Group	:	D16
Quantity	:	2.50 AC			
Daily Production	:	1.25 AC per	10	hour shift	
Work Days	:	2.0	Days		
Unit Price	:	\$5,058.76	per AC		
Total Cost	:	\$12,647			
			Project #	:	2
			Estimator	:	Eric Jones
			Probable Low Cost Parameter		1.375
			Probable High Cost Parameter		1.0625
			AC per		Total Cost
					Unit Price Per AC
					\$4,552.88
					\$5,817.57

Description	Active Idle	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Labor Foreman	Active	1.00	2.0	10	20.00	L	\$58.87	incl. in rate	incl. in rate	\$1,177.44
Laborer	Active	3.00	2.0	10	60.00	L	\$51.07	incl. in rate	incl. in rate	\$3,064.38
Equipment Operator (medium)	Active	2.00	2.0	10	40.00	L	\$72.34	incl. in rate	incl. in rate	\$2,893.44
Dozer (235hp)(CATD7)	Active	1.00	2.0	10	20.00	E	\$171.07	incl. in rate	incl. in rate	\$3,421.40
Grader, 180hp, 13' blade	Active	1.00	2.0	10	20.00	E	\$84.69	incl. in rate	incl. in rate	\$1,693.80
Labor Hours					120	TOTAL LABOR				\$7,135.26
Equipment Hours					40	TOTAL EQUIPMENT				\$5,115.20

Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost
TOTAL MATERIAL						\$0.00

Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount
TOTAL SUBCONTRACTS					\$0.00

Labor Cost	\$7,135.26	Labor Burden @	0.0%		\$7,135.26
Material Cost	\$0.00	Material Tax @	7.75%	\$0.00	\$0.00
Equipment Cost	\$5,115.20	Equipment Tax @	7.75%	\$396.43	\$5,511.63
Subcontractors	\$0.00				\$0.00
<b>DIRECT COST SUBTOTALS</b>	<b>\$12,250</b>			<b>\$396</b>	<b>DIRECT COST SUBTOTALS \$12,647</b>

**Additional Pay Item Notes :**

Production is based off of 12 man crew finishing .5 acres a shift, dozers will be regrading area, grader will be used to fine grade, tractors will be used to rip material for seeding, seed sprayers will use Idaho Fescue seed, water truck will continuously water area for 2 weeks.

**2.095 Copco Cove - Concrete Total**

PAY ITEM NUMBER	:	2.095	Project	:	KRRP - Copco 1
Description	:	Copco Cove - Concrete Total	Group	:	D16
Quantity	:	84.00 CY			
Daily Production	:	50.00 CY per	10	hour shift	
Work Days	:	1.7 Days	Project #	:	2
Unit Price	:	\$172.82 per CY	Estimator	:	Eric Jones
Total Cost	:	\$14,517	Probable Low Cost Parameter	:	57.5
			Probable High Cost Parameter	:	42.5
					Total Cost
					Unit Price Per CY
					\$126.90
					\$198.75

Description	Active Idle	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Hydraulic Excavator (5.0cy)	Active	1.00	1.7	10	17.00	E	\$276.50	incl. in rate	incl. in rate	\$4,700.50
Loader, FE Rubber Tire (5.25cy)	Active	1.00	1.7	10	17.00	E	\$76.00	incl. in rate	incl. in rate	\$1,292.00
Truck, On-Highway Dump (6x4, 12cy)	Active	1.00	1.7	10	17.00	E	\$57.41	incl. in rate	incl. in rate	\$975.97
Hydraulic Impact Breaker Attachment (3k-4k ft-lb)	Active	1.00	1.7	10	17.00	E	\$36.81	incl. in rate	incl. in rate	\$625.77
Truck Driver (heavy)	Active	1.00	1.7	10	17.00	L	\$66.92	incl. in rate	incl. in rate	\$1,137.71
Labor Foreman	Active	1.00	1.7	10	17.00	L	\$58.87	incl. in rate	incl. in rate	\$1,000.82
Laborer	Active	2.00	1.7	10	34.00	L	\$51.07	incl. in rate	incl. in rate	\$1,736.48
Equipment Operator (medium)	Active	2.00	1.7	10	34.00	L	\$72.34	incl. in rate	incl. in rate	\$2,459.42
Labor Hours					102	TOTAL LABOR				\$6,334.44
Equipment Hours					68	TOTAL EQUIPMENT				\$7,594.24

Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price		Material Cost
TOTAL MATERIAL							\$0.00

Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount
TOTAL SUBCONTRACTS					\$0.00

Labor Cost	\$6,334.44	Labor Burden @	0.0%			\$6,334.44
Material Cost	\$0.00	Material Tax @	7.75%	\$0.00		\$0.00
Equipment Cost	\$7,594.24	Equipment Tax @	7.75%	\$588.55		\$8,182.79
Subcontractors	\$0.00					\$0.00
<b>DIRECT COST SUBTOTALS</b>	<b>\$13,929</b>			<b>\$589</b>	<b>DIRECT COST SUBTOTALS</b>	<b>\$14,517</b>

Excavator with breaker will be used to break up concrete and loader will be used to load the haul truck. The duration is a total of two days to account for mobilizing the demo equipment.

PAY ITEM COST DETAIL WORKSHEET

2.096 Copco Cove - Dock abutment railing made of 2.5" dia. steel pipe

PAY ITEM INFORMATION									
PAY ITEM NUMBER	:	2.096			Project	:	KRRP - Copco 1		
Description	:	Copco Cove - Dock abutment railing made of 2.5" dia. steel pipe			Group	:	D16		
Quantity	:	1.00 EA							
Daily Production	:	2.50 EA per	10	hour shift	Project #	:	2		
Work Days	:	0.4	Days		Estimator	:	Mihaela Tomulescu	EA per	Total Cost
Unit Price	:	\$1,327.49	per EA		Probable Low Cost Parameter		2.75	\$1,195	\$1,194.74
Total Cost	:	\$1,327			Probable High Cost Parameter		2.25	\$1,460	\$1,460.24

CREW COSTS										
Description	Active Idle	# In crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Laborer	Active	1.00	0.4	10	4.00	L	\$51.07	incl. in rate	incl. in rate	\$204.29
Steelworker	Active	1.00	0.4	10	4.00	L	\$78.10	incl. in rate	incl. in rate	\$312.40
Truck Driver (light)	Active	1.00	0.4	10	4.00	L	\$65.82	incl. in rate	incl. in rate	\$263.30
Truck, Off-Road, Articulated Rear, 20cy	Active	1.00	0.4	10	4.00	E	\$117.28	incl. in rate	incl. in rate	\$469.12
Labor Hours					12	TOTAL LABOR				\$779.99
Equipment Hours					4	TOTAL EQUIPMENT				\$469.12

MATERIAL COSTS						
Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost
Consumables 5% labor (saw blades, drill bits, etc)	1.00	LS	1.000	1.00	\$39.00	\$39.00
TOTAL MATERIAL						\$39.00

SUBCONTRACT COSTS				
Description	Quantity	Units	Notes / Company	Contract or Quote Amount
TOTAL SUBCONTRACTS				\$0.00

SUMMARY OF COSTS									
Labor Cost	\$779.99	Labor Burden @	0.0%	\$0.00					\$779.99
Material Cost	\$39.00	Material Tax @	7.75%	\$3.02					\$42.02
Equipment Cost	\$469.12	Equipment Tax @	7.75%	\$36.36					\$505.48
Subcontractors	\$0.00								\$0.00
DIRECT COST SUBTOTALS	\$1,288			\$39				DIRECT COST SUBTOTALS	\$1,327
Additional Pay Item Notes :									

Assumed 1/2 day of work done by 1 Steelman to cut and 1 Laborer to load in the truck.

### 2.097 Copco Cove - Signs to be removed and hauled away

PAY ITEM NUMBER	:	2.097	Project	:	KRRP - Copco 1
Description	:	Copco Cove - Signs to be removed and hauled away	Group	:	D16
Quantity	:	6.00 EA			
Daily Production	:	15.00 EA per	10	hour shift	
Work Days	:	0.4	Days		
Unit Price	:	\$290.01	per EA		
Total Cost	:	\$1,740			
			Project #	:	2
			Estimator	:	Eric Jones
			Probable Low Cost Parameter	:	EA per Total Cost Unit Price Per EA
			Probable High Cost Parameter	:	16.5 \$1,566 \$261.01
				:	13.5 \$1,914 \$319.01

Description	Active Idle	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Loader, FE Rubber Tire (5.25cy)	Active	1.00	0.4	10	4.00	E	\$76.00	incl. in rate	incl. in rate	\$304.00
Truck, Flatbed (4x4, 10,000 gvw)	Active	1.00	0.4	10	4.00	E	\$32.06	incl. in rate	incl. in rate	\$128.24
Truck Driver (heavy)	Active	1.00	0.4	10	4.00	L	\$66.92	incl. in rate	incl. in rate	\$267.70
Truck, Pickup (4x4, 3/4tn)	Active	1.00	0.4	10	4.00	E	\$16.99	incl. in rate	incl. in rate	\$67.96
Labor Foreman	Active	1.00	0.4	10	4.00	L	\$58.87	incl. in rate	incl. in rate	\$235.49
Laborer	Active	2.00	0.4	10	8.00	L	\$51.07	incl. in rate	incl. in rate	\$408.58
Equipment Operator (medium)	Active	1.00	0.4	10	4.00	L	\$72.34	incl. in rate	incl. in rate	\$289.34
Labor Hours					20	TOTAL LABOR				\$1,201.11
Equipment Hours					12	TOTAL EQUIPMENT				\$500.20

Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost
TOTAL MATERIAL						\$0.00

Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount
TOTAL SUBCONTRACTS					\$0.00

Labor Cost	\$1,201.11	Labor Burden @	0.0%			\$1,201.11
Material Cost	\$0.00	Material Tax @	7.75%	\$0.00		\$0.00
Equipment Cost	\$500.20	Equipment Tax @	7.75%	\$38.77		\$538.97
Subcontractors	\$0.00					\$0.00
<b>DIRECT COST SUBTOTALS</b>	<b>\$1,701</b>			<b>\$39</b>	<b>DIRECT COST SUBTOTALS</b>	<b>\$1,740</b>

Based on a 4 man crew removing signs with loader, extra time accounts for getting equipment to area, flatbed truck is expected to be used whole day to dispose material.



**2.098 Copco Cove - Wood plank tables to be removed and hauled away**

PAY ITEM NUMBER	:	2.098	Project	:	KRRP - Copco 1
Description	:	Copco Cove - Wood plank tables to be removed and hauled away	Group	:	D16
Quantity	:	2.00 EA			
Daily Production	:	30.00 EA per	10	hour shift	
Work Days	:	0.1 Days	Project #	:	2
Unit Price	:	\$166.78 per EA	Estimator	:	Eric Jones
Total Cost	:	\$334	EA per	:	33
			Total Cost	:	\$300
			Unit Price Per EA	:	\$150.10
			Probable Low Cost Parameter	:	27
			Probable High Cost Parameter	:	\$367
				:	\$183.45

Description	Active Idle	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Loader, FE Rubber Tire (5.25cy)	Active	1.00	0.1	10	1.00	E	\$76.00	incl. in rate	incl. in rate	\$76.00
Truck, Pickup (4x4, 3/4tn)	Active	1.00	0.1	10	1.00	E	\$16.99	incl. in rate	incl. in rate	\$16.99
Equipment Operator (medium)	Active	1.00	0.1	10	1.00	L	\$72.34	incl. in rate	incl. in rate	\$72.34
Labor Foreman	Active	1.00	0.1	10	1.00	L	\$58.87	incl. in rate	incl. in rate	\$58.87
Laborer	Active	2.00	0.1	10	2.00	L	\$51.07	incl. in rate	incl. in rate	\$102.15
Labor Hours					4	TOTAL LABOR				\$233.35
Equipment Hours					2	TOTAL EQUIPMENT				\$92.99

Description	Item	Order	Conversion	Order	Order	Material
	Quantity	Unit	Factor / Waste	Quantity	Price	Cost
TOTAL MATERIAL						\$0.00

Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount
		EA EA			
TOTAL SUBCONTRACTS					\$0.00

Labor Cost	\$233.35	Labor Burden @	0.0%			\$233.35
Material Cost	\$0.00	Material Tax @	7.75%	\$0.00		\$0.00
Equipment Cost	\$92.99	Equipment Tax @	7.75%	\$7.21		\$100.20
Subcontractors	\$0.00					\$0.00
<b>DIRECT COST SUBTOTALS</b>	<b>\$326</b>			<b>\$7</b>	<b>DIRECT COST SUBTOTALS</b>	<b>\$334</b>

Base don four man crew taking 2 hours to remove and load tables. Tables to be loaded on same flatbed truck from pay item 97.

### 2.099 Copco Cove - Regrade

PAY ITEM NUMBER	:	2.099	Project	:	KRRP - Copco 1	
Description	:	Copco Cove - Regrade	Group	:	D16	
Quantity	:	2.30 AC				
Daily Production	:	1.25 AC per	10	hour shift		
Work Days	:	1.8 Days	Project #	:	2	
Unit Price	:	\$5,368.26 per AC	Estimator	:	Eric Jones	
Total Cost	:	\$12,347	Probable Low Cost Parameter	:	1.375	
			Probable High Cost Parameter	:	1.0625	
				AC per	Total Cost	Unit Price Per AC
					\$11,112	\$4,831.44
					\$14,199	\$6,173.50

Description	Active Idle	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Dozer (125hp)(CATD6)	Active	1.00	1.8	10	18.00	E	\$82.58	incl. in rate	incl. in rate	\$1,486.44
Truck, On-Highway Dump (6x4, 12cy)	Active	1.00	1.8	10	18.00	E	\$57.41	incl. in rate	incl. in rate	\$1,033.38
Grader, 180hp, 13' blade	Active	1.00	1.8	10	18.00	E	\$84.69	incl. in rate	incl. in rate	\$1,524.42
Roller, Single Drum (steel wheel, 12.0 - 14.9 MTn)	Active	1.00	1.8	10	18.00	E	\$76.79	incl. in rate	incl. in rate	\$1,382.22
Truck, Pickup (4x4, 3/4tn)	Active	1.00	1.8	10	18.00	E	\$16.99	incl. in rate	incl. in rate	\$305.82
Truck Driver (heavy)	Active	1.00	1.8	10	18.00	L	\$66.92	incl. in rate	incl. in rate	\$1,204.63
Labor Foreman (out)	Active	1.00	1.8	10	18.00	L	\$58.87	incl. in rate	incl. in rate	\$1,059.70
Equipment Operator (medium)	Active	3.00	1.8	10	54.00	L	\$72.34	incl. in rate	incl. in rate	\$3,906.14
					Labor Hours	90	TOTAL LABOR			\$6,170.47
					Equipment Hours	90	TOTAL EQUIPMENT			\$5,732.28

Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price		Material Cost
						TOTAL MATERIAL	\$0.00

Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount
TOTAL SUBCONTRACTS					\$0.00

Labor Cost	\$6,170.47	Labor Burden @	0.0%		\$6,170.47
Material Cost	\$0.00	Material Tax @	7.75%	\$0.00	\$0.00
Equipment Cost	\$5,732.28	Equipment Tax @	7.75%	\$444.25	\$6,176.53
Subcontractors	\$0.00				\$0.00
<b>DIRECT COST SUBTOTALS</b>	<b>\$11,903</b>		<b>\$444</b>		<b>\$12,347</b>

**Additional Pay Item Notes :**

Production is based off of 12 man crew finishing .5 acres a shift, dozers will be regrading area, grader will be used to fine grade, tractors will be used to rip material for seeding, seed sprayers will use Idaho Fescue seed, water truck will continuously water area for 2 weeks.



PAY ITEM INFORMATION									
PAY ITEM NUMBER	:	5.006	Project	:	KRRP - Copco 1				
Description	:	Remove Frame dead end structures 60-80 ft high @Switchyard	Group	:	D05				
Quantity	:	4.00 EA							
Daily Production	:	1.00 EA per	10	hour shift	Project #	:	2		
Work Days	:	4.0 Days			Estimator	:	Mihaela Tomulescu	EA per	Total Cost
Unit Price	:	\$11,850.45 per EA			Probable Low Cost Parameter			1.15	\$40,292
Total Cost	:	\$47,402			Probable High Cost Parameter			0.7	\$61,622
									Unit Price Per EA
									\$10,072.88
									\$15,405.58

CREW COSTS										
Description	Active Idle	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Labor Foreman	Active	1.00	4.0	10	40.00	L	\$58.87	incl. in rate	incl. in rate	\$2,354.88
Laborer	Active	1.00	4.0	10	40.00	L	\$51.07	incl. in rate	incl. in rate	\$2,042.92
Equipment Operator (crane)	Active	2.00	4.0	10	80.00	L	\$81.60	incl. in rate	incl. in rate	\$6,527.84
Equipment Operator (medium)	Active	1.00	4.0	10	40.00	L	\$72.34	incl. in rate	incl. in rate	\$2,893.44
Electrician	Active	3.00	4.0	10	120.00	L	\$55.80	incl. in rate	incl. in rate	\$6,696.36
Steelworker	Active	1.00	4.0	10	40.00	L	\$78.10	incl. in rate	incl. in rate	\$3,124.00
Hydraulic Crane (80tn)	Active	2.00	4.0	10	80.00	E	\$197.66	incl. in rate	incl. in rate	\$15,812.80
Loader, FE Rubber Tire (5.25cy)	Active	1.00	4.0	10	40.00	E	\$76.00	incl. in rate	incl. in rate	\$3,040.00
Truck, Utility, with Man-Basket	Active	1.00	4.0	10	40.00	E	\$31.90	incl. in rate	incl. in rate	\$1,276.00
					Labor Hours	360			TOTAL LABOR	\$23,639.44
					Equipment Hours	160			TOTAL EQUIPMENT	\$20,128.80

MATERIAL COSTS						
Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost
Consumables 5% labor (saw blades, drill bits, etc)	1.00	LS	1.000	1.00	\$1,181.97	\$1,181.97
						TOTAL MATERIAL
						\$1,181.97

SUBCONTRACT COSTS					
Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount
Hauling cost to landfill	4.00	Loads	18 CY per load	\$200.00	\$800.00
					TOTAL SUBCONTRACTS
					\$800.00

SUMMARY OF COSTS						
Labor Cost	\$23,639.44	Labor Burden @	0.0%	\$0.00		\$23,639.44
Material Cost	\$1,181.97	Material Tax @	7.75%	\$91.60		\$1,273.57
Equipment Cost	\$20,128.80	Equipment Tax @	7.75%	\$1,559.98		\$21,688.78
Subcontractors	\$800.00					\$800.00
DIRECT COST SUBTOTALS	\$45,750			\$1,652	DIRECT COST SUBTOTALS	\$47,402
Additional Pay Item Notes :						
Figuring it will take one day for each structure to be removed. Assuming that the structure will need to be cut into pieces for hauling. Hauling has being accounted for by an allowance line item.						

PAY ITEM INFORMATION									
PAY ITEM NUMBER	:	5.007	Project	:	KRRP - Copco 1				
Description	:	Remove Power Circuit Breakers 69KV @Switchyard	Group	:	D05				
Quantity	:	2.00 EA							
Daily Production	:	1.25 EA per	10	hour shift	Project #	:	2		
Work Days	:	1.6	Days		Estimator	:	Mihaela Tomulescu	EA per	Total Cost
Unit Price	:	\$6,116.39	per EA		Probable Low Cost Parameter			1.375	\$11,010
Total Cost	:	\$12,233			Probable High Cost Parameter			0.9375	\$15,291
									Unit Price Per EA
									\$5,504.75
									\$7,645.49

CREW COSTS										
Description	Active Idle	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Labor Foreman	Active	2.00	1.6	10	32.00	L	\$58.87	incl. in rate	incl. in rate	\$1,883.90
Electrician	Active	2.00	1.6	10	32.00	L	\$55.80	incl. in rate	incl. in rate	\$1,785.70
Hydraulic Crane (35tn)	Active	1.00	1.6	10	16.00	E	\$117.77	incl. in rate	incl. in rate	\$1,884.32
Equipment Operator (crane)	Active	1.00	1.6	10	16.00	L	\$81.60	incl. in rate	incl. in rate	\$1,305.57
Laborer	Active	2.00	1.6	10	32.00	L	\$51.07	incl. in rate	incl. in rate	\$1,634.34
Truck, Flatbed (4x4, 10,000 gvw)	Active	1.00	1.6	10	16.00	E	\$27.09	incl. in rate	incl. in rate	\$433.44
Truck, Utility, with Man-Basket	Active	1.00	1.6	10	16.00	E	\$31.90	incl. in rate	incl. in rate	\$510.40
Truck Driver (light)	Active	2.00	1.6	10	32.00	L	\$65.82	incl. in rate	incl. in rate	\$2,106.37
Labor Hours					144	TOTAL LABOR				\$8,715.87
Equipment Hours					48	TOTAL EQUIPMENT				\$2,828.16

MATERIAL COSTS						
Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost
Consumables 5% labor (saw blades, drill bits, etc)	1.00	LS	1.000	1.00	\$435.79	\$435.79
						TOTAL MATERIAL
						\$435.79

SUBCONTRACT COSTS					
Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount
					TOTAL SUBCONTRACTS
					\$0.00

SUMMARY OF COSTS						
Labor Cost	\$8,715.87	Labor Burden @	0.0%	\$0.00		\$8,715.87
Material Cost	\$435.79	Material Tax @	7.75%	\$33.77		\$469.57
Equipment Cost	\$2,828.16	Equipment Tax @	7.75%	\$219.18		\$3,047.34
Subcontractors	\$0.00					\$0.00
DIRECT COST SUBTOTALS	\$11,980			\$253	DIRECT COST SUBTOTALS	\$12,233
Additional Pay Item Notes :						

Production is based off of RSMs using Crew formed of 1 Forman, 1 Electrician,1Crane. Considered 1 laborer to help loading circuit breakers in the truck for saving it in the designated place. 1 utility truck access poles, string conductor, modify structure arms, provide guard structures, etc. Crews may be working simultaneously along the project alignment and substations, power plant and switchyard.

PAY ITEM INFORMATION									
PAY ITEM NUMBER	:	5.008	Project	:	KRRP - Copco 1				
Description	:	Remove Disconnect Switches @Switchyard	Group	:	D05				
Quantity	:	4.00 EA							
Daily Production	:	1.25 EA per	10	hour shift	Project #	:	2		
Work Days	:	3.2	Days		Estimator	:	Mihaela Tomulescu	EA per	Total Cost
Unit Price	:	\$8,710.21	per EA		Probable Low Cost Parameter			1.375	\$31,357
Total Cost	:	\$34,841			Probable High Cost Parameter			0.9375	\$43,551
									Unit Price Per EA
									\$7,839.19
									\$10,887.76

CREW COSTS										
Description	Active Idle	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Labor Foreman	Active	1.00	3.2	10	32.00	L	\$58.87	incl. in rate	incl. in rate	\$1,883.90
Electrician	Active	2.00	3.2	10	64.00	L	\$55.80	incl. in rate	incl. in rate	\$3,571.39
Hydraulic Excavator (6.0cy)	Active	1.00	3.2	10	32.00	E	\$324.12	incl. in rate	incl. in rate	\$10,371.84
Equipment Operator (medium)	Active	1.00	3.2	10	32.00	L	\$72.34	incl. in rate	incl. in rate	\$2,314.75
Laborer	Active	2.00	3.2	10	64.00	L	\$51.07	incl. in rate	incl. in rate	\$3,268.67
Truck, Flatbed (4x4, 10,000 gvw)	Active	1.00	3.2	10	32.00	E	\$27.09	incl. in rate	incl. in rate	\$866.88
Truck, Utility, with Man-Basket	Active	2.00	3.2	10	64.00	E	\$31.90	incl. in rate	incl. in rate	\$2,041.60
Truck Driver (light)	Active	2.00	3.2	10	64.00	L	\$65.82	incl. in rate	incl. in rate	\$4,212.74
Truck Driver (heavy)	Active	1.00	3.2	10	32.00	L	\$75.72	incl. in rate	incl. in rate	\$2,423.17
					Labor Hours	288	TOTAL LABOR			\$17,674.62
					Equipment Hours	128	TOTAL EQUIPMENT			\$13,280.32

MATERIAL COSTS						
Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost
Consumables 15% labor (saw blades, drill bits, etc)	1.00	LS	1.000	1.00	\$2,651.19	\$2,651.19
						TOTAL MATERIAL
						\$2,651.19

SUBCONTRACT COSTS					
Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount
					TOTAL SUBCONTRACTS
					\$0.00

SUMMARY OF COSTS						
Labor Cost	\$17,674.62	Labor Burden @	0.0%	\$0.00		\$17,674.62
Material Cost	\$2,651.19	Material Tax @	7.75%	\$205.47		\$2,856.66
Equipment Cost	\$13,280.32	Equipment Tax @	7.75%	\$1,029.22		\$14,309.54
Subcontractors	\$0.00					\$0.00
DIRECT COST SUBTOTALS	\$33,606			\$1,235	DIRECT COST SUBTOTALS	\$34,841
Additional Pay Item Notes :						

PAY ITEM COST DETAIL WORKSHEET

5.009 Remove all associated auxiliary equipment @Switchyard (Allowance)

PAY ITEM INFORMATION									
PAY ITEM NUMBER	:	5.009	Project	:	KRRP - Copco 1				
Description	:	Remove all associated auxiliary equipment @Switchyard (Allowance)	Group	:	D05				
Quantity	:	1.00 LS							
Daily Production	:	1.25 LS per	10	hour shift	Project #	:	2		
Work Days	:	3.0	Days		Estimator	:	Mihaela Tomulescu	LS per	
Unit Price	:	\$53,473.36	per LS		Probable Low Cost Parameter			1.375	Total Cost
Total Cost	:	\$53,473			Probable High Cost Parameter			0.9375	\$66,842
									Unit Price Per LS
									\$48,126
									\$48,126.02
									\$66,841.70

CREW COSTS											
Description	Active Idle	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost	
Labor Foreman	Active	1.00	3.0	10	30.00	L	\$58.87	incl. in rate	incl. in rate	\$1,766.16	
Electrician	Active	4.00	3.0	10	120.00	L	\$55.80	incl. in rate	incl. in rate	\$6,696.36	
Hydraulic Excavator (2.5cy)	Active	1.00	3.0	10	30.00	E	\$205.40	incl. in rate	incl. in rate	\$6,162.00	
Equipment Operator (medium)	Active	1.00	3.0	10	30.00	L	\$72.34	incl. in rate	incl. in rate	\$2,170.08	
Truck, Utility, with Man-Basket	Active	1.00	3.0	10	30.00	E	\$31.90	incl. in rate	incl. in rate	\$957.00	
Hydraulic Crane (17tn)	Active	1.00	3.0	10	30.00	E	\$82.43	incl. in rate	incl. in rate	\$2,472.90	
Laborer	Active	4.00	3.0	10	120.00	L	\$51.07	incl. in rate	incl. in rate	\$6,128.76	
Truck Driver (heavy)	Active	3.00	3.0	10	90.00	L	\$75.72	incl. in rate	incl. in rate	\$6,815.16	
Truck, On-Highway Dump (6x4, 12cy)	Active	2.00	3.0	10	60.00	E	\$57.41	incl. in rate	incl. in rate	\$3,444.60	
Equipment Operator (crane)	Active	1.00	3.0	10	30.00	L	\$81.60	incl. in rate	incl. in rate	\$2,447.94	
					Labor Hours	420	TOTAL LABOR				\$26,024.46
					Equipment Hours	150	TOTAL EQUIPMENT				\$13,036.50

MATERIAL COSTS						
Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost
Consumables 5% labor (saw blades, drill bits, etc)	1.00	LS	1.000	1.00	\$1,301.22	\$1,301.22
						TOTAL MATERIAL
						\$1,301.22

SUBCONTRACT COSTS					
Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount
Rent trailer with cable pulling rig, for high voltage line work - Rent per day	1.00	days		4.00	\$3,000.00
					TOTAL SUBCONTRACTS
					\$12,000.00

SUMMARY OF COSTS						
Labor Cost	\$26,024.46	Labor Burden @	0.0%	\$0.00		\$26,024.46
Material Cost	\$1,301.22	Material Tax @	7.75%	\$100.84		\$1,402.07
Equipment Cost	\$13,036.50	Equipment Tax @	7.75%	\$1,010.33		\$14,046.83
Subcontractors	\$12,000.00					\$12,000.00
DIRECT COST SUBTOTALS	\$52,362			\$1,111	DIRECT COST SUBTOTALS	\$53,473
Additional Pay Item Notes :						

Production is based off of RSMs using Crew formed of 1 Forman, 4 Electrician, 2 laborer, 1 Excavator & 1 crane for lift, position and load in the truck,, 1 Hydraulic rock-splitting/rock-drilling equipment to break equipment foundations, 1 utility truck access poles, string conductor, modify structure arms, provide guard structures, etc. Crews may be working simultaneously along the project alignment and substations, hydro plant and switchyard.

PAY ITEM INFORMATION									
PAY ITEM NUMBER	:	5.010			Project	:	KRRP - Copco 1		
Description	:	(6 Poles)			Group	:	D05		
Quantity	:	6.00	EA						
Daily Production	:	3.75	EA per	10	hour shift	Project #	:	2	
Work Days	:	1.6	Days		Estimator	:	Mihaela Tomulescu	EA per	Total Cost
Unit Price	:	\$3,306.79	per EA		Probable Low Cost Parameter		4.125	\$17,857	\$2,976.11
Total Cost	:	\$19,841			Probable High Cost Parameter		2.8125	\$24,801	\$4,133.48

CREW COSTS										
Description	Active Idle	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Labor Foreman	Active	1.00	1.6	10	16.00	L	\$58.87	incl. in rate	incl. in rate	\$941.95
Laborer	Active	1.00	1.6	10	16.00	L	\$51.07	incl. in rate	incl. in rate	\$817.17
Equipment Operator (crane)	Active	2.00	1.6	10	32.00	L	\$81.60	incl. in rate	incl. in rate	\$2,611.14
Equipment Operator (medium)	Active	1.00	1.6	10	16.00	L	\$72.34	incl. in rate	incl. in rate	\$1,157.38
Electrician	Active	3.00	1.6	10	48.00	L	\$55.80	incl. in rate	incl. in rate	\$2,678.54
Steelworker	Active	1.00	1.6	10	16.00	L	\$78.10	incl. in rate	incl. in rate	\$1,249.60
Hydraulic Crane (80tn)	Active	2.00	1.6	10	32.00	E	\$197.66	incl. in rate	incl. in rate	\$6,325.12
Loader, FE Rubber Tire (5.25cy)	Active	1.00	1.6	10	16.00	E	\$76.00	incl. in rate	incl. in rate	\$1,216.00
Truck, Utility, with Man-Basket	Active	1.00	1.6	10	16.00	E	\$31.90	incl. in rate	incl. in rate	\$510.40
Labor Hours					144	TOTAL LABOR				\$9,455.78
Equipment Hours					64	TOTAL EQUIPMENT				\$8,051.52

MATERIAL COSTS						
Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost
Consumables 5% labor (saw blades, drill bits, etc)	1.00	LS	1.000	1.00	\$472.79	\$472.79
						TOTAL MATERIAL
						\$472.79

SUBCONTRACT COSTS					
Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount
Hauling cost to landfill	6.00	Loads	18 CY per load	\$200.00	\$1,200.00
					TOTAL SUBCONTRACTS
					\$1,200.00

SUMMARY OF COSTS						
Labor Cost	\$9,455.78	Labor Burden @	0.0%	\$0.00		\$9,455.78
Material Cost	\$472.79	Material Tax @	7.75%	\$36.64		\$509.43
Equipment Cost	\$8,051.52	Equipment Tax @	7.75%	\$623.99		\$8,675.51
Subcontractors	\$1,200.00					\$1,200.00
DIRECT COST SUBTOTALS	\$19,180			\$661	DIRECT COST SUBTOTALS	\$19,841
Additional Pay Item Notes :						



PAY ITEM INFORMATION									
PAY ITEM NUMBER	:	5.011	Project	:	KRRP - Copco 1				
Description	:	Diversion Dam	Group	:	D05				
Quantity	:	8.00 EA							
Daily Production	:	2.50 EA per	10	hour shift	Project #	:	2		
Work Days	:	3.2	Days		Estimator	:	Mihaela Tomulescu	EA per	Total Cost
Unit Price	:	\$1,794.89	per EA		Probable Low Cost Parameter			2.75	\$12,923
Total Cost	:	\$14,359			Probable High Cost Parameter			1.875	\$17,949
									Unit Price Per EA
									\$1,615.40
									\$2,243.61

CREW COSTS										
Description	Active Idle	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Labor Foreman	Active	1.00	3.2	10	32.00	L	\$58.87	incl. in rate	incl. in rate	\$1,883.90
Electrician	Active	1.00	3.2	10	32.00	L	\$55.80	incl. in rate	incl. in rate	\$1,785.70
Hydraulic Crane (17tn)	Active	1.00	3.2	10	32.00	E	\$82.43	incl. in rate	incl. in rate	\$2,637.76
Equipment Operator (medium)	Active	1.00	3.2	10	32.00	L	\$72.34	incl. in rate	incl. in rate	\$2,314.75
Truck Driver (heavy)	Active	1.00	3.2	10	32.00	L	\$75.72	incl. in rate	incl. in rate	\$2,423.17
Truck, Flatbed (4x4, 10,000 gvw)	Active	1.00	3.2	10	32.00	E	\$27.09	incl. in rate	incl. in rate	\$866.88
Laborer	Active	1.00	3.2	10	32.00	L	\$51.07	incl. in rate	incl. in rate	\$1,634.34
Labor Hours					160	TOTAL LABOR				\$10,041.86
Equipment Hours					64	TOTAL EQUIPMENT				\$3,504.64

MATERIAL COSTS						
Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost
Consumables 5% labor (saw blades, drill bits, etc)	1.00	LS	1.000	1.00	\$502.09	\$502.09
						TOTAL MATERIAL
						\$502.09

SUBCONTRACT COSTS					
Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount
					TOTAL SUBCONTRACTS
					\$0.00

SUMMARY OF COSTS						
Labor Cost	\$10,041.86	Labor Burden @	0.0%	\$0.00		\$10,041.86
Material Cost	\$502.09	Material Tax @	7.75%	\$38.91		\$541.00
Equipment Cost	\$3,504.64	Equipment Tax @	7.75%	\$271.61		\$3,776.25
Subcontractors	\$0.00					\$0.00
DIRECT COST SUBTOTALS	\$14,049			\$311	DIRECT COST SUBTOTALS	\$14,359
Additional Pay Item Notes :						
Production is based off of RSMs using Crew R3 (1 Forman and 1 Electrician,1 Crane). Considered one laborer for demolish the pole and helping placing poles in a designated place and loading it in the truck for disposal. Crews may be working simultaneously along the project alignment and substations, power plant and switchyard.						

PAY ITEM INFORMATION									
PAY ITEM NUMBER	:	5.012	Project	:	KRRP - Copco 1				
Description	:	Remove "Production Poles" in general area Copco#1	Group	:	D05				
Quantity	:	7.00 EA							
Daily Production	:	2.50 EA per	10	hour shift	Project #	:	2		
Work Days	:	2.8	Days		Estimator	:	Mihaela Tomulescu	EA per	Total Cost
Unit Price	:	\$3,599.99	per EA		Probable Low Cost Parameter			2.875	\$21,420
Total Cost	:	\$25,200			Probable High Cost Parameter			1.75	\$32,760
									Unit Price Per EA
									\$3,059.99
									\$4,679.99

CREW COSTS										
Description	Active Idle	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Labor Foreman	Active	1.00	2.8	10	28.00	L	\$58.87	incl. in rate	incl. in rate	\$1,648.42
Electrician	Active	1.00	2.8	10	28.00	L	\$55.80	incl. in rate	incl. in rate	\$1,562.48
Hydraulic Crane (17tn)	Active	1.00	2.8	10	28.00	E	\$82.43	incl. in rate	incl. in rate	\$2,308.04
Equipment Operator (medium)	Active	1.00	2.8	10	28.00	L	\$72.34	incl. in rate	incl. in rate	\$2,025.41
Laborer	Active	1.00	2.8	10	28.00	L	\$51.07	incl. in rate	incl. in rate	\$1,430.04
Truck, Flatbed (4x4, 10,000 gvw)	Active	1.00	2.8	10	28.00	E	\$27.09	incl. in rate	incl. in rate	\$758.52
Truck Driver (heavy)	Active	1.00	2.8	10	28.00	L	\$75.72	incl. in rate	incl. in rate	\$2,120.27
Labor Hours					140	TOTAL LABOR				\$8,786.62
Equipment Hours					56	TOTAL EQUIPMENT				\$3,066.56

MATERIAL COSTS						
Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost
Consumables 5% labor (saw blades, drill bits, etc)	1.00	LS	1.000	1.00	\$439.33	\$439.33
Topsoil placement and grading, loam or topsoil, F.E. loader, 1-1/2 C.Y., remove and stockpile on site, spread from pile to rough finish grade	7.00	CY	1.000	7.00	\$4.74	\$33.18
						TOTAL MATERIAL
						\$472.51

SUBCONTRACT COSTS					
Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount
					TOTAL SUBCONTRACTS
					\$0.00

SUMMARY OF COSTS						
Labor Cost	\$8,786.62	Labor Burden @	0.0%	\$0.00		\$8,786.62
Material Cost	\$472.51	Material Tax @	7.75%	\$36.62		\$509.13
Equipment Cost	\$3,066.56	Equipment Tax @	7.75%	\$237.66		\$3,304.22
Subcontractors	\$0.00	Subcontractor MU @				\$12,599.97
DIRECT COST SUBTOTALS	\$12,326			\$274	DIRECT COST SUBTOTALS	\$25,200

Additional Pay Item Notes :	
Production is based off of RSMs using Crew R3 (1 Forman and 1 Electrician,1 Crane). Considered one laborer for demolish the pole and helping placing poles in a designated place and loading them in the truck for disposal. This process includes filling in pole locations with gravel, clean fill and topsoil. Crews may be working simultaneously along the project alignment and substations, power plant and switchyard.	

**5.013 Remove "Village Houses Distribution Poles" near dam (assumed 10)**

Additional Pay Item Notes :
<p>Production is based off of RSMs using Crew R3 (1 Foreman and 1 Electrician,1 Crane). Considered one laborer for demolish the pole and helping placing poles in a designated place and loading them in the truck for disposal. This process includes filling in pole locations with gravel, clean fill and topsoil. Crews may be working simultaneously along the project alignment and substations, power plant and switchyard.</p>

**5.014 Remove 69 KV Distribution line 1.6 miles (30 poles)**

This process includes filling in pole locations with gravel, clean fill and topsoil. Crews may be working simultaneously along the project alignment and substations, power plant and switchyard. Figuring crew will get three poles a day due to repositioning of equipment at each location. Loader will be used to do minor grading in the removal location for crane setup.

PAY ITEM INFORMATION									
PAY ITEM NUMBER	:	5.015	Project	:	KRRP - Copco 1				
Description	:	distribution intact	Group	:	D05				
Quantity	:	2.00 EA							
Daily Production	:	2.50 EA per	10	hour shift	Project #	:	2		
Work Days	:	0.8 Days			Estimator	:	Mihaela Tomulescu	EA per	Total Cost
Unit Price	:	\$2,521.03 per EA			Probable Low Cost Parameter			2.875	\$4,286
Total Cost	:	\$5,042			Probable High Cost Parameter			1.75	\$6,555
									Unit Price Per EA
									\$2,142.88
									\$3,277.34

CREW COSTS										
Description	Active Idle	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Labor Foreman	Active	2.00	0.8	10	16.00	L	\$58.87	incl. in rate	incl. in rate	\$941.95
Electrician	Active	4.00	0.8	10	32.00	L	\$55.80	incl. in rate	incl. in rate	\$1,785.70
Truck, Pickup (4x4, 3/4tn)	Active	1.00	0.8	10	8.00	E	\$16.99	incl. in rate	incl. in rate	\$135.92
Equipment Operator (medium)	Active	1.00	0.8	10	8.00	L	\$72.34	incl. in rate	incl. in rate	\$578.69
Truck, Utility, with Man-Basket	Active	2.00	0.8	10	16.00	E	\$31.90	incl. in rate	incl. in rate	\$510.40
Laborer	Active	2.00	0.8	10	16.00	L	\$51.07	incl. in rate	incl. in rate	\$817.17
Labor Hours					72	TOTAL LABOR				\$4,123.50
Equipment Hours					24	TOTAL EQUIPMENT				\$646.32

MATERIAL COSTS						
Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost
Consumables 5% labor (saw blades, drill bits, etc)	1.00	LS	1.000	1.00	\$206.18	\$206.18
						TOTAL MATERIAL
						\$206.18

SUBCONTRACT COSTS				
Description	Quantity	Units	Notes / Company	Unit Price
				Contract or Quote Amount
				TOTAL SUBCONTRACTS
				\$0.00

SUMMARY OF COSTS					
Labor Cost	\$4,123.50	Labor Burden @	0.0%	\$0.00	\$4,123.50
Material Cost	\$206.18	Material Tax @	7.75%	\$15.98	\$222.15
Equipment Cost	\$646.32	Equipment Tax @	7.75%	\$50.09	\$696.41
Subcontractors	\$0.00				\$0.00
DIRECT COST SUBTOTALS	\$4,976		\$66	DIRECT COST SUBTOTALS	\$5,042
Additional Pay Item Notes :					

Production is based off of RSMs using Crew formed from 2 Forman and 4 Electrician,2 Laborer, 2 utility truck access poles, string conductor, modify structure arms, provide guard structures., 2 Laborer to help ground side. Crews may be working simultaneously along the project alignment and substations, power plant and switchyard.



### 5.034 Remove Maintenance Building, North & South Residence

PAY ITEM NUMBER	:	5.034	Project	:	KRRP - Copco 1
Description	:	Remove Maintenance Building, North & South Residence	Group	:	D10
Quantity	:	6,030.00 SF			
Daily Production	:	1,125.00 SF per	10	hour shift	
Work Days	:	5.4	Days		
Unit Price	:	\$14.02	per SF		
Total Cost	:	\$84,565			
			Project #	:	2
			Estimator	:	Eric Jones
			Probable Low Cost Parameter	:	1293.75
			Probable High Cost Parameter	:	843.75
					Total Cost
					Unit Price Per SF
					\$71,881
					\$11.92
					\$105,707
					\$17.53

Description	Active Idle	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Labor Foreman	Active	1.00	5.4	10	54.00	L	\$58.87	incl. in rate	incl. in rate	\$3,179.09
Laborer	Active	4.00	5.4	10	216.00	L	\$51.07	incl. in rate	incl. in rate	\$11,031.77
Equipment Operator (medium)	Active	2.00	5.4	10	108.00	L	\$72.34	incl. in rate	incl. in rate	\$7,812.29
Hydraulic Excavator (5.0cy)	Active	1.00	5.4	10	54.00	E	\$276.50	incl. in rate	incl. in rate	\$14,931.00
Loader, FE Rubber Tire (3.5cy)	Active	1.00	5.4	10	54.00	E	\$63.11	incl. in rate	incl. in rate	\$3,407.94
Labor Hours					378	TOTAL LABOR				\$22,023.14
Equipment Hours					108	TOTAL EQUIPMENT				\$18,338.94

Description	Item	Order	Conversion	Order	Order	Material
	Quantity	Unit	Factor / Waste	Quantity	Price	Cost
TOTAL MATERIAL						\$0.00

Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount
Dump Fee Conversion (SFXH* 33/27)	884	CY			\$0.00
Conversion CY to Tons (2 tons per CY)	443.00	tons	Klamath County Landfill	\$74.00	\$32,782.00
Hauling cost to landfill	50.00	Loads	18 CY per load	\$200.00	\$10,000.00
					\$0.00
TOTAL SUBCONTRACTS					\$42,782.00

Labor Cost	\$22,023.14	Labor Burden @	0.0%		\$22,023.14
Material Cost	\$0.00	Material Tax @	7.75%	\$0.00	\$0.00
Equipment Cost	\$18,338.94	Equipment Tax @	7.75%	\$1,421.27	\$19,760.21
Subcontractors	\$42,782.00				\$42,782.00
<b>DIRECT COST SUBTOTALS</b>	<b>\$83,144</b>			<b>\$1,421</b>	<b>DIRECT COST SUBTOTALS</b>
					<b>\$84,565</b>
<b>Additional Pay Item Notes :</b>					
<div> Cost accounts for mobilizing equipment, demolition of structures, Disposal, and demobilization. </div>					

# **COPCO 2 DAM REMOVAL**



### 3.001 Right Side Cofferdam- Furnish & Unload Material

PAY ITEM NUMBER	:	3.001	Project	:	KRRP - Copco 2
Description	:	Right Side Cofferdam- Furnish & Unload Material	Group	:	D02
Quantity	:	20.00 LD			
Daily Production	:	20.00 LD per 10 hour shift	Project #	:	3
Work Days	:	1.0 Days	Estimator	:	Eric Jones
Unit Price	:	\$2,009.34 per LD	Probable Low Cost Parameter	:	LD per 23 \$34,159
Total Cost	:	\$40,187	Probable High Cost Parameter	:	LD per 16 \$48,224
					Unit Price Per LD \$1,707.94 \$2,411.20

Description	Active Idle	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Labor Foreman	Active	1.00	1.0	10	10.00	L	\$58.87	incl. in rate	incl. in rate	\$588.72
Laborer	Active	1.00	1.0	10	10.00	L	\$51.07	incl. in rate	incl. in rate	\$510.73
Equipment Operator (medium)	Active	1.00	1.0	10	10.00	L	\$72.34	incl. in rate	incl. in rate	\$723.36
Equipment Operator (crane)	Active	1.00	1.0	10	10.00	L	\$81.60	incl. in rate	incl. in rate	\$815.98
Crawler Crane (130tn)	Active	1.00	1.0	10	10.00	E	\$262.91	incl. in rate	incl. in rate	\$2,629.10
Loader, FE Rubber Tire (5.25cy)	Active	1.00	1.0	10	10.00	E	\$76.00	incl. in rate	incl. in rate	\$760.00
Pile Driver	Active	2.00	1.0	10	20.00	L	\$78.56			\$1,571.20
Labor Hours					60	TOTAL LABOR				\$4,209.99
Equipment Hours					20	TOTAL EQUIPMENT				\$3,389.10

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Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount
					\$0.00
					\$0.00
					\$0.00
TOTAL SUBCONTRACTS					\$0.00

Labor Cost	\$4,209.99	Labor Burden @	0.0%	\$0.00		\$4,209.99
Material Cost	\$30,000.00	Material Tax @	7.75%	\$2,325.00		\$32,325.00
Equipment Cost	\$3,389.10	Equipment Tax @	7.75%	\$262.66		\$3,651.76
Subcontractors	\$0.00					\$0.00
<b>DIRECT COST SUBTOTALS</b>	<b>\$37,599</b>			<b>\$2,588</b>	<b>DIRECT COST SUBTOTALS</b>	<b>\$40,187</b>

This item is to account for the repositioning of the pile from the leftside coffer dam after the piles are extracted. Due to the tight area it is expected that there will be some rehandling of material before coffer cell pile installation begins. Material for coffer dam is purchased under payitem 3.005.

### 3.001.1 Right Side Cofferd Dam- Drive Pile

SUMMARY OF COSTS					
Labor Cost	\$50,064.80	Labor Burden @	0.0%		\$50,064.80
Material Cost	\$15,000.00	Material Tax @	7.75%	\$1,162.50	\$16,162.50
Equipment Cost	\$45,035.75	Equipment Tax @	7.75%	\$3,490.27	\$48,526.02
Subcontractors	\$95,360.00				\$95,360.00
<b>DIRECT COST SUBTOTALS</b>	<b>\$205,461</b>		<b>\$4,653</b>	<b>DIRECT COST SUBTOTALS</b>	<b>\$210,113</b>
Additional Pay Item Notes :					

### 3.001.2 Right Side Cofferd Dam- Extract Pile

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Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost
						\$0.00
TOTAL MATERIAL						\$0.00

Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount
	-				\$0.00
Pile Load Allowance	20	LD		\$1,000.00	\$20,000.00
					\$0.00
					\$0.00
<b>TOTAL SUBCONTRACTS</b>					<b>\$20,000.00</b>

Labor Cost	\$25,032.40	Labor Burden @	0.0%		\$25,032.40
Material Cost	\$0.00	Material Tax @	7.75%	\$0.00	\$0.00
Equipment Cost	\$18,244.38	Equipment Tax @	7.75%	\$1,413.94	\$19,658.31
Subcontractors	\$20,000.00				\$20,000.00
<b>DIRECT COST SUBTOTALS</b>	<b>\$63,277</b>			<b>\$1,414</b>	<b>DIRECT COST SUBTOTALS</b>
<b>Additional Pay Item Notes :</b>					<b>\$64,691</b>
<p>This estimate is to account for the extracting and removing pile and loading them on trucks for complete removal from the site.</p>					

PAY ITEM INFORMATION									
PAY ITEM NUMBER	:	3.002		Project	:	KRRP - Copco 2			
Description	:	Access Trestle- Furnish & Unload Material		Group	:	D02			
Quantity	:	78.00	LD						
Daily Production	:	20.00	LD per	10	hour shift	Project #	:	3	
Work Days	:	3.9	Days			Estimator	:	Eric Jones	LD per
Unit Price	:	\$6,265.64	per LD			Probable Low Cost Parameter	:	23	Total Cost
Total Cost	:	\$488,720				Probable High Cost Parameter	:	16	\$586,464
									\$7,518.77

CREW COSTS									
Description	Active Idle	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Labor / Equipment Cost
Labor Foreman	Active	1.00	3.9	10	39.00	L	\$58.87	incl. in rate	\$2,296.01
Laborer	Active	1.00	3.9	10	39.00	L	\$51.07	incl. in rate	\$1,991.85
Equipment Operator (medium)	Active	1.00	3.9	10	39.00	L	\$72.34	incl. in rate	\$2,821.10
Equipment Operator (crane)	Active	1.00	3.9	10	39.00	L	\$81.60	incl. in rate	\$3,182.32
Crawler Crane (130tn)	Active	1.00	3.9	10	39.00	E	\$262.91	incl. in rate	\$10,253.49
Loader, FE Rubber Tire (5.25cy)	Active	1.00	3.9	10	39.00	E	\$76.00	incl. in rate	\$2,964.00
Pile Driver	Active	2.00	3.9	10	78.00	L	\$78.56		\$6,127.68
Labor Hours					234	TOTAL LABOR			\$16,418.96
Equipment Hours					78	TOTAL EQUIPMENT			\$13,217.49

MATERIAL COSTS						
Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost
250' Long X 32' Wide Trestle						\$0.00
Trestle Bent Caps (W30X108X 33'long) 2 each 7 locations	49,896.00	Lbs	1.000	49,896.00	\$0.50	\$24,948.00
Trestle Logitudinal Beams (W36X135X250'Long) 4 each 2 locations	270,000.00	Lbs	1.000	270,000.00	\$0.50	\$135,000.00
24" Pipe Pile (.5" thick wall X 40' long 2each at each bent)	560.00	LF	1.000	560.00	\$20.00	\$11,200.00
30" Pipe Pile (.5" thick wall X 40' long 2each at each bent)	560.00	LF	1.000	560.00	\$24.00	\$13,440.00
Handrail and Kicker	500.00	LF	1.000	500.00	\$5.00	\$2,500.00
Bent Cap to Pile Sleeve Allowance (10% of Material Cost)	1.00	AL	1.000	1.00	\$18,709.00	\$18,709.00
Bolt and Stiffener Allowance (5% of Material Cost)	1.00	AL	1.000	1.00	\$9,355.00	\$9,355.00
Crane Mats 5'X30'	54.00	EA	1.000	54.00	\$1,500.00	\$81,000.00
Rigging Allowance (5% of Material Cost)	1.00	AL	1.000	1.00	\$14,807.60	\$14,807.60
TOTAL MATERIAL						\$310,959.60

SUBCONTRACT COSTS					
Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount
Freight Cost 10 ton/load (due to access restrictions) Allowance	29	LD		\$1,000.00	\$29,000.00
Freight Cost Crane Mats 5 ea/ Ld	54	LD		\$1,000.00	\$54,000.00
Mobilization of Crane and Equipment	1	LS		\$40,000.00	\$40,000.00
					\$0.00
TOTAL SUBCONTRACTS					\$123,000.00

SUMMARY OF COSTS						
Labor Cost	\$16,418.96	Labor Burden @	0.0%	\$0.00		\$16,418.96
Material Cost	\$310,959.60	Material Tax @	7.75%	\$24,099.37		\$335,058.97
Equipment Cost	\$13,217.49	Equipment Tax @	7.75%	\$1,024.36		\$14,241.85
Subcontractors	\$123,000.00					\$123,000.00
DIRECT COST SUBTOTALS	\$463,596			\$25,124	DIRECT COST SUBTOTALS	\$488,720
Additional Pay Item Notes :						
This payitem is to furnish and unload material for temporary work trestle at Copco 2 that is expected to be 8000 SF. Loads have been calculated by total weight of major structural steel items and adding 15% for misc items such as bolts, stiffeners, handrails ect. Mobilization of crane is expected to cost more than a standard mobilization due using smaller trucks due to access restrictions.						

### 3.002.1 Access Trestle- Drive Pile

PAY ITEM NUMBER	:	3.002.1	Project	:	KRRP - Copco 2			
Description	:	Access Trestle- Drive Pile	Group	:	D02			
Quantity	:	1,120.00 LF		:				
Daily Production	:	500.00 LF per	20	hour shift	Project #	:	3	
Work Days	:	2.2	Days	Estimator	:	Eric Jones	LF per	Total Cost
Unit Price	:	\$178.65	per LF	Probable Low Cost Parameter	:	575		\$170,077
Total Cost	:	\$200,090		Probable High Cost Parameter	:	400		\$240,108
								\$214.38

Description	Active Idle	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Labor Foreman	Active	1.00	2.2	20	44.00	L	\$58.87	incl. in rate	incl. in rate	\$2,590.37
Laborer	Active	1.00	2.2	20	44.00	L	\$51.07	incl. in rate	incl. in rate	\$2,247.21
Equipment Operator (crane)	Active	1.00	2.2	20	44.00	L	\$81.60	incl. in rate	incl. in rate	\$3,590.31
Equipment Operator (oiler)	Active	1.00	2.2	20	44.00	L	\$73.43	incl. in rate	incl. in rate	\$3,230.70
Carpenters	Active	2.00	2.2	20	88.00	L	\$85.49	incl. in rate	incl. in rate	\$7,523.30
Vibratory Hammer & Extractor	Active	1.00	2.2	20	44.00	E	\$94.14	incl. in rate	incl. in rate	\$4,142.16
Welder, Portable	Active	1.00	2.2	20	44.00	E	\$7.84	incl. in rate	incl. in rate	\$344.85
Crawler Crane (130tn)	Active	2.00	2.2	20	88.00	E	\$262.91	incl. in rate	incl. in rate	\$23,136.08
Pile Driver	Active	3.00	2.2	20	132.00	L	\$78.56	incl. in rate	incl. in rate	\$10,369.92
D36 Hammer 36X100' Leads	Active	1.00	2.2	20	44.00	E	\$85.47	incl. in rate	incl. in rate	\$3,760.68
Labor Hours					396	TOTAL LABOR				\$29,551.81
Equipment Hours					220	TOTAL EQUIPMENT				\$31,383.77

Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost
						\$0.00
PDA Allowance	1.00	AL	1.000	1.00	\$15,000.00	\$15,000.00
TOTAL MATERIAL						\$15,000.00

Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount
Predrilling for Pipe Pile (20' deep at 28 locations)	560	VLFT		\$126.00	\$70,560.00
Predrilling Equipment Mob and Demob	1	LS		\$50,000.00	\$50,000.00
					\$0.00
					\$0.00
TOTAL SUBCONTRACTS					\$120,560.00

Labor Cost	\$29,551.81	Labor Burden @	0.0%		\$29,551.81
Material Cost	\$15,000.00	Material Tax @	7.75%	\$1,162.50	\$16,162.50
Equipment Cost	\$31,383.77	Equipment Tax @	7.75%	\$2,432.24	\$33,816.01
Subcontractors	\$120,560.00				\$120,560.00
<b>DIRECT COST SUBTOTALS</b>	<b>\$196,496</b>			<b>\$3,595</b>	<b>DIRECT COST SUBTOTALS \$200,090</b>
<b>Additional Pay Item Notes :</b>					

### 3.002.2 Access Trestle - Fabricate Trestle Platform

SUMMARY OF COSTS					
Labor Cost	\$62,098.30	Labor Burden @	0.0%		\$62,098.30
Material Cost	\$6,209.83	Material Tax @	7.75%	\$481.26	\$6,691.09
Equipment Cost	\$27,858.50	Equipment Tax @	7.75%	\$2,159.03	\$30,017.53
Subcontractors	\$0.00				\$0.00
<b>DIRECT COST SUBTOTALS</b>	<b>\$96,167</b>			<b>\$2,640</b>	<b>DIRECT COST SUBTOTALS \$98,807</b>
<b>Additional Pay Item Notes :</b>					

### 3.002.3 Access Trestle - Remove Trestle Platform

PAY ITEM NUMBER	:	3.002.3	Project	:	KRRP - Copco 2			
Description	:	Access Trestle - Remove Trestle Platform	Group	:	D02			
Quantity	:	8,000.00 SF						
Daily Production	:	1,600.00 SF per	10	hour shift	Project #	:	3	
Work Days	:	5.0 Days			Estimator	:	Eric Jones	
Unit Price	:	\$6.08 per SF				SF per	Total Cost	Unit Price Per SF
Total Cost	:	\$48,606			Probable Low Cost Parameter	1840	\$41,315	\$5.16
					Probable High Cost Parameter	1280	\$58,328	\$7.29

Description	Active Idle	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Labor Foreman	Active	1.00	5.0	10	50.00	L	\$58.87	incl. in rate	incl. in rate	\$2,943.60
Laborer	Active	3.00	5.0	10	150.00	L	\$51.07	incl. in rate	incl. in rate	\$7,660.95
Steelworker	Active	2.00	5.0	10	100.00	L	\$78.16	incl. in rate	incl. in rate	\$7,815.50
Equipment Operator (crane)	Active	1.00	5.0	10	50.00	L	\$81.60	incl. in rate	incl. in rate	\$4,079.90
Carpenters	Active	2.00	5.0	10	100.00	L	\$85.49	incl. in rate	incl. in rate	\$8,549.20
Acetylene Torches	Active	2.00	5.0	10	100.00	E	\$0.44	incl. in rate	incl. in rate	\$44.00
Crawler Crane (130tn)	Active	1.00	5.0	10	50.00	E	\$262.91	incl. in rate	incl. in rate	\$13,145.50
0										
0										
Labor Hours					450	TOTAL LABOR				\$31,049.15
Equipment Hours					150	TOTAL EQUIPMENT				\$13,189.50

Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost
						\$0.00
Consumable Allowance 10% of Labor	1.00	AL	1.000	1.00	\$3,104.92	\$3,104.92
TOTAL MATERIAL						\$3,104.92

Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount
					\$0.00
					\$0.00
					\$0.00
					\$0.00
<b>TOTAL SUBCONTRACTS</b>					<b>\$0.00</b>

Labor Cost	\$31,049.15	Labor Burden @	0.0%		\$31,049.15
Material Cost	\$3,104.92	Material Tax @	7.75%	\$240.63	\$3,345.55
Equipment Cost	\$13,189.50	Equipment Tax @	7.75%	\$1,022.19	\$14,211.69
Subcontractors	\$0.00				\$0.00
<b>DIRECT COST SUBTOTALS</b>	<b>\$47,344</b>			<b>\$1,263</b>	<b>DIRECT COST SUBTOTALS \$48,606</b>
<b>Additional Pay Item Notes :</b>					

### 3.002.4 Access Trestle- Extract Pile

PAY ITEM NUMBER	:	3.002.4	Project	:	KRRP - Copco 2			
Description	:	Access Trestle- Extract Pile	Group	:	D02			
Quantity	:	1,120.00 LF		:				
Daily Production	:	500.00 LF per	20	:	hour shift			
Work Days	:	2.2 Days	Project #	:	3			
Unit Price	:	\$52.96 per LF	Estimator	:	Eric Jones	LF per	Total Cost	Unit Price Per LF
Total Cost	:	\$59,316	Probable Low Cost Parameter	:		575	\$50,418	\$45.02
	:		Probable High Cost Parameter	:		400	\$71,179	\$63.55

Description	Active Idle	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Labor Foreman	Active	1.00	2.2	20	44.00	L	\$58.87	incl. in rate	incl. in rate	\$2,590.37
Laborer	Active	1.00	2.2	20	44.00	L	\$51.07	incl. in rate	incl. in rate	\$2,247.21
Equipment Operator (crane)	Active	1.00	2.2	20	44.00	L	\$81.60	incl. in rate	incl. in rate	\$3,590.31
Equipment Operator (oiler)	Active	1.00	2.2	20	44.00	L	\$73.43	incl. in rate	incl. in rate	\$3,230.70
Carpenters	Active	2.00	2.2	20	88.00	L	\$85.49	incl. in rate	incl. in rate	\$7,523.30
Vibratory Hammer & Extractor	Active	1.00	2.2	20	44.00	E	\$94.14	incl. in rate	incl. in rate	\$4,142.16
Welder, Portable	Active	1.00	2.2	20	44.00	E	\$7.84	incl. in rate	incl. in rate	\$344.85
Crawler Crane (130tn)	Active	2.00	2.2	20	88.00	E	\$262.91	incl. in rate	incl. in rate	\$23,136.08
Pile Driver	Active	3.00	2.2	20	132.00	L	\$78.56	incl. in rate	incl. in rate	\$10,369.92
Labor Hours					396	TOTAL LABOR				\$29,551.81
Equipment Hours					176	TOTAL EQUIPMENT				\$27,623.09

Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost
TOTAL MATERIAL						\$0.00

Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount
					\$0.00
					\$0.00
					\$0.00
					\$0.00
TOTAL SUBCONTRACTS					\$0.00

Labor Cost	\$29,551.81	Labor Burden @	0.0%			\$29,551.81
Material Cost	\$0.00	Material Tax @	7.75%	\$0.00		\$0.00
Equipment Cost	\$27,623.09	Equipment Tax @	7.75%	\$2,140.79		\$29,763.88
Subcontractors	\$0.00					\$0.00
<b>DIRECT COST SUBTOTALS</b>	<b>\$57,175</b>			<b>\$2,141</b>	<b>DIRECT COST SUBTOTALS</b>	<b>\$59,316</b>
<b>Additional Pay Item Notes :</b>						



### 3.002.5 Access Trestle- Load & Hauloff Material

Additional Pay Item Notes :

This activity is to account for loading out trestle material and demobilizing equipment. It is expected that the crane demobilizing cost will be higher than usually due to need smaller trucks due the access restrictions.

### 3.003 Provide Dewatering behind Cofferdams

PAY ITEM NUMBER	:	3.003		Project	:	KRRP - Copco 2			
Description	:	Provide Dewatering behind Cofferdams		Group	:	D02			
Quantity	:	1.00 LS							
Daily Production	:	0.10 LS per	10	hour shift	Project #	:	3		
Work Days	:	10.0	Days	Estimator	:	Eric Jones	LS per	Total Cost	Unit Price Per LS
Unit Price	:	\$178,728.63	per LS	Probable Low Cost Parameter	:		0.11	\$160,856	\$160,855.77
Total Cost	:	\$178,729		Probable High Cost Parameter	:		0.09	\$196,601	\$196,601.49

Description	Active Idle	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Pump, Trash Pump, 6"+	Active	1.00	120.0	10	1,200.00	E	\$16.11	incl. in rate	incl. in rate	\$19,332.00
Laborer	Active	2.00	120.0	10	2,400.00	L	\$51.07	incl. in rate	incl. in rate	\$122,575.20
Labor Foreman	Active	1.00	60.0	10	600.00	L	\$58.87	incl. in rate	incl. in rate	\$35,323.20
0										
Labor Hours					3000	TOTAL LABOR				\$157,898.40
Equipment Hours					1200	TOTAL EQUIPMENT				\$19,332.00

Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost
TOTAL MATERIAL \$0.00						

Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount
					\$0.00
					\$0.00
					\$0.00
					\$0.00
TOTAL SUBCONTRACTS					\$0.00

Labor Cost	\$157,898.40	Labor Burden @	0.0%	\$0.00		\$157,898.40
Material Cost	\$0.00	Material Tax @	7.75%	\$0.00		\$0.00
Equipment Cost	\$19,332.00	Equipment Tax @	7.75%	\$1,498.23		\$20,830.23
Subcontractors	\$0.00					\$0.00
<b>DIRECT COST SUBTOTALS</b>	<b>\$177,230</b>			<b>\$1,498</b>	<b>DIRECT COST SUBTOTALS</b>	<b>\$178,729</b>

3" pump will be used for 4 months, 1 laborer will be managing the pump during the day and 1 laborer will be managing the pump at night, foreman will be involved with managing the pump 1/2 of the 4 months.

### 3.004 Remove Water from behind Cofferdams

PAY ITEM NUMBER	:	3.004	Project	:	KRRP - Copco 2			
Description	:	Remove Water from behind Cofferdams	Group	:	D02			
Quantity	:	241,000.00 GAL						
Daily Production	:	150,625.00 GAL per	10	hour shift	Project #	:	3	
Work Days	:	1.6	Days	Estimator	:	Eric Jones	GAL per	Total Cost
Unit Price	:	\$0.02	per GAL	Probable Low Cost Parameter			165687.5	\$5,111
Total Cost	:	\$5,679		Probable High Cost Parameter			135562.5	\$6,247
								Unit Price Per GAL
								\$0.02
								\$0.03

Description	Active Idle	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Pump, Trash Pump, 6"+	Active	1.00	1.6	10	16.00	E	\$16.11	incl. in rate	incl. in rate	\$257.76
Loader, FE Rubber Tire (5.25cy)	Active	1.00	1.0	10	10.00	E	\$76.00	incl. in rate	incl. in rate	\$760.00
Truck, Pickup (4x4, 3/4tn)	Active	1.00	1.6	10	16.00	E	\$16.99	incl. in rate	incl. in rate	\$271.84
Labor Foreman	Active	1.00	1.6	10	16.00	L	\$58.87	incl. in rate	incl. in rate	\$941.95
Laborer	Active	3.00	1.6	10	48.00	L	\$51.07	incl. in rate	incl. in rate	\$2,451.50
Equipment Operator (medium)	Active	1.00	1.0	10	10.00	L	\$72.34	incl. in rate	incl. in rate	\$723.36
Intake and Discharge Hose, 3" 20' lengths		4.00	1.6	10	64.00	E	\$2.50			\$160.00
Labor Hours					74	TOTAL LABOR				\$4,116.82
Equipment Hours					106	TOTAL EQUIPMENT				\$1,449.60

Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost
TOTAL MATERIAL						\$0.00

Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount
					\$0.00
					\$0.00
					\$0.00
					\$0.00
			TOTAL SUBCONTRACTS		\$0.00

Labor Cost	\$4,116.82	Labor Burden @	0.0%			\$4,116.82
Material Cost	\$0.00	Material Tax @	7.75%	\$0.00		\$0.00
Equipment Cost	\$1,449.60	Equipment Tax @	7.75%	\$112.34		\$1,561.94
Subcontractors	\$0.00					\$0.00
<b>DIRECT COST SUBTOTALS</b>	<b>\$5,566</b>			<b>\$112</b>	<b>DIRECT COST SUBTOTALS</b>	<b>\$5,679</b>

It will take a 3" pump 2 days to dewater 241,000gallons of water, 1 laborer will manage pump at night and 1 laborer will manage the pump during the day, loader will be used half of the time to place pump. Foreman with truck will oversee operation.

### 3.005 Left Side Cofferdam- Furnish & Unload Material

PAY ITEM NUMBER	:	3.005	Project	:	KRRP - Copco 2
Description	:	Left Side Coffor Dam- Furnish & Unload Material	Group	:	D07
Quantity	:	15.00 LD			
Daily Production	:	20.00 LD per 10 hour shift	Project #	:	3
Work Days	:	0.8 Days	Estimator	:	Eric Jones LD per
Unit Price	:	\$6,989.38 per LD	Probable Low Cost Parameter	:	23 \$89,115
Total Cost	:	\$104,841	Probable High Cost Parameter	:	16 \$125,809
					Unit Price Per LD \$5,940.98 \$8,387.26

Description	Active Idle	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Labor Foreman	Active	1.00	0.8	10	8.00	L	\$58.87	incl. in rate	incl. in rate	\$470.98
Laborer	Active	1.00	0.8	10	8.00	L	\$51.07	incl. in rate	incl. in rate	\$408.58
Equipment Operator (medium)	Active	1.00	0.8	10	8.00	L	\$72.34	incl. in rate	incl. in rate	\$578.69
Equipment Operator (crane)	Active	1.00	0.8	10	8.00	L	\$81.60	incl. in rate	incl. in rate	\$652.78
Crawler Crane (130tn)	Active	1.00	0.8	10	8.00	E	\$262.91	incl. in rate	incl. in rate	\$2,103.28
Loader, FE Rubber Tire (5.25cy)	Active	1.00	0.8	10	8.00	E	\$76.00	incl. in rate	incl. in rate	\$608.00
Pile Driver	Active	2.00	0.8	10	16.00	L	\$78.56			\$1,256.96
Labor Hours					48	TOTAL LABOR				\$3,367.99
Equipment Hours					16	TOTAL EQUIPMENT				\$2,711.28

[illegible]

Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount
Pile Load Allowance	20	LD		\$1,000.00	\$20,000.00
					\$0.00
					\$0.00
					\$0.00
TOTAL SUBCONTRACTS					\$20,000.00

[illegible]

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### 3.005.1 Left Side Cofferd Dam- Drive Pile

PAY ITEM NUMBER	:	3.005.1	Project	:	KRRP - Copco 2			
Description	:	Left Side Cofferdam- Drive Pile	Group	:	D07			
Quantity	:	7,500.00 SF		:				
Daily Production	:	1,500.00 SF per	20	hour shift	Project #	:	3	
Work Days	:	5.0 Days		:	Estimator	:	Eric Jones	
Unit Price	:	\$28.02 per SF		:		SF per	Total Cost	Unit Price Per SF
Total Cost	:	\$210,113		:	Probable Low Cost Parameter	1725	\$178,596	\$23.81
	:			:	Probable High Cost Parameter	1200	\$252,136	\$33.62

Description	Active Idle	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Labor Foreman	Active	1.00	5.0	20	100.00	L	\$58.87	incl. in rate	incl. in rate	\$5,887.20
Laborer	Active	1.00	5.0	20	100.00	L	\$51.07	incl. in rate	incl. in rate	\$5,107.30
Equipment Operator (crane)	Active	1.00	5.0	20	100.00	L	\$81.60	incl. in rate	incl. in rate	\$8,159.80
Equipment Operator (oiler)	Active	1.00	5.0	20	100.00	L	\$73.43	incl. in rate	incl. in rate	\$7,342.50
Vibratory Hammer & Extractor	Active	1.00	5.0	20	100.00	E	\$94.14	incl. in rate	incl. in rate	\$9,414.00
Welder, Portable	Active	1.00	5.0	20	100.00	E	\$7.84	incl. in rate	incl. in rate	\$783.75
Crawler Crane (130tn)	Active	1.00	5.0	20	100.00	E	\$262.91	incl. in rate	incl. in rate	\$26,291.00
		0.00	5.0	20	0.00	0	\$0.00	incl. in rate	incl. in rate	\$0.00
		0.00	5.0	20	0.00	0	\$0.00	incl. in rate	incl. in rate	\$0.00
		0.00	5.0	20	0.00	0	\$0.00	incl. in rate	incl. in rate	\$0.00
		0.00	5.0	20	0.00	0	\$0.00	incl. in rate	incl. in rate	\$0.00
		0.00	5.0	20	0.00	0	\$0.00	incl. in rate	incl. in rate	\$0.00
Pile Driver	Active	3.00	5.0	20	300.00	L	\$78.56	incl. in rate	incl. in rate	\$23,568.00
D36 Hammer 36X100' Leads	Active	1.00	5.0	20	100.00	E	\$85.47	incl. in rate	incl. in rate	\$8,547.00
Labor Hours					700	TOTAL LABOR				\$50,064.80
Equipment Hours					400	TOTAL EQUIPMENT				\$45,035.75

Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost
PDA Allowance	1.00	AL	1.000	1.00	\$15,000.00	\$15,000.00
TOTAL MATERIAL						\$15,000.00

Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount
Predrilling for Pipe Pile (20' deep at 18 locations)	360	VLFT		\$126.00	\$45,360.00
Predrilling Equipment Mob and Demob	1	LS		\$50,000.00	\$50,000.00
					\$0.00
					\$0.00
			TOTAL SUBCONTRACTS		\$95,360.00

Labor Cost	\$50,064.80	Labor Burden @	0.0%			\$50,064.80
Material Cost	\$15,000.00	Material Tax @	7.75%	\$1,162.50		\$16,162.50
Equipment Cost	\$45,035.75	Equipment Tax @	7.75%	\$3,490.27		\$48,526.02
Subcontractors	\$95,360.00					\$95,360.00
<b>DIRECT COST SUBTOTALS</b>	<b>\$205,461</b>			<b>\$4,653</b>	<b>DIRECT COST SUBTOTALS</b>	<b>\$210,113</b>

**\$205,461**

**\$4,653**

**DIRECT COST SUBTOTALS**

**\$210,113**

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PAY ITEM INFORMATION									
PAY ITEM NUMBER	:	3.005.2	Project	:	KRRP - Copco 2				
Description	:	Left Side Coffe Dam- Extract Pile	Group	:	D07				
Quantity	:	7,500.00 SF							
Daily Production	:	3,000.00 SF per	20	hour shift	Project #	:	3		
Work Days	:	2.5 Days			Estimator	:	Eric Jones	SF per	Total Cost
Unit Price	:	\$6.76 per SF			Probable Low Cost Parameter		3450		\$43,087
Total Cost	:	\$50,691			Probable High Cost Parameter		2400		\$60,829
								Unit Price Per SF	\$5.74
									\$8.11

CREW COSTS										
Description	Active Idle	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Labor Foreman	Active	1.00	2.5	20	50.00	L	\$58.87	incl. in rate	incl. in rate	\$2,943.60
Laborer	Active	1.00	2.5	20	50.00	L	\$51.07	incl. in rate	incl. in rate	\$2,553.65
Equipment Operator (crane)	Active	1.00	2.5	20	50.00	L	\$81.60	incl. in rate	incl. in rate	\$4,079.90
Equipment Operator (oiler)	Active	1.00	2.5	20	50.00	L	\$73.43	incl. in rate	incl. in rate	\$3,671.25
Vibratory Hammer & Extractor	Active	1.00	2.5	20	50.00	E	\$94.14	incl. in rate	incl. in rate	\$4,707.00
Welder, Portable	Active	1.00	2.5	20	50.00	E	\$7.84	incl. in rate	incl. in rate	\$391.88
Crawler Crane (130tn)	Active	1.00	2.5	20	50.00	E	\$262.91	incl. in rate	incl. in rate	\$13,145.50
Pile Driver	Active	3.00	2.5	20	150.00	L	\$78.56	incl. in rate	incl. in rate	\$11,784.00
Labor Hours					350	TOTAL LABOR				\$25,032.40
Equipment Hours					150	TOTAL EQUIPMENT				\$18,244.38

MATERIAL COSTS						
Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost
			1.000	0.00	\$0.00	\$0.00
			1.000	0.00	\$0.00	\$0.00
			1.000	0.00	\$0.00	\$0.00
			1.000	0.00	\$0.00	\$0.00
			1.000	0.00	\$0.00	\$0.00
			1.000	0.00	\$0.00	\$0.00
			1.000	0.00	\$0.00	\$0.00
			1.000	0.00	\$0.00	\$0.00
			1.000	0.00	\$0.00	\$0.00
			1.000	0.00	\$0.00	\$0.00
			1.000	0.00	\$0.00	\$0.00
			1.000	0.00	\$0.00	\$0.00
			1.000	0.00	\$0.00	\$0.00
			1.000	0.00	\$0.00	\$0.00
			1.000	0.00	\$0.00	\$0.00
			1.000	0.00	\$0.00	\$0.00
			1.000	0.00	\$0.00	\$0.00
			1.000	0.00	\$0.00	\$0.00
TOTAL MATERIAL						\$0.00

SUBCONTRACT COSTS				
Description	Quantity	Units	Notes / Company	Unit Price
Load Allowance	10	LD		\$600.00
				\$6,000.00
				\$0.00
				\$0.00
				\$0.00
TOTAL SUBCONTRACTS				\$6,000.00

SUMMARY OF COSTS						
Labor Cost	\$25,032.40	Labor Burden @	0.0%			\$25,032.40
Material Cost	\$0.00	Material Tax @	7.75%	\$0.00		\$0.00
Equipment Cost	\$18,244.38	Equipment Tax @	7.75%	\$1,413.94		\$19,658.31
Subcontractors	\$6,000.00					\$6,000.00
DIRECT COST SUBTOTALS	\$49,277			\$1,414	DIRECT COST SUBTOTALS	\$50,691
Additional Pay Item Notes :						

### 3.005.3 Left Side Cofferdam- Load & Hauloff Material

SUMMARY OF COSTS					
Labor Cost	\$4,720.72	Labor Burden @	0.0%	\$0.00	\$4,720.72
Material Cost	\$0.00	Material Tax @	7.75%	\$0.00	\$0.00
Equipment Cost	\$3,389.10	Equipment Tax @	7.75%	\$262.66	\$3,651.76
Subcontractors	\$9,000.00				\$9,000.00
<b>DIRECT COST SUBTOTALS</b>	<b>\$17,110</b>			<b>\$263</b>	<b>\$17,372</b>

### 3.006 Cofferd Dam Backfill allowance

PAY ITEM NUMBER	:	3.006	Project	:	KRRP - Copco 2
Description	:	Coffer Dam Backfill allowance	Group	:	D10
Quantity	:	1.00 LS			
Daily Production	:	1.00 LS per 10 hour shift	Project #	:	3
Work Days	:	1.0 Days	Estimator	:	Eric Jones
Unit Price	:	\$50,000.00 per LS	Probable Low Cost Parameter	:	LS per 1.15
Total Cost	:	\$50,000	Probable High Cost Parameter	:	0.8
					Total Cost \$42,500 Unit Price Per LS \$42,500.00

Description	Active Idle	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
0										
Labor Hours					0	TOTAL LABOR				\$0.00
Equipment Hours					0	TOTAL EQUIPMENT				\$0.00

[illegible]

Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount
Allowance to Haul Material to Coffe Dams	1	LS		\$50,000.00	\$50,000.00
					\$0.00
					\$0.00
					\$0.00
TOTAL SUBCONTRACTS					\$50,000.00

Labor Cost	\$0.00	Labor Burden @	0.0%		\$0.00
Material Cost	\$0.00	Material Tax @	7.75%	\$0.00	\$0.00
Equipment Cost	\$0.00	Equipment Tax @	7.75%	\$0.00	\$0.00
Subcontractors	\$50,000.00				\$50,000.00
<b>DIRECT COST SUBTOTALS</b>	<b>\$50,000</b>			<b>\$0</b>	<b>DIRECT COST SUBTOTALS \$50,000</b>
<b>Additional Pay Item Notes :</b>					
<p>This items is to provide an allowance amount for base material in the coffer dams to demolish the concrete dam.</p>					



### 3.007 Provide Dewatering behind left Side Cofferdam

SUMMARY OF COSTS					
Labor Cost	\$78,949.20	Labor Burden @	0.0%		\$78,949.20
Material Cost	\$0.00	Material Tax @	7.75%	\$0.00	\$0.00
Equipment Cost	\$9,741.00	Equipment Tax @	7.75%	\$754.93	\$10,495.93
Subcontractors	\$0.00				\$0.00
<b>DIRECT COST SUBTOTALS</b>	<b>\$88,690</b>			<b>\$755</b>	<b>DIRECT COST SUBTOTALS \$89,445</b>
<b>Additional Pay Item Notes :</b>					
<p>3" pump will be used for 4 months, 1 laborer during the day and 1 laborer during the night will maintain the pump half of the 4 month period, 1 foreman with truck will oversee the operation .25 of the duration.</p>					

### 3.008 Remove Water from behind Cofferdams

[illegible]

Description	Active Idle	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Pump, Submersible Trash Pump, 3" & 4"	Active	1.00	0.8	10	8.00	E	\$3.87	incl. in rate	incl. in rate	\$30.96
Hydraulic Excavator (5.0cy)	Active	1.00	0.8	10	8.00	E	\$276.50	incl. in rate	incl. in rate	\$2,212.00
Truck, Pickup (4x4, 3/4tn)	Active	1.00	0.8	10	8.00	E	\$16.99	incl. in rate	incl. in rate	\$135.92
Labor Foreman (out)	Active	1.00	0.8	10	8.00	L	\$58.87	incl. in rate	incl. in rate	\$470.98
Laborer	Active	2.00	0.8	10	16.00	L	\$51.07	incl. in rate	incl. in rate	\$817.17
Equipment Operator (medium)	Active	1.00	0.8	10	8.00	L	\$72.34	incl. in rate	incl. in rate	\$578.69
Intake and Discharge Hose, 5"		4.00	0.8	10	32.00	E	\$5.00			\$160.00
Labor Hours				32		TOTAL LABOR				\$1,866.83
Equipment Hours				56		TOTAL EQUIPMENT				\$2,538.88

Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost
TOTAL MATERIAL						\$0.00

Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount
					\$0.00
					\$0.00
					\$0.00
					\$0.00
TOTAL SUBCONTRACTS					\$0.00

Labor Cost	\$1,866.83	Labor Burden @	0.0%			\$1,866.83
Material Cost	\$0.00	Material Tax @	7.75%	\$0.00		\$0.00
Equipment Cost	\$2,538.88	Equipment Tax @	7.75%	\$196.76		\$2,735.64
Subcontractors	\$0.00					\$0.00
<b>DIRECT COST SUBTOTALS</b>	<b>\$4,406</b>			<b>\$197</b>	<b>DIRECT COST SUBTOTALS</b>	<b>\$4,602</b>
<b>Additional Pay Item Notes :</b>						
<p>3" pump will pump down 36,000 gals in .25 of a shift, it will take a full day to set pump up and to pump down area. Excavator will be used to set pump and hoses, laborers will assist equipment with setting up pump and maintaining the pump, 1 foreman with truck will oversee operation.</p>						

### 3.009 Remove Water from behind Tailrace Cofferdam

PAY ITEM NUMBER	:	3.009	Project	:	KRRP - Copco 2				
Description	:	Remove Water from behind Tailrace Cofferdam	Group	:	D10				
Quantity	:	400,000.00 GAL							
Daily Production	:	125,000.00 GAL per	10	hour shift	Project #	:	3		
Work Days	:	3.2 Days	Estimator	:	Eric Jones	GAL per	Total Cost	Unit Price Per GAL	
Unit Price	:	\$0.02 per GAL	Probable Low Cost Parameter			137500	\$8,927	\$0.02	
Total Cost	:	\$9,919	Probable High Cost Parameter			112500	\$10,911	\$0.03	

Description	Active Idle	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Pump, Submersible Trash Pump, 3" & 4"	Active	1.00	3.2	10	32.00	E	\$3.87	incl. in rate	incl. in rate	\$123.84
Hydraulic Excavator (5.0cy)	Active	1.00	1.0	10	10.00	E	\$276.50	incl. in rate	incl. in rate	\$2,765.00
Truck, Pickup (4x4, 3/4tn)	Active	1.00	3.2	10	32.00	E	\$16.99	incl. in rate	incl. in rate	\$543.68
Labor Foreman	Active	1.00	3.2	10	32.00	L	\$58.87	incl. in rate	incl. in rate	\$1,883.90
Laborer	Active	2.00	3.2	10	64.00	L	\$51.07	incl. in rate	incl. in rate	\$3,268.67
Equipment Operator (medium)	Active	1.00	1.0	10	10.00	L	\$72.34	incl. in rate	incl. in rate	\$723.36
Intake and Discharge Hose, 6"		2.00	3.2	10	64.00	E	\$5.00			\$320.00
Labor Hours				106		TOTAL LABOR				\$5,875.94
Equipment Hours				138		TOTAL EQUIPMENT				\$3,752.52

Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost
TOTAL MATERIAL						\$0.00

Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount
					\$0.00
					\$0.00
					\$0.00
					\$0.00
TOTAL SUBCONTRACTS					\$0.00

Labor Cost	\$5,875.94	Labor Burden @	0.0%		\$5,875.94
Material Cost	\$0.00	Material Tax @	7.75%	\$0.00	\$0.00
Equipment Cost	\$3,752.52	Equipment Tax @	7.75%	\$290.82	\$4,043.34
Subcontractors	\$0.00				\$0.00
<b>DIRECT COST SUBTOTALS</b>	<b>\$9,628</b>			<b>\$291</b>	<b>DIRECT COST SUBTOTALS \$9,919</b>
<b>Additional Pay Item Notes :</b>					
<p>It will take roughly 3 days to pump 300,000gallons with a 3" pump. 1 day will be need to set up pump and hoses, excavator will be used 1 day to set up pump, laborers will support equipment during set up and maintain the pump through the duration of the dewatering, 1 foreman with truck will oversee operation.</p>					

### 3.010 Provide Dewatering behind Tailrace Cofferdam

PAY ITEM NUMBER	:	3.01	Project	:	KRRP - Copco 2
Description	:	Provide Dewatering behind Tailrace Cofferdam	Group	:	#N/A
Quantity	:	1.00 LS			
Daily Production	:	1.25 LS per	10 hour shift	Project #	: 3
Work Days	:	0.8 Days	Estimator	:	Eric Jones      LS per
Unit Price	:	\$54,619.80 per LS	Probable Low Cost Parameter		1.375      \$49,158      \$49,157.82
Total Cost	:	\$54,620	Probable High Cost Parameter		1.125      \$60,082      \$60,081.78

Description	Active	# in	Days	Hours	Total	L/E	Hourly	Hrly oper.	Burden	Labor / Equipment
	Idle	crew	Worked	/day	Hours		Rate	Cost	Rate	Cost
0			0.8	10	0.00	0	\$0.00	\$0.00		\$0.00
Pump, Submersible Trash Pump, 3" & 4"	Active	2.00	92.0	10	1,840.00	E	\$3.87	incl. in rate	incl. in rate	\$7,120.80
Laborer	Active	1.00	46.0	10	460.00	L	\$51.07	incl. in rate	incl. in rate	\$23,493.58
Labor Foreman	Active	1.00	23.0	10	230.00	L	\$58.87	incl. in rate	incl. in rate	\$13,540.56
Intake and Discharge Hose, 3"		4.00	92.0	10	3,680.00	E	\$2.50			\$9,200.00
Labor Hours				690		TOTAL LABOR				\$37,034.14
Equipment Hours				5520		TOTAL EQUIPMENT				\$16,320.80

Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost
TOTAL MATERIAL						\$0.00

Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount
					\$0.00
					\$0.00
					\$0.00
					\$0.00
<b>TOTAL SUBCONTRACTS</b>					<b>\$0.00</b>

Labor Cost	\$37,034.14	Labor Burden @	0.0%		\$37,034.14
Material Cost	\$0.00	Material Tax @	7.75%	\$0.00	\$0.00
Equipment Cost	\$16,320.80	Equipment Tax @	7.75%	\$1,264.86	\$17,585.66
Subcontractors	\$0.00				\$0.00
<b>DIRECT COST SUBTOTALS</b>	<b>\$53,355</b>			<b>\$1,265</b>	<b>DIRECT COST SUBTOTALS \$54,620</b>
<b>Additional Pay Item Notes :</b>					
<p>1 Foreman Involved 1/4 of the time of the pump operation for adjustments and maintenance. 1 Laborer Involved 1/2 of the time of the pump operation for adjustments and maintenance (fueling). 1 Extra pump Added 1 extra pump to help manage water and when pump is down for maintenance.</p>					

### 3.011 Tailrace Cofferdam- Furnish & Unload Material

Additional Pay Item Notes :	
<div></div>	

### 3.011.1 Tailrace Cofferdam - Drive Pile

SUMMARY OF COSTS					
Labor Cost	\$36,046.66	Labor Burden @	0.0%		\$36,046.66
Material Cost	\$15,000.00	Material Tax @	7.75%	\$1,162.50	\$16,162.50
Equipment Cost	\$46,191.42	Equipment Tax @	7.75%	\$3,579.84	\$49,771.26
Subcontractors	\$85,280.00				\$85,280.00
<b>DIRECT COST SUBTOTALS</b>	<b>\$182,518</b>			<b>\$4,742</b>	<b>DIRECT COST SUBTOTALS \$187,260</b>
Additional Pay Item Notes :					

### 3.011.2 Tailrace Cofferd Dam - Extract Pile

PAY ITEM NUMBER	:	3.011.2	Project	:	KRRP - Copco 2			
Description	:	Tailrace Cofferdam - Extract Pile	Group	:	D10			
Quantity	:	5,400.00 SF						
Daily Production	:	3,000.00 SF per	20	hour shift	Project #	:	3	
Work Days	:	1.8	Days		Estimator	:	Eric Jones	
Unit Price	:	\$7.07 per SF			Probable Low Cost Parameter	SF per	3450	
Total Cost	:	\$38,177			Probable High Cost Parameter	2400	\$32,451	
							\$6.01	
							\$45,813	
							\$8.48	

Description	Active Idle	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Labor Foreman	Active	1.00	1.8	20	36.00	L	\$58.87	incl. in rate	incl. in rate	\$2,119.39
Laborer	Active	1.00	1.8	20	36.00	L	\$51.07	incl. in rate	incl. in rate	\$1,838.63
Equipment Operator (crane)	Active	1.00	1.8	20	36.00	L	\$81.60	incl. in rate	incl. in rate	\$2,937.53
Equipment Operator (oiler)	Active	1.00	1.8	20	36.00	L	\$73.43	incl. in rate	incl. in rate	\$2,643.30
Vibratory Hammer & Extractor	Active	1.00	1.8	20	36.00	E	\$94.14	incl. in rate	incl. in rate	\$3,389.04
Welder, Portable	Active	1.00	1.8	20	36.00	E	\$7.84	incl. in rate	incl. in rate	\$282.15
Crawler Crane (130tn)	Active	1.00	1.8	20	36.00	E	\$262.91	incl. in rate	incl. in rate	\$9,464.76
		0.00	1.8	20	0.00	0	\$0.00	incl. in rate	incl. in rate	\$0.00
		0.00	1.8	20	0.00	0	\$0.00	incl. in rate	incl. in rate	\$0.00
		0.00	1.8	20	0.00	0	\$0.00	incl. in rate	incl. in rate	\$0.00
		0.00	1.8	20	0.00	0	\$0.00	incl. in rate	incl. in rate	\$0.00
		0.00	1.8	20	0.00	0	\$0.00	incl. in rate	incl. in rate	\$0.00
Pile Driver	Active	3.00	1.8	20	108.00	L	\$78.56	incl. in rate	incl. in rate	\$8,484.48
Labor Hours					252	TOTAL LABOR				\$18,023.33
Equipment Hours					108	TOTAL EQUIPMENT				\$13,135.95

Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost
<b>TOTAL MATERIAL</b>						<b>\$0.00</b>

Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount
Load Allowance	10	LD		\$600.00	\$6,000.00
					\$0.00
					\$0.00
					\$0.00
TOTAL SUBCONTRACTS					\$6,000.00

Labor Cost	\$18,023.33	Labor Burden @	0.0%			\$18,023.33
Material Cost	\$0.00	Material Tax @	7.75%	\$0.00		\$0.00
Equipment Cost	\$13,135.95	Equipment Tax @	7.75%	\$1,018.04		\$14,153.99
Subcontractors	\$6,000.00					\$6,000.00
<b>DIRECT COST SUBTOTALS</b>	<b>\$37,159</b>			<b>\$1,018</b>	<b>DIRECT COST SUBTOTALS</b>	<b>\$38,177</b>
<b>Additional Pay Item Notes :</b>						

PAY ITEM INFORMATION									
PAY ITEM NUMBER	:	3.014	Project	:	KRRP - Copco 2				
Description	:	Remove Concrete in Dam	Group	:	D10				
Quantity	:	4,430.00 cy							
Daily Production	:	120.00 cy per	10	hour shift	Project #	:	3		
Work Days	:	36.9 Days			Estimator	:	Eric Jones	cy per	Total Cost
Unit Price	:	\$168.51 per cy			Probable Low Cost Parameter		138	\$634,532	Unit Price Per cy
Total Cost	:	\$746,509			Probable High Cost Parameter		96	\$895,810	\$202.21

CREW COSTS										
Description	Active Idle	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Labor Foreman	Active	1.00	36.9	10	369.00	L	\$58.87	incl. in rate	incl. in rate	\$21,723.77
Laborer	Active	3.00	36.9	10	1,107.00	L	\$51.07	incl. in rate	incl. in rate	\$56,537.81
Equipment Operator (medium)	Active	3.00	36.9	10	1,107.00	L	\$72.34	incl. in rate	incl. in rate	\$80,075.95
Truck Driver (heavy)	Active	3.00	28.2	10	845.10	L	\$66.92	incl. in rate	incl. in rate	\$56,557.47
Hydraulic Excavator (5.0cy)	Active	1.00	36.9	10	369.00	E	\$276.50	incl. in rate	incl. in rate	\$102,028.50
Hydraulic Excavator (2.5cy)	Active	1.00	36.9	10	369.00	E	\$205.40	incl. in rate	incl. in rate	\$75,792.60
Loader, FE Rubber Tire (3.5cy)	Active	1.00	36.9	10	369.00	E	\$63.11	incl. in rate	incl. in rate	\$23,287.59
Hydraulic Impact Breaker Attachment (3k-4k ft-lb)	Active	1.00	36.9	10	369.00	E	\$36.81	incl. in rate	incl. in rate	\$13,582.89
Truck, On-Highway Dump (6x4, 12cy)	Active	3.00	28.2	10	845.10	E	\$57.41	incl. in rate	incl. in rate	\$48,517.19
Acetylene Torches	Active	1.00	36.9	10	369.00	E	\$0.44	incl. in rate	incl. in rate	\$162.36
Air Compressor 600 cfm	Active	1.00	36.9	10	369.00	E	\$21.74	incl. in rate	incl. in rate	\$8,021.66
3 Man Blasting Crew	Active	1.00	36.9	10	369.00	L	\$146.09	incl. in rate	incl. in rate	\$53,907.30
Air Track Drill 4", Air Hoses, Compressor	Active	1.00	36.9	10	369.00	E	\$212.49	incl. in rate	incl. in rate	\$78,407.15
Labor Hours					3,797	TOTAL LABOR				\$268,802.31
Equipment Hours					3,428	TOTAL EQUIPMENT				\$349,799.94

MATERIAL COSTS						
Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost
Consumables (5% labor)	1.00	LS	1.000	1.00	\$13,440.12	\$13,440.12
Blasting Material	4,430.00	CY	1.050	4,651.50	5.56	\$25,862.34
Drill Bit Wear Allowance (10% of Drilling Eq)	1.00	LS	1.000	1.00	\$7,840.71	\$7,840.71
TOTAL MATERIAL						\$47,143.17

SUBCONTRACT COSTS					
Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount
Concrete Saw Cutting and Drilling	10	EA	Cost per Mob	\$5,000.00	\$50,000.00
					\$0.00
					\$0.00
					\$0.00
TOTAL SUBCONTRACTS					\$50,000.00

SUMMARY OF COSTS						
Labor Cost	\$268,802.31	Labor Burden @	0.0%	\$0.00	Included in hourly labor rate.	\$268,802.31
Material Cost	\$47,143.17	Material Tax @	7.75%	\$3,653.60		\$50,796.77
Equipment Cost	\$349,799.94	Equipment Tax @	7.75%	\$27,109.50		\$376,909.44
Subcontractors	\$50,000.00					\$50,000.00
DIRECT COST SUBTOTALS	\$715,745			\$30,763	DIRECT COST SUBTOTALS	\$746,509

Additional Pay Item Notes :

Demolition of the the concrete dam is by a combination of blasting and hydrylic breakers. The material is expected to fall to the down stream side near the power house coffer dam. Equipment will be staged at bottom to process and load trucks as material is provided. Due to the narrow and steep haul routes small 12CY dump trucks have been used to transport material from load out area to the copco 1 disposal site. A concrete sawing subcontractor is expected to periodically be used during the demo process and an allowance by mob has been used to account for the cost. It is expected that the demolition activity will have reduced production due to the strength of concrete and the amount of oversize reinforcement embedded with in the concrete. Crew Break down is provided in the production notes. This item is to be double shifted with two 10 hour shifts to account for the California in water work retrictions.



### 3.015 Remove concrete equipment slab from top of embankment wing dam on right abutment

SUMMARY OF COSTS				
Labor Cost	\$747.62	Labor Burden @	0.0%	\$747.62
Material Cost	\$0.00	Material Tax @	7.75%	\$0.00
Equipment Cost	\$1,001.73	Equipment Tax @	7.75%	\$1,079.36
Subcontractors	\$0.00			\$0.00
<b>DIRECT COST SUBTOTALS</b>	<b>\$1,749</b>		<b>\$78</b>	<b>DIRECT COST SUBTOTALS \$1,827</b>
<b>Additional Pay Item Notes :</b>				
4 man crew roughly 3 hours to mobilize to area and haul off material				

### 3.016 Remove Concrete Wing wall

PAY ITEM NUMBER	:	3.016	Project	:	KRRP - Copco 2
Description	:	Remove Concrete Wing wall	Group	:	D10
Quantity	:	240.00 CY			
Daily Production	:	112.00 CY per	20	hour shift	
Work Days	:	2.1 Days	Project #	:	3
Unit Price	:	\$184.14 per CY	Estimator	:	Eric Jones
Total Cost	:	\$44,193	Probable Low Cost Parameter	:	123.2
			Probable High Cost Parameter	:	100.8
					Total Cost
					\$39,773
					Unit Price Per CY
					\$165.72
					\$202.55

Description	Active Idle	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Labor Foreman	Active	1.00	2.1	20	42.00	L	\$58.87	incl. in rate	incl. in rate	\$2,472.62
Laborer	Active	1.00	2.1	20	42.00	L	\$51.07	incl. in rate	incl. in rate	\$2,145.07
Equipment Operator (medium)	Active	2.00	2.1	20	84.00	L	\$72.34	incl. in rate	incl. in rate	\$6,076.22
Truck Driver (heavy)	Active	1.00	2.1	20	42.00	L	\$66.92	incl. in rate	incl. in rate	\$2,810.81
Hydraulic Excavator (5.0cy)	Active	2.00	2.1	20	84.00	E	\$276.50	incl. in rate	incl. in rate	\$23,226.00
Truck, On-Highway Dump (6x4, 12cy)	Active	1.00	2.1	20	42.00	E	\$57.41	incl. in rate	incl. in rate	\$2,411.22
Hydraulic Impact Breaker Attachment (5k+ ft-lb)	Active	1.00	2.1	20	42.00	E	\$63.28	incl. in rate	incl. in rate	\$2,657.76
Labor Hours					210	TOTAL LABOR				\$13,504.72
Equipment Hours					168	TOTAL EQUIPMENT				\$28,294.98

Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost
TOTAL MATERIAL						\$0.00

Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount
Reinforcement Disposal Fee	21,600	lbs.	lbs Rebar per CY of Concre		\$0.00
Rebar Hauling to Facility (30 Miles)	30	Miles	Yreka Recycle		\$0.00
Hauling Cost by Load	1.00	loads	40,000lbs per load	\$200.00	\$200.00
					\$0.00
<b>TOTAL SUBCONTRACTS</b>					<b>\$200.00</b>

Labor Cost	\$13,504.72	Labor Burden @	0.0%		\$13,504.72
Material Cost	\$0.00	Material Tax @	7.75%	\$0.00	\$0.00
Equipment Cost	\$28,294.98	Equipment Tax @	7.75%	\$2,192.86	\$30,487.84
Subcontractors	\$200.00				\$200.00
<b>DIRECT COST SUBTOTALS</b>	<b>\$42,000</b>			<b>\$2,193</b>	<b>\$44,193</b>

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### 3.017 Right Abutment Removal - Random Fill

PAY ITEM NUMBER	:	3.017	Project	:	KRRP - Copco 2
Description	:	Right Abutment Removal - Random Fill	Group	:	D10
Quantity	:	1,510.00 CY			
Daily Production	:	300.00 CY per	10	hour shift	
Work Days	:	5.0 Days	Project #	:	3
Unit Price	:	\$21.01 per CY	Estimator	:	Eric Jones
Total Cost	:	\$31,726	Probable Low Cost Parameter	:	330
			Probable High Cost Parameter	:	240
					Total Cost
					Unit Price Per CY
					\$28,554
					\$38,072
					\$18.91
					\$25.21

Description	Active Idle	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Labor Foreman	Active	1.00	5.0	10	50.00	L	\$58.87	incl. in rate	incl. in rate	\$2,943.60
Laborer	Active	3.00	5.0	10	150.00	L	\$51.07	incl. in rate	incl. in rate	\$7,660.95
Equipment Operator (medium)	Active	1.00	5.0	10	50.00	L	\$72.34	incl. in rate	incl. in rate	\$3,616.80
Truck Driver (heavy)	Active	1.00	5.0	10	50.00	L	\$66.92	incl. in rate	incl. in rate	\$3,346.20
Hydraulic Excavator (2.5cy)	Active	1.00	5.0	10	50.00	E	\$205.40	incl. in rate	incl. in rate	\$10,270.00
Truck, On-Highway Dump (6x4, 12cy)	Active	1.00	5.0	10	50.00	E	\$57.41	incl. in rate	incl. in rate	\$2,870.50
Labor Hours					300	TOTAL LABOR				\$17,567.55
Equipment Hours					100	TOTAL EQUIPMENT				\$13,140.50

Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost
TOTAL MATERIAL						\$0.00

Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount
					\$0.00
					\$0.00
					\$0.00
					\$0.00
			TOTAL SUBCONTRACTS		\$0.00

Labor Cost	\$17,567.55	Labor Burden @	0.0%			\$17,567.55
Material Cost	\$0.00	Material Tax @	7.75%	\$0.00		\$0.00
Equipment Cost	\$13,140.50	Equipment Tax @	7.75%	\$1,018.39		\$14,158.89
Subcontractors	\$0.00					\$0.00
<b>DIRECT COST SUBTOTALS</b>	<b>\$30,708</b>			<b>\$1,018</b>	<b>DIRECT COST SUBTOTALS</b>	<b>\$31,726</b>

Crew and production is based on moving 1510CY which is a total of 151 each 10 CY loads. 5 trucks will be used hauling 6 loads per day for 5 days. There will be 2 excavators loading trucks, 3 laborers directing truck traffic, 1 foreman will oversee operation. All material will be hauled to Copco disposal site.

### 3.018 Right Abutment Removal - Remove Hand Placed Riprap

PAY ITEM NUMBER	:	3.018	Project	:	KRRP - Copco 2
Description	:	Right Abutment Removal - Remove Hand Placed Riprap	Group	:	D10
Quantity	:	5,400.00 SF			
Daily Production	:	6,750.00 SF per	10	hour shift	
Work Days	:	0.8 Days	Project #	:	3
Unit Price	:	\$1.83 per SF	Estimator	:	Eric Jones
Total Cost	:	\$9,895	Probable Low Cost Parameter		SF per 7425
			Probable High Cost Parameter		Total Cost \$8,905
					Unit Price Per SF \$1.65
					\$2.02

Description	Active Idle	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Labor Foreman (out)	Active	1.00	0.8	10	8.00	L	\$58.87	incl. in rate	incl. in rate	\$470.98
Laborer	Active	1.00	0.8	10	8.00	L	\$51.07	incl. in rate	incl. in rate	\$408.58
Equipment Operator (medium)	Active	2.00	0.8	10	16.00	L	\$72.34	incl. in rate	incl. in rate	\$1,157.38
Truck Driver (heavy)	Active	3.00	0.8	10	24.00	L	\$66.92	incl. in rate	incl. in rate	\$1,606.18
Hydraulic Excavator (5.0cy)	Active	2.00	0.8	10	16.00	E	\$276.50	incl. in rate	incl. in rate	\$4,424.00
Truck, On-Highway Dump (6x4, 12cy)	Active	3.00	0.8	10	24.00	E	\$57.41	incl. in rate	incl. in rate	\$1,377.84
Labor Hours					56	TOTAL LABOR				\$3,643.11
Equipment Hours					40	TOTAL EQUIPMENT				\$5,801.84

Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost
TOTAL MATERIAL						\$0.00

Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount
					\$0.00
					\$0.00
					\$0.00
					\$0.00
			TOTAL SUBCONTRACTS		\$0.00

Labor Cost	\$3,643.11	Labor Burden @	0.0%			\$3,643.11
Material Cost	\$0.00	Material Tax @	7.75%	\$0.00		\$0.00
Equipment Cost	\$5,801.84	Equipment Tax @	7.75%	\$449.64		\$6,251.48
Subcontractors	\$0.00					\$0.00
<b>DIRECT COST SUBTOTALS</b>	<b>\$9,445</b>			<b>\$450</b>	<b>DIRECT COST SUBTOTALS</b>	<b>\$9,895</b>

Assuming Rip Rap is 12" thick which will equal 200 CY of material to move. 3 trucks total to be used each truck will haul 6 loads at 10 cy a load. Total of 200 Cys roughly 67 cy per truck, which is 7 loads a truck.

### 3.019 Right Abutment Removal - Gunite Curtain Wall

[illegible]

Description	Active Idle	# In crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Labor Foreman	Active	1.00	1.4	20	28.00	L	\$58.87	incl. in rate	incl. in rate	\$1,648.42
Laborer	Active	4.00	1.4	20	112.00	L	\$51.07	incl. in rate	incl. in rate	\$5,720.18
Equipment Operator (medium)	Active	2.00	1.4	20	56.00	L	\$72.34	incl. in rate	incl. in rate	\$4,050.82
Truck Driver (heavy)	Active	1.00	1.4	20	28.00	L	\$66.92	incl. in rate	incl. in rate	\$1,873.87
Truck, On-Highway Dump (6x4, 12cy)	Active	1.00	1.4	20	28.00	E	\$57.41	incl. in rate	incl. in rate	\$1,607.48
Air Compressor 900 cfm	Active	1.00	1.4	20	28.00	E	\$38.87	incl. in rate	incl. in rate	\$1,088.33
Air Tool, Chipping Hammer	Active	4.00	1.4	20	112.00	E	\$1.64	incl. in rate	incl. in rate	\$183.57
Generator, Small Generator, 10 - 15 kW	Active	2.00	1.4	20	56.00	E	\$7.04	incl. in rate	incl. in rate	\$394.24
Hydraulic Excavator (5.0cy)	Active	1.00	1.4	20	28.00	E	\$276.50	incl. in rate	incl. in rate	\$7,742.00
Hydraulic Impact Breaker Attachment (5k+ ft-lb)	Active	1.00	1.4	20	28.00	E	\$63.28	incl. in rate	incl. in rate	\$1,771.84
Hydraulic Thumbs/Shear Attachment	Active	1.00	1.4	20	28.00	E	\$24.92	incl. in rate	incl. in rate	\$697.76
Hydraulic Excavator (2.5cy)	Active	1.00	1.4	20	28.00	E	\$205.40	incl. in rate	incl. in rate	\$5,751.20
Labor Hours					224	TOTAL LABOR				\$13,293.28
Equipment Hours					336	TOTAL EQUIPMENT				\$19,236.42

Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost
TOTAL MATERIAL						\$0.00

Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount
Reinforcement Disposal Fee	16,200	lbs.	90lbs Rebar per CY of Concrete		\$0.00
Rebar Hauling to Facility (30 Miles)	30	Miles	Yreka Recycle		\$0.00
Hauling Cost by Load	1.00	loads	40,000lbs per load	\$400.00	\$400.00
					\$0.00
TOTAL SUBCONTRACTS					\$400.00

Labor Cost	\$13,293.28	Labor Burden @	0.0%		\$13,293.28
Material Cost	\$0.00	Material Tax @	7.75%	\$0.00	\$0.00
Equipment Cost	\$19,236.42	Equipment Tax @	7.75%	\$1,490.82	\$20,727.24
Subcontractors	\$400.00				\$400.00
<b>DIRECT COST SUBTOTALS</b>	<b>\$32,930</b>			<b>\$1,491</b>	<b>DIRECT COST SUBTOTALS \$34,421</b>
<b>Additional Pay Item Notes :</b>					

PAY ITEM INFORMATION									
PAY ITEM NUMBER	:	3.020	Project	:	KRRP - Copco 2				
Description	:	Remove & Dispose - Hand rails and Light Poles	Group	:	D08				
Quantity	:	5,000.00 LBS							
Daily Production	:	23,125.00 LBS per	10	hour shift	Project #	:	3		
Work Days	:	0.2 Days			Estimator	:	Mihaela Tomulescu	LBS per	Total Cost
Unit Price	:	\$0.76 per LBS			Probable Low Cost Parameter			23125	\$3,442
Total Cost	:	\$3,825			Probable High Cost Parameter			23125	\$4,207
									Unit Price Per LBS
									\$0.69
									\$0.84

CREW COSTS										
Description	Active Idle	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Hydraulic Crane (80tn)	Active	1.00	0.2	10	2.00	E	\$197.66	incl. in rate	incl. in rate	\$395.32
Equipment Operator (crane)	Active	1.00	0.2	10	2.00	L	\$81.02	incl. in rate	incl. in rate	\$162.04
Loader, FE Rubber Tire (8.6cy)	Active	1.00	0.2	10	2.00	E	\$225.40	incl. in rate	incl. in rate	\$450.80
Electrician	Active	1.00	0.2	10	2.00	L	\$55.25	incl. in rate	incl. in rate	\$110.51
Millwright	Active	6.00	0.2	10	12.00	L	\$81.53	incl. in rate	incl. in rate	\$978.31
Labor Foreman	Active	2.00	0.2	10	4.00	L	\$58.35	incl. in rate	incl. in rate	\$233.39
Labor Hours					20	TOTAL LABOR			\$1,484.25	
Equipment Hours					4	TOTAL EQUIPMENT			\$846.12	

MATERIAL COSTS						
Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost
Consumables 5% labor (saw blades, drill bits, etc)	1.00	LS	1.000	1.00	\$74.21	\$74.21
TOTAL MATERIAL						\$74.21

SUBCONTRACT COSTS					
Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount
Hazardous waste cleanup/pickup/disposal, solid pickup, bulk material, maximum (10%)	0.25	ton	1.000	0.25	\$595.00
Hauling Cost by Load	3.00	loads		\$400.00	\$1,200.00
TOTAL SUBCONTRACTS					\$1,348.75

SUMMARY OF COSTS					
Labor Cost	\$1,484.25	Labor Burden @	0.0%	\$0.00	\$1,484.25
Material Cost	\$74.21	Material Tax @	7.8%	\$5.75	\$79.96
Equipment Cost	\$846.12	Equipment Tax @	7.8%	\$65.57	\$911.69
Subcontractors	\$1,348.75				\$1,348.75
DIRECT COST SUBTOTALS	\$3,753		\$71	DIRECT COST SUBTOTALS	\$3,825

Additional Pay Item Notes :

Crews E-19 for metals demolition, E-12 for welding , E-25 for cutting steel and A-3H for equipment disposal. Assumed hazardous waste 100% of the total lbs, calculated 36 miles from Copco2 to Yreka Transfer Recycling.

PAY ITEM INFORMATION									
PAY ITEM NUMBER	:	3.021	Project	:	KRRP - Copco 2				
Description	:	Remove & Dispose - Radial Gates and Hoists	Group	:	D08				
Quantity	:	66,000.00 LBS							
Daily Production	:	37,500.00 LBS per	10	hour shift	Project #	:	3		
Work Days	:	1.8 Days			Estimator	:	Mihaela Tomulescu	LBS per	Total Cost
Unit Price	:	\$0.58 per LBS			Probable Low Cost Parameter			43125	\$32,603
Total Cost	:	\$38,356			Probable High Cost Parameter			30000	\$46,027
									Unit Price Per LBS
									\$0.49
									\$0.70

CREW COSTS										
Description	Active Idle	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Labor Foreman	Active	1.00	1.8	10	18.00	L	\$58.35	incl. in rate	incl. in rate	\$1,050.25
Laborer	Active	2.00	1.8	10	36.00	L	\$51.01	incl. in rate	incl. in rate	\$1,836.36
Steelworker	Active	2.00	1.8	10	36.00	L	\$77.55	incl. in rate	incl. in rate	\$2,791.87
Equipment Operator (medium)	Active	1.00	1.8	10	18.00	L	\$72.39	incl. in rate	incl. in rate	\$1,302.98
Equipment Operator (crane)	Active	1.00	1.8	10	18.00	L	\$81.02	incl. in rate	incl. in rate	\$1,458.38
Loader, FE Rubber Tire (5.25cy)	Active	1.00	1.8	10	18.00	E	\$76.00	incl. in rate	incl. in rate	\$1,368.00
Crawler Crane (130tn)	Active	1.00	1.8	10	18.00	E	\$262.91	incl. in rate	incl. in rate	\$4,732.38
Welder	Active	1.00	1.8	10	18.00	L	\$8.62	incl. in rate	incl. in rate	\$155.23
Labor Hours					144	TOTAL LABOR				\$8,595.07
Equipment Hours					36	TOTAL EQUIPMENT				\$6,100.38

MATERIAL COSTS						
Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost
Consumables 5% labor (saw blades, drill bits, etc)	1.00	LS	1.000	1.00	\$429.75	\$429.75
Selective demolition, torch cutting, steel, 1" thick plate (assumed qty)	2,500.00	LF	1.000	2,500.00	\$0.85	\$2,125.00
						TOTAL MATERIAL
						\$2,554.75

SUBCONTRACT COSTS						
Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount	
Hazardous waste cleanup/pickup/disposal, solid pickup, bulk material, maximum	33.00	ton	1.000	33.00	\$595.00	\$19,635.00
Hazardous waste cleanup/pickup/disposal, transportation to disposal site, truckload = 80 drums or 25 C.Y. or 18 tons, maximum	2.00	Load	1.000	2.00	\$400.00	\$800.00
						TOTAL SUBCONTRACTS
						\$20,435.00

SUMMARY OF COSTS									
Labor Cost	\$8,595.07	Labor Burden @	0.0%	\$0.00					\$8,595.07
Material Cost	\$2,554.75	Material Tax @	7.8%	\$197.99					\$2,752.75
Equipment Cost	\$6,100.38	Equipment Tax @	7.8%	\$472.78					\$6,573.16
Subcontractors	\$20,435.00								\$20,435.00
DIRECT COST SUBTOTALS	\$37,685			\$671				DIRECT COST SUBTOTALS	\$38,356
Additional Pay Item Notes :									

PAY ITEM COST DETAIL WORKSHEET

3.022 Remove & Dispose - 5-Radial Gate Stoplogs & Slots (steel)

PAY ITEM INFORMATION									
PAY ITEM NUMBER	:	3.022		Project	:	KRRP - Copco 2			
Description	:	Remove & Dispose - 5-Radial Gate Stoplogs & Slots (steel)		Group	:	D08			
Quantity	:	95,800.00	LBS						
Daily Production	:	37,500.00	LBS per	10	hour shift	Project #	:	3	
Work Days	:	2.6	Days			Estimator	:	Mihaela Tomulescu	
Unit Price	:	\$0.36	per LBS			LBS per		Total Cost	Unit Price Per LBS
Total Cost	:	\$34,294				Probable Low Cost Parameter		43125	\$29,150
						Probable High Cost Parameter		30000	\$41,153
									\$0.30
									\$0.43

CREW COSTS										
Description	Active Idle	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Labor Foreman	Active	1.00	2.6	10	26.00	L	\$58.35	incl. in rate	incl. in rate	\$1,517.02
Laborer	Active	2.00	2.6	10	52.00	L	\$51.01	incl. in rate	incl. in rate	\$2,652.52
Steelworker	Active	2.00	2.6	10	52.00	L	\$77.55	incl. in rate	incl. in rate	\$4,032.70
Equipment Operator (medium)	Active	1.00	2.6	10	26.00	L	\$72.39	incl. in rate	incl. in rate	\$1,882.09
Equipment Operator (crane)	Active	1.00	2.6	10	26.00	L	\$81.02	incl. in rate	incl. in rate	\$2,106.55
Loader, FE Rubber Tire (5.25cy)	Active	1.00	2.6	10	26.00	E	\$76.00	incl. in rate	incl. in rate	\$1,976.00
Crawler Crane (130tn)	Active	1.00	2.6	10	26.00	E	\$262.91	incl. in rate	incl. in rate	\$6,835.66
Welder	Active	2.00	2.6	10	52.00	L	\$8.62	incl. in rate	incl. in rate	\$448.44
Labor Hours					234	TOTAL LABOR				\$12,639.32
Equipment Hours					52	TOTAL EQUIPMENT				\$8,811.66

MATERIAL COSTS						
Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost
Consumables 5% labor (saw blades, drill bits, etc)	1.00	LS	1.000	1.00	\$631.97	\$631.97
Selective demolition, torch cutting, steel, 1" thick plate (assumed qty)	5,000.00	LF	1.000	5,000.00	\$0.85	\$4,250.00
						TOTAL MATERIAL
						\$4,881.97

SUBCONTRACT COSTS						
Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount	
Hazardous waste cleanup/pickup/disposal, solid pickup, bulk material, maximum (20%)	9.58	ton	1.000	9.58	\$595.00	\$5,700.10
Hazardous waste cleanup/pickup/disposal, transportation to disposal site, truckload = 80 drums or 25 C.Y. or 18 tons, maximum	3.00	Load	1.000	3.00	\$400.00	\$1,200.00
						TOTAL SUBCONTRACTS
						\$6,900.10

SUMMARY OF COSTS									
Labor Cost	\$12,639.32	Labor Burden @	0.0%	\$0.00					\$12,639.32
Material Cost	\$4,881.97	Material Tax @	7.8%	\$378.35					\$5,260.32
Equipment Cost	\$8,811.66	Equipment Tax @	7.8%	\$682.90					\$9,494.56
Subcontractors	\$6,900.10								\$6,900.10
DIRECT COST SUBTOTALS	\$33,233			\$1,061			DIRECT COST SUBTOTALS		\$34,294
Additional Pay Item Notes :									



### 3.023 Remove & Dispose - Spillway intake gate motor & control panel

Additional Pay Item Notes :

Assumed that two electrician will work one day to unconnect and remove the control panel and the gate motor.

### 3.024 Remove & Dispose - Spillway radial gate motor & control panel

PAY ITEM NUMBER	:	3.024	Project	:	KRRP - Copco 2
Description	:	Remove & Dispose - Spillway radial gate motor & control panel	Group	:	D07
Quantity	:	1.00 EA			
Daily Production	:	1.25 EA per	10	hour shift	
Work Days	:	0.8	Days		
Unit Price	:	\$1,347.21 per EA	Project #	:	3
Total Cost	:	\$1,347	Estimator	:	Mihaela Tomulescu
			EA per		
			Total Cost		
			Unit Price Per EA		
			Probable Low Cost Parameter		
			Probable High Cost Parameter		
			1.375	\$1,212	\$1,212.49
			1.125	\$1,482	\$1,481.93

Description	Active Idle	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Electrician	Active	2.00	0.8	10	16.00	L	\$55.25	incl. in rate	incl. in rate	\$884.05
Labor Hours					16	TOTAL LABOR				\$884.05
Equipment Hours					0	TOTAL EQUIPMENT				\$0.00

Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost
Consumables 0.5% labor ( Side Cutter, Sharp-Nose Pliers, Sharp Tip Tweezers PCB Clamp, etc)	4.86	LS	1.000	4.86	\$88.40	\$429.85
TOTAL MATERIAL						\$429.85

Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount
					\$0.00
					\$0.00
					\$0.00
TOTAL SUBCONTRACTS					\$0.00

Labor Cost	\$884.05	Labor Burden @	0.0%	\$0.00	\$884.05
Material Cost	\$429.85	Material Tax @	7.8%	\$33.31	\$463.16
Equipment Cost	\$0.00	Equipment Tax @	7.8%	\$0.00	\$0.00
Subcontractors	\$0.00				\$0.00
<b>DIRECT COST SUBTOTALS</b>	<b>\$1,314</b>			<b>\$33</b>	<b>DIRECT COST SUBTOTALS \$1,347</b>

Assumed that two electrician will work one day to unconnect and remove the control panel and the gate motor.



PAY ITEM INFORMATION									
PAY ITEM NUMBER	:	3.026	Project	:	KRRP - Copco 2				
Description	:	Remove & Dispose - Distribution equipment, panelboards	Group	:	D03				
Quantity	:	1.00 EA							
Daily Production	:	0.63 EA per	10	hour shift	Project #	:	3		
Work Days	:	1.6 Days			Estimator	:	Mihaela Tomulescu	EA per	Total Cost
Unit Price	:	\$4,888.73 per EA			Probable Low Cost Parameter			0.6875	\$4,400
Total Cost	:	\$4,889			Probable High Cost Parameter			0.5625	\$5,378
									Unit Price Per EA
									\$4,399.85
									\$5,377.60

CREW COSTS										
Description	Active Idle	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Electrician Foreman	Active	1.00	1.6	10	16.00	L	\$55.45	incl. in rate	incl. in rate	\$887.25
Electrician	Active	1.00	1.6	10	16.00	L	\$55.25	incl. in rate	incl. in rate	\$884.05
Equipment Operator (crane)	Active	1.00	1.6	10	16.00	L	\$81.02	incl. in rate	incl. in rate	\$1,296.34
Hydraulic Crane (17tn)	Active	1.00	1.6	10	16.00	E	\$82.43	incl. in rate	incl. in rate	\$1,318.88
Labor Hours					48	TOTAL LABOR				\$3,067.63
Equipment Hours					16	TOTAL EQUIPMENT				\$1,318.88

MATERIAL COSTS						
Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost
Consumables 0.5% labor ( Side Cutter, Sharp- Nose Pliers, Sharp Tip Tweezers PCB Clamp, etc)	0.00	LS	1.000	0.00	\$153.38	\$0.00
						TOTAL MATERIAL
						\$0.00

SUBCONTRACT COSTS				
Description	Quantity	Units	Notes / Company	Contract or Quote Price Amount
Hauling Disosal Cost	1	load	40 miles to Yreka	\$400.00
				TOTAL SUBCONTRACTS
				\$400.00

SUMMARY OF COSTS					
Labor Cost	\$3,067.63	Labor Burden @	0.0%	\$0.00	\$3,067.63
Material Cost	\$0.00	Material Tax @	7.8%	\$0.00	\$0.00
Equipment Cost	\$1,318.88	Equipment Tax @	7.8%	\$102.21	\$1,421.09
Subcontractors	\$400.00				\$400.00
DIRECT COST SUBTOTALS	\$4,787		\$102	DIRECT COST SUBTOTALS	\$4,889

## Additional Pay Item Notes :

Assumed that electrical crew formed of 1 Forman and 1 Electricians will work two days to unconnect and remove the distribution panels. They are going to use same crane and a truck for disposal of spillway intake, trash rake and radial motor & control panel.

### 3.027 Remove Copper Shingles from Roof of Powerhouse

PAY ITEM NUMBER	:	3.027	Project	:	KRRP - Copco 2			
Description	:	Remove Copper Shingles from Roof of Powerhouse	Group	:				
Quantity	:	7,000.00 SF						
Daily Production	:	4,375.00 SF per 10	hour shift	Project #	:	3		
Work Days	:	1.6 Days	Estimator	:	Eric Jones	SF per	Total Cost	
Unit Price	:	\$1.83 per SF			Probable Low Cost Parameter	4812.5	\$11,511	
Total Cost	:	\$12,790			Probable High Cost Parameter	3937.5	\$14,069	
							Unit Price Per SF	
							\$1.64	
							\$2.01	

Description	Active Idle	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Carpenter Foreman (out)	Active	1.00	1.6	10	16.00	L	\$85.49	incl. in rate	incl. in rate	\$1,367.87
Carpenters	Active	2.00	1.6	10	32.00	L	\$85.49	incl. in rate	incl. in rate	\$2,735.74
Laborer	Active	3.00	1.6	10	48.00	L	\$51.07	incl. in rate	incl. in rate	\$2,451.50
Truck Driver (heavy)	Active	2.00	1.6	10	32.00	L	\$66.92	incl. in rate	incl. in rate	\$2,141.57
Equipment Operator (medium)	Active	1.00	1.6	10	16.00	L	\$72.34	incl. in rate	incl. in rate	\$1,157.38
Truck, On-Highway Dump (6x4, 12cy)	Active	2.00	1.6	10	32.00	E	\$57.41	incl. in rate	incl. in rate	\$1,837.12
Forklift, Rough Terrain (9,000 lb capacity)	Active	1.00	1.6	10	16.00	E	\$55.50	incl. in rate	incl. in rate	\$888.00
Labor Hours					144	TOTAL LABOR				\$9,854.06
Equipment Hours					48	TOTAL EQUIPMENT				\$2,725.12

Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost
TOTAL MATERIAL						\$0.00

Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount
					\$0.00
					\$0.00
					\$0.00
					\$0.00
<b>TOTAL SUBCONTRACTS</b>					<b>\$0.00</b>

Labor Cost	\$9,854.06	Labor Burden @	0.0%			\$9,854.06
Material Cost	\$0.00	Material Tax @	7.75%	\$0.00		\$0.00
Equipment Cost	\$2,725.12	Equipment Tax @	7.75%	\$211.20		\$2,936.32
Subcontractors	\$0.00					\$0.00
<b>DIRECT COST SUBTOTALS</b>	<b>\$12,579</b>			<b>\$211</b>	<b>DIRECT COST SUBTOTALS</b>	<b>\$12,790</b>

2 working days to strip roof organize and haul off material. The carpenters and laborers will remove roof and stack and organized material. Forklift will be used to load material in two dump trucks.

### 3.028 Remove Powerhouse Concrete down to spring-line of turbine

PAY ITEM NUMBER	:	3.028	Project	:	KRRP - Copco 2
Description	:	Remove Powerhouse Concrete down to spring-line of turbine	Group	:	D03
Quantity	:	1,110.00 cy			
Daily Production	:	105.00 cy per	10	hour shift	
Work Days	:	10.6 Days	Project #	:	3
Unit Price	:	\$145.88 per cy	Estimator	:	Eric Jones
Total Cost	:	\$161,932	Probable Low Cost Parameter	:	115.5
			Probable High Cost Parameter	:	84
				Total Cost	\$145,739
				Unit Price Per cy	\$131.30
					\$175.06

Description	Active Idle	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Labor Foreman	Active	1.00	10.6	10	106.00	L	\$58.87	incl. in rate	incl. in rate	\$6,240.43
Laborer	Active	3.00	10.6	10	318.00	L	\$51.07	incl. in rate	incl. in rate	\$16,241.21
Equipment Operator (medium)	Active	2.00	10.6	10	212.00	L	\$72.34	incl. in rate	incl. in rate	\$15,335.23
Truck Driver (heavy)	Active	1.00	4.7	10	47.00	L	\$66.92	incl. in rate	incl. in rate	\$3,145.43
Air Compressor 900 cfm	Active	1.00	10.6	10	106.00	E	\$38.87	incl. in rate	incl. in rate	\$4,120.11
Air Tool, Chipping Hammer	Active	2.00	10.6	10	212.00	E	\$1.64	incl. in rate	incl. in rate	\$347.48
Generator, Small Generator, 10 - 15 kW	Active	1.00	10.6	10	106.00	E	\$7.04	incl. in rate	incl. in rate	\$746.24
Hydraulic Excavator (5.0cy)	Active	1.00	10.6	10	106.00	E	\$276.50	incl. in rate	incl. in rate	\$29,309.00
Hydraulic Excavator (2.5cy)	Active	1.00	10.6	10	106.00	E	\$205.40	incl. in rate	incl. in rate	\$21,772.40
Hydraulic Impact Breaker Attachment (5k+ ft-lb)	Active	1.00	10.6	10	106.00	E	\$63.28	incl. in rate	incl. in rate	\$6,707.68
Acetylene Torches	Active	2.00	10.6	10	212.00	E	\$0.44	incl. in rate	incl. in rate	\$93.28
CAT 745 (32 CY) OFF ROAD TRUCK	Active	1.00	4.7	10	47.00	E	\$177.47	incl. in rate	incl. in rate	\$8,341.09
3 man Blasting Crew	Active	1.00	10.6	10	106.00	L	\$146.09	incl. in rate	incl. in rate	\$15,485.54
Air Track Drill 4" Airhoses, Compressor	Active	1.00	10.6	10	106.00	E	\$212.49	incl. in rate	incl. in rate	\$22,523.94
					Labor Hours	789	TOTAL LABOR			\$56,447.85
					Equipment Hours	1,107	TOTAL EQUIPMENT			\$93,961.21

Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost
Consumables (5% labor)	1.00	LS	1.000	1.00	\$2,822.39	\$2,822.39
TOTAL MATERIAL						\$2,822.39

Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount
Reinforcement Disposal Fee	99,900	lbs.	90lbs Rebar per CY of Concrete		\$0.00
Rebar Hauling to Facility (30 Miles)	90	Miles	Yreka Recycle		\$0.00
Hauling Cost by Load	3.00	loads	40,000lbs per load	\$400.00	\$1,200.00
					\$0.00
TOTAL SUBCONTRACTS					\$1,200.00

Labor Cost	\$56,447.85	Labor Burden @	0.0%	\$0.00	Included in hourly labor rate.	\$56,447.85
Material Cost	\$2,822.39	Material Tax @	7.75%	\$218.74		\$3,041.13
Equipment Cost	\$93,961.21	Equipment Tax @	7.75%	\$7,281.99		\$101,243.20
Subcontractors	\$1,200.00					\$1,200.00
<b>DIRECT COST SUBTOTALS</b>	<b>\$154,431</b>			<b>\$7,501</b>	<b>DIRECT COST SUBTOTALS</b>	<b>\$161,932</b>
<b>Additional Pay Item Notes :</b>						
<p>This item will be double shifted with two 10 hours shifts due to work window restrictions established by the California in water work permit.</p>						

### 3.029 Remove Structural Steel items associated with Powerhouse

PAY ITEM NUMBER	:	3.029	Project	:	KRRP - Copco 2
Description	:	Remove Structural Steel items associated with Powerhouse	Group	:	D09
Quantity	:	220,000.00 LBS	Project #	:	3
Daily Production	:	19,000.00 LBS per 10 hour shift	Estimator	:	Mihaela Tomulescu
Work Days	:	11.6 Days	LBS per	:	21850
Unit Price	:	\$0.64 per LBS	Total Cost	:	\$120,533
Total Cost	:	\$141,804	Unit Price Per LBS	:	\$0.55
			Probable Low Cost Parameter	:	16150
			Probable High Cost Parameter	:	\$163,074
				:	\$0.74

Description	Active Idle	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Labor Foreman	Active	1.00	11.6	10	116.00	L	\$58.35	incl. in rate	incl. in rate	\$6,768.25
Laborer	Active	3.00	11.6	10	348.00	L	\$51.01	incl. in rate	incl. in rate	\$17,751.48
Steelworker	Active	3.00	11.6	10	348.00	L	\$77.55	incl. in rate	incl. in rate	\$26,988.10
Equipment Operator (crane)	Active	1.00	11.6	10	116.00	L	\$81.02	incl. in rate	incl. in rate	\$9,398.44
Equipment Operator (medium)	Active	1.00	11.6	10	116.00	L	\$72.39	incl. in rate	incl. in rate	\$8,397.01
Crawler Crane (130tn)	Active	1.00	11.6	10	116.00	E	\$262.91	incl. in rate	incl. in rate	\$30,497.56
Loader, FE Rubber Tire (5.25cy)	Active	1.00	11.6	10	116.00	E	\$76.00	incl. in rate	incl. in rate	\$8,816.00
Oxygen and Acetylene Torches	Active	3.00	11.6	10	348.00	E	\$0.47	incl. in rate	incl. in rate	\$163.56
Labor Hours					1044	TOTAL LABOR				\$69,303.27
Equipment Hours					580	TOTAL EQUIPMENT				\$39,477.12

Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost
Consumables 15% labor (saw blades, drill bits, wrenches, electrodes, welding accessories, etc )	1.00	LS	1.000	1.00	\$10,395.49	\$10,395.49
TOTAL MATERIAL						\$10,395.49

Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount
Hazardous waste cleanup/pickup/disposal, solid pickup, bulk material, maximum (25% from total)					
	27.50	ton	Based on 25 % of total weight	\$ 595.00	\$16,362.50
Haul off of material	6.00	Loads	20 tons a load	\$ 400.00	\$2,400.00
TOTAL SUBCONTRACTS					\$18,762.50

Labor Cost	\$69,303.27	Labor Burden @	0.0%	\$0.00		\$69,303.27
Material Cost	\$10,395.49	Material Tax @	7.8%	\$805.65		\$11,201.14
Equipment Cost	\$39,477.12	Equipment Tax @	7.8%	\$3,059.48		\$42,536.60
Subcontractors	\$18,762.50					\$18,762.50
<b>DIRECT COST SUBTOTALS</b>	<b>\$137,938</b>			<b>\$3,865</b>	<b>DIRECT COST SUBTOTALS</b>	<b>\$141,804</b>
<b>Additional Pay Item Notes :</b>						
Includes columns, beams, crane girders, bracing, misc. shapes, roof trusses, purlins, etc. Assumed contains paint with heavy metals 25% of the total lbs, 36 miles from Copco lake to Yreka transfer recycling.						

### 3.030 Remove Control House Concrete

PAY ITEM NUMBER	:	3.03	Project	:	KKRP - Copco 2
Description	:	Remove Control House Concrete	Group	:	D04
Quantity	:	30.00 CY			
Daily Production	:	37.50 CY per	10	hour shift	
Work Days	:	0.8 Days	Project #	:	3
Unit Price	:	\$261.14 per CY	Estimator	:	Eric Jones
Total Cost	:	\$7,834	Probable Low Cost Parameter	:	43.125
			Probable High Cost Parameter	:	30
					Total Cost
					Unit Price Per CY
					\$221.97
					\$313.36

Description	Active Idle	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Labor Foreman	Active	1.00	0.8	10	8.00	L	\$58.87	incl. in rate	incl. in rate	\$470.98
Laborer	Active	1.00	0.8	10	8.00	L	\$51.07	incl. in rate	incl. in rate	\$408.58
Equipment Operator (medium)	Active	2.00	0.8	10	16.00	L	\$72.34	incl. in rate	incl. in rate	\$1,157.38
Truck Driver (heavy)	Active	1.00	0.8	10	8.00	L	\$66.92	incl. in rate	incl. in rate	\$535.39
Hydraulic Excavator (5.0cy)	Active	2.00	0.8	10	16.00	E	\$276.50	incl. in rate	incl. in rate	\$4,424.00
Truck, On-Highway Dump (6x4, 12cy)	Active	1.00	0.8	10	8.00	E	\$57.41	incl. in rate	incl. in rate	\$459.28
Labor Hours					40	TOTAL LABOR				\$2,572.33
Equipment Hours					24	TOTAL EQUIPMENT				\$4,883.28

Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price		Material Cost
TOTAL MATERIAL							\$0.00

Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount
					\$0.00
					\$0.00
					\$0.00
					\$0.00
TOTAL SUBCONTRACTS					\$0.00

Labor Cost	\$2,572.33	Labor Burden @	0.0%			\$2,572.33
Material Cost	\$0.00	Material Tax @	7.75%	\$0.00		\$0.00
Equipment Cost	\$4,883.28	Equipment Tax @	7.75%	\$378.45		\$5,261.73
Subcontractors	\$0.00					\$0.00
<b>DIRECT COST SUBTOTALS</b>	<b>\$7,456</b>			<b>\$378</b>	<b>DIRECT COST SUBTOTALS</b>	<b>\$7,834</b>
<b>Additional Pay Item Notes :</b>						
1 truck 3 loads and 2 excavators 1 breaking and 1 loading material, foreman managing operation and labor flagging trucks.						



PAY ITEM COST DETAIL WORKSHEET

3.031 Remove Control House Structural Steel Items

PAY ITEM INFORMATION

PAY ITEM NUMBER	: 3.031	Project	: KRRP - Copco 2
Description	: Remove Control House Structural Steel Items	Group	: D04
Quantity	: 3,500.00 LBS		
Daily Production	: 22,500.00 LBS per 10 hour shift	Project #	: 3
Work Days	: 0.2 Days	Estimator	: Mihaela Tomulescu
Unit Price	: \$0.80 per LBS	LBS per	25875
Total Cost	: \$2,785	Probable Low Cost Parameter	\$2,367
		Probable High Cost Parameter	\$3,202
		Unit Price Per LBS	\$0.68
			\$0.91

CREW COSTS

Description	Active Idle	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Labor Foreman	Active	1.00	0.2	10	2.00	L	\$58.35	incl. in rate	incl. in rate	\$116.69
Electrician	Active	1.00	0.2	10	2.00	L	\$55.25	incl. in rate	incl. in rate	\$110.51
Steelworker	Active	2.00	0.2	10	4.00	L	\$77.55	incl. in rate	incl. in rate	\$310.21
Welder	Active	1.00	0.2	10	2.00	L	\$8.62	incl. in rate	incl. in rate	\$17.25
Loader, FE Rubber Tire (8.6cy)	Active	1.00	0.2	10	2.00	E	\$225.40	incl. in rate	incl. in rate	\$450.80
Hydraulic Crane (17tn)	Active	1.00	0.2	10	2.00	E	\$82.43	incl. in rate	incl. in rate	\$164.86
Equipment Operator (medium)	Active	2.00	0.2	10	4.00	L	\$72.39	incl. in rate	incl. in rate	\$289.55
Gas Welding Machine	Active	1.00	0.2	10	2.00	E	\$2.88	incl. in rate	incl. in rate	\$5.75
Laborer	Active	4.00	0.2	10	8.00	L	\$51.01	incl. in rate	incl. in rate	\$408.08
					Labor Hours	22	TOTAL LABOR			\$1,252.29
					Equipment Hours	6	TOTAL EQUIPMENT			\$621.41

MATERIAL COSTS

Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost
Consumables 15% labor (saw blades, drill bits, wrenches, electrodes, welding accessories, etc )	1.00	LS	1.000	1.00	\$187.84	\$187.84
TOTAL MATERIAL						\$187.84

SUBCONTRACT COSTS

Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount
Hazardous waste cleanup/pickup/disposal, solid pickup, bulk material, maximum (25% from total)					
	0.44	ton	1.000	0.44	\$595.00
Hauling to Yreka	1.00	load	20 tons per load	\$400.00	\$400.00
TOTAL SUBCONTRACTS					\$660.31

SUMMARY OF COSTS

Labor Cost	\$1,252.29	Labor Burden @	0.0%	\$0.00	\$1,252.29
Material Cost	\$187.84	Material Tax @	7.8%	\$14.56	\$202.40
Equipment Cost	\$621.41	Equipment Tax @	7.8%	\$48.16	\$669.57
Subcontractors	\$660.31				\$660.31
DIRECT COST SUBTOTALS	\$2,722			\$63	DIRECT COST SUBTOTALS \$2,785

Additional Pay Item Notes :

Assumed structural frames contains paint with heavy metals 25% of the total lbs, 36 miles from Copco lake to Yreka transfer recycling. Crews E-19 for metals demolition, E-12 for welding , E-25 for cutting steel and A-3H for equipment disposal. Assuming using 1 cranes, 1 loader and 1 trucks for disposal.

### 3.032 Remove Shop Building

### 3.033 Remove & Dispose - 2 - Governor oil systems

SUMMARY OF COSTS					
Labor Cost	\$5,652.59	Labor Burden @	0.0%	\$0.00	\$5,652.59
Material Cost	\$565.26	Material Tax @	7.8%	\$43.81	\$609.07
Equipment Cost	\$4,072.56	Equipment Tax @	7.8%	\$315.62	\$4,388.18
Subcontractors	\$11,705.00				\$11,705.00
<b>DIRECT COST SUBTOTALS</b>	<b>\$21,995</b>			<b>\$359</b>	<b>DIRECT COST SUBTOTALS \$22,355</b>
<b>Additional Pay Item Notes :</b>					
Will be removed simultaneously with the demolition of the surrounding concrete. Assumed hazardous waste 100% of the total lbs, calculated 34 miles from Copco1 to Yreka Transfer Recycling.					

PAY ITEM INFORMATION									
PAY ITEM NUMBER	:	3.034	Project	:	KRRP - Copco 2				
Description	:	Remove & Dispose - Cooling water and bearing oil systems	Group	:	D10				
Quantity	:	13,300.00 LBS							
Daily Production	:	31,250.00 LBS per	10	hour shift	Project #	:	3		
Work Days	:	0.4 Days			Estimator	:	Mihaela Tomulescu	LBS per	Total Cost
Unit Price	:	\$0.52 per LBS			Probable Low Cost Parameter			34375	\$6,167
Total Cost	:	\$6,852			Probable High Cost Parameter			25000	\$8,222
									Unit Price Per LBS
									\$0.46
									\$0.62

CREW COSTS										
Description	Active Idle	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Labor Foreman	Active	1.00	0.4	10	4.00	L	\$58.35	incl. in rate	incl. in rate	\$233.39
Steelworker	Active	2.00	0.4	10	8.00	L	\$77.55	incl. in rate	incl. in rate	\$620.42
Crawler Crane (130tn)	Active	1.00	0.4	10	4.00	E	\$262.91	incl. in rate	incl. in rate	\$1,051.64
Equipment Operator (medium)	Active	1.00	0.4	10	4.00	L	\$72.39	incl. in rate	incl. in rate	\$289.55
Electrician	Active	2.00	0.4	10	8.00	L	\$55.25	incl. in rate	incl. in rate	\$442.02
Laborer	Active	3.00	0.4	10	12.00	L	\$51.01	incl. in rate	incl. in rate	\$612.12
Loader, FE Rubber Tire (5.25cy)	Active	2.00	0.4	10	8.00	E	\$76.00	incl. in rate	incl. in rate	\$608.00
Oxygen and Acetylene Torches	Active	1.00	0.4	10	4.00	E	\$0.47	incl. in rate	incl. in rate	\$1.88
					Labor Hours	36	TOTAL LABOR			\$2,197.50
					Equipment Hours	16	TOTAL EQUIPMENT			\$1,661.52

MATERIAL COSTS						
Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost
Consumables 10% labor (saw blades, drill bits, etc)	1.00	LS	1.000	1.00	\$219.75	\$219.75
Selective demolition, torch cutting, steel, 1" thick plate (assumption)	2,000.00	LF	1.000	2,000.00	\$0.85	\$1,700.00
						TOTAL MATERIAL
						\$1,919.75

SUBCONTRACT COSTS					
Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount
Hazardous waste cleanup/pickup/disposal, solid pickup, bulk material, maximum	0.67	ton	1.000	\$595.00	\$395.68
Hauling to Disposal or recycle site	1.00	Load	1.000	\$400.00	\$400.00
					TOTAL SUBCONTRACTS
					\$795.68

SUMMARY OF COSTS					
Labor Cost	\$2,197.50	Labor Burden @	0.0%	\$0.00	\$2,197.50
Material Cost	\$1,919.75	Material Tax @	7.8%	\$148.78	\$2,068.53
Equipment Cost	\$1,661.52	Equipment Tax @	7.8%	\$128.77	\$1,790.29
Subcontractors	\$795.68				\$795.68
DIRECT COST SUBTOTALS	\$6,574			\$278	DIRECT COST SUBTOTALS
					\$6,852

Additional Pay Item Notes :

Used RS Means : Pipe, metal pipe, to 1-1/2" diam., selective demolition,4890 LF of 1 1/2" oil pipes at 2.72 Lbs. Used 1 Forman, 2 Steelworkers to cut the pipes and 3 Laborers to load the pipes in the truck. The cooling and lubrication systems for the Hydroelectric Barge turbine, speed increaser and generator will be a combination of water and oil. These systems will be isolated from the water passages so that no contamination of passing water will occur. The following is a list of hazardous materials, substances, chemicals, and wastes normally found at a hydropower facility that may require disposal actions if not recycled or reused for their intended purpose:

1. Polychlorinated Biphenyls (PCBs)
2. Asbestos
3. Paint/abrasive blast grit (red lead paint)
4. Oil
5. Mercury
6. Antifreeze
7. Halogenated and non-halogenated solvents
8. Greases
9. Pesticides (includes herbicides, insecticides, and wood preservatives)
10. Petroleum contaminated
11. Chlorinated fluorocarbons (CFCs) Freon/Halon
12. Gasoline/diesel (includes product and sludge in tanks)
13. Batteries (includes acid)
14. Water treatment sludge (septic tanks/wastewater treatment).

Based on the hazardous materials above assumed hazardous waste 100% of the total lbs

PAY ITEM COST DETAIL WORKSHEET

3.035 Remove & Dispose - Oil / Water separator tank and piping

PAY ITEM INFORMATION

PAY ITEM NUMBER	: 3.035	Project	: KRRP - Copco 2
Description	: Remove & Dispose - Oil / Water separator tank and piping	Group	: D03
Quantity	: 2,700.00 LBS		
Daily Production	: 18,750.00 LBS per 10 hour shift	Project #	: 3
Work Days	: 0.1 Days	Estimator	: Mihaela Tomulescu
Unit Price	: \$0.50 per LBS	Probable Low Cost Parameter	LBS per 20625
Total Cost	: \$1,338	Probable High Cost Parameter	Total Cost \$1,204
			Unit Price Per LBS \$0.45
			\$0.59

CREW COSTS

Description	Active Idle	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Labor Foreman	Active	1.00	0.1	10	1.00	L	\$58.35	incl. in rate	incl. in rate	\$58.35
Steelworker	Active	4.00	0.1	10	4.00	L	\$77.55	incl. in rate	incl. in rate	\$310.21
Laborer	Active	4.00	0.1	10	4.00	L	\$51.01	incl. in rate	incl. in rate	\$204.04
Equipment Operator (crane)	Active	1.00	0.1	10	1.00	L	\$81.02	incl. in rate	incl. in rate	\$81.02
Hydraulic Crane (80tn)	Active	1.00	0.1	10	1.00	E	\$197.66	incl. in rate	incl. in rate	\$197.66
Oxygen and Acetylene Torches	Active	1.00	0.1	10	1.00	E	\$0.47	incl. in rate	incl. in rate	\$0.47
					Labor Hours	10	TOTAL LABOR		\$653.62	
					Equipment Hours	2	TOTAL EQUIPMENT		\$198.13	

MATERIAL COSTS

Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost
Consumables 10% labor (saw blades, drill bits, etc)	1.00	LS	1.000	1.00	\$65.36	\$65.36
TOTAL MATERIAL						\$65.36

SUBCONTRACT COSTS

Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount
Hauling to Disposal Site Or Recycle Site	1.00	Loads	20 tons a load	\$400.00	\$400.00
TOTAL SUBCONTRACTS					\$400.00

SUMMARY OF COSTS

Labor Cost	\$653.62	Labor Burden @	0.0%	\$0.00	\$653.62
Material Cost	\$65.36	Material Tax @	7.8%	\$5.07	\$70.43
Equipment Cost	\$198.13	Equipment Tax @	7.8%	\$15.36	\$213.49
Subcontractors	\$400.00				\$400.00
DIRECT COST SUBTOTALS	\$1,317		\$20	DIRECT COST SUBTOTALS	\$1,338

Additional Pay Item Notes :

Crews E-19 for metals demolition, E-25 for cutting steel and A-3H for equipment disposal. Assumed a disposal fee will be required.

PAY ITEM INFORMATION									
PAY ITEM NUMBER	:	3.036	Project	:	KRRP - Copco 2				
Description	:	Remove & Dispose - 12 - Cast Iron Columns	Group	:	D03				
Quantity	:	54,000.00 LBS							
Daily Production	:	27,500.00 LBS per	10	hour shift	Project #	:	3		
Work Days	:	2.0 Days			Estimator	:	Mihaela Tomulescu	LBS per	Total Cost
Unit Price	:	\$0.32 per LBS			Probable Low Cost Parameter			31625	\$14,851
Total Cost	:	\$17,472			Probable High Cost Parameter			23375	\$20,092
									Unit Price Per LBS
									\$0.28
									\$0.37

CREW COSTS										
Description	Active Idle	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Labor Foreman	Active	1.00	2.0	10	20.00	L	\$58.35	incl. in rate	incl. in rate	\$1,166.94
Laborer	Active	3.00	2.0	10	60.00	L	\$51.01	incl. in rate	incl. in rate	\$3,060.60
Steelworker	Active	2.00	2.0	10	40.00	L	\$77.55	incl. in rate	incl. in rate	\$3,102.08
Equipment Operator (crane)	Active	1.00	2.0	10	20.00	L	\$81.02	incl. in rate	incl. in rate	\$1,620.42
Equipment Operator (medium)	Active	1.00	2.0	10	20.00	L	\$72.39	incl. in rate	incl. in rate	\$1,447.76
Hydraulic Crane (50tn)	Active	1.00	2.0	10	20.00	E	\$136.20	incl. in rate	incl. in rate	\$2,724.00
Loader, FE Rubber Tire (5.25cy)	Active	1.00	2.0	10	20.00	E	\$76.00	incl. in rate	incl. in rate	\$1,520.00
Oxygen and Acetylene Torches	Active	2.00	2.0	10	40.00	E	\$0.47	incl. in rate	incl. in rate	\$18.80
					Labor Hours	160	TOTAL LABOR		\$10,397.80	
					Equipment Hours	80	TOTAL EQUIPMENT		\$4,262.80	

MATERIAL COSTS						
Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost
Consumables 15% labor (saw blades, drill bits, etc)	1.00	LS	1.000	1.00	\$1,559.67	\$1,559.67
TOTAL MATERIAL						\$1,559.67

SUBCONTRACT COSTS				
Description	Quantity	Units	Notes / Company	Contract or Quote Amount
Hauling to Disposal Site Or Recycle Site	2.00	Loads	20 tons a load	\$800.00
TOTAL SUBCONTRACTS				\$800.00

SUMMARY OF COSTS					
Labor Cost	\$10,397.80	Labor Burden @	0.0%	\$0.00	\$10,397.80
Material Cost	\$1,559.67	Material Tax @	7.8%	\$120.87	\$1,680.54
Equipment Cost	\$4,262.80	Equipment Tax @	7.8%	\$330.37	\$4,593.17
Subcontractors	\$800.00				\$800.00
DIRECT COST SUBTOTALS	\$17,020		\$451	DIRECT COST SUBTOTALS	\$17,472

Additional Pay Item Notes :

Assumed Crews E-19 for metals demolition, E-12 for welding , E-25 for cutting steel and A-3H for equipment disposal., B-34A for hauling. Assuming using 2 cranes, 1 loader and 2 trucks for disposal.  
Using hydraulic impact breaker because columns that are encased in concrete.

PAY ITEM INFORMATION									
PAY ITEM NUMBER	:	3.037	Project	:	KRRP - Copco 2				
Description	:	Remove & Dispose - 2 - Francis Turbines	Group	:	D03				
Quantity	:	660,000.00 LBS							
Daily Production	:	28,000.00 LBS per	10	hour shift	Project #	:	3		
Work Days	:	23.6	Days		Estimator	:	Mihaela Tomulescu	LBS per	Total Cost
Unit Price	:	\$0.51	per LBS		Probable Low Cost Parameter		32200	\$283,401	Unit Price Per LBS
Total Cost	:	\$333,413			Probable High Cost Parameter		22400	\$400,095	\$0.61

CREW COSTS										
Description	Active Idle	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Labor Foreman	Active	1.00	23.6	10	236.00	L	\$58.35	incl. in rate	incl. in rate	\$13,769.89
Laborer	Active	3.00	23.6	10	708.00	L	\$51.01	incl. in rate	incl. in rate	\$36,115.08
Electrician Foreman	Active	1.00	23.6	10	236.00	L	\$55.45	incl. in rate	incl. in rate	\$13,086.91
Electrician	Active	2.00	23.6	10	472.00	L	\$55.25	incl. in rate	incl. in rate	\$26,079.42
Steelworker	Active	2.00	23.6	10	472.00	L	\$77.55	incl. in rate	incl. in rate	\$36,604.54
Millwright	Active	2.00	23.6	10	472.00	L	\$81.53	incl. in rate	incl. in rate	\$38,480.27
Equipment Operator (medium)	Active	1.00	23.6	10	236.00	L	\$72.39	incl. in rate	incl. in rate	\$17,083.57
Equipment Operator (crane)	Active	2.00	23.6	10	472.00	L	\$81.02	incl. in rate	incl. in rate	\$38,241.91
Hydraulic Crane (50tn)	Active	1.00	23.6	10	236.00	E	\$136.20	incl. in rate	incl. in rate	\$32,143.20
Loader, FE Rubber Tire (3.5cy)	Active	1.00	23.6	10	236.00	E	\$63.11	incl. in rate	incl. in rate	\$14,893.96
Oxygen and Acetylene Torches	Active	2.00	23.6	10	472.00	E	\$0.47	incl. in rate	incl. in rate	\$221.84
					Labor Hours	3304	TOTAL LABOR		\$219,461.59	
					Equipment Hours	944	TOTAL EQUIPMENT		\$47,259.00	

MATERIAL COSTS						
Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost
Consumables 10% labor (saw blades, drill bits, etc)	1.00	LS	1.000	1.00	\$21,946.16	\$21,946.16
Selective demolition, torch cutting, steel, 1" thick plate (assumption)	3,000.00	LF	1.000	3,000.00	\$0.85	\$2,550.00
TOTAL MATERIAL						\$24,496.16

SUBCONTRACT COSTS					
Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount
Hazardous waste cleanup/pickup/disposal, solid pickup, bulk material, maximum (10%)					
	33.00	ton	1.000	33.00	\$595.00
Wide Load Hauling to Recycle site	17.00	Loads	1.000	17.00	\$1,000.00
TOTAL SUBCONTRACTS					\$36,635.00

SUMMARY OF COSTS					
Labor Cost	\$219,461.59	Labor Burden @	0.0%	\$0.00	\$219,461.59
Material Cost	\$24,496.16	Material Tax @	7.8%	\$1,898.45	\$26,394.61
Equipment Cost	\$47,259.00	Equipment Tax @	7.8%	\$3,662.57	\$50,921.57
Subcontractors	\$36,635.00				\$36,635.00
DIRECT COST SUBTOTALS	\$327,852		\$5,561	DIRECT COST SUBTOTALS	\$333,413

Additional Pay Item Notes :	
<p>The crew will open the engine side panels, and remove the nacelle access panels. Disconnect the engine thermocouple leads at the terminal board. Before disconnecting any lines all fuel, oil, and hydraulic fluid valves are closed. Plug all lines as they are disconnected to prevent entrance of foreign material. Remove the clamps securing the bleed-air ducts at the firewall. Then, disconnect the electrical connector plugs, engine breather and vent lines, and fuel, oil, and hydraulic lines. Disconnect the engine power lever and propeller control rods or cables. Remove the covers from the lift points, attach the sling, and remove slack from the cables using a suitable hoist. The sling must be adjusted to position. Remove the engine mount bolts. The engine ready to be removed. Move the engine forward, out of the nacelle structure. Lower the into position on the stand, and secure it prior to removing the engine sling. The crew of 4 Welder are going to cut in pieces the big parts of the turbine to be able to load them in the truck using a loader and dispose. .Assumed contains paint with heavy metals 10% of the total lbs, 36 miles from Copco2 to Yreka transfer recycling, due to size of the loads it is expected to have extra cost to account for lead cars and potential permits.</p>	

PAY ITEM COST DETAIL WORKSHEET

3.038 Remove & Dispose - 2 - 40 Ton indoor cranes

PAY ITEM INFORMATION									
PAY ITEM NUMBER	:	3.038	Project	:	KRRP - Copco 2				
Description	:	Remove & Dispose - 2 - 40 Ton indoor cranes	Group	:	D10				
Quantity	:	140,000.00 LBS							
Daily Production	:	28,000.00 LBS per	10	hour shift	Project #	:	3		
Work Days	:	5.0 Days	Estimator	:	Mihaela Tomulescu	LBS per	32200	Total Cost	Unit Price Per LBS
Unit Price	:	\$0.62 per LBS	Probable Low Cost Parameter				22400	\$73,418	\$0.52
Total Cost	:	\$86,374	Probable High Cost Parameter					\$103,649	\$0.74

CREW COSTS										
Description	Active Idle	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Labor Foreman	Active	1.00	5.0	10	50.00	L	\$58.35	incl. in rate	incl. in rate	\$2,917.35
Laborer	Active	4.00	5.0	10	200.00	L	\$51.01	incl. in rate	incl. in rate	\$10,202.00
Steelworker	Active	3.00	5.0	10	150.00	L	\$77.55	incl. in rate	incl. in rate	\$11,632.80
Equipment Operator (crane)	Active	2.00	5.0	10	100.00	L	\$81.02	incl. in rate	incl. in rate	\$8,102.10
Equipment Operator (medium)	Active	1.00	5.0	10	50.00	L	\$72.39	incl. in rate	incl. in rate	\$3,619.40
Electrician	Active	1.00	5.0	10	50.00	L	\$55.25	incl. in rate	incl. in rate	\$2,762.65
Crawler Crane (270tn)	Active	1.00	5.0	10	50.00	E	\$454.10	incl. in rate	incl. in rate	\$22,705.00
Hydraulic Crane (80tn)	Active	1.00	5.0	10	50.00	E	\$197.66	incl. in rate	incl. in rate	\$9,883.00
Loader, FE Rubber Tire (5.25cy)	Active	1.00	5.0	10	50.00	E	\$76.00	incl. in rate	incl. in rate	\$3,800.00
Oxygen and Acetylene Torches	Active	2.00	5.0	10	100.00	E	\$0.47	incl. in rate	incl. in rate	\$47.00
					Labor Hours	600	TOTAL LABOR		\$39,236.30	
					Equipment Hours	250	TOTAL EQUIPMENT		\$36,435.00	

MATERIAL COSTS						
Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost
Consumables 5% labor (saw blades, drill bits, etc)	1.00	LS	1.000	1.00	\$1,961.82	\$1,961.82
TOTAL MATERIAL						\$1,961.82

SUBCONTRACT COSTS					
Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount
Hazardous waste cleanup/pickup/disposal, solid pickup, bulk material, maximum	7.00	ton	1.000	7.00	\$595.00
Hauling to Disposal Site Or Recycle Site	4.00	Loads	20 tons a load	\$400.00	\$1,600.00
TOTAL SUBCONTRACTS					\$5,765.00

SUMMARY OF COSTS									
Labor Cost	\$39,236.30	Labor Burden @	0.0%	\$0.00					\$39,236.30
Material Cost	\$1,961.82	Material Tax @	7.8%	\$152.04					\$2,113.86
Equipment Cost	\$36,435.00	Equipment Tax @	7.8%	\$2,823.71					\$39,258.71
Subcontractors	\$5,765.00								\$5,765.00
DIRECT COST SUBTOTALS	\$83,398			\$2,976				DIRECT COST SUBTOTALS	\$86,374
Additional Pay Item Notes :									



PAY ITEM INFORMATION									
PAY ITEM NUMBER	:	3.039	Project	:	KRRP - Copco 2				
Description	:	Remove & Dispose - Compressed Air Systems	Group	:	D03				
Quantity	:	1,000.00 LBS							
Daily Production	:	7,500.00 LBS per	10	hour shift	Project #	:	3		
Work Days	:	0.133 Days			Estimator	:	Mihaela Tomulescu	LBS per	Total Cost
Unit Price	:	\$1.23 per LBS			Probable Low Cost Parameter			8250	\$1,105
Total Cost	:	\$1,227			Probable High Cost Parameter			6000	\$1,473
									Unit Price Per LBS
									\$1.10
									\$1.47

CREW COSTS										
Description	Active Idle	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Electrician Foreman	Active	1.00	0.1	10	1.33	L	\$55.45	incl. in rate	incl. in rate	\$73.94
Steelworker	Active	1.00	0.1	10	1.33	L	\$77.55	incl. in rate	incl. in rate	\$103.40
Laborer	Active	3.00	0.1	10	4.00	L	\$51.01	incl. in rate	incl. in rate	\$204.04
Loader, FE Rubber Tire (8.6cy)	Active	1.00	0.1	10	1.33	E	\$225.40	incl. in rate	incl. in rate	\$300.53
Equipment Operator (medium)	Active	1.00	0.1	10	1.33	L	\$72.39	incl. in rate	incl. in rate	\$96.52
Labor Hours					8	TOTAL LABOR				\$477.90
Equipment Hours					1.333333333	TOTAL EQUIPMENT				\$300.53

MATERIAL COSTS						
Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost
Consumables 5% labor (saw blades, drill bits, etc)	1.00	LS	1.000	1.00	\$23.89	\$23.89
						TOTAL MATERIAL
						\$23.89

SUBCONTRACT COSTS					
Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount
Hauling to Disposal Site Or Recycle Site	1.00	Loads	20 tons a load	\$400.00	\$400.00
					TOTAL SUBCONTRACTS
					\$400.00

SUMMARY OF COSTS									
Labor Cost	\$477.90	Labor Burden @	0.0%	\$0.00					\$477.90
Material Cost	\$23.89	Material Tax @	7.8%	\$1.85					\$25.75
Equipment Cost	\$300.53	Equipment Tax @	7.8%	\$23.29					\$323.82
Subcontractors	\$400.00								\$400.00
DIRECT COST SUBTOTALS	\$1,202			\$25			DIRECT COST SUBTOTALS		\$1,227
Additional Pay Item Notes :									
Used RS Means : assumption for "Pipe, metal pipe, to 1-1/2" diam., selective demolition, 370 LF of 1 1/2" pipes at 2.72 Lbs. Used 1 Steelworkers to cut the pipes and 3 Laborers for hauling.									

## PAY ITEM INFORMATION

PAY ITEM NUMBER	: 3.040	Project	: KRRP - Copco 2
Description	: Remove & Dispose - 2 - CO2 Systems	Group	: D03
Quantity	: 2,100.00 LBS		
Daily Production	: 7,500.00 LBS per 10 hour shift	Project #	: 3
Work Days	: 0.3 Days	Estimator	: Mihaela Tomulescu
Unit Price	: \$1.08 per LBS	Probable Low Cost Parameter	8250 \$2,039 \$0.97
Total Cost	: \$2,266	Probable High Cost Parameter	6000 \$2,719 \$1.29

## CREW COSTS

Description	Active Idle	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Labor Foreman	Active	1.00	0.3	10	3.00	L	\$58.35	incl. in rate	incl. in rate	\$175.04
Steelworker	Active	2.00	0.3	10	6.00	L	\$77.55	incl. in rate	incl. in rate	\$465.31
Laborer	Active	2.00	0.3	10	6.00	L	\$51.01	incl. in rate	incl. in rate	\$306.06
Equipment Operator (medium)	Active	1.00	0.3	10	3.00	L	\$72.39	incl. in rate	incl. in rate	\$217.16
Loader, FE Rubber Tire (5.25cy)	Active	1.00	0.3	10	3.00	E	\$76.00	incl. in rate	incl. in rate	\$228.00
Electrician	Active	1.00	0.3	10	3.00	L	\$55.25	incl. in rate	incl. in rate	\$165.76
Equipment Operator (light)	Active	1.00	0.3	10	3.00	L	\$69.39	incl. in rate	incl. in rate	\$208.17
Labor Hours					24	TOTAL LABOR				\$1,537.51
Equipment Hours					3	TOTAL EQUIPMENT				\$228.00

## MATERIAL COSTS

Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost
Consumables 5% labor (saw blades, drill bits, etc)	1.00	LS	1.000	1.00	\$76.88	\$76.88
						TOTAL MATERIAL
						\$76.88

## SUBCONTRACT COSTS

Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount
Hauling to Disposal Site Or Recycle Site	1.00	Loads	20 tons a load	\$400.00	\$400.00
					TOTAL SUBCONTRACTS
					\$400.00

## SUMMARY OF COSTS

Labor Cost	\$1,537.51	Labor Burden @	0.0%	\$0.00	\$1,537.51
Material Cost	\$76.88	Material Tax @	7.8%	\$5.96	\$82.83
Equipment Cost	\$228.00	Equipment Tax @	7.8%	\$17.67	\$245.67
Subcontractors	\$400.00				\$400.00
DIRECT COST SUBTOTALS	\$2,242			\$24	DIRECT COST SUBTOTALS
					\$2,266

## Additional Pay Item Notes :

Used RS Means : Pipe, metal pipe, to 1-1/2" diam., selective demolition, 772 LF of 1 1/2" pipes at 2.72 Lbs. Used 1 Forman, 2 Steelworkers to cut the pipes and 2 Laborers to load the pipes in the truck. 1 electrician for tools.



PAY ITEM COST DETAIL WORKSHEET

3.042 Remove & Dispose - Transformer Oil Fire Protection

PAY ITEM INFORMATION									
PAY ITEM NUMBER	:	3.042	Project	:	KRRP - Copco 2				
Description	:	Remove & Dispose - Transformer Oil Fire Protection	Group	:	D09				
Quantity	:	6,500.00 LBS							
Daily Production	:	23,125.00 LBS per	10	hour shift					
Work Days	:	0.3 Days	Project #	:	3				
Unit Price	:	\$0.66 per LBS	Estimator	:	Mihaela Tomulescu	LBS per	Total Cost	Unit Price Per LBS	
Total Cost	:	\$4,289	Probable Low Cost Parameter			25437.5	\$3,860	\$0.59	
			Probable High Cost Parameter			18500	\$5,146	\$0.79	

CREW COSTS										
Description	Active Idle	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Labor Foreman	Active	1.00	0.3	10	3.00	L	\$58.35	incl. in rate	incl. in rate	\$175.04
Laborer	Active	2.00	0.3	10	6.00	L	\$51.01	incl. in rate	incl. in rate	\$306.06
Steelworker	Active	2.00	0.3	10	6.00	L	\$77.55	incl. in rate	incl. in rate	\$465.31
Loader, FE Rubber Tire (8.6cy)	Active	1.00	0.3	10	3.00	E	\$225.40	incl. in rate	incl. in rate	\$676.20
Equipment Operator (medium)	Active	1.00	0.3	10	3.00	L	\$72.39	incl. in rate	incl. in rate	\$217.16
Labor Hours					18	TOTAL LABOR				\$1,163.58
Equipment Hours					3	TOTAL EQUIPMENT				\$676.20

MATERIAL COSTS						
Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost
Consumables 5% labor (saw blades, drill bits, etc)	1.00	LS	1.000	1.00	\$58.18	\$58.18
						TOTAL MATERIAL
						\$58.18

SUBCONTRACT COSTS					
Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount
Hazardous waste cleanup/pickup/disposal, solid pickup, bulk material, maximum	3.25	ton	1.000	3.25	\$595.00
Hauling to Disposal Site Or Recycle Site	1.00	Loads	20 tons a load	\$400.00	\$400.00
					TOTAL SUBCONTRACTS
					\$2,333.75

SUMMARY OF COSTS									
Labor Cost	\$1,163.58	Labor Burden @	0.0%	\$0.00					\$1,163.58
Material Cost	\$58.18	Material Tax @	7.8%	\$4.51					\$62.69
Equipment Cost	\$676.20	Equipment Tax @	7.8%	\$52.41					\$728.61
Subcontractors	\$2,333.75								\$2,333.75
DIRECT COST SUBTOTALS	\$4,232			\$57			DIRECT COST SUBTOTALS		\$4,289
Additional Pay Item Notes :									
Based on RS Means : Pipe, metal pipe, to 1-1/2" diam., selective demolition, 2390 LF of 1 1/2" fire protection pipes at 2.72 Lbs. Used 1 Forman and 1 Laborers to load in drums and put them in the truck. Calculated 36 miles from Copco 1 to Yreka Transfer Recycling. Each hydropower facility has at least 150,000 gallons to 250,000 gallon of oil currently in use. This oil would have to be properly disposed of in the event of decommissioning. Oil removed from the turbines and other equipment, including transformer oil, would be either a waste oil or used oil, depending on prior use and contaminants found in the oil. Containerized oil containing contaminants such as solvents are commonly encountered at hydropower facilities. Oil sludges are common in tanks. Oil disposal would likely be costly due to the large volumes found at hydropower facilities and the ease of contamination with other regulated hazardous wastes.									

### 3.043 Remove & Dispose - Unwatering Piping

PAY ITEM NUMBER	:	3.043	Project	:	KRRP - Copco 2		
Description	:	Remove & Dispose - Unwatering Piping	Group	:	D05		
Quantity	:	32,000.00 LBS					
Daily Production	:	22,500.00 LBS per	10	hour shift	Project #	:	3
Work Days	:	1.4 Days			Estimator	:	Mihaela Tomulescu
Unit Price	:	\$0.48 per LBS			LBS per		Total Cost
Total Cost	:	\$15,367			Probable Low Cost Parameter	24750	\$13,830
					Probable High Cost Parameter	18000	\$18,440
							Unit Price Per LBS
							\$0.43
							\$0.58

Description	Active Idle	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Labor Foreman	Active	1.00	1.4	10	14.00	L	\$58.35	incl. in rate	incl. in rate	\$816.86
Laborer	Active	4.00	1.4	10	56.00	L	\$51.01	incl. in rate	incl. in rate	\$2,856.56
Steelworker	Active	4.00	1.4	10	56.00	L	\$77.55	incl. in rate	incl. in rate	\$4,342.91
Equipment Operator (medium)	Active	1.00	1.4	10	14.00	L	\$72.39	incl. in rate	incl. in rate	\$1,013.43
Welder	Active	1.00	1.4	10	14.00	L	\$8.62	incl. in rate	incl. in rate	\$120.73
Gas Welding Machine	Active	1.00	1.4	10	14.00	E	\$2.88	incl. in rate	incl. in rate	\$40.28
Electrician	Active	1.00	1.4	10	14.00	L	\$55.25	incl. in rate	incl. in rate	\$773.54
Loader, FE Rubber Tire (5.25cy)	Active	1.00	1.4	10	14.00	E	\$76.00	incl. in rate	incl. in rate	\$1,064.00
Labor Hours					168	TOTAL LABOR				\$9,924.04
Equipment Hours					28	TOTAL EQUIPMENT				\$1,104.28

Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost
Consumables 10% labor (saw blades, drill bits, etc)	1.00	LS	1.000	1.00	\$992.40	\$992.40
Selective demolition, torch cutting, steel, 1" thick plate (assumption)	2,000.00	LF	1.000	2,000.00	\$0.85	\$1,700.00
TOTAL MATERIAL						\$2,692.40

Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount
Hazardous waste cleanup/pickup/disposal, solid pickup, bulk material, maximum	1.60	ton	1,000	1.60	\$952.00
Hauling to Disposal Site Or Recycle Site	1.00	Loads	20 tons a load	\$400.00	\$400.00
TOTAL SUBCONTRACTS					\$1,352.00

Labor Cost	\$9,924.04	Labor Burden @	0.0%	\$0.00		\$9,924.04
Material Cost	\$2,692.40	Material Tax @	7.8%	\$208.66		\$2,901.06
Equipment Cost	\$1,104.28	Equipment Tax @	7.8%	\$85.58		\$1,189.86
Subcontractors	\$1,352.00					\$1,352.00
<b>DIRECT COST SUBTOTALS</b>	<b>\$15,073</b>			<b>\$294</b>	<b>DIRECT COST SUBTOTALS</b>	<b>\$15,367</b>

Used RS Means : Assumed Pipe, metal pipe, to 1-1/2" diam., selective demolition, around 11765 LF of 1 1/2" pipes at 2.72 Lbs. Used Crew formed of 1 Forman, 2 Steelworkers to cut the pipes, 1 Welder to cut steel in inaccessible places, 2 Laborers to haul the pipes in the truck with the loader, 1 electrician to unplug the power and to assure the temporary power at the construction site. Calculated 36 miles from Copco to Yreka Transfer Recycling.

## PAY ITEM INFORMATION

PAY ITEM NUMBER	: 3.044	Project	: KRRP - Copco 2
Description	: Remove & Dispose - Drainage Piping	Group	: D05
Quantity	: 10,000.00 LBS		
Daily Production	: 5,562.50 LBS per 10 hour shift	Project #	: 3
Work Days	: 1.8 Days	Estimator	: Mihaela Tomulescu
Unit Price	: \$0.82 per LBS	LBS per	6118.75
Total Cost	: \$8,231	Probable Low Cost Parameter	\$7,408
		Probable High Cost Parameter	\$9,877
		Unit Price Per LBS	\$0.74
			\$0.99

## CREW COSTS

Description	Active Idle	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Labor Foreman	Active	1.00	1.8	10	18.00	L	\$58.35	incl. in rate	incl. in rate	\$1,050.25
Steelworker	Active	1.00	1.8	10	18.00	L	\$77.55	incl. in rate	incl. in rate	\$1,395.94
Electrician	Active	1.00	1.8	10	18.00	L	\$55.25	incl. in rate	incl. in rate	\$994.55
Equipment Operator (medium)	Active	1.00	1.8	10	18.00	L	\$72.39	incl. in rate	incl. in rate	\$1,302.98
Loader, FE Rubber Tire (5.25cy)	Active	1.00	1.8	10	18.00	E	\$76.00	incl. in rate	incl. in rate	\$1,368.00
Electrician	Active	1.00	1.8	10	18.00	L	\$55.25	incl. in rate	incl. in rate	\$994.55
Labor Hours					90	TOTAL LABOR				\$5,738.27
Equipment Hours					18	TOTAL EQUIPMENT				\$1,368.00

## MATERIAL COSTS

Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost
Consumables 10% labor (saw blades, drill bits, etc)	1.00	LS	1.000	1.00	\$573.83	\$573.83
						TOTAL MATERIAL
						\$573.83

## SUBCONTRACT COSTS

Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount
Hauling to Disposal Site Or Recycle Site	1.00	Loads	20 tons a load	\$400.00	\$400.00
					TOTAL SUBCONTRACTS
					\$400.00

## SUMMARY OF COSTS

Labor Cost	\$5,738.27	Labor Burden @	0.0%	\$0.00	\$5,738.27
Material Cost	\$573.83	Material Tax @	7.8%	\$44.47	\$618.30
Equipment Cost	\$1,368.00	Equipment Tax @	7.8%	\$106.02	\$1,474.02
Subcontractors	\$400.00				\$400.00
DIRECT COST SUBTOTALS	\$8,080			\$150	DIRECT COST SUBTOTALS
					\$8,231

## Additional Pay Item Notes :

Assumed 2735 LF of 1 " drainage pipes at 3.66 Lbs. Used 1 Loader and 1 Forman, 1 Steelworkers to cut the pipes and 1 Laborers to load the pipes in the truck.

PAY ITEM COST DETAIL WORKSHEET

3.044a Remove & Dispose - Petroleum Products from Mechanical Equip.

PAY ITEM INFORMATION									
PAY ITEM NUMBER	:	3.044a	Project	:	KRRP - Copco 2				
Description	:	Remove & Dispose - Petroleum Products from Mechanical Equip.	Group	:	D05				
Quantity	:	3,300.00 GAL							
Daily Production	:	1,375.00 GAL per	10	hour shift	Project #	:	3		
Work Days	:	2.4 Days	Estimator	:	Mihaela Tomulescu	GAL per	1512.5	Total Cost	Unit Price Per GAL
Unit Price	:	\$4.74 per GAL	Probable Low Cost Parameter				\$14,087		\$4.27
Total Cost	:	\$15,652	Probable High Cost Parameter				1168.75	\$18,000	\$5.45

CREW COSTS										
Description	Active Idle	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Labor Foreman	Active	1.00	2.4	10	24.00	L	\$58.35	incl. in rate	incl. in rate	\$1,400.33
Carpenters, Journeyman	Active	2.00	2.4	10	48.00	L	\$77.03	incl. in rate	incl. in rate	\$3,697.30
Laborer	Active	2.00	2.4	10	48.00	L	\$51.01	incl. in rate	incl. in rate	\$2,448.48
					Labor Hours	120	TOTAL LABOR			\$7,546.10
					Equipment Hours	0	TOTAL EQUIPMENT			\$0.00

MATERIAL COSTS							
Description	Item Quantity	Order Unit	conversion	Factor / Waste	Order Quantity	Order Price	Material Cost
Consumables 20% labor (absorbant materials, drums, etc)	1.00	LS		1.000	1.00	\$1,509.22	\$1,509.22
TOTAL MATERIAL							\$1,509.22

SUBCONTRACT COSTS					
Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount
Hazardous waste cleanup/pickup/disposal, liquid pickup, vacuum truck, stainless steel tank, 5000 gallons, minimum charge, 4 hours, 2 compartment	24.00	hour	RSM Means 028120101260	\$270.00	\$6,480.00
TOTAL SUBCONTRACTS					\$6,480.00

SUMMARY OF COSTS									
Labor Cost	\$7,546.10	Labor Burden @	0.0%	\$0.00					\$7,546.10
Material Cost	\$1,509.22	Material Tax @	7.8%	\$116.96					\$1,626.19
Equipment Cost	\$0.00	Equipment Tax @	7.8%	\$0.00					\$0.00
Subcontractors	\$6,480.00								\$6,480.00
DIRECT COST SUBTOTALS	\$15,535			\$117				DIRECT COST SUBTOTALS	\$15,652

Additional Pay Item Notes :

Petroleum-based products, ranging from fuel oil and hydraulic fluid to lubricating greases and oils, are found throughout every type of power generating plant or system. Lubrication supports bearings and moving parts in all sorts of equipment: pumps, conveyors, feeders, scrubbers, cranes, turbines, and more. A good oil/water separation system will result in a flow of concentrated waste oil to a collection area and a flow of oil-free water ready for secondary processing or discharge. Once an oil layer has been separated from free water, it must be removed for recycling or disposal. Many plants use one or more of these oil removal methods, but each has costly limitations:

1. Absorbent materials. Absorbent mats or materials are frequently used to dam up and absorb excess oils and greases resulting from accidents or the routine operation of machinery. These materials are very effective for preventing the spread of a source leak and very efficient in terms of oil pickup. Yet, their use on large volumes of waste oil results in multiple, recurring costs that can make them impractical as an everyday solution:
  - the costs of the materials themselves
  - the labor costs for ordering, stocking, application, and removal
  - the costs of used-media collection, disposal, or re-processing/recycling.
2. Manually operated "slotted pipes." Many separators feature a "slotted pipe," a pipe located near the top of the vessel that has a horizontal opening. Oil is removed by turning the horizontal opening downward until it meets the floating oil layer, which drains through the pipe to a collection receptacle. These pipes work well on thick layers of oil, but cannot drain off a sheen of oil without draining off a large amount of water as well.

AECOM assumed the best is Vacuum truck removal method. Used a crew formed of 1 Foreman, 2 Laborers and 2 journeymen to takeout the petroleum waste, Vacuum-equipped tank trucks are used to remove waste oil from collection points (assumed existing drums or tanks) so that it can be transported to recycling or disposal locations. If the waste oil has been thoroughly separated, highly concentrated, and stored in an appropriate receptacle, this service can be used very efficiently. However, vacuum disposal units are often used to pump oil layers directly off of water. This results in the intake of a significant amount free water along with the waste oil – and a significantly higher cost.





PAY ITEM INFORMATION									
PAY ITEM NUMBER	:	3.045	Project	:	KRRP - Copco 2				
Description	:	Remove & Dispose - AC Generator, Indoor Vertical	Group	:	D09				
Quantity	:	2.00 EA							
Daily Production	:	0.25 EA per	10	hour shift					
Work Days	:	8.0	Days		Project #	:	3		
Unit Price	:	\$65,756.87	per EA		Estimator	:	Mihaela Tomulescu	EA per	Total Cost
Total Cost	:	\$131,514			Probable Low Cost Parameter			0.275	\$118,362
					Probable High Cost Parameter			0.225	\$144,665
									Unit Price Per EA
									\$59,181.18
									\$72,332.56

CREW COSTS										
Description	Active Idle	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Electrician Foreman	Active	1.00	8.0	10	80.00	L	\$55.45	incl. in rate	incl. in rate	\$4,436.24
Electrician	Active	6.00	8.0	10	480.00	L	\$55.25	incl. in rate	incl. in rate	\$26,521.44
Equipment Operator (oiler)	Active	2.00	8.0	10	160.00	L	\$73.04	incl. in rate	incl. in rate	\$11,687.04
Equipment Operator (crane)	Active	1.00	8.0	10	80.00	L	\$81.02	incl. in rate	incl. in rate	\$6,481.68
Crawler Crane (130tn)	Active	1.00	8.0	10	80.00	E	\$262.91	incl. in rate	incl. in rate	\$21,032.80
Steelworker	Active	6.00	8.0	10	480.00	L	\$77.55	incl. in rate	incl. in rate	\$37,224.96
Labor Foreman	Active	1.00	8.0	10	80.00	L	\$58.35	incl. in rate	incl. in rate	\$4,667.76
Welder	Active	2.00	8.0	10	160.00	L	\$8.62	incl. in rate	incl. in rate	\$1,379.80
Gas Welding Machine	Active	2.00	8.0	10	160.00	E	\$2.88	incl. in rate	incl. in rate	\$460.32
Labor Hours					1520	TOTAL LABOR				\$92,398.92
Equipment Hours					240	TOTAL EQUIPMENT				\$21,493.12

MATERIAL COSTS						
Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost
Consumables 10% labor (saw blades, drill bits, e	1.00	LS	1.000	1.00	\$9,239.89	\$9,239.89
						TOTAL MATERIAL
						\$9,239.89

SUBCONTRACT COSTS					
Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount
Hauling to Yreka increased amount for wide loads	6.00	Loads	20 tons a load	\$ 1,000.00	\$6,000.00
					TOTAL SUBCONTRACTS
					\$6,000.00

SUMMARY OF COSTS					
Labor Cost	\$92,398.92	Labor Burden @	0.0%	\$0.00	\$92,398.92
Material Cost	\$9,239.89	Material Tax @	7.8%	\$716.09	\$9,955.98
Equipment Cost	\$21,493.12	Equipment Tax @	7.8%	\$1,665.72	\$23,158.83
Subcontractors	\$6,000.00				\$6,000.00
DIRECT COST SUBTOTALS	\$129,132			\$2,382	DIRECT COST SUBTOTALS
					\$131,514
Additional Pay Item Notes :					
Assumed removal of 2 units in 2 weeks, weight per unit around 230000 LBS (stator, rotor, base, exciter assembly). Used RS Means, 2 X R13 Crew formed of 1 Forman, 3 Electricians, 1 Oiler, 0 .25 Equipment Crane, 3 Steelworkers to cut adjacent appurtenances and 1 Welder to cut pipes.					

PAY ITEM INFORMATION									
PAY ITEM NUMBER	:	3.046	Project	:	KRRP - Copco 2				
Description	:	Remove & Dispose - Excitation equipment for 15 MVA Generator	Group	:	D04				
Quantity	:	2.00 EA							
Daily Production	:	1.88 EA per	10	hour shift	Project #	:	3		
Work Days	:	1.1 Days	Estimator	:	Mihaela Tomulescu	EA per		Total Cost	Unit Price Per EA
Unit Price	:	\$7,006.64 per EA	Probable Low Cost Parameter			2.0625	\$12,612	\$6,305.98	
Total Cost	:	\$14,013	Probable High Cost Parameter			1.6875	\$15,415	\$7,707.30	

CREW COSTS										
Description	Active Idle	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Electrician Foreman	Active	1.00	1.1	10	11.00	L	\$55.45	incl. in rate	incl. in rate	\$609.98
Electrician	Active	2.00	1.1	10	22.00	L	\$55.25	incl. in rate	incl. in rate	\$1,215.57
Ironworkers	Active	1.00	1.1	10	11.00	L	\$77.45	incl. in rate	incl. in rate	\$851.90
Loader, FE Rubber Tire (8.6cy)	Active	1.00	1.1	10	11.00	E	\$225.40	incl. in rate	incl. in rate	\$2,479.40
Hydraulic Crane (120tn)	Active	1.00	1.1	10	11.00	E	\$242.08	incl. in rate	incl. in rate	\$2,662.88
Laborer	Active	2.00	1.1	10	22.00	L	\$51.01	incl. in rate	incl. in rate	\$1,122.22
Equipment Operator (crane)	Active	1.00	1.1	10	11.00	L	\$81.02	incl. in rate	incl. in rate	\$891.23
Equipment Operator (medium)	Active	1.00	1.1	10	11.00	L	\$72.39	incl. in rate	incl. in rate	\$796.27
Labor Hours					88	TOTAL LABOR				\$5,487.16
Equipment Hours					22	TOTAL EQUIPMENT				\$5,142.28

MATERIAL COSTS						
Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost
Consumables 5% labor (saw blades, drill bits, etc	1.00	LS	1.000	1.00	\$274.36	\$274.36
Selective demolition, torch cutting, steel, 1" thick plate (assumed qty)	2,500.00	LF	1.000	2,500.00	\$0.85	\$2,125.00
TOTAL MATERIAL						\$2,399.36

SUBCONTRACT COSTS					
Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount
Hauling to Disposal Site Or Recycle Site	1.00	Loads	20 tons a load	\$400.00	\$400.00
TOTAL SUBCONTRACTS					\$400.00

SUMMARY OF COSTS						
Labor Cost	\$5,487.16	Labor Burden @	0.0%	\$0.00		\$5,487.16
Material Cost	\$2,399.36	Material Tax @	7.8%	\$185.95		\$2,585.31
Equipment Cost	\$5,142.28	Equipment Tax @	7.8%	\$398.53		\$5,540.81
Subcontractors	\$400.00					\$400.00
DIRECT COST SUBTOTALS	\$13,429			\$584	DIRECT COST SUBTOTALS	\$14,013

## Additional Pay Item Notes :

Production based on 1 Forman, 1 Electrician, 1 Welder to cut to remove the electrical equipment and 1 laborer to haul. Equipment used 1 Loader and 1 Crane for disposal. Assumed 2 sections, weight 1000LBS.

### 3.047 Remove & Dispose - Surge protection equip. for 15 MVA Generator

PAY ITEM NUMBER	:	3.047	Project	:	KRRP - Copco 2
Description	:	Remove & Dispose - Surge protection equip. for 15 MVA Generator	Group	:	D04
Quantity	:	2.00 EA			
Daily Production	:	1.88 EA per	10	hour shift	
Work Days	:	1.1	Days	Project #	: 3
Unit Price	:	\$1,881.92 per EA	Estimator	:	Mihaela Tomulescu
Total Cost	:	\$3,764	Probable Low Cost Parameter	:	2.0625
			Probable High Cost Parameter	:	1.6875
					\$3,387
					\$4,140
					\$1,693.73
					\$2,070.11

Description	Active Idle	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Electrician Foreman	Active	1.00	1.1	10	11.00	L	\$55.45	incl. in rate	incl. in rate	\$609.98
Electrician	Active	1.00	1.1	10	11.00	L	\$55.25	incl. in rate	incl. in rate	\$607.78
Ironworkers	Active	1.00	1.1	10	11.00	L	\$77.45	incl. in rate	incl. in rate	\$851.90
Laborer	Active	2.00	1.1	10	22.00	L	\$51.01	incl. in rate	incl. in rate	\$1,122.22
Labor Hours					55	TOTAL LABOR				\$3,191.88
Equipment Hours					0	TOTAL EQUIPMENT				\$0.00

Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost
Consumables 5% labor (saw blades, drill bits, etc	1.00	LS	1.000	1.00	\$159.59	\$159.59
TOTAL MATERIAL						\$159.59

Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount
Hauling to Disposal Site Or Recycle Site	1.00	Loads	20 tons a load	\$400.00	\$400.00
TOTAL SUBCONTRACTS					\$400.00

Labor Cost	\$3,191.88	Labor Burden @	0.0%	\$0.00				\$3,191.88
Material Cost	\$159.59	Material Tax @	7.8%	\$12.37				\$171.96
Equipment Cost	\$0.00	Equipment Tax @	7.8%	\$0.00				\$0.00
Subcontractors	\$400.00							\$400.00
<b>DIRECT COST SUBTOTALS</b>	<b>\$3,751</b>			<b>\$12</b>		<b>DIRECT COST SUBTOTALS</b>		<b>\$3,764</b>

Assumption for Crew R3: 1 Forman, 1 Electrician, 2 Ironworker to cut rods and 1 laborer to haul in the truck.. Assumed 2 sections, weight 800LBS.



PAY ITEM COST DETAIL WORKSHEET

3.049 Remove & Dispose - Generator Switchgear, 7.2kV-includes unit breakers

PAY ITEM INFORMATION

PAY ITEM NUMBER	: 3.049	Project	: KRRP - Copco 2
Description	: Remove & Dispose - Generator Switchgear, 7.2kV-includes unit breakers	Group	: D04
Quantity	: 1.00 EA	Project #	: 3
Daily Production	: 0.50 EA per 10 hour shift	Estimator	: Mihaela Tomulescu
Work Days	: 2.0 Days	EA per	0.55
Unit Price	: \$11,215.25 per EA	Total Cost	\$10,094
Total Cost	: \$11,215	Probable Low Cost Parameter	\$10,093.72
		Probable High Cost Parameter	\$12,897.53

CREW COSTS

Description	Active Idle	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Electrician Foreman	Active	1.00	2.0	10	20.00	L	\$55.45	incl. in rate	incl. in rate	\$1,109.06
Electrician	Active	3.00	2.0	10	60.00	L	\$55.25	incl. in rate	incl. in rate	\$3,315.18
Laborer	Active	2.00	2.0	10	40.00	L	\$51.01	incl. in rate	incl. in rate	\$2,040.40
Loader, FE Rubber Tire (5.25cy)	Active	1.00	2.0	10	20.00	E	\$76.00	incl. in rate	incl. in rate	\$1,520.00
Welder	Active	1.00	2.0	10	20.00	L	\$8.62	incl. in rate	incl. in rate	\$172.48
Gas Welding Machine	Active	1.00	2.0	10	20.00	E	\$2.88	incl. in rate	incl. in rate	\$57.54
Equipment Operator (medium)	Active	1.00	2.0	10	20.00	L	\$72.39	incl. in rate	incl. in rate	\$1,447.76
Labor Hours					160	TOTAL LABOR				\$8,084.88
Equipment Hours					40	TOTAL EQUIPMENT				\$1,577.54

MATERIAL COSTS

Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost
Consumables 5% labor (saw blades, drill bits, etc)	1.00	LS	1.000	1.00	\$404.24	\$404.24
						TOTAL MATERIAL
						\$404.24

SUBCONTRACT COSTS

Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount
Hazardous waste cleanup/pickup/disposal, solid pickup, bulk material, maximum	1.00	ton	1.000	1.00	\$595.00
Hauling to Disposal Site Or Recycle Site	1.00	Loads	20 tons a load	\$400.00	\$400.00
					TOTAL SUBCONTRACTS
					\$995.00

SUMMARY OF COSTS

Labor Cost	\$8,084.88	Labor Burden @	0.0%	\$0.00	\$8,084.88
Material Cost	\$404.24	Material Tax @	7.8%	\$31.33	\$435.57
Equipment Cost	\$1,577.54	Equipment Tax @	7.8%	\$122.26	\$1,699.80
Subcontractors	\$995.00				\$995.00
DIRECT COST SUBTOTALS	\$11,062		\$154		DIRECT COST SUBTOTALS
					\$11,215

Additional Pay Item Notes :

Used 1 Crews (2 sections each weight around 2400 LBS) formed of 1 Foreman, 3 Electrician, 2 laborer to haul with the crane in the truck. Assumed containing hazardous waste that will be disposed at 36 miles away from the construction site to Yreka Transfer Recycling . In normal circumstances, decontaminated residual components could be accepted at landfill sites but Polychlorinated biphenyl, otherwise known as PCB, is a synthetic chemical that is widely used for industrial and commercial use as dielectric fluid in transformers and capacitors because of its high resistance to decomposition, low electrical conductivity, low flammability and high heat capacity. Transformer repair, reconditioning and retro-filling facilities are the major industry sectors that contributes to the spread of PCB contamination. Types of PCB Wastes:  
PCB wastes are discarded materials that contain PCB or have been contaminated with PCBs and that are without any commercial, industrial, or economic use. For the purpose of this Code of Practice, PCBs wastes are classified as follows: Liquid PCB wastes  
o PCB-based dielectric fluids removed from transformers and other equipment  
o PCB-based heat transfer and hydraulic fluids  
Metallic solid wastes  
o PCB equipment such as capacitors, transformers, switchgears, circuit breakers, heat transfer systems, etc.  
o Contaminated components removed from electrical equipment such as windings;  
PCB-contaminated containers and equipment such as metal drums, tanks, pumps, metal filters, etc.

PAY ITEM INFORMATION									
PAY ITEM NUMBER	:	3.050	Project	:	KRRP - Copco 2				
Description	:	Remove & Dispose - Station Service Switchgear, 600-volt (5 sections)	Group	:	D04				
Quantity	:	1.00 EA	Project #	:	3				
Daily Production	:	0.50 EA per 10 hour shift	Estimator	:	Mihaela Tomulescu				
Work Days	:	2.0 Days	Probable Low Cost Parameter		EA per	0.55	Total Cost	\$9,046	Unit Price Per EA
Unit Price	:	\$10,050.65 per EA	Probable High Cost Parameter		0.425	\$11,558	\$9,045.59	\$11,558.25	
Total Cost	:	\$10,051							

CREW COSTS											
Description	Active Idle	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost	
Electrician Foreman	Active	1.00	2.0	10	20.00	L	\$55.45	incl. in rate	incl. in rate	\$1,109.06	
Electrician	Active	2.00	2.0	10	40.00	L	\$55.25	incl. in rate	incl. in rate	\$2,210.12	
Laborer	Active	2.00	2.0	10	40.00	L	\$51.01	incl. in rate	incl. in rate	\$2,040.40	
Loader, FE Rubber Tire (5.25cy)	Active	1.00	2.0	10	20.00	E	\$76.00	incl. in rate	incl. in rate	\$1,520.00	
Equipment Operator (medium)	Active	1.00	2.0	10	20.00	L	\$72.39	incl. in rate	incl. in rate	\$1,447.76	
Welder	Active	1.00	2.0	10	20.00	L	\$8.62	incl. in rate	incl. in rate	\$172.48	
Gas Welding Machine	Active	1.00	2.0	10	20.00	E	\$2.88	incl. in rate	incl. in rate	\$57.54	

MATERIAL COSTS						
Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost
Consumables 5% labor (saw blades, drill bits, etc)	1.00	LS	1.000	1.00	\$348.99	\$348.99
Selective demolition, torch cutting, steel, 1" thick plate (assumed qty)	0.00	LF	1.000	0.00	\$0.85	\$0.00
TOTAL MATERIAL						\$348.99

SUBCONTRACT COSTS					
Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount
Hazardous waste cleanup/pickup/disposal, solid pickup, bulk material, maximum	1.00	ton	1.000	1.00	\$595.00
Hauling to Disposal Site Or Recycle Site	1.00	Loads	20 tons a load	\$400.00	\$400.00
TOTAL SUBCONTRACTS					\$995.00

SUMMARY OF COSTS						
Labor Cost	\$6,979.82	Labor Burden @	0.0%	\$0.00		\$6,979.82
Material Cost	\$348.99	Material Tax @	7.8%	\$27.05		\$376.04
Equipment Cost	\$1,577.54	Equipment Tax @	7.8%	\$122.26		\$1,699.80
Subcontractors	\$995.00					\$995.00
DIRECT COST SUBTOTALS	\$9,901			\$149	DIRECT COST SUBTOTALS	\$10,051

Additional Pay Item Notes :

Used 1 Crew formed of 1 Forman, 2 Electrician, 1welder to cut, 2 laborer to haul with the loader in the truck. Assumed containing hazardous waste that will be disposed . Calculated 34 miles from Copco 1 to Yreka Transfer Recycling.



## PAY ITEM INFORMATION

PAY ITEM NUMBER	: 3.052	Project	: KRRP - Copco 2
Description	: Remove & Dispose - Battery system	Group	: D05
Quantity	: 1.00 EA		
Daily Production	: 0.63 EA per 10 hour shift	Project #	: 3
Work Days	: 1.6 Days	Estimator	: Mihaela Tomulescu
Unit Price	: \$8,584.36 per EA	Probable Low Cost Parameter	EA per 0.6875 Total Cost \$7,726 Unit Price Per EA \$7,725.93
Total Cost	: \$8,584	Probable High Cost Parameter	0.53125 \$9,872 \$9,872.02

## CREW COSTS

Description	Active Idle	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Labor Foreman	Active	1.00	1.6	10	16.00	L	\$58.35	incl. in rate	incl. in rate	\$933.55
Electrician	Active	2.00	1.6	10	32.00	L	\$55.25	incl. in rate	incl. in rate	\$1,768.10
Laborer	Active	4.00	1.6	10	64.00	L	\$51.01	incl. in rate	incl. in rate	\$3,264.64
Loader, FE Rubber Tire (3.5cy)	Active	1.00	1.0	10	10.00	E	\$63.11	incl. in rate	incl. in rate	\$631.10
Equipment Operator (light)	Active	1.00	1.0	10	10.00	L	\$69.39	incl. in rate	incl. in rate	\$693.90
Welder	Active	1.00	1.0	10	10.00	L	\$8.62	incl. in rate	incl. in rate	\$86.24
Gas Welding Machine	Active	1.00	1.0	10	10.00	E	\$2.88	incl. in rate	incl. in rate	\$28.77
Labor Hours					132	TOTAL LABOR				\$6,746.43
Equipment Hours					20	TOTAL EQUIPMENT				\$659.87

## MATERIAL COSTS

Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost
Consumables 10% labor (saw blades, drill bits, etc)	1.00	LS	1.000	1.00	\$674.64	\$674.64
						TOTAL MATERIAL
						\$674.64

## SUBCONTRACT COSTS

Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount
Hauling to Disposal Site Or Recycle Site	1.00	Loads	20 tons a load	\$400.00	\$0.00
					\$400.00
					TOTAL SUBCONTRACTS
					\$400.00

## SUMMARY OF COSTS

Labor Cost	\$6,746.43	Labor Burden @	0.0%	\$0.00	\$6,746.43
Material Cost	\$674.64	Material Tax @	7.8%	\$52.28	\$726.93
Equipment Cost	\$659.87	Equipment Tax @	7.8%	\$51.14	\$711.01
Subcontractors	\$400.00				\$400.00
DIRECT COST SUBTOTALS	\$8,481			\$103	DIRECT COST SUBTOTALS
					\$8,584

## Additional Pay Item Notes :

Assuming 2 days of work disposing around 100 batteries, racks and supports. Using Crews E-19 for metals demolition, E-12 and E-25 for cutting steel and A-3H for equipment disposal, B-34A for hauling.



## PAY ITEM INFORMATION

PAY ITEM NUMBER	: 3.053	Project	: KRRP - Copco 2
Description	: Remove & Dispose - Raceways, Conduit and Cable	Group	: D05
Quantity	: 1.00 EA		
Daily Production	: 0.63 EA per 10 hour shift	Project #	: 3
Work Days	: 1.6 Days	Estimator	: Mihaela Tomulescu
Unit Price	: \$14,076.70 per EA	Probable Low Cost Parameter	EA per 0.6875 Total Cost \$12,669 Unit Price Per EA \$12,669.03
Total Cost	: \$14,077	Probable High Cost Parameter	0.53125 \$16,188 \$16,188.21

## CREW COSTS

Description	Active Idle	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Labor Foreman	Active	1.00	1.6	10	16.00	L	\$58.35	incl. in rate	incl. in rate	\$933.55
Electrician	Active	4.00	1.6	10	64.00	L	\$55.25	incl. in rate	incl. in rate	\$3,536.19
Laborer	Active	6.00	1.6	10	96.00	L	\$51.01	incl. in rate	incl. in rate	\$4,896.96
Loader, FE Rubber Tire (3.5cy)	Active	1.00	1.6	10	16.00	E	\$63.11	incl. in rate	incl. in rate	\$1,009.76
Equipment Operator (light)	Active	1.00	1.6	10	16.00	L	\$69.39	incl. in rate	incl. in rate	\$1,110.24
Electrician Foreman	Active	1.00	1.6	10	16.00	L	\$55.45	incl. in rate	incl. in rate	\$887.25
Labor Hours					208	TOTAL LABOR				\$11,364.19
Equipment Hours					16	TOTAL EQUIPMENT				\$1,009.76

## MATERIAL COSTS

Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost
Consumables 10% labor (saw blades, drill bits, etc)	1.00	LS	1.000	1.00	\$1,136.42	\$1,136.42
						TOTAL MATERIAL
						\$1,136.42

## SUBCONTRACT COSTS

Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount
Hauling to Disposal Site Or Recycle Site	1.00	Loads	20 tons a load	\$400.00	\$400.00
					TOTAL SUBCONTRACTS
					\$400.00

## SUMMARY OF COSTS

Labor Cost	\$11,364.19	Labor Burden @	0.0%	\$0.00	\$11,364.19
Material Cost	\$1,136.42	Material Tax @	7.8%	\$88.07	\$1,224.49
Equipment Cost	\$1,009.76	Equipment Tax @	7.8%	\$78.26	\$1,088.02
Subcontractors	\$400.00				\$400.00
DIRECT COST SUBTOTALS	\$13,910			\$166	DIRECT COST SUBTOTALS
					\$14,077

## Additional Pay Item Notes :

Assumption for removal of control power cable, conduit (3000 LF) and cable tray (300 LF) - using R3 electrical crew and laborers for hauling with the loader.

PAY ITEM COST DETAIL WORKSHEET

3.054 Remove & Dispose - Misc. Power & Control Boards

PAY ITEM INFORMATION									
PAY ITEM NUMBER	:	3.054	Project	:	KRRP - Copco 2				
Description	:	Remove & Dispose - Misc. Power & Control Boards	Group	:	D05				
Quantity	:	1.00 EA							
Daily Production	:	1.25 EA per	10	hour shift	Project #	:	3		
Work Days	:	0.8	Days		Estimator	:	Mihaela Tomulescu	EA per	Total Cost
Unit Price	:	\$2,952.33	per EA		Probable Low Cost Parameter			1.375	\$2,657
Total Cost	:	\$2,952			Probable High Cost Parameter			1.0625	\$3,395
									Unit Price Per EA
									\$2,657.09
									\$3,395.18

CREW COSTS										
Description	Active Idle	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Labor Foreman	Active	1.00	0.8	10	8.00	L	\$58.35	incl. in rate	incl. in rate	\$466.78
Electrician	Active	1.00	0.8	10	8.00	L	\$55.25	incl. in rate	incl. in rate	\$442.02
Laborer	Active	2.00	0.8	10	16.00	L	\$51.01	incl. in rate	incl. in rate	\$816.16
Equipment Operator (medium)	Active	1.00	0.8	10	8.00	L	\$72.39	incl. in rate	incl. in rate	\$579.10
Labor Hours					40	TOTAL LABOR				\$2,304.06
Equipment Hours					0	TOTAL EQUIPMENT				\$0.00

MATERIAL COSTS						
Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost
Consumables 10% labor (saw blades, drill bits, etc)	1.00	LS	1.000	1.00	\$230.41	\$230.41
						TOTAL MATERIAL
						\$230.41

SUBCONTRACT COSTS					
Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount
Hauling to Disposal Site Or Recycle Site	1.00	Loads	20 tons a load	\$400.00	\$400.00
					TOTAL SUBCONTRACTS
					\$400.00

SUMMARY OF COSTS									
Labor Cost	\$2,304.06	Labor Burden @	0.0%	\$0.00					\$2,304.06
Material Cost	\$230.41	Material Tax @	7.8%	\$17.86					\$248.26
Equipment Cost	\$0.00	Equipment Tax @	7.8%	\$0.00					\$0.00
Subcontractors	\$400.00								\$400.00
DIRECT COST SUBTOTALS	\$2,934			\$18				DIRECT COST SUBTOTALS	\$2,952

Additional Pay Item Notes :

Assumption for removal of 3' x 2' x 9" boards - 10 each using R3 electrical crew and laborers for hauling with the loader.



## PAY ITEM INFORMATION

PAY ITEM NUMBER	: 3.056	Project	: KRRP - Copco 2
Description	: Remove & Dispose - 40-Ton Travelling Crane control equipment	Group	: D10
Quantity	: 1.00 EA		
Daily Production	: 1.50 EA per 10 hour shift	Project #	: 3
Work Days	: 0.7 Days	Estimator	: Mihaela Tomulescu
Unit Price	: \$3,671.60 per EA	EA per	1.65
Total Cost	: \$3,672	Probable Low Cost Parameter	\$3,304
		Probable High Cost Parameter	\$4,222
			Unit Price Per EA \$3,304.44
			\$4,222.34

## CREW COSTS

Description	Active Idle	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Labor Foreman	Active	1.00	0.7	10	7.00	L	\$58.35	incl. in rate	incl. in rate	\$408.43
Hydraulic Crane (80tn)	Active	1.00	0.7	10	7.00	E	\$197.66	incl. in rate	incl. in rate	\$1,383.62
Laborer	Active	2.00	0.7	10	14.00	L	\$51.01	incl. in rate	incl. in rate	\$714.14
Equipment Operator (crane)	Active	1.00	0.7	10	7.00	L	\$81.02	incl. in rate	incl. in rate	\$567.15
Labor Hours					28	TOTAL LABOR				\$1,689.72
Equipment Hours					7	TOTAL EQUIPMENT				\$1,383.62

## MATERIAL COSTS

Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost
Consumables 5% labor (saw blades, drill bits, etc)	1.00	LS	1.000	1.00	\$84.49	\$84.49
						TOTAL MATERIAL
						\$84.49

## SUBCONTRACT COSTS

Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount
Hauling to Disposal Site Or Recycle Site	1.00	Loads	20 tons a load	\$400.00	\$400.00
					\$0.00
					\$0.00
					TOTAL SUBCONTRACTS
					\$400.00

## SUMMARY OF COSTS

Labor Cost	\$1,689.72	Labor Burden @	0.0%	\$0.00	\$1,689.72
Material Cost	\$84.49	Material Tax @	7.8%	\$6.55	\$91.03
Equipment Cost	\$1,383.62	Equipment Tax @	7.8%	\$107.23	\$1,490.85
Subcontractors	\$400.00				\$400.00
DIRECT COST SUBTOTALS	\$3,558			\$114	DIRECT COST SUBTOTALS
					\$3,672

Additional Pay Item Notes :

Assumed 5 cubicles: 2 Laborers and 1 Electrician will load in the truck with the crane the control equipment.

### 3.057 Remove & Dispose - 40-Ton Travelling Crane Festoon Cable

PAY ITEM NUMBER	:	3.057	Project	:	KRRP - Copco 2
Description	:	Remove & Dispose - 40-Ton Travelling Crane Festoon Cable	Group	:	D10
Quantity	:	1.00 EA			
Daily Production	:	2.50 EA per	10	hour shift	
Work Days	:	0.4	Days		
Unit Price	:	\$1,653.18	per EA		
Total Cost	:	\$1,653			
			Project #	:	3
			Estimator	:	Mihaela Tomulescu
			Probable Low Cost Parameter	:	2.75
			Probable High Cost Parameter	:	2.125
					EA per
					Total Cost
					Unit Price Per EA
					\$1,487.86
					\$1,901.16

Description	Active Idle	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Laborer	Active	2.00	0.4	10	8.00	L	\$51.01	incl. in rate	incl. in rate	\$408.08
Equipment Operator (medium)	Active	1.00	0.4	10	4.00	L	\$72.39	incl. in rate	incl. in rate	\$289.55
Loader, FE Rubber Tire (3.5cy)	Active	1.00	0.4	10	4.00	E	\$63.11	incl. in rate	incl. in rate	\$252.44
Labor Foreman	Active	1.00	0.4	10	4.00	L	\$58.35	incl. in rate	incl. in rate	\$233.39
Labor Hours					16	TOTAL LABOR				\$931.02
Equipment Hours					4	TOTAL EQUIPMENT				\$252.44

Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost
Consumables 5% labor (saw blades, drill bits, etc)	1.00	LS	1.000	1.00	\$46.55	\$46.55
TOTAL MATERIAL						\$46.55

Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount
Hauling to Disposal Site Or Recycle Site	1.00	Loads	20 tons a load	\$400.00	\$400.00
TOTAL SUBCONTRACTS					\$400.00

Labor Cost	\$931.02	Labor Burden @	0.0%	\$0.00		\$931.02
Material Cost	\$46.55	Material Tax @	7.8%	\$3.61		\$50.16
Equipment Cost	\$252.44	Equipment Tax @	7.8%	\$19.56		\$272.00
Subcontractors	\$400.00					\$400.00
<b>DIRECT COST SUBTOTALS</b>	<b>\$1,630</b>			<b>\$23</b>	<b>DIRECT COST SUBTOTALS</b>	<b>\$1,653</b>

Assumed 200 LF of cable: 2 Laborers will load in the truck with the loader the overhead crane cable.



### 3.061 Remove Intake Structure Concrete

PAY ITEM NUMBER	:	3.061	Project	:	KRRP - Copco 2
Description	:	Remove Intake Structure Concrete	Group	:	D05
Quantity	:	1,650.00	cy		
Daily Production	:	140.00	cy per	10	hour shift
Work Days	:	11.8	Days		
Unit Price	:	\$195.42	per cy		
Total Cost	:	\$322,442			
			Project #	:	3
			Estimator	:	Eric Jones
				cy per	
			Probable Low Cost Parameter	154	\$290,198
			Probable High Cost Parameter	112	\$386,931
					\$175.88
					\$234.50

Description	Active Idle	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Labor Foreman	Active	1.00	11.8	10	118.00	L	\$58.87	incl. in rate	incl. in rate	\$6,946.90
Laborer	Active	3.00	11.8	10	354.00	L	\$51.07	incl. in rate	incl. in rate	\$18,079.84
Equipment Operator (medium)	Active	2.00	11.8	10	236.00	L	\$72.34	incl. in rate	incl. in rate	\$17,071.30
Truck Driver (heavy)	Active	3.00	9.2	10	276.00	L	\$66.92	incl. in rate	incl. in rate	\$18,471.02
Air Compressor 900 cfm	Active	1.00	11.8	10	118.00	E	\$38.87	incl. in rate	incl. in rate	\$4,586.53
Air Tool, Chipping Hammer	Active	2.00	11.8	10	236.00	E	\$1.64	incl. in rate	incl. in rate	\$386.81
Generator, Small Generator, 10 - 15 kW	Active	1.00	11.8	10	118.00	E	\$7.04	incl. in rate	incl. in rate	\$830.72
Hydraulic Excavator (5.0cy)	Active	1.00	11.8	10	118.00	E	\$276.50	incl. in rate	incl. in rate	\$32,627.00
Hydraulic Excavator (2.5cy)	Active	1.00	11.8	10	118.00	E	\$205.40	incl. in rate	incl. in rate	\$24,237.20
Hydraulic Impact Breaker Attachment (5k+ ft-lb)	Active	1.00	11.8	10	118.00	E	\$63.28	incl. in rate	incl. in rate	\$7,467.04
Hydraulic Thumbs/Shear Attachment	Active	1.00	11.8	10	118.00	E	\$24.92	incl. in rate	incl. in rate	\$2,940.56
Truck, On-Highway Dump (6x4, 12cy)	Active	3.00	9.2	10	276.00	E	\$57.41	incl. in rate	incl. in rate	\$15,845.16
3 Man Blasting Crew	Active	1.00	11.8	10	118.00	L	\$146.09	incl. in rate	incl. in rate	\$17,238.65
Air Track Drill 4", Air Hoses, Compressor	Active	1.00	11.8	10	118.00	E	\$212.49	incl. in rate	incl. in rate	\$25,073.29
Acetylene Torches	Active	2.00	11.8	10	236.00	E	\$0.44	incl. in rate	incl. in rate	\$103.84
Labor Hours					1,102	TOTAL LABOR				\$77,807.71
Equipment Hours					1,574	TOTAL EQUIPMENT				\$114,098.15

Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost
Consumables (5% labor)	1.00	LS	1.000	1.00	\$3,890.39	\$3,890.39
Blasting Material	16,400.00	CY	1.050	17,220.00	\$5.56	\$95,777.64
Drill Bit Wear Allowance (10% of Drilling Eq)	1.00	LS	1.000	1.00	\$2,507.33	\$2,507.33
			1.000	0.00		\$0.00
			1.000	0.00		\$0.00
			1.000	0.00		\$0.00
TOTAL MATERIAL						\$102,175.35

Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount
Concrete Saw Cutting	2	EA	Cost per Mob	\$5,000.00	\$10,000.00
Reinforcement Disposal Fee	148,500	lbs.	90lbs Rebar per CY of Concrete		\$0.00
Rebar Hauling to Facility (30 Miles)	120	Miles	Yreka Recycle		\$0.00
Hauling Cost by Load	4.00	loads	40,000lbs per load	\$400.00	\$1,600.00
TOTAL SUBCONTRACTS					\$11,600.00

Labor Cost	\$77,807.71	Labor Burden @	0.0%	\$0.00	Included in hourly labor rate.	\$77,807.71
Material Cost	\$102,175.35	Material Tax @	7.75%	\$7,918.59		\$110,093.94
Equipment Cost	\$114,098.15	Equipment Tax @	7.75%	\$8,842.61		\$122,940.76
Subcontractors	\$11,600.00					\$11,600.00
<b>DIRECT COST SUBTOTALS</b>	<b>\$305,681</b>			<b>\$16,761</b>	<b>DIRECT COST SUBTOTALS</b>	<b>\$322,442</b>

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### 3.062 Remove Concrete Items associated with 16-foot I.D. Wood Stave Pipe

PAY ITEM NUMBER	:	3.062	Project	:	KRRP - Copco 2
Description	:	Remove Concrete Items associated with 16-foot I.D. Wood Stave Pipe	Group	:	D05
Quantity	:	1,310.00 cy			
Daily Production	:	128.00 cy per	10	hour shift	
Work Days	:	10.2 Days	Project #	:	3
Unit Price	:	\$100.45 per cy	Estimator	:	Eric Jones
Total Cost	:	\$131,584	cy per		Total Cost
			Probable Low Cost Parameter	147.2	\$111,846
			Probable High Cost Parameter	108.8	\$151,321
					Unit Price Per cy
					\$85.38
					\$115.51

Description	Active Idle	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Labor Foreman	Active	1.00	10.2	10	102.00	L	\$58.87	incl. in rate	incl. in rate	\$6,004.94
Laborer	Active	3.00	10.2	10	306.00	L	\$51.07	incl. in rate	incl. in rate	\$15,628.34
Equipment Operator (medium)	Active	2.00	10.2	10	204.00	L	\$72.34	incl. in rate	incl. in rate	\$14,756.54
Truck Driver (heavy)	Active	1.00	6.9	10	69.30	L	\$66.92	incl. in rate	incl. in rate	\$4,637.83
Air Compressor 600 cfm	Active	1.00	10.2	10	102.00	E	\$21.74	incl. in rate	incl. in rate	\$2,217.37
Air Tool, Chipping Hammer	Active	1.00	10.2	10	102.00	E	\$1.64	incl. in rate	incl. in rate	\$167.18
Acetylene Torches	Active	1.00	10.2	10	102.00	E	\$0.44	incl. in rate	incl. in rate	\$44.88
Hydraulic Excavator (5.0cy)	Active	1.00	10.2	10	102.00	E	\$276.50	incl. in rate	incl. in rate	\$28,203.00
Hydraulic Impact Breaker Attachment (5k+ ft-lb)	Active	1.00	10.2	10	102.00	E	\$63.28	incl. in rate	incl. in rate	\$6,454.56
Hydraulic Excavator (2.5cy)	Active	1.00	10.2	10	102.00	E	\$205.40	incl. in rate	incl. in rate	\$20,950.80
Loader, FE Rubber Tire (5.25cy)	Active	1.00	10.2	10	102.00	E	\$76.00	incl. in rate	incl. in rate	\$7,752.00
Truck, Off-Road, Articulated Rear, 20cy	Active	1.00	6.9	10	69.30	E	\$117.28	incl. in rate	incl. in rate	\$8,127.50
Labor Hours					681	TOTAL LABOR				\$41,027.66
Equipment Hours					783	TOTAL EQUIPMENT				\$73,917.30

Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost
Consumables (5% labor)	1.00	LS	1.000	1.00	\$2,051.38	\$2,051.38
TOTAL MATERIAL						\$2,051.38

Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount
Concrete Saw Cutting	3	EA	Cost per Mob	\$2,500.00	
Reinforcement Disposal Fee	117,900	lbs.	90lbs Rebar per CY of Concrete		\$7,500.00
Rebar Hauling to Facility (30 Miles)	90	Miles	Yreka Recycle		\$0.00
Hauling Cost by Load	3.00	loads	40,000lbs per load	\$400.00	\$0.00
TOTAL SUBCONTRACTS					\$1,200.00
					\$8,700.00

Labor Cost	\$41,027.66	Labor Burden @	0.0%	\$0.00	Included in hourly labor rate.	\$41,027.66
Material Cost	\$2,051.38	Material Tax @	7.75%	\$158.98		\$2,210.37
Equipment Cost	\$73,917.30	Equipment Tax @	7.75%	\$5,728.59		\$79,645.89
Subcontractors	\$8,700.00					\$8,700.00
<b>DIRECT COST SUBTOTALS</b>	<b>\$125,696</b>			<b>\$5,888</b>	<b>DIRECT COST SUBTOTALS</b>	<b>\$131,584</b>

Demolition is done using hydraulic chipping hammers and excavator mounted claw. Allowance for saw cutting sub is included at one mobilization a week. Blasting method is not found to be feasible for this work. A cost using RS Means was used: reference 03055110 (\$224/CY, excludes hauling, sawing, and dumping) - Selective concrete demolition, reinforcing more than 2% cross-sectional area.



PAY ITEM INFORMATION									
PAY ITEM NUMBER	:	3.063	Project	:	KRRP - Copco 2				
Description	:	Place Concrete Plugs for Tunnels	Group	:	D05				
Quantity	:	100.00	cy						
Daily Production	:	13.75	cy per	10	hour shift	Project #	:	3	
Work Days	:	7.3	Days			Estimator	:	Eric Jones	cy per
Unit Price	:	\$1,536.52	per cy			Probable Low Cost Parameter		15.8125	Total Cost
Total Cost	:	\$153,652				Probable High Cost Parameter		11.6875	Unit Price Per cy
								\$130,604	\$1,306.04
								\$176,700	\$1,767.00

CREW COSTS										
Description	Active Idle	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Carpenter Foreman (out)	Active	2.00	7.3	10	146.00	L	\$85.49	incl. in rate	incl. in rate	\$12,481.83
Carpenters	Active	6.00	7.3	10	438.00	L	\$85.49	incl. in rate	incl. in rate	\$37,445.50
Carpenters, Journeyman	Active	4.00	7.3	10	292.00	L	\$77.54	incl. in rate	incl. in rate	\$22,641.39
Equipment Operator (medium)	Active	2.00	7.3	10	146.00	L	\$72.34	incl. in rate	incl. in rate	\$10,561.06
Truck Driver (heavy)	Active	1.00	7.3	10	73.00	L	\$66.92	incl. in rate	incl. in rate	\$4,885.45
Loader, FE Rubber Tire (5.25cy)	Active	1.00	7.3	10	73.00	E	\$76.00	incl. in rate	incl. in rate	\$5,548.00
Hydraulic Excavator (2.5cy)	Active	1.00	7.3	10	73.00	E	\$205.40	incl. in rate	incl. in rate	\$14,994.20
Truck, Flatbed (4x4, 10,000 gvw)	Active	1.00	7.3	10	73.00	E	\$27.09	incl. in rate	incl. in rate	\$1,977.57
0										
Labor Hours					1,095	TOTAL LABOR				\$88,015.22
Equipment Hours					219	TOTAL EQUIPMENT				\$22,519.77

MATERIAL COSTS						
Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost
Consumables (25% labor)	1.00	LS	1.000	1.00	\$22,003.81	\$22,003.81
Concrete	100.00	CY	1.200	120.00	\$150.00	\$15,000.00
TOTAL MATERIAL						\$37,003.81

SUBCONTRACT COSTS					
Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount
Concrete Pump	1	LS	1 Mobilization	\$1,500.00	\$1,500.00
					\$0.00
					\$0.00
					\$0.00
TOTAL SUBCONTRACTS					\$1,500.00

SUMMARY OF COSTS						
Labor Cost	\$88,015.22	Labor Burden @	0.0%	\$0.00	Included in hourly labor rate.	\$88,015.22
Material Cost	\$37,003.81	Material Tax @	7.75%	\$2,867.79		\$39,871.60
Equipment Cost	\$22,519.77	Equipment Tax @	7.75%	\$1,745.28		\$24,265.05
Subcontractors	\$1,500.00					\$1,500.00
DIRECT COST SUBTOTALS	\$149,039			\$4,613	DIRECT COST SUBTOTALS	\$153,652

Additional Pay Item Notes :

There will be 2 crews work in two locations at 1 time. The loaders will support crews for providing materials/ equipment that a pick up truck can not handle. There is a total of 9 plugs and figured roughly 1 day per plug.

### 3.064 Remove Concrete Items associated with Penstocks D/S from Tunnel No. 2

SUMMARY OF COSTS						
Labor Cost	\$166,166.00	Labor Burden @	0.0%	\$0.00	Included in hourly labor rate.	\$166,166.00
Material Cost	\$8,308.30	Material Tax @	7.75%	\$643.89		\$8,952.19
Equipment Cost	\$244,133.39	Equipment Tax @	7.75%	\$18,920.34		\$263,053.73
Subcontractors	\$22,500.00					\$22,500.00
DIRECT COST SUBTOTALS		\$441,108		\$19,564	DIRECT COST SUBTOTALS	\$460,672
Additional Pay Item Notes :						

PAY ITEM INFORMATION									
PAY ITEM NUMBER	:	3.065	Project	:	KRRP - Copco 2				
Description	:	Remove & Dispose of Caterpillar Gate (steel)	Group	:	D07				
Quantity	:	50,000.00 LBS							
Daily Production	:	31,250.00 LBS per	10	hour shift	Project #	:	3		
Work Days	:	1.6 Days			Estimator	:	Mihaela Tomulescu	LBS per	Total Cost
Unit Price	:	\$0.66 per LBS			Probable Low Cost Parameter			34375	\$29,767
Total Cost	:	\$33,075			Probable High Cost Parameter			28125	\$36,382
									Unit Price Per LBS
									\$0.60
									\$0.73

CREW COSTS										
Description	Active Idle	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Labor Foreman	Active	1.00	1.6	10	16.00	L	\$58.35	incl. in rate	incl. in rate	\$933.55
Laborer	Active	4.00	1.6	10	64.00	L	\$51.01	incl. in rate	incl. in rate	\$3,264.64
Steelworker	Active	2.00	1.6	10	32.00	L	\$77.55	incl. in rate	incl. in rate	\$2,481.66
Loader, FE Rubber Tire (5.25cy)	Active	1.00	1.6	10	16.00	E	\$76.00	incl. in rate	incl. in rate	\$1,216.00
Hydraulic Crane (120tn)	Active	1.00	1.6	10	16.00	E	\$242.08	incl. in rate	incl. in rate	\$3,873.28
Equipment Operator (medium)	Active	1.00	1.6	10	16.00	L	\$72.39	incl. in rate	incl. in rate	\$1,158.21
Equipment Operator (crane)	Active	1.00	1.6	10	16.00	L	\$81.02	incl. in rate	incl. in rate	\$1,296.34
Labor Hours					144	TOTAL LABOR				\$9,134.40
Equipment Hours					32	TOTAL EQUIPMENT				\$5,089.28

MATERIAL COSTS						
Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost
Consumables 5% labor (saw blades, drill bits, etc)	1.00	LS	1.000	1.00	\$456.72	\$456.72
Selective demolition, torch cutting, steel, 1" thick plate (assumed qty)	2,500.00	LF	1.000	2,500.00	\$0.85	\$2,125.00
						TOTAL MATERIAL
						\$2,581.72

SUBCONTRACT COSTS					
Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount
Hazardous waste cleanup/pickup/disposal, solid pickup, bulk material, maximum	25.00	ton	1.000	25.00	\$595.00
Hauling to Disposal Site Or Recycle Site	2.00	Loads	20 tons a load	\$400.00	\$800.00
					TOTAL SUBCONTRACTS
					\$15,675.00

SUMMARY OF COSTS						
Labor Cost	\$9,134.40	Labor Burden @	0.0%	\$0.00		\$9,134.40
Material Cost	\$2,581.72	Material Tax @	7.8%	\$200.08		\$2,781.80
Equipment Cost	\$5,089.28	Equipment Tax @	7.8%	\$394.42		\$5,483.70
Subcontractors	\$15,675.00					\$15,675.00
DIRECT COST SUBTOTALS	\$32,480			\$595	DIRECT COST SUBTOTALS	\$33,075
Additional Pay Item Notes :						
Assumed hazardous waste cleanup 100% disposal because of the engine Oil and Transmission Oil used for cranes .						

PAY ITEM INFORMATION									
PAY ITEM NUMBER	:	3.066	Project	:	KRRP - Copco 2				
Description	:	Remove & Dispose of Trash rack and trash rake (steel)	Group	:	D10				
Quantity	:	86,000.00 LBS							
Daily Production	:	37,500.00 LBS per	10	hour shift	Project #	:	3		
Work Days	:	2.3	Days		Estimator	:	Mihaela Tomulescu	LBS per	Total Cost
Unit Price	:	\$0.44	per LBS		Probable Low Cost Parameter			41250	\$33,996
Total Cost	:	\$37,773			Probable High Cost Parameter			30000	\$45,327
									Unit Price Per LBS
									\$0.40
									\$0.53

CREW COSTS										
Description	Active Idle	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Labor Foreman	Active	1.00	2.3	10	23.00	L	\$58.35	incl. in rate	incl. in rate	\$1,341.98
Laborer	Active	4.00	2.3	10	92.00	L	\$51.01	incl. in rate	incl. in rate	\$4,692.92
Steelworker	Active	3.00	2.3	10	69.00	L	\$77.55	incl. in rate	incl. in rate	\$5,351.09
Equipment Operator (medium)	Active	1.00	2.3	10	23.00	L	\$72.39	incl. in rate	incl. in rate	\$1,664.92
Equipment Operator (crane)	Active	1.00	2.3	10	23.00	L	\$81.02	incl. in rate	incl. in rate	\$1,863.48
Hydraulic Excavator (5.0cy)	Active	1.00	2.3	10	23.00	E	\$276.50	incl. in rate	incl. in rate	\$6,359.50
Hydraulic Crane (120tn)	Active	1.00	2.3	10	23.00	E	\$242.08	incl. in rate	incl. in rate	\$5,567.84
Labor Hours					230	TOTAL LABOR				\$14,914.40
Equipment Hours					46	TOTAL EQUIPMENT				\$11,927.34

MATERIAL COSTS						
Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost
Consumables 15% labor (saw blades, drill bits, electrodes, wrenches, hard hats etc)	1.00	LS	1.000	1.00	\$2,237.16	\$2,237.16
						TOTAL MATERIAL
						\$2,237.16

SUBCONTRACT COSTS					
Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount
Hazardous waste cleanup/pickup/disposal, solid pickup, bulk material, maximum (25%)	10.75	ton	1.000	10.75	\$595.00
					\$6,396.25
Hauling to Disposal Site Or Recycle Site	3.00	Loads	20 tons a load	\$400.00	\$1,200.00
					TOTAL SUBCONTRACTS
					\$7,596.25

SUMMARY OF COSTS					
Labor Cost	\$14,914.40	Labor Burden @	0.0%	\$0.00	\$14,914.40
Material Cost	\$2,237.16	Material Tax @	7.8%	\$173.38	\$2,410.54
Equipment Cost	\$11,927.34	Equipment Tax @	7.8%	\$924.37	\$12,851.71
Subcontractors	\$7,596.25				\$7,596.25
DIRECT COST SUBTOTALS	\$36,675			\$1,098	DIRECT COST SUBTOTALS
					\$37,773
Additional Pay Item Notes :					

PAY ITEM INFORMATION									
PAY ITEM NUMBER	:	3.067	Project	:	KRRP - Copco 2				
Description	:	Remove & Dispose of Stop Logs and slots for intake (steel)	Group	:	D03				
Quantity	:	220,000.00 LBS							
Daily Production	:	25,000.00 LBS per	10	hour shift	Project #	:	3		
Work Days	:	8.8 Days			Estimator	:	Mihaela Tomulescu	LBS per	Total Cost
Unit Price	:	\$0.55 per LBS			Probable Low Cost Parameter			27500	\$108,459
Total Cost	:	\$120,510			Probable High Cost Parameter			20000	\$144,612
									Unit Price Per LBS
									\$0.49
									\$0.66

CREW COSTS										
Description	Active Idle	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Labor Foreman	Active	1.00	8.8	10	88.00	L	\$58.35	incl. in rate	incl. in rate	\$5,134.54
Laborer	Active	4.00	8.8	10	352.00	L	\$51.01	incl. in rate	incl. in rate	\$17,955.52
Steelworker	Active	3.00	8.8	10	264.00	L	\$77.55	incl. in rate	incl. in rate	\$20,473.73
Equipment Operator (medium)	Active	1.00	8.8	10	88.00	L	\$72.39	incl. in rate	incl. in rate	\$6,370.14
Equipment Operator (crane)	Active	1.00	8.8	10	88.00	L	\$81.02	incl. in rate	incl. in rate	\$7,129.85
Hydraulic Excavator (5.0cy)	Active	1.00	8.8	10	88.00	E	\$276.50	incl. in rate	incl. in rate	\$24,332.00
Hydraulic Crane (120tn)	Active	1.00	8.8	10	88.00	E	\$242.08	incl. in rate	incl. in rate	\$21,303.04

MATERIAL COSTS						
Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost
Consumables 5% labor (saw blades, drill bits, etc)	1.00	LS	1.000	1.00	\$2,853.19	\$2,853.19
						TOTAL MATERIAL
						\$2,853.19

SUBCONTRACT COSTS					
Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount
Stop log lifter - Rent per day	8.80	day	1.000	8.80	\$1,000.00
Hauling to Disposal Site Or Recycle Site	6.00	Loads	20 tons a load		\$400.00
					TOTAL SUBCONTRACTS
					\$11,200.00

SUMMARY OF COSTS					
Labor Cost	\$57,063.78	Labor Burden @	0.0%	\$0.00	\$57,063.78
Material Cost	\$2,853.19	Material Tax @	7.8%	\$221.12	\$3,074.31
Equipment Cost	\$45,635.04	Equipment Tax @	7.8%	\$3,536.72	\$49,171.76
Subcontractors	\$11,200.00				\$11,200.00
DIRECT COST SUBTOTALS	\$116,752			\$3,758	DIRECT COST SUBTOTALS
					\$120,510

Additional Pay Item Notes :	
The process of removing top logs is not manual, but done with hydraulic stop log lifters. The gate side guides and invert shall have a minimum weight of 4 lbs./ft. for wall mounted. The gate invert should contain a removable neoprene seal. Including stop log grooves, lifter, guide - weight around 220,000 lbs. This activity will be completed during the concrete demolition of the stop log area.	

PAY ITEM COST DETAIL WORKSHEET

3.068 Remove & Dispose of Wood Staves Soaked in Creosote

PAY ITEM INFORMATION									
PAY ITEM NUMBER	:	3.068		Project	:	KRRP - Copco 2			
Description	:	Remove & Dispose of Wood Staves Soaked in Creosote		Group	:	D03			
Quantity	:	1,100,000.00	LBS						
Daily Production	:	50,000.00	LBS per	10	hour shift	Project #	:	3	
Work Days	:	22.0	Days			Estimator	:	Mihaela Tomulescu	
Unit Price	:	\$0.59	per LBS			LBS per		Total Cost	Unit Price Per LBS
Total Cost	:	\$646,878				Probable Low Cost Parameter		60000	\$517,502
						Probable High Cost Parameter		40000	\$776,253
									\$0.47
									\$0.71

CREW COSTS										
Description	Active Idle	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Labor Foreman	Active	1.00	22.0	10	220.00	L	\$58.35	incl. in rate	incl. in rate	\$12,836.34
Laborer	Active	6.00	22.0	10	1,320.00	L	\$51.01	incl. in rate	incl. in rate	\$67,333.20
Carpenters	Active	6.00	22.0	10	1,320.00	L	\$84.98	incl. in rate	incl. in rate	\$112,173.60
Equipment Operator (crane)	Active	1.00	22.0	10	220.00	L	\$81.02	incl. in rate	incl. in rate	\$17,824.62
Equipment Operator (medium)	Active	2.00	22.0	10	440.00	L	\$72.39	incl. in rate	incl. in rate	\$31,850.72
Hydraulic Crane (80tn)	Active	1.00	22.0	10	220.00	E	\$197.66	incl. in rate	incl. in rate	\$43,485.20
Loader, FE Rubber Tire (5.25cy)	Active	2.00	22.0	10	440.00	E	\$76.00	incl. in rate	incl. in rate	\$33,440.00
Labor Hours					3520	TOTAL LABOR				\$242,018.48
Equipment Hours					660	TOTAL EQUIPMENT				\$76,925.20

MATERIAL COSTS						
Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost
Consumables 30% labor (saw blades, drill bits, etc)	1.00	LS	1.000	1.00	\$72,605.54	\$72,605.54
						TOTAL MATERIAL
						\$72,605.54

SUBCONTRACT COSTS					
Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount
Hazardous waste for metal bands (allowance)	232.00	ton	1.000	232.00	\$595.00
					\$138,040.00
Disposal fees -RCRA hazardous waste treated to be a non-RCRA or nonhazardous waste	550	Ton	1.000	550.00	\$74.00
					\$40,700.00
Wide Load Hauling to Disposal Site Or Recycle Site	65.00	Loads	65 each 20' loads	\$	1,000.00
					\$65,000.00
					TOTAL SUBCONTRACTS
					\$243,740.00

SUMMARY OF COSTS									
Labor Cost	\$242,018.48	Labor Burden @	0.0%	\$0.00					\$242,018.48
Material Cost	\$72,605.54	Material Tax @	7.8%	\$5,626.93					\$78,232.47
Equipment Cost	\$76,925.20	Equipment Tax @	7.8%	\$5,961.70					\$82,886.90
Subcontractors	\$243,740.00								\$243,740.00
DIRECT COST SUBTOTALS	\$635,289			\$11,589			DIRECT COST SUBTOTALS		\$646,878
Additional Pay Item Notes :									
It is expected that the crew will cut the penstock into 20' sections and a crane will load entire section on to truck. Due to access the sections of penstock will only be able to be cut into 20' sections. The total length of the penstock is 1300'. The hauling cost is expected to be higher due to due to needing a lead car and potential permits and added . It is expected 2 loader will be used to support 3 demolition crews.									

PAY ITEM INFORMATION									
PAY ITEM NUMBER	:	3.069	Project	:	KRRP - Copco 2				
Description	:	Remove & Dispose of Cradles (steel)	Group	:	D07				
Quantity	:	290,000.00 LBS							
Daily Production	:	31,250.00 LBS per	10	hour shift	Project #	:	3		
Work Days	:	9.3 Days	Estimator	:	Mihaela Tomulescu	LBS per		Total Cost	Unit Price Per LBS
Unit Price	:	\$0.55 per LBS	Probable Low Cost Parameter			37500	\$127,421	\$0.44	
Total Cost	:	\$159,276	Probable High Cost Parameter			25000	\$191,131	\$0.66	

CREW COSTS										
Description	Active Idle	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Labor Foreman	Active	1.00	9.3	10	93.00	L	\$58.35	incl. in rate	incl. in rate	\$5,426.27
Laborer	Active	6.00	9.3	10	558.00	L	\$51.01	incl. in rate	incl. in rate	\$28,463.58
Steelworker	Active	3.00	9.3	10	279.00	L	\$77.55	incl. in rate	incl. in rate	\$21,637.01
Equipment Operator (crane)	Active	1.00	9.3	10	93.00	L	\$81.02	incl. in rate	incl. in rate	\$7,534.95
Equipment Operator (medium)	Active	2.00	9.3	10	186.00	L	\$72.39	incl. in rate	incl. in rate	\$13,464.17
Hydraulic Crane (80tn)	Active	1.00	9.3	10	93.00	E	\$197.66	incl. in rate	incl. in rate	\$18,382.38
Loader, FE Rubber Tire (5.25cy)	Active	2.00	9.3	10	186.00	E	\$76.00	incl. in rate	incl. in rate	\$14,136.00
					Labor Hours	1209	TOTAL LABOR			\$76,525.98
					Equipment Hours	279	TOTAL EQUIPMENT			\$32,518.38

MATERIAL COSTS						
Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost
Selective demolition, torch cutting, steel, 1" thick plate (assumption)	1,500.00	LF	1.000	1,500.00	\$0.85	\$1,275.00
						TOTAL MATERIAL
						\$1,275.00

SUBCONTRACT COSTS						
Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount	
Hazardous waste cleanup/pickup/disposal, solid pickup, bulk material, maximum (50% of total QTY)	72.50	ton	1.000	72.50	\$595.00	\$43,137.50
Hauling to Disposal Site Or Recycle Site	8.00	Loads	20 tons a load	\$400.00		\$3,200.00
						TOTAL SUBCONTRACTS
						\$46,337.50

SUMMARY OF COSTS						
Labor Cost	\$76,525.98	Labor Burden @	0.0%	\$0.00		\$76,525.98
Material Cost	\$1,275.00	Material Tax @	7.8%	\$98.81		\$1,373.81
Equipment Cost	\$32,518.38	Equipment Tax @	7.8%	\$2,520.17		\$35,038.55
Subcontractors	\$46,337.50					\$46,337.50
DIRECT COST SUBTOTALS	\$156,657			\$2,619	DIRECT COST SUBTOTALS	\$159,276
Additional Pay Item Notes :						

### 3.070 Remove & Dispose of Bands (steel) Hauling Only

PAY ITEM NUMBER	:	3.07	Project	:	KRRP - Copco 2
Description	:	Remove & Dispose of Bands (steel) Hauling Only	Group	:	D10
Quantity	:	463,000.00 LBS			
Daily Production	:	81,250.00 LBS per	10	hour shift	
Work Days	:	6.0 Days	Project #	:	3
Unit Price	:	\$0.31 per LBS	Estimator	:	Mihaela Tomulescu
Total Cost	:	\$142,543	LBS per	:	97500
			Total Cost	:	\$114,034
			Unit Price Per LBS	:	\$0.25
			Probable Low Cost Parameter	:	65000
			Probable High Cost Parameter	:	\$171,051
				:	\$0.37

Description	Active Idle	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Labor Hours					0	TOTAL LABOR				\$0.00
Equipment Hours					0	TOTAL EQUIPMENT				\$0.00

Description	Item	Order	Conversion	Order	Order	Material
	Quantity	Unit	Factor / Waste	Quantity	Price	Cost
TOTAL MATERIAL						\$0.00

Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount
Hazardous waste cleanup/pickup/disposal, solid pickup, bulk material, maximum (10%)	231.50	ton	1.000	231.50	\$595.00
Hauling to Disposal Site Or Recycle Site	12.00	Loads	20 tons a load	\$400.00	\$4,800.00
TOTAL SUBCONTRACTS					\$142,542.50

Labor Cost	\$0.00	Labor Burden @	0.0%	\$0.00		\$0.00
Material Cost	\$0.00	Material Tax @	7.8%	\$0.00		\$0.00
Equipment Cost	\$0.00	Equipment Tax @	7.8%	\$0.00		\$0.00
Subcontractors	\$142,542.50					\$142,542.50
<b>DIRECT COST SUBTOTALS</b>	<b>\$142,543</b>			<b>\$0</b>	<b>DIRECT COST SUBTOTALS</b>	<b>\$142,543</b>

This item is to account for the extra cost associated with hauling the weight of the bands. The demolition of the bands are accounted for under Pay Item 3.068.



PAY ITEM INFORMATION									
PAY ITEM NUMBER	:	3.071			Project	:	KRRP - Copco 2		
Description	:	Remove & Dispose of Penstock after bifurcation to butterfly valves			Group	:	D07		
Quantity	:	860,000.00 LBS							
Daily Production	:	30,300.00 LBS per			10	:	hour shift		
Work Days	:	28.4 Days			Estimator	:	Mihaela Tomulescu	LBS per	Total Cost
Unit Price	:	\$0.80 per LBS			Probable Low Cost Parameter	:	36360	\$547,203	\$0.64
Total Cost	:	\$684,003			Probable High Cost Parameter	:	24240	\$820,804	\$0.95

CREW COSTS											
Description	Active Idle	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost	
Labor Foreman	Active	1.00	28.4	10	284.00	L	\$58.35	incl. in rate	incl. in rate	\$16,570.55	
Laborer	Active	4.00	28.4	10	1,136.00	L	\$51.01	incl. in rate	incl. in rate	\$57,947.36	
Steelworker	Active	2.00	28.4	10	568.00	L	\$77.55	incl. in rate	incl. in rate	\$44,049.54	
Equipment Operator (crane)	Active	2.00	28.4	10	568.00	L	\$81.02	incl. in rate	incl. in rate	\$46,019.93	
Equipment Operator (medium)	Active	2.00	28.4	10	568.00	L	\$72.39	incl. in rate	incl. in rate	\$41,116.38	
Crawler Crane (90tn)	Active	1.00	28.4	10	284.00	E	\$211.22	incl. in rate	incl. in rate	\$59,986.48	
Crawler Crane (270tn)	Active	1.00	28.4	10	284.00	E	\$454.10	incl. in rate	incl. in rate	\$128,964.40	
Loader, FE Rubber Tire (5.25cy)	Active	1.00	28.4	10	284.00	E	\$76.00	incl. in rate	incl. in rate	\$21,584.00	
Hydraulic Excavator (5.0cy)	Active	1.00	28.4	10	284.00	E	\$276.50	incl. in rate	incl. in rate	\$78,526.00	
Boomlift (JLG 60')	Active	2.00	28.4	10	568.00	E	\$52.87	incl. in rate	incl. in rate	\$30,030.16	
Acetylene Torches	Active	4.00	28.4	10	1,136.00	E	\$0.47	incl. in rate	incl. in rate	\$533.92	
Air Compressor 600 cfm	Active	2.00	28.4	10	568.00	E	\$21.74	incl. in rate	incl. in rate	\$12,348.32	
Generator, Small Generator, 10 - 15 kW	Active	2.00	28.4	10	568.00	E	\$7.04	incl. in rate	incl. in rate	\$3,998.72	
Hepa Vac System	Active	4.00	28.4	10	1,136.00	E	\$0.47	incl. in rate	incl. in rate	\$533.92	
					Labor Hours	3124				TOTAL LABOR	\$205,703.76
					Equipment Hours	5112				TOTAL EQUIPMENT	\$336,505.92

MATERIAL COSTS						
Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost
Consumables 5% labor (saw blades, drill bits, etc)	1.00	LS	1.000	1.00	\$16,825.30	\$16,825.30
						TOTAL MATERIAL
						\$16,825.30

SUBCONTRACT COSTS					
Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount
Hazardous waste cleanup/pickup/disposal, solid pickup, bulk material, maximum	43.00	ton	1.000	43.00	\$595.00
Hauling to Disposal Site Or Recycle Site	22.00	Loads	20 tons a load	\$1,000.00	\$22,000.00
Shoring Allowance	1	AL		\$50,000.00	\$50,000.00
					TOTAL SUBCONTRACTS
					\$97,585.00

SUMMARY OF COSTS						
Labor Cost	\$205,703.76	Labor Burden @	0.0%	\$0.00		\$205,703.76
Material Cost	\$16,825.30	Material Tax @	7.8%	\$1,303.96		\$18,129.26
Equipment Cost	\$336,505.92	Equipment Tax @	7.8%	\$26,079.21		\$362,585.13
Subcontractors	\$97,585.00					\$97,585.00
DIRECT COST SUBTOTALS	\$656,620			\$27,383	DIRECT COST SUBTOTALS	\$684,003

Additional Pay Item Notes :	

PAY ITEM INFORMATION									
PAY ITEM NUMBER	:	3.072	Project	:	KRRP - Copco 2				
Description	:	Remove & Dispose of Bifurcated vent pipes and support structure	Group	:	D02				
Quantity	:	19,500.00 LBS							
Daily Production	:	53,750.00 LBS per	10	hour shift	Project #	:	3		
Work Days	:	0.4 Days			Estimator	:	Mihaela Tomulescu	LBS per	Total Cost
Unit Price	:	\$0.43 per LBS			Probable Low Cost Parameter			64500	\$6,761
Total Cost	:	\$8,451			Probable High Cost Parameter			43000	\$10,141
									Unit Price Per LBS
									\$0.35
									\$0.52

CREW COSTS											
Description	Active Idle	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost	
Labor Foreman	Active	1.00	0.4	10	4.00	L	\$58.35	incl. in rate	incl. in rate	\$233.39	
Laborer	Active	4.00	0.4	10	16.00	L	\$51.01	incl. in rate	incl. in rate	\$816.16	
Steelworker	Active	2.00	0.4	10	8.00	L	\$77.55	incl. in rate	incl. in rate	\$620.42	
Equipment Operator (crane)	Active	2.00	0.4	10	8.00	L	\$81.02	incl. in rate	incl. in rate	\$648.17	
Equipment Operator (medium)	Active	2.00	0.4	10	8.00	L	\$72.39	incl. in rate	incl. in rate	\$579.10	
Crawler Crane (90tn)	Active	1.00	0.4	10	4.00	E	\$211.22	incl. in rate	incl. in rate	\$844.88	
Loader, FE Rubber Tire (5.25cy)	Active	1.00	0.4	10	4.00	E	\$76.00	incl. in rate	incl. in rate	\$304.00	
Hydraulic Excavator (5.0cy)	Active	1.00	0.4	10	4.00	E	\$276.50	incl. in rate	incl. in rate	\$1,106.00	
					Labor Hours	44	TOTAL LABOR			\$2,897.24	
					Equipment Hours	12	TOTAL EQUIPMENT			\$2,254.88	

MATERIAL COSTS						
Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost
Consumables 10% labor (saw blades, drill bits, etc)	1.00	LS	1.000	1.00	\$289.72	\$289.72
Selective demolition, torch cutting, steel, 1" thick plate (assumption)	2,000.00	LF	1.000	2,000.00	\$0.85	\$1,700.00
TOTAL MATERIAL						\$1,989.72

SUBCONTRACT COSTS					
Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount
Hazardous waste cleanup/pickup/disposal, solid pickup, bulk material, maximum	0.98	ton	1.000	0.98	\$580.13
Hauling to Disposal Site Or Recycle Site	1.00	Loads	20 tons a load	\$400.00	\$400.00
TOTAL SUBCONTRACTS					\$980.13

SUMMARY OF COSTS						
Labor Cost	\$2,897.24	Labor Burden @	0.0%	\$0.00		\$2,897.24
Material Cost	\$1,989.72	Material Tax @	7.8%	\$154.20		\$2,143.93
Equipment Cost	\$2,254.88	Equipment Tax @	7.8%	\$174.75		\$2,429.63
Subcontractors	\$980.13					\$980.13
DIRECT COST SUBTOTALS	\$8,122			\$329	DIRECT COST SUBTOTALS	\$8,451
Additional Pay Item Notes :						
Assumed the process of removing pipes, expansion joints and support rings encased in concrete is done in around 20 days by 3 crew formed of 1 foreman, 4 journeymen, 4 steelworkers ;6 equipment operators 1 for each excavator, crane and loader. We dispose pipes with 1 trucks per day for each crew. Assumed contains paint with heavy metals 10% of the total lbs, 36 miles from Copco lake to Yreka transfer recycling. Based on the current production rate, only 1 trips a day would be necessary. Demolition is done using one crawler crane, excavator and welding machine.						

PAY ITEM INFORMATION									
PAY ITEM NUMBER	:	3.073	Project	:	KRRP - Copco 2				
Description	:	Remove & Dispose of 2 - 138" Butterfly valves	Group	:	D07				
Quantity	:	148,000.00 LBS							
Daily Production	:	31,250.00 LBS per	10	hour shift	Project #	:	3		
Work Days	:	4.7 Days			Estimator	:	Mihaela Tomulescu	LBS per	Total Cost
Unit Price	:	\$0.98 per LBS			Probable Low Cost Parameter			37500	\$116,144
Total Cost	:	\$145,180			Probable High Cost Parameter			25000	\$174,216
								Unit Price Per LBS	\$0.78
									\$1.18

CREW COSTS										
Description	Active Idle	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Labor Foreman	Active	1.00	4.7	10	47.00	L	\$58.35	incl. in rate	incl. in rate	\$2,742.31
Laborer	Active	4.00	4.7	10	188.00	L	\$51.01	incl. in rate	incl. in rate	\$9,589.88
Steelworker	Active	2.00	4.7	10	94.00	L	\$77.55	incl. in rate	incl. in rate	\$7,289.89
Equipment Operator (crane)	Active	2.00	4.7	10	94.00	L	\$81.02	incl. in rate	incl. in rate	\$7,615.97
Equipment Operator (medium)	Active	2.00	4.7	10	94.00	L	\$72.39	incl. in rate	incl. in rate	\$6,804.47
Crawler Crane (90tn)	Active	1.00	4.7	10	47.00	E	\$211.22	incl. in rate	incl. in rate	\$9,927.34
Crawler Crane (270tn)	Active	1.00	4.7	10	47.00	E	\$454.10	incl. in rate	incl. in rate	\$21,342.70
Loader, FE Rubber Tire (5.25cy)	Active	1.00	4.7	10	47.00	E	\$76.00	incl. in rate	incl. in rate	\$3,572.00
Hydraulic Excavator (5.0cy)	Active	1.00	4.7	10	47.00	E	\$276.50	incl. in rate	incl. in rate	\$12,995.50
Boomlift (JLG 60')	Active	2.00	4.7	10	94.00	E	\$52.87	incl. in rate	incl. in rate	\$4,969.78
Acetylene Torches	Active	4.00	4.7	10	188.00	E	\$0.47	incl. in rate	incl. in rate	\$88.36
Air Compressor 600 cfm	Active	2.00	4.7	10	94.00	E	\$21.74	incl. in rate	incl. in rate	\$2,043.56
Generator, Small Generator, 10 - 15 kW	Active	2.00	4.7	10	94.00	E	\$7.04	incl. in rate	incl. in rate	\$661.76
Hepa Vac System	Active	4.00	4.7	10	188.00	E	\$0.47	incl. in rate	incl. in rate	\$88.36
					Labor Hours	517	TOTAL LABOR		\$34,042.52	
					Equipment Hours	846	TOTAL EQUIPMENT		\$55,689.36	

MATERIAL COSTS						
Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost
Consumables 15% labor (saw blades, electrodes, drill bits, etc)	1.00	LS	1.000	1.00	\$5,106.38	\$5,106.38
TOTAL MATERIAL						\$5,106.38

SUBCONTRACT COSTS					
Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount
Hazardous waste cleanup/pickup/disposal, solid pickup, bulk material, maximum	74.00	ton	1.000	74.00	\$595.00
					\$44,030.00
Hauling to Disposal Site Or Recycle Site	4.00	Loads	20 tons a load	\$400.00	\$1,600.00
TOTAL SUBCONTRACTS					\$45,630.00

SUMMARY OF COSTS					
Labor Cost	\$34,042.52	Labor Burden @	0.0%	\$0.00	\$34,042.52
Material Cost	\$5,106.38	Material Tax @	7.8%	\$395.74	\$5,502.12
Equipment Cost	\$55,689.36	Equipment Tax @	7.8%	\$4,315.93	\$60,005.29
Subcontractors	\$45,630.00				\$45,630.00
DIRECT COST SUBTOTALS	\$140,468		\$4,712	DIRECT COST SUBTOTALS	\$145,180
Additional Pay Item Notes :					
Assumed the process of removing 138" butterfly valves is done in around 6 days by 2 crew formed of 1 foreman, 2 journeymen, 2 steelworkers ;We dispose cradles with 1 trucks per day for each crew. Assumed contains paint with heavy metals 100% of the total lbs, 36 miles from Copco lake to Yreka transfer recycling. Based on the current production rate, only 1 trips a day would be necessary. Demolition is done using one crawler crane, excavator and welding machine.					

PAY ITEM INFORMATION									
PAY ITEM NUMBER	:	5.017			Project	:	KRRP - Copco 2		
Description	:	Disconnect and remove MV Transformers 115 KV @ Substation			Group	:	D10		
Quantity	:	2.00 EA			Project #	:	3		
Daily Production	:	2.24 EA per 10 hour shift			Estimator	:	Mihaela Tomulescu	EA per	Total Cost
Work Days	:	0.9 Days			Probable Low Cost Parameter	:	2.46125	\$3,162	\$1,581.01
Unit Price	:	\$1,756.68 per EA			Probable High Cost Parameter	:	1.79	\$4,216	\$2,108.01
Total Cost	:	\$3,513							

CREW COSTS										
Description	Active Idle	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Electrician Foreman	Active	1.00	0.9	10	8.90	L	\$55.45	incl. in rate	incl. in rate	\$493.53
Electrician	Active	1.00	0.9	10	8.90	L	\$55.25	incl. in rate	incl. in rate	\$491.75
Hydraulic Excavator (1.5cy)	Active	1.00	0.9	10	8.90	E	\$140.73	incl. in rate	incl. in rate	\$1,252.50
Equipment Operator (light)	Active	0.50	0.9	10	4.45	L	\$69.39	incl. in rate	incl. in rate	\$308.79
					Labor Hours	22.25	TOTAL LABOR			\$1,294.07
					Equipment Hours	8.9	TOTAL EQUIPMENT			\$1,252.50

MATERIAL COSTS						
Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost
Consumables 5% labor (saw blades, drill bits, etc)	1.00	LS	1.000	1.00	\$64.70	\$64.70
TOTAL MATERIAL						\$64.70

SUBCONTRACT COSTS					
Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount
Hauling to Disposal Site Or Recycle Site	2.00	Loads	20 tons a load	\$400.00	\$800.00
TOTAL SUBCONTRACTS					\$800.00

SUMMARY OF COSTS						
Labor Cost	\$1,294.07	Labor Burden @	0.0%	\$0.00		\$1,294.07
Material Cost	\$64.70	Material Tax @	7.8%	\$5.01		\$69.72
Equipment Cost	\$1,252.50	Equipment Tax @	7.8%	\$97.07		\$1,349.57
Subcontractors	\$800.00					\$800.00
DIRECT COST SUBTOTALS	\$3,411			\$102	DIRECT COST SUBTOTALS	\$3,513
Additional Pay Item Notes :						



PAY ITEM INFORMATION									
PAY ITEM NUMBER	:	5.019			Project	:	KRRP - Copco 2		
Description	:	Disconnect and remove MV Transformers 12 KV @ Substation			Group	:	D10		
Quantity	:	1.00 EA							
Daily Production	:	5.00 EA per		10	hour shift	Project #	:	3	
Work Days	:	0.2 Days				Estimator	:	Mihaela Tomulescu	
Unit Price	:	\$1,403.33 per EA				EA per		5.5	
Total Cost	:	\$1,403				Total Cost		\$1,263	
						Unit Price Per EA		\$1,262.99	
						Probable Low Cost Parameter		4	
						Probable High Cost Parameter		\$1,684	
								\$1,683.99	

CREW COSTS										
Description	Active Idle	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Electrician Foreman	Active	1.00	0.2	10	2.00	L	\$55.45	incl. in rate	incl. in rate	\$110.91
Electrician	Active	1.00	0.2	10	2.00	L	\$55.25	incl. in rate	incl. in rate	\$110.51
Loader, FE Rubber Tire (8.6cy)	Active	1.00	0.2	10	2.00	E	\$225.40	incl. in rate	incl. in rate	\$450.80
Equipment Operator (light)	Active	1.00	0.2	10	2.00	L	\$69.39	incl. in rate	incl. in rate	\$138.78
Truck Driver (light)	Active	1.00	0.2	10	2.00	L	\$65.47	incl. in rate	incl. in rate	\$130.94

MATERIAL COSTS						
Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost
Consumables 5% labor (saw blades, drill bits, etc	1.00	LS	1.000	1.00	\$24.56	\$24.56
TOTAL MATERIAL						\$24.56

SUBCONTRACT COSTS					
Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount
Hauling to Disposal Site Or Recycle Site	1.00	Loads		\$400.00	\$400.00
TOTAL SUBCONTRACTS					\$400.00

SUMMARY OF COSTS									
Labor Cost	\$491.13	Labor Burden @	0.0%	\$0.00					\$491.13
Material Cost	\$24.56	Material Tax @	7.8%	\$1.90					\$26.46
Equipment Cost	\$450.80	Equipment Tax @	7.8%	\$34.94					\$485.74
Subcontractors	\$400.00								\$400.00
DIRECT COST SUBTOTALS	\$1,366			\$37			DIRECT COST SUBTOTALS		\$1,403
Additional Pay Item Notes :									
Production is based off of RSMs using Crew formed of 1 Forman, 1 Electrician,1 Loader to discharge the transformer in the truck for disposal.									

PAY ITEM INFORMATION									
PAY ITEM NUMBER	:	5.020			Project	:	KRRP - Copco 2		
Description	:	Disconnect and remove cable connection between Copco#2 sub and HE plant @ Substation			Group	:	D10		
Quantity	:	0.10	Mile		Project #	:	3		
Daily Production	:	0.06	Mile per	10	hour shift	Estimator	:	Mihaela Tomulescu	
Work Days	:	1.6	Days					Mile per	Total Cost
Unit Price	:	\$97,483.57	per Mile					0.06875	\$8,774
Total Cost	:	\$9,748						Probable Low Cost Parameter	\$87,735.21
								Probable High Cost Parameter	\$116,980.28
								0.05	\$11,698

CREW COSTS										
Description	Active Idle	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Electrician Foreman	Active	1.00	1.6	10	16.00	L	\$55.45	incl. in rate	incl. in rate	\$887.25
Electrician	Active	2.00	1.6	10	32.00	L	\$55.25	incl. in rate	incl. in rate	\$1,768.10
Truck, Utility, with Man-Basket	Active	1.00	1.6	10	16.00	E	\$31.90	incl. in rate	incl. in rate	\$510.40
Labor Hours					48	TOTAL LABOR				\$2,655.34
Equipment Hours					16	TOTAL EQUIPMENT				\$510.40

MATERIAL COSTS						
Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost
Consumables 5% labor (saw blades, drill bits, etc	1.00	LS	1.000	1.00	\$132.77	\$132.77
TOTAL MATERIAL						\$132.77

SUBCONTRACT COSTS					
Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount
Rent trailer with cable pulling rig, for high voltage line work - Rent per day	2.00	days		\$3,000.00	\$6,000.00
Hauling to Disposal Site Or Recycle Site	1.00	Loads		\$400.00	\$400.00
TOTAL SUBCONTRACTS					\$6,400.00

SUMMARY OF COSTS						
Labor Cost	\$2,655.34	Labor Burden @	0.0%	\$0.00		\$2,655.34
Material Cost	\$132.77	Material Tax @	7.8%	\$10.29		\$143.06
Equipment Cost	\$510.40	Equipment Tax @	7.8%	\$39.56		\$549.96
Subcontractors	\$6,400.00					\$6,400.00
DIRECT COST SUBTOTALS	\$9,699		\$50		DIRECT COST SUBTOTALS	\$9,748
Additional Pay Item Notes :						
Production is based off of RSMS using Crew formed of 1 Forman, 1 Electrician. Equipment*: 1 Utility Man-Basket Truck, Trailer with cable pulling rig, for high voltage line work.						

PAY ITEM INFORMATION									
PAY ITEM NUMBER	:	5.021			Project	:	KRRP - Copco 2		
Description	:	Remove all associated auxiliary equipment @ Substation (Allowance)			Group	:	D03		
Quantity	:	1.00 LS			Project # : 3				
Daily Production	:	1.25 LS per		10					
Work Days	:	2.0		Days	Estimator	:	Mihaela Tomulescu	LS per	Total Cost
Unit Price	:	\$25,473.07 per LS			Probable Low Cost Parameter	:	1.375	\$22,926	\$22,925.76
Total Cost	:	\$25,473			Probable High Cost Parameter	:	1	\$30,568	\$30,567.68

CREW COSTS										
Description	Active Idle	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Electrician Foreman	Active	1.00	2.0	10	20.00	L	\$55.45	incl. in rate	incl. in rate	\$1,109.06
Electrician	Active	4.00	2.0	10	80.00	L	\$55.25	incl. in rate	incl. in rate	\$4,420.24
Truck, Utility, with Man-Basket	Active	1.00	2.0	10	20.00	E	\$31.90	incl. in rate	incl. in rate	\$638.00
Laborer	Active	2.00	2.0	10	40.00	L	\$51.01	incl. in rate	incl. in rate	\$2,040.40
Hydraulic Excavator (1.5cy)	Active	1.00	2.0	10	20.00	E	\$140.73	incl. in rate	incl. in rate	\$2,814.60
Hydraulic Crane (17tn)	Active	1.00	2.0	10	20.00	E	\$82.43	incl. in rate	incl. in rate	\$1,648.60
Equipment Operator (crane)	Active	1.00	2.0	10	20.00	L	\$81.02	incl. in rate	incl. in rate	\$1,620.42
Equipment Operator (light)	Active	1.00	2.0	10	20.00	L	\$69.39	incl. in rate	incl. in rate	\$1,387.80
Vibratory Hammer & Extractor	Active	1.00	2.0	10	20.00	E	\$94.14	incl. in rate	incl. in rate	\$1,882.80
					Labor Hours	180			TOTAL LABOR	\$10,577.92
					Equipment Hours	80			TOTAL EQUIPMENT	\$6,984.00

MATERIAL COSTS						
Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost
Consumables 5% labor (saw blades, drill bits, etc)	1.00	LS	1.000	1.00	\$528.90	\$528.90
						TOTAL MATERIAL
						\$528.90

SUBCONTRACT COSTS					
Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount
Rent trailer with cable pulling rig, for high voltage line work - Rent per day	2.00	days			\$6,000.00
Hauling to Disposal Site Or Recycle Site	2.00	Loads		\$400.00	\$800.00
					TOTAL SUBCONTRACTS
					\$6,800.00

SUMMARY OF COSTS						
Labor Cost	\$10,577.92	Labor Burden @	0.0%	\$0.00		\$10,577.92
Material Cost	\$528.90	Material Tax @	7.8%	\$40.99		\$569.89
Equipment Cost	\$6,984.00	Equipment Tax @	7.8%	\$541.26		\$7,525.26
Subcontractors	\$6,800.00					\$6,800.00
DIRECT COST SUBTOTALS	\$24,891			\$582	DIRECT COST SUBTOTALS	\$25,473
Additional Pay Item Notes :						
When a transmission line is decommissioned and is not converted to another use, the decommissioning typically includes the removal of all infrastructure if it is no longer required, or has reached end-of-life conditions. Removed parts will be re-used, recycled or disposed. Production is based off of RSMs using Crew B-1C and B-3 ( 1 Foreman, 2 laborer, 1 Excavator& 1 crane for lift, position and load in the truck, 1 Hydraulic rock-splitting/rock-drilling equipment to break equipment foundations and concrete ) for demo :4 Electrician,, 1 utility truck access poles, string conductor, modify structure arms, provide guard structures, etc. Crews may be working simultaneously along the project alignment and substations, hydro plant and switchyard. .						



PAY ITEM INFORMATION									
PAY ITEM NUMBER	:	5.022	Project	:	KRRP - Copco 2				
Description	:	Demolish overhead transmission line and structure 69 KV Copco#1 to Iron Gate	Group	:	D03				
Quantity	:	5.00 Miles	Project #	:	3				
Daily Production	:	0.13 Miles per 10 hour shift	Estimator	:	Mihaela Tomulescu				
Work Days	:	40.0 Days	Miles per	:	0.1375	Total Cost	Unit Price Per Miles		
Unit Price	:	\$106,556.17 per Miles	Probable Low Cost Parameter	:	0.1	\$639,337	\$127,867.40		
Total Cost	:	\$532,781	Probable High Cost Parameter	:					

CREW COSTS										
Description	Active Idle	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Electrician Foreman	Active	1.00	40.0	10	400.00	L	\$55.45	incl. in rate	incl. in rate	\$22,181.20
Electrician	Active	2.00	40.0	10	800.00	L	\$55.25	incl. in rate	incl. in rate	\$44,202.40
Truck, Utility, with Man-Basket	Active	2.00	40.0	10	800.00	E	\$31.90	incl. in rate	incl. in rate	\$25,520.00
Laborer	Active	2.00	40.0	10	800.00	L	\$51.01	incl. in rate	incl. in rate	\$40,808.00
Hydraulic Excavator (1.5cy)	Active	1.00	40.0	10	400.00	E	\$140.73	incl. in rate	incl. in rate	\$56,292.00
Hydraulic Crane (80tn)	Active	1.00	40.0	10	400.00	E	\$197.66	incl. in rate	incl. in rate	\$79,064.00
Equipment Operator (crane)	Active	1.00	40.0	10	400.00	L	\$81.02	incl. in rate	incl. in rate	\$32,408.40
Equipment Operator (light)	Active	1.00	40.0	10	400.00	L	\$69.39	incl. in rate	incl. in rate	\$27,756.00
Vibratory Hammer & Extractor	Active	1.00	40.0	10	400.00	E	\$94.14	incl. in rate	incl. in rate	\$37,656.00
Labor Hours					2800	TOTAL LABOR			\$167,356.00	
Equipment Hours					2000	TOTAL EQUIPMENT			\$198,532.00	

MATERIAL COSTS						
Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost
Consumables 5% labor ( saw blades, drill bits, etc)	1.00	LS	1.000	1.00	\$8,367.80	\$8,367.80
Topsoil placement and grading, loam or topsoil, F.E. loader, 1-1/2 C.Y., remove and stockpile on site, spread from pile to rough finish grade	96.00	CY	1.000	96.00	\$4.74	\$455.04
TOTAL MATERIAL						\$8,822.84

SUBCONTRACT COSTS					
Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount
Rent trailer with cable pulling rig, for high voltage line work - Rent per day	40.00	days		\$3,000.00	\$120,000.00
Hauling to Disposal Wire	5.00	Loads	1 load per mile of wire	\$400.00	\$2,000.00
Hauling to Disposal Structures	50.00	Loads	2 Structures per Load	\$400.00	\$20,000.00
TOTAL SUBCONTRACTS					\$142,000.00

SUMMARY OF COSTS						
Labor Cost	\$167,356.00	Labor Burden @	0.0%	\$0.00		\$167,356.00
Material Cost	\$8,822.84	Material Tax @	7.8%	\$683.77		\$9,506.61
Equipment Cost	\$198,532.00	Equipment Tax @	7.8%	\$15,386.23		\$213,918.23
Subcontractors	\$142,000.00					\$142,000.00
DIRECT COST SUBTOTALS		\$516,711	\$16,070		DIRECT COST SUBTOTALS	
					\$532,781	

Additional Pay Item Notes :

When a transmission line is decommissioned and is not converted to another use, the decommissioning typically includes the removal of all infrastructure if it is no longer required, or has reached end-of-life conditions. Removed parts will be re-used, recycled or disposed. Production is based off of RSMs using Crew B-1C and B-3 ( 1 Foreman, 2 laborer, 1 Excavator & 1 crane for lift, position and load in the truck, 1 Hydraulic rock-splitting/rock-drilling equipment to break equipment foundations and concrete for demo :2 Electrician,, 1 utility truck to access poles, string conductor, modify structure arms, provide guard structures, etc. Crews may be working simultaneously along the project alignment and substations, hydro plant and switchyard. Transmission line poles or structures are commonly between 60 and 140 feet tall. There are several different kinds of transmission structures. Transmission structures can be constructed of metal or wood. They can be single-poled or multi-poled. They can be single-circuited, carrying one set of transmission lines or double-circuited with two sets of lines. Assumed based on RSMs we have "Communications transmission tower, radio towers self-supporting, wind load 70 mph basic wind speed, 120' high" (33811310). Pole height and load capacity limitations determine the distance between poles (span length) either on the basis of ground clearance or ability to support heavy wind and ice loads. Assumed average span between structures to be 275 feet so for 5 miles of overhead transmission we will have approximately 96 structures. In areas where single-pole structures are preferred, weak or wet soils may require concrete foundations for support. Where a transmission line must cross a street or slightly change direction, larger angle structures or guy wires may be required. Poles with guy wires impact a much larger area. Angle structures are usually more than double the diameter of other steel poles. They are made of steel, usually five to six feet in diameter, and have a large concrete base. The base may be buried ten or more feet below the ground surface. The diameter of the pole and the depth the base is buried depends on the condition of the soils and the voltage of the line. Assumed the structures are disposed to Yreka recycling, 34 miles away. This estimate is made as the best AECOM assumption, as actual pricing would occur during the detailed engineering and construction bid process.

PAY ITEM COST DETAIL WORKSHEET

5.023 Demolish transmission conductor from existing structure pole. Structures remain.

PAY ITEM INFORMATION

PAY ITEM NUMBER	: 5.023	Project	: KRRP - Copco 2
Description	: Demolish transmission conductor from existing structure pole. Structures remain.	Group	: D03
Quantity	: 1.50 Miles	Project #	: 3
Daily Production	: 0.94 Miles per 10 hour shift	Estimator	: Mihaela Tomulescu
Work Days	: 1.6 Days	Miles per	1.03125
Unit Price	: \$7,132.21 per Miles	Probable Low Cost Parameter	\$9,628
Total Cost	: \$10,698	Probable High Cost Parameter	\$12,838
		Unit Price Per Miles	\$6,418.99
			\$8,558.65

CREW COSTS

Description	Active Idle	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Electrician Foreman	Active	1.00	1.6	10	16.00	L	\$55.45	incl. in rate	incl. in rate	\$887.25
Electrician	Active	2.00	1.6	10	32.00	L	\$55.25	incl. in rate	incl. in rate	\$1,768.10
Truck, Utility, with Man-Basket	Active	2.00	1.6	10	32.00	E	\$31.90	incl. in rate	incl. in rate	\$1,020.80

PAY ITEM INFORMATION											
PAY ITEM NUMBER	:	5.024			Project	:	KRRP - Copco 2				
Description	:	Remove structures between pole 2/007 and Iron Gate			Group	:	D03				
Quantity	:	6.00 EA			Project #	:	3				
Daily Production	:	2.50 EA per		10	hour shift	Estimator	:	Mihaela Tomulescu	EA per	Total Cost	Unit Price Per EA
Work Days	:	2.4		Days		Probable Low Cost Parameter	:	2.75	\$18,005	\$3,000.84	
Unit Price	:	\$3,334.27 per EA			Probable High Cost Parameter	:	2	\$24,007	\$4,001.13		
Total Cost	:	\$20,006									

CREW COSTS										
Description	Active Idle	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Electrician Foreman	Active	1.00	2.4	10	24.00	L	\$55.45	incl. in rate	incl. in rate	\$1,330.87
Electrician	Active	1.00	2.4	10	24.00	L	\$55.25	incl. in rate	incl. in rate	\$1,326.07
Truck, Utility, with Man-Basket	Active	1.00	2.4	10	24.00	E	\$31.90	incl. in rate	incl. in rate	\$765.60
Laborer	Active	2.00	2.4	10	48.00	L	\$51.01	incl. in rate	incl. in rate	\$2,448.48
Hydraulic Excavator (1.5cy)	Active	1.00	2.4	10	24.00	E	\$140.73	incl. in rate	incl. in rate	\$3,377.52
Hydraulic Crane (50tn)	Active	1.00	2.4	10	24.00	E	\$136.20	incl. in rate	incl. in rate	\$3,268.80
Equipment Operator (crane)	Active	1.00	2.4	10	24.00	L	\$81.02	incl. in rate	incl. in rate	\$1,944.50
Equipment Operator (light)	Active	1.00	2.4	10	24.00	L	\$69.39	incl. in rate	incl. in rate	\$1,665.36
Vibratory Hammer & Extractor	Active	1.00	2.4	10	24.00	E	\$94.14	incl. in rate	incl. in rate	\$2,259.36
Labor Hours					144	TOTAL LABOR				\$8,715.29
Equipment Hours					96	TOTAL EQUIPMENT				\$9,671.28

MATERIAL COSTS						
Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost
Consumables 5% labor (saw blades, drill bits, etc)	1.00	LS	1.000	1.00	\$435.76	\$435.76
TOTAL MATERIAL						\$435.76

SUBCONTRACT COSTS					
Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount
Hauling to Disposal Site Or Recycle Site	1.00	Loads	20 tons a load	\$400.00	\$400.00
TOTAL SUBCONTRACTS					\$400.00

SUMMARY OF COSTS					
Labor Cost	\$8,715.29	Labor Burden @	0.0%	\$0.00	\$8,715.29
Material Cost	\$435.76	Material Tax @	7.8%	\$33.77	\$469.54
Equipment Cost	\$9,671.28	Equipment Tax @	7.8%	\$749.52	\$10,420.80
Subcontractors	\$400.00				\$400.00
DIRECT COST SUBTOTALS	\$19,222		\$783	DIRECT COST SUBTOTALS	\$20,006

Additional Pay Item Notes :		The switchyard site and transmission line rights-of-way will be restored to the natural conditions. Production is based off of RSMs using Crew B-1C and B-3 ( 1 Foreman, 2 laborer, 1 Excavator& 1 crane for lift, position and load in the truck, 1 Hydraulic rock-splitting/rock-drilling equipment to break equipment foundations and concrete for demo :4 Electrician,, 1 utility truck access poles, string conductor, modify structure arms, provide guard structures, etc. Crews may be working simultaneously along the project alignment. Assumed the structures are disposed to Yreka recycling, 34 miles away. These are only estimates as actual pricing would occur during the detailed engineering and construction bid process.	
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### 5.035 Copco Village Building Demolition

Additional Pay Item Notes :	

# IRON GATE DAM REMOVAL

#### 4.001 Furnish, Install, and Remove Barge-Mounted Crane in Reservoir

SUMMARY OF COSTS					
Labor Cost	\$43,061.92	Labor Burden @	0.0%	\$0.00	\$43,061.92
Material Cost	\$0.00	Material Tax @	7.75%	\$0.00	\$0.00
Equipment Cost	\$63,920.00	Equipment Tax @	7.75%	\$4,953.80	\$68,873.80
Subcontractors	\$39,450.00				\$39,450.00
DIRECT COST SUBTOTALS				\$4,954	DIRECT COST SUBTOTALS
					\$151,386
Additional Pay Item Notes :					

#### 4.002 Furnish, Install, and Remove Temporary Air Vent Hose from Barge to Diversion Tunnel Intake Structure

PAY ITEM NUMBER	4.002	Project	KRRP - Iron Gate			
Description	Furnish, Install, and Remove Temporary Air Vent Hose from Barge to Diversion Tunnel Intake Structure	Group	D02			
Quantity	1.00 LS	Project #	4			
Daily Production	1.00 LS per 10 hour shift	Estimator	Eric Jones			
Work Days	1.0 Days	LS per	1.15			
Unit Price	\$19,693.52 per LS	Probable Low Cost Parameter	\$16,739			
Total Cost	\$19,694	Probable High Cost Parameter	\$23,632			
			Unit Price Per LS			
			\$26,997.45			

Description	Active Idle	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Barge, Bargeman, Deckhand, Fireman, Oiler	Active	2.00	1.0	10	20.00	L	\$67.06	incl. in rate	incl. in rate	\$1,341.12
Barge, Deck Engineer, Winch Operator	Active	8.00	1.0	10	80.00	L	\$70.69	incl. in rate	incl. in rate	\$5,654.88
Barge, Sectional, 20'x10'	Active	2.00	1.0	10	20.00	E	\$4.48	incl. in rate	incl. in rate	\$89.60
Barge, Sectional, 40'x10', includes ramp	Active	1.00	1.0	10	10.00	E	\$16.48	incl. in rate	incl. in rate	\$164.80
Carpenter Foreman (out)	Active	1.00	1.0	10	10.00	L	\$51.04	incl. in rate	incl. in rate	\$510.40
Carpenters	Active	1.00	1.0	10	10.00	L	\$79.86	incl. in rate	incl. in rate	\$798.60
Carpenters, Journeyman	Active	4.00	1.0	10	40.00	L	\$71.91	incl. in rate	incl. in rate	\$2,876.28
Cement finisher	Active	2.00	1.0	10	20.00	L	\$79.86	incl. in rate	incl. in rate	\$1,597.20
Conc Bucket (1cy)	Active	2.00	1.0	10	20.00	E	\$2.83	incl. in rate	incl. in rate	\$56.60
Conc Pump (large, 196 cy/hr, 111' & over)	Active	1.00	1.0	10	10.00	E	\$139.74	incl. in rate	incl. in rate	\$1,397.40
Conc Saw (19 - 36 hp)	Active	1.00	1.0	10	10.00	E	\$6.89	incl. in rate	incl. in rate	\$68.90
Labor Hours					180	TOTAL LABOR				\$12,778.48
Equipment Hours					70	TOTAL EQUIPMENT				\$1,777.30

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Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount
Concrete Saw Cutting	1	EA	Cost per Mob	\$5,000.00	\$5,000.00
TOTAL SUBCONTRACTS					\$5,000.00

Labor Cost	\$12,778.48	Labor Burden @	0.0%		\$12,778.48
Material Cost	\$0.00	Material Tax @	7.75%	\$0.00	\$0.00
Equipment Cost	\$1,777.30	Equipment Tax @	7.75%	\$137.74	\$1,915.04
Subcontractors	\$5,000.00				\$5,000.00
<b>DIRECT COST SUBTOTALS</b>	<b>\$19,556</b>			<b>\$138</b>	<b>\$19,694</b>
<b>Additional Pay Item Notes :</b>					

#### 4.003 Remove Reinforced Concrete Ring Located D/S of Closure Gate and U/S for Flap Gate

PAY ITEM NUMBER	:	4.003	Project	:	KRRP - Iron Gate		
Description	:	Remove Reinforced Concrete Ring Located D/S of Closure Gate and U/S for Flap Gate	Group	:	D02		
Quantity	:	46.00 CY					
Daily Production	:	11.56 CY per	10 hour shift	Project #	: 4		
Work Days	:	4.0 Days	Estimator	:	Eric Jones		
Unit Price	:	\$331.68 per CY		CY per	Total Cost	Unit Price Per CY	
Total Cost	:	\$15,257	Probable Low Cost Parameter		13.296875	\$12,969	\$322.08
			Probable High Cost Parameter		8.671875	\$19,072	\$473.64

Description	Active Idle	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Labor Foreman	Active	1.00	4.0	10	40.00	L	\$53.10	incl. in rate	incl. in rate	\$2,123.88
Equipment Operator (medium)	Active	1.00	4.0	10	40.00	L	\$72.91	incl. in rate	incl. in rate	\$2,916.32
Laborer	Active	4.00	4.0	10	160.00	L	\$50.38	incl. in rate	incl. in rate	\$8,060.80
Air Tool, Chipping Hammer	Active	4.00	4.0	10	160.00	E	\$1.64	incl. in rate	incl. in rate	\$262.25
Air Compressor 600 cfm	Active	2.00	4.0	10	80.00	E	\$21.74	incl. in rate	incl. in rate	\$1,739.11
Labor Hours					240	TOTAL LABOR				\$13,101.00
Equipment Hours					240	TOTAL EQUIPMENT				\$2,001.36

Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost
TOTAL MATERIAL						\$0.00

Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount
TOTAL SUBCONTRACTS					\$0.00

Labor Cost	\$13,101.00	Labor Burden @	0.0%			\$13,101.00
Material Cost	\$0.00	Material Tax @	7.75%	\$0.00		\$0.00
Equipment Cost	\$2,001.36	Equipment Tax @	7.75%	\$155.11		\$2,156.46
Subcontractors	\$0.00					\$0.00
<b>DIRECT COST SUBTOTALS</b>	<b>\$15,102</b>			<b>\$155</b>	<b>DIRECT COST SUBTOTALS</b>	<b>\$15,257</b>

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#### 4.004 Remove Reinforced Concrete Stoplog Structure

SUMMARY OF COSTS					
Labor Cost	\$3,253.25	Labor Burden @	0.0%		\$3,253.25
Material Cost	\$0.00	Material Tax @	7.75%	\$0.00	\$0.00
Equipment Cost	\$2,536.64	Equipment Tax @	7.75%	\$196.59	\$2,733.23
Subcontractors	\$0.00				\$0.00
<b>DIRECT COST SUBTOTALS</b>	<b>\$5,790</b>			<b>\$197</b>	<b>DIRECT COST SUBTOTALS \$5,986</b>
<b>Additional Pay Item Notes :</b>					

#### 4.005 Remove Water from behind Tailrace Cofferdam

SUMMARY OF COSTS				
Labor Cost	\$3,593.04	Labor Burden @	0.0%	\$3,593.04
Material Cost	\$0.00	Material Tax @	7.75%	\$0.00
Equipment Cost	\$1,294.90	Equipment Tax @	7.75%	\$100.35
Subcontractors	\$0.00			\$0.00
<b>DIRECT COST SUBTOTALS</b>	<b>\$4,888</b>		<b>\$100</b>	<b>DIRECT COST SUBTOTALS \$4,988</b>
<b>Additional Pay Item Notes :</b>				



#### 4.007 Tailrace Cofferdam- Furnish & Unload Material

4.007

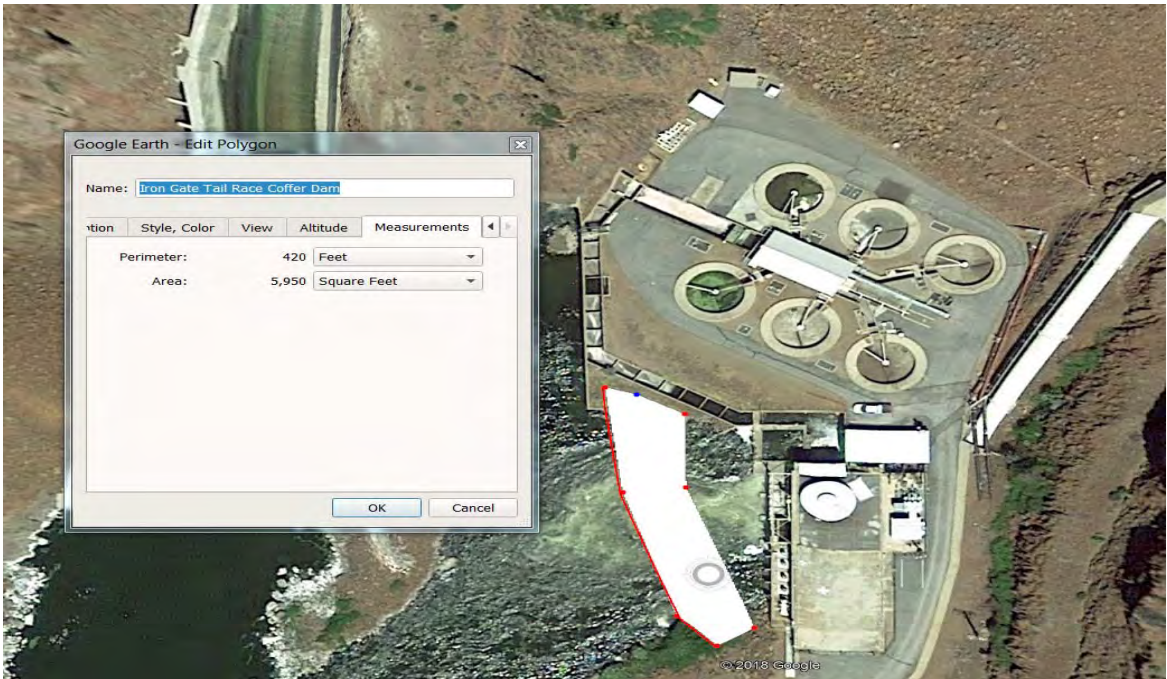
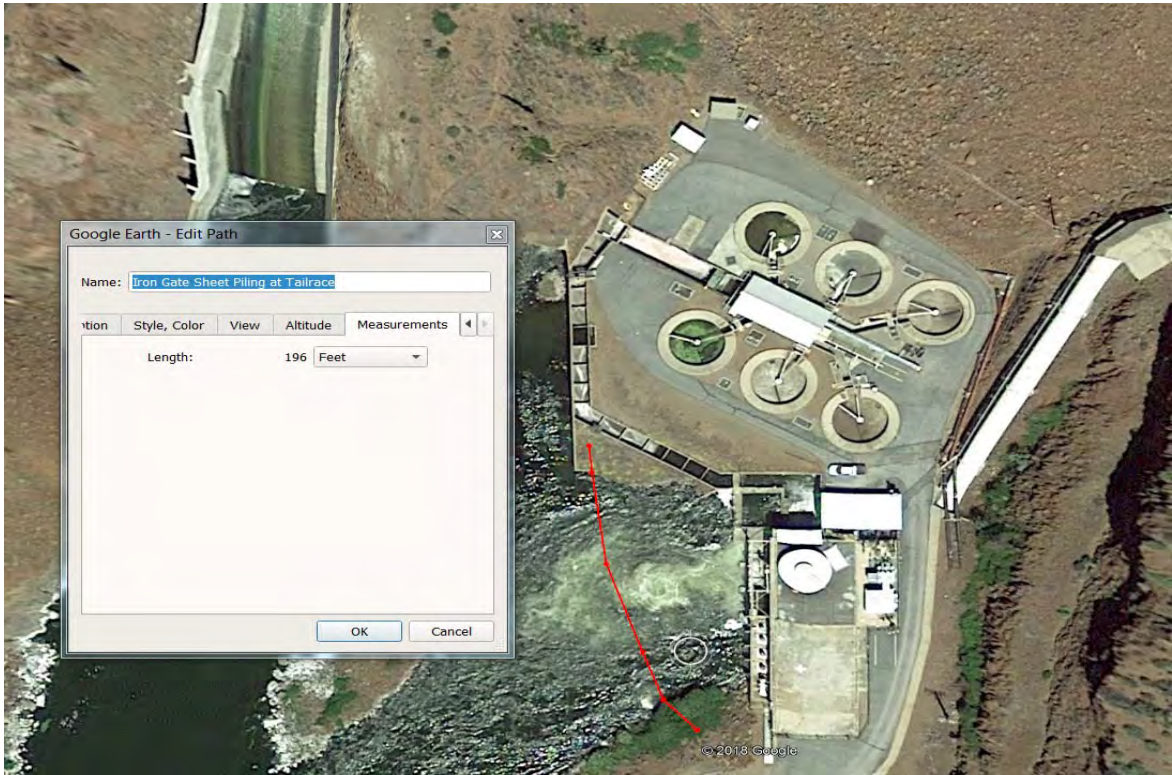
#### 4.007.1 Tailrace Cofferd Dam- Drive Pile

SUMMARY OF COSTS					
Labor Cost	\$74,251.74	Labor Burden @	49.7%	\$0.00	\$74,251.74
Material Cost	\$22,425.17	Material Tax @	7.75%	\$1,737.95	\$24,163.13
Equipment Cost	\$51,887.08	Equipment Tax @	7.75%	\$4,021.25	\$55,908.33
Subcontractors	\$100,400.00				\$100,400.00
<b>DIRECT COST SUBTOTALS</b>	<b>\$248,964</b>			<b>\$5,759</b>	<b>DIRECT COST SUBTOTALS \$254,723</b>
<b>Additional Pay Item Notes :</b>					
This estimate is to drive pile for coffer dam at the tailrace. It is expected that the wall will be a combi pile wall. Utilizing pipe pile and sheet pile.					

4.007.1 Tailrace Coffor Dam- Drive Pile Details					
High Cost Factors			Low Cost Factors		
Bad Weather		0%	No Bad Weather		0%
Gas Price Increase		10%	Gas Price Decrease		10%
Unforeseen Contaminated Mats/ Access Issues		5%	No Unforeseen Contaminated Mats/ Access Issues		0%
		15%			10%

Production Per Hour	Hours	Efficiency Factor (Access, Activity, Qty, High Rebar Density, Breaks, Ect)	Overall Production	
	1500	8	70%	8400
	100	10	70%	700



#### 4.007.2 Tailrace Cofferdam-Extract Pile

SUMMARY OF COSTS					
Labor Cost	\$49,722.15	Labor Burden @	49.7%	\$0.00	\$49,722.15
Material Cost	\$4,972.22	Material Tax @	7.75%	\$385.35	\$5,357.56
Equipment Cost	\$27,062.81	Equipment Tax @	7.75%	\$2,097.37	\$29,160.18
Subcontractors	\$40,000.00				\$40,000.00
<b>DIRECT COST SUBTOTALS</b>	<b>\$121,757</b>			<b>\$2,483</b>	<b>DIRECT COST SUBTOTALS \$124,240</b>
<b>Additional Pay Item Notes :</b>					
This estimate is for extracting pile and loading out coffer dam material.					



#### 4.010 Upstream Cofferdam to be Removed in the Wet

PAY ITEM NUMBER	:	4.010	Project	:	KRRP - Iron Gate
Description	:	Upstream Cofferdam to be Removed in the Wet	Group	:	D08
Quantity	:	10,000.00	cy		
Daily Production	:	1,560.00	cy per	20	hour shift
Work Days	:	6.4	Days	Project #	: 4
Unit Price	:	\$17.00	per cy	Estimator	: Eric Jones
Total Cost	:	\$169,960		Probable Low Cost Parameter	1794
				Probable High Cost Parameter	1326
				Total Cost	\$144,466
				Unit Price Per cy	\$16.50
					\$22.33

Description	Active Idle	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Hydraulic Excavator (5.0cy)	Active	1.00	6.4	20	128.00	E	\$274.63	incl. in rate	incl. in rate	\$35,152.64
Dozer (235hp)(CATD7)	Active	1.00	6.4	20	128.00	E	\$165.11	incl. in rate	incl. in rate	\$21,134.08
Loader, FE Rubber Tire (5.25cy)	Active	1.00	6.4	20	128.00	E	\$75.42	incl. in rate	incl. in rate	\$9,653.76
Truck Driver (heavy)	Active	2.00	5.7	20	229.44	L	\$63.35	incl. in rate	incl. in rate	\$14,534.79
Labor Foreman	Active	1.00	6.4	20	128.00	L	\$53.10	incl. in rate	incl. in rate	\$6,796.42
Laborer	Active	1.00	6.4	20	128.00	L	\$50.38	incl. in rate	incl. in rate	\$6,448.64
Equipment Operator (medium)	Active	3.00	6.4	20	384.00	L	\$72.91	incl. in rate	incl. in rate	\$27,996.67
CAT 745 (32 CY) OFF ROAD TRUCK	Active	2.00	5.7	20	229.44	E	\$174.47	incl. in rate	incl. in rate	\$40,030.40
Labor Hours					869.44	TOTAL LABOR				\$55,776.52
Equipment Hours					613.44	TOTAL EQUIPMENT				\$105,970.88

Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost
TOTAL MATERIAL						\$0.00

Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount
TOTAL SUBCONTRACTS					\$0.00

Labor Cost	\$55,776.52	Labor Burden @	49.7%	\$0.00				\$55,776.52
Material Cost	\$0.00	Material Tax @	7.75%	\$0.00				\$0.00
Equipment Cost	\$105,970.88	Equipment Tax @	7.75%	\$8,212.74				\$114,183.62
Subcontractors	\$0.00							\$0.00
<b>DIRECT COST SUBTOTALS</b>	<b>\$161,747</b>			<b>\$8,213</b>		<b>DIRECT COST SUBTOTALS</b>		<b>\$169,960</b>

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4.010 Upstream Cofferdam to be Removed in the Wet Details				
High Cost Factors		Low Cost Factors		
Bad Weather	0%	No Bad Weather		0%
Gas Price Increase	10%	Gas Price Decrease		10%
Unforeseen Contaminated Mats/ Access Issues	5%	No Unforeseen Contaminated Mats/ Access Issues		5%
	15%			15%
Production Per Hour		Efficiency Factor (Access, Activity, Qty, High Rebar Density, Breaks, Ect)		Overall Production
	Hours			
	120		65%	624
		20	65%	1560
Haul Notes		Excavator Loading Production per shift		
CY	10,000.00	CY per Hour		57
Swell Factor	30%	CY Bucket Size		5.00
Bulk CY	13,000.00	Buckets Per Hour		11
Haul Vehicle 80% Capacity (1.3 tons per CY)	27.5	# of Excavators		1.00
# of Haul Vehicles		CY per Hour (5 CY Bucket)		57
Load Time (Includes Spot Time, Maneuver Time, & Loading) (Minutes)		CY Per Hour Ideal Production Per 8 Hour Shift		160
Dump Time (Includes Spot Time, Maneuver Time, & Unloading) (Minutes)		Efficient Compared to Ideal Production		35%
Haul Speed (Loaded MPH)	8.8	Inefficiencies Compared to Ideal Production		65%
Return Speed (Unloaded MPH)	15			
Haul Distance (Miles)	1.00			
Shift Length (Hours)	20			
Cycle Time				
Load Time (Load Time Minutes / Minutes)	0.09			
Haul Time (haul Distance / Haul Speed)	0.11			
Dump Time (Dump Time Minutes / 40 Mins)	0.05			
Return Time (haul Distance / Return Speed)	0.07			
Hours Per Cycle	0.31			
Efficiency Factor (night Work, Traffic Restrictions, Coffee Breaks, ECT)	65%			
Actual Hours Per Cycle (Hours per Cycle / Efficiency Factor)	0.48			
Number of Cycles Bulk CY (Haul Vehicle Cap X # of Haul Vehicles)	228			
Total Number of Haul Hours ( Actual Cycle Hours X Number of Cycles)	114.72			
Loads Per Hour (Number of Cycles / Total Number of Haul Hours)	2.08			
Number of Haul Days	5.7			
Speed Loaded				
	Max Weight lbs of loaded 745	164,500.00		
	Tons	82.25		
	20lbs/Ton Rolling weight	4		
	Rolling Resistance ( 1% for each 20lbs/Ton)	4%		
	Slope Grade	8%		
	Total Resistance	12%		
	Max Gear per CAT Chart	4		
	Max MPH	8.8		
Speed Empty				
	Max Weight lbs of Empty 745	74,100.00		
	Tons Empty	37.05		
	20lbs/Ton Rolling weight Empty	2		
	Rolling Resistance ( 1% per 20lbs/Ton) Empty	2%		
	Average Slope Empty	8%		
	Total Resistance Empty	10%		
	Max Gear per CAT Chart Empty	N/A		
	Max MPH Empty	N/A		

**Other Notes**  
This is for removal of Up stream offer dam. Total CY is expected to be 20,000 and assumption is that 50% of that Quantity will be washed out when the coffer dam is breached. It is expected that the remaining 10,000 CY can be removed with excavators and haul trucks. The efficiency of this pay item is expected to be lower than other excavation items due to haul road maintenance or temp construction due to the material traveled on will be wet.

#### 4.011 Remove 9' dia. hinged blind flange

PAY ITEM NUMBER	:	4.011	Project	:	KRRP - Iron Gate			
Description	:	Remove 9' dia. hinged blind flange	Group	:	D02			
Quantity	:	19,000.00 LBS						
Daily Production	:	9,500.00 LBS per	10	hour shift	Project #	:	4	
Work Days	:	2.0 Days			Estimator	:	Mihaela Tomulescu	
Unit Price	:	\$3.20 per LBS			LBS per	Total Cost	Unit Price Per LBS	
Total Cost	:	\$60,734			Probable Low Cost Parameter	10925	\$51,624 \$3.10	
					Probable High Cost Parameter	7600	\$72,881 \$4.38	

Description	Active Idle	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Labor Foreman	Active	1.00	2.0	10	20.00	L	\$53.10	incl. in rate	incl. in rate	\$1,061.94
Laborer	Active	4.00	2.0	10	80.00	L	\$50.38	incl. in rate	incl. in rate	\$4,030.40
Steelworker	Active	2.00	2.0	10	40.00	L	\$72.07	incl. in rate	incl. in rate	\$2,882.88
Equipment Operator (medium)	Active	1.00	2.0	10	20.00	L	\$72.91	incl. in rate	incl. in rate	\$1,458.16
Equipment Operator (crane)	Active	1.00	2.0	10	20.00	L	\$75.25	incl. in rate	incl. in rate	\$1,505.02
Hydraulic Crane (80tn)	Active	1.00	2.0	10	20.00	E	\$190.46	incl. in rate	incl. in rate	\$3,809.20
Loader, FE Rubber Tire (3.5cy)	Active	1.00	2.0	10	20.00	E	\$64.23	incl. in rate	incl. in rate	\$1,284.60
Forklift, Rough Terrain (9,000 lb capacity)	Active	1.00	2.0	10	20.00	E	\$54.70	incl. in rate	incl. in rate	\$1,094.00
Labor Hours					180	TOTAL LABOR				\$10,938.40
Equipment Hours					60	TOTAL EQUIPMENT				\$6,187.80

Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost
Consumables 10% labor (saw blades, drill bits, etc)	1.00	LS	1.000	1.00	\$1,093.84	\$1,093.84
Skid Allowance	1.00	AL	1.00	1.00	\$20,000.00	\$20,000.00
TOTAL MATERIAL						\$21,093.84

Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount
Hauling Disposal Cost 40 Miles to Yreka	1.00	Loads	20 tons a load	\$400.00	\$400.00
Cutting, steel, to 1/4" thick, by hand, incl prep, torch cutting & grinding, excl staging (assumed qty)	1,000.00	lf	1,000	1,000.00	\$20.00
TOTAL SUBCONTRACTS					\$20,400.00

Labor Cost	\$10,938.40	Labor Burden @	49.7%	\$0.00		\$10,938.40
Material Cost	\$21,093.84	Material Tax @	7.75%	\$1,634.77		\$22,728.61
Equipment Cost	\$6,187.80	Equipment Tax @	7.75%	\$479.55		\$6,667.35
Subcontractors	\$20,400.00					\$20,400.00
DIRECT COST SUBTOTALS	\$58,620			\$2,114	DIRECT COST SUBTOTALS	\$60,734

Turning of the actuating bolts and nuts - accomplished by steelworker / welder crew using only standard hand tools - spreads the yoke halves until they are fully separated, allowing the head to be swung open on its hinge. Contact surfaces of the clamping yokes, head and hub are tapered and when the head is closed and the yoke bolts are tightened, the head and hub are wedged together, compressing the O-ring and effecting a leakproof seal. Removing flanges is cumbersome and time consuming because of the tunnel work and the rusted fasteners. There is need to tug or hammer at bulky flanges or to struggle with bulky lugs and threads. Using crane, load to load the flange and associated metal work in the truck. Included 5' of pipe spool. Expecting flange to be removed with a combination of a forklift and skids.

#### 4.012 Remove 18" plug valve and 7' of 18" drainage pipe

PAY ITEM INFORMATION							
PAY ITEM NUMBER :	4.012			Project :	KRRP - Iron Gate		
Description :	Remove 18" plug valve and 7' of 18" drainage pipe			Group :	D03		
Quantity :	2,620.00 LBS						
Daily Production :	3,275.00 LBS per 10 hour shift			Project # :	4		
Work Days :	0.8 Days			Estimator :	Mihaela Tomulescu	LBS per	Total Cost
Unit Price :	\$2.18 per LBS			Probable Low Cost Parameter		3766.25	\$4,852
Total Cost :	\$5,708			Probable High Cost Parameter		2620	\$6,850
							\$2.12
							\$2.99

CREW COSTS										
Description	Active Idle	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Truck Driver (heavy)	Active	1.00	0.8	10	8.00	L	\$63.35	incl. in rate	incl. in rate	\$506.79
Trencher	Active	2.00	0.8	10	16.00	E	\$4.07	incl. in rate	incl. in rate	\$65.12
Equipment Operator (crane)	Active	1.00	0.8	10	8.00	L	\$75.25	incl. in rate	incl. in rate	\$602.01
Hydraulic Crane (17tn)	Active	1.00	0.8	10	8.00	E	\$81.52	incl. in rate	incl. in rate	\$652.16
Truck, On-Highway Dump (6x4, 12cy)	Active	1.00	0.8	10	8.00	E	\$70.35	incl. in rate	incl. in rate	\$562.80
Hydraulic Excavator (1.5cy)	Active	1.00	0.8	10	8.00	E	\$141.92	incl. in rate	incl. in rate	\$1,135.36
Equipment Operator (medium)	Active	1.00	0.8	10	8.00	L	\$72.91	incl. in rate	incl. in rate	\$583.26
Steelworker	Active	2.00	0.8	10	16.00	L	\$72.07	incl. in rate	incl. in rate	\$1,153.15
Labor Hours					40	TOTAL LABOR				\$2,845.22
Equipment Hours					40	TOTAL EQUIPMENT				\$2,415.44

MATERIAL COSTS						
Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost
Consumables 10% labor (saw blades, drill bits, e	1.00	LS	1.000	1.00	\$241.54	\$241.54
TOTAL MATERIAL						\$241.54

SUBCONTRACT COSTS					
Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount
TOTAL SUBCONTRACTS					\$0.00

SUMMARY OF COSTS					
Labor Cost	\$2,845.22	Labor Burden @	49.7%	\$0.00	\$2,845.22
Material Cost	\$241.54	Material Tax @	7.75%	\$18.72	\$260.26
Equipment Cost	\$2,415.44	Equipment Tax @	7.75%	\$187.20	\$2,602.64
Subcontractors	\$0.00				\$0.00
<b>DIRECT COST SUBTOTALS</b>	<b>\$5,502</b>			<b>\$206</b>	<b>DIRECT COST SUBTOTALS \$5,708</b>
<b>Additional Pay Item Notes :</b>					
This is tunnel work. Assumed 7' ductile iron 18" pipe at 78.5LBS /LF= 550 LBS, weight of the valve assumed API 600 gate valve for 18" is 2070 LBS.					

#### 4.013.1 Installation of 15.5'w X 16.5't Roller Gate and Gate Structure

SUMMARY OF COSTS					
Labor Cost	\$679,375.40	Labor Burden @	49.7%	\$0.00	\$679,375.40
Material Cost	\$2,560,311.24	Material Tax @	7.75%	\$198,424.12	\$2,758,735.36
Equipment Cost	\$326,894.80	Equipment Tax @	7.75%	\$25,334.35	\$352,229.15
Subcontractors	\$960.00				\$960.00
<b>DIRECT COST SUBTOTALS</b>	<b>\$3,567,541</b>			<b>\$223,758</b>	<b>DIRECT COST SUBTOTALS \$3,791,300</b>
<b>Additional Pay Item Notes :</b> <div> <p>This item is to build the diversion roller gate structure for the Iron Gate reservoir draw down. It is expected that the fish bays will be backfilled and a crane will be placed near the existing diversion tunnel down stream end to support construction of the roller gate structure. Material items have been accounted for using allowance amounts. Concrete pump is expected to be used 3 days to accommodate pouring concrete</p> </div>					

#### 4.013.2 Remove Existing Sluice Gate and Grating by divers

SUMMARY OF COSTS					
Labor Cost	\$192,569.61	Labor Burden @	49.7%	\$0.00	\$192,569.61
Material Cost	\$19,506.96	Material Tax @	7.75%	\$1,511.79	\$21,018.75
Equipment Cost	\$71,504.72	Equipment Tax @	7.75%	\$5,541.62	\$77,046.34
Subcontractors	\$4,472.50				\$4,472.50
<b>DIRECT COST SUBTOTALS</b>	<b>\$288,054</b>		<b>\$7,053</b>		<b>DIRECT COST SUBTOTALS</b>
					<b>\$295,107</b>
<b>Additional Pay Item Notes :</b> <div style="border: 1px solid black; padding: 5px; margin-top: 5px;">                     This estimate is to remove the grating and gates on the existing diversion tunnel. Due to the depth of the and distance to the gate it is expected that the divers will only be able to spend 20 mins at the location of the grates or the gates. Extra divers have been added to account for the circulation due to the depth restriction. It is expected that there will be a total of 3 divers working on the removal at each time. A total of 9 divers will be need to ensure coverage for the demolition operation. This accounts for 3 divers needing to rotate every 20 mins.                 </div>					

PAY ITEM INFORMATION									
PAY ITEM NUMBER	:	4.013.3			Project	:	KRRP - Iron Gate		
Description	:	Remove New Roller Gate Structure			Group	:	D02		
Quantity	:	300.00 CY							
Daily Production	:	100.00	CY per	20					
Work Days	:	3.0 Days			Project #	:	4		
Unit Price	:	\$424.46 per CY			Estimator	:	Mihaela Tomulescu	CY per	Total Cost
Total Cost	:	\$127,339			Probable Low Cost Parameter		110	\$114,605	\$436
					Probable High Cost Parameter		90	\$140,073	\$533

CREW COSTS										
Description	Active Idle	# In crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Labor Foreman	Active	1.00	3.0	20	60.00	L	\$53.10	incl. in rate	incl. in rate	\$3,185.82
Equipment Operator (medium)	Active	2.00	3.0	20	120.00	L	\$72.91	incl. in rate	incl. in rate	\$8,748.96
Equipment Operator (crane)	Active	1.00	3.0	20	60.00	L	\$75.25	incl. in rate	incl. in rate	\$4,515.06
Crawler Crane (270tn)	Active	1.00	3.0	20	60.00	E	\$399.50	incl. in rate	incl. in rate	\$23,970.00
Laborer	Active	4.00	3.0	20	240.00	L	\$50.38	incl. in rate	incl. in rate	\$12,091.20
Truck Driver (heavy)	Active	3.00	3.0	20	180.00	L	\$63.35	incl. in rate	incl. in rate	\$11,402.82
Hydraulic Excavator (5.0cy)	Active	2.00	3.0	20	120.00	E	\$274.63	incl. in rate	incl. in rate	\$32,955.60
Hydraulic Impact Breaker Attachment (5k+ ft-lb)	Active	2.00	3.0	20	120.00	E	\$62.72	incl. in rate	incl. in rate	\$7,526.40
Truck, On-Highway Dump (6x4, 12cy)	Active	3.00	3.0	20	180.00	E	\$70.35	incl. in rate	incl. in rate	\$12,663.00
					Labor Hours	660	TOTAL LABOR			\$39,943.86
					Equipment Hours	480	TOTAL EQUIPMENT			\$77,115.00

MATERIAL COSTS						
Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost
Consumables 10% labor (saw blades, drill bits, etc)	1.00	LS	1.000	1.00	\$3,994.39	\$3,994.39
						TOTAL MATERIAL
						\$3,994.39

SUBCONTRACT COSTS					
Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount
					TOTAL SUBCONTRACTS
					\$0.00

SUMMARY OF COSTS									
Labor Cost	\$39,943.86	Labor Burden @	49.7%	\$0.00				\$39,943.86	
Material Cost	\$3,994.39	Material Tax @	7.75%	\$309.56				\$4,303.95	
Equipment Cost	\$77,115.00	Equipment Tax @	7.75%	\$5,976.41				\$83,091.41	
Subcontractors	\$0.00							\$0.00	
DIRECT COST SUBTOTALS	\$121,053			\$6,286			DIRECT COST SUBTOTALS	\$127,339	
Additional Pay Item Notes :									
Crane will be used to remove gate material as it because free from gate structure. Estimated 300 CY of concrete to be removed and the production reflected are adjusted to account for other items that need to be removed in regards to the gate. It is expected access for equipment will be where the existing fish bays are. This item is double shifted with two 10 hour shifts due to the California in water work restrictions.									

#### 4.014 Remove Concrete in Observation Platform, Crest Wall and Wall Extension

PAY ITEM NUMBER	:	4.014	Project	:	KRRP - Iron Gate
Description	:	Remove Concrete in Observation Platform, Crest Wall and Wall Extension	Group	:	D07
Quantity	:	780.00 cy			
Daily Production	:	150.00 cy per	10 hour shift	Project #	: 4
Work Days	:	5.2 Days	Estimator	:	Eric Jones
Unit Price	:	\$106.08 per cy	Probable Low Cost Parameter	:	165
Total Cost	:	\$82,743	Probable High Cost Parameter	:	135
				Total Cost	\$74,469
				Unit Price Per cy	\$109.07
					\$133.31

Description	Active Idle	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Labor Foreman	Active	1.00	5.2	10	52.00	L	\$53.10	incl. in rate	incl. in rate	\$2,761.04
Laborer	Active	3.00	5.2	10	156.00	L	\$50.38	incl. in rate	incl. in rate	\$7,859.28
Equipment Operator (medium)	Active	4.00	5.2	10	208.00	L	\$72.91	incl. in rate	incl. in rate	\$15,164.86
Truck Driver (heavy)	Active	1.00	2.9	10	29.25	L	\$63.35	incl. in rate	incl. in rate	\$1,852.96
Hydraulic Excavator (2.5cy)	Active	1.00	5.2	10	52.00	E	\$203.63	incl. in rate	incl. in rate	\$10,588.76
Hydraulic Excavator (5.0cy)	Active	1.00	5.2	10	52.00	E	\$274.63	incl. in rate	incl. in rate	\$14,280.76
Loader, FE Rubber Tire (3.5cy)	Active	1.00	5.2	10	52.00	E	\$64.23	incl. in rate	incl. in rate	\$3,339.96
Hydraulic Thumbs/Shear Attachment	Active	1.00	2.9	10	29.25	E	\$16.39	incl. in rate	incl. in rate	\$479.41
Air Tool, Chipping Hammer	Active	2.00	5.2	10	104.00	E	\$1.64	incl. in rate	incl. in rate	\$170.46
Air Compressor 600 cfm	Active	1.00	5.2	10	52.00	E	\$21.74	incl. in rate	incl. in rate	\$1,130.42
Kobelco SK260LC-10 Ex With CP100 Magnet	Active	1.00	5.2	10	52.00	E	\$89.29	incl. in rate	incl. in rate	\$4,643.08
CAT 745 (32 CY) OFF ROAD TRUCK	Active	1.00	2.9	10	29.25	E	\$174.47	incl. in rate	incl. in rate	\$5,103.25
Labor Hours					445	TOTAL LABOR				\$27,638.15
Equipment Hours					423	TOTAL EQUIPMENT				\$39,736.10

Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost
Consumables (5% labor)	1.00	LS	1.000	1.00	\$1,381.91	\$1,381.91
<b>TOTAL MATERIAL</b>						<b>\$1,381.91</b>

Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount
Concrete Saw Cutting	2	EA	Cost per Mob	\$5,000.00	\$10,000.00
Hauling Disposal Cost 40 Mile to Yreka	2.00	Loads	90lbs per CY	\$400.00	\$800.00
TOTAL SUBCONTRACTS					\$10,800.00

Labor Cost	\$27,638.15	Labor Burden @	0.0%	\$0.00		\$27,638.15
Material Cost	\$1,381.91	Material Tax @	7.75%	\$107.10		\$1,489.01
Equipment Cost	\$39,736.10	Equipment Tax @	7.75%	\$3,079.55		\$42,815.65
Subcontractors	\$10,800.00					\$10,800.00
<b>DIRECT COST SUBTOTALS</b>	<b>\$79,556</b>			<b>\$3,187</b>	<b>DIRECT COST SUBTOTALS</b>	<b>\$82,743</b>

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4.014 Remove Concrete in Observation Platform, Crest Wall and Wall Extension			
Details			
High Cost Factors		Low Cost Factors	
Bad Weather	0%	No Bad Weather	0%
Gas Price Increase	5%	Gas Price Decrease	5%
Unforeseen Contaminated Mats/ Access Issues	5%	No Unforeseen Contaminated Mats/ Access Issues	5%
Total	10%	Total	10%
Production Per Hour		Overall Production	
Hours	15	8	120.00
		10	150.00
Haul Notes		Excavator Loading Production per shift	
CY	780.00	CY per Hour	42.67
Swell Factor	60%	CY Bucket Size	2.50
Bulk CY	1248	Buckets Per Hour	17
Haul Vehicle 60% Capacity (2 tons per CY)	19.2	# of Excavators	1.00
# of Haul Vehicles	1	CY per Hour (2.5 CY Bucket)	42.66666667
Load Time (Includes Spot Time, Maneuver Time, & Loading) (Minutes)	8	CY Per Hour Ideal Production Per 8 Hour Shift	95
Dump Time (Includes Spot Time, Maneuver Time, & Unloading) Minutes)	3	Efficient Compared to Ideal Production	45%
Haul Speed (Loaded MPH)	9	Inefficiencies Compared to Ideal Production	55%
Return Speed (Unloaded MPH)	20		
Haul Distance (Miles)	1		
Shift Length (Hours)	10		
Cyce Time		Breaker Production	
Load Time (Load Time Minutes / 60mins)	0.13	Hydraulic Hammer CY per Hour	15
Haul Time (Haul Distance / Haul Speed)	0.11	# of Hammers	1.00
Dump Time (Dump Time Minutes / 60 Mins)	0.05	CY per Hour	42.66666667
Return Time (Haul Distance / Return Speed)	0.05	CY per Hour Back Check	15
Hours Per Cycle	0.34	32CY per HR per 8hr shift (Ideal prod)	32
Efficiency Factor (Night Work, Traffic Retrictions, Coffee Breaks, ECT)	75%	Efficient Compared to Ideal Production	45%
Actual Hours Per Cycle (Hours per Cycle / Efficiency Factor)	0.45	Inefficiencies Compared to Ideal Production	55%
Number of Cycles/Bulk CY (Haul Vehicle Cap X # of Haul Vehicles)	65		
Total Number of Haul Hours ( Actual Cycle Hours X Number of Cycles)	29.25		
Loads Per Hour (Number of Cycles / Total Number of Haul Hours)	2.22		
Number of Haul Days	2.925		
Speed Loaded			
Max Weight lbs of loaded 745	164,500.00		
Tons	82		
20lbs/Ton Rolling weighth	4		
Rolling Resistance ( 1% for each 20lbs/Ton)	4%		
Average Slope	2%		
Total Resistance	6%		
Max Gear per CAT Chart	4		
Max MPH	8.8		
Speed Empty	0		
Max Weight lbs of Empty 745	74,100.00		
Tons Empty	37		
20lbs/Ton Rolling weight Empty	2		
Rolling Resistance ( 1% per 20lbs/Ton) Empty	2%		
Average Slope Empty	2%		
Total Resistance Empty	0%		
Max Gear per CAT Chart Empty N/A			
Max MPH Empty N/A			
Other Notes			



#### 4.015 Remove Concrete in Diversion Tunnel Intake Structure

[illegible]

Description	Active Idle	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Labor Foreman	Active	1.00	4.8	10	48.00	L	\$53.10	incl. in rate	incl. in rate	\$2,548.66
Laborer	Active	3.00	4.8	10	144.00	L	\$50.38	incl. in rate	incl. in rate	\$7,254.72
Equipment Operator (medium)	Active	4.00	4.8	10	192.00	L	\$72.91	incl. in rate	incl. in rate	\$13,998.34
Truck Driver (heavy)	Active	1.00	2.9	10	28.80	L	\$63.35	incl. in rate	incl. in rate	\$1,824.45
Hydraulic Excavator (2.5cy)	Active	1.00	4.8	10	48.00	E	\$203.63	incl. in rate	incl. in rate	\$9,774.24
Hydraulic Excavator (5.0cy)	Active	1.00	4.8	10	48.00	E	\$274.63	incl. in rate	incl. in rate	\$13,182.24
Loader, FE Rubber Tire (3.5cy)	Active	1.00	4.8	10	48.00	E	\$64.23	incl. in rate	incl. in rate	\$3,083.04
Hydraulic Thumbs/Shear Attachment	Active	1.00	4.8	10	48.00	E	\$16.39	incl. in rate	incl. in rate	\$786.72
Air Tool, Chipping Hammer	Active	2.00	4.8	10	96.00	E	\$1.64	incl. in rate	incl. in rate	\$157.35
Air Compressor 600 cfm	Active	1.00	4.8	10	48.00	E	\$21.74	incl. in rate	incl. in rate	\$1,043.47
Kobelco SK260LC-10 Ex With CP100 Magnet	Active	1.00	4.8	10	48.00	E	\$89.29	incl. in rate	incl. in rate	\$4,285.92
CAT 745 (32 CY) OFF ROAD TRUCK	Active	1.00	2.9	10	28.80	E	\$174.47	incl. in rate	incl. in rate	\$5,024.74
Labor Hours					413	TOTAL LABOR				\$25,626.16
Equipment Hours					413	TOTAL EQUIPMENT				\$37,337.71

Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost
Consumables (5% labor)	1.00	LS	1.000	1.00	\$1,281.31	\$1,281.31
<b>TOTAL MATERIAL</b>						<b>\$1,281.31</b>

Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount
Concrete Saw Cutting	1	EA	Cost per Mob	\$5,000.00	\$5,000.00
Hauling Disposal Cost 40 Mile to Yreka	2.00	Loads	90lbs per CY	\$400.00	\$800.00
TOTAL SUBCONTRACTS					\$5,800.00

Labor Cost	\$25,626.16	Labor Burden @	0.0%	\$0.00	Included in hourly labor rate.		\$25,626.16
Material Cost	\$1,281.31	Material Tax @	7.75%	\$99.30			\$1,380.61
Equipment Cost	\$37,337.71	Equipment Tax @	7.75%	\$2,893.67			\$40,231.38
Subcontractors	\$5,800.00						\$5,800.00
<b>DIRECT COST SUBTOTALS</b>	<b>\$70,045</b>			<b>\$2,993</b>		<b>DIRECT COST SUBTOTALS</b>	<b>\$73,038</b>
Additional Pay Item Notes :							

4.015 Remove Concrete in Diversion Tunnel Intake Structure  
Details

High Cost Factors			Low Cost Factors		
Bad Weather	0%	No Bad Weather	0%		
Gas Price Increase	5%	Gas Price Decrease	5%		
Unforeseen Contaminated Mats/ Access Issues	5%	No Unforeseen Contaminated Mats/ Access Issues	5%		
Total	10%	Total	10%		
Production Per Hour		Overall Production			
Hours	8	120.00			
15	10	150.00			
Haul Notes		Excavator Loading Production per shift			
CY	715.00	CY per Hour	40.00		
Swell Factor	60%	CY Bucket Size	2.50		
Bulk CY	1144	Buckets Per Hour	16		
Haul Vehicle 60% Capacity (2 tons per CY)	19.2	# of Excavators	1.00		
# of Haul Vehicles	1	CY per Hour (2.5 CY Bucket)	40		
Load Time (Includes Spot Time, Maneuver Time, & Loading) (Minutes)	9	CY Per Hour Ideal Production Per 8 Hour Shift	95		
Dump Time (Includes Spot Time, Maneuver Time, & Unloading) Minute:	3	Efficient Compared to Ideal Production	42%		
Haul Speed (Loaded MPH)	9	Inefficiencies Compared to Ideal Production	58%		
Return Speed (Unloaded MPH)	20				
Haul Distance (Miles)	1				
Shift Length (Hours)	10				
Cyce Time		Breaker Production			
Load Time (Load Time Minutes / 60mins)	0.15	Hydraulic Hammer CY per Hour	15		
Haul Time (Haul Distance / Haul Speed)	0.11	# of Hammers	1.00		
Dump Time (Dump Time Minutes / 60 Mins)	0.05	CY per Hour	40		
Return Time (Haul Distance / Return Speed)	0.05	CY per Hour Back Check	15		
Hours Per Cycle	0.36	32CY per HR per 8hr shift (Ideal prod)	32		
Efficiency Factor (Night Work, Traffic Retrictions, Coffee Breaks, ECT)	75%	Efficient Compared to Ideal Production	42%		
Actual Hours Per Cycle (Hours per Cycle / Efficiency Factor)	0.48	Inefficiencies Compared to Ideal Production	58%		
Number of Cycles( Bulk CY/ (Haul Vehicle Cap X # of Haul Vehicles)	60				
Total Number of Haul Hours ( Actual Cycle Hours X Number of Cycles)	28.8				
Loads Per Hour (Number of Cycles / Total Number of Haul Hours)	2.08				
Number of Haul Days	2.88				
Speed Loaded					
Max Weight lbs of loaded 745	164,500.00				
Tons	82				
20lbs/Ton Rolling weighth	4				
Rolling Resitance ( 1% for each 20lbs/Ton)	4%				
Average Slope	2%				
Total Resistance	6%				
Max Gear per CAT Chart	4				
Max MPH	8.8				
Speed Empty	0				
Max Weight lbs of Empty 745	74,100.00				
Tons Empty	37				
20lbs/Ton Rolling weight Empty	2				
Rolling Resitance ( 1% per 20lbs/Ton) Empty	2%				
Average Slope Empty	2%				
Total Resistance Empty	0%				
Max Gear per CAT Chart Empty	N/A				
Max MPH Empty	N/A				
Other Notes					

#### 4.016 Remove Concrete in Diversion Tunnel Gate Tower

SUMMARY OF COSTS					
Labor Cost	\$19,837.59	Labor Burden @	49.7%	\$0.00	\$19,837.59
Material Cost	\$0.00	Material Tax @	7.75%	\$0.00	\$0.00
Equipment Cost	\$26,822.07	Equipment Tax @	7.75%	\$2,078.71	\$28,900.78
Subcontractors	\$0.00				\$0.00
<b>DIRECT COST SUBTOTALS</b>	<b>\$46,660</b>			<b>\$2,079</b>	<b>DIRECT COST SUBTOTALS \$48,738</b>
<b>Additional Pay Item Notes :</b>					

PAY ITEM INFORMATION									
PAY ITEM NUMBER	:	4.017	Project	:	KRRP - Iron Gate				
Description	:	Remove Steel Footbridge to Gate Tower	Group	:	D10				
Quantity	:	13,000.00 LBS							
Daily Production	:	12,500.00 LBS per	10	hour shift	Project #	:	4		
Work Days	:	1.0 Days			Estimator	:	Mihaela Tomulescu	LBS per	Total Cost
Unit Price	:	\$0.72 per LBS			Probable Low Cost Parameter			14375	\$7,960
Total Cost	:	\$9,365			Probable High Cost Parameter			10625	\$10,770
								Unit Price Per LBS	\$0.70
									\$0.95

CREW COSTS										
Description	Active Idle	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Labor Foreman	Active	1.00	1.0	10	10.40	L	\$53.10	incl. in rate	incl. in rate	\$552.21
Electrician	Active	1.00	1.0	10	10.40	L	\$49.75	incl. in rate	incl. in rate	\$517.43
Hydraulic Crane (50tn)	Active	1.00	1.0	10	10.40	E	\$134.32	incl. in rate	incl. in rate	\$1,396.93
Equipment Operator (crane)	Active	1.00	1.0	10	10.40	L	\$75.25	incl. in rate	incl. in rate	\$782.61
Vibratory Hammer & Extractor	Active	1.00	1.0	10	10.40	E	\$94.34	incl. in rate	incl. in rate	\$981.14
Laborer	Active	2.00	1.0	10	20.80	L	\$50.38	incl. in rate	incl. in rate	\$1,047.90
Equipment Operator (light)	Active	1.00	1.0	10	10.40	L	\$71.39	incl. in rate	incl. in rate	\$742.46
Steelworker	Active	2.00	1.0	10	20.80	L	\$72.07	incl. in rate	incl. in rate	\$1,499.10
Labor Hours					83.2	TOTAL LABOR				\$5,141.71
Equipment Hours					20.8	TOTAL EQUIPMENT				\$2,378.06

MATERIAL COSTS						
Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost
Consumables 5% labor (saw blades, drill bits, etc)	1.00	LS	1.000	1.00	\$257.09	\$257.09
TOTAL MATERIAL						\$257.09

SUBCONTRACT COSTS					
Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount
Rent aerial lift, articulating boom, to 80' high, 500 lb. capacity, diesel - Rent per day (RS Means 01543340)	1.00	days	1.000	1.00	\$584.00
Hauling Disposal Cost 40 Mile to Yreka	2.00	Loads		\$400.00	\$800.00
TOTAL SUBCONTRACTS					\$1,384.00

SUMMARY OF COSTS						
Labor Cost	\$5,141.71	Labor Burden @	49.7%	\$0.00		\$5,141.71
Material Cost	\$257.09	Material Tax @	7.75%	\$19.92		\$277.01
Equipment Cost	\$2,378.06	Equipment Tax @	7.75%	\$184.30		\$2,562.36
Subcontractors	\$1,384.00					\$1,384.00
DIRECT COST SUBTOTALS	\$9,161			\$204	DIRECT COST SUBTOTALS	\$9,365

Additional Pay Item Notes :		
The bridge steel grid, excess steel members and similar materials shall be removed from each span prior to removing the main supporting beams, girders or trusses over land. Assumed crew is formed of 1 Forman, 1 Electrician (temporary power for tools), 2 steelworkers to cut steel in the articulated boom and 2 Laborers (Load, Haul, help with the crane ropes, etc).		

#### 4.018 Remove Concrete in Diversion Tunnel Footbridge Abutment

SUMMARY OF COSTS					
Labor Cost	\$2,042.96	Labor Burden @	49.7%	\$0.00	\$2,042.96
Material Cost	\$0.00	Material Tax @	7.75%	\$0.00	\$0.00
Equipment Cost	\$2,914.08	Equipment Tax @	7.75%	\$225.84	\$3,139.92
Subcontractors	\$0.00				\$0.00
<b>DIRECT COST SUBTOTALS</b>	<b>\$4,957</b>			<b>\$226</b>	<b>DIRECT COST SUBTOTALS \$5,183</b>
<b>Additional Pay Item Notes :</b>					

## PAY ITEM INFORMATION

PAY ITEM NUMBER	: 4.019	Project	: KRRP - Iron Gate
Description	: Place Concrete Plugs for Diversion Tunnel	Group	: D02
Quantity	: 86.00 CY		
Daily Production	: 3.00 CY per 10 hour shift	Project #	: 4
Work Days	: 28.7 Days	Estimator	: Mihaela Tomulescu
Unit Price	: \$2,769.61 per CY	Probable Low Cost Parameter	3.3
Total Cost	: \$238,186	Probable High Cost Parameter	2.7
		CY per	Total Cost
			\$214,368
		Unit Price Per CY	\$2,848
			\$3,480

## CREW COSTS

Description	Active Idle	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Carpenter Foreman (out)	Active	1.00	28.7	10	287.00	L	\$51.04	incl. in rate	incl. in rate	\$14,648.48
Carpenters	Active	2.00	28.7	10	574.00	L	\$79.86	incl. in rate	incl. in rate	\$45,839.64
Carpenters, Journeyman	Active	2.00	28.7	10	574.00	L	\$71.91	incl. in rate	incl. in rate	\$41,274.62
Equipment Operator (crane)	Active	2.00	14.4	10	287.00	L	\$75.25	incl. in rate	incl. in rate	\$21,597.04
Equipment Operator (light)	Active	2.00	2.0	10	40.00	L	\$71.39	incl. in rate	incl. in rate	\$2,855.60
Hydraulic Crane (80tn)	Active	1.00	14.4	10	143.50	E	\$190.46	incl. in rate	incl. in rate	\$27,331.01
Conc Pump (small)	Active	1.00	2.0	10	20.00	E	\$121.58	incl. in rate	incl. in rate	\$2,431.60
Steelworker	Active	2.00	5.0	10	100.00	L	\$72.07	incl. in rate	incl. in rate	\$7,207.20
Welder	Active	1.00	28.7	10	287.00	E	\$7.84	incl. in rate	incl. in rate	\$2,249.36
					Labor Hours	1862	TOTAL LABOR			\$133,422.58
					Equipment Hours	450.5	TOTAL EQUIPMENT			\$32,011.97

## MATERIAL COSTS

Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost
Concrete	86.00	CY	1.100	94.60	\$159.23	\$15,063.16
Reinforcement (At 90lbs per CY)	3.87	Ton	1.100	4.26	\$1,000.00	\$4,257.00
FormWork Allowance (20% of Labor)	1.00	LS	1.100	1.10	\$26,684.52	\$29,352.97
Consumables (10% of Equip & Labor)	1.00	LS	1.000	1.00	\$16,543.45	\$16,543.45
						TOTAL MATERIAL
						\$65,216.58

## SUBCONTRACT COSTS

Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount
					TOTAL SUBCONTRACTS
					\$0.00

## SUMMARY OF COSTS

Labor Cost	\$133,422.58	Labor Burden @	49.7%	\$0.00	\$133,422.58
Material Cost	\$65,216.58	Material Tax @	7.75%	\$5,054.28	\$70,270.86
Equipment Cost	\$32,011.97	Equipment Tax @	7.75%	\$2,480.93	\$34,492.90
Subcontractors	\$0.00				\$0.00
DIRECT COST SUBTOTALS	\$230,651			\$7,535	DIRECT COST SUBTOTALS
					\$238,186

## Additional Pay Item Notes :

The 2 Plugs are expected to be formed in two sections. The inner section will be formed and braced off of the tunnel walls. After the inner form (set form) is installed the face form will be built similar to the set form by bracing off of the tunnel walls. To ensure consolidation a high slump small aggregate mix will be used and concrete vibrators will have access through the Bat opening block out at the top. One 5 man crew will be used to construct the formwork, place the concrete, and strip the form work. One crew of 3 rodusters will be used to tie and brace reinforcement. Expected duration is 5 days to form the plug , 2 days to reinforce the plug, 1 days to pour the plug, and 2 days to strip the plug. Crane will be used 1/2 of time to support crew by flying material close to plug location. A small pump will be used to install concrete. Please note the production is adjusted to account for the duration as listed above.



**4.021 Remove Upstream Riprap (10' thick upstream side of Dam)**

SUMMARY OF COSTS					
Labor Cost	\$194,516.33	Labor Burden @	49.7%	\$0.00	\$194,516.33
Material Cost	\$0.00	Material Tax @	7.75%	\$0.00	\$0.00
Equipment Cost	\$352,432.64	Equipment Tax @	7.75%	\$27,313.53	\$379,746.17
Subcontractors	\$0.00				\$0.00
DIRECT COST SUBTOTALS	\$546,949			\$27,314	DIRECT COST SUBTOTALS \$574,262
Additional Pay Item Notes :					
See production and sequence notes					



4.021 Remove Upstream Riprap (10' thick upstream side of Dam)

Details

High Cost Factors		Low Cost Factors	
Bad Weather	0%	No Bad Weather	0%
Gas Price Increase	10%	Gas Price Decrease	10%
Unforeseen Contaminated Matel Access Issues	10%	No Unforeseen Contaminated Matel Access Issues	0%
	20%		10%
Production Per Hour		Overall Production	
Hours	550	Efficiency Factor (Access, Activity, Qty, High Rebar Density, Breaks, Etc)	
		9	9520
		20	8800
Haul Notes		Excavator Loading Production per shift	
CY		92,400.00	CY per Hour
Swirl Factor		30%	CY Bucket Size
Bulk CY		120,120.00	Buckets Per Hour
Haul Vehicle 85% Capacity (1.3 tons per CY)		27.2	# of Excavators
# of Haul Vehicles		9	CY per Hour (5 CY Bucket)
Load Time (Includes Spot Time, Maneuver Time, & Loading) (Minutes)		5.0	CY Per Hour Ideal Production Per 8 Hour Shift
Dump Time (Includes Spot Time, Maneuver Time, & Unloading) (Minutes)		3.0	Efficient Compared to Ideal Production
Haul Speed (Loaded MPH)		8.8	Inefficiencies Compared to Ideal Production
Return Speed (Unloaded MPH)		20	
Haul Distance (Miles)		1.00	
Shift Length (Hours)		20	
Cycle Time			
Load Time (Load Time Minutes / Minutes)		0.08	
Haul Time (Haul Distance / Haul Speed)		0.11	
Dump Time (Dump Time Minutes / 60 Mins)		0.05	
Return Time (Haul Distance / Return Speed)		0.05	
Hours Per Cycle		0.29	
Efficiency Factor (Night Work, Traffic Restrictions, Coffee Breaks, ETC)		-0%	
Actual Hours Per Cycle (Hours per Cycle / Efficiency Factor)		0.34	
Number of Cycles Bulk CY (Haul Vehicle Cap X # of Haul Vehicles)		552	
Total Number of Haul Hours (Actual Cycle Hours X Number of Cycles)		187.68	
Loads Per Hour (Number of Cycles / Total Number of Haul Hours)		2.94	
Number of Haul Days		9.384	
Speed Loaded			
Max Weight lbs of loaded 745		164,500.00	
Tons		82	
20lbs/Ton Rolling weighth		4	
Rolling Resistance ( 1%for each 20lbs/Ton)		4%	
Slope Grade		7%	
Total Resistance		11%	
Max Gear per CAT Chart		4	
Max MPH		8.8	
Speed Empty			
Max Weight lbs of Empty 745		74,100.00	
Tons Empty		37	
20lbs/Ton Rolling weight Empty		2	
Rolling Resistance ( 1% per 20lbs/Ton) Empty		2%	
Average Slope Empty		7%	
Total Resistance Empty		-5%	
Max Gear per CAT Chart Empty		N/A	
Max MPH Empty		N/A	
Notes Due to weight and Grade Speed Calculation is not applicable			

This estimate is for excavating the rip rap off of the earth dam at Iron Gate. This activity is expected to have similar production as 4.023.1

#### 4.022 Remove Downstream Riprap

PAY ITEM NUMBER	:	4.022	Project	:	KRRP - Iron Gate
Description	:	Remove Downstream Riprap	Group	:	D08
Quantity	:	23,400.00 cy			
Daily Production	:	8,000.00 cy per	20	hour shift	
Work Days	:	2.9 Days	Project #	:	4
Unit Price	:	\$6.41 per cy	Estimator	:	Eric Jones
Total Cost	:	\$150,090	Probable Low Cost Parameter	:	8800
			Probable High Cost Parameter	:	6400
					\$135,081
					\$180,107
					\$6.59
					\$8.79

Description	Active Idle	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Hydraulic Excavator (5.0cy)	Active	1.00	2.9	20	58.00	E	\$274.63	incl. in rate	incl. in rate	\$15,928.54
Loader, FE Rubber Tire (5.25cy)	Active	1.00	2.9	20	58.00	E	\$75.42	incl. in rate	incl. in rate	\$4,374.36
Equipment Operator (medium)	Active	3.00	2.9	20	174.00	L	\$72.91	incl. in rate	incl. in rate	\$12,685.99
Truck Driver (heavy)	Active	7.00	2.7	20	380.80	L	\$63.35	incl. in rate	incl. in rate	\$24,123.30
Laborer	Active	4.00	2.9	20	232.00	L	\$50.38	incl. in rate	incl. in rate	\$11,688.16
Labor Foreman	Active	1.00	2.9	20	58.00	L	\$53.10	incl. in rate	incl. in rate	\$3,079.63
Grader, 180hp, 13' blade	Active	1.00	2.9	20	58.00	E	\$80.79	incl. in rate	incl. in rate	\$4,685.82
CAT 745 (32 CY) OFF ROAD TRUCK	Active	7.00	2.7	20	380.80	E	\$174.47	incl. in rate	incl. in rate	\$66,438.18
Labor Hours					844.8	TOTAL LABOR				\$51,577.08
Equipment Hours					554.8	TOTAL EQUIPMENT				\$91,426.90

Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost
TOTAL MATERIAL						\$0.00

Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount
TOTAL SUBCONTRACTS					\$0.00

Labor Cost	\$51,577.08	Labor Burden @	49.7%	\$0.00		\$51,577.08
Material Cost	\$0.00	Material Tax @	7.75%	\$0.00		\$0.00
Equipment Cost	\$91,426.90	Equipment Tax @	7.75%	\$7,085.58		\$98,512.48
Subcontractors	\$0.00					\$0.00
<b>DIRECT COST SUBTOTALS</b>	<b>\$143,004</b>			<b>\$7,086</b>	<b>DIRECT COST SUBTOTALS</b>	<b>\$150,090</b>
<b>Additional Pay Item Notes :</b>						
See production and sequence notes						

4.022 Remove Downstream Riprap				
Details				
High Cost Factors		Low Cost Factors		
Bad Weather	0%	No Bad Weather	0%	
Gas Price Increase	10%	Gas Price Decrease	10%	
Unforeseen Contaminated Mats/ Access Issues	10%	No Unforeseen Contaminated Mats/ Access Issues	0%	
	20%		10%	
Production Per Hour	Hours	Efficiency Factor (Access, Activity, Qty, High Rebar Density, Breaks, Ect)	Overall Production	
	500	8	80%	3200
		20	80%	8000
Haul Notes		Excavator Loading Production per shift		
CY		23,400.00	CY per Hour	128
Swell Factor		30%	CY Bucket Size	5.00
Bulk CY		30,420.00	Buckets Per Hour	26
Haul Vehicle 85% Capacity (1.3 tons per CY)		27.2	# of Excavators	1.00
# of Haul Vehicles		7	CY per Hour (5 CY Bucket)	128
Load Time (Includes Spot Time, Maneuver Time, & Loading) (Minutes)		5.0	CY Per Hour Ideal Production Per 8 Hour Shift	160
Dump Time (Includes Spot Time, Maneuver Time, & Unloading) (Minutes)		3.0	Efficient Compared to Ideal Production	80%
Haul Speed (Loaded MPH)		8.8	Inefficiencies Compared to Ideal Production	20%
Return Speed (Unloaded MPH)		20		
Haul Distance (Miles)		1.00		
Shift Length (Hours)		20		
Cycle Time				
Load Time (Load Time Minutes / 60mins)		0.08		
Haul Time (Haul Distance / Haul Speed)		0.11		
Dump Time (Dump Time Minutes / 60 Mins)		0.05		
Return Time (Haul Distance / Return Speed)		0.05		
Hours Per Cycle		0.29		
Efficiency Factor (Night Work, Traffic Rearndoms, Coffee Breaks, ECT)		85%		
Actual Hours Per Cycle (Hours per Cycle / Efficiency Factor)		0.34		
Number of Cycles( Bulk CY/ Haul Vehicle Cap X # of Haul Vehicles)		160		
Total Number of Haul Hours ( Actual Cycle Hours X Number of Cycles)		54.4		
Loads Per Hour (Number of Cycles / Total Number of Haul Hours)		2.94		
Number of Haul Days		2.72		
Speed Loaded				
	Max Weight lbs of loaded 745	164,500.00		
	Tons	82		
	20lbs/Ton Rolling weight	4		
	Rolling Resistance ( 1% for each 20lbs/Ton)	4%		
	Slope Grade	7%		
	Total Resistance	11%		
	Max Gear per CAT Chart	4		
	Max MPH	8.8		
Speed Empty				
	Max Weight lbs of Empty 745	74,100.00		
	Tons Empty	37		
	20lbs/Ton Rolling weight Empty	2		
	Rolling Resistance ( 1% per 20lbs/Ton) Empty	2%		
	Average Slope Empty	7%		
	Total Resistance Empty	-5%		
	Max Gear per CAT Chart Empty	N/A		
	Max MPH Empty	N/A		
	Notes Due to weight and Grade Speed Calculation is not applicable			

**Other Notes**  
This estimate is for excavating the rip rap off of the earth dam at Iron Gate. This activity is expected to have similar production as 4.023.1.

#### 4.023 Dam Fill Excavation to Spillway

[illegible]

Description	Active Idle	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Hydraulic Excavator (5.0cy)	Active	1.00	33.8	20	676.00	E	\$274.63	incl. in rate	incl. in rate	\$185,649.88
Loader, FE Rubber Tire (5.25cy)	Active	1.00	33.8	20	676.00	E	\$75.42	incl. in rate	incl. in rate	\$50,983.92
Equipment Operator (medium)	Active	4.00	33.8	20	2,704.00	L	\$72.91	incl. in rate	incl. in rate	\$197,143.23
Truck Driver (heavy)	Active	6.00	33.8	20	4,056.00	L	\$63.35	incl. in rate	incl. in rate	\$256,943.54
Laborer	Active	4.00	33.8	20	2,704.00	L	\$50.38	incl. in rate	incl. in rate	\$136,227.52
Labor Foreman	Active	1.00	33.8	20	676.00	L	\$53.10	incl. in rate	incl. in rate	\$35,893.57
Dozer (235hp)(CATD7)	Active	1.00	33.8	20	676.00	E	\$165.11	incl. in rate	incl. in rate	\$111,614.36
Roller, Single Drum (steel wheel, 12.0 - 14.9 MTn)	Active	1.00	33.8	20	676.00	E	\$72.79	incl. in rate	incl. in rate	\$49,206.04
CAT 745 (32 CY) OFF ROAD TRUCK	Active	6.00	33.8	20	4,056.00	E	\$134.79	incl. in rate	incl. in rate	\$546,708.24
Labor Hours					10140	TOTAL LABOR				\$626,207.87
Equipment Hours					6760	TOTAL EQUIPMENT				\$944,162.44

Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price		Material Cost
TOTAL MATERIAL							\$0.00

Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount
TOTAL SUBCONTRACTS					\$0.00

Labor Cost	\$626,207.87	Labor Burden @	49.7%	\$0.00		\$626,207.87
Material Cost	\$0.00	Material Tax @	7.75%	\$0.00		\$0.00
Equipment Cost	\$944,162.44	Equipment Tax @	7.75%	\$73,172.59		\$1,017,335.03
Subcontractors	\$0.00					\$0.00
<b>DIRECT COST SUBTOTALS</b>	<b>\$1,570,370</b>			<b>\$73,173</b>	<b>DIRECT COST SUBTOTALS</b>	<b>\$1,643,543</b>
<b>Additional Pay Item Notes :</b>						

4.023 Dam Fill Excavation to Spillway				
Details				
High Cost Factors			Low Cost Factors	
Bad Weather	0%		No Bad Weather	0%
Gas Price Increase	10%		Gas Price Decrease	10%
Unforeseen Contaminated Mats/ Access Issues	10%		No Unforeseen Contaminated Mats/ Access Issues	0%
	20%			10%
Production Per Hour		Efficiency Factor (Access, Activity, Qty, High Rebar Density, Breaks, Etc)		Overall Production
	Hours			
	800	8	50%	3200
		20	50%	8000
Haul Notes		Excavator Loading Production per shift		
CY	270,000.00	CY per Hour		68
Swell Factor	30%	CY Bucket Size		5.00
Bulk CY	351,000.00	Buckets Per Hour		14
Haul Vehicle 85% Capacity (1.3 tons per CY)	27.2	# of Excavators		1.00
# of Haul Vehicles		1 CY per Hour (5 CY Bucket)		68
Load Time (Includes Spot Time, Maneuver Time, & Loading) (Minutes)	50	CY Per Hour Ideal Production Per 8 Hour Shift		160
Dump Time (Includes Spot Time, Maneuver Time, & Unloading) (Minutes)	10	Efficient Compared to Ideal Production		43%
Haul Speed (Loaded MPH)	50	Inefficiencies Compared to Ideal Production		58%
Return Speed (Unloaded MPH)	50			
Haul Distance (Miles)	0.35			
Shift Length (Hours)	20			
Cycle Time				
Load Time (Load Time Minutes / 60mins)	0.08			
Haul Time (Haul Distance / Haul Speed)	0.05			
Dump Time (Dump Time Minutes / 60 Mins)	0.02			
Return Time (Haul Distance / Return Speed)	0.05			
Hours Per Cycle	0.20			
Efficiency Factor (Night Work, Traffic Barriers, Coffee Breaks, ECT)	50%			
Actual Hours Per Cycle (Hours per Cycle / Efficiency Factor)	0.40			
Number of Cycles( Bulk CY/ (Haul Vehicle Cap X # of Haul Vehicles)	2151			
Total Number of Haul Hours ( Actual Cycle Hours X Number of Cycles)	866.4			
Loads Per Hour (Number of Cycles / Total Number of Haul Hours)	2.50			
Number of Haul Days	43.02			
Speed Loaded				
	Max Weight lbs of loaded 745	164,500.00		
	Tons	82		
	20lbs/Ton Rolling weighth	4		
	Rolling Resistance ( 1% for each 20lbs/Ton)	4%		
	Slope Grade	7%		
	Total Resistance	11%		
	Max Gear per CAT Chart	4		
	Max MPH	8.8		
Speed Empty				
	Max Weight lbs of Empty 745	74,100.00		
	Tons Empty	37		
	20lbs/Ton Rolling weight Empty	2		
	Rolling Resistance ( 1% per 20lbs/Ton) Empty	2%		
	Average Slope Empty	7%		
	Total Resistance Empty	9%		
	Max Gear per CAT Chart Empty	N/A		
	Max MPH Empty	N/A		
	Notes Due to weight and Grade Speed Calculation is not applicable			

**Other Notes**  
This estimate is to account for excavating 1/4 of the Iron Gate Dam Material and hauling it into the spill way section. The production of this activity is expected to be 50% efficient due to access restrictions and haul road adjustment requirements. It is expected that material from the dam will be used to create a haul road into the spill to provide access for equipment and haul trucks. A dozer will be used to push material down the spill way as it dumped by the haul trucks and a roller will be used to compact material in lifts.

#### 4.023.1 Dam Fill Excavation to Disposal Site

PAY ITEM NUMBER	:	4.023.1	Project	:	KRRP - Iron Gate
Description	:	Dam Fill Excavation to Disposal Site	Group	:	D08
Quantity	:	761,169.00 cy			
Daily Production	:	12,800.00 cy per	20	hour shift	
Work Days	:	59.5 Days			
Unit Price	:	\$4.14 per cy	Project #	:	4
Total Cost	:	\$3,151,693	Estimator	:	Eric Jones
			Probable Low Cost Parameter	:	14080
			Probable High Cost Parameter	:	10240
					Total Cost
					Unit Price Per cy
					\$2,836,524
					\$4.26
					\$3,782,032
					\$5.68

Description	Active Idle	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Hydraulic Excavator (5.0cy)	Active	1.00	59.5	20	1,190.00	E	\$274.63	incl. in rate	incl. in rate	\$326,809.70
Loader, FE Rubber Tire (5.25cy)	Active	1.00	59.5	20	1,190.00	E	\$75.42	incl. in rate	incl. in rate	\$89,749.80
Equipment Operator (medium)	Active	4.00	59.5	20	4,760.00	L	\$72.91	incl. in rate	incl. in rate	\$347,042.08
Truck Driver (heavy)	Active	7.00	59.5	20	8,330.00	L	\$63.35	incl. in rate	incl. in rate	\$527,697.17
Laborer	Active	4.00	59.5	20	4,760.00	L	\$50.38	incl. in rate	incl. in rate	\$239,808.80
Labor Foreman	Active	1.00	59.5	20	1,190.00	L	\$53.10	incl. in rate	incl. in rate	\$63,185.43
Grader, 180hp, 13' blade	Active	1.00	59.5	20	1,190.00	E	\$80.79	incl. in rate	incl. in rate	\$96,140.10
Dozer (235hp)(CATD7)	Active	1.00	59.5	20	1,190.00	E	\$165.11	incl. in rate	incl. in rate	\$196,480.90
CAT 745 (32 CY) OFF ROAD TRUCK	Active	7.00	59.5	20	8,330.00	E	\$134.79	incl. in rate	incl. in rate	\$1,122,800.70
Labor Hours					19040	TOTAL LABOR				\$1,177,733.48
Equipment Hours					13090	TOTAL EQUIPMENT				\$1,831,981.20

Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost
TOTAL MATERIAL						\$0.00

Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount
TOTAL SUBCONTRACTS					\$0.00

Labor Cost	\$1,177,733.48	Labor Burden @	49.7%	\$0.00		\$1,177,733.48
Material Cost	\$0.00	Material Tax @	7.75%	\$0.00		\$0.00
Equipment Cost	\$1,831,981.20	Equipment Tax @	7.75%	\$141,978.54		\$1,973,959.74
Subcontractors	\$0.00					\$0.00
<b>DIRECT COST SUBTOTALS</b>	<b>\$3,009,715</b>			<b>\$141,979</b>	<b>DIRECT COST SUBTOTALS</b>	<b>\$3,151,693</b>
<b>Additional Pay Item Notes :</b>						
See production notes						

4.023.1 Dam Fill Excavation to Disposal Site				
Details				
High Cost Factors			Low Cost Factors	
Bad Weather	0%		No Bad Weather	0%
Gas Price Increase	10%		Gas Price Decrease	10%
Unforeseen Contaminated Mats/ Access Issues	10%		No Unforeseen Contaminated Mats/ Access Issues	0%
	20%			10%
Production Per Hour		Efficiency Factor (Access, Activity, Qty, High Rebar Density, Breaks, Etc)		Overall Production
	Hours			
	800	8	80%	5120
		20	80%	12800
Haul Notes		Excavator Loading Production per shift		
CY	761,159.00	CY per Hour		128
Swell Factor	30%	CY Bucket Size		5.00
Bulk CY	989,506.70	Buckets Per Hour		26
Haul Vehicle 85% Capacity (1.3 tons per CY)	27.2	# of Excavators		1.00
# of Haul Vehicles	7	CY per Hour (5 CY Bucket)		128
Load Time (Includes Spot Time, Maneuver Time, & Loading) (Minutes)	1.0	CY Per Hour Ideal Production Per 8 Hour Shift		160
Dump Time (Includes Spot Time, Maneuver Time, & Unloading) (Minutes)	1.0	Efficient Compared to Ideal Production		80%
Haul Speed (Loaded MPH)	6.0	Inefficiencies Compared to Ideal Production		20%
Return Speed (Unloaded MPH)	30			
Haul Distance (Miles)	1.00			
Shift Length (Hours)	20			
Cycle Time				
Load Time (Load Time Minutes / Minutes)	0.02			
Haul Time (Haul Distance / Haul Speed)	0.11			
Dump Time (Dump Time Minutes / 60 Mins)	0.02			
Return Time (Haul Distance / Return Speed)	0.05			
Hours Per Cycle	0.20			
Efficiency Factor (night Work, Traffic Restrictions, Coffee Breaks, ECT)	90%			
Actual Hours Per Cycle (Hours per Cycle / Efficiency Factor)	0.25			
Number of Cycles (Bulk CY/ (Haul Vehicle Cap X # of Haul Vehicles)	5197			
Total Number of Haul Hours ( Actual Cycle Hours X Number of Cycles)	1299.25			
Loads Per Hour (Number of Cycles / Total Number of Haul Hours)	4.00			
Number of Haul Days	64.9625			
Speed Loaded				
Max Weight lbs of loaded 745	164,500.00			
Tons	82			
20lbs/Ton Rolling weighth	4			
Rolling Resistance ( 1% for each 20lbs/Ton)	4%			
Slope Grade	7%			
Total Resistance	11%			
Max Gear per CAT Chart	4			
Max MPH	8.8			
Speed Empty				
Max Weight lbs of Empty 745	74,100.00			
Tons Empty	37			
20lbs/Ton Rolling weight Empty	2			
Rolling Resistance ( 1% per 20lbs/Ton) Empty	2%			
Average Slope Empty	7%			
Total Resistance Empty	-5%			
Max Gear per CAT Chart Empty	N/A			
Max MPH Empty	N/A			
Notes Due to weight and Grade Speed Calculation is not applicable				

**Other Notes**  
This estimate accounts for excavating the remaining material of the Iron Gate Dam after the spill way is backfilled (Pay Item 4.023). It is expected that the excavation operation will be 80% efficient after accounting for equipment positioning, haul road maintenance, staff breaks ect. The excavation operation will be completed with an 5 CY excavator running at roughly 80% efficient. Max haul speeds have been calculated per the haul truck manufactures data and have been adjusted based on area of the haul. A grader and a loader will be used to maintain the haul road. It is expected that there will be some inefficiencies when first starting operation by establishing a haul road which allows trucks to drive forward only in a loop around the excavator. Once haul route is established it is expected the excavator will be sitting on a stock pile of material for loading haul trucks, which will allow the trucks to be loaded as mentioned above. A dozer will be used at the disposal site to spread material.

#### 4.024 Cutoff Wall Concrete Demolition

Additional Pay Item Notes :

This item will be double shifted with two 10 hours shifts due to work window restrictions established by the California in water work permit.



#### 4.025 Earth Fill Crest Raise Demolition

[illegible]

Description	Active Idle	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Dozer (310hp)(CATD8)	Active	2.00	4.7	20	188.00	E	\$197.60	incl. in rate	incl. in rate	\$37,148.80
Hydraulic Excavator (5.0cy)	Active	1.00	4.7	20	94.00	E	\$274.63	incl. in rate	incl. in rate	\$25,815.22
Truck, Pickup (4x4, 3/4tn)	Active	4.00	4.7	20	376.00	E	\$16.94	incl. in rate	incl. in rate	\$6,369.44
Loader, FE Rubber Tire (5.25cy)	Active	1.00	4.7	20	94.00	E	\$75.42	incl. in rate	incl. in rate	\$7,089.48
Truck Driver (heavy)	Active	2.00	4.7	20	188.00	L	\$63.35	incl. in rate	incl. in rate	\$11,909.61
Equipment Operator (medium)	Active	4.00	4.7	20	376.00	L	\$72.91	incl. in rate	incl. in rate	\$27,413.41
Labor Foreman (out)	Active	1.00	4.7	20	94.00	L	\$50.90	incl. in rate	incl. in rate	\$4,784.32
Laborer	Active	2.00	4.7	20	188.00	L	\$50.38	incl. in rate	incl. in rate	\$9,471.44
CAT 745 (32 CY) OFF ROAD TRUCK	Active	2.00	4.7	20	188.00	E	\$134.79	incl. in rate	incl. in rate	\$25,340.52
Labor Hours					846	TOTAL LABOR				\$53,578.78
Equipment Hours					940	TOTAL EQUIPMENT				\$101,763.46

Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost
TOTAL MATERIAL						\$0.00

Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount
TOTAL SUBCONTRACTS					\$0.00

Labor Cost	\$53,578.78	Labor Burden @	49.7%	\$0.00			\$53,578.78
Material Cost	\$0.00	Material Tax @	7.75%	\$0.00			\$0.00
Equipment Cost	\$101,763.46	Equipment Tax @	7.75%	\$7,886.67			\$109,650.13
Subcontractors	\$0.00						\$0.00
<b>DIRECT COST SUBTOTALS</b>	<b>\$155,342</b>			<b>\$7,887</b>		<b>DIRECT COST SUBTOTALS</b>	<b>\$163,229</b>
<b>Additional Pay Item Notes :</b> <div style="border: 1px solid black; height: 100px; width: 100%;"></div>							

#### 4.026 Sheetpile Crest Raise Demolition

SUMMARY OF COSTS									
Labor Cost	\$40,056.08	Labor Burden @	49.7%	\$0.00					\$40,056.08
Material Cost	\$0.00	Material Tax @	7.75%	\$0.00					\$0.00
Equipment Cost	\$110,503.20	Equipment Tax @	7.75%	\$8,564.00					\$119,067.20
Subcontractors	\$70,000.00								\$70,000.00
<b>DIRECT COST SUBTOTALS</b>	<b>\$220,559</b>			<b>\$8,564</b>			<b>DIRECT COST SUBTOTALS</b>		<b>\$229,123</b>
<b>Additional Pay Item Notes :</b>									

#### 4.027 Remove 5 Reservoir Monitoring Wells

PAY ITEM NUMBER	:	4.027	Project	:	KRRP - Iron Gate
Description	:	Remove 5 Reservoir Monitoring Wells	Group	:	D10
Quantity	:	5.00 EA			
Daily Production	:	2.50 EA per	10	hour shift	
Work Days	:	2.0	Days		
Unit Price	:	\$2,203.61 per EA	Project #	:	4
Total Cost	:	\$11,018	Estimator	:	Mihaela Tomulescu
			Probable Low Cost Parameter	:	EA per Total Cost Unit Price Per EA
			Probable High Cost Parameter	:	2.15 \$9,916 \$2,265.66
				:	2.125 \$12,671 \$2,895.01

Description	Active Idle	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Labor Foreman	Active	1.00	2.0	10	20.00	L	\$53.10	incl. in rate	incl. in rate	\$1,061.94
Laborer	Active	3.00	2.0	10	60.00	L	\$50.38	incl. in rate	incl. in rate	\$3,022.80
Hydraulic Excavator (2.5cy)	Active	1.00	2.0	10	20.00	E	\$203.63	incl. in rate	incl. in rate	\$4,072.60
Equipment Operator (medium)	Active	1.00	2.0	10	20.00	L	\$72.91	incl. in rate	incl. in rate	\$1,458.16
Hydraulic Impact Breaker Attachment (3k-4k ft-lb)	Active	1.00	2.0	10	20.00	E	\$36.58	incl. in rate	incl. in rate	\$731.60
Labor Hours					100	TOTAL LABOR				\$5,542.90
Equipment Hours					40	TOTAL EQUIPMENT				\$4,804.20

Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost
Consumables 5% labor (sawblades, drill bits, etc)	1.00	LS	1.000	1.00	\$277.15	\$277.15
TOTAL MATERIAL						\$277.15

Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount
TOTAL SUBCONTRACTS					\$0.00

Labor Cost	\$5,542.90	Labor Burden @	49.7%	\$0.00					\$5,542.90
Material Cost	\$277.15	Material Tax @	7.75%	\$21.48					\$298.62
Equipment Cost	\$4,804.20	Equipment Tax @	7.75%	\$372.33					\$5,176.53
Subcontractors	\$0.00								\$0.00
<b>DIRECT COST SUBTOTALS</b>	<b>\$10,624</b>			<b>\$394</b>			<b>DIRECT COST SUBTOTALS</b>		<b>\$11,018</b>

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PAY ITEM INFORMATION									
PAY ITEM NUMBER	:	4.029	Project	:	KRRP - Iron Gate				
Description	:	Remove and Dispose of Intake Structure	Group	:	D07				
Quantity	:	72,000.00 LBS							
Daily Production	:	20,000.00 LBS per	10	hour shift	Project #	:	4		
Work Days	:	3.6 Days			Estimator	:	Mihaela Tomulescu	LBS per	Total Cost
Unit Price	:	\$0.75 per LBS			Probable Low Cost Parameter			23000	\$46,052
Total Cost	:	\$54,179			Probable High Cost Parameter			16000	\$65,014
									Unit Price Per LBS
									\$0.73
									\$1.03

CREW COSTS										
Description	Active Idle	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Labor Foreman	Active	1.00	3.6	10	36.00	L	\$53.10	\$0.00		\$1,911.49
Laborer	Active	4.00	3.6	10	144.00	L	\$50.38	\$0.00		\$7,254.72
Steelworker	Active	2.00	3.6	10	72.00	L	\$72.07	\$0.00		\$5,189.18
Equipment Operator (medium)	Active	1.00	3.6	10	36.00	L	\$72.91	\$0.00		\$2,624.69
Equipment Operator (crane)	Active	1.00	3.6	10	36.00	L	\$75.25	\$0.00		\$2,709.04
Crawler Crane (130tn)	Active	1.00	3.6	10	36.00	E	\$258.66	\$258.66		\$9,311.76
Hydraulic Excavator (5.0cy)	Active	1.00	3.6	10	36.00	E	\$274.63	\$274.63		\$9,886.68
Hydraulic Impact Breaker Attachment (5k+ ft-lb)	Active	2.00	3.6	10	72.00	E	\$62.72	\$62.72		\$4,515.84
Labor Hours					324	TOTAL LABOR				\$19,689.12
Equipment Hours					144	TOTAL EQUIPMENT				\$23,714.28

MATERIAL COSTS						
Description	Item	Order	Conversion	Order	Order	Material
	Quantity	Unit	Factor / Waste	Quantity	Price	Cost
Consumables 15% labor (saw blades, drill bits, electrodes, wrenches, hard hats etc)	1.00	LS	1.000	1.00	\$2,953.37	\$2,953.37
TOTAL MATERIAL						\$2,953.37

SUBCONTRACT COSTS					
Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount
Hazardous waste cleanup/pickup/disposal, solid pickup, bulk material, maximum (25%)	9.00	ton	1.000	9.00	\$595.00
Hauling Disposal Cost	2.00	Loads	20 tons a load	\$200.00	\$400.00
TOTAL SUBCONTRACTS					\$5,755.00

SUMMARY OF COSTS						
Labor Cost	\$19,689.12	Labor Burden @	49.7%	\$0.00		\$19,689.12
Material Cost	\$2,953.37	Material Tax @	7.75%	\$228.89		\$3,182.25
Equipment Cost	\$23,714.28	Equipment Tax @	7.75%	\$1,837.86		\$25,552.14
Subcontractors	\$5,755.00					\$5,755.00
DIRECT COST SUBTOTALS	\$52,112			\$2,067	DIRECT COST SUBTOTALS	\$54,179
Additional Pay Item Notes :						

PAY ITEM INFORMATION									
PAY ITEM NUMBER	:	4.031			Project	:	KRRP - Iron Gate		
Description	:	Remove and Dispose of Hoist Stem - 6" Dia. Sch 160' x150'			Group	:	D03		
Quantity	:	7,500.00 LBS							
Daily Production	:	15,625.00 LBS per		10	hour shift	Project #	:	4	
Work Days	:	0.5		Days		Estimator	:	Mihaela Tomulescu	
Unit Price	:	\$0.92		per LBS		LBS per		17968.75	Total Cost \$5,836
Total Cost	:	\$6,866				Probable Low Cost Parameter			\$0.89
						Probable High Cost Parameter		12500	\$8,240
									Unit Price Per LBS \$1.26

CREW COSTS										
Description	Active Idle	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Labor Foreman	Active	1.00	0.5	10	5.00	L	\$53.10	\$0.00		\$265.49
Electrician	Active	1.00	0.5	10	5.00	L	\$49.75	\$0.00		\$248.77
Steelworker	Active	3.00	0.5	10	15.00	L	\$72.07	\$0.00		\$1,081.08
Loader, FE Rubber Tire (8.6cy)	Active	1.00	0.5	10	5.00	E	\$221.50	\$221.50		\$1,107.50
Truck Driver (heavy)	Active	2.00	0.5	10	10.00	L	\$63.35	\$0.00		\$633.49
Truck, Flatbed (4x4, 10,000 gvw)	Active	2.00	0.5	10	10.00	E	\$31.90	\$31.90		\$319.00
Hydraulic Crane (120tn)	Active	1.00	0.5	10	5.00	E	\$239.06	\$239.06		\$1,195.30
Welder	Active	2.00	0.5	10	10.00	E	\$7.84	\$7.84		\$78.38
Gas Welding Machine	Active	2.00	0.5	10	10.00	E	\$2.88	\$2.88		\$28.77
Equipment Operator (medium)	Active	1.00	0.5	10	5.00	L	\$72.91	\$0.00		\$364.54
Equipment Operator (crane)	Active	1.00	0.5	10	5.00	L	\$75.25	\$0.00		\$376.26
Laborer	Active	3.00	0.5	10	15.00	L	\$50.38	\$0.00		\$755.70
					Labor Hours	60	TOTAL LABOR			\$3,725.32
					Equipment Hours	40	TOTAL EQUIPMENT			\$2,728.94

MATERIAL COSTS						
Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost
Consumables 5% labor (saw blades, drill bits, etc	1.00	LS	1.000	1.00	\$186.27	\$186.27
						TOTAL MATERIAL
						\$186.27

SUBCONTRACT COSTS				
Description	Quantity	Units	Notes / Company	Unit Price
				Contract or Quote Amount
				TOTAL SUBCONTRACTS
				\$0.00

SUMMARY OF COSTS									
Labor Cost	\$3,725.32	Labor Burden @	49.7%	\$0.00					\$3,725.32
Material Cost	\$186.27	Material Tax @	7.75%	\$14.44					\$200.70
Equipment Cost	\$2,728.94	Equipment Tax @	7.75%	\$211.49					\$2,940.44
Subcontractors	\$0.00								\$0.00
DIRECT COST SUBTOTALS	\$6,641			\$226			DIRECT COST SUBTOTALS		\$6,866
Additional Pay Item Notes :									
The removal hoist stem 150 LF is done by one 9-men crew (1 foreman, 3 steelworkers, 1 welder, 3 laborer,1 electrician and 2 equipment operators). Based on the fact that we dispose big pieces of steel we use 2 trucks per day. Assumed is not taking around 1/2 day of work.									

PAY ITEM INFORMATION									
PAY ITEM NUMBER	:	4.032	Project	:	KRRP - Iron Gate				
Description	:	Remove and Dispose of Air Vent Pipe - 8" Dia. Sch 40 x160'	Group	:	D03				
Quantity	:	4,650.00 LBS							
Daily Production	:	4,650.00 LBS per	10	hour shift	Project #	:	4		
Work Days	:	1.0 Days			Estimator	:	Mihaela Tomulescu	LBS per	Total Cost
Unit Price	:	\$1.25 per LBS			Probable Low Cost Parameter			5347.5	\$4,959
Total Cost	:	\$5,834			Probable High Cost Parameter			3720	\$7,001
									Unit Price Per LBS
									\$1.22
									\$1.72

CREW COSTS										
Description	Active Idle	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Truck Driver (light)	Active	1.00	1.0	10	10.00	L	\$61.92	incl. in rate	incl. in rate	\$619.19
Laborer	Active	1.00	1.0	10	10.00	L	\$50.38	incl. in rate	incl. in rate	\$503.80
Equipment Operator (light)	Active	1.00	1.0	10	10.00	L	\$71.39	incl. in rate	incl. in rate	\$713.90
Loader, FE Rubber Tire (3.5cy)	Active	1.00	1.0	10	10.00	E	\$64.23	incl. in rate	incl. in rate	\$642.30
Truck, Off-Road, Articulated Rear, 20cy	Active	1.00	1.0	10	10.00	E	\$111.64	incl. in rate	incl. in rate	\$1,116.40
Steelworker	Active	1.00	1.0	10	10.00	L	\$72.07	incl. in rate	incl. in rate	\$720.72
					Labor Hours	40			TOTAL LABOR	\$2,557.61
					Equipment Hours	20			TOTAL EQUIPMENT	\$1,758.70

MATERIAL COSTS						
Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost
Consumables 10% labor (saw blades, drill bits, etc)	1.00	LS	1.000	1.00	\$175.87	\$175.87
						TOTAL MATERIAL
						\$175.87

SUBCONTRACT COSTS					
Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount
Forklift crew, all-terrain forklift, 45' lift, 35' reach, 9000 lb. capacity, weekly use	0.20	week	1.000	0.20	\$5,961.23
					\$1,192.25
					\$0.00
					\$0.00
					\$0.00
					TOTAL SUBCONTRACTS
					\$1,192.25

SUMMARY OF COSTS									
Labor Cost	\$2,557.61	Labor Burden @	49.7%	\$0.00					\$2,557.61
Material Cost	\$175.87	Material Tax @	7.75%	\$13.63					\$189.50
Equipment Cost	\$1,758.70	Equipment Tax @	7.75%	\$136.30					\$1,895.00
Subcontractors	\$1,192.25								\$1,192.25
DIRECT COST SUBTOTALS	\$5,684			\$150				DIRECT COST SUBTOTALS	\$5,834
Additional Pay Item Notes :									
Assumed we need forklift because of work in the tunnel near sluice gate, based on RS Means, Utility removal, pipe, sewer/water, 8" diameter, remove, excludes excavation, B12Z Crew is formed of 2 laborers loading 1 truck with the crane for disposal based on daily production.									

PAY ITEM INFORMATION									
PAY ITEM NUMBER	:	4.034	Project	:	KRRP - Iron Gate				
Description	:	Remove and Dispose of Air Vent Pipe - 12" Dia. Sch 40 x560'	Group	:	D03				
Quantity	:	30,250.00 LBS							
Daily Production	:	15,000.00 LBS per	10	hour shift	Project #	:	4		
Work Days	:	2.0 Days			Estimator	:	Mihaela Tomulescu	LBS per	Total Cost
Unit Price	:	\$0.48 per LBS			Probable Low Cost Parameter			17250	\$12,346
Total Cost	:	\$14,525			Probable High Cost Parameter			12000	\$17,430
									Unit Price Per LBS
									\$0.47
									\$0.66

CREW COSTS										
Description	Active Idle	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Truck Driver (heavy)	Active	1.00	2.0	10	20.00	L	\$63.35	incl. in rate	incl. in rate	\$1,266.98
Laborer	Active	2.00	2.0	10	40.00	L	\$50.38	incl. in rate	incl. in rate	\$2,015.20
Equipment Operator (medium)	Active	1.00	2.0	10	20.00	L	\$72.91	incl. in rate	incl. in rate	\$1,458.16
Loader, FE Rubber Tire (5.25cy)	Active	1.00	2.0	10	20.00	E	\$75.42	incl. in rate	incl. in rate	\$1,508.40
Truck, On-Highway Dump (6x4, 12cy)	Active	1.00	2.0	10	20.00	E	\$70.35	incl. in rate	incl. in rate	\$1,407.00
Steelworker	Active	2.00	2.0	10	40.00	L	\$72.07	incl. in rate	incl. in rate	\$2,882.88
Labor Foreman	Active	1.00	2.0	10	20.00	L	\$53.10	incl. in rate	incl. in rate	\$1,061.94
					Labor Hours	140			TOTAL LABOR	\$8,685.16
					Equipment Hours	40			TOTAL EQUIPMENT	\$2,915.40

MATERIAL COSTS						
Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost
Consumables 10% labor (saw blades, drill bits, etc)	1.00	LS	1.000	1.00	\$291.54	\$291.54
						TOTAL MATERIAL
						\$291.54

SUBCONTRACT COSTS					
Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount
Forklift crew, all-terrain forklift, 45' lift, 35' reach, 9000 lb. capacity, weekly use	0.40	week	1.000	0.40	\$5,961.23
					TOTAL SUBCONTRACTS
					\$2,384.49

SUMMARY OF COSTS						
Labor Cost	\$8,685.16	Labor Burden @	49.7%	\$0.00		\$8,685.16
Material Cost	\$291.54	Material Tax @	7.75%	\$22.59		\$314.13
Equipment Cost	\$2,915.40	Equipment Tax @	7.75%	\$225.94		\$3,141.34
Subcontractors	\$2,384.49					\$2,384.49
DIRECT COST SUBTOTALS	\$14,277			\$249	DIRECT COST SUBTOTALS	\$14,525
Additional Pay Item Notes :						
Assumed we need forklift because of work in the tunnel from gate to outlet works, based on RS Means, Utility removal, pipe, sewer/water, 12" diameter, remove, excludes excavation & Cycle hauling(wait, load, travel, unload or dump & return) time per cycle, excavated or borrow, loose cubic yards, 15 min load/wait/unload, 12 C.Y. truck, cycle 30 miles, 50 MPH. Using CREW B6 .						

PAY ITEM INFORMATION									
PAY ITEM NUMBER	:	4.038			Project	:	KRRP - Iron Gate		
Description		Remove and Dispose of Power Cable and 4" Conduit from Penstock Structure			D05				
Quantity	:	800.00	LF		Group	:			
Daily Production	:	400.00	LF per	10	hour shift	Project #	:	4	
Work Days	:	2.0	Days			Estimator	:	Mihaela Tomulescu	
Unit Price	:	\$16.95	per LF			LF per		Total Cost	Unit Price Per LF
Total Cost	:	\$13,560			Probable Low Cost Parameter		460	\$11,526	\$16
					Probable High Cost Parameter		340	\$15,594	\$22

CREW COSTS										
Description	Active Idle	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Electrician Foreman	Active	1.00	2.0	10	20.00	L	\$51.95	incl. in rate	incl. in rate	\$1,039.06
Electrician	Active	4.00	2.0	10	80.00	L	\$49.75	incl. in rate	incl. in rate	\$3,980.24
Laborer	Active	2.00	2.0	10	40.00	L	\$50.38	incl. in rate	incl. in rate	\$2,015.20
Truck, Off-Road, Articulated Rear, 20cy	Active	2.00	2.0	10	40.00	E	\$111.64	incl. in rate	incl. in rate	\$4,465.60
Truck Driver (heavy)	Active	1.00	2.0	10	20.00	L	\$63.35	incl. in rate	incl. in rate	\$1,266.98
					Labor Hours	160	TOTAL LABOR			\$8,301.48
					Equipment Hours	40	TOTAL EQUIPMENT			\$4,465.60

MATERIAL COSTS						
Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost
Consumables 5% labor (saw blades, drill bits, etc)	1.00	LS	1.000	1.00	\$415.07	\$415.07
						TOTAL MATERIAL
						\$415.07

SUBCONTRACT COSTS					
Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount
					TOTAL SUBCONTRACTS
					\$0.00

SUMMARY OF COSTS						
Labor Cost	\$8,301.48	Labor Burden @	49.7%	\$0.00		\$8,301.48
Material Cost	\$415.07	Material Tax @	7.75%	\$32.17		\$447.24
Equipment Cost	\$4,465.60	Equipment Tax @	7.75%	\$346.08		\$4,811.68
Subcontractors	\$0.00					\$0.00
DIRECT COST SUBTOTALS	\$13,182			\$378	DIRECT COST SUBTOTALS	\$13,560
Additional Pay Item Notes :						
Based on RS Means:26050510- Armored cable, (BX), #8, 3 wire, average 50' runs, electrical demolition, remove we use crew Elec2 and 26050510 -Conduit, rigid galvanized steel, 4" to 6" diameter, electrical demolition, remove conduit to 10' high, including fittings & hangers						



#### 4.039 Remove Powerhouse Concrete down to spring-line of turbine

SUMMARY OF COSTS						
Labor Cost	\$209,354.05	Labor Burden @	0.0%	\$0.00	Included in hourly labor rate.	\$209,354.05
Material Cost	\$117,669.58	Material Tax @	7.75%	\$9,119.39		\$126,788.97
Equipment Cost	\$410,598.52	Equipment Tax @	7.75%	\$31,821.39		\$442,419.90
Subcontractors	\$34,000.00					\$34,000.00
DIRECT COST SUBTOTALS		\$771,622		\$40,941	DIRECT COST SUBTOTALS	\$812,563
Additional Pay Item Notes :						

4.039 Remove Powerhouse Concrete down to spring-line of turbine

Details

High Cost Factors		Low Cost Factors	
Bad Weather	0%	No Bad Weather	0%
Gas Price Increase	10%	Gas Price Decrease	10%
Unforeseen Contaminated Mats/ Access Issues	10%	No Unforeseen Contaminated Mats/ Access Issues	0%
20%		10%	

Production Per Hour	Hours	Efficiency Factor (Access, Activity, Qty, High Rebar Density, Breaks, Ect)	Overall Production
	38	8	106.40
		10	133.00

Haul Notes	Excavator Loading Production per shift		
CY	5,200.00	CY per Hour	34
Swell Factor	60%	CY Bucket Size	2.50
Bulk CY	8320	Buckets Per Hour	14
Haul Vehicle 60% Capacity (2 tons per CY)	19.2	# of Excavators	1.00
# of Haul Vehicles		1 CY per Hour (5 CY Bucket)	34
Load Time (Includes Spot Time, Maneuver Time, & Loading) (Minutes)	5	CY Per Hour Ideal Production Per 8 Hour Shift	95
Dump Time (Includes Spot Time, Maneuver Time, & Unloading) Minutes)		3 Efficient Compared to Ideal Production	36%
Haul Speed (Loaded MPH)	5.00	Inefficiencies Compared to Ideal Production	64%
Return Speed (Unloaded MPH)	15.00		
Haul Distance (Miles)	1.20		
Shift Length (Hours)	10		
Cyce Time	Breaker Production		
Load Time (Load Time Minutes / 60mins)	0.08		
Haul Time (Haul Distance / Haul Speed)	0.24	Hydraulic Hammer CY per Hour	1
Dump Time (Dump Time Minutes / 60 Mins)	0.05	# of Hammers	13.30
Return Time (Haul Distance / Return Speed)	0.08	CY per Hour	34.28571429
Hours Per Cycle	0.45	CY per Hour Back Check	32
Efficiency Factor (Night Work, Traffic Restrictions, Coffee Breaks, ECT)	80%	32CY per HR per 8hr shift (Ideal prod)	0.415625
Actual Hours Per Cycle (Hours per Cycle / Efficiency Factor)	0.56	Efficient Compared to Ideal Production	36%
Number of Cycles Bulk CY (Haul Vehicle Cap X # of Haul Vehicles)	433	Inefficiencies Compared to Ideal Production	64%
Total Number of Haul Hours ( Actual Cycle Hours X Number of Cycles)	242.48		
Loads Per Hour (Number of Cycles / Total Number of Haul Hours)	1.79		
Number of Haul Days	24		
	Drilling and Blasting Production per shift		
		Drilling and Blasting CY per Hour	13.3
		# of Drills	1.00
		CY per Hour	34.28571429
		CY per Hour Back Check	32
		38CY per HR per 8hr shift (Ideal prod)	38
		Efficient Compared to Ideal Production	36%
		Inefficiencies Compared to Ideal Production	64%

Other Notes

This estimate presents that the power house concrete will be demolished by using a combination of blasting and concrete breakers/ Crushers. A CPM 100 crusher attachment with a magnet option will be used to help sort reinforcement for the demolished concrete. . It is expected that the power house concrete will have dense reinforcement and other embedded items and the efficiency has been reduced to account for the time it will take for extra processing time. Steel cutting and a crane have been added for .25 of the time to account for removing the draft tube as the concrete demolition progresses.

#### 4.04 Remove and Dispose of Turbine Unit

Additional Pay Item Notes :
<p>Working crew will disconnect power and take care of the temporary electrical power they need at the site. Then the crew will open the engine side panels, and remove the nacelle access panels. Disconnect the engine thermocouple leads at the terminal board. Before disconnecting any lines all fuel, oil, and hydraulic fluid valves are closed. Plug all lines as they are disconnected to prevent entrance of foreign material. Remove the clamps securing the bleed-air ducts at the firewall. Then, disconnect the electrical connector plugs, engine breather and vent lines, and fuel, oil, and hydraulic lines. Disconnect the engine power lever and propeller control rods or cables. Remove the covers from the lift points, attach the sling, and remove slack from the cables using a suitable hoist. The sling must be adjusted to position. Remove the engine mount bolts. The engine is ready to be removed. Move the engine forward, out of the nacelle structure, until it clears the and then lower into position on the stand, and secure it prior to removing the engine sling. The crew will then cut it into pieces the big parts for disposal. Per load price is more expensive due to potential permits or more smaller loads due to haul route restrictions.</p>

#### 4.041 Remove and Dispose of Draft Tube Bulkheads

SUMMARY OF COSTS				
Labor Cost	\$3,980.28	Labor Burden @	49.7%	\$0.00
Material Cost	\$398.03	Material Tax @	7.75%	\$30.85
Equipment Cost	\$2,348.43	Equipment Tax @	7.75%	\$182.00
Subcontractors	\$690.88			
DIRECT COST SUBTOTALS				\$213
Additional Pay Item Notes :				DIRECT COST SUBTOTALS
				\$7,630

PAY ITEM INFORMATION									
PAY ITEM NUMBER	:	4.042	Project	:	KRRP - Iron Gate				
Description	:	Remove and Dispose of Crane	Group	:	D10				
Quantity	:	24,000.00 LBS							
Daily Production	:	25,000.00 LBS per	10	hour shift	Project #	:	4		
Work Days	:	1.0 Days			Estimator	:	Mihaela Tomulescu	LBS per	Total Cost
Unit Price	:	\$0.53 per LBS			Probable Low Cost Parameter			28750	\$10,761
Total Cost	:	\$12,659			Probable High Cost Parameter			18750	\$15,824
									Unit Price Per LBS
									\$0.51
									\$0.75

CREW COSTS										
Description	Active Idle	# In crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Labor Foreman	Active	1.00	1.0	10	10.00	L	\$53.10	incl. in rate	incl. in rate	\$530.97
Laborer	Active	3.00	1.0	10	30.00	L	\$50.38	incl. in rate	incl. in rate	\$1,511.40
Steelworker	Active	3.00	1.0	10	30.00	L	\$72.07	incl. in rate	incl. in rate	\$2,162.16
Equipment Operator (crane)	Active	1.00	1.0	10	10.00	L	\$75.25	incl. in rate	incl. in rate	\$752.51
Equipment Operator (medium)	Active	1.00	1.0	10	10.00	L	\$72.91	incl. in rate	incl. in rate	\$729.08
Crawler Crane (130tn)	Active	1.00	1.0	10	10.00	E	\$258.66	incl. in rate	incl. in rate	\$2,586.60
Loader, FE Rubber Tire (5.25cy)	Active	1.00	1.0	10	10.00	E	\$75.42	incl. in rate	incl. in rate	\$754.20
Oxygen and Acetylene Torches	Active	3.00	1.0	10	30.00	E	\$0.47	incl. in rate	incl. in rate	\$14.10
					Labor Hours	90	TOTAL LABOR		\$5,686.12	
					Equipment Hours	50	TOTAL EQUIPMENT		\$3,354.90	

MATERIAL COSTS						
Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost
Consumables 10% labor (saw blades, drill bits, etc)	1.00	LS	1.000	1.00	\$568.61	\$568.61
Selective demolition, torch cutting, steel, 1" thick plate (assumption)	2,000.00	LF	1.000	2,000.00	\$0.85	\$1,700.00
TOTAL MATERIAL						\$2,268.61

SUBCONTRACT COSTS					
Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount
Hazardous waste cleanup/pickup/disposal, solid pickup, bulk material, maximum	1.20	ton	1.000	1.20	\$595.00
Haul off of material	1.00	Loads	20 tons a load	\$200.00	\$200.00
TOTAL SUBCONTRACTS					\$914.00

SUMMARY OF COSTS									
Labor Cost	\$5,686.12	Labor Burden @	49.7%	\$0.00					\$5,686.12
Material Cost	\$2,268.61	Material Tax @	7.75%	\$175.82					\$2,444.43
Equipment Cost	\$3,354.90	Equipment Tax @	7.75%	\$260.00					\$3,614.90
Subcontractors	\$914.00								\$914.00
DIRECT COST SUBTOTALS	\$12,224			\$436				DIRECT COST SUBTOTALS	\$12,659
Additional Pay Item Notes :									

#### 4.043 Remove and Dispose of Governor

PAY ITEM NUMBER	:	4.043	Project	:	KRRP - Iron Gate		
Description	:	Remove and Dispose of Governor	Group	:	D04		
Quantity	:	20,310.00 LBS					
Daily Production	:	25,000.00 LBS per 10	Project #	:	4		
Work Days	:	0.8 Days	Estimator	:	Mihaela Tomulescu	LBS per	Total Cost
Unit Price	:	\$0.40 per LBS	Probable Low Cost Parameter		28750	\$6,922	Unit Price Per LBS
Total Cost	:	\$8,144	Probable High Cost Parameter		20000	\$9,772	\$0.39
							\$0.55

Description	Active Idle	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Labor Foreman	Active	1.00	0.8	10	8.00	L	\$53.10	incl. in rate	incl. in rate	\$424.78
Laborer	Active	3.00	0.8	10	24.00	L	\$50.38	incl. in rate	incl. in rate	\$1,209.12
Steelworker	Active	3.00	0.8	10	24.00	L	\$72.07	incl. in rate	incl. in rate	\$1,729.73
Equipment Operator (medium)	Active	2.00	0.8	10	16.00	L	\$72.91	incl. in rate	incl. in rate	\$1,166.53
Hydraulic Excavator (2.5cy)	Active	1.00	0.8	10	8.00	E	\$203.63	incl. in rate	incl. in rate	\$1,629.04
Loader, FE Rubber Tire (3.5cy)	Active	1.00	0.8	10	8.00	E	\$64.23	incl. in rate	incl. in rate	\$513.84
Oxygen and Acetylene Torches	Active	3.00	0.8	10	24.00	E	\$0.47	incl. in rate	incl. in rate	\$11.28
					Labor Hours	72	TOTAL LABOR			\$4,530.15
					Equipment Hours	40	TOTAL EQUIPMENT			\$2,154.16

Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost
Consumables 10% labor (saw blades, drill bits, etc)	1.00	LS	1.000	1.00	\$453.02	\$453.02
TOTAL MATERIAL						\$453.02

[illegible]

Labor Cost	\$4,530.15	Labor Burden @	49.7%	\$0.00		\$4,530.15
Material Cost	\$453.02	Material Tax @	7.75%	\$35.11		\$488.12
Equipment Cost	\$2,154.16	Equipment Tax @	7.75%	\$166.95		\$2,321.11
Subcontractors	\$804.22					\$804.22
<b>DIRECT COST SUBTOTALS</b>	<b>\$7,942</b>			<b>\$202</b>	<b>DIRECT COST SUBTOTALS</b>	<b>\$8,144</b>
<b>Additional Pay Item Notes :</b>						

## PAY ITEM INFORMATION

PAY ITEM NUMBER	: 4.044	Project	: KRRP - Iron Gate
Description	: Remove and Dispose of Bearing Oil System and Cooling Water System	Group	: D03
Quantity	: 9,182.00 LBS	Project #	: 4
Daily Production	: 25,000.00 LBS per 10 hour shift	Estimator	: Mihaela Tomulescu
Work Days	: 0.4 Days	Probable Low Cost Parameter	LBS per 28750
Unit Price	: \$0.71 per LBS	Probable High Cost Parameter	Total Cost \$5,507
Total Cost	: \$6,479		Unit Price Per LBS \$0.69
			\$0.97

## CREW COSTS

Description	Active Idle	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Labor Foreman	Active	1.00	0.4	10	4.00	L	\$53.10	incl. in rate	incl. in rate	\$212.39
Laborer	Active	3.00	0.4	10	12.00	L	\$50.38	incl. in rate	incl. in rate	\$604.56
Steelworker	Active	3.00	0.4	10	12.00	L	\$72.07	incl. in rate	incl. in rate	\$864.86
Equipment Operator (medium)	Active	2.00	0.4	10	8.00	L	\$72.91	incl. in rate	incl. in rate	\$583.26
Hydraulic Excavator (2.5cy)	Active	1.00	0.4	10	4.00	E	\$203.63	incl. in rate	incl. in rate	\$814.52
Loader, FE Rubber Tire (3.5cy)	Active	1.00	0.4	10	4.00	E	\$64.23	incl. in rate	incl. in rate	\$256.92
Oxygen and Acetylene Torches	Active	3.00	0.4	10	12.00	E	\$0.47	incl. in rate	incl. in rate	\$5.64
					Labor Hours	36	TOTAL LABOR			\$2,265.08
					Equipment Hours	20	TOTAL EQUIPMENT			\$1,077.08

## MATERIAL COSTS

Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost
Consumables 5% labor (saw blades, drill bits, etc)	1.00	LS	1.000	1.00	\$113.25	\$113.25
						TOTAL MATERIAL
						\$113.25

## SUBCONTRACT COSTS

Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount
Hazardous waste cleanup/pickup/disposal, solid pickup, bulk material, maximum	4.59	ton	1.000	4.59	\$2,731.65
Haul off of material	1.00	Loads	20 tons a load	\$200.00	\$200.00
					TOTAL SUBCONTRACTS
					\$2,931.65

## SUMMARY OF COSTS

Labor Cost	\$2,265.08	Labor Burden @	49.7%	\$0.00	\$2,265.08
Material Cost	\$113.25	Material Tax @	7.75%	\$8.78	\$122.03
Equipment Cost	\$1,077.08	Equipment Tax @	7.75%	\$83.47	\$1,160.55
Subcontractors	\$2,931.65				\$2,931.65
DIRECT COST SUBTOTALS	\$6,387			\$92	DIRECT COST SUBTOTALS
					\$6,479

Additional Pay Item Notes :

PAY ITEM INFORMATION									
PAY ITEM NUMBER	:	4.045	Project	:	KRRP - Iron Gate				
Description	:	Remove and Dispose of CO2 Systems	Group	:	D03				
Quantity	:	2,568.00 LBS							
Daily Production	:	25,000.00 LBS per	10	hour shift	Project #	:	4		
Work Days	:	0.1 Days			Estimator	:	Mihaela Tomulescu	LBS per	27500
Unit Price	:	\$0.72 per LBS			Probable Low Cost Parameter			Total Cost	\$1,666
Total Cost	:	\$1,851			Probable High Cost Parameter			Unit Price Per LBS	\$0.74
									\$0.99

CREW COSTS										
Description	Active Idle	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Labor Foreman	Active	1.00	0.1	10	1.00	L	\$53.10	incl. in rate	incl. in rate	\$53.10
Laborer	Active	3.00	0.1	10	3.00	L	\$50.38	incl. in rate	incl. in rate	\$151.14
Steelworker	Active	3.00	0.1	10	3.00	L	\$72.07	incl. in rate	incl. in rate	\$216.22
Equipment Operator (medium)	Active	2.00	0.1	10	2.00	L	\$72.91	incl. in rate	incl. in rate	\$145.82
Hydraulic Excavator (2.5cy)	Active	1.00	0.1	10	1.00	E	\$203.63	incl. in rate	incl. in rate	\$203.63
Loader, FE Rubber Tire (3.5cy)	Active	1.00	0.1	10	1.00	E	\$64.23	incl. in rate	incl. in rate	\$64.23
Oxygen and Acetylene Torches	Active	3.00	0.1	10	3.00	E	\$0.47	incl. in rate	incl. in rate	\$1.41
Labor Hours					9	TOTAL LABOR				\$566.27
Equipment Hours					5	TOTAL EQUIPMENT				\$269.27

MATERIAL COSTS						
Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost
Consumables 5% labor (saw blades, drill bits, etc)	1.00	LS	1.000	1.00	\$28.31	\$28.31
						TOTAL MATERIAL
						\$28.31

SUBCONTRACT COSTS					
Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount
Hazardous waste cleanup/pickup/disposal, solid pickup, bulk material, maximum	1.28	ton	1.000	1.28	\$595.00
Haul off of material	1.00	Loads	20 tons a load		\$200.00
					TOTAL SUBCONTRACTS
					\$963.98

SUMMARY OF COSTS									
Labor Cost	\$566.27	Labor Burden @	49.7%	\$0.00					\$566.27
Material Cost	\$28.31	Material Tax @	7.75%	\$2.19					\$30.51
Equipment Cost	\$269.27	Equipment Tax @	7.75%	\$20.87					\$290.14
Subcontractors	\$963.98								\$963.98
DIRECT COST SUBTOTALS	\$1,828			\$23				DIRECT COST SUBTOTALS	\$1,851
Additional Pay Item Notes :									



PAY ITEM INFORMATION									
PAY ITEM NUMBER	:	4.046	Project	:	KRRP - Iron Gate				
Description	:	Remove and Dispose of Plant Water and Fire Protection System	Group	:	D05				
Quantity	:	9,182.00 LBS							
Daily Production	:	25,000.00 LBS per	10	hour shift	Project #	:	4		
Work Days	:	0.4 Days			Estimator	:	Mihaela Tomulescu	LBS per	Total Cost
Unit Price	:	\$0.71 per LBS			Probable Low Cost Parameter			27500	\$5,831
Total Cost	:	\$6,479			Probable High Cost Parameter			20000	\$7,775
									Unit Price Per LBS
									\$0.73
									\$0.97

CREW COSTS										
Description	Active Idle	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Labor Foreman	Active	1.00	0.4	10	4.00	L	\$53.10	incl. in rate	incl. in rate	\$212.39
Laborer	Active	3.00	0.4	10	12.00	L	\$50.38	incl. in rate	incl. in rate	\$604.56
Steelworker	Active	3.00	0.4	10	12.00	L	\$72.07	incl. in rate	incl. in rate	\$864.86
Equipment Operator (medium)	Active	2.00	0.4	10	8.00	L	\$72.91	incl. in rate	incl. in rate	\$583.26
Hydraulic Excavator (2.5cy)	Active	1.00	0.4	10	4.00	E	\$203.63	incl. in rate	incl. in rate	\$814.52
Loader, FE Rubber Tire (3.5cy)	Active	1.00	0.4	10	4.00	E	\$64.23	incl. in rate	incl. in rate	\$256.92
Oxygen and Acetylene Torches	Active	3.00	0.4	10	12.00	E	\$0.47	incl. in rate	incl. in rate	\$5.64
					Labor Hours	36			TOTAL LABOR	\$2,265.08
					Equipment Hours	20			TOTAL EQUIPMENT	\$1,077.08

MATERIAL COSTS						
Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost
Consumables 5% labor (saw blades, drill bits, etc)	1.00	LS	1.000	1.00	\$113.25	\$113.25
						TOTAL MATERIAL
						\$113.25

SUBCONTRACT COSTS					
Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount
Hazardous waste cleanup/pickup/disposal, solid pickup, bulk material, maximum	4.59	ton	1.000	4.59	\$595.00
Haul off of material	1.00	Loads	20 tons a load		\$200.00
					TOTAL SUBCONTRACTS
					\$2,931.65

SUMMARY OF COSTS									
Labor Cost	\$2,265.08	Labor Burden @	49.7%	\$0.00					\$2,265.08
Material Cost	\$113.25	Material Tax @	7.75%	\$8.78					\$122.03
Equipment Cost	\$1,077.08	Equipment Tax @	7.75%	\$83.47					\$1,160.55
Subcontractors	\$2,931.65								\$2,931.65
DIRECT COST SUBTOTALS	\$6,387			\$92				DIRECT COST SUBTOTALS	\$6,479
Additional Pay Item Notes :									

#### 4.047 Remove and Dispose of Oil Sump Pumps

PAY ITEM NUMBER	:	4.047	Project	:	KRRP - Iron Gate
Description	:	Remove and Dispose of Oil Sump Pumps	Group	:	D05
Quantity	:	2,000.00 LBS			
Daily Production	:	25,000.00 LBS per	10	hour shift	
Work Days	:	0.1 Days	Project #	:	4
Unit Price	:	\$0.84 per LBS	Estimator	:	Mihaela Tomulescu
Total Cost	:	\$1,682	Probable Low Cost Parameter	:	LBS per Total Cost Unit Price Per LBS
			Probable High Cost Parameter	:	27500 \$1,514 \$0.86
				:	20000 \$2,018 \$1.15

Description	Active Idle	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Labor Foreman	Active	1.00	0.1	10	1.00	L	\$53.10	incl. in rate	incl. in rate	\$53.10
Laborer	Active	3.00	0.1	10	3.00	L	\$50.38	incl. in rate	incl. in rate	\$151.14
Steelworker	Active	3.00	0.1	10	3.00	L	\$72.07	incl. in rate	incl. in rate	\$216.22
Equipment Operator (medium)	Active	2.00	0.1	10	2.00	L	\$72.91	incl. in rate	incl. in rate	\$145.82
Hydraulic Excavator (2.5cy)	Active	1.00	0.1	10	1.00	E	\$203.63	incl. in rate	incl. in rate	\$203.63
Loader, FE Rubber Tire (3.5cy)	Active	1.00	0.1	10	1.00	E	\$64.23	incl. in rate	incl. in rate	\$64.23
Oxygen and Acetylene Torches	Active	3.00	0.1	10	3.00	E	\$0.47	incl. in rate	incl. in rate	\$1.41
					Labor Hours	9	TOTAL LABOR			\$566.27
					Equipment Hours	5	TOTAL EQUIPMENT			\$269.27

Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost
Consumables 5% labor (saw blades, drill bits, etc)	1.00	LS	1.000	1.00	\$28.31	\$28.31
TOTAL MATERIAL						\$28.31

Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount
Hazardous waste cleanup/pickup/disposal, solid pickup, bulk material, maximum	1.00	ton	1.000	1.00	\$595.00
Haul off of material	1.00	Loads	20 tons a load		\$200.00
TOTAL SUBCONTRACTS					\$795.00

Summary of Costs					
Labor Cost	\$566.27	Labor Burden @	49.7%	\$0.00	\$566.27
Material Cost	\$28.31	Material Tax @	7.75%	\$2.19	\$30.51
Equipment Cost	\$269.27	Equipment Tax @	7.75%	\$20.87	\$290.14
Subcontractors	\$795.00				\$795.00
<b>DIRECT COST SUBTOTALS</b>	<b>\$1,659</b>			<b>\$23</b>	<b>\$1,682</b>

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PAY ITEM INFORMATION									
PAY ITEM NUMBER	:	4.048	Project	:	KRRP - Iron Gate				
Description	:	Remove and Dispose of Pumps	Group	:	D03				
Quantity	:	22,000.00 LBS							
Daily Production	:	25,000.00 LBS per	10	hour shift	Project #	:	4		
Work Days	:	0.9 Days							
Unit Price	:	\$0.68 per LBS	Estimator	:	Mihaela Tomulescu	LBS per	27500	Total Cost	\$13,489
Total Cost	:	\$14,988	Probable Low Cost Parameter						
			Probable High Cost Parameter						
							20000	\$17,986	\$0.93

CREW COSTS										
Description	Active Idle	# In crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Labor Foreman	Active	1.00	0.9	10	9.00	L	\$53.10	incl. in rate	incl. in rate	\$477.87
Laborer	Active	3.00	0.9	10	27.00	L	\$50.38	incl. in rate	incl. in rate	\$1,360.26
Steelworker	Active	3.00	0.9	10	27.00	L	\$72.07	incl. in rate	incl. in rate	\$1,945.94
Equipment Operator (medium)	Active	2.00	0.9	10	18.00	L	\$72.91	incl. in rate	incl. in rate	\$1,312.34
Hydraulic Excavator (2.5cy)	Active	1.00	0.9	10	9.00	E	\$203.63	incl. in rate	incl. in rate	\$1,832.67
Loader, FE Rubber Tire (3.5cy)	Active	1.00	0.9	10	9.00	E	\$64.23	incl. in rate	incl. in rate	\$578.07
					Labor Hours	81	TOTAL LABOR			\$5,096.42
					Equipment Hours	18	TOTAL EQUIPMENT			\$2,410.74

MATERIAL COSTS						
Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost
Consumables 10% labor (saw blades, drill bits, etc)	1.00	LS	1.000	1.00	\$509.64	\$509.64
						TOTAL MATERIAL
						\$509.64

SUBCONTRACT COSTS					
Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount
Hazardous waste cleanup/pickup/disposal, solid pickup, bulk material, maximum	11.00	ton	1.000	11.00	\$595.00
Haul off of material	1.00	Loads	20 tons a load		\$200.00
					TOTAL SUBCONTRACTS
					\$6,745.00

SUMMARY OF COSTS									
Labor Cost	\$5,096.42	Labor Burden @	49.7%	\$0.00					\$5,096.42
Material Cost	\$509.64	Material Tax @	7.75%	\$39.50					\$549.14
Equipment Cost	\$2,410.74	Equipment Tax @	7.75%	\$186.83					\$2,597.57
Subcontractors	\$6,745.00								\$6,745.00
DIRECT COST SUBTOTALS		\$14,762		\$226		DIRECT COST SUBTOTALS		\$14,988	
Additional Pay Item Notes :									

#### 4.049 Remove and Dispose of Exposed Piping Around the Plant

PAY ITEM NUMBER	:	4.049	Project	:	KRRP - Iron Gate
Description	:	Remove and Dispose of Exposed Piping Around the Plant	Group	:	D05
Quantity	:	19,291.00 LBS			
Daily Production	:	25,000.00 LBS per	10	hour shift	
Work Days	:	0.8 Days	Project #	:	4
Unit Price	:	\$0.69 per LBS	Estimator	:	Mihaela Tomulescu
Total Cost	:	\$13,278	LBS per	:	27500
			Total Cost	:	\$11,951
			Unit Price Per LBS	:	\$0.71
			Probable Low Cost Parameter	:	20000
			Probable High Cost Parameter	:	\$15,934
				:	\$0.94

Description	Active Idle	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Labor Foreman	Active	1.00	0.8	10	8.00	L	\$53.10	incl. in rate	incl. in rate	\$424.78
Laborer	Active	3.00	0.8	10	24.00	L	\$50.38	incl. in rate	incl. in rate	\$1,209.12
Steelworker	Active	3.00	0.8	10	24.00	L	\$72.07	incl. in rate	incl. in rate	\$1,729.73
Equipment Operator (medium)	Active	2.00	0.8	10	16.00	L	\$72.91	incl. in rate	incl. in rate	\$1,166.53
Hydraulic Excavator (2.5cy)	Active	1.00	0.8	10	8.00	E	\$203.63	incl. in rate	incl. in rate	\$1,629.04
Loader, FE Rubber Tire (3.5cy)	Active	1.00	0.8	10	8.00	E	\$64.23	incl. in rate	incl. in rate	\$513.84
Oxygen and Acetylene Torches	Active	3.00	0.8	10	24.00	E	\$0.47	incl. in rate	incl. in rate	\$11.28
Labor Hours					72	TOTAL LABOR				\$4,530.15
Equipment Hours					40	TOTAL EQUIPMENT				\$2,154.16

Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost
Consumables 10% labor (saw blades, drill bits, etc)	1.00	LS	1.000	1.00	\$453.02	\$453.02
TOTAL MATERIAL						\$453.02

Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount
Hazardous waste cleanup/pickup/disposal, solid pickup, bulk material, maximum	9.65	ton	1.000	9.65	\$595.00
Haul off of material	1.00	Loads	20 tons a load		\$200.00
TOTAL SUBCONTRACTS					\$5,939.07

Labor Cost	\$4,530.15	Labor Burden @	49.7%	\$0.00		\$4,530.15
Material Cost	\$453.02	Material Tax @	7.75%	\$35.11		\$488.12
Equipment Cost	\$2,154.16	Equipment Tax @	7.75%	\$166.95		\$2,321.11
Subcontractors	\$5,939.07					\$5,939.07
<b>DIRECT COST SUBTOTALS</b>	<b>\$13,076</b>			<b>\$202</b>	<b>DIRECT COST SUBTOTALS</b>	<b>\$13,278</b>

**Additional Pay Item Notes :**

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#### 4.05 Remove and Dispose of Unwatering Piping

PAY ITEM NUMBER	:	4.050	Project	:	KRRP - Iron Gate
Description	:	Remove and Dispose of Unwatering Piping	Group	:	D05
Quantity	:	19,291.00 LBS			
Daily Production	:	25,000.00 LBS per	10	hour shift	
Work Days	:	0.8	Days		
Unit Price	:	\$0.68	per LBS		
Total Cost	:	\$13,034			
			Project #	:	4
			Estimator	:	Mihaela Tomulescu
			Probable Low Cost Parameter	:	27500
			Probable High Cost Parameter	:	21250
			LBS per	:	\$11,731
			Total Cost	:	\$0.69
			Unit Price Per LBS	:	\$0.89

Description	Active Idle	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Labor Foreman	Active	1.00	0.8	10	8.00	L	\$53.10	incl. in rate	incl. in rate	\$424.78
Laborer	Active	3.00	0.8	10	24.00	L	\$50.38	incl. in rate	incl. in rate	\$1,209.12
Steelworker	Active	3.00	0.8	10	24.00	L	\$72.07	incl. in rate	incl. in rate	\$1,729.73
Equipment Operator (medium)	Active	2.00	0.8	10	16.00	L	\$72.91	incl. in rate	incl. in rate	\$1,166.53
Hydraulic Excavator (2.5cy)	Active	1.00	0.8	10	8.00	E	\$203.63	incl. in rate	incl. in rate	\$1,629.04
Loader, FE Rubber Tire (3.5cy)	Active	1.00	0.8	10	8.00	E	\$64.23	incl. in rate	incl. in rate	\$513.84
Oxygen and Acetylene Torches	Active	3.00	0.8	10	24.00	E	\$0.47	incl. in rate	incl. in rate	\$11.28
Labor Hours					72	TOTAL LABOR				\$4,530.15
Equipment Hours					40	TOTAL EQUIPMENT				\$2,154.16

Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost
Consumables 5% labor (saw blades, drill bits, etc)	1.00	LS	1.000	1.00	\$226.51	\$226.51
TOTAL MATERIAL						\$226.51

Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount
Hazardous waste cleanup/pickup/disposal, solid pickup, bulk material, maximum	9.65	ton	1.000	9.65	\$595.00
Haul off of material	1.00	Loads	20 tons a load		\$200.00
TOTAL SUBCONTRACTS					\$5,939.07

Labor Cost	\$4,530.15	Labor Burden @	49.7%	\$0.00		\$4,530.15
Material Cost	\$226.51	Material Tax @	7.75%	\$17.55		\$244.06
Equipment Cost	\$2,154.16	Equipment Tax @	7.75%	\$166.95		\$2,321.11
Subcontractors	\$5,939.07					\$5,939.07
<b>DIRECT COST SUBTOTALS</b>	<b>\$12,850</b>			<b>\$185</b>	<b>DIRECT COST SUBTOTALS</b>	<b>\$13,034</b>

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PAY ITEM INFORMATION									
PAY ITEM NUMBER	:	4.051	Project	:	KRRP - Iron Gate				
Description	:	Remove and Dispose of Drainage Piping	Group	:	D05				
Quantity	:	9,518.00 LBS							
Daily Production	:	25,000.00 LBS per	10	hour shift	Project #	:	4		
Work Days	:	0.4 Days			Estimator	:	Mihaela Tomulescu	LBS per	Total Cost
Unit Price	:	\$0.69 per LBS			Probable Low Cost Parameter			27500	\$5,916
Total Cost	:	\$6,573			Probable High Cost Parameter			21250	\$7,559
									Unit Price Per LBS
									\$0.71
									\$0.91

CREW COSTS										
Description	Active Idle	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Labor Foreman	Active	1.00	0.4	10	4.00	L	\$53.10	incl. in rate	incl. in rate	\$212.39
Laborer	Active	3.00	0.4	10	12.00	L	\$50.38	incl. in rate	incl. in rate	\$604.56
Steelworker	Active	3.00	0.4	10	12.00	L	\$72.07	incl. in rate	incl. in rate	\$864.86
Equipment Operator (medium)	Active	2.00	0.4	10	8.00	L	\$72.91	incl. in rate	incl. in rate	\$583.26
Hydraulic Excavator (2.5cy)	Active	1.00	0.4	10	4.00	E	\$203.63	incl. in rate	incl. in rate	\$814.52
Loader, FE Rubber Tire (3.5cy)	Active	1.00	0.4	10	4.00	E	\$64.23	incl. in rate	incl. in rate	\$256.92
					Labor Hours	36	TOTAL LABOR			\$2,265.08
					Equipment Hours	8	TOTAL EQUIPMENT			\$1,071.44

MATERIAL COSTS						
Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost
Consumables 5% labor (saw blades, drill bits, etc)	1.00	LS	1.000	1.00	\$113.25	\$113.25
						TOTAL MATERIAL
						\$113.25

SUBCONTRACT COSTS					
Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount
Hazardous waste cleanup/pickup/disposal, solid pickup, bulk material, maximum	4.76	ton	1.000	4.76	\$595.00
Haul off of material	1.00	Loads	20 tons a load		\$200.00
					TOTAL SUBCONTRACTS
					\$3,031.61

SUMMARY OF COSTS									
Labor Cost	\$2,265.08	Labor Burden @	49.7%	\$0.00					\$2,265.08
Material Cost	\$113.25	Material Tax @	7.75%	\$8.78					\$122.03
Equipment Cost	\$1,071.44	Equipment Tax @	7.75%	\$83.04					\$1,154.48
Subcontractors	\$3,031.61								\$3,031.61
DIRECT COST SUBTOTALS	\$6,481			\$92				DIRECT COST SUBTOTALS	\$6,573
Additional Pay Item Notes :									

PAY ITEM INFORMATION									
PAY ITEM NUMBER	:	4.052	Project	:	KRRP - Iron Gate D05				
Description	:	Remove and Dispose of Transformer Oil and Fire Protection Pipes	Group	:					
Quantity	:	9,182.00 LBS							
Daily Production	:	25,000.00 LBS per	10	hour shift	Project #	:	4		
Work Days	:	0.4 Days			Estimator	:	Mihaela Tomulescu	LBS per	Total Cost
Unit Price	:	\$0.94 per LBS			Probable Low Cost Parameter			26250	\$8,202
Total Cost	:	\$8,633			Probable High Cost Parameter			22500	\$9,497
									Unit Price Per LBS \$1.02

CREW COSTS										
Description	Active Idle	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Labor Foreman	Active	1.00	0.4	10	4.00	L	\$53.10	incl. in rate	incl. in rate	\$212.39
Laborer	Active	3.00	0.4	10	12.00	L	\$50.38	incl. in rate	incl. in rate	\$604.56
Steelworker	Active	3.00	0.4	10	12.00	L	\$72.07	incl. in rate	incl. in rate	\$864.86
Equipment Operator (medium)	Active	2.00	0.4	10	8.00	L	\$72.91	incl. in rate	incl. in rate	\$583.26
Hydraulic Excavator (2.5cy)	Active	1.00	0.4	10	4.00	E	\$203.63	incl. in rate	incl. in rate	\$814.52
Loader, FE Rubber Tire (3.5cy)	Active	1.00	0.4	10	4.00	E	\$64.23	incl. in rate	incl. in rate	\$256.92
					Labor Hours	36	TOTAL LABOR			\$2,265.08
					Equipment Hours	8	TOTAL EQUIPMENT			\$1,071.44

MATERIAL COSTS						
Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost
Consumables 5% labor (saw blades, drill bits, etc)	1.00	LS	1.000	1.00	\$113.25	\$113.25
						\$0.00
						\$0.00
						\$0.00
						\$0.00
						TOTAL MATERIAL
						\$113.25

SUBCONTRACT COSTS					
Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount
Hazardous waste cleanup/pickup/disposal, solid pickup, bulk material, maximum	4.59	ton	1.000	4.59	\$595.00
					\$2,731.65
Hazardous waste cleanup/pickup/disposal, liquid pickup, vacuum truck, stainless steel tank, 5000 gallons, minimum charge, 4 hours, 2 compartment	8.00	hour	RSM Means 028120101260	\$270.00	\$2,160.00
Haul off of material	1.00	Loads	20 tons a load	\$200.00	\$200.00
					TOTAL SUBCONTRACTS
					\$5,091.65

SUMMARY OF COSTS						
Labor Cost	\$2,265.08	Labor Burden @	49.7%	\$0.00		\$2,265.08
Material Cost	\$113.25	Material Tax @	7.75%	\$8.78		\$122.03
Equipment Cost	\$1,071.44	Equipment Tax @	7.75%	\$83.04		\$1,154.48
Subcontractors	\$5,091.65					\$5,091.65
DIRECT COST SUBTOTALS	\$8,541			\$92	DIRECT COST SUBTOTALS	\$8,633
Additional Pay Item Notes :						

PAY ITEM INFORMATION									
PAY ITEM NUMBER	:	4.053			Project	:	KRRP - Iron Gate		
Description	:	Remove and Dispose of Compressed Air System			Group	:	D05		
Quantity	:	1,450.00 LBS							
Daily Production	:	25,000.00 LBS per			10	hour shift	Project #	:	4
Work Days	:	0.058 Days			Estimator	:	Mihaela Tomulescu	LBS per	Total Cost
Unit Price	:	\$0.79 per LBS			Probable Low Cost Parameter		27500	\$1,030	\$0.81
Total Cost	:	\$1.145			Probable High Cost Parameter		21250	\$1,317	\$1.04

CREW COSTS										
Description	Active Idle	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Labor Foreman	Active	1.00	0.1	10	0.58	L	\$53.10	incl. in rate	incl. in rate	\$30.80
Laborer	Active	3.00	0.1	10	1.74	L	\$50.38	incl. in rate	incl. in rate	\$87.66
Steelworker	Active	3.00	0.1	10	1.74	L	\$72.07	incl. in rate	incl. in rate	\$125.41
Equipment Operator (medium)	Active	2.00	0.1	10	1.16	L	\$72.91	incl. in rate	incl. in rate	\$84.57
Hydraulic Excavator (2.5cy)	Active	1.00	0.1	10	0.58	E	\$203.63	incl. in rate	incl. in rate	\$118.11
Loader, FE Rubber Tire (3.5cy)	Active	1.00	0.1	10	0.58	E	\$64.23	incl. in rate	incl. in rate	\$37.25
Labor Hours					5.22	TOTAL LABOR				\$328.44
Equipment Hours					1.16	TOTAL EQUIPMENT				\$155.36

MATERIAL COSTS						
Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost
Consumables 5% labor (saw blades, drill bits, etc)	1.00	LS	1.000	1.00	\$16.42	\$16.42
						TOTAL MATERIAL
						\$16.42

SUBCONTRACT COSTS					
Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount
Hazardous waste cleanup/pickup/disposal, solid pickup, bulk material, maximum	0.73	ton	1.000	\$0.73	\$431.38
Haul off of material	1.00	Loads	20 tons a load	\$200.00	\$200.00
					TOTAL SUBCONTRACTS
					\$631.38

SUMMARY OF COSTS									
Labor Cost	\$328.44	Labor Burden @	49.7%	\$0.00				\$328.44	
Material Cost	\$16.42	Material Tax @	7.75%	\$1.27				\$17.69	
Equipment Cost	\$155.36	Equipment Tax @	7.75%	\$12.04				\$167.40	
Subcontractors	\$631.38							\$631.38	
DIRECT COST SUBTOTALS		\$1,132					\$13	DIRECT COST SUBTOTALS	\$1,145
Additional Pay Item Notes :									



PAY ITEM INFORMATION									
PAY ITEM NUMBER	:	4.053a			Project	:	KRRP - Iron Gate		
Description	:	Remove & Dispose - Petroleum Products from Mechanical Equip.			Group	:	D09		
Quantity	:	1,100.00 GAL							
Daily Production	:	5,000.00 GAL per		10					
Work Days	:	0.2 Days			Project #	:	4		
Unit Price	:	\$2.72 per GAL			Estimator	:	Mihaela Tomulescu	GAL per	Total Cost
Total Cost	:	\$2,996			Probable Low Cost Parameter		5250	\$2,846	\$3
	Probable High Cost Parameter					4500	\$3,296	\$3	

CREW COSTS										
Description	Active Idle	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Labor Foreman	Active	1.00	0.2	10	2.00	L	\$53.10	incl. in rate	incl. in rate	\$106.19
Electrician	Active	1.00	0.2	10	2.00	L	\$49.75	incl. in rate	incl. in rate	\$99.51
Laborer	Active	5.00	0.2	10	10.00	L	\$50.38	incl. in rate	incl. in rate	\$503.80
Truck Driver (heavy)	Active	1.00	0.2	10	2.00	L	\$63.35	incl. in rate	incl. in rate	\$126.70
					Labor Hours	16	TOTAL LABOR			\$836.20
					Equipment Hours	0	TOTAL EQUIPMENT			\$0.00

MATERIAL COSTS						
Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost
						TOTAL MATERIAL
						\$0.00

SUBCONTRACT COSTS					
Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount
Hazardous waste cleanup/pickup/disposal, liquid pickup, vacuum truck, stainless steel tank, 5000 gallons, minimum charge, 4 hours, 2 compartment	8.00	hour	RSM Means 028120101260	\$270.00	\$2,160.00
					TOTAL SUBCONTRACTS
					\$2,160.00

SUMMARY OF COSTS						
Labor Cost	\$836.20	Labor Burden @	49.7%	\$0.00		\$836.20
Material Cost	\$0.00	Material Tax @	7.75%	\$0.00		\$0.00
Equipment Cost	\$0.00	Equipment Tax @	7.75%	\$0.00		\$0.00
Subcontractors	\$2,160.00					\$2,160.00
DIRECT COST SUBTOTALS	\$2,996			\$0	DIRECT COST SUBTOTALS	\$2,996

Additional Pay Item Notes :

Petroleum-based products, ranging from fuel oil and hydraulic fluid to lubricating greases and oils, are found throughout every type of power generating plant or system. Lubrication supports bearings and moving parts in all sorts of equipment: pumps, conveyors, feeders, scrubbers, cranes, turbines, and more. A good oil/water separation system will result in a flow of concentrated waste oil to a collection area and a flow of oil-free water ready for secondary processing or discharge. Once an oil layer has been separated from free water, it must be removed for recycling or disposal. Many plants use one or more of these oil removal methods, but each has costly limitations:

- 1. Absorbent materials. Absorbent mats or materials are frequently used to dam up and absorb excess oils and greases resulting from accidents or the routine operation of machinery. These materials are very effective for preventing the spread of a source leak and very efficient in terms of oil pickup. Yet, their use on large volumes of waste oil results in multiple, recurring costs that can make them impractical as an everyday solution:
  - the costs of the materials themselves
  - the labor costs for ordering, stocking, application, and removal
  - the costs of used-media collection, disposal, or re-processing/recycling.
- 2. Manually operated "slotted pipes." Many separators feature a "slotted pipe," a pipe located near the top of the vessel that has a horizontal opening. Oil is removed by turning the horizontal opening downward until it meets the floating oil layer, which drains through the pipe to a collection receptacle. These pipes work well on thick layers of oil, but cannot drain off a sheen of oil without draining off a large amount of water as well.

AECOM assumed the best is Vacuum truck removal method. Used a crew formed of 1 Foreman, 5 Laborers to takeout the petroleum waste. 1 Electrician to unplug the power and to assure the temporary power at the construction site. Vacuum-equipped tank trucks are used to remove waste oil from collection points at plants so that it can be transported to recycling or disposal locations. If the waste oil has been thoroughly separated, highly concentrated, and stored in an appropriate receptacle, this service can be used very efficiently. However, vacuum disposal units are often used to pump oil layers directly off of water. This results in the intake of a significant amount free water along with the waste oil – and a significantly higher cost.

#### 4.054 Remove and Dispose of AC Generator, Outdoor Horizontal

**Additional Pay Item Notes :**

The cooling and lubrication systems for the generator will be a combination of water and oil. These systems will be isolated from the water passages so that no contamination of passing water will occur. Used RS Means, a R13 Crew formed of 1 Foreman, 3 Electricians, 1 Oiler, 0.25 Equipment Crane. 5 Steelworkers to cut adjacent appurtenances and 1 Welder to cut pipes. Calculated 28 miles from Iron Gate Dam to Yreka Transfer Recycling (back and forth).

PAY ITEM INFORMATION									
PAY ITEM NUMBER	:	4.055	Project	:	KRRP - Iron Gate				
Description	:	Remove and Dispose of Excitation equipment for 18.975 MVA Generator	Group	:	D04				
Quantity	:	1.00 EA							
Daily Production	:	1.25 EA per	10	hour shift	Project #	:	4		
Work Days	:	0.8	Days		Estimator	:	Mihaela Tomulescu	EA per	Total Cost
Unit Price	:	\$2,263.30 per EA			Probable Low Cost Parameter			1.375	\$2,037
Total Cost	:	\$2,263			Probable High Cost Parameter			1.0625	\$2,603
									Unit Price Per EA
									\$2,327
									\$2,973

CREW COSTS										
Description	Active Idle	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Electrician Foreman	Active	1.00	0.8	10	8.00	L	\$51.95	incl. in rate	incl. in rate	\$415.62
Electrician	Active	1.00	0.8	10	8.00	L	\$49.75	incl. in rate	incl. in rate	\$398.02
Laborer	Active	1.00	0.8	10	8.00	L	\$50.38	incl. in rate	incl. in rate	\$403.04
Truck, Off-Road, Articulated Rear, 20cy	Active	1.00	0.5	10	5.00	E	\$111.64	incl. in rate	incl. in rate	\$558.20
Truck Driver (heavy)	Active	1.00	0.5	10	5.00	L	\$63.35	incl. in rate	incl. in rate	\$316.75
					Labor Hours	29	TOTAL LABOR			\$1,533.43
					Equipment Hours	5	TOTAL EQUIPMENT			\$558.20

MATERIAL COSTS						
Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost
Consumables 5% labor (saw blades, drill bits, etc)	1.00	LS	1.000	1.00	\$76.67	\$76.67
Selective demolition, torch cutting, steel, 1" thick plate (assumed qty)	50.00	LF	1.000	50.00	\$0.85	\$42.50
						TOTAL MATERIAL
						\$119.17

SUBCONTRACT COSTS					
Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount
					TOTAL SUBCONTRACTS
					\$0.00

SUMMARY OF COSTS						
Labor Cost	\$1,533.43	Labor Burden @	49.7%	\$0.00		\$1,533.43
Material Cost	\$119.17	Material Tax @	7.75%	\$9.24		\$128.41
Equipment Cost	\$558.20	Equipment Tax @	7.75%	\$43.26		\$601.46
Subcontractors	\$0.00					\$0.00
DIRECT COST SUBTOTALS	\$2,211			\$52	DIRECT COST SUBTOTALS	\$2,263
Additional Pay Item Notes :						
Used 1 Forman, 1 Electrician to remove the electrical equipment and 1 laborer to haul.						



PAY ITEM INFORMATION									
PAY ITEM NUMBER	:	4.057	Project		:	KRRP - Iron Gate D04			
Description	:	Remove and Dispose of Neutral grounding equip. for 18.975 MVA Generator	Group		:				
Quantity	:	1.00 EA	Project #		:	4			
Daily Production	:	1.25 EA per	Estimator		:	Mihaela Tomulescu			
Work Days	:	0.8 Days	Probable Low Cost Parameter		:	1.375		Total Cost	Unit Price Per EA
Unit Price	:	\$2,737.67 per EA	Probable High Cost Parameter		:	1.0625		\$2,464	\$2,815
Total Cost	:	\$2,738			:			\$3,148	\$3,597

CREW COSTS										
Description	Active Idle	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Electrician Foreman	Active	1.00	0.8	10	8.00	L	\$51.95	incl. in rate	incl. in rate	\$415.62
Electrician	Active	1.00	0.8	10	8.00	L	\$49.75	incl. in rate	incl. in rate	\$398.02
Ironworkers	Active	1.00	0.8	10	8.00	L	\$70.35	incl. in rate	incl. in rate	\$562.76
Laborer	Active	1.00	0.8	10	8.00	L	\$50.38	incl. in rate	incl. in rate	\$403.04
Gas Welding Machine	Active	1.00	0.8	10	8.00	E	\$2.88	incl. in rate	incl. in rate	\$23.02
Welder	Active	1.00	0.8	10	8.00	E	\$7.84	incl. in rate	incl. in rate	\$62.70
Labor Hours					32	TOTAL LABOR				\$1,779.45
Equipment Hours					16	TOTAL EQUIPMENT				\$85.72

MATERIAL COSTS						
Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost
Consumables 5% labor (saw blades, drill bits, etc)	1.00	LS	1.000	1.00	\$88.97	\$88.97
TOTAL MATERIAL						\$88.97

SUBCONTRACT COSTS					
Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount
Hauling to Yreka Transfer 40 Miles	1.00	Load	20 tons per load	\$400.00	\$400.00
Disposal Fee	5.00	Ton		\$74.00	\$370.00
TOTAL SUBCONTRACTS					\$770.00

SUMMARY OF COSTS									
Labor Cost	\$1,779.45	Labor Burden @	49.7%	\$0.00					\$1,779.45
Material Cost	\$88.97	Material Tax @	7.75%	\$6.90					\$95.87
Equipment Cost	\$85.72	Equipment Tax @	7.75%	\$6.64					\$92.36
Subcontractors	\$770.00								\$770.00
DIRECT COST SUBTOTALS		\$2,724		\$14		DIRECT COST SUBTOTALS		\$2,738	
Additional Pay Item Notes :									

#### 4.058 Remove and Dispose of Station Service Switchgear, 600 volt - (5 sections)

SUMMARY OF COSTS					
Labor Cost	\$3,017.78	Labor Burden @	49.7%	\$0.00	\$3,017.78
Material Cost	\$150.89	Material Tax @	7.75%	\$11.69	\$162.58
Equipment Cost	\$930.40	Equipment Tax @	7.75%	\$72.11	\$1,002.51
Subcontractors	\$995.00				\$995.00
<b>DIRECT COST SUBTOTALS</b>	<b>\$5,094</b>			<b>\$84</b>	<b>\$5,178</b>

**Additional Pay Item Notes :**

Used 1 Forman, 3 Electrician, 2 laborer to haul with the crane in the truck. Assumed contamination hazardous waste that will be disposed at 28 miles away from the construction site. In normal circumstances, decontaminated residual components could be accepted at landfill sites but Polychlorinated biphenyl, otherwise known as PCB, is a synthetic chemical that is widely used for industrial and commercial use as dielectric fluid in transformers and capacitors because of its high resistance to decomposition, low electrical conductivity, low flammability and high heat capacity. Transformer repair, reconditioning and retro-filling facilities are the major industry sectors that contributes to the spread of PCB contamination. Types of PCB Wastes:

- o PCB wastes are discarded materials that contain PCB or have been contaminated with PCBs and that are without any commercial, industrial, or economic use. For the purpose of this Code of Practice, PCBs wastes are classified as follows: Liquid PCB wastes
- o PCB-based dielectric fluids removed from transformers and other equipment
- o PCB-based heat transfer and hydraulic fluids
- o Metallic solid wastes
- o PCB equipment such as capacitors, transformers, switchgears, circuit breakers, heat transfer systems, etc.
- o Contaminated components removed from electrical equipment such as windings; PCB-contaminated containers and equipment such as metal drums, tanks, pumps, metal filters, etc.

Calculated 28 miles from Iron Gate Dam to Yreka Transfer Recycling

PAY ITEM INFORMATION									
PAY ITEM NUMBER	:	4.059			Project	:	KRRP - Iron Gate		
Description	:	Remove and Dispose of Unit and plant control switchboard			Group	:	D05		
Quantity	:	1.00 EA							
Daily Production	:	0.25 EA per		10					
Work Days	:	4.0		Days	Project #	:	4		
Unit Price	:	\$21,610.85 per EA			Estimator	:	Mihaela Tomulescu	EA per	Total Cost
Total Cost	:	\$21,611			Probable Low Cost Parameter	:	0.275	\$19,450	\$22,219
	Probable High Cost Parameter				:	0.2125	\$24,852	\$28,391	

CREW COSTS										
Description	Active Idle	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Electrician Foreman	Active	1.00	4.0	10	40.00	L	\$51.95	incl. in rate	incl. in rate	\$2,078.12
Electrician	Active	6.00	4.0	10	240.00	L	\$49.75	incl. in rate	incl. in rate	\$11,940.72
Loader, FE Rubber Tire (3.5cy)	Active	1.00	4.0	10	40.00	E	\$64.23	incl. in rate	incl. in rate	\$2,569.20
Equipment Operator (medium)	Active	1.00	4.0	10	40.00	L	\$72.91	incl. in rate	incl. in rate	\$2,916.32
					Labor Hours	320	TOTAL LABOR			\$16,935.16
					Equipment Hours	40	TOTAL EQUIPMENT			\$2,569.20

MATERIAL COSTS						
Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost
Consumables 5% labor (saw blades, drill bits, etc)	1.00	LS	1.000	1.00	\$846.76	\$846.76
						TOTAL MATERIAL
						\$846.76

SUBCONTRACT COSTS					
Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount
Hazardous waste cleanup/pickup/disposal, solid pickup, bulk material, maximum	1.00	ton	1.000	1.00	\$595.00
Hauling to Yreka Transfer 40 Miles	1.00	Load	20 tons per load	\$400.00	\$400.00
					TOTAL SUBCONTRACTS
					\$995.00

SUMMARY OF COSTS									
Labor Cost	\$16,935.16	Labor Burden @	49.7%	\$0.00					\$16,935.16
Material Cost	\$846.76	Material Tax @	7.75%	\$65.62					\$912.38
Equipment Cost	\$2,569.20	Equipment Tax @	7.75%	\$199.11					\$2,768.31
Subcontractors	\$995.00								\$995.00
DIRECT COST SUBTOTALS		\$21,346		\$265				DIRECT COST SUBTOTALS	\$21,611
Additional Pay Item Notes :									

PAY ITEM INFORMATION									
PAY ITEM NUMBER	:	4.060	Project	:	KRRP - Iron Gate				
Description	:	Remove and Dispose of Battery System - assume 60 batteries, charger	Group	:	D05				
Quantity	:	1.00 EA	Project #	:	4	Estimator	:	Mihaela Tomulescu	EA per
Daily Production	:	0.41 EA per	Probable Low Cost Parameter	:					0.45375
Work Days	:	2.4 Days	Probable High Cost Parameter	:					0.350625
Unit Price	:	\$7,115.12 per EA				Total Cost	:	\$6,404	Unit Price Per EA
Total Cost	:	\$7,115						\$8,182	\$9,347.56

CREW COSTS										
Description	Active Idle	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Labor Foreman	Active	1.00	2.4	10	24.00	L	\$53.10	\$0.00		\$1,274.33
Electrician	Active	1.00	2.4	10	24.00	L	\$49.75	\$0.00		\$1,194.07
Equipment Operator (light)	Active	1.00	2.4	10	24.00	L	\$71.39	\$0.00		\$1,713.36
Loader, FE Rubber Tire (3.5cy)	Active	1.00	2.4	10	24.00	E	\$64.23	\$64.23		\$1,541.52
Welder	Active	1.00	2.4	10	24.00	E	\$7.84	\$7.84		\$188.10
Gas Welding Machine	Active	1.00	2.4	10	24.00	E	\$2.88	\$2.88		\$69.05
					Labor Hours	72			TOTAL LABOR	\$4,181.76
					Equipment Hours	72			TOTAL EQUIPMENT	\$1,798.67

MATERIAL COSTS						
Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost
Consumables 5% labor (saw blades, drill bits, etc)	1.00	LS	1.000	1.00	\$209.09	\$209.09
						TOTAL MATERIAL
						\$209.09

SUBCONTRACT COSTS						
Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount	
Hauling to Yreka Transfer 40 Miles	1.00	Load	20 tons per load		\$400.00	\$400.00
Disposal Fee	5.00	Ton			\$74.00	\$370.00
TOTAL SUBCONTRACTS						\$770.00

SUMMARY OF COSTS									
Labor Cost	\$4,181.76	Labor Burden @	49.7%	\$0.00					\$4,181.76
Material Cost	\$209.09	Material Tax @	7.75%	\$16.20					\$225.29
Equipment Cost	\$1,798.67	Equipment Tax @	7.75%	\$139.40					\$1,938.06
Subcontractors	\$770.00								\$770.00
DIRECT COST SUBTOTALS	\$6,960			\$156			DIRECT COST SUBTOTALS		\$7,116
Additional Pay Item Notes :									



#### 4.061 Remove and Dispose of Raceways, Bus, Conduit and Cable

PAY ITEM INFORMATION							
PAY ITEM NUMBER :	4.061		Project :	KRRP - Iron Gate			
Description :	Remove and Dispose of Raceways, Bus, Conduit and Cable		Group :	D05			
Quantity :	1.00 EA						
Daily Production :	0.25 EA per 10 hour shift		Project # :	4			
Work Days :	4.0 Days		Estimator :	Mihaela Tomulescu	EA per	Total Cost	Unit Price Per EA
Unit Price :	\$9,278.52 per EA		Probable Low Cost Parameter	0.275	\$8,351	\$9,540	
Total Cost :	\$9,279		Probable High Cost Parameter	0.2125	\$10,670	\$12,190	

CREW COSTS										
Description	Active Idle	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Electrician Foreman	Active	1.00	4.0	10	40.00	L	\$51.95	incl. in rate	incl. in rate	\$2,078.12
Electrician	Active	2.00	4.0	10	80.00	L	\$49.75	incl. in rate	incl. in rate	\$3,980.24
Laborer	Active	1.00	4.0	10	40.00	L	\$50.38	incl. in rate	incl. in rate	\$2,015.20
Labor Hours					160	TOTAL LABOR				\$8,073.56
Equipment Hours					0	TOTAL EQUIPMENT				\$0.00

MATERIAL COSTS						
Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost
Consumables 5% labor (saw blades, drill bits, etc)	1.00	LS	1.000	1.00	\$403.68	\$403.68
TOTAL MATERIAL						\$403.68

SUBCONTRACT COSTS					
Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount
Hauling to Yreka Transfer 40 Miles	1.00	Load	20 tons per load	\$400.00	\$400.00
Disposal Fee	5.00	Ton		\$74.00	\$370.00
TOTAL SUBCONTRACTS					\$770.00

SUMMARY OF COSTS					
Labor Cost	\$8,073.56	Labor Burden @	49.7%	\$0.00	\$8,073.56
Material Cost	\$403.68	Material Tax @	7.75%	\$31.29	\$434.96
Equipment Cost	\$0.00	Equipment Tax @	7.75%	\$0.00	\$0.00
Subcontractors	\$770.00				\$770.00
DIRECT COST SUBTOTALS		\$9,247		\$31	DIRECT COST SUBTOTALS
Additional Pay Item Notes :		<div>Used 1 Forman, 2 Electrician, 1 Laborer hauling with the loader in the truck.</div>			

#### 4.062 Remove and Dispose of Unit and plant control switchboard

SUMMARY OF COSTS					
Labor Cost	\$1,825.03	Labor Burden @	49.7%	\$0.00	\$1,825.03
Material Cost	\$91.25	Material Tax @	7.75%	\$7.07	\$98.32
Equipment Cost	\$0.00	Equipment Tax @	7.75%	\$0.00	\$0.00
Subcontractors	\$995.00				\$995.00
<b>DIRECT COST SUBTOTALS</b>	<b>\$2,911</b>			<b>\$7</b>	<b>DIRECT COST SUBTOTALS \$2,918</b>
Additional Pay Item Notes :					

PAY ITEM INFORMATION									
PAY ITEM NUMBER	:	4.063			Project	:	KRRP - Iron Gate		
Description	:	Remove and Dispose of Unit and plant control switchboard			Group	:	D05		
Quantity	:	1.00 EA							
Daily Production	:	0.81 EA per		10	hour shift	Project #	:	4	
Work Days	:	1.2 Days			Estimator	:	Mihaela Tomulescu		
Unit Price	:	\$6,566.41 per EA			EA per		Total Cost	Unit Price Per EA	
Total Cost	:	\$6,566			Probable Low Cost Parameter		0.89375	\$5,910	\$6,751
					Probable High Cost Parameter		0.690625	\$7,551	\$8,627

CREW COSTS										
Description	Active Idle	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Electrician Foreman	Active	1.00	1.2	10	12.00	L	\$51.95	incl. in rate	incl. in rate	\$623.44
Electrician	Active	3.00	1.2	10	36.00	L	\$49.75	incl. in rate	incl. in rate	\$1,791.11
Laborer	Active	2.00	1.2	10	24.00	L	\$50.38	incl. in rate	incl. in rate	\$1,209.12
Loader, FE Rubber Tire (3.5cy)	Active	1.00	1.2	10	12.00	E	\$64.23	incl. in rate	incl. in rate	\$770.76
Equipment Operator (medium)	Active	1.00	1.2	10	12.00	L	\$72.91	incl. in rate	incl. in rate	\$874.90
Labor Hours					84	TOTAL LABOR				\$4,498.56
Equipment Hours					12	TOTAL EQUIPMENT				\$770.76

MATERIAL COSTS						
Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost
Consumables 5% labor (saw blades, drill bits, etc)	1.00	LS	1.000	1.00	\$224.93	\$224.93
						TOTAL MATERIAL
						\$224.93

SUBCONTRACT COSTS						
Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount	
Hazardous waste cleanup/pickup/disposal, solid pickup, bulk material, maximum	1.00	ton	1.000	1.00	\$595.00	\$595.00
Hauling to Yreka Transfer 40 Miles	1.00	Load	20 tons per load		\$400.00	\$400.00
						TOTAL SUBCONTRACTS
						\$995.00

SUMMARY OF COSTS						
Labor Cost	\$4,498.56	Labor Burden @	49.7%	\$0.00		\$4,498.56
Material Cost	\$224.93	Material Tax @	7.75%	\$17.43		\$242.36
Equipment Cost	\$770.76	Equipment Tax @	7.75%	\$59.73		\$830.49
Subcontractors	\$995.00					\$995.00
DIRECT COST SUBTOTALS	\$6,489			\$77	DIRECT COST SUBTOTALS	\$6,566
Additional Pay Item Notes :						
Used 1 Forman, 3 Electrician, 2 laborer to haul with the loader in the truck. Assumed containing hazardous waste that will be disposed at 200 miles away from the construction site. In normal circumstances, decontaminated residual components could be accepted at landfill sites but Polychlorinated biphenyl, otherwise known as PCB, is a synthetic chemical that is widely used for industrial and commercial use as dielectric fluid in transformers and capacitors because of its high resistance to decomposition, low electrical conductivity, low flammability and high heat capacity. Transformer repair, reconditioning and retro-filling facilities are the major industry sectors that contributes to the spread of PCB contamination. Types of PCB Wastes: PCB wastes are discarded materials that contain PCB or have been contaminated with PCBs and that are without any commercial, industrial, or economic use. For the purpose of this Code of Practice, PCBs wastes are classified as follows: Liquid PCB wastes o PCB-based dielectric fluids removed from transformers and other equipment o PCB-based heat transfer and hydraulic fluids Metallic solid wastes o PCB equipment such as capacitors, transformers, switchgears, circuit breakers, heat transfer systems, etc. o Contaminated components removed from electrical equipment such as windings; PCB-contaminated containers and equipment such as metal drums, tanks, pumps, metal filters, etc. Calculated 28 miles from Iron Gate Dam to Yreka Transfer Recycling						





PAY ITEM INFORMATION										
PAY ITEM NUMBER	:	4.067			Project	:	KRRP - Iron Gate			
Description	:	Remove and Dispose of Step-up Transformer, outdoor, oil-filled, 3-phase, 18.947 kVA, 6.600/69.000 volt			Group	:	D09			
Quantity	:	1.00	EA							
Daily Production	:	1.00	EA per	10	hour shift	Project #	:	4		
Work Days	:	1.0	Days			Estimator	:	Mihaela Tomulescu	EA per	Total Cost
Unit Price	:	\$37,330.80 per EA			Probable Low Cost Parameter			1.1	\$33,598	\$38,382
Total Cost	:	\$37,331			Probable High Cost Parameter			0.85	\$42,930	\$49,044

CREW COSTS										
Description	Active Idle	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Electrician Foreman	Active	2.00	1.0	10	20.00	L	\$51.95	incl. in rate	incl. in rate	\$1,039.06
Electrician	Active	2.00	1.0	10	20.00	L	\$49.75	incl. in rate	incl. in rate	\$995.06
Laborer	Active	4.00	1.0	10	40.00	L	\$50.38	incl. in rate	incl. in rate	\$2,015.20
Hydraulic Excavator (6.0cy)	Active	1.00	1.0	10	10.00	E	\$322.48	incl. in rate	incl. in rate	\$3,224.80
Truck Driver (heavy)	Active	1.00	1.0	10	10.00	L	\$63.35	incl. in rate	incl. in rate	\$633.49
Truck, Flatbed (4x4, 10,000 gvw)	Active	1.00	1.0	10	10.00	E	\$31.90	incl. in rate	incl. in rate	\$319.00
Crawler Crane (130tn)	Active	2.00	1.0	10	20.00	E	\$258.66	incl. in rate	incl. in rate	\$5,173.20
Truck, Utility, with Man-Basket	Active	2.00	1.0	10	20.00	E	\$31.90	incl. in rate	incl. in rate	\$638.00
Equipment Operator (crane)	Active	2.00	1.0	10	20.00	L	\$75.25	incl. in rate	incl. in rate	\$1,505.02
Equipment Operator (medium)	Active	1.00	1.0	10	10.00	L	\$72.91	incl. in rate	incl. in rate	\$729.08
					Labor Hours	120	TOTAL LABOR			\$6,916.91
					Equipment Hours	60	TOTAL EQUIPMENT			\$9,355.00

MATERIAL COSTS						
Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost
Consumables 5% labor (saw blades, drill bits, etc)	1.00	LS	1.000	1.00	\$345.85	\$345.85
TOTAL MATERIAL						\$345.85

SUBCONTRACT COSTS						
Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount	
Disposal fee	1	EA	1.000	1.00	\$1,000.00	\$1,000.00
Remove oil from oil-filled step-up transformer (allowance for oil containers, filters, etc)	1	EA	1.000	1.00	\$13,000.00	\$13,000.00
Forklift crew, all-terrain forklift, 45' lift, 35' reach, 9000 lb. capacity, weekly use	1	week	1.000	1.00	\$5,961.23	\$5,961.23
TOTAL SUBCONTRACTS						\$19,961.23

SUMMARY OF COSTS							
Labor Cost	\$6,916.91	Labor Burden @	49.7%	\$0.00			\$6,916.91
Material Cost	\$345.85	Material Tax @	7.75%	\$26.80			\$372.65
Equipment Cost	\$9,355.00	Equipment Tax @	7.75%	\$725.01			\$10,080.01
Subcontractors	\$19,961.23						\$19,961.23
DIRECT COST SUBTOTALS		\$36,579			\$752	DIRECT COST SUBTOTALS	\$37,331
Additional Pay Item Notes :							
Weight and dimensions of the transformers have particular importance so transport vehicles must be adequate. A considerable proportion of the weight is due to the oil, so the direct consequence is that the big transformers have to be transported empty. During transport the transformers are filled either by dry air or nitrogen. Because of transportation, the auxiliaries have to be removed . For this reason the collaboration with all the people involved in the project is essential. AECOM best assumption - 2 crew R3 formed of 1 Forman, 1 Electricians, 1 utility man-bucket truck to work on the electrical line, 1 crane for disposal of each transformer in the truck and 2 laborers to remove the auxiliaries and the pad (1 excavator).							

PAY ITEM INFORMATION											
PAY ITEM NUMBER	:	4.068				Project	:	KRRP - Iron Gate			
Description	:	Remove and Dispose of Lattice steel structure, with 69-kV disconnect switches and insulators				Group	:	D05			
	Quantity						:	1.00	EA		
	Daily Production						:	1.25	EA per	10	hour shift
	Work Days						:	0.8 Days			
Unit Price	:	\$7,869.60 per EA				Project #	:	4			
Total Cost	:	\$7,870				Estimator	:	Mihaela Tomulescu	EA per	Total Cost	Unit Price Per EA
	Probable Low Cost Parameter						1.375	\$7,083	\$8,091.20		
	Probable High Cost Parameter						1.0625	\$9,050	\$10,338.76		

CREW COSTS										
Description	Active Idle	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Labor Foreman	Active	1.00	0.8	10	8.00	L	\$53.10	\$0.00		\$424.78
Electrician	Active	1.00	0.8	10	8.00	L	\$49.75	\$0.00		\$398.02
Hydraulic Crane (35tn)	Active	1.00	0.8	10	8.00	E	\$116.30	\$116.30		\$930.40
Equipment Operator (crane)	Active	1.00	0.8	10	8.00	L	\$75.25	\$0.00		\$602.01
Steelworker	Active	2.00	0.8	10	16.00	L	\$72.07	\$0.00		\$1,153.15
Truck, Off-Road, Articulated Rear, 20cy	Active	1.00	0.8	10	8.00	E	\$111.64	\$111.64		\$893.12
Truck Driver (light)	Active	1.00	0.8	10	8.00	L	\$61.92	\$0.00		\$495.35
Laborer	Active	2.00	0.8	10	16.00	L	\$50.38	\$0.00		\$806.08
Gas Welding Machine	Active	1.00	0.8	10	8.00	E	\$2.88	\$2.88		\$23.02
Welder	Active	1.00	0.8	10	8.00	E	\$7.84	\$7.84		\$62.70
					Labor Hours	64	TOTAL LABOR			\$3,879.39
					Equipment Hours	32	TOTAL EQUIPMENT			\$1,909.24

MATERIAL COSTS						
Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost
Consumables 5% labor (saw blades, drill bits, etc)	1.00	LS	1.000	1.00	\$193.97	\$193.97
						TOTAL MATERIAL
						\$193.97

SUBCONTRACT COSTS						
Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount	
Rent aerial lift, articulating boom, to 80' high, 500 lb. capacity, diesel - Rent per day (RS Means 01543340)	1.00	days	1.000	1.00	\$584.00	\$584.00
Hauling to Yreka Transfer 40 Miles	1.00	Load	20 tons per load		\$400.00	\$400.00
Disposal Fee	10.00	Ton			\$74.00	\$740.00
						TOTAL SUBCONTRACTS
						\$1,724.00

SUMMARY OF COSTS						
Labor Cost	\$3,879.39	Labor Burden @	49.7%	\$0.00		\$3,879.39
Material Cost	\$193.97	Material Tax @	7.75%	\$15.03		\$209.00
Equipment Cost	\$1,909.24	Equipment Tax @	7.75%	\$147.97		\$2,057.20
Subcontractors	\$1,724.00					\$1,724.00
DIRECT COST SUBTOTALS		\$7,707	\$163		DIRECT COST SUBTOTALS	
Additional Pay Item Notes :						
Production is based off of RSMs using Crew formed of 1 Foreman, 1 Electrician disconnect switches and insulators, 2 steelworkers to cut in pieces the structure , 2 laborer to help loading and hauling lattice steel members. It will require the use of steel haul trucks; carry all's, boom cranes. the structure will be dismantle on a basis of top to bottom, thus avoiding any form of collapse or toppling over.						

PAY ITEM COST DETAIL WORKSHEET

4.069 Remove and Dispose of Generator Switchgear, outdoor, 7.2kV includes unit breaker (5 sections)

PAY ITEM INFORMATION

PAY ITEM NUMBER	4.069	Project	KRRP - Iron Gate		
Description	Remove and Dispose of Generator Switchgear, outdoor, 7.2kV includes unit breaker (5 sections)	Group	D05		
Quantity	1.00 EA	Project #	4		
Daily Production	0.63 EA per	Estimator	Mihaela Tomulescu		
Work Days	1.6 Days	Probable Low Cost Parameter	0.6875	Total Cost	\$20,460
Unit Price	\$22,733.54 per EA	Probable High Cost Parameter	0.53125	Unit Price Per EA	\$23,373.72
Total Cost	\$22,734				\$29,866.41

CREW COSTS

Description	Active Idle	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Labor Foreman	Active	2.00	1.6	10	32.00	L	\$53.10	\$0.00		\$1,699.10
Electrician	Active	6.00	1.6	10	96.00	L	\$49.75	\$0.00		\$4,776.29
Hydraulic Crane (50tn)	Active	1.00	2.0	10	20.00	E	\$134.32	\$134.32		\$2,686.40
Equipment Operator (crane)	Active	1.00	2.0	10	20.00	L	\$75.25	\$0.00		\$1,505.02
Laborer	Active	4.00	1.6	10	64.00	L	\$50.38	\$0.00		\$3,224.32
Steelworker	Active	2.00	1.6	10	32.00	L	\$72.07	\$0.00		\$2,306.30
Labor Hours					244	TOTAL LABOR				\$13,511.04
Equipment Hours					20	TOTAL EQUIPMENT				\$2,686.40

MATERIAL COSTS

Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost
Consumables 5% labor (saw blades, drill bits, etc)	1.00	LS	1.000	1.00	\$675.55	\$675.55
						TOTAL MATERIAL
						\$675.55

SUBCONTRACT COSTS

Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount
Hazardous waste cleanup/pickup/disposal, solid pickup, bulk material, maximum	6.00	ton	1.000	\$595.00	\$3,570.00
Hazardous waste cleanup/pickup/disposal, transportation to disposal site, truckload = 80 drums or 25 C.Y. or 18 tons, maximum	280.00	mile	1.000	\$7.25	\$2,030.00
					TOTAL SUBCONTRACTS
					\$5,600.00

SUMMARY OF COSTS

Labor Cost	\$13,511.04	Labor Burden @	49.7%	\$0.00	\$13,511.04
Material Cost	\$675.55	Material Tax @	7.75%	\$52.36	\$727.91
Equipment Cost	\$2,686.40	Equipment Tax @	7.75%	\$208.20	\$2,894.60
Subcontractors	\$5,600.00				\$5,600.00
DIRECT COST SUBTOTALS	\$22,473			\$261	DIRECT COST SUBTOTALS
					\$22,734

Additional Pay Item Notes :

Used 2 Crews (2 sections each weight around 2400 LBS per crew) formed of 1 Foreman, 3 Electrician, 2 laborer to haul with the crane in the truck considering one way for each section. Assumed containing hazardous waste that will be disposed (12000 LBS) at 28 miles away from the construction site to Yreka Transfer Recycling .



PAY ITEM INFORMATION									
PAY ITEM NUMBER	:	4.070	Project	:	KRRP - Iron Gate				
Description	:	Remove and Dispose of Single Phase Pole Transformers (25 kVA est.)	Group	:	D05				
Quantity	:	3.00 EA							
Daily Production	:	3.75 EA per	10	hour shift	Project #	:	4		
Work Days	:	0.8	Days		Estimator	:	Mihaela Tomulescu	EA per	Total Cost
Unit Price	:	\$2,254.43	per EA		Probable Low Cost Parameter		4.125	\$6,087	Unit Price Per EA
Total Cost	:	\$6,763			Probable High Cost Parameter		3.1875	\$7,778	\$2,961.77

CREW COSTS										
Description	Active Idle	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Electrician Foreman	Active	3.00	0.8	10	24.00	L	\$51.95	incl. in rate	incl. in rate	\$1,246.87
Electrician	Active	3.00	0.8	10	24.00	L	\$49.75	incl. in rate	incl. in rate	\$1,194.07
Truck, Utility, with Man-Basket	Active	3.00	0.8	10	24.00	E	\$31.90	incl. in rate	incl. in rate	\$765.60
Equipment Operator (crane)	Active	1.00	0.8	10	8.00	L	\$75.25	incl. in rate	incl. in rate	\$602.01
Hydraulic Crane (17tn)	Active	1.00	0.8	10	8.00	E	\$81.52	incl. in rate	incl. in rate	\$652.16
Labor Hours					56	TOTAL LABOR				\$3,042.95
Equipment Hours					32	TOTAL EQUIPMENT				\$1,417.76

MATERIAL COSTS						
Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost
Consumables 5% labor (saw blades, drill bits, etc)	1.00	LS	1.000	1.00	\$152.15	\$152.15
TOTAL MATERIAL						\$152.15

SUBCONTRACT COSTS					
Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount
Hazardous waste cleanup/pickup/disposal, solid pickup, bulk material, maximum	0.25	ton	1.000	0.25	\$595.00
Hauling to Yreka Transfer 40 Miles	1.00	Load	20 tons per load		\$400.00
Disposal Fee	20.00	Ton			\$74.00
TOTAL SUBCONTRACTS					\$2,028.75

SUMMARY OF COSTS					
Labor Cost	\$3,042.95	Labor Burden @	49.7%	\$0.00	\$3,042.95
Material Cost	\$152.15	Material Tax @	7.75%	\$11.79	\$163.94
Equipment Cost	\$1,417.76	Equipment Tax @	7.75%	\$109.88	\$1,527.64
Subcontractors	\$2,028.75				\$2,028.75
DIRECT COST SUBTOTALS	\$6,642			\$122	DIRECT COST SUBTOTALS \$6,763

Additional Pay Item Notes :



4.071 Remove Concrete in Penstock Intake Structure

Details

High Cost Factors				Low Cost Factors			
Bad Weather		0%		No Bad Weather			0%
Gas Price Increase		5%		Gas Price Decrease			5%
Unforeseen Contaminated Mats/ Access Issues		5%		No Unforeseen Contaminated Mats/ Access Issues			5%
Total		10%		Total			10%

Production Per Hour		Overall Production	
Hours	15	8	120.00
		10	150.00

Haul Notes		Excavator Loading Production per shift	
CY	460.00	CY per Hour	35.56
Swell Factor	60%	CY Bucket Size	2.50
Bulk CY	736	Buckets Per Hour	14
Haul Vehicle 60% Capacity (2 tons per CY)	19.2	# of Excavators	1.00
# of Haul Vehicles	1	CY per Hour (2.5 CY Bucket)	35.5555556
Load Time (Includes Spot Time, Maneuver Time, & Loading) (Minutes)		CY Per Hour Ideal Production Per 8 Hour Shift	95
Dump Time (Includes Spot Time, Maneuver Time, & Unloading) Minute:		Efficient Compared to Ideal Production	37%
Haul Speed (Loaded MPH)		Inefficiencies Compared to Ideal Production	63%
Return Speed (Unloaded MPH)	20		
Haul Distance (Miles)	1		
Shift Length (Hours)	10		

Cyce Time		Breaker Production	
Load Time (Load Time Minutes / 60mins)	0.13	Hydraulic Hammer CY per Hour	15
Haul Time (Haul Distance / Haul Speed)	0.14	# of Hammers	3.00
Dump Time (Dump Time Minutes / 60 Mins)	0.05	CY per Hour	35.5555556
Return Time (Haul Distance / Return Speed)	0.06	CY per Hour Back Check	5
Hours Per Cycle	0.38	32CY per HR per 8hr shift (Ideal prod)	32
Efficiency Factor (Night Work, Traffic Restrictions, Coffee Breaks, ECT)	70%	Efficient Compared to Ideal Production	37%
Actual Hours Per Cycle (Hours per Cycle / Efficiency Factor)	0.54	Inefficiencies Compared to Ideal Production	63%
Number of Cycles( Bulk CY/ (Haul Vehicle Cap X # of Haul Vehicles)	38		
Total Number of Haul Hours ( Actual Cycle Hours X Number of Cycles)	20.52		
Loads Per Hour (Number of Cycles / Total Number of Haul Hours)	1.85		
Number of Haul Days	2.052		

Speed Loaded			
Max Weight lbs of loaded 745	164,500.00		
Tons	82		
20lbs/Ton Rolling weight	4		
Rolling Resistance ( 1% for each 20lbs/Ton)	4%		
Average Slope	2%		
Total Resistance	6%		
Max Gear per CAT Chart	4		
Max MPH	8.8		

Speed Empty			
Max Weight lbs of Empty 745	74,100.00		
Tons Empty	37		
20lbs/Ton Rolling weight Empty	2		
Rolling Resistance ( 1% per 20lbs/Ton) Empty	2%		
Average Slope Empty	2%		
Total Resistance Empty	4%		
Max Gear per CAT Chart Empty	N/A		
Max MPH Empty	N/A		

Other Notes

#### 4.072 Remove Concrete in Penstock Encasement

SUMMARY OF COSTS									
Labor Cost	\$25,324.14	Labor Burden @	0.0%	\$0.00	Included in hourly labor rate.			\$25,324.14	
Material Cost	\$1,266.21	Material Tax @	7.75%	\$98.13				\$1,364.34	
Equipment Cost	\$38,143.10	Equipment Tax @	7.75%	\$2,956.09				\$41,099.19	
Subcontractors	\$5,800.00							\$5,800.00	
DIRECT COST SUBTOTALS		\$70,533		\$3,054		DIRECT COST SUBTOTALS		\$73,588	
Additional Pay Item Notes :									

4.072 Remove Concrete in Penstock Encasement  
Details

High Cost Factors		Low Cost Factors	
Bad Weather	0%	No Bad Weather	0%
Gas Price Increase	5%	Gas Price Decrease	5%
Unforeseen Contaminated Mats/ Access Issues	5%	No Unforeseen Contaminated Mats/ Access Issues	5%
Total	10%	Total	10%

Production Per Hour	Hours	Overall Production	
	15	8	120.00
		10	150.00

Haul Notes	Excavator Loading Production per shift		
CY	710.00	CY per Hour	35.56
Swell Factor	60%	CY Bucket Size	2.50
Bulk CY	1136	Buckets Per Hour	14
Haul Vehicle 60% Capacity (2 tons per CY)	19.2	# of Excavators	0.50
# of Haul Vehicles	1	CY per Hour (2.5 CY Bucket)	71.11111111
Load Time (Includes Spot Time, Maneuver Time, & Loading) (Minutes)	8	CY Per Hour Ideal Productio	95
Dump Time (Includes Spot Time, Maneuver Time, & Unloading) Minute	3	Efficient Compared to Ideal I	75%
Haul Speed (Loaded MPH)	9	Inefficiencies Compared to I	25%
Return Speed (Unloaded MPH)	20		
Haul Distance (Miles)	1		
Shift Length (Hours)	10		

Cycle Time	Breaker Production		
Load Time (Load Time Minutes / 60mins)	0.13	Hydraulic Hammer CY per H	15
Haul Time (Haul Distance / Haul Speed)	0.14	# of Hammers	2.00
Dump Time (Dump Time Minutes / 60 Mins)	0.05	CY per Hour	35.55555556
Return Time (Haul Distance / Return Speed)	0.06	CY per Hour Back Check	7.5
Hours Per Cycle	0.38	32CY per HR per 8hr shift (Ic	32
Efficiency Factor (Night Work, Traffic Retrictions, Coffee Breaks, ECT)	70%	Efficient Compared to Ideal I	75%
Actual Hours Per Cycle (Hours per Cycle / Efficiency Factor)	0.54	Inefficiencies Compared to I	25%
Number of Cycles( Bulk CY/ (Haul Vehicle Cap X # of Haul Vehicles)	59		
Total Number of Haul Hours( Actual Cycle Hours X Number of Cycles)	31.86		
Loads Per Hour (Number of Cycles / Total Number of Haul Hours)	1.85		
Number of Haul Days	3.186		

Speed Loaded		
Max Weight lbs of loaded 745	164,500.00	
Tons	82	
20lbs/Ton Rolling weight	4	
Rolling Resistance ( 1% for each 20lbs/Ton)	4%	
Average Slope	2%	
Total Resistance	6%	
Max Gear per CAT Chart	4	
Max MPH	8.8	
Speed Empty		
Max Weight lbs of Empty 745	74,100.00	
Tons Empty	37	
20lbs/Ton Rolling weight Empty	2	
Rolling Resistance ( 1% per 20lbs/Ton) Empty	2%	
Average Slope Empty	2%	
Total Resistance Empty	4%	
Max Gear per CAT Chart Empty	N/A	
Max MPH Empty	N/A	

Other Notes

PAY ITEM COST DETAIL WORKSHEET

4.073 Remove Concrete in 3 Penstock Anchors and 7 Penstock Supports

PAY ITEM INFORMATION									
PAY ITEM NUMBER	:	4.073	Project	:	KRRP - Iron Gate				
Description	:	Remove Concrete in 3 Penstock Anchors and 7 Penstock Supports	Group	:	D07				
Quantity	:	3,110.00 cy	Project #	:	4	Estimator	:	Eric Jones	
Daily Production	:	150.00 cy per	20.7 Days	:	10 hour shift	cy per	:	165	Total Cost
Unit Price	:	\$95.98 per cy	Probable Low Cost Parameter	:	135	\$268,642	:	\$98.68	Unit Price Per cy
Total Cost	:	\$298,491	Probable High Cost Parameter	:	135	\$328,340	:	\$120.61	

CREW COSTS

Description	Active Idle	# In crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Labor Foreman	Active	1.00	20.7	10	207.00	L	\$53.10	incl. in rate	incl. in rate	\$10,991.08
Laborer	Active	3.00	20.7	10	621.00	L	\$50.38	incl. in rate	incl. in rate	\$31,285.98
Equipment Operator (medium)	Active	4.00	20.7	10	828.00	L	\$72.91	incl. in rate	incl. in rate	\$60,367.82
Truck Driver (heavy)	Active	1.00	7.0	10	70.20	L	\$63.35	incl. in rate	incl. in rate	\$4,447.10
Hydraulic Excavator (2.5cy)	Active	1.00	20.7	10	207.00	E	\$203.63	incl. in rate	incl. in rate	\$42,151.41
Hydraulic Excavator (5.0cy)	Active	1.00	20.7	10	207.00	E	\$274.63	incl. in rate	incl. in rate	\$56,848.41
Loader, FE Rubber Tire (3.5cy)	Active	1.00	20.7	10	207.00	E	\$64.23	incl. in rate	incl. in rate	\$13,295.61
Hydraulic Thumbs/Shear Attachment	Active	1.00	20.7	10	207.00	E	\$16.39	incl. in rate	incl. in rate	\$3,392.73
Air Tool, Chipping Hammer	Active	1.00	20.7	10	207.00	E	\$1.64	incl. in rate	incl. in rate	\$339.28
Air Compressor 600 cfm	Active	2.00	20.7	10	414.00	E	\$21.74	incl. in rate	incl. in rate	\$8,999.91
Kobelco SK260LC-10 Ex With CP100 Magnet	Active	1.00	20.7	10	207.00	E	\$89.29	incl. in rate	incl. in rate	\$18,483.03
CAT 745 (32 CY) OFF ROAD TRUCK	Active	1.00	7.0	10	70.20	E	\$174.47	incl. in rate	incl. in rate	\$12,247.79
Labor Hours					1,726	TOTAL LABOR				\$107,091.98
Equipment Hours					1,726	TOTAL EQUIPMENT				\$155,758.18

MATERIAL COSTS

Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost
Consumables (5% labor)	1.00	LS	1.000	1.00	\$5,354.60	\$5,354.60
TOTAL MATERIAL						\$5,354.60

SUBCONTRACT COSTS

Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount
Concrete Saw Cutting	6	EA	Cost per Mob	\$2,500.00	\$15,000.00
Hauling Disposal Cost	7.00	Loads	90lbs per CY	\$400.00	\$2,800.00
TOTAL SUBCONTRACTS					\$17,800.00

SUMMARY OF COSTS

Labor Cost	\$107,091.98	Labor Burden @	0.0%	\$0.00	Included in hourly labor rate.	\$107,091.98
Material Cost	\$5,354.60	Material Tax @	7.75%	\$414.98		\$5,769.58
Equipment Cost	\$155,758.18	Equipment Tax @	7.75%	\$12,071.26		\$167,829.44
Subcontractors	\$17,800.00					\$17,800.00
DIRECT COST SUBTOTALS	\$286,005			\$12,486	DIRECT COST SUBTOTALS	\$298,491

Additional Pay Item Notes :

## 4.073 Remove Concrete in 3 Penstock Anchors and 7 Penstock Supports

## Details

High Cost Factors		Low Cost Factors	
Bad Weather	0%	No Bad Weather	0%
Gas Price Increase	5%	Gas Price Decrease	5%
Unforeseen Contaminated Mats/ Access Issues	5%	No Unforeseen Contaminated Mats/ Access Issues	5%
Total	10%	Total	10%

Production Per Hour	Hours	Overall Production	
	15	8	120.00
		10	150.00

Haul Notes		Excavator Loading Production per shift	
CY	3,110.00	CY per Hour	35.56
Swell Factor	60%	CY Bucket Size	2.50
Bulk CY	4976	Buckets Per Hour	14
Haul Vehicle 60% Capacity (2 tons per CY)	19.2	# of Excavators	1.00
# of Haul Vehicles	2	CY per Hour (2.5 CY Bucket)	35.5555556
Load Time (Includes Spot Time, Maneuver Time, & Loading) (Minutes)	8	CY Per Hour Ideal Production Per 8 Hour Shift	95
Dump Time (Includes Spot Time, Maneuver Time, & Unloading) (Minutes)	3	Efficient Compared to Ideal Production	37%
Haul Speed (Loaded MPH)	9	Inefficiencies Compared to Ideal Production	63%
Return Speed (Unloaded MPH)	20		
Haul Distance (Miles)	1		
Shift Length (Hours)	10		
Cyce Time		Breaker Production	
Load Time (Load Time Minutes / 60mins)	0.13	Hydraulic Hammer CY per Hour	15
Haul Time (Haul Distance / Haul Speed)	0.14	# of Hammers	2.00
Dump Time (Dump Time Minutes / 60 Mins)	0.05	CY per Hour	35.5555556
Return Time (Haul Distance / Return Speed)	0.06	CY per Hour Back Check	7.5
Hours Per Cycle	0.38	32CY per HR per 8hr shift (Ideal prod)	32
Efficiency Factor (Night Work, Traffic Restrictions, Coffee Breaks, ECT)	70%	Efficient Compared to Ideal Production	37%
Actual Hours Per Cycle (Hours per Cycle / Efficiency Factor)	0.54	Inefficiencies Compared to Ideal Production	63%
Number of Cycles( Bulk CY/ (Haul Vehicle Cap X # of Haul Vehicles)	130		
Total Number of Haul Hours ( Actual Cycle Hours X Number of Cycles)	70.2		
Loads Per Hour (Number of Cycles / Total Number of Haul Hours)	1.85		
Number of Haul Days	7.02		
Speed Loaded			
Max Weight lbs of loaded 745	164,500.00		
Tons	82		
20lbs/Ton Rolling weight	4		
Rolling Resistance ( 1% for each 20lbs/Ton)	4%		
Average Slope	2%		
Total Resistance	6%		
Max Gear per CAT Chart	4		
Max MPH	8.8		
Speed Empty	0		
Max Weight lbs of Empty 745	74,100.00		
Tons Empty	37		
20lbs/Ton Rolling weight Empty	2		
Rolling Resistance ( 1% per 20lbs/Ton) Empty	2%		
Average Slope Empty	2%		
Total Resistance Empty	4%		
Max Gear per CAT Chart Empty	N/A		
Max MPH Empty	N/A		

## Other Notes

PAY ITEM INFORMATION									
PAY ITEM NUMBER	:	4.074	Project	:	KRRP - Iron Gate				
Description	:	Remove Steel Footbridge to Intake Structure	Group	:	D10				
Quantity	:	11,000.00 LBS							
Daily Production	:	12,500.00 LBS per	10	hour shift	Project #	:	4		
Work Days	:	0.9 Days			Estimator	:	Mihaela Tomulescu	LBS per	Total Cost
Unit Price	:	\$0.98 per LBS			Probable Low Cost Parameter			14375	\$9,204
Total Cost	:	\$10,829			Probable High Cost Parameter			10625	\$12,453
								Unit Price Per LBS	\$0.96
									\$1.29

CREW COSTS											
Description	Active Idle	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost	
Labor Foreman	Active	1.00	0.9	10	8.80	L	\$53.10	incl. in rate	incl. in rate	\$467.25	
Electrician	Active	1.00	0.9	10	8.80	L	\$49.75	incl. in rate	incl. in rate	\$437.83	
Hydraulic Crane (50tn)	Active	1.00	0.9	10	8.80	E	\$134.32	incl. in rate	incl. in rate	\$1,182.02	
Equipment Operator (crane)	Active	1.00	0.9	10	8.80	L	\$75.25	incl. in rate	incl. in rate	\$662.21	
Vibratory Hammer & Extractor	Active	1.00	0.9	10	8.80	E	\$94.34	incl. in rate	incl. in rate	\$830.19	
Laborer	Active	2.00	0.9	10	17.60	L	\$50.38	incl. in rate	incl. in rate	\$886.69	
Truck Driver (heavy)	Active	2.00	0.9	10	17.60	L	\$63.35	incl. in rate	incl. in rate	\$1,114.94	
Equipment Operator (light)	Active	2.00	0.9	10	17.60	L	\$71.39	incl. in rate	incl. in rate	\$1,256.46	
Steelworker	Active	2.00	0.9	10	17.60	L	\$72.07	incl. in rate	incl. in rate	\$1,268.47	
CAT 745 (32 CY) OFF ROAD TRUCK	Active	1.00	0.9	10	8.80	E	\$174.47	incl. in rate	incl. in rate	\$1,535.34	
					Labor Hours	96.8	TOTAL LABOR				\$6,093.85
					Equipment Hours	26.4	TOTAL EQUIPMENT				\$3,547.54

MATERIAL COSTS						
Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost
Consumables 5% labor (saw blades, drill bits, etc)	1.00	LS	1.000	1.00	\$304.69	\$304.69
						TOTAL MATERIAL
						\$304.69

SUBCONTRACT COSTS					
Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount
Rent aerial lift, articulating boom, to 80' high, 500 lb. capacity, diesel - Rent per day (RS Means 01543340)	1.00	days	1.000	1.00	\$584.00
					TOTAL SUBCONTRACTS
					\$584.00

SUMMARY OF COSTS						
Labor Cost	\$6,093.85	Labor Burden @	49.7%	\$0.00		\$6,093.85
Material Cost	\$304.69	Material Tax @	7.75%	\$23.61		\$328.31
Equipment Cost	\$3,547.54	Equipment Tax @	7.75%	\$274.93		\$3,822.48
Subcontractors	\$584.00					\$584.00
DIRECT COST SUBTOTALS	\$10,530			\$299	DIRECT COST SUBTOTALS	\$10,829

Additional Pay Item Notes :	
The bridge steel grid, excess steel members and similar materials shall be removed from each span prior to removing the main supporting beams, girders or trusses over land. Assumed crew is formed of 1 Forman, 1 Electrician (temporary power for tools), 2 steelworkers to cut steel and 2 Laborers (Load, Haul, help with the crane ropes, etc).	



#### 4.075 Remove Concrete in Intake Structure Footbridge Abutment

PAY ITEM INFORMATION									
PAY ITEM NUMBER	:	4.076	Project	:	KRRP - Iron Gate				
Description	:	Remove and Dispose of Intake Structure	Group	:	D07				
Quantity	:	131,630.00 LBS							
Daily Production	:	31,250.00 LBS per	10	hour shift	Project #	:	4		
Work Days	:	4.2 Days			Estimator	:	Mihaela Tomulescu	LBS per	
Unit Price	:	\$0.87 per LBS			Probable Low Cost Parameter			35937.5	Total Cost
Total Cost	:	\$114,162			Probable High Cost Parameter			26562.5	\$97,037
									Unit Price Per LBS
									\$0.84
									\$1.14

CREW COSTS										
Description	Active Idle	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Barge, Bargeman, Deckhand, Fireman, Oiler	Active	1.00	4.2	10	42.00	L	\$67.06	incl. in rate	incl. in rate	\$2,816.35
Carpenter Foreman (out)	Active	1.00	4.2	10	42.00	L	\$51.04	incl. in rate	incl. in rate	\$2,143.68
Carpenters, Journeyman	Active	6.00	4.2	10	252.00	L	\$71.91	incl. in rate	incl. in rate	\$18,120.56
Hydraulic Excavator (6.0cy)	Active	2.00	4.2	10	84.00	E	\$322.48	incl. in rate	incl. in rate	\$27,088.32
Hydraulic Crane (120tn)	Active	1.00	4.2	10	42.00	E	\$239.06	incl. in rate	incl. in rate	\$10,040.52
Hydraulic Impact Breaker Attachment (5k+ ft-lb)	Active	1.00	4.2	10	42.00	E	\$62.72	incl. in rate	incl. in rate	\$2,634.24
Truck Driver (heavy)	Active	2.00	4.2	10	84.00	L	\$63.35	incl. in rate	incl. in rate	\$5,321.32
Truck, On-Highway Dump (6x4, 12cy)	Active	2.00	4.2	10	84.00	E	\$70.35	incl. in rate	incl. in rate	\$5,909.40
Labor Hours					420	TOTAL LABOR				\$28,401.91
Equipment Hours					252	TOTAL EQUIPMENT				\$45,672.48

MATERIAL COSTS						
Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost
Permeable Floating Turbidity Barrier	600.00	lf	1.000	600.00	\$38.00	\$22,800.00
Floating Marker Buoy	7.00	ea	1.000	7.00	\$32.00	\$224.00
Anchor Systems	13.00	ea	1.000	13.00	\$215.00	\$2,795.00
Tow Bridles	2.00	ea	1.000	2.00	\$50.00	\$100.00
Pile Template	1.00	ls	1.000	1.00	\$8,000.00	\$8,000.00
TOTAL MATERIAL						\$33,919.00

SUBCONTRACT COSTS					
Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount
TOTAL SUBCONTRACTS					\$0.00

SUMMARY OF COSTS									
Labor Cost	\$28,401.91	Labor Burden @	49.7%	\$0.00					\$28,401.91
Material Cost	\$33,919.00	Material Tax @	7.75%	\$2,628.72					\$36,547.72
Equipment Cost	\$45,672.48	Equipment Tax @	7.75%	\$3,539.62					\$49,212.10
Subcontractors	\$0.00								\$0.00
DIRECT COST SUBTOTALS	\$107,993			\$6,168			DIRECT COST SUBTOTALS		\$114,162
Additional Pay Item Notes :									
AECOM best estimate - the crew is formed of 1 Forman, 6 journeyman working with 2 excavators, 1 hydraulic breaker and 1 crane. Using 2 trucks per day for disposal based on daily production.									

## PAY ITEM INFORMATION

PAY ITEM NUMBER	: 4.081	Project	: KRRP - Iron Gate
Description	: Remove and Dispose of Penstock Vent - 46" Dia, 0.25" Thick x 60'	Group	: D03
Quantity	: 7,440.00 LBS		
Daily Production	: 30,300.00 LBS per 10 hour shift	Project #	: 4
Work Days	: 0.2 Days	Estimator	: Mihaela Tomulescu
Unit Price	: \$1.32 per LBS	LBS per	34845
Total Cost	: \$9,834	Probable Low Cost Parameter	\$8,359
		Probable High Cost Parameter	\$11,309
		Unit Price Per LBS	\$1.28
			\$1.74

## CREW COSTS

Description	Active Idle	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Labor Foreman	Active	1.00	0.2	10	2.00	L	\$53.10	incl. in rate	incl. in rate	\$106.19
Laborer	Active	4.00	0.2	10	8.00	L	\$50.38	incl. in rate	incl. in rate	\$403.04
Steelworker	Active	2.00	0.2	10	4.00	L	\$72.07	incl. in rate	incl. in rate	\$288.29
Equipment Operator (crane)	Active	2.00	0.2	10	4.00	L	\$75.25	incl. in rate	incl. in rate	\$301.00
Equipment Operator (medium)	Active	2.00	0.2	10	4.00	L	\$72.91	incl. in rate	incl. in rate	\$291.63
Crawler Crane (90tn)	Active	1.00	0.2	10	2.00	E	\$208.09	incl. in rate	incl. in rate	\$416.18
Crawler Crane (270tn)	Active	1.00	0.2	10	2.00	E	\$399.50	incl. in rate	incl. in rate	\$799.00
Loader, FE Rubber Tire (5.25cy)	Active	1.00	0.2	10	2.00	E	\$75.42	incl. in rate	incl. in rate	\$150.84
Hydraulic Excavator (5.0cy)	Active	1.00	0.2	10	2.00	E	\$274.63	incl. in rate	incl. in rate	\$549.26
Boomlift (JLG 60')	Active	2.00	0.2	10	4.00	E	\$52.87	incl. in rate	incl. in rate	\$211.48
Acetylene Torches	Active	4.00	0.2	10	8.00	E	\$0.47	incl. in rate	incl. in rate	\$3.76
Air Compressor 600 cfm	Active	2.00	0.2	10	4.00	E	\$21.74	incl. in rate	incl. in rate	\$86.96
Generator, Small Generator, 10 - 15 kW	Active	2.00	0.2	10	4.00	E	\$7.04	incl. in rate	incl. in rate	\$28.16
Hepa Vac System	Active	4.00	0.2	10	8.00	E	\$0.47	incl. in rate	incl. in rate	\$3.76
					Labor Hours	22	TOTAL LABOR			\$1,390.16
					Equipment Hours	36	TOTAL EQUIPMENT			\$2,249.40

## MATERIAL COSTS

Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost
torch gas, etc)	1.00	LS	1.000	1.00	\$278.03	\$278.03
HEPA Vac Systems For Grinders	4.00	EA	1.000	4.00	\$1,000.00	\$4,000.00
Handheld Grinders	4.00	EA	1.000	4.00	\$250.00	\$1,000.00
						TOTAL MATERIAL
						\$5,278.03

## SUBCONTRACT COSTS

Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount
Hazardous waste cleanup/pickup/disposal, solid pickup, bulk material, maximum (10% of total)	0.37	ton		\$595.00	\$221.34
Hauling Disposal Cost	0.19	Loads	20 tons a load	\$600.00	\$111.60
					TOTAL SUBCONTRACTS
					\$332.94

## SUMMARY OF COSTS

Labor Cost	\$1,390.16	Labor Burden @	49.7%	\$0.00	\$1,390.16
Material Cost	\$5,278.03	Material Tax @	7.75%	\$409.05	\$5,687.08
Equipment Cost	\$2,249.40	Equipment Tax @	7.75%	\$174.33	\$2,423.73
Subcontractors	\$332.94				\$332.94
DIRECT COST SUBTOTALS	\$9,251			\$583	DIRECT COST SUBTOTALS
					\$9,834

Additional Pay Item Notes :

## PAY ITEM INFORMATION

PAY ITEM NUMBER	: 4.082	Project	: KRRP - Iron Gate
Description	: Remove and Dispose of Penstock - 12' Dia, 0.25" Thick x 698'	Group	: D03
Quantity	: 294,426.00 LBS		
Daily Production	: 30,300.00 LBS per 10 hour shift	Project #	: 4
Work Days	: 9.7 Days	Estimator	: Mihaela Tomulescu
Unit Price	: \$1.04 per LBS	Probable Low Cost Parameter	LBS per Total Cost Unit Price Per LBS
Total Cost	: \$306,205	Probable High Cost Parameter	34845 \$260,274 \$1.01
			25755 \$352,136 \$1.37

## CREW COSTS

Description	Active Idle	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Labor Foreman	Active	1.00	9.7	10	97.00	L	\$53.10	incl. in rate	incl. in rate	\$5,150.41
Laborer	Active	4.00	9.7	10	388.00	L	\$50.38	incl. in rate	incl. in rate	\$19,547.44
Steelworker	Active	2.00	9.7	10	194.00	L	\$72.07	incl. in rate	incl. in rate	\$13,981.97
Equipment Operator (crane)	Active	2.00	9.7	10	194.00	L	\$75.25	incl. in rate	incl. in rate	\$14,598.69
Equipment Operator (medium)	Active	2.00	9.7	10	194.00	L	\$72.91	incl. in rate	incl. in rate	\$14,144.15
Crawler Crane (90tn)	Active	1.00	9.7	10	97.00	E	\$208.09	incl. in rate	incl. in rate	\$20,184.73
Crawler Crane (270tn)	Active	1.00	9.7	10	97.00	E	\$399.50	incl. in rate	incl. in rate	\$38,751.50
Loader, FE Rubber Tire (5.25cy)	Active	1.00	9.7	10	97.00	E	\$75.42	incl. in rate	incl. in rate	\$7,315.74
Hydraulic Excavator (5.0cy)	Active	1.00	9.7	10	97.00	E	\$274.63	incl. in rate	incl. in rate	\$26,639.11
Boomlift (JLG 60')	Active	2.00	9.7	10	194.00	E	\$52.87	incl. in rate	incl. in rate	\$10,256.78
Acetylene Torches	Active	4.00	9.7	10	388.00	E	\$0.47	incl. in rate	incl. in rate	\$182.36
Air Compressor 600 cfm	Active	2.00	9.7	10	194.00	E	\$21.74	incl. in rate	incl. in rate	\$4,217.56
Generator, Small Generator, 10 - 15 kW	Active	2.00	9.7	10	194.00	E	\$7.04	incl. in rate	incl. in rate	\$1,365.76
Hepa Vac System	Active	4.00	9.7	10	388.00	E	\$0.47	incl. in rate	incl. in rate	\$182.36
					Labor Hours	1067			TOTAL LABOR	\$67,422.66
					Equipment Hours	1746			TOTAL EQUIPMENT	\$109,095.90

## MATERIAL COSTS

Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost
torch gas, etc)	1.00	LS	1.000	1.00	\$13,484.53	\$13,484.53
HEPA Vac Systems For Grinders	4.00	EA	1.000	4.00	\$1,000.00	\$4,000.00
Handheld Grinders	4.00	EA	1.000	4.00	\$250.00	\$1,000.00
						TOTAL MATERIAL
						\$18,484.53

## SUBCONTRACT COSTS

Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount
Access Allowance Down slope	1	AL		\$25,000.00	\$25,000.00
Hazardous waste cleanup/pickup/disposal, solid pickup, bulk material, maximum (25% of total)					
	36.80	ton		\$595.00	\$21,898.08
Hauling Disposal Cost	7.36	Loads	20 tons a load	\$600.00	\$4,416.42
Shoring Allowance	1	AL		\$50,000.00	\$50,000.00
					TOTAL SUBCONTRACTS
					\$101,314.50

## SUMMARY OF COSTS

Labor Cost	\$67,422.66	Labor Burden @	49.7%	\$0.00	\$67,422.66
Material Cost	\$18,484.53	Material Tax @	7.75%	\$1,432.55	\$19,917.08
Equipment Cost	\$109,095.90	Equipment Tax @	7.75%	\$8,454.93	\$117,550.83
Subcontractors	\$101,314.50				\$101,314.50
DIRECT COST SUBTOTALS	\$296,318			\$9,887	DIRECT COST SUBTOTALS
					\$306,205

Additional Pay Item Notes :

**4.083 Remove and Dispose of Bypass Outlet - 96" Dia, 0.25" Thick x 50'**

[illegible]

## CREW COSTS

## MATERIAL COSTS

## SUBCONTRACT COSTS

## SUMMARY OF COSTS

PAY ITEM INFORMATION									
PAY ITEM NUMBER	:	4,084	Project	:	KRRP - Iron Gate				
Description	:	Remove and Dispose of Outlet Valve on bypass outlet - 66" Dia.	Group	:	D03				
Quantity	:	18,000.00 LBS							
Daily Production	:	11,250.00 LBS per	10	hour shift	Project #	:	4		
Work Days	:	1.6 Days			Estimator	:	Mihaela Tomulescu	LBS per	Total Cost
Unit Price	:	\$2.22 per LBS			Probable Low Cost Parameter			12937.5	\$33,918
Total Cost	:	\$39,904			Probable High Cost Parameter			9562.5	\$45,890
									Unit Price Per LBS
									\$2.15
									\$2.91

CREW COSTS											
Description	Active	# in	Days	Hours	Total	L/E	Hourly	Hrly oper.	Burden	Labor / Equipment	
	Idle	crew	Worked	/day	Hours		Rate	Cost	Rate	Cost	
Labor Foreman	Active	1.00	1.6	10	16.00	L	\$53.10	incl. in rate	incl. in rate		\$849.55
Laborer	Active	4.00	1.6	10	64.00	L	\$50.38	incl. in rate	incl. in rate		\$3,224.32
Steelworker	Active	2.00	1.6	10	32.00	L	\$72.07	incl. in rate	incl. in rate		\$2,306.30
Equipment Operator (crane)	Active	2.00	1.6	10	32.00	L	\$75.25	incl. in rate	incl. in rate		\$2,408.03
Equipment Operator (medium)	Active	2.00	1.6	10	32.00	L	\$72.91	incl. in rate	incl. in rate		\$2,333.06
Crawler Crane (90tn)	Active	1.00	1.6	10	16.00	E	\$208.09	incl. in rate	incl. in rate		\$3,329.44
Crawler Crane (270tn)	Active	1.00	1.6	10	16.00	E	\$399.50	incl. in rate	incl. in rate		\$6,392.00
Loader, FE Rubber Tire (5.25cy)	Active	1.00	1.6	10	16.00	E	\$75.42	incl. in rate	incl. in rate		\$1,206.72
Hydraulic Excavator (5.0cy)	Active	1.00	1.6	10	16.00	E	\$274.63	incl. in rate	incl. in rate		\$4,394.08
Boomlift (JLG 60')	Active	2.00	1.6	10	32.00	E	\$52.87	incl. in rate	incl. in rate		\$1,691.84
Acetylene Torches	Active	4.00	1.6	10	64.00	E	\$0.47	incl. in rate	incl. in rate		\$30.08
Air Compressor 600 cfm	Active	2.00	1.6	10	32.00	E	\$21.74	incl. in rate	incl. in rate		\$695.68
Generator, Small Generator, 10 - 15 kW	Active	2.00	1.6	10	32.00	E	\$7.04	incl. in rate	incl. in rate		\$225.28
Hepa Vac System	Active	4.00	1.6	10	64.00	E	\$0.47	incl. in rate	incl. in rate		\$30.08
					Labor Hours	176	TOTAL LABOR		\$11,121.26		
					Equipment Hours	288	TOTAL EQUIPMENT		\$17,995.20		

MATERIAL COSTS							
Description	Item	Order	Conversion	Order	Order	Material	
	Quantity	Unit	Factor / Waste	Quantity	Price	Cost	
gas, etc)	1.00	LS	1.000	1.00	\$2,224.25	\$2,224.25	
HEPA Vac Systems For Grinders	4.00	EA	1.000	4.00	\$1,000.00	\$4,000.00	
Handheld Grinders	4.00	EA	1.000	4.00	\$250.00	\$1,000.00	
TOTAL MATERIAL							\$7,224.25

SUBCONTRACT COSTS					
Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount
Hazardous waste cleanup/pickup/disposal, solid pickup, bulk material, maximum (25% of total)	2.25	ton		\$595.00	\$1,338.75
Hauling Disposal Cost	0.45	Loads	20 tons a load	\$600.00	\$270.00
TOTAL SUBCONTRACTS					\$1,608.75

SUMMARY OF COSTS									
Labor Cost	\$11,121.26	Labor Burden @	49.7%	\$0.00					\$11,121.26
Material Cost	\$7,224.25	Material Tax @	7.75%	\$559.88					\$7,784.13
Equipment Cost	\$17,995.20	Equipment Tax @	7.75%	\$1,394.63					\$19,389.83
Subcontractors	\$1,608.75								\$1,608.75
DIRECT COST SUBTOTALS	\$37,949			\$1,955		DIRECT COST SUBTOTALS			\$39,904
Additional Pay Item Notes :									

#### 4.087 Remove and Dispose Power Cable and Conduit

Additional Pay Item Notes :

#### 4.097 Clear and Grub Disposal Area

PAY ITEM NUMBER	:	4.097	Project	:	KRRP - Iron Gate
Description	:	Clear and Grub Disposal Area	Group	:	D11
Quantity	:	29.00 AC			
Daily Production	:	2.00 AC per	10 hour shift	Project #	: 4
Work Days	:	14.5 Days	Estimator	:	Eric Jones
Unit Price	:	\$3,593.19 per AC	Probable Low Cost Parameter	2.3	\$88,572
Total Cost	:	\$104,203	Probable High Cost Parameter	1.7	\$119,833
					\$4,720.59

Description	Active	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Labor Foreman (out)	Active	1.00	14.5	10	145.00	L	\$50.90	incl. in rate	incl. in rate	\$7,380.07
Equipment Operator (medium)	Active	2.00	14.5	10	290.00	L	\$72.91	incl. in rate	incl. in rate	\$21,143.32
Laborer	Active	4.00	14.5	10	580.00	L	\$50.38	incl. in rate	incl. in rate	\$29,220.40
Loader, FE Rubber Tire (5.25cy)	Active	1.00	14.5	10	145.00	E	\$75.42	incl. in rate	incl. in rate	\$10,935.90
0										
0										
0										
0										
0										
0										
Brush Chipper	Active	1.00	14.5	10	145.00	E	\$50.55	incl. in rate	incl. in rate	\$7,329.75
Crawler Loader 3CY Bucket	Active	1.00	14.5	10	145.00	E	\$160.13	incl. in rate	incl. in rate	\$23,218.85
Chain Saw, Gas, 36" Long	Active	2.00	14.5	10	290.00	E	\$5.63	incl. in rate	incl. in rate	\$1,632.70
Labor Hours					1015	TOTAL LABOR				\$57,743.79
Equipment Hours					725	TOTAL EQUIPMENT				\$43,117.20

Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price		Material Cost
<b>TOTAL MATERIAL</b>						<b>\$0.00</b>	

Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount
TOTAL SUBCONTRACTS					\$0.00

Labor Cost	\$57,743.79	Labor Burden @	0.0%			\$57,743.79
Material Cost	\$0.00	Material Tax @	7.75%	\$0.00		\$0.00
Equipment Cost	\$43,117.20	Equipment Tax @	7.75%	\$3,341.58		\$46,458.78
Subcontractors	\$0.00					\$0.00
<b>DIRECT COST SUBTOTALS</b>	<b>\$100,861</b>			<b>\$3,342</b>	<b>DIRECT COST SUBTOTALS</b>	<b>\$104,203</b>

Crew is based off clear and grub crew B7 off of RSM means. Production for the crew in 2 ac per day to clear and process the trees/ shrubs on site. Production was adjust to 2 acres per day, Equipment is B7 off of RSMs no adjustment was made.



PAY ITEM INFORMATION									
PAY ITEM NUMBER	:	4.099	Project	:	KRRP - Iron Gate				
Description	:	Clear and Grub, 40' width for 1 mile - Prepare Haul Road - 1.25 mi	Group	:	#N/A				
Quantity	:	5.00 AC							
Daily Production	:	2.00 AC per	10	hour shift	Project #	:	4		
Work Days	:	2.5	Days		Estimator	:	Mihaela Tomulescu	AC per	Total Cost
Unit Price	:	\$2,479.21	per AC		Probable Low Cost Parameter			2.3	\$10,537
Total Cost	:	\$12,396			Probable High Cost Parameter			1.7	\$14,255
									Unit Price Per AC
									\$2,407
									\$3,257

CREW COSTS										
Description	Active Idle	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Labor Foreman	Active	1.00	2.5	10	25.00	L	\$53.10	incl. in rate	incl. in rate	\$1,327.43
Equipment Operator (medium)	Active	1.00	2.5	10	25.00	L	\$72.91	incl. in rate	incl. in rate	\$1,822.70
Laborer	Active	4.00	2.5	10	100.00	L	\$50.38	incl. in rate	incl. in rate	\$5,038.00
Grader, 180hp, 13' blade	Active	1.00	2.5	10	25.00	E	\$80.79	incl. in rate	incl. in rate	\$2,019.75
Loader, FE Rubber Tire (5.25cy)	Active	1.00	2.5	10	25.00	E	\$75.42	incl. in rate	incl. in rate	\$1,885.50
Labor Hours					150	TOTAL LABOR				\$8,188.13
Equipment Hours					50	TOTAL EQUIPMENT				\$3,905.25

MATERIAL COSTS						
Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost
						TOTAL MATERIAL
						\$0.00

SUBCONTRACT COSTS					
Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount
					TOTAL SUBCONTRACTS
					\$0.00

SUMMARY OF COSTS						
Labor Cost	\$8,188.13	Labor Burden @	49.7%	\$0.00		\$8,188.13
Material Cost	\$0.00	Material Tax @	7.75%	\$0.00		\$0.00
Equipment Cost	\$3,905.25	Equipment Tax @	7.75%	\$302.66		\$4,207.91
Subcontractors	\$0.00					\$0.00
DIRECT COST SUBTOTALS	\$12,093			\$303	DIRECT COST SUBTOTALS	\$12,396
Additional Pay Item Notes :						

#### 4.101 Remove Building No. 2

PAY ITEM NUMBER	:	4.101	Project	:	KRRP - Iron Gate
Description	:	Remove Building No. 2	Group	:	D10
Quantity	:	800.00 SF			
Daily Production	:	1,125.00 SF per		10	hour shift
Work Days	:	0.7	Days		
Unit Price	:	\$14.04 per SF	Project #	:	4
Total Cost	:	\$11,235	Estimator	:	Mihaela Tomulescu
			Probable Low Cost Parameter		SF per 1237.5
			Probable High Cost Parameter		Total Cost \$10,111
					Unit Price Per SF \$14
					\$18

Description	Active Idle	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Labor Foreman	Active	1.00	0.7	10	7.10	L	\$53.10	incl. in rate	incl. in rate	\$376.99
Laborer	Active	4.00	0.7	10	28.40	L	\$50.38	incl. in rate	incl. in rate	\$1,430.79
Equipment Operator (oiler)	Active	2.00	0.7	10	14.20	L	\$69.23	incl. in rate	incl. in rate	\$983.12
Hydraulic Excavator (5.0cy)	Active	1.00	0.7	10	7.10	E	\$274.63	incl. in rate	incl. in rate	\$1,949.87
Loader, FE Rubber Tire (5.25cy)	Active	1.00	0.7	10	7.10	E	\$75.42	incl. in rate	incl. in rate	\$535.48
Labor Hours					49.7	TOTAL LABOR				\$2,790.90
Equipment Hours					14.2	TOTAL EQUIPMENT				\$2,485.36

Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost
						TOTAL MATERIAL
						\$0.00

Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount
Dump Fee Conversion (SFXH*.33/27)	117	CY			
Conversion CY to Tons (2 tons per CY)	59.00	tons	Klamath County Landfill	\$74.00	\$4,366.00
Hauling cost to landfill	7.00	Loads	18 CY per load	\$200.00	\$1,400.00
TOTAL SUBCONTRACTS					\$5,766.00

Labor Cost	\$2,790.90	Labor Burden @	49.7%	\$0.00		\$2,790.90
Material Cost	\$0.00	Material Tax @	7.75%	\$0.00		\$0.00
Equipment Cost	\$2,485.36	Equipment Tax @	7.75%	\$192.62		\$2,677.97
Subcontractors	\$5,766.00					\$5,766.00
<b>DIRECT COST SUBTOTALS</b>	<b>\$11,042</b>			<b>\$193</b>	<b>DIRECT COST SUBTOTALS</b>	<b>\$11,235</b>

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#### 4.102 Remove Building No. 3

[illegible]

Description	Active Idle	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Labor Foreman	Active	1.00	1.0	10	9.70	L	\$53.10	incl. in rate	incl. in rate	\$515.04
Laborer	Active	4.00	1.0	10	38.80	L	\$50.38	incl. in rate	incl. in rate	\$1,954.74
Equipment Operator (oiler)	Active	2.00	1.0	10	19.40	L	\$69.23	incl. in rate	incl. in rate	\$1,343.14
Hydraulic Excavator (5.0cy)	Active	1.00	1.0	10	9.70	E	\$274.63	incl. in rate	incl. in rate	\$2,663.91
Loader, FE Rubber Tire (5.25cy)	Active	1.00	1.0	10	9.70	E	\$75.42	incl. in rate	incl. in rate	\$731.57
Labor Hours					67.9	TOTAL LABOR				\$3,812.92
Equipment Hours					19.4	TOTAL EQUIPMENT				\$3,395.49

[illegible]

Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount
Dump Fee Conversion (SFXH*.33/27)	160	CY			
Conversion CY to Tons (2 tons per CY)	80.00	tons	Klamath County Landfill	\$74.00	\$5,920.00
Hauling cost to landfill	9.00	Loads	18 CY per load	\$200.00	\$1,800.00
TOTAL SUBCONTRACTS					\$7,720.00

Labor Cost	\$3,812.92	Labor Burden @	49.7%	\$0.00		\$3,812.92
Material Cost	\$0.00	Material Tax @	7.75%	\$0.00		\$0.00
Equipment Cost	\$3,395.49	Equipment Tax @	7.75%	\$263.15		\$3,658.64
Subcontractors	\$7,720.00					\$7,720.00
<b>DIRECT COST SUBTOTALS</b>	<b>\$14,928</b>			<b>\$263</b>	<b>DIRECT COST SUBTOTALS</b>	<b>\$15,192</b>

**Additional Pay Item Notes :**

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#### 4.103 Remove Concrete in Fish Ladder

The work is done by **two 6-man crew** (foreman, 4 laborers, and 1 equipment operator). Concrete hauling to disposal site - based on the current production rate, only **5 trips a day** would be necessary. Demolition is done using hydraulic chipping hammers and excavator mounted claw. Allowance for saw cutting sub is included at one mobilization a week. Blasting method is not found to be feasible for this work. A check using RS Means was used: reference 03055110 (\$224/CY, excludes hauling, sawing, and dumping) - Selective concrete demolition, reinforcing more than 2% cross-sectional area.

4.103 Remove Concrete in Fish Ladder  
Details

High Cost Factors			Low Cost Factors		
Bad Weather		0%	No Bad Weather		0%
Gas Price Increase		5%	Gas Price Decrease		5%
Unforeseen Contaminated Mats/ Access Issues		5%	No Unforeseen Contaminated Mats/ Access Issues		5%
Total		10%	Total		10%

Production Per Hour		Hours	Overall Production	
		15	8	120.00
			10	150.00

Haul Notes		Excavator Loading Production per shift	
CY	1,240.00	CY per Hour	35.56
Swell Factor	60%	CY Bucket Size	2.50
Bulk CY	1984	Buckets Per Hour	14
Haul Vehicle 60% Capacity (2 tons per CY)	19.2	# of Excavators	0.50
# of Haul Vehicles	1	CY per Hour (2.5 CY Bucket)	71.11111111
Load Time (Includes Spot Time, Maneuver Time, & Loading) (Minutes)	8	CY Per Hour Ideal Production Per 8 Hour Shift	95
Dump Time (Includes Spot Time, Maneuver Time, & Unloading) Minutes)	3	Efficient Compared to Ideal Production	75%
Haul Speed (Loaded MPH)	9	Inefficiencies Compared to Ideal Production	25%
Return Speed (Unloaded MPH)	20		
Haul Distance (Miles)	1		
Shift Length (Hours)	10		
Cyce Time		Breaker Production	
Load Time (Load Time Minutes / 60mins)	0.13	Hydraulic Hammer CY per Hour	15
Haul Time (Haul Distance / Haul Speed)	0.14	# of Hammers	2.00
Dump Time (Dump Time Minutes / 60 Mins)	0.05	CY per Hour	35.55555556
Return Time (Haul Distance / Return Speed)	0.06	CY per Hour Back Check	7.5
Hours Per Cycle	0.38	32CY per HR per 8hr shift (Ideal prod)	32
Efficiency Factor (Night Work, Traffic Restrictions, Coffee Breaks, ECT)	70%	Efficient Compared to Ideal Production	75%
Actual Hours Per Cycle (Hours per Cycle / Efficiency Factor)	0.54	Inefficiencies Compared to Ideal Production	25%
Number of Cycles( Bulk CY/ (Haul Vehicle Cap X # of Haul Vehicles)	103		
Total Number of Haul Hours ( Actual Cycle Hours X Number of Cycles)	55.62		
Loads Per Hour (Number of Cycles / Total Number of Haul Hours)	1.85		
Number of Haul Days	5.562		
Speed Loaded			
Speed Loaded		-	
Max Weight lbs of loaded 745		164,500	
Tons		82	
20lbs/Ton Rolling weight		411%	
Rolling Resistance ( 1% for each 20lbs/Ton)		4%	
Average Slope		2%	
Total Resistance		0.061125	
Max Gear per CAT Chart		4	
Max MPH			
Speed Empty		-	
Max Weight lbs of Empty 745		74,100	
Tons Empty		37	
20lbs/Ton Rolling weight Empty		185%	
Rolling Resistance ( 1% per 20lbs/Ton) Empty		2%	
Average Slope Empty		2%	
Total Resistance Empty		0.038525	
Max Gear per CAT Chart Empty		N/A	

Other Notes

#### 4.104 Remove Concrete in Holding Ponds #1 thru #6

PAY ITEM NUMBER	:	4.104	Project	:	KRRP - Iron Gate
Description	:	Remove Concrete in Holding Ponds #1 thru #6	Group	:	D07
Quantity	:	1,380.00 CY			
Daily Production	:	150.00 CY per	10	hour shift	
Work Days	:	9.2	Days		
Unit Price	:	\$98.52 per CY	Project #	:	4
Total Cost	:	\$135,964	Estimator	:	Mihaela Tomulescu
			Probable Low Cost Parameter	:	157.5
			Probable High Cost Parameter	:	142.5
			CY per	:	157.5
			Total Cost	:	\$122,367
			Unit Price Per CY	:	\$107
				:	\$156,358
				:	\$118

Description	Active Idle	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Labor Foreman	Active	1.00	9.2	10	92.00	L	\$53.10	incl. in rate	incl. in rate	\$4,884.92
Laborer	Active	3.00	9.2	10	276.00	L	\$50.38	incl. in rate	incl. in rate	\$13,904.88
Equipment Operator (medium)	Active	4.00	9.2	10	368.00	L	\$72.91	incl. in rate	incl. in rate	\$26,830.14
Truck Driver (heavy)	Active	1.00	4.7	10	47.15	L	\$63.35	incl. in rate	incl. in rate	\$2,986.91
Hydraulic Excavator (2.5cy)	Active	1.00	9.2	10	92.00	E	\$203.63	incl. in rate	incl. in rate	\$18,733.96
Hydraulic Excavator (5.0cy)	Active	1.00	9.2	10	92.00	E	\$274.63	incl. in rate	incl. in rate	\$25,265.96
Loader, FE Rubber Tire (3.5cy)	Active	2.00	9.2	10	184.00	E	\$64.23	incl. in rate	incl. in rate	\$11,818.32
Hydraulic Impact Breaker Attachment (5k+ ft-lb)	Active	1.00	9.2	10	92.00	E	\$62.72	incl. in rate	incl. in rate	\$5,770.24
Air Compressor 600 CFM	Active	1.00	9.2	10	92.00	E	\$21.74	incl. in rate	incl. in rate	\$2,000.08
Kobelco SK260LC-10 Ex With CP100 Magnet	Active	1.00	9.2	10	92.00	E	\$89.29	incl. in rate	incl. in rate	\$8,214.68
Air Tool Chipping Hammer	Active	2.00	9.2	10	184.00	E	\$1.64	incl. in rate	incl. in rate	\$301.76
CAT 745 (32 CY) OFF ROAD TRUCK	Active	1.00	4.7	10	47.15	E	\$174.47	incl. in rate	incl. in rate	\$8,226.26
Labor Hours					783.15	TOTAL LABOR				\$48,606.85
Equipment Hours					875.15	TOTAL EQUIPMENT				\$80,331.26

Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost
						TOTAL MATERIAL
						\$0.00

Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount
Hauling Disposal Cost	4.00	Loads	90lbs per CY	\$200.00	\$800.00
TOTAL SUBCONTRACTS					\$800.00

Summary of Costs		Summary of Costs		Summary of Costs	
Labor Cost	\$48,606.85	Labor Burden @	49.7%	\$0.00	\$48,606.85
Material Cost	\$0.00	Material Tax @	7.8%	\$0.00	\$0.00
Equipment Cost	\$80,331.26	Equipment Tax @	7.8%	\$6,225.67	\$86,556.93
Subcontractors	\$800.00				\$800.00
<b>DIRECT COST SUBTOTALS</b>	<b>\$129,738</b>			<b>\$6,226</b>	<b>\$135,964</b>
<b>Additional Pay Item Notes :</b>					

## Details

**Other Notes**  
0

#### 4.105 Remove Concrete in Fish Facility Items

PAY ITEM NUMBER	:	4.105	Project	:	KRRP - Iron Gate
Description	:	Remove Concrete in Fish Facility Items	Group	:	D07
Quantity	:	1,200.00 CY			
Daily Production	:	150.00 CY per	10	hour shift	
Work Days	:	8.0	Days		
Unit Price	:	\$98.44 per CY	Project #	:	4
Total Cost	:	\$118,134	Estimator	:	Mihaela Tomulescu
			Probable Low Cost Parameter	:	157.5
			Probable High Cost Parameter	:	142.5
					Total Cost
					Unit Price Per CY
					\$106,320
					\$135,854
					\$107
					\$118

Description	Active Idle	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Labor Foreman	Active	1.00	8.0	10	80.00	L	\$53.10	incl. in rate	incl. in rate	\$4,247.76
Laborer	Active	3.00	8.0	10	240.00	L	\$50.38	incl. in rate	incl. in rate	\$12,091.20
Equipment Operator (medium)	Active	4.00	8.0	10	320.00	L	\$72.91	incl. in rate	incl. in rate	\$23,330.56
Truck Driver (heavy)	Active	1.00	4.1	10	41.00	L	\$63.35	incl. in rate	incl. in rate	\$2,597.31
Hydraulic Excavator (2.5cy)	Active	1.00	8.0	10	80.00	E	\$203.63	incl. in rate	incl. in rate	\$16,290.40
Hydraulic Excavator (5.0cy)	Active	1.00	8.0	10	80.00	E	\$274.63	incl. in rate	incl. in rate	\$21,970.40
Loader, FE Rubber Tire (3.5cy)	Active	2.00	8.0	10	160.00	E	\$64.23	incl. in rate	incl. in rate	\$10,276.80
Hydraulic Impact Breaker Attachment (5k+ ft-lb)	Active	1.00	8.0	10	80.00	E	\$62.72	incl. in rate	incl. in rate	\$5,017.60
Air Compressor 600 CFM	Active	1.00	8.0	10	80.00	E	\$21.74	incl. in rate	incl. in rate	\$1,739.20
Kobelco SK260LC-10 Ex With CP100 Magnet	Active	1.00	8.0	10	80.00	E	\$89.29	incl. in rate	incl. in rate	\$7,143.20
Air Tool Chipping Hammer	Active	2.00	8.0	10	160.00	E	\$1.64	incl. in rate	incl. in rate	\$262.40
CAT 745 (32 CY) OFF ROAD TRUCK	Active	1.00	4.1	10	41.00	E	\$174.47	incl. in rate	incl. in rate	\$7,153.27
Labor Hours					681	TOTAL LABOR				\$42,266.83
Equipment Hours					761	TOTAL EQUIPMENT				\$69,853.27

Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost
						TOTAL MATERIAL \$0.00

Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount
Hauling Disposal Cost	3.00	Loads	90lbs per CY	\$200.00	\$600.00
TOTAL SUBCONTRACTS					\$600.00

Summary of Costs		Labor Burden		Material Burden		Equipment Burden		Subcontractor Burden	
Labor Cost	\$42,266.83	Labor Burden @	49.7%	\$0.00					\$42,266.83
Material Cost	\$0.00	Material Tax @	7.8%	\$0.00					\$0.00
Equipment Cost	\$69,853.27	Equipment Tax @	7.8%	\$5,413.63					\$75,266.90
Subcontractors	\$600.00								\$600.00
<b>DIRECT COST SUBTOTALS</b>	<b>\$112,720</b>			<b>\$5,414</b>				<b>DIRECT COST SUBTOTALS</b>	<b>\$118,134</b>
Additional Pay Item Notes :									



## 4.105 Remove Concrete in Fish Facility Items

## Details

High Cost Factors		Low Cost Factors	
Bad Weather	5%	No Bad Weather	0%
Gas Price Increase	5%	Gas Price Decrease	5%
Unforeseen Contaminated Mats/ Access Issues	5%	No Unforeseen Contaminated Mats/ Access Issues	5%
<b>Total</b>	<b>15%</b>	<b>Total</b>	<b>10%</b>

Production Per Hour	Hours	Overall Production
	15	8
		10
		120.00
		150.00

Haul Notes		Excavator Loading Production per shift	
CY	1,200.00	CY per Hour	46.83
Swell Factor	60%	CY Bucket Size	2.50
Bulk CY	1920	Buckets Per Hour	19
Haul Vehicle 60% Capacity (2 tons per CY)	19.2	# of Excavators	1.00
# of Haul Vehicles	1	CY per Hour (2.5 CY Bucket)	46.82926829
Load Time (Includes Spot Time, Maneuver Time, & Loading) (Minutes)	8	CY Per Hour Ideal Production Per 8 Hour Shift	95
Dump Time (Includes Spot Time, Maneuver Time, & Unloading) Minutes)	3	Efficient Compared to Ideal Production	49%
Haul Speed (Loaded MPH)	10	Inefficiencies Compared to Ideal Production	51%
Return Speed (Unloaded MPH)	20		
Haul Distance (Miles)	1		
Shift Length (Hours)	10		
Cycle Time		Breaker Production	
Load Time (Load Time Minutes / 60mins)	0.13	Hydraulic Hammer CY per Hour	15
Haul Time (Haul Distance / Haul Speed)	0.13	# of Hammers	1.00
Dump Time (Dump Time Minutes / 60 Mins)	0.05	CY per Hour	46.82926829
Return Time (Haul Distance / Return Speed)	0.06	CY per Hour Back Check	15
Hours Per Cycle	0.37	32CY per HR per 8hr shift (Ideal prod)	32
Efficiency Factor (Night Work, Traffic Restrictions, Coffee Breaks, ECT)	90%	Efficient Compared to Ideal Production	49%
Actual Hours Per Cycle (Hours per Cycle / Efficiency Factor)	0.41	Inefficiencies Compared to Ideal Production	51%
Number of Cycles( Bulk CY/ (Haul Vehicle Cap X # of Haul Vehicles)	100		
Total Number of Haul Hours ( Actual Cycle Hours X Number of Cycles)	41		
Loads Per Hour (Number of Cycles / Total Number of Haul Hours)	2.44		
Number of Haul Days	4.1		
Speed Loaded			
Max Weight lbs of loaded 745	164,500.00		
Tons	82		
20lbs/Ton Rolling weight	4		
Rolling Resistance ( 1% for each 20lbs/Ton)	4%		
Average Slope	2%		
Total Resistance	6%		
Max Gear per CAT Chart	4		
Max MPH	8.8		
Speed Empty			
Max Weight lbs of Empty 745	74,100.00		
Tons Empty	37		
20lbs/Ton Rolling weight Empty	2		
Rolling Resistance ( 1% per 20lbs/Ton) Empty	2%		
Average Slope Empty	2%		
Total Resistance Empty	4%		
Max Gear per CAT Chart Empty N/A			
Max MPH Empty N/A			

## Other Notes

## PAY ITEM INFORMATION

PAY ITEM NUMBER	:	4.106	Project	:	KRRP - Iron Gate
Description	:	Remove Miscellaneous Metalwork in Fish Facilities	Group	:	D10
Quantity	:	12,000.00 LBS			
Daily Production	:	53,750.00 LBS per	10	hour shift	
Work Days	:	0.2 Days	Project #	:	4
Unit Price	:	\$0.70 per LBS	Estimator	:	Mihaela Tomulescu
Total Cost	:	\$8,390	Probable Low Cost Parameter		LBS per 61812.5 Total Cost \$7,132 Unit Price Per LBS \$0.68
			Probable High Cost Parameter		43000 \$10,068 \$0.96

## CREW COSTS

Description	Active Idle	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Labor Foreman	Active	3.00	0.2	10	6.00	L	\$53.10	\$0.00		\$318.58
Steelworker	Active	12.00	0.2	10	24.00	L	\$72.07	\$0.00		\$1,729.73
Crawler Crane (270tn)	Active	2.00	0.2	10	4.00	E	\$399.50	\$446.84		\$1,598.00
Equipment Operator (crane)	Active	2.00	0.2	10	4.00	L	\$75.25	\$0.00		\$301.00
Welder	Active	3.00	0.2	10	6.00	E	\$7.84	\$7.84		\$47.03
Gas Welding Machine	Active	3.00	0.2	10	6.00	E	\$2.88	\$2.88		\$17.26
Electrician	Active	1.00	0.2	10	2.00	L	\$49.75	\$0.00		\$99.51
Carpenters, Journeyman	Active	12.00	0.2	10	24.00	L	\$71.91	\$0.00		\$1,725.77
Hydraulic Impact Breaker Attachment (3k-4k ft-lb)	Active	1.00	0.2	10	2.00	E	\$36.58	\$36.58		\$73.16
Hydraulic Excavator (6.0cy)	Active	1.00	0.2	10	2.00	E	\$322.48	\$322.48		\$644.96
					Labor Hours	60	TOTAL LABOR		\$4,174.59	
					Equipment Hours	20	TOTAL EQUIPMENT		\$2,380.41	

## MATERIAL COSTS

Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost
Consumables 10% labor (saw blades, drill bits, etc)	1.00	LS	1.000	1.00	\$417.46	\$417.46
TOTAL MATERIAL						\$417.46

## SUBCONTRACT COSTS

Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount
Hazardous waste cleanup/pickup/disposal, solid pickup, bulk material, maximum	0.60	ton	1.000	0.60	\$595.00
Hauling to Yreka Transfer 40 Miles	1.00	Load	20 tons per load		\$400.00
Disposal Fee	6.00	Ton			\$74.00
TOTAL SUBCONTRACTS					\$1,201.00

## SUMMARY OF COSTS

Labor Cost	\$4,174.59	Labor Burden @	49.7%	\$0.00	\$4,174.59
Material Cost	\$417.46	Material Tax @	7.75%	\$32.35	\$449.81
Equipment Cost	\$2,380.41	Equipment Tax @	7.75%	\$184.48	\$2,564.89
Subcontractors	\$1,201.00				\$1,201.00
DIRECT COST SUBTOTALS	\$8,173			\$217	DIRECT COST SUBTOTALS \$8,390

## Additional Pay Item Notes :

Assumed the process of removing and disposing of Miscellaneous Metalwork in Fish Facilities (frames, grating, handrails, ladders, mechanical sweeps) is done in around 1/2 day by 3 crew formed of 1 foreman, 4 journeymen, 4 steelworkers. We dispose metal with 1 trucks per day for each crew. Assumed contains paint with heavy metals 10% of the total lbs, 28 miles from Iron Gate to Yreka transfer recycling. Based on the current production rate, only 1 trips a day would be necessary. Demolition is done using one crawler crane, excavator and welding machine.

#### 4.107 Remove Concrete Associated with 30" Dia. water supply line

PAY ITEM NUMBER	:	4.107	Project	:	KRRP - Iron Gate
Description	:	Remove Concrete Associated with 30" Dia. water supply line	Group	:	D03
Quantity	:	80.00 CY			
Daily Production	:	187.50 CY per	10	hour shift	
Work Days	:	0.4	Days		
Unit Price	:	\$68.90 per CY			
Total Cost	:	\$5,512			
			Project #	:	4
			Estimator	:	Mihaela Tomulescu
			Probable Low Cost Parameter		CY per Total Cost Unit Price Per CY
			Probable High Cost Parameter		215.625 \$4,685 \$67
					159.375 \$6,338 \$91

Description	Active Idle	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Labor Foreman	Active	1.00	0.4	10	4.00	L	\$53.10	incl. in rate	incl. in rate	\$212.39
Laborer	Active	3.00	0.4	10	12.00	L	\$50.38	incl. in rate	incl. in rate	\$604.56
Equipment Operator (medium)	Active	3.00	0.4	10	12.00	L	\$72.91	incl. in rate	incl. in rate	\$874.90
Truck Driver (heavy)	Active	1.00	0.4	10	4.00	L	\$63.35	incl. in rate	incl. in rate	\$253.40
Hydraulic Excavator (2.5cy)	Active	1.00	0.4	10	4.00	E	\$203.63	incl. in rate	incl. in rate	\$814.52
Hydraulic Excavator (5.0cy)	Active	1.00	0.4	10	4.00	E	\$274.63	incl. in rate	incl. in rate	\$1,098.52
Loader, FE Rubber Tire (3.5cy)	Active	2.00	0.4	10	8.00	E	\$64.23	incl. in rate	incl. in rate	\$513.84
Hydraulic Impact Breaker Attachment (5k+ ft-lb)	Active	1.00	0.4	10	4.00	E	\$62.72	incl. in rate	incl. in rate	\$250.88
Truck, Off-Road, Articulated Rear, 20cy	Active	1.00	0.4	10	4.00	E	\$111.64	incl. in rate	incl. in rate	\$446.56
					Labor Hours	32	TOTAL LABOR			\$1,945.24
					Equipment Hours	24	TOTAL EQUIPMENT			\$3,124.32

<b>MATERIAL COSTS</b>						
Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost
						TOTAL MATERIAL
						\$0.00

Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount
Hauling Disposal Cost	1.00	Loads	90lbs per CY	\$200.00	\$200.00
TOTAL SUBCONTRACTS					\$200.00

Summary of Costs		Summary of Costs		Summary of Costs	
Labor Cost	\$1,945.24	Labor Burden @	49.7%	\$0.00	\$1,945.24
Material Cost	\$0.00	Material Tax @	7.75%	\$0.00	\$0.00
Equipment Cost	\$3,124.32	Equipment Tax @	7.75%	\$242.13	\$3,366.45
Subcontractors	\$200.00				\$200.00
<b>DIRECT COST SUBTOTALS</b>	<b>\$5,270</b>			<b>\$242</b>	<b>DIRECT COST SUBTOTALS \$5,512</b>
<b>Additional Pay Item Notes :</b>					

#### 4.108 Remove Concrete in Aerator Structure

SUMMARY OF COSTS					
Labor Cost	\$4,834.77	Labor Burden @	49.7%	\$0.00	\$4,834.77
Material Cost	\$0.00	Material Tax @	7.75%	\$0.00	\$0.00
Equipment Cost	\$0.00	Equipment Tax @	7.75%	\$0.00	\$0.00
Subcontractors	\$0.00				\$0.00
DIRECT COST SUBTOTALS		\$4,835		\$0	DIRECT COST SUBTOTALS \$4,835
Additional Pay Item Notes :					
Based on RS.Means - "Selective concrete demolition, reinforcing 1% - 2% of cross-sectional area, break up into small pieces, excludes shoring, bracing, saw or torch cutting, loading, hauling, dumping, 650 CY - work done with crew B9" and "Cycle hauling(wait, load, travel, unload or dump & return) time per cycle, excavated or borrow, loose cubic yards, 15 min load/wait/unload, 12 C.Y. truck, cycle 30 miles, 50 MPH, excludes loading equipment Crew B34B"					

#### 4.111 Remove Asphalt Pavement

PAY ITEM NUMBER	:	4.111	Project	:	KRRP - Iron Gate
Description	:	Remove Asphalt Pavement	Group	:	D11
Quantity	:	3,900.00 SF			
Daily Production	:	1,587.50 SF per	10 hour shift	Project #	: 4
Work Days	:	2.5 Days	Estimator	:	Eric Jones
Unit Price	:	\$5.53 per SF		SF per	1825.625
Total Cost	:	\$21,573	Probable Low Cost Parameter		\$18,337
			Probable High Cost Parameter		\$24,809
					\$5.37
					\$7.27

Description	Active Idle	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Labor Foreman	Active	1.00	2.5	10	25.00	L	\$53.10	incl. in rate	incl. in rate	\$1,327.43
Laborer	Active	2.00	2.5	10	50.00	L	\$50.38	incl. in rate	incl. in rate	\$2,519.00
Equipment Operator (light)	Active	1.00	2.5	10	25.00	L	\$71.39	incl. in rate	incl. in rate	\$1,784.75
Equipment Operator (medium)	Active	1.00	2.5	10	25.00	L	\$72.91	incl. in rate	incl. in rate	\$1,822.70
Hydraulic Excavator (5.0cy)	Active	1.00	2.5	10	25.00	E	\$274.63	incl. in rate	incl. in rate	\$6,865.75
Hydraulic Impact Breaker Attachment (5k+ ft-lb)	Active	1.00	2.5	10	25.00	E	\$62.72	incl. in rate	incl. in rate	\$1,568.00
Loader, FE Rubber Tire (5.25cy)	Active	1.00	2.5	10	25.00	E	\$75.42	incl. in rate	incl. in rate	\$1,885.50
Labor Hours					125	TOTAL LABOR				\$7,453.88
Equipment Hours					75	TOTAL EQUIPMENT				\$10,319.25

Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost
TOTAL MATERIAL						\$0.00

Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount
Asphalt Disposal	150	tons	433SY at 6" thick		
Asphalt Disposal	7.50	Loads	Hauling to Yreka	\$400.00	\$3,000.00
TOTAL SUBCONTRACTS					\$3,000.00

Labor Cost	\$7,453.88	Labor Burden @	0.0%			\$7,453.88
Material Cost	\$0.00	Material Tax @	7.75%	\$0.00		\$0.00
Equipment Cost	\$10,319.25	Equipment Tax @	7.75%	\$799.74		\$11,118.99
Subcontractors	\$3,000.00					\$3,000.00
<b>DIRECT COST SUBTOTALS</b>	<b>\$20,773</b>			<b>\$800</b>	<b>DIRECT COST SUBTOTALS</b>	<b>\$21,573</b>

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## PAY ITEM INFORMATION

PAY ITEM NUMBER	: 4.112	Project	: KRRP - Iron Gate
Description	: Remove Restroom Building near Aerator Structure	Group	: D10
Quantity	: 340.00 SF		
Daily Production	: 1,125.00 SF per 10 hour shift	Project #	: 4
Work Days	: 0.3 Days	Estimator	: Mihaela Tomulescu
Unit Price	: \$14.00 per SF	Probable Low Cost Parameter	SF per 1237.5
Total Cost	: \$4,761	Probable High Cost Parameter	Total Cost \$5,475
			Unit Price Per SF \$18

## CREW COSTS

Description	Active Idle	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Labor Foreman	Active	1.00	0.3	10	3.00	L	\$53.10	incl. in rate	incl. in rate	\$159.29
Laborer	Active	4.00	0.3	10	12.00	L	\$50.38	incl. in rate	incl. in rate	\$604.56
Equipment Operator (oiler)	Active	2.00	0.3	10	6.00	L	\$69.23	incl. in rate	incl. in rate	\$415.40
Hydraulic Excavator (5.0cy)	Active	1.00	0.3	10	3.00	E	\$274.63	incl. in rate	incl. in rate	\$823.89
Loader, FE Rubber Tire (5.25cy)	Active	1.00	0.3	10	3.00	E	\$75.42	incl. in rate	incl. in rate	\$226.26
Labor Hours					21	TOTAL LABOR				\$1,179.26
Equipment Hours					6	TOTAL EQUIPMENT				\$1,050.15

## MATERIAL COSTS

Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost
						TOTAL MATERIAL
						\$0.00

## SUBCONTRACT COSTS

Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount
Dump Fee Conversion (SFXH*.33/27)	50	CY			
Conversion CY to Tons (2 tons per CY)	25.00	tons	Klamath County Landfill	\$74.00	\$1,850.00
Hauling cost to landfill	3.00	Loads	18 CY per load	\$200.00	\$600.00
					TOTAL SUBCONTRACTS
					\$2,450.00

## SUMMARY OF COSTS

Labor Cost	\$1,179.26	Labor Burden @	49.7%	\$0.00	\$1,179.26
Material Cost	\$0.00	Material Tax @	7.75%	\$0.00	\$0.00
Equipment Cost	\$1,050.15	Equipment Tax @	7.75%	\$81.39	\$1,131.54
Subcontractors	\$2,450.00				\$2,450.00
DIRECT COST SUBTOTALS	\$4,679			\$81	DIRECT COST SUBTOTALS
					\$4,761

Additional Pay Item Notes :

#### 4.113 Remove Storage Shed near Aerator Structure

PAY ITEM NUMBER	:	4.113	Project	:	KRRP - Iron Gate
Description	:	Remove Storage Shed near Aerator Structure	Group	:	D10
Quantity	:	90.00 SF			
Daily Production	:	1,125.00 SF per	10	hour shift	
Work Days	:	0.1	Days		
Unit Price	:	\$14.82	per SF		
Total Cost	:	\$1,334			
			Project #	:	4
			Estimator	:	Mihaela Tomulescu
			Probable Low Cost Parameter		1237.5
			Probable High Cost Parameter		956.25
				Total Cost	\$1,201
				Unit Price Per SF	\$15
					\$19

Description	Active Idle	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Labor Foreman	Active	1.00	0.1	10	0.80	L	\$53.10	incl. in rate	incl. in rate	\$42.48
Laborer	Active	4.00	0.1	10	3.20	L	\$50.38	incl. in rate	incl. in rate	\$161.22
Equipment Operator (oiler)	Active	2.00	0.1	10	1.60	L	\$69.23	incl. in rate	incl. in rate	\$110.77
Hydraulic Excavator (5.0cy)	Active	1.00	0.1	10	0.80	E	\$274.63	incl. in rate	incl. in rate	\$219.70
Loader, FE Rubber Tire (5.25cy)	Active	1.00	0.1	10	0.80	E	\$75.42	incl. in rate	incl. in rate	\$60.34
					Labor Hours	5.6	TOTAL LABOR			\$314.47
					Equipment Hours	1.6	TOTAL EQUIPMENT			\$280.04

Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost
						TOTAL MATERIAL \$0.00

Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount
Dump Fee Conversion (SFXH*.33/27)	13	CY			
Conversion CY to Tons (2 tons per CY)	7.00	tons	Klamath County Landfill	\$74.00	\$518.00
Hauling cost to landfill	1.00	Loads	18 CY per load	\$200.00	\$200.00
TOTAL SUBCONTRACTS					\$718.00

Summary of Costs					
Labor Cost	\$314.47	Labor Burden @	49.7%	\$0.00	\$314.47
Material Cost	\$0.00	Material Tax @	7.75%	\$0.00	\$0.00
Equipment Cost	\$280.04	Equipment Tax @	7.75%	\$21.70	\$301.74
Subcontractors	\$718.00				\$718.00
<b>DIRECT COST SUBTOTALS</b>	<b>\$1,313</b>		<b>\$22</b>		<b>\$1,334</b>

The cost of removal can vary based on the area lived in and the typical wages in the region. We assumed that we need 1 Forman, 2 Laborer's and 1 Excavator to load the rubbish in the truck in 1/2 day.

PAY ITEM INFORMATION									
PAY ITEM NUMBER	:	4.114	Project	:	KRRP - Iron Gate				
Description	:	Remove Toe Drain Pipe	Group	:	D10				
Quantity	:	260.00 LF							
Daily Production	:	281.25 LF per	10	hour shift	Project #	:	4		
Work Days	:	0.9 Days			Estimator	:	Mihaela Tomulescu	LF per	Total Cost
Unit Price	:	\$12.53 per LF			Probable Low Cost Parameter			323.4375	\$2,769
Total Cost	:	\$3,257			Probable High Cost Parameter			239.0625	\$3,746
									Unit Price Per LF
									\$12
									\$16

CREW COSTS										
Description	Active Idle	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Labor Foreman (out)	Active	1.00	0.9	10	9.20	L	\$50.90	incl. in rate	incl. in rate	\$468.25
Equipment Operator (medium)	Active	1.00	0.9	10	9.20	L	\$72.91	incl. in rate	incl. in rate	\$670.75
Trencher	Active	2.00	0.9	10	18.40	E	\$4.07	incl. in rate	incl. in rate	\$74.89
Loader, FE Rubber Tire (3.5cy)	Active	1.00	0.9	10	9.20	E	\$64.23	incl. in rate	incl. in rate	\$590.92
Laborer	Active	2.00	0.9	10	18.40	L	\$50.38	incl. in rate	incl. in rate	\$926.99



#### 4.116 Berm Removal

PAY ITEM NUMBER	:	4.116	Project	:	KRRP - Iron Gate
Description	:	Berm Removal	Group	:	D03
Quantity	:	53,000.00	cy		
Daily Production	:	12,800.00	cy per	20	hour shift
Work Days	:	4.1	Days		
Unit Price	:	\$3.71	per cy		
Total Cost	:	\$196,609			
			Project #	:	4
			Estimator	:	Eric Jones
			Probable Low Cost Parameter	:	14080
			Probable High Cost Parameter	:	10240
				cy per	Total Cost
					Unit Price Per cy
					\$3.81
					\$5.09

Description	Active Idle	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Hydraulic Excavator (5.0cy)	Active	1.00	4.1	20	82.00	E	\$274.63	incl. in rate	incl. in rate	\$22,519.66
Loader, FE Rubber Tire (5.25cy)	Active	1.00	4.1	20	82.00	E	\$75.42	incl. in rate	incl. in rate	\$6,184.44
Equipment Operator (medium)	Active	3.00	4.1	20	246.00	L	\$72.91	incl. in rate	incl. in rate	\$17,935.37
Truck Driver (heavy)	Active	7.00	4.1	20	574.00	L	\$63.35	incl. in rate	incl. in rate	\$36,362.33
Laborer	Active	4.00	4.1	20	328.00	L	\$50.38	incl. in rate	incl. in rate	\$16,524.64
Labor Foreman	Active	1.00	4.1	20	82.00	L	\$53.10	incl. in rate	incl. in rate	\$4,353.95
Grader, 180hp, 13' blade	Active	1.00	4.1	20	82.00	E	\$80.79	incl. in rate	incl. in rate	\$6,624.78
CAT 745 (32 CY) OFF ROAD TRUCK	Active	7.00	4.1	20	574.00	E	\$134.79	incl. in rate	incl. in rate	\$77,369.46
Labor Hours					1230	TOTAL LABOR				\$75,176.29
Equipment Hours					820	TOTAL EQUIPMENT				\$112,698.34

Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost
TOTAL MATERIAL						\$0.00

Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount
TOTAL SUBCONTRACTS					\$0.00

Labor Cost	\$75,176.29	Labor Burden @	0.0%	\$0.00		\$75,176.29
Material Cost	\$0.00	Material Tax @	7.75%	\$0.00		\$0.00
Equipment Cost	\$112,698.34	Equipment Tax @	7.75%	\$8,734.12		\$121,432.46
Subcontractors	\$0.00					\$0.00
<b>DIRECT COST SUBTOTALS</b>	<b>\$187,875</b>			<b>\$8,734</b>	<b>DIRECT COST SUBTOTALS</b>	<b>\$196,609</b>
<b>Additional Pay Item Notes :</b>						

4.116 Berm Removal				
Details				
High Cost Factors		Low Cost Factors		
Bad Weather	0%	No Bad Weather		0%
Gas Price Increase	10%	Gas Price Decrease		10%
Unforeseen Contaminated Mats/ Access Issues	10%	No Unforeseen Contaminated Mats/ Access Issues		0%
	20%			10%
Production Per Hour		Efficiency Factor (Access, Activity, Qty, High Rebar Density, Breaks, Etc)		Overall Production
	Hours			
	800	8	80%	5120
		20	80%	12800
Haul Notes		Excavator Loading Production per shift		
CY		53,000.00	CY per Hour	128
Swell Factor		30%	CY Bucket Size	5.00
Bulk CY		68,900.00	Buckets Per Hour	26
Haul Vehicle 85% Capacity (1.3 tons per CY)		27.7	# of Excavators	1.00
# of Haul Vehicles		7	CY per Hour (5 CY Bucket)	128
Load Time (Includes Spot Time, Maneuver Time, & Loading) (Minutes)		10	CY Per Hour Ideal Production Per 8 Hour Shift	160
Dump Time (Includes Spot Time, Maneuver Time, & Unloading) (Minutes)		1.0	Efficient Compared to Ideal Production	80%
Haul Speed (Loaded MPH)		8.0	Inefficiencies Compared to Ideal Production	20%
Return Speed (Unloaded MPH)		30		
Haul Distance (Miles)		1.00		
Shift Length (Hours)		20		
Cycle Time				
Load Time (Load Time Minutes / 60mins)		0.00		
Haul Time (Haul Distance / Haul Speed)		0.11		
Dump Time (Dump Time Minutes / 60 Mins)		0.02		
Return Time (Haul Distance / Return Speed)		0.05		
Hours Per Cycle		0.20		
Efficiency Factor (Night Work, Traffic Restrictions, Coffee Breaks, ECT)		80%		
Actual Hours Per Cycle (Hours per Cycle / Efficiency Factor)		0.25		
Number of Cycles( Bulk CY/ (Haul Vehicle Cap X # of Haul Vehicles)		362		
Total Number of Haul Hours ( Actual Cycle Hours X Number of Cycles)		90.5		
Loads Per Hour (Number of Cycles / Total Number of Haul Hours)		4.00		
Number of Haul Days		4.525		
Speed Loaded				
	Max Weight lbs of loaded 745	164,900.00		
	Tons	82		
	20lbs/Ton Rolling weight	4		
	Rolling Resistance ( 1% for each 20lbs/Ton)	4%		
	Slope Grade	7%		
	Total Resistance	11%		
	Max Gear per CAT Chart	4		
	Max MPH	8.8		
Speed Empty				
	Max Weight lbs of Empty 745	74,100.00		
	Tons Empty	37		
	20lbs/Ton Rolling weight Empty	2		
	Rolling Resistance ( 1% per 20lbs/Ton) Empty	2%		
	Average Slope Empty	7%		
	Total Resistance Empty	-6%		
	Max Gear per CAT Chart Empty	N/A		
	Max MPH Empty	N/A		
Notes Due to weight and Grade Speed Calculation is not applicable				
Other Notes				

**4.118 Remove and Dispose of Pipe Conduit, 30" Dia. x 0.25" Thick x 960'**

SUMMARY OF COSTS					
Labor Cost	\$38,443.09	Labor Burden @	49.7%	\$0.00	\$38,443.09
Material Cost	\$1,247.26	Material Tax @	7.75%	\$96.66	\$1,343.92
Equipment Cost	\$12,472.56	Equipment Tax @	7.75%	\$966.62	\$13,439.18
Subcontractors	\$3,602.08				\$3,602.08
<b>DIRECT COST SUBTOTALS</b>	<b>\$55,765</b>			<b>\$1,063</b>	<b>DIRECT COST SUBTOTALS \$56,828</b>
<b>Additional Pay Item Notes :</b>					

PAY ITEM INFORMATION									
PAY ITEM NUMBER	:	4.122	Project	:	KRRP - Iron Gate				
Description	:	Remove and Dispose of Piping- 30-in. Dia. x 0.25 Thickness x 90'	Group	:	D03				
Quantity	:	7,200.00 LBS							
Daily Production	:	9,000.00 LBS per	10	hour shift	Project #	:	4		
Work Days	:	0.8 Days			Estimator	:	Mihaela Tomulescu	LBS per	Total Cost
Unit Price	:	\$0.36 per LBS			Probable Low Cost Parameter			10350	\$2,194
Total Cost	:	\$2,581			Probable High Cost Parameter			7200	\$3,097
									Unit Price Per LBS
									\$0.35
									\$0.49

CREW COSTS										
Description	Active Idle	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Laborer	Active	2.00	0.8	10	16.00	L	\$50.38	incl. in rate	incl. in rate	\$806.08
Equipment Operator (crane)	Active	1.00	0.8	10	8.00	L	\$75.25	incl. in rate	incl. in rate	\$602.01
Hydraulic Crane (17tn)	Active	1.00	0.8	10	8.00	E	\$81.52	incl. in rate	incl. in rate	\$652.16
					Labor Hours	24	TOTAL LABOR			\$1,408.09
					Equipment Hours	8	TOTAL EQUIPMENT			\$652.16

MATERIAL COSTS						
Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost
Consumables 10% labor (saw blades, drill bits, etc)	1.00	LS	1.000	1.00	\$65.22	\$65.22
						TOTAL MATERIAL
						\$65.22

SUBCONTRACT COSTS					
Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount
Hauling to Yreka Transfer 40 Miles	1.00	Load	20 tons per load	\$400.00	\$400.00
					TOTAL SUBCONTRACTS
					\$400.00

SUMMARY OF COSTS						
Labor Cost	\$1,408.09	Labor Burden @	49.7%	\$0.00		\$1,408.09
Material Cost	\$65.22	Material Tax @	7.75%	\$5.05		\$70.27
Equipment Cost	\$652.16	Equipment Tax @	7.75%	\$50.54		\$702.70
Subcontractors	\$400.00					\$400.00
DIRECT COST SUBTOTALS	\$2,525			\$56	DIRECT COST SUBTOTALS	\$2,581
Additional Pay Item Notes :						
Based on RS Means, Utility removal, pipe, sewer/water, 27" to 36" diameter, remove, excludes excavation & Cycle hauling(wait, load, travel, unload or dump & return) time per cycle, excavated or borrow, loose cubic yards, 15 min load/wait/unload, 12 C.Y. truck, cycle 30 miles, 50 MPH. Using CREW B12Z .						

PAY ITEM INFORMATION									
PAY ITEM NUMBER	:	4.123	Project	:	KRRP - Iron Gate				
Description	:	Remove and Dispose of Piping- 24-in. Dia. x 0.25 Thikness x 248'	Group	:	D03				
Quantity	:	15,872.00 LBS							
Daily Production	:	9,500.00 LBS per	10	hour shift	Project #	:	4		
Work Days	:	1.7 Days			Estimator	:	Mihaela Tomulescu	LBS per	Total Cost
Unit Price	:	\$0.32 per LBS			Probable Low Cost Parameter			10925	\$4,280
Total Cost	:	\$5,035			Probable High Cost Parameter			7600	\$6,042
									Unit Price Per LBS
									\$0.31
									\$0.43

CREW COSTS										
Description	Active Idle	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Laborer	Active	2.00	1.7	10	34.00	L	\$50.38	incl. in rate	incl. in rate	\$1,712.92
Equipment Operator (crane)	Active	1.00	1.7	10	17.00	L	\$75.25	incl. in rate	incl. in rate	\$1,279.27
Hydraulic Crane (17tn)	Active	1.00	1.7	10	17.00	E	\$81.52	incl. in rate	incl. in rate	\$1,385.84
Labor Hours					51	TOTAL LABOR				\$2,992.19
Equipment Hours					17	TOTAL EQUIPMENT				\$1,385.84

MATERIAL COSTS						
Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost
Consumables 10% labor (saw blades, drill bits, etc)	1.00	LS	1.000	1.00	\$138.58	\$138.58
						TOTAL MATERIAL
						\$138.58

SUBCONTRACT COSTS					
Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount
Hauling Disposal to Yreka	1.00	Loads	40 Mile Haul	\$400.00	\$400.00
					TOTAL SUBCONTRACTS
					\$400.00

SUMMARY OF COSTS						
Labor Cost	\$2,992.19	Labor Burden @	49.7%	\$0.00		\$2,992.19
Material Cost	\$138.58	Material Tax @	7.75%	\$10.74		\$149.32
Equipment Cost	\$1,385.84	Equipment Tax @	7.75%	\$107.40		\$1,493.24
Subcontractors	\$400.00					\$400.00
DIRECT COST SUBTOTALS	\$4,917			\$118	DIRECT COST SUBTOTALS	\$5,035
Additional Pay Item Notes :						
Based on RS Means, Utility removal, pipe, sewer/water, 21" to 24" diameter, remove, excludes excavation & Cycle hauling(wait, load, travel, unload or dump & return) time per cycle, excavated or borrow, loose cubic yards, 15 min load/wait/unload, 12 C.Y. truck, cycle 30 miles, 50 MPH. Using CREW B12Z .						

PAY ITEM INFORMATION									
PAY ITEM NUMBER	:	4.124	Project	:	KRRP - Iron Gate				
Description	:	Remove and Dispose of Piping- 20-in. Dia. x 0.25 Thickness x 85'	Group	:	D03				
Quantity	:	4,505.00 LBS							
Daily Production	:	9,500.00 LBS per	10	hour shift	Project #	:	4		
Work Days	:	0.5 Days			Estimator	:	Mihaela Tomulescu	LBS per	Total Cost
Unit Price	:	\$0.39 per LBS			Probable Low Cost Parameter			10925	\$1,499
Total Cost	:	\$1,763			Probable High Cost Parameter			7600	\$2,116
									Unit Price Per LBS
									\$0.38
									\$0.54

CREW COSTS										
Description	Active Idle	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Laborer	Active	2.00	0.5	10	10.00	L	\$50.38	incl. in rate	incl. in rate	\$503.80
Equipment Operator (crane)	Active	1.00	0.5	10	5.00	L	\$75.25	incl. in rate	incl. in rate	\$376.26
Hydraulic Crane (17tn)	Active	1.00	0.5	10	5.00	E	\$81.52	incl. in rate	incl. in rate	\$407.60
					Labor Hours	15			TOTAL LABOR	\$880.06
					Equipment Hours	5			TOTAL EQUIPMENT	\$407.60

MATERIAL COSTS						
Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost
Consumables 10% labor (saw blades, drill bits, etc)	1.00	LS	1.000	1.00	\$40.76	\$40.76
						TOTAL MATERIAL
						\$40.76

SUBCONTRACT COSTS					
Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount
Hauling Disposal to Yreka	1.00	Loads	40 Mile Haul	\$400.00	\$400.00
					TOTAL SUBCONTRACTS
					\$400.00

SUMMARY OF COSTS						
Labor Cost	\$880.06	Labor Burden @	49.7%	\$0.00		\$880.06
Material Cost	\$40.76	Material Tax @	7.75%	\$3.16		\$43.92
Equipment Cost	\$407.60	Equipment Tax @	7.75%	\$31.59		\$439.19
Subcontractors	\$400.00					\$400.00
DIRECT COST SUBTOTALS	\$1,728			\$35	DIRECT COST SUBTOTALS	\$1,763
Additional Pay Item Notes :						

PAY ITEM INFORMATION									
PAY ITEM NUMBER	:	4.125	Project	:	KRRP - Iron Gate				
Description	:	Remove and Dispose of Piping- 18-in. Dia. x 0.25 Thickness x 432'	Group	:	D03				
Quantity	:	29,088.00 LBS							
Daily Production	:	13,750.00 LBS per	10	hour shift	Project #	:	4		
Work Days	:	2.1 Days			Estimator	:	Mihaela Tomulescu	LBS per	Total Cost
Unit Price	:	\$0.37 per LBS			Probable Low Cost Parameter			15812.5	\$9,049
Total Cost	:	\$10,646			Probable High Cost Parameter			11000	\$12,775
									Unit Price Per LBS
									\$0.36
									\$0.50

CREW COSTS										
Description	Active Idle	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Labor Foreman	Active	1.00	2.1	10	21.00	L	\$53.10	incl. in rate	incl. in rate	\$1,115.04
Laborer	Active	3.00	2.1	10	63.00	L	\$50.38	incl. in rate	incl. in rate	\$3,173.94
Steelworker	Active	2.00	2.1	10	42.00	L	\$72.07	incl. in rate	incl. in rate	\$3,027.02
Equipment Operator (medium)	Active	1.00	2.1	10	21.00	L	\$72.91	incl. in rate	incl. in rate	\$1,531.07
Loader, FE Rubber Tire (3.5cy)	Active	1.00	2.1	10	21.00	E	\$64.23	incl. in rate	incl. in rate	\$1,348.83
					Labor Hours	147	TOTAL LABOR			\$8,847.07
					Equipment Hours	21	TOTAL EQUIPMENT			\$1,348.83

MATERIAL COSTS						
Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost
Consumables 10% labor (saw blades, drill bits, etc)	1.00	LS	1.000	1.00	\$134.88	\$134.88
						TOTAL MATERIAL
						\$134.88

SUBCONTRACT COSTS					
Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount
Hauling Disposal Cost	1.00	Loads	20 tons a load	\$200.00	\$200.00
					TOTAL SUBCONTRACTS
					\$200.00

SUMMARY OF COSTS									
Labor Cost	\$8,847.07	Labor Burden @	49.7%	\$0.00					\$8,847.07
Material Cost	\$134.88	Material Tax @	7.75%	\$10.45					\$145.34
Equipment Cost	\$1,348.83	Equipment Tax @	7.75%	\$104.53					\$1,453.36
Subcontractors	\$200.00								\$200.00
DIRECT COST SUBTOTALS	\$10,531			\$115				DIRECT COST SUBTOTALS	\$10,646
Additional Pay Item Notes :									

## PAY ITEM INFORMATION

PAY ITEM NUMBER	: 4.126	Project	: KRRP - Iron Gate
Description	: Remove and Dispose of Piping- 16-in. Dia. x 0.25 Thickness x 166'	Group	: D03
Quantity	: 6,972.00 LBS		
Daily Production	: 9,875.00 LBS per 10 hour shift	Project #	: 4
Work Days	: 0.7 Days	Estimator	: Mihaela Tomulescu
Unit Price	: \$0.37 per LBS	Probable Low Cost Parameter	11356.25
Total Cost	: \$2,566	Probable High Cost Parameter	7900
		LBS per	Total Cost
			Unit Price Per LBS

## CREW COSTS

Description	Active Idle	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Laborer	Active	2.00	0.7	10	14.00	L	\$50.38	incl. in rate	incl. in rate	\$705.32
Equipment Operator (crane)	Active	1.00	0.7	10	7.00	L	\$75.25	incl. in rate	incl. in rate	\$526.76
Hydraulic Crane (17tn)	Active	1.00	0.7	10	7.00	E	\$81.52	incl. in rate	incl. in rate	\$570.64
Labor Hours					21	TOTAL LABOR				\$1,232.08
Equipment Hours					7	TOTAL EQUIPMENT				\$570.64

## MATERIAL COSTS

Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost
Consumables 10% labor (saw blades, drill bits, etc)	1.00	LS	1.000	1.00	\$57.06	\$57.06
						TOTAL MATERIAL
						\$57.06

## SUBCONTRACT COSTS

Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount
Hauling Disposal to Yreka	1.00	Loads	40 Mile Haul	\$400.00	\$400.00
Disposal Fee	3.49	Tons		\$74.00	\$257.96
					\$0.00
					\$0.00
					TOTAL SUBCONTRACTS
					\$657.96

## SUMMARY OF COSTS

Labor Cost	\$1,232.08	Labor Burden @	49.7%	\$0.00	\$1,232.08
Material Cost	\$57.06	Material Tax @	7.75%	\$4.42	\$61.49
Equipment Cost	\$570.64	Equipment Tax @	7.75%	\$44.22	\$614.86
Subcontractors	\$657.96				\$657.96
DIRECT COST SUBTOTALS	\$2,518			\$49	DIRECT COST SUBTOTALS
					\$2,566

## Additional Pay Item Notes :

Based on RS Means, Utility removal, pipe, sewer/water, 15" to 18" diameter, remove, excludes excavation & Cycle hauling(wait, load, travel, unload or dump & return) time per cycle, excavated or borrow, loose cubic yards, 15 min load/wait/unload, 12 C.Y. truck, cycle 30 miles, 50 MPH. Using CREW B12Z .



**4.127 Remove and Dispose of Piping- 12-in. Dia. x 0.25 Thickness x 64'**

SUMMARY OF COSTS					
Labor Cost	\$322.10	Labor Burden @	49.7%	\$0.00	\$322.10
Material Cost	\$14.92	Material Tax @	7.75%	\$1.16	\$16.07
Equipment Cost	\$149.18	Equipment Tax @	7.75%	\$11.56	\$160.74
Subcontractors	\$548.00				\$548.00
<b>DIRECT COST SUBTOTALS</b>	<b>\$1,034</b>		<b>\$13</b>		<b>DIRECT COST SUBTOTALS \$1,047</b>
<b>Additional Pay Item Notes :</b>					
Based on RS Means, Utility removal, pipe, sewer/water, 12" diameter, remove, excludes excavation & Cycle hauling(wait, load, travel, unload or dump & return) time per cycle, excavated or borrow, loose cubic yards, 15 min load/wait/unload, 12 C.Y. truck, cycle 30 miles, 50 MPH. Using CREW B6 .					

PAY ITEM INFORMATION									
PAY ITEM NUMBER	:	4.128			Project	:	KRRP - Iron Gate		
Description	:	Remove and Dispose of Piping- 10-in. Dia. x 0.25 Thickness x 69'			Group	:	D03		
Quantity	:	1,932.00 LBS							
Daily Production	:	12,500.00 LBS per			10	hour shift	Project #	:	4
Work Days	:	0.2 Days					Estimator	:	Mihaela Tomulescu
Unit Price	:	\$0.53 per LBS					Probable Low Cost Parameter		14375
Total Cost	:	\$1,019					Probable High Cost Parameter		10000
									\$866
									\$0.51
									\$0.72

CREW COSTS										
Description	Active Idle	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Laborer	Active	2.00	0.2	10	4.00	L	\$50.38	incl. in rate	incl. in rate	\$201.52
Equipment Operator (crane)	Active	1.00	0.2	10	2.00	L	\$75.25	incl. in rate	incl. in rate	\$150.50
Hydraulic Crane (17tn)	Active	1.00	0.2	10	2.00	E	\$81.52	incl. in rate	incl. in rate	\$163.04
					Labor Hours	6			TOTAL LABOR	\$352.02
					Equipment Hours	2			TOTAL EQUIPMENT	\$163.04

MATERIAL COSTS						
Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost
Consumables 10% labor (saw blades, drill bits, etc)	1.00	LS	1.000	1.00	\$16.30	\$16.30
						TOTAL MATERIAL
						\$16.30

SUBCONTRACT COSTS					
Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount
Hauling to Yreka Transfer 40 Miles	1.00	Load	20 tons per load	\$400.00	\$400.00
Disposal Fee	1.00	Ton		\$74.00	\$74.00
					TOTAL SUBCONTRACTS
					\$474.00

SUMMARY OF COSTS						
Labor Cost	\$352.02	Labor Burden @	49.7%	\$0.00		\$352.02
Material Cost	\$16.30	Material Tax @	7.75%	\$1.26		\$17.57
Equipment Cost	\$163.04	Equipment Tax @	7.75%	\$12.64		\$175.68
Subcontractors	\$474.00					\$474.00
DIRECT COST SUBTOTALS	\$1,005			\$14	DIRECT COST SUBTOTALS	\$1,019
Additional Pay Item Notes :						
Based on RS Means, Utility removal, pipe, sewer/water, 10" diameter, remove, excludes excavation & Cycle hauling(wait, load, travel, unload or dump & return) time per cycle, excavated or borrow, loose cubic yards, 15 min load/wait/unload, 12 C.Y. truck, cycle 30 miles, 50 MPH. Using CREW B6 .						



## PAY ITEM INFORMATION

PAY ITEM NUMBER	: 4.130	Project	: KRRP - Iron Gate
Description	: Remove and Dispose of Piping- 3-in. Dia. x STD x 30'	Group	: D03
Quantity	: 1,088.00 LBS		
Daily Production	: 22,500.00 LBS per 10 hour shift	Project #	: 4
Work Days	: 0.0 Days	Estimator	: Mihaela Tomulescu
Unit Price	: \$0.65 per LBS	Probable Low Cost Parameter	25875 \$600 \$0.63
Total Cost	: \$706	Probable High Cost Parameter	18000 \$847 \$0.89

## CREW COSTS

Description	Active Idle	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Laborer	Active	2.00	0.0	10	0.96	L	\$50.38	incl. in rate	incl. in rate	\$48.36
Equipment Operator (crane)	Active	1.00	0.0	10	0.48	L	\$75.25	incl. in rate	incl. in rate	\$36.12
Crawler Crane (130tn)	Active	1.00	0.0	10	0.48	E	\$258.66	incl. in rate	incl. in rate	\$124.16
					Labor Hours	1.44	TOTAL LABOR			\$84.49
					Equipment Hours	0.48	TOTAL EQUIPMENT			\$124.16

## MATERIAL COSTS

Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost
Consumables 10% labor (saw blades, drill bits, etc)	1.00	LS	1.000	1.00	\$12.42	\$12.42
TOTAL MATERIAL						\$12.42

## SUBCONTRACT COSTS

Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount
Hauling to Yreka Transfer 40 Miles	1.00	Load	20 tons per load	\$400.00	\$400.00
Disposal Fee	1.00	Ton		\$74.00	\$74.00
TOTAL SUBCONTRACTS					\$474.00

## SUMMARY OF COSTS

Labor Cost	\$84.49	Labor Burden @	0.0%	\$0.00	\$84.49
Material Cost	\$12.42	Material Tax @	7.75%	\$0.96	\$13.38
Equipment Cost	\$124.16	Equipment Tax @	7.75%	\$9.62	\$133.78
Subcontractors	\$474.00				\$474.00
DIRECT COST SUBTOTALS	\$695			\$11	DIRECT COST SUBTOTALS \$706

## Additional Pay Item Notes :

Based on RS Means, Utility removal, pipe, sewer/water, 3" diameter, remove, excludes excavation, B12Z Crew is formed of 2 laborers loading 1 truck with the crane for disposal based on daily production.

PAY ITEM INFORMATION									
PAY ITEM NUMBER	:	4.131	Project	:	KRRP - Iron Gate				
Description	:	Remove and Dispose of Gate Valves	Group	:	D03				
Quantity	:	21,792.00 LBS							
Daily Production	:	13,750.00 LBS per	10	hour shift	Project #	:	4		
Work Days	:	1.6 Days			Estimator	:	Mihaela Tomulescu	LBS per	Total Cost
Unit Price	:	\$0.42 per LBS			Probable Low Cost Parameter			15812.5	\$7,838
Total Cost	:	\$9,221			Probable High Cost Parameter			11000	\$11,066
									Unit Price Per LBS
									\$0.41
									\$0.58

CREW COSTS											
Description	Active	# In	Days	Hours	Total	L/E	Hourly	Hrly oper.	Burden	Labor / Equipment	
	Idle	crew	Worked	/day	Hours		Rate	Cost	Rate	Cost	
Labor Foreman	Active	2.00	1.6	10	31.70	L	\$53.10	incl. in rate	incl. in rate		\$1,683.17
Laborer	Active	2.00	1.6	10	31.70	L	\$50.38	incl. in rate	incl. in rate		\$1,597.05
Steelworker	Active	1.00	1.6	10	15.85	L	\$72.07	incl. in rate	incl. in rate		\$1,142.34
Equipment Operator (medium)	Active	1.00	1.6	10	15.85	L	\$72.91	incl. in rate	incl. in rate		\$1,155.59
Loader, FE Rubber Tire (3.5cy)	Active	2.00	1.6	10	31.70	E	\$64.23	incl. in rate	incl. in rate		\$2,036.09
					Labor Hours	95.1					
					Equipment Hours	31.7					
										TOTAL LABOR	\$5,578.15
										TOTAL EQUIPMENT	\$2,036.09

MATERIAL COSTS						
Description	Item	Order	Conversion	Order	Order	Material
	Quantity	Unit	Factor / Waste	Quantity	Price	Cost
Consumables 10% labor (saw blades, drill bits, etc)	1.00	LS	1.000	1.00	\$557.82	\$557.82
						TOTAL MATERIAL
						\$557.82

SUBCONTRACT COSTS					
Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount
Hazardous waste cleanup/pickup/disposal, solid pickup, bulk material, maximum	1.09	ton	1.000	1.09	\$595.00
Hauling Disposal Cost	1.00	Loads	20 tons a load	\$200.00	\$200.00
					TOTAL SUBCONTRACTS
					\$848.31

SUMMARY OF COSTS									
Labor Cost	\$5,578.15	Labor Burden @	0.0%	\$0.00					\$5,578.15
Material Cost	\$557.82	Material Tax @	7.75%	\$43.23					\$601.05
Equipment Cost	\$2,036.09	Equipment Tax @	7.75%	\$157.80					\$2,193.89
Subcontractors	\$848.31								\$848.31
DIRECT COST SUBTOTALS	\$9,020			\$201				DIRECT COST SUBTOTALS	\$9,221

Additional Pay Item Notes :

## PAY ITEM INFORMATION

PAY ITEM NUMBER	: 4.132	Project	: KRRP - Iron Gate
Description	: Remove and Dispose of Basin #1	Group	: D07
Quantity	: 2,880.00 LBS		
Daily Production	: 13,750.00 LBS per 10 hour shift	Project #	: 4
Work Days	: 0.2 Days	Estimator	: Mihaela Tomulescu
Unit Price	: \$0.89 per LBS	Probable Low Cost Parameter	LBS per 15812.5
Total Cost	: \$2,577	Probable High Cost Parameter	Total Cost \$2,190
			Unit Price Per LBS \$0.87
			\$3,092
			\$1.23

## CREW COSTS

Description	Active Idle	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Labor Foreman	Active	1.00	0.2	10	2.00	L	\$53.10	incl. in rate	incl. in rate	\$106.19
Steelworker	Active	2.00	0.2	10	4.00	L	\$72.07	incl. in rate	incl. in rate	\$288.29
Crawler Crane (90tn)	Active	1.00	0.2	10	2.00	E	\$208.09	incl. in rate	incl. in rate	\$416.18
Equipment Operator (crane)	Active	1.00	0.2	10	2.00	L	\$75.25	incl. in rate	incl. in rate	\$150.50
Welder	Active	2.00	0.2	10	4.00	E	\$7.84	incl. in rate	incl. in rate	\$31.35
Gas Welding Machine	Active	2.00	0.2	10	4.00	E	\$2.88	incl. in rate	incl. in rate	\$11.51
Electrician	Active	1.00	0.2	10	2.00	L	\$49.75	incl. in rate	incl. in rate	\$99.51
Carpenters, Journeyman	Active	1.00	0.2	10	2.00	L	\$71.91	incl. in rate	incl. in rate	\$143.81
Truck, Flatbed (4x4, 10,000 gvw)	Active	1.00	0.2	10	2.00	E	\$31.90	incl. in rate	incl. in rate	\$63.80
Truck Driver (heavy)	Active	1.00	0.2	10	2.00	L	\$63.35	incl. in rate	incl. in rate	\$126.70
					Labor Hours	14	TOTAL LABOR			\$915.00
					Equipment Hours	12	TOTAL EQUIPMENT			\$522.84

## MATERIAL COSTS

Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost
Consumables 10% labor (saw blades, drill bits, etc)	1.00	LS	1.000	1.00	\$91.50	\$91.50
TOTAL MATERIAL						\$91.50

## SUBCONTRACT COSTS

Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount
Stop log lifter - Rent per day	1.00	day	1.000	1.00	\$1,000.00
TOTAL SUBCONTRACTS					\$1,000.00

## SUMMARY OF COSTS

Labor Cost	\$915.00	Labor Burden @	0.0%	\$0.00	\$915.00
Material Cost	\$91.50	Material Tax @	7.75%	\$7.09	\$98.59
Equipment Cost	\$522.84	Equipment Tax @	7.75%	\$40.52	\$563.36
Subcontractors	\$1,000.00				\$1,000.00
DIRECT COST SUBTOTALS	\$2,529			\$48	DIRECT COST SUBTOTALS \$2,577

## Additional Pay Item Notes :

Assumed the process of removing and disposing of basin#6 (manually operated 18" slide gate and stop logs) is done in around 1 day by crew formed of foreman, journeymen, steelworkers. We dispose metal with 1 trucks per day for each crew. Assumed contains petroleum products 10% of the total lbs, 28 miles from Iron Gate to Yreka transfer recycling. Based on the current production rate, only 1 trips a day would be necessary.

## PAY ITEM INFORMATION

PAY ITEM NUMBER	: 4.133	Project	: KRRP - Iron Gate
Description	: Remove and Dispose of Basin #2	Group	: D07
Quantity	: 3,660.00 LBS		
Daily Production	: 13,750.00 LBS per 10 hour shift	Project #	: 4
Work Days	: 0.3 Days	Estimator	: Mihaela Tomulescu
Unit Price	: \$0.92 per LBS	Probable Low Cost Parameter	LBS per 15812.5
Total Cost	: \$3,365	Probable High Cost Parameter	Total Cost \$2,861
			Unit Price Per LBS \$0.89
			\$1.26

## CREW COSTS

Description	Active Idle	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Labor Foreman	Active	1.00	0.3	10	3.00	L	\$53.10	incl. in rate	incl. in rate	\$159.29
Steelworker	Active	2.00	0.3	10	6.00	L	\$72.07	incl. in rate	incl. in rate	\$432.43
Crawler Crane (90tn)	Active	1.00	0.3	10	3.00	E	\$208.09	incl. in rate	incl. in rate	\$624.27
Equipment Operator (crane)	Active	1.00	0.3	10	3.00	L	\$75.25	incl. in rate	incl. in rate	\$225.75
Welder	Active	2.00	0.3	10	6.00	E	\$7.84	incl. in rate	incl. in rate	\$47.03
Gas Welding Machine	Active	2.00	0.3	10	6.00	E	\$2.88	incl. in rate	incl. in rate	\$17.26
Electrician	Active	1.00	0.3	10	3.00	L	\$49.75	incl. in rate	incl. in rate	\$149.26
Carpenters, Journeyman	Active	1.00	0.3	10	3.00	L	\$71.91	incl. in rate	incl. in rate	\$215.72
Truck, Flatbed (4x4, 10,000 gvw)	Active	1.00	0.3	10	3.00	E	\$31.90	incl. in rate	incl. in rate	\$95.70
Truck Driver (heavy)	Active	1.00	0.3	10	3.00	L	\$63.35	incl. in rate	incl. in rate	\$190.05
					Labor Hours	21	TOTAL LABOR		\$1,372.50	
					Equipment Hours	18	TOTAL EQUIPMENT		\$784.26	

## MATERIAL COSTS

Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost
Consumables 10% labor (saw blades, drill bits, etc)	1.00	LS	1.000	1.00	\$137.25	\$137.25
TOTAL MATERIAL						\$137.25

## SUBCONTRACT COSTS

Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount
Stop log lifter - Rent per day	1.00	day	1.000	1.00	\$1,000.00
TOTAL SUBCONTRACTS					\$1,000.00

## SUMMARY OF COSTS

Labor Cost	\$1,372.50	Labor Burden @	0.0%	\$0.00	\$1,372.50
Material Cost	\$137.25	Material Tax @	7.75%	\$10.64	\$147.89
Equipment Cost	\$784.26	Equipment Tax @	7.75%	\$60.78	\$845.04
Subcontractors	\$1,000.00				\$1,000.00
DIRECT COST SUBTOTALS	\$3,294			\$71	DIRECT COST SUBTOTALS \$3,365

## Additional Pay Item Notes :

Assumed the process of removing and disposing of basin#6 (manually operated 18" slide gate and stop logs) is done in around 1 day by crew formed of foreman, journeymen, steelworkers. We dispose metal with 1 trucks per day for each crew. Assumed contains petroleum products 10% of the total lbs, 28 miles from Iron Gate to Yreka transfer recycling. Based on the current production rate, only 1 trips a day would be necessary.

## PAY ITEM INFORMATION

PAY ITEM NUMBER	: 4.134	Project	: KRRP - Iron Gate
Description	: Remove and Dispose of Basin #3	Group	: D07
Quantity	: 2,880.00 LBS		
Daily Production	: 3,600.00 LBS per 10 hour shift	Project #	: 4
Work Days	: 0.8 Days	Estimator	: Mihaela Tomulescu
Unit Price	: \$2.39 per LBS	Probable Low Cost Parameter	LBS per 4140 Total Cost \$5,841 Unit Price Per LBS \$2.32
Total Cost	: \$6,871	Probable High Cost Parameter	2880 \$8,246 \$3.27

## CREW COSTS

Description	Active Idle	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Labor Foreman	Active	1.00	0.8	10	8.00	L	\$53.10	incl. in rate	incl. in rate	\$424.78
Steelworker	Active	2.00	0.8	10	16.00	L	\$72.07	incl. in rate	incl. in rate	\$1,153.15
Crawler Crane (90tn)	Active	1.00	0.8	10	8.00	E	\$208.09	incl. in rate	incl. in rate	\$1,664.72
Equipment Operator (crane)	Active	1.00	0.8	10	8.00	L	\$75.25	incl. in rate	incl. in rate	\$602.01
Welder	Active	2.00	0.8	10	16.00	E	\$7.84	incl. in rate	incl. in rate	\$125.40
Gas Welding Machine	Active	2.00	0.8	10	16.00	E	\$2.88	incl. in rate	incl. in rate	\$46.03
Electrician	Active	1.00	0.8	10	8.00	L	\$49.75	incl. in rate	incl. in rate	\$398.02
Carpenters, Journeyman	Active	1.00	0.8	10	8.00	L	\$71.91	incl. in rate	incl. in rate	\$575.26
Labor Hours					48	TOTAL LABOR				\$3,153.22
Equipment Hours					40	TOTAL EQUIPMENT				\$1,836.15

## MATERIAL COSTS

Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost
Consumables 10% labor (saw blades, drill bits, etc)	1.00	LS	1.000	1.00	\$315.32	\$315.32
						TOTAL MATERIAL
						\$315.32

## SUBCONTRACT COSTS

Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount
Stop log lifter - Rent per day	1.00	day	1.000	1.00	\$1,000.00
Hauling to Yreka Transfer 40 Miles	1.00	Load	20 tons per load		\$400.00
					TOTAL SUBCONTRACTS
					\$1,400.00

## SUMMARY OF COSTS

Labor Cost	\$3,153.22	Labor Burden @	0.0%	\$0.00	\$3,153.22
Material Cost	\$315.32	Material Tax @	7.75%	\$24.44	\$339.76
Equipment Cost	\$1,836.15	Equipment Tax @	7.75%	\$142.30	\$1,978.45
Subcontractors	\$1,400.00				\$1,400.00
DIRECT COST SUBTOTALS	\$6,705			\$167	DIRECT COST SUBTOTALS
					\$6,871

## Additional Pay Item Notes :

Assumed the process of removing and disposing of basin#6 (manually operated 18" slide gate and stop logs) is done in around 1 day by crew formed of foreman, journeymen, steelworkers. We dispose metal with 1 trucks per day for each crew. Assumed contains petroleum products 10% of the total lbs, 28 miles from Iron Gate to Yreka transfer recycling. Based on the current production rate, only 1 trips a day would be necessary.



## PAY ITEM INFORMATION

PAY ITEM NUMBER	: 4.135	Project	: KRRP - Iron Gate
Description	: Remove and Dispose of Basin #4	Group	: D07
Quantity	: 3,580.00 LBS		
Daily Production	: 4,475.00 LBS per 10 hour shift	Project #	: 4
Work Days	: 0.8 Days	Estimator	: Mihaela Tomulescu
Unit Price	: \$1.92 per LBS	Probable Low Cost Parameter	LBS per 5146.25
Total Cost	: \$6,871	Probable High Cost Parameter	Total Cost \$5,841
			Unit Price Per LBS \$1.86
			\$2.63

## CREW COSTS

Description	Active Idle	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Labor Foreman	Active	1.00	0.8	10	8.00	L	\$53.10	incl. in rate	incl. in rate	\$424.78
Steelworker	Active	2.00	0.8	10	16.00	L	\$72.07	incl. in rate	incl. in rate	\$1,153.15
Crawler Crane (90tn)	Active	1.00	0.8	10	8.00	E	\$208.09	incl. in rate	incl. in rate	\$1,664.72
Equipment Operator (crane)	Active	1.00	0.8	10	8.00	L	\$75.25	incl. in rate	incl. in rate	\$602.01
Welder	Active	2.00	0.8	10	16.00	E	\$7.84	incl. in rate	incl. in rate	\$125.40
Gas Welding Machine	Active	2.00	0.8	10	16.00	E	\$2.88	incl. in rate	incl. in rate	\$46.03
Electrician	Active	1.00	0.8	10	8.00	L	\$49.75	incl. in rate	incl. in rate	\$398.02
Carpenters, Journeyman	Active	1.00	0.8	10	8.00	L	\$71.91	incl. in rate	incl. in rate	\$575.26
Labor Hours					48	TOTAL LABOR				\$3,153.22
Equipment Hours					40	TOTAL EQUIPMENT				\$1,836.15

## MATERIAL COSTS

Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost
Consumables 10% labor (saw blades, drill bits, etc)	1.00	LS	1.000	1.00	\$315.32	\$315.32
						TOTAL MATERIAL
						\$315.32

## SUBCONTRACT COSTS

Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount
Stop log lifter - Rent per day	1.00	day	1.000	1.00	\$1,000.00
Hauling to Yreka Transfer 40 Miles	1.00	Load	20 tons per load		\$400.00
					TOTAL SUBCONTRACTS
					\$1,400.00

## SUMMARY OF COSTS

Labor Cost	\$3,153.22	Labor Burden @	0.0%	\$0.00	\$3,153.22
Material Cost	\$315.32	Material Tax @	7.75%	\$24.44	\$339.76
Equipment Cost	\$1,836.15	Equipment Tax @	7.75%	\$142.30	\$1,978.45
Subcontractors	\$1,400.00				\$1,400.00
DIRECT COST SUBTOTALS	\$6,705			\$167	DIRECT COST SUBTOTALS
					\$6,871

## Additional Pay Item Notes :

Assumed the process of removing and disposing of basin#6 (manually operated 18" slide gate and stop logs) is done in around 1 day by crew formed of foreman, journeymen, steelworkers. We dispose metal with 1 trucks per day for each crew. Assumed contains petroleum products 10% of the total lbs, 28 miles from Iron Gate to Yreka transfer recycling. Based on the current production rate, only 1 trips a day would be necessary.

## PAY ITEM INFORMATION

PAY ITEM NUMBER	: 4.136	Project	: KRRP - Iron Gate
Description	: Remove and Dispose of Basin #5	Group	: D07
Quantity	: 1,440.00 LBS		
Daily Production	: 1,800.00 LBS per 10 hour shift	Project #	: 4
Work Days	: 0.8 Days	Estimator	: Mihaela Tomulescu
Unit Price	: \$4.77 per LBS	Probable Low Cost Parameter	LBS per 2070
Total Cost	: \$6,871	Probable High Cost Parameter	Total Cost \$5,841
			Unit Price Per LBS \$4.63
			\$6.54

## CREW COSTS

Description	Active Idle	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Labor Foreman	Active	1.00	0.8	10	8.00	L	\$53.10	incl. in rate	incl. in rate	\$424.78
Steelworker	Active	2.00	0.8	10	16.00	L	\$72.07	incl. in rate	incl. in rate	\$1,153.15
Crawler Crane (90tn)	Active	1.00	0.8	10	8.00	E	\$208.09	incl. in rate	incl. in rate	\$1,664.72
Equipment Operator (crane)	Active	1.00	0.8	10	8.00	L	\$75.25	incl. in rate	incl. in rate	\$602.01
Welder	Active	2.00	0.8	10	16.00	E	\$7.84	incl. in rate	incl. in rate	\$125.40
Gas Welding Machine	Active	2.00	0.8	10	16.00	E	\$2.88	incl. in rate	incl. in rate	\$46.03
Electrician	Active	1.00	0.8	10	8.00	L	\$49.75	incl. in rate	incl. in rate	\$398.02
Carpenters, Journeyman	Active	1.00	0.8	10	8.00	L	\$71.91	incl. in rate	incl. in rate	\$575.26
Labor Hours					48	TOTAL LABOR				\$3,153.22
Equipment Hours					40	TOTAL EQUIPMENT				\$1,836.15

## MATERIAL COSTS

Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost
Consumables 10% labor (saw blades, drill bits, etc)	1.00	LS	1.000	1.00	\$315.32	\$315.32
						TOTAL MATERIAL
						\$315.32

## SUBCONTRACT COSTS

Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount
Stop log lifter - Rent per day	1.00	day	1.000	1.00	\$1,000.00
Hauling to Yreka Transfer 40 Miles	1.00	Load	20 tons per load		\$400.00
					TOTAL SUBCONTRACTS
					\$1,400.00

## SUMMARY OF COSTS

Labor Cost	\$3,153.22	Labor Burden @	0.0%	\$0.00	\$3,153.22
Material Cost	\$315.32	Material Tax @	7.75%	\$24.44	\$339.76
Equipment Cost	\$1,836.15	Equipment Tax @	7.75%	\$142.30	\$1,978.45
Subcontractors	\$1,400.00				\$1,400.00
DIRECT COST SUBTOTALS	\$6,705			\$167	DIRECT COST SUBTOTALS
					\$6,871

## Additional Pay Item Notes :

Assumed the process of removing and disposing of basin#6 (manually operated 18" slide gate and stop logs) is done in around 1 day by crew formed of foreman, journeymen, steelworkers. We dispose metal with 1 trucks per day for each crew. Assumed contains petroleum products 10% of the total lbs, 28 miles from Iron Gate to Yreka transfer recycling. Based on the current production rate, only 1 trips a day would be necessary.

PAY ITEM INFORMATION									
PAY ITEM NUMBER	:	4.137	Project	:	KRRP - Iron Gate				
Description	:	Remove and Dispose of Basin #6	Group	:	#N/A				
Quantity	:	1,440.00 LBS							
Daily Production	:	1,800.00 LBS per	10	hour shift	Project #	:	4		
Work Days	:	0.8 Days			Estimator	:	Mihaela Tomulescu	LBS per	Total Cost
Unit Price	:	\$4.77 per LBS			Probable Low Cost Parameter		2070	\$5,841	Unit Price Per LBS
Total Cost	:	\$6,871			Probable High Cost Parameter		1440	\$8,246	\$6.54

CREW COSTS										
Description	Active	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Labor Foreman	Active	1.00	0.8	10	8.00	L	\$53.10	incl. in rate	incl. in rate	\$424.78
Steelworker	Active	2.00	0.8	10	16.00	L	\$72.07	incl. in rate	incl. in rate	\$1,153.15
Crawler Crane (90tn)	Active	1.00	0.8	10	8.00	E	\$208.09	incl. in rate	incl. in rate	\$1,664.72
Equipment Operator (crane)	Active	1.00	0.8	10	8.00	L	\$75.25	incl. in rate	incl. in rate	\$602.01
Welder	Active	2.00	0.8	10	16.00	E	\$7.84	incl. in rate	incl. in rate	\$125.40
Gas Welding Machine	Active	2.00	0.8	10	16.00	E	\$2.88	incl. in rate	incl. in rate	\$46.03
Electrician	Active	1.00	0.8	10	8.00	L	\$49.75	incl. in rate	incl. in rate	\$398.02
Carpenters, Journeyman	Active	1.00	0.8	10	8.00	L	\$71.91	incl. in rate	incl. in rate	\$575.26
					Labor Hours	48			TOTAL LABOR	\$3,153.22
					Equipment Hours	40			TOTAL EQUIPMENT	\$1,836.15

MATERIAL COSTS						
Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost
Consumables 10% labor (saw blades, drill bits, etc)	1.00	LS	1.000	1.00	\$315.32	\$315.32
TOTAL MATERIAL						\$315.32

SUBCONTRACT COSTS					
Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount
Stop log lifter - Rent per day	1.00	day	1.000	1.00	\$1,000.00
Hauling to Yreka Transfer 40 Miles	1.00	Load	20 tons per load		\$400.00
TOTAL SUBCONTRACTS					\$1,400.00

SUMMARY OF COSTS									
Labor Cost	\$3,153.22	Labor Burden @	0.0%	\$0.00					\$3,153.22
Material Cost	\$315.32	Material Tax @	7.75%	\$24.44					\$339.76
Equipment Cost	\$1,836.15	Equipment Tax @	7.75%	\$142.30					\$1,978.45
Subcontractors	\$1,400.00								\$1,400.00
DIRECT COST SUBTOTALS	\$6,705			\$167				DIRECT COST SUBTOTALS	\$6,871

Additional Pay Item Notes :

Assumed the process of removing and disposing of basin#6 (manually operated 18" slide gate and stop logs) is done in around 1 day by crew formed of foreman, journeymen, steelworkers. We dispose metal with 1 trucks per day for each crew. Assumed contains petroleum products 10% of the total lbs, 28 miles from Iron Gate to Yreka transfer recycling. Based on the current production rate, only 1 trips a day would be necessary.

PAY ITEM INFORMATION									
PAY ITEM NUMBER	:	4.138	Project	:	KRRP - Iron Gate				
Description	:	Remove and Dispose of Holding Tank	Group	:	D07				
Quantity	:	7,400.00 LBS							
Daily Production	:	9,250.00 LBS per	10	hour shift	Project #	:	4		
Work Days	:	0.8 Days			Estimator	:	Mihaela Tomulescu	LBS per	Total Cost
Unit Price	:	\$1.25 per LBS			Probable Low Cost Parameter			10637.5	\$7,889
Total Cost	:	\$9,281			Probable High Cost Parameter			7400	\$11,137
								Unit Price Per LBS	\$1.22
									\$1.72

CREW COSTS										
Description	Active Idle	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Labor Foreman	Active	1.00	0.8	10	8.00	L	\$53.10	incl. in rate	incl. in rate	\$424.78
Steelworker	Active	4.00	0.8	10	32.00	L	\$72.07	incl. in rate	incl. in rate	\$2,306.30
Crawler Crane (90tn)	Active	1.00	0.8	10	8.00	E	\$208.09	incl. in rate	incl. in rate	\$1,664.72
Equipment Operator (crane)	Active	1.00	0.8	10	8.00	L	\$75.25	incl. in rate	incl. in rate	\$602.01
Welder	Active	2.00	0.8	10	16.00	E	\$7.84	incl. in rate	incl. in rate	\$125.40
Gas Welding Machine	Active	2.00	0.8	10	16.00	E	\$2.88	incl. in rate	incl. in rate	\$46.03
Electrician	Active	1.00	0.8	10	8.00	L	\$49.75	incl. in rate	incl. in rate	\$398.02
Carpenters, Journeyman	Active	4.00	0.8	10	32.00	L	\$71.91	incl. in rate	incl. in rate	\$2,301.02
Labor Hours					88	TOTAL LABOR				\$6,032.14
Equipment Hours					40	TOTAL EQUIPMENT				\$1,836.15

MATERIAL COSTS						
Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost
Consumables 10% labor (saw blades, drill bits, etc)	1.00	LS	1.000	1.00	\$603.21	\$603.21
						TOTAL MATERIAL
						\$603.21

SUBCONTRACT COSTS					
Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount
Hazardous waste cleanup/pickup/disposal, solid pickup, bulk material, maximum	0.37	ton	1.000	0.37	\$595.00
Hauling to Yreka Transfer 40 Miles	1.00	Load	20 tons per load		\$400.00
					TOTAL SUBCONTRACTS
					\$620.15

SUMMARY OF COSTS									
Labor Cost	\$6,032.14	Labor Burden @	0.0%	\$0.00					\$6,032.14
Material Cost	\$603.21	Material Tax @	7.75%	\$46.75					\$649.96
Equipment Cost	\$1,836.15	Equipment Tax @	7.75%	\$142.30					\$1,978.45
Subcontractors	\$620.15								\$620.15
DIRECT COST SUBTOTALS	\$9,092			\$189				DIRECT COST SUBTOTALS	\$9,281
Additional Pay Item Notes :									
Assumed the process of removing and disposing of holding tank (2 slide gates 42" x 72" with motor and recirculation pumps) is done in around 1 day by crew formed of foreman, journeymen, steelworkers. Assumed contains petroleum products 10% of the total lbs, 28 miles from Iron Gate to Yreka transfer recycling.									

#### 4.14 Wanaka Springs - Concrete Total

[illegible]

CREW COSTS										
Description	Active Idle	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Labor Foreman	Active	2.00	0.2	10	3.00	L	\$53.10	incl. in rate	incl. in rate	\$159.29
Equipment Operator (medium)	Active	8.00	0.2	10	12.00	L	\$72.91	incl. in rate	incl. in rate	\$874.90
Steelworker	Active	6.00	0.2	10	9.00	L	\$72.07	incl. in rate	incl. in rate	\$648.65
Electrician	Active	1.00	0.2	10	1.50	L	\$49.75	incl. in rate	incl. in rate	\$74.63
Vibratory Hammer & Extractor	Active	2.00	0.2	10	3.00	E	\$94.34	incl. in rate	incl. in rate	\$283.02
Hydraulic Excavator (6.0cy)	Active	3.00	0.2	10	4.50	E	\$322.48	incl. in rate	incl. in rate	\$1,451.16
Loader, FE Rubber Tire (8.6cy)	Active	3.00	0.2	10	4.50	E	\$221.50	incl. in rate	incl. in rate	\$996.75
Labor Hours					25.5	TOTAL LABOR				\$1,757.46
Equipment Hours					12	TOTAL EQUIPMENT				\$2,730.90

Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost
						TOTAL MATERIAL
						\$0.00

Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount
Concrete Saw Cutting	1	EA	Cost per Mob	\$2,500.00	\$2,500.00
Hauling to Yreka Transfer 40 Miles	1.00	Load	20 tons per load	\$400.00	\$400.00
Disposal Fee	1.00	Ton		\$74.00	\$74.00
TOTAL SUBCONTRACTS					\$2,974.00

SUMMARY OF COSTS				
Labor Cost	\$1,757.46	Labor Burden @	49.7%	\$0.00
Material Cost	\$0.00	Material Tax @	7.75%	\$0.00
Equipment Cost	\$2,730.93	Equipment Tax @	7.75%	\$211.65
Subcontractors	\$2,974.00			
<b>DIRECT COST SUBTOTALS</b>	<b>\$7,462</b>		<b>\$212</b>	
				<b>\$7,674</b>

Based on RS.Means - "Selective concrete demolition, reinforcing 1% - 2% of cross-sectional area, break up into small pieces, excludes shoring, bracing, saw or torch cutting, loading, hauling, dumping, 650 CY - work done with crew B9" and "Cycle hauling(wait, load, travel, unload or dump & return) time per cycle, excavated or borrow, loose cubic yards, 15 min load/wait/unload, 12 C.Y. truck, cycle 30 miles, 50 MPH, excludes loading equipment Crew B34B".

#### 4.144 Wanaka Springs - Regrade

[illegible]

Description	Active Idle	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Labor Foreman	Active	1.00	2.5	10	25.00	L	\$53.10	incl. in rate	incl. in rate	\$1,327.43
Equipment Operator (medium)	Active	1.00	2.5	10	25.00	L	\$72.91	incl. in rate	incl. in rate	\$1,822.70
Laborer	Active	4.00	2.5	10	100.00	L	\$50.38	incl. in rate	incl. in rate	\$5,038.00
Grader, 180hp, 13' blade	Active	1.00	2.5	10	25.00	E	\$80.79	incl. in rate	incl. in rate	\$2,019.75
Dozer (235hp)(CATD7)	Active	1.00	2.5	10	25.00	E	\$165.11	incl. in rate	incl. in rate	\$4,127.75
Labor Hours					150	TOTAL LABOR				\$8,188.13
Equipment Hours					50	TOTAL EQUIPMENT				\$6,147.50

Description	Item	Order	Conversion	Order	Order	Material
	Quantity	Unit	Factor / Waste	Quantity	Price	Cost
TOTAL MATERIAL						\$0.00

Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount
TOTAL SUBCONTRACTS					\$0.00

Labor Cost	\$8,188.13	Labor Burden @	49.7%	\$0.00		\$8,188.13
Material Cost	\$0.00	Material Tax @	7.75%	\$0.00		\$0.00
Equipment Cost	\$6,147.50	Equipment Tax @	7.75%	\$476.43		\$6,623.93
Subcontractors	\$0.00					\$0.00
<b>DIRECT COST SUBTOTALS</b>	<b>\$14,336</b>			<b>\$476</b>	<b>DIRECT COST SUBTOTALS</b>	<b>\$14,812</b>

Crew is based off clear and grub crew B7 off of RSM means. Production for the crew in .69 ac per day to clear and process the trees/ shrubs on site. Assumed Seeding, mechanical seeding, 215 lb/acre with crew B66. The amount and type of seed are calculated as 215 lbs per acre in total.

#### 4.147 Juniper Point - Concrete Total

PAY ITEM NUMBER	:	4.147	Project	:	KRRP - Iron Gate
Description	:	Juniper Point - Concrete Total	Group	:	D16
Quantity	:	19.00 CY			
Daily Production	:	75.00 CY per	10	hour shift	
Work Days	:	0.3	Days		
Unit Price	:	\$297.08	per CY		
Total Cost	:	\$5,644			
			Project #	:	4
			Estimator	:	Mihaela Tomulescu
			Probable Low Cost Parameter		86.25
			Probable High Cost Parameter		63.75
				CY per	Total Cost
					Unit Price Per CY
					\$288
					\$390

Description	Active Idle	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Labor Foreman	Active	1.00	0.3	10	2.50	L	\$53.10	incl. in rate	incl. in rate	\$132.74
Equipment Operator (medium)	Active	3.00	0.3	10	7.50	L	\$72.91	incl. in rate	incl. in rate	\$546.81
Steelworker	Active	3.00	0.3	10	7.50	L	\$72.07	incl. in rate	incl. in rate	\$540.54
Electrician	Active	1.00	0.3	10	2.50	L	\$49.75	incl. in rate	incl. in rate	\$124.38
Vibratory Hammer & Extractor	Active	1.00	0.3	10	2.50	E	\$94.34	incl. in rate	incl. in rate	\$235.85
Hydraulic Excavator (6.0cy)	Active	1.00	0.3	10	2.50	E	\$322.48	incl. in rate	incl. in rate	\$806.20
Loader, FE Rubber Tire (5.25cy)	Active	1.00	0.3	10	2.50	E	\$75.42	incl. in rate	incl. in rate	\$188.55
Labor Hours					20	TOTAL LABOR				\$1,344.48
Equipment Hours					7.5	TOTAL EQUIPMENT				\$1,230.60

[illegible]

Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount
Concrete Saw Cutting	1	EA	Cost per Mob	\$2,500.00	\$2,500.00
Hauling to Yreka Transfer 40 Miles	1.00	Load	20 tons per load	\$400.00	\$400.00
Disposal Fee	1.00	Ton		\$74.00	\$74.00
TOTAL SUBCONTRACTS					\$2,974.00

Labor Cost	\$1,344.48	Labor Burden @	49.7%	\$0.00		\$1,344.48
Material Cost	\$0.00	Material Tax @	7.75%	\$0.00		\$0.00
Equipment Cost	\$1,230.60	Equipment Tax @	7.75%	\$95.37		\$1,325.97
Subcontractors	\$2,974.00					\$2,974.00
<b>DIRECT COST SUBTOTALS</b>	<b>\$5,549</b>			<b>\$95</b>	<b>DIRECT COST SUBTOTALS</b>	<b>\$5,644</b>

Based on RS.Means - \*Selective concrete demolition, reinforcing 1% - 2% of cross-sectional area, break up into small pieces, excludes shoring, bracing, saw or torch cutting, loading, hauling, dumping, 650 CY - work done with crew B9\* and \*Cycle hauling(wait, load, travel, unload or dump & return) time per cycle, excavated or borrow, loose cubic yards, 15 min load/wait/unload, 12 C.Y. truck, cycle 30 miles, 50 MPH, excludes loading equipment Crew B34B\*







#### 4.156 Camp Creek - Concrete Total

[illegible]

Description	Active Idle	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Labor Foreman	Active	1.00	0.7	10	7.30	L	\$53.10	incl. in rate	incl. in rate	\$387.61
Laborer	Active	3.00	0.7	10	21.90	L	\$50.38	incl. in rate	incl. in rate	\$1,103.32
Equipment Operator (medium)	Active	4.00	0.7	10	29.20	L	\$72.91	incl. in rate	incl. in rate	\$2,128.91
Truck Driver (heavy)	Active	1.00	0.7	10	7.30	L	\$63.35	incl. in rate	incl. in rate	\$462.45
Hydraulic Excavator (2.5cy)	Active	1.00	0.7	10	7.30	E	\$203.63	incl. in rate	incl. in rate	\$1,486.50
Hydraulic Excavator (5.0cy)	Active	1.00	0.7	10	7.30	E	\$274.63	incl. in rate	incl. in rate	\$2,004.80
Loader, FE Rubber Tire (3.5cy)	Active	1.00	0.7	10	7.30	E	\$64.23	incl. in rate	incl. in rate	\$468.88
Truck, Off-Road, Articulated Rear, 20cy	Active	1.00	0.7	10	7.30	E	\$111.64	incl. in rate	incl. in rate	\$814.97
Kobelco SK260LC-10 Ex With CP100 Magnet	Active	1.00	0.7	10	7.30	E	\$89.29	incl. in rate	incl. in rate	\$651.82
Hydraulic Thumbs/Shear Attachment	Active	1.00	0.7	10	7.30	E	\$16.39	incl. in rate	incl. in rate	\$119.65
Air Tool, Chipping Hammer	Active	2.00	0.7	10	14.60	E	\$1.64	incl. in rate	incl. in rate	\$23.94
Air Compressor 600 cfm	Active	1.00	0.7	10	7.30	E	\$21.74	incl. in rate	incl. in rate	\$158.70
Labor Hours					65.7	TOTAL LABOR				\$4,082.29
Equipment Hours					65.7	TOTAL EQUIPMENT				\$5,729.26

Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost
						TOTAL MATERIAL
						\$0.00

Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount
Concrete Saw Cutting	1	EA	Cost per Mob	\$2,500.00	\$2,500.00
TOTAL SUBCONTRACTS					\$2,500.00

Labor Cost	\$4,082.29	Labor Burden @	0.0%	\$0.00		\$4,082.29
Material Cost	\$0.00	Material Tax @	7.75%	\$0.00		\$0.00
Equipment Cost	\$5,729.26	Equipment Tax @	7.75%	\$444.02		\$6,173.28
Subcontractors	\$2,500.00					\$2,500.00
<b>DIRECT COST SUBTOTALS</b>	<b>\$12,312</b>			<b>\$444</b>	<b>DIRECT COST SUBTOTALS</b>	<b>\$12,756</b>

Based on RS.Means - "Selective concrete demolition, reinforcing 1% - 2% of cross-sectional area, break up into small pieces, excludes shoring, bracing, saw or torch cutting, loading, hauling, dumping, 650 CY - work done with crew B9" and "Cycle hauling(wait, load, travel, unload or dump & return) time per cycle, excavated or borrow, loose cubic yards, 15 min load/wait/unload, 12 C.Y. truck, cycle 30 miles, 50 MPH, excludes loading equipment Crew B34B"

**4.157 Camp Creek - 180'Lx16"Wx8'D Earth jetty to remove and/or regrade**

SUMMARY OF COSTS				
Labor Cost	\$31,021.48	Labor Burden @	0.0%	\$0.00
Material Cost	\$0.00	Material Tax @	7.75%	\$0.00
Equipment Cost	\$43,230.40	Equipment Tax @	7.75%	\$3,350.36
Subcontractors	\$800.00			
<b>DIRECT COST SUBTOTALS</b>	<b>\$75,052</b>		<b>\$3,350</b>	<b>DIRECT COST SUBTOTALS</b>
<b>Additional Pay Item Notes :</b>				
Based on RS Means - Selective concrete demolition, reinforcing 1% - 2% of cross-sectional area, break up into small pieces, excludes shoring, bracing, saw or torch cutting, loading, hauling, dumping, 650 CY - work done with crew B9 and B34B - Cycle hauling(wait, load, travel, unload or dump & return) time per cycle, excavated or borrow, loose cubic yards, 15 min load/wait/unload, 12 C.Y. truck, cycle 30 miles, 50 MPH, excludes loading equipment				

## PAY ITEM INFORMATION

PAY ITEM NUMBER	: 4.158	Project	: KRPP - Iron Gate
Description	: Camp Creek - Well house 10'x16' concrete block building	Group	: D16
Quantity	: 160.00 SF		
Daily Production	: 1,125.00 SF per 10 hour shift	Project #	: 4
Work Days	: 0.1 Days	Estimator	: Mihaela Tomulescu
Unit Price	: \$14.08 per SF	Probable Low Cost Parameter	SF per 1237.5
Total Cost	: \$2,253	Probable High Cost Parameter	Total Cost \$2,478
			Unit Price Per SF \$18

## CREW COSTS

Description	Active Idle	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Labor Foreman	Active	1.00	0.1	10	1.40	L	\$53.10	incl. in rate	incl. in rate	\$74.34
Laborer	Active	4.00	0.1	10	5.60	L	\$50.38	incl. in rate	incl. in rate	\$282.13
Equipment Operator (medium)	Active	2.00	0.1	10	2.80	L	\$72.91	incl. in rate	incl. in rate	\$204.14
Hydraulic Excavator (2.5cy)	Active	1.00	0.1	10	1.40	E	\$203.63	incl. in rate	incl. in rate	\$285.08
Loader, FE Rubber Tire (3.5cy)	Active	1.00	0.1	10	1.40	E	\$64.23	incl. in rate	incl. in rate	\$89.92
					Labor Hours	9.8	TOTAL LABOR			\$560.61
					Equipment Hours	2.8	TOTAL EQUIPMENT			\$375.00

## MATERIAL COSTS

Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost
						TOTAL MATERIAL
						\$0.00

## SUBCONTRACT COSTS

Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount
Dump Fee Coverage (SFXH*.33/27)	23	CY			
Conversion CY to Tons (2 tons per CY)	12.00	tons	Klamath County LandFill	\$74.00	\$888.00
Hauling cost to landfill	2.00	Loads	18 CY per load	\$200.00	\$400.00
					TOTAL SUBCONTRACTS
					\$1,288.00

## SUMMARY OF COSTS

Labor Cost	\$560.61	Labor Burden @	0.0%	\$0.00	\$560.61
Material Cost	\$0.00	Material Tax @	7.75%	\$0.00	\$0.00
Equipment Cost	\$375.00	Equipment Tax @	7.75%	\$29.06	\$404.07
Subcontractors	\$1,288.00				\$1,288.00
DIRECT COST SUBTOTALS	\$2,224			\$29	DIRECT COST SUBTOTALS
					\$2,253

## Additional Pay Item Notes :

The price of removing a building is based on several factors including the size of the space, structural additions on the property, required permits and waste material clearing. A complete demo of a house and its foundation or basement can cost much as \$25,000.

The cost of removal can vary based on the area lived in and the typical wages in the region. Some estimates put a price tag of \$18,000 on bulldozing a 1,500 square-foot house, while others show that the average estimate is around \$4-\$15 per square foot.

Hazardous waste can greatly impact the cost of clearing debris. Many older homes contain asbestos, and there are special fees and considerations associated with its removal and disposal. The national average cost to eliminate asbestos is about \$200-\$700 per hour. We take in consideration this aspect in our estimate assuming 3 Laborers working 1 days, 8 hours per day @\$350

## PAY ITEM INFORMATION

PAY ITEM NUMBER	: 4.161	Project	: KRRP - Iron Gate
Description	: Camp Creek - Concrete block double toilet bldg 10'x16'	Group	: D16
Quantity	: 160.00 SF		
Daily Production	: 1,125.00 SF per 10 hour shift	Project #	: 4
Work Days	: 0.1 Days	Estimator	: Mihaela Tomulescu
Unit Price	: \$14.08 per SF	Probable Low Cost Parameter	SF per 1237.5
Total Cost	: \$2,253	Probable High Cost Parameter	Total Cost \$2,027
			Unit Price Per SF \$14
			\$18

## CREW COSTS

Description	Active Idle	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Labor Foreman	Active	1.00	0.1	10	1.40	L	\$53.10	incl. in rate	incl. in rate	\$74.34
Laborer	Active	4.00	0.1	10	5.60	L	\$50.38	incl. in rate	incl. in rate	\$282.13
Equipment Operator (medium)	Active	2.00	0.1	10	2.80	L	\$72.91	incl. in rate	incl. in rate	\$204.14
Hydraulic Excavator (2.5cy)	Active	1.00	0.1	10	1.40	E	\$203.63	incl. in rate	incl. in rate	\$285.08
Loader, FE Rubber Tire (3.5cy)	Active	1.00	0.1	10	1.40	E	\$64.23	incl. in rate	incl. in rate	\$89.92
Labor Hours					9.8	TOTAL LABOR				\$560.61
Equipment Hours					2.8	TOTAL EQUIPMENT				\$375.00

## MATERIAL COSTS

Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost
						TOTAL MATERIAL
						\$0.00

## SUBCONTRACT COSTS

Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount
Dump Fee Coverage (SFxH*.33/27)	23	CY			
Conversion CY to Tons (2 tons per CY)	12.00	tons	Klamath County LandFill	\$74.00	\$888.00
Hauling cost to landfill	2.00	Loads	18 CY per load	\$200.00	\$400.00
					TOTAL SUBCONTRACTS
					\$1,288.00

## SUMMARY OF COSTS

Labor Cost	\$560.61	Labor Burden @	49.7%	\$0.00	\$560.61
Material Cost	\$0.00	Material Tax @	7.75%	\$0.00	\$0.00
Equipment Cost	\$375.00	Equipment Tax @	7.75%	\$29.06	\$404.07
Subcontractors	\$1,288.00				\$1,288.00
DIRECT COST SUBTOTALS	\$2,224			\$29	DIRECT COST SUBTOTALS
					\$2,253

Additional Pay Item Notes :

PAY ITEM INFORMATION									
PAY ITEM NUMBER	:	4.162			Project	:	KRRP - Iron Gate		
Description	:	Camp Creek - Dump stations and approx. 2000 gal buried			Group	:	D16		
Quantity	:	1.00 EA							
Daily Production	:	1.88 EA per		10	hour shift	Project #	:	4	
Work Days	:	0.5 Days				Estimator	:	Mihaela Tomulescu	EA per
Unit Price	:	\$3,027.37 per EA				Probable Low Cost Parameter		2.15625	Total Cost
Total Cost	:	\$3,027				Probable High Cost Parameter		1.5	Unit Price Per EA
								\$2,573	\$2,939.70
								\$3,633	\$4,150.16

CREW COSTS										
Description	Active Idle	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Labor Foreman	Active	1.00	0.5	10	5.00	L	\$53.10	\$0.00		\$265.49
Vibratory Hammer & Extractor	Active	1.00	0.5	10	5.00	E	\$94.34	\$94.34		\$471.70
Backhoe Loader (91hp)	Active	1.00	0.5	10	5.00	E	\$40.35	\$40.35		\$201.75
Equipment Operator (medium)	Active	2.00	0.5	10	10.00	L	\$72.91	\$0.00		\$729.08
Labor Hours					15	TOTAL LABOR				\$994.57
Equipment Hours					10	TOTAL EQUIPMENT				\$673.45

MATERIAL COSTS						
Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost
Consumables 10% labor (saw blades, drill bits, etc)	1.00	LS	1.000	1.00	\$99.46	\$99.46
TOTAL MATERIAL						\$99.46

SUBCONTRACT COSTS					
Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount
Hauling Disposal Cost	3.00	Loads		\$400.00	\$1,200.00
					TOTAL SUBCONTRACTS
					\$1,200.00

SUMMARY OF COSTS									
Labor Cost	\$994.57	Labor Burden @	0.0%	\$0.00				\$994.57	
Material Cost	\$99.46	Material Tax @	7.75%	\$7.71				\$107.16	
Equipment Cost	\$673.45	Equipment Tax @	7.75%	\$52.19				\$725.64	
Subcontractors	\$1,200.00							\$1,200.00	
DIRECT COST SUBTOTALS	\$2,967			\$60		DIRECT COST SUBTOTALS		\$3,027	
Additional Pay Item Notes :									

#### 4.163 Camp Creek - Power poles and lines

SUMMARY OF COSTS					
Labor Cost	\$3,203.51	Labor Burden @	0.0%	\$0.00	\$3,203.51
Material Cost	\$174.40	Material Tax @	7.75%	\$13.52	\$187.91
Equipment Cost	\$2,875.92	Equipment Tax @	7.75%	\$222.88	\$3,098.80
Subcontractors	\$1,200.00				\$1,200.00
<b>DIRECT COST SUBTOTALS</b>	<b>\$7,454</b>			<b>\$236</b>	<b>DIRECT COST SUBTOTALS \$7,690</b>
<b>Additional Pay Item Notes :</b>					
Production is based off of RSMs using Crew R3 (1 Forman and 1 Electrician,1 Crane). Considered 2 laborer and 1 Vibratory Hammer for demolish the pole foundation and helping placing poles in a designated place and loading them in the truck for disposal. This process includes filling in pole locations with gravel, clean fill and topsoil.					

#### 4.168 Camp Creek-Regrade

PAY ITEM NUMBER	:	4.168	Project	:	KRRP - Iron Gate
Description	:	Camp Creek-Regrade	Group	:	D16
Quantity	:	4.00 AC			
Daily Production	:	2.50 AC per	10 hour shift	Project #	: 4
Work Days	:	1.6 Days	Estimator	:	Eric Jones
Unit Price	:	\$3,961.01 per AC	Probable Low Cost Parameter	:	2.875
Total Cost	:	\$15,844	Probable High Cost Parameter	:	2.125
				Total Cost	\$13,467
				Unit Price Per AC	\$3,846.30
					\$5,203.82

Description	Active Idle	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost			
Labor Foreman	Active	1.00	1.6	10	16.00	L	\$53.10	incl. in rate	incl. in rate	\$849.55			
Equipment Operator (medium)	Active	2.00	1.6	10	32.00	L	\$72.91	incl. in rate	incl. in rate	\$2,333.06			
Laborer	Active	2.00	1.6	10	32.00	L	\$50.38	incl. in rate	incl. in rate	\$1,612.16			
Dozer (235hp)(CATD7)	Active	3.00	1.6	10	48.00	E	\$165.11	incl. in rate	incl. in rate	\$7,925.28			
Roller, Single Drum (steel wheel, 12.0 - 14.9 MTn)	Active	2.00	1.6	10	32.00	E	\$72.79	incl. in rate	incl. in rate	\$2,329.28			
0													
0													
0													
					Labor Hours	80				TOTAL LABOR			
					Equipment Hours	80				TOTAL EQUIPMENT			
										\$4,794.77			
										\$10,254.56			

Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price		Material Cost
TOTAL MATERIAL							\$0.00

Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount
TOTAL SUBCONTRACTS					\$0.00

Labor Cost	\$4,794.77	Labor Burden @	0.0%			\$4,794.77
Material Cost	\$0.00	Material Tax @	7.75%	\$0.00		\$0.00
Equipment Cost	\$10,254.56	Equipment Tax @	7.75%	\$794.73		\$11,049.29
Subcontractors	\$0.00					\$0.00
<b>DIRECT COST SUBTOTALS</b>	<b>\$15,049</b>			<b>\$795</b>	<b>DIRECT COST SUBTOTALS</b>	<b>\$15,844</b>

Crew will grade, rip, and reseed 1/3 of anchor per day, All equipment will be staged at area during operation due to the location of the operation. Seeding was assumed to be the same seeding used on other parts of the job using the same ratio.



#### 4.17 Dutch Creek - 50'4'3" Dock Concrete Abutment

PAY ITEM NUMBER	:	4.170	Project	:	KRRP - Iron Gate
Description	:	Dutch Creek - 50'4'3" Dock Concrete Abutment	Group	:	D16
Quantity	:	22.00 CY			
Daily Production	:	185.00 CY per	10	hour shift	
Work Days	:	0.1	Days		
Unit Price	:	\$344.64 per CY	Estimator	:	Mihaela Tomulescu
Total Cost	:	\$7,582	Probable Low Cost Parameter	:	203.5
			Probable High Cost Parameter	:	166.5
			CY per	:	Total Cost
				:	Unit Price Per CY
				:	\$6,824
				:	\$354
				:	\$6,340
				:	\$433

Description	Active Idle	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Labor Foreman	Active	2.00	0.1	10	2.40	L	\$53.10	incl. in rate	incl. in rate	\$127.43
Equipment Operator (medium)	Active	8.00	0.1	10	9.60	L	\$72.91	incl. in rate	incl. in rate	\$699.92
Steelworker	Active	6.00	0.1	10	7.20	L	\$72.07	incl. in rate	incl. in rate	\$518.92
Electrician	Active	1.00	0.1	10	1.20	L	\$49.75	incl. in rate	incl. in rate	\$59.70
Vibratory Hammer & Extractor	Active	3.00	0.1	10	3.60	E	\$94.34	incl. in rate	incl. in rate	\$339.62
Hydraulic Excavator (6.0cy)	Active	3.00	0.1	10	3.60	E	\$322.48	incl. in rate	incl. in rate	\$1,160.93
Loader, FE Rubber Tire (8.6cy)	Active	3.00	0.1	10	3.60	E	\$221.50	incl. in rate	incl. in rate	\$797.40
Labor Hours					20.4	TOTAL LABOR				\$1,405.97
Equipment Hours					10.8	TOTAL EQUIPMENT				\$2,297.95

[illegible]

Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount
Concrete Saw Cutting	1	EA	Cost per Mob	\$2,500.00	\$2,500.00
Hauling Disposal Cost	3.00	Loads		\$400.00	\$1,200.00
TOTAL SUBCONTRACTS					\$3,700.00

Labor Cost	\$1,405.97	Labor Burden @	0.0%	\$0.00		\$1,405.97
Material Cost	\$0.00	Material Tax @	7.75%	\$0.00		\$0.00
Equipment Cost	\$2,297.95	Equipment Tax @	7.75%	\$178.09		\$2,476.04
Subcontractors	\$3,700.00					\$3,700.00
<b>DIRECT COST SUBTOTALS</b>	<b>\$7,404</b>			<b>\$178</b>	<b>DIRECT COST SUBTOTALS</b>	<b>\$7,582</b>

Based on RS.Means - "Selective concrete demolition, reinforcing 1% - 2% of cross-sectional area, break up into small pieces, excludes shoring, bracing, saw or torch cutting, loading, hauling, dumping, 650 CY - work done with crew B9" and "Cycle hauling(wait, load, travel, unload or dump & return) time per cycle, excavated or borrow, loose cubic yards, 15 min load/wait/unload, 12 C.Y. truck, cycle 30 miles, 50 MPH, excludes loading equipment Crew B34B"

#### 4.172 Mirror Cove - Concrete Total

PAY ITEM NUMBER	:	4.172	Project	:	KRRP - Iron Gate
Description	:	Mirror Cove - Concrete Total	Group	:	D16
Quantity	:	89.00 CY			
Daily Production	:	187.50 CY per	10	hour shift	
Work Days	:	0.5 Days	Project #	:	4
Unit Price	:	\$89.03 per CY	Estimator	:	Mihaela Tomulescu
Total Cost	:	\$7,924	CY per	:	206.25
			Total Cost	:	\$7,131
			Unit Price Per CY	:	\$92
			Probable Low Cost Parameter	:	168.75
			Probable High Cost Parameter	:	\$7,916
				:	\$112

Description	Active Idle	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Labor Foreman	Active	1.00	0.5	10	4.70	L	\$53.10	incl. in rate	incl. in rate	\$249.56
Laborer	Active	4.00	0.5	10	18.80	L	\$50.38	incl. in rate	incl. in rate	\$947.14
Equipment Operator (medium)	Active	2.00	0.5	10	9.40	L	\$72.91	incl. in rate	incl. in rate	\$685.34
Hydraulic Excavator (2.5cy)	Active	1.00	0.5	10	4.70	E	\$203.63	incl. in rate	incl. in rate	\$957.06
Hydraulic Impact Breaker Attachment (3k-4k ft-lb)	Active	1.00	0.5	10	4.70	E	\$36.58	incl. in rate	incl. in rate	\$171.93
Loader, FE Rubber Tire (3.5cy)	Active	1.00	0.5	10	4.70	E	\$64.23	incl. in rate	incl. in rate	\$301.88
Labor Hours					32.9	TOTAL LABOR				\$1,882.04
Equipment Hours					14.1	TOTAL EQUIPMENT				\$1,430.87

Description	Item	Order	Conversion	Order	Order	Material
	Quantity	Unit	Factor / Waste	Quantity	Price	Cost
						TOTAL MATERIAL
						\$0.00

Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount
Concrete Saw Cutting	1	EA	Cost per Mob	\$2,500.00	\$2,500.00
Hauling Disposal Cost	5.00	Loads		\$400.00	\$2,000.00
TOTAL SUBCONTRACTS					\$4,500.00

Labor Cost	\$1,882.04	Labor Burden @	0.0%	\$0.00				\$1,882.04
Material Cost	\$0.00	Material Tax @	7.75%	\$0.00				\$0.00
Equipment Cost	\$1,430.87	Equipment Tax @	7.75%	\$110.89				\$1,541.76
Subcontractors	\$4,500.00							\$4,500.00
<b>DIRECT COST SUBTOTALS</b>	<b>\$7,813</b>			<b>\$111</b>			<b>DIRECT COST SUBTOTALS</b>	<b>\$7,924</b>

**Additional Pay Item Notes :**

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#### 4.173 Mirror Cove - 10'x16' Toilet Vault

PAY ITEM NUMBER	:	4.173	Project	:	KRRP - Iron Gate			
Description	:	Mirror Cove - 10'x16' Toilet Vault	Group	:	D16			
Quantity	:	160.00 SF						
Daily Production	:	1,125.00 SF per	10	hour shift	Project #	:	4	
Work Days	:	0.1 Days			Estimator	:	Mihaela Tomulescu	
Unit Price	:	\$14.08 per SF			SF per	Total Cost	Unit Price Per SF	
Total Cost	:	\$2,253			Probable Low Cost Parameter	1237.5	\$2,027	
					Probable High Cost Parameter	1012.5	\$2,478	
							\$14	
							\$18	

Description	Active Idle	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Labor Foreman	Active	1.00	0.1	10	1.40	L	\$53.10	incl. in rate	incl. in rate	\$74.34
Laborer	Active	4.00	0.1	10	5.60	L	\$50.38	incl. in rate	incl. in rate	\$282.13
Equipment Operator (medium)	Active	2.00	0.1	10	2.80	L	\$72.91	incl. in rate	incl. in rate	\$204.14
Hydraulic Excavator (2.5cy)	Active	1.00	0.1	10	1.40	E	\$203.63	incl. in rate	incl. in rate	\$285.08
Loader, FE Rubber Tire (3.5cy)	Active	1.00	0.1	10	1.40	E	\$64.23	incl. in rate	incl. in rate	\$89.92
Labor Hours					9.8	TOTAL LABOR				\$560.61
Equipment Hours					2.8	TOTAL EQUIPMENT				\$375.00

Description	Item	Order	Conversion	Order	Order	Material
	Quantity	Unit	Factor / Waste	Quantity	Price	Cost
TOTAL MATERIAL						\$0.00

Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount
Dump Fee Conversion (SFXH*.33/27)	23	CY			\$0.00
Conversion CY to Tons (2 tons per CY)	12.00	tons	Klamath County LandFill	\$74.00	\$888.00
Hauling cost to landfill	2.00	Loads	18 CY per load	\$200.00	\$400.00
TOTAL SUBCONTRACTS					\$1,288.00

Labor Cost	\$560.61	Labor Burden @	0.0%	\$0.00		\$560.61
Material Cost	\$0.00	Material Tax @	7.75%	\$0.00		\$0.00
Equipment Cost	\$375.00	Equipment Tax @	7.75%	\$29.06		\$404.07
Subcontractors	\$1,288.00					\$1,288.00
<b>DIRECT COST SUBTOTALS</b>	<b>\$2,224</b>			<b>\$29</b>	<b>DIRECT COST SUBTOTALS</b>	<b>\$2,253</b>

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**4.174 Mirror Cove - 2, 30'x5' Composite Gangplanks w/ aluminum**

SUMMARY OF COSTS				
Labor Cost	\$2,217.16	Labor Burden @	0.0%	\$0.00
Material Cost	\$0.00	Material Tax @	7.75%	\$0.00
Equipment Cost	\$603.36	Equipment Tax @	7.75%	\$46.76
Subcontractors	\$2,000.00			
DIRECT COST SUBTOTALS		\$4,821	\$47	
			DIRECT COST SUBTOTALS	
			\$4,867	
Additional Pay Item Notes :				



## PAY ITEM INFORMATION

PAY ITEM NUMBER	: 4.181	Project	: KRRP - Iron Gate D16			
Description	: Overlook Point - Regrade steep access road and site to natural contours	Group	:			
Quantity	: 0.50 AC	Project #	: 4			
Daily Production	: 1.00 AC per	Estimator	: M Mihaela Tomulescu			
Work Days	: 0.5 Days	Probable Low Cost Parameter	1.15	Total Cost	\$2,828	
Unit Price	: \$6,653.90 per AC	Probable High Cost Parameter	0.85	Unit Price Per AC	\$6,461	
Total Cost	: \$3,327				\$8,742	

## CREW COSTS

Description	Active Idle	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Labor Foreman	Active	1.00	0.5	10	5.00	L	\$53.10	incl. in rate	incl. in rate	\$265.49
Equipment Operator (medium)	Active	2.00	0.5	10	10.00	L	\$72.91	incl. in rate	incl. in rate	\$729.08
Laborer	Active	4.00	0.5	10	20.00	L	\$50.38	incl. in rate	incl. in rate	\$1,007.60
Grader, 180hp, 13' blade	Active	1.00	0.5	10	5.00	E	\$80.79	incl. in rate	incl. in rate	\$403.95
Dozer (235hp)(CATD7)	Active	1.00	0.5	10	5.00	E	\$165.11	incl. in rate	incl. in rate	\$825.55
Labor Hours					35	TOTAL LABOR				\$2,002.17
Equipment Hours					10	TOTAL EQUIPMENT				\$1,229.50

## MATERIAL COSTS

Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost
						TOTAL MATERIAL
						\$0.00

## SUBCONTRACT COSTS

Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount
					TOTAL SUBCONTRACTS
					\$0.00

## SUMMARY OF COSTS

Labor Cost	\$2,002.17	Labor Burden @	0.0%	\$0.00	\$2,002.17
Material Cost	\$0.00	Material Tax @	7.75%	\$0.00	\$0.00
Equipment Cost	\$1,229.50	Equipment Tax @	7.75%	\$95.29	\$1,324.79
Subcontractors	\$0.00				\$0.00
DIRECT COST SUBTOTALS	\$3,232			\$95	DIRECT COST SUBTOTALS
					\$3,327

## Additional Pay Item Notes :

Crew is based off clear and grub crew B7 off of RSM means. Production for the crew in .69 ac per day to clear and process the trees/ shrubs on site. Assumed Seeding, mechanical seeding, 215 lb./acre with crew B66.The amount and type of seed are calculated as 215 lbs per acre in total.

PAY ITEM INFORMATION									
PAY ITEM NUMBER	:	4.182			Project	:	KRRP - Iron Gate		
Description	:	Long Gulch - 80'x25x4" Concrete boat ramp to be removed			Group	:	D16		
Quantity	:	25.00 CY							
Daily Production	:	125.00	CY per	10	hour shift	Project #	:	4	
Work Days	:	0.2	Days						
Unit Price	:	\$290.80	per CY			Estimator	:	M Mihaela Tomulescu	
Total Cost	:	\$7,270			Probable Low Cost Parameter		CY per	137.5	Total Cost
			Probable High Cost Parameter		112.5	\$7,997	Unit Price Per CY	\$299	
									\$365

CREW COSTS										
Description	Active Idle	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Labor Foreman	Active	2.00	0.2	10	4.00	L	\$53.10	incl. in rate	incl. in rate	\$212.39
Equipment Operator (medium)	Active	8.00	0.2	10	16.00	L	\$72.91	incl. in rate	incl. in rate	\$1,166.53
Steelworker	Active	6.00	0.2	10	12.00	L	\$72.07	incl. in rate	incl. in rate	\$864.86
Electrician	Active	1.00	0.2	10	2.00	L	\$49.75	incl. in rate	incl. in rate	\$99.51
Vibratory Hammer & Extractor	Active	3.00	0.2	10	6.00	E	\$94.34	incl. in rate	incl. in rate	\$566.04
Hydraulic Excavator (6.0cy)	Active	3.00	0.2	10	6.00	E	\$322.48	incl. in rate	incl. in rate	\$1,934.88
Loader, FE Rubber Tire (8.6cy)	Active	3.00	0.2	10	6.00	E	\$221.50	incl. in rate	incl. in rate	\$1,329.00
					Labor Hours	34	TOTAL LABOR			\$2,343.29
					Equipment Hours	18	TOTAL EQUIPMENT			\$3,829.92

MATERIAL COSTS						
Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost
						TOTAL MATERIAL
						\$0.00

SUBCONTRACT COSTS				
Description	Quantity	Units	Notes / Company	Unit Price
Hauling Disposal Cost	2.00	Loads		\$400.00
				TOTAL SUBCONTRACTS
				\$800.00

SUMMARY OF COSTS						
Labor Cost	\$2,343.29	Labor Burden @	0.0%	\$0.00		\$2,343.29
Material Cost	\$0.00	Material Tax @	7.75%	\$0.00		\$0.00
Equipment Cost	\$3,829.92	Equipment Tax @	7.75%	\$296.82		\$4,126.74
Subcontractors	\$800.00					\$800.00
DIRECT COST SUBTOTALS	\$6,973			\$297	DIRECT COST SUBTOTALS	\$7,270
Additional Pay Item Notes :						
Based on RS.Means - "Selective concrete demolition, reinforcing 1% - 2% of cross-sectional area, break up into small pieces, excludes shoring, bracing, saw or torch cutting, loading, hauling, dumping, 650 CY - work done with crew B9" and "Cycle hauling(wait, load, travel, unload or dump & return) time per cycle, excavated or borrow, loose cubic yards, 15 min load/wait/unload, 12 C.Y. truck, cycle 30 miles, 50 MPH, excludes loading equipment Crew B34B"						

PAY ITEM INFORMATION									
PAY ITEM NUMBER	:	4.185			Project	:	KRRP - Iron Gate		
		Concrete Lining Installation for Diversion Tunnel					D02		
Description	:				Group	:			
Quantity	:	1.00	LS						
Daily Production	:	0.05	LS per	10	hour shift	Project #	:	4	
Work Days	:	20.0	Days			Estimator	:	Mih Mihaela Tomulescu	
Unit Price	:	\$1,116,948.40		per LS		LS per		Total Cost	Unit Price Per LS
Total Cost	:	\$1,116,948				Probable Low Cost Parameter	0.055	\$1,005,254	\$1,148,402
						Probable High Cost Parameter	0.045	\$1,228,643	\$1,403,602

CREW COSTS										
Description	Active Idle	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost

MATERIAL COSTS						
Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost
TOTAL MATERIAL						\$0.00

SUBCONTRACT COSTS						
Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount	
Tunnel Lining (Shotcrete with Reinforcement)	1.00	LS	RSMs (2780 CY @ \$401.78/CY)	\$1,116,948.40	\$1,116,948.40	

SUMMARY OF COSTS									
Labor Cost	\$0.00	Labor Burden @	0.0%	\$0.00					\$0.00
Material Cost	\$0.00	Material Tax @	7.75%	\$0.00					\$0.00
Equipment Cost	\$0.00	Equipment Tax @	7.75%	\$0.00					\$0.00
Subcontractors	\$1,116,948.40								\$1,116,948.40
DIRECT COST SUBTOTALS	\$1,116,948			\$0			DIRECT COST SUBTOTALS		\$1,116,948
Additional Pay Item Notes :									
Subcontractor will install reinforcement and shotcrete concrete lining in diversion tunnel.									



### 5.025 Remove Distribution Poles near Iron Gate Hydro Plant

SUMMARY OF COSTS				
Labor Cost	\$4,271.34	Labor Burden @	0.0%	\$0.00
Material Cost	\$237.27	Material Tax @	7.75%	\$18.39
Equipment Cost	\$3,834.56	Equipment Tax @	7.75%	\$297.18
Subcontractors	\$0.00			
<b>DIRECT COST SUBTOTALS</b>	<b>\$8,343</b>		<b>\$316</b>	<b>DIRECT COST SUBTOTALS</b>
<b>Additional Pay Item Notes :</b> Production is based off of RSMs using Crew R3 (1 Forman and 1 Electrician,1 Crane). Considered 2 laborer and 1 Vibratory Hammer for demolish the pole foundation and helping placing poles in a designated place and loading them in the truck for disposal. This process includes filling in pole locations with gravel, clean fill and topsoil.				

PAY ITEM INFORMATION									
PAY ITEM NUMBER	:	5.026			Project	:	KRRP - Iron Gate		
Description	:	Remove 69kV/6.6kV Transformer @Substation			Group	:	D06		
Quantity	:	1.00	EA						
Daily Production	:	3.13	EA per	10	hour shift	Project #	:	4	
Work Days	:	0.3	Days						
Unit Price	:	\$2,319.44	per EA				Estimator	:	M Mihaela Tomulescu
Total Cost	:	\$2,319					Probable Low Cost Parameter	3.59375	\$1,972
							Probable High Cost Parameter	2.34375	\$2,899
									\$3,312

CREW COSTS										
Description	Active Idle	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Electrician Foreman	Active	1.00	0.3	10	3.00	L	\$51.95	incl. in rate	incl. in rate	\$155.86
Electrician	Active	1.00	0.3	10	3.00	L	\$49.75	incl. in rate	incl. in rate	\$149.26
Loader, FE Rubber Tire (8.6cy)	Active	1.00	0.3	10	3.00	E	\$221.50	incl. in rate	incl. in rate	\$664.50
Truck Driver (light)	Active	1.00	0.3	10	3.00	L	\$61.92	incl. in rate	incl. in rate	\$185.76
Truck, Off-Road, Articulated Rear, 20cy	Active	1.00	0.3	10	3.00	E	\$111.64	incl. in rate	incl. in rate	\$334.92
Equipment Operator (light)	Active	1.00	0.3	10	3.00	L	\$71.39	incl. in rate	incl. in rate	\$214.17
Labor Hours					12	TOTAL LABOR				\$705.05
Equipment Hours					6	TOTAL EQUIPMENT				\$999.42

MATERIAL COSTS						
Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost
Consumables 5% labor (saw blades, drill bits, etc)	1.00	LS	1.000	1.00	\$35.25	\$35.25
Topsoil placement and grading, loam or topsoil, F.E. loader, 1-1/2 C.Y., remove and stockpile on site, spread from pile to rough finish grade	5.00	CY	1.000	5.00	\$4.74	\$23.70
						TOTAL MATERIAL
						\$58.95

SUBCONTRACT COSTS					
Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount
Hauling to Yreka Transfer 40 Miles	1.00	Load	20 tons per load	\$400.00	\$400.00
Disposal Fee	1.00	Ton		\$74.00	\$74.00
					TOTAL SUBCONTRACTS
					\$474.00

SUMMARY OF COSTS						
Labor Cost	\$705.05	Labor Burden @	0.0%	\$0.00		\$705.05
Material Cost	\$58.95	Material Tax @	7.75%	\$4.57		\$63.52
Equipment Cost	\$999.42	Equipment Tax @	7.75%	\$77.46		\$1,076.88
Subcontractors	\$474.00					\$474.00
DIRECT COST SUBTOTALS	\$2,237			\$82	DIRECT COST SUBTOTALS	\$2,319
Additional Pay Item Notes :						
Production is based off of RSMs using Crew Elec2 : 1 El. Forman and 1 Electrician,1 Loader and 1 truck for disposal.						

### 5.027 Remove 6.6kV Power Circuit Breaker @Substation

SUMMARY OF COSTS				
Labor Cost	\$1,880.12	Labor Burden @	0.0%	\$0.00
Material Cost	\$0.00	Material Tax @	7.75%	\$0.00
Equipment Cost	\$1,406.96	Equipment Tax @	7.75%	\$109.04
Subcontractors	\$0.00			
<b>DIRECT COST SUBTOTALS</b>	<b>\$3,287</b>		<b>\$109</b>	<b>DIRECT COST SUBTOTALS</b>
<b>Additional Pay Item Notes :</b>				
Production is based off of RSMs using Crew Elec2 : 1 El. Forman and 1 Electrician,1 Loader and 1 truck for disposal.				

### 5.028 Remove Generator @Substation

PAY ITEM INFORMATION							
PAY ITEM NUMBER :	5.028			Project :	KRRP - Iron Gate		
Description :	Remove Generator @Substation			Group :	D06		
Quantity :	1.00 EA						
Daily Production :	0.31	EA per	10	hour shift			
Work Days :	3.2	Days					
Unit Price :	\$14,304.19	per EA					
Total Cost :	\$14,304						
				Project # :	4		
				Estimator :	M Mihaela Tomulescu	EA per	Total Cost
				Probable Low Cost Parameter		0.359375	\$12,159
				Probable High Cost Parameter		0.234375	\$17,880
							Unit Price Per EA
							\$13,890
							\$20,426

CREW COSTS										
Description	Active Idle	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Electrician Foreman	Active	1.00	3.2	10	32.00	L	\$51.95	incl. in rate	incl. in rate	\$1,662.50
Electrician	Active	1.00	3.2	10	32.00	L	\$49.75	incl. in rate	incl. in rate	\$1,592.10
Hydraulic Crane (17tn)	Active	1.00	3.2	10	32.00	E	\$81.52	incl. in rate	incl. in rate	\$2,608.64
Truck, Off-Road, Articulated Rear, 20cy	Active	1.00	3.2	10	32.00	E	\$111.64	incl. in rate	incl. in rate	\$3,572.48
Truck Driver (light)	Active	1.00	3.2	10	32.00	L	\$61.92	incl. in rate	incl. in rate	\$1,981.41
Equipment Operator (crane)	Active	1.00	3.2	10	32.00	L	\$75.25	incl. in rate	incl. in rate	\$2,408.03
					Labor Hours	128	TOTAL LABOR			\$7,644.03
					Equipment Hours	64	TOTAL EQUIPMENT			\$6,181.12

MATERIAL COSTS						
Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost
						TOTAL MATERIAL \$0.00

SUBCONTRACT COSTS					
Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount
TOTAL SUBCONTRACTS					\$0.00

SUMMARY OF COSTS				
Labor Cost	\$7,644.03	Labor Burden @	0.0%	\$0.00
Material Cost	\$0.00	Material Tax @	7.8%	\$0.00
Equipment Cost	\$6,181.12	Equipment Tax @	7.8%	\$479.04
Subcontractors	\$0.00			
DIRECT COST SUBTOTALS		\$13,825		\$479
DIRECT COST SUBTOTALS				\$14,304
Additional Pay Item Notes :				
Production is based off of RSMs using Crew Elec2 : 1 El. Foreman and 1 Electrician, 1 Crane , 1 Laborer and 1 truck for disposal.				

**5.029 Remove all auxiliary equipment @Substation (Allowance)**

PAY ITEM NUMBER	:	5.029	Project	:	KRRP - Iron Gate
Description	:	Remove all auxiliary equipment @ Substation (Allowance)	Group	:	D06
Quantity	:	1.00 LS			
Daily Production	:	0.31 LS per	10	hour shift	
Work Days	:	3.0	Days		
Unit Price	:	\$30,514.04	per LS		
Total Cost	:	\$30,514			
			Project #	:	4
			Estimator	:	M Mihaela Tomulescu
			Probable Low Cost Parameter		0.359375
			Probable High Cost Parameter		0.234375
			LS per		\$25,937
			Total Cost		\$38,143
			Unit Price Per LS		\$29,630
					\$43,574

Description	Active Idle	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost			
Electrician Foreman	Active	1.00	3.0	10	30.00	L	\$51.95	incl. in rate	incl. in rate	\$1,558.59			
Electrician	Active	2.00	3.0	10	60.00	L	\$49.75	incl. in rate	incl. in rate	\$2,985.18			
Hydraulic Crane (17tn)	Active	1.00	0.2	10	2.00	E	\$81.52	incl. in rate	incl. in rate	\$163.04			
Truck, Off-Road, Articulated Rear, 20cy	Active	2.00	0.2	10	4.00	E	\$111.64	incl. in rate	incl. in rate	\$446.56			
Truck Driver (light)	Active	2.00	0.2	10	4.00	L	\$61.92	incl. in rate	incl. in rate	\$247.68			
Equipment Operator (crane)	Active	1.00	0.2	10	2.00	L	\$75.25	incl. in rate	incl. in rate	\$150.50			
Laborer	Active	2.00	4.0	10	80.00	L	\$50.38	incl. in rate	incl. in rate	\$4,030.40			
Hydraulic Excavator (2.5cy)	Active	1.00	4.0	10	40.00	E	\$203.63	incl. in rate	incl. in rate	\$8,145.20			
Truck, Utility, with Man-Basket	Active	1.00	2.0	10	20.00	E	\$31.90	incl. in rate	incl. in rate	\$638.00			
Vibratory Hammer & Extractor	Active	1.00	0.2	10	2.00	E	\$94.34	incl. in rate	incl. in rate	\$188.68			
Equipment Operator (light)	Active	1.00	4.0	10	40.00	L	\$71.39	incl. in rate	incl. in rate	\$2,855.60			
Grader, 180hp, 13' blade	Active	1.00	4.0	10	40.00	E	\$80.79	incl. in rate	incl. in rate	\$3,231.60			
					Labor Hours	216				TOTAL LABOR			
					Equipment Hours	108				TOTAL EQUIPMENT			
										\$11,827.95			
										\$12,813.08			

Description	Item	Order	Conversion	Order	Order	Material
	Quantity	Unit	Factor / Waste	Quantity	Price	Cost
TOTAL MATERIAL						\$0.00

Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount
Rent trailer with cable pulling rig, for high voltage line work - Rent per day	1.00	days		\$3,000.00	\$3,000.00
Hauling to Yreka Transfer 40 Miles	1.00	Load	20 tons per load	\$400.00	\$400.00
Disposal Fee	20.00	Ton		\$74.00	\$1,480.00
TOTAL SUBCONTRACTS					\$4,880.00

Labor Cost	\$11,827.95	Labor Burden @	0.0%	\$0.00					\$11,827.95
Material Cost	\$0.00	Material Tax @	7.75%	\$0.00					\$0.00
Equipment Cost	\$12,813.08	Equipment Tax @	7.75%	\$993.01					\$13,806.09
Subcontractors	\$4,880.00								\$4,880.00
<b>DIRECT COST SUBTOTALS</b>	<b>\$29,521</b>			<b>\$993</b>				<b>DIRECT COST SUBTOTALS</b>	<b>\$30,514</b>

**Additional Pay Item Notes :**

Assumed 3 days of work to clean and the substation right-of-way to be restored to the natural conditions. Production is based off of RSMs using Crew formed of 1 Foreman, 4 Electrician, 2 laborer, 1 Excavator & 1 crane for lift, position and load in the truck, 1 Hydraulic rock-splitting/rock-drilling equipment to break equipment foundations, 1 utility truck access poles, string conductor, modify structure arms, provide guard structures, etc. Crews may be working simultaneously along the project alignment and substations, hydro plant and switchyard.

### 5.03 New Connection @Iron Gate Hatchery from PacifiCorp's Hornbrook Substation (Allowance)

**Additional Pay Item Notes :**

Iron Gate Hatchery located near the Klamath River downstream of Iron Gate Dam will require a new connection from PacifiCorp's Hornbrook Substation (5G19). Details for connection requirements are unknown at this stage, this estimate is just an allowance for assumed 0.9 miles of overhead distribution line. Transmission line poles or structures are commonly between 60 and 140 feet tall. Distribution line structures are approximately 40 to 60 feet tall.

There are several different kinds of transmission structures. Transmission structures can be constructed of metal or wood. They can be single-poled or multi-poled. They can be single-circuited, carrying one set of transmission lines or double-circuited with two sets of lines. . A typical new 69 kV overhead single-circuit transmission line costs approximately \$315,000 per mile as opposed to \$1.6 million per mile for a new 69 kV underground line (without the terminals).

### 5.036 Removal Of Residence Building (Spillway Bank)

SUMMARY OF COSTS									
Labor Cost	\$27,629.88	Labor Burden @	0.0%	\$0.00					\$27,629.88
Material Cost	\$0.00	Material Tax @	7.75%	\$0.00					\$0.00
Equipment Cost	\$23,381.34	Equipment Tax @	7.75%	\$1,812.05					\$25,193.39
Subcontractors	\$54,484.00								\$54,484.00
<b>DIRECT COST SUBTOTALS</b>	<b>\$105,495</b>			<b>\$1,812</b>			<b>DIRECT COST SUBTOTALS</b>		<b>\$107,307</b>

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### 5.037 Iron Gate Spillway Concrete Removal

PAY ITEM NUMBER	:	5.037	Project	:	KRRP - Iron Gate
Description	:	Iron Gate Spillway Concrete Removal	Group	:	D10
Quantity	:	366.00 cy			
Daily Production	:	250.00 cy per	10 hour shift	Project #	: 4
Work Days	:	1.5 Days	Estimator	:	Eric Jones cy per
Unit Price	:	\$122.81 per cy	Probable Low Cost Parameter	:	275 \$40,455
Total Cost	:	\$44,950	Probable High Cost Parameter	:	200 \$53,940
					Unit Price Per cy \$126.27 \$168.36

Description	Active Idle	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Labor Foreman	Active	1.00	1.5	10	15.00	L	\$53.10	incl. in rate	incl. in rate	\$796.46
Laborer	Active	3.00	1.5	10	45.00	L	\$50.38	incl. in rate	incl. in rate	\$2,267.10
Equipment Operator (medium)	Active	2.00	1.5	10	30.00	L	\$72.91	incl. in rate	incl. in rate	\$2,187.24
Truck Driver (heavy)	Active	1.00	1.5	10	15.00	L	\$63.35	incl. in rate	incl. in rate	\$950.24
Air Compressor 900 cfm	Active	1.00	1.5	10	15.00	E	\$38.87	incl. in rate	incl. in rate	\$583.03
Air Tool, Chipping Hammer	Active	2.00	1.5	10	30.00	E	\$1.64	incl. in rate	incl. in rate	\$49.17
Generator, Small Generator, 10 - 15 kW	Active	1.00	1.5	10	15.00	E	\$7.04	incl. in rate	incl. in rate	\$105.60
Hydraulic Excavator (2.5cy)	Active	1.00	1.5	10	15.00	E	\$203.63	incl. in rate	incl. in rate	\$3,054.45
Kobelco SK260LC-10 Ex With CP100 Magnet	Active	1.00	1.5	10	15.00	E	\$89.29	incl. in rate	incl. in rate	\$1,339.35
CAT 745 (32 CY) OFF ROAD TRUCK	Active	1.00	1.5	10	15.00	E	\$174.47	incl. in rate	incl. in rate	\$2,617.05
Labor Hours					105	TOTAL LABOR				\$6,201.03
Equipment Hours					105	TOTAL EQUIPMENT				\$7,748.68

Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price		Material Cost
TOTAL MATERIAL							\$0.00

Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount
Concrete Saw Cutting	1	AL	Allowance	\$20,000.00	\$20,000.00
Hauling Disposal Cost	2.00	Loads	150lbs per CY	\$200.00	\$400.00
Selective demolition, torch cutting, steel, 1" thick plate	1.00	AL	Allowance	10,000.00	\$10,000.00
TOTAL SUBCONTRACTS					\$30,400.00

Labor Cost	\$6,201.03	Labor Burden @	0.0%	\$0.00	Included in hourly labor rate.	\$6,201.03	
Material Cost	\$0.00	Material Tax @	7.75%	\$0.00		\$0.00	
Equipment Cost	\$7,748.65	Equipment Tax @	7.75%	\$600.52		\$8,349.18	
Subcontractors	\$30,400.00					\$30,400.00	
<b>DIRECT COST SUBTOTALS</b>	<b>\$44,350</b>			<b>\$601</b>		<b>DIRECT COST SUBTOTALS</b>	<b>\$44,950</b>
Additional Pay Item Notes :							



# JC BOYLE DAM REMOVAL

### 1.001 Removal of Diversion Conduit Bulkheads

SUMMARY OF COSTS									
Labor Cost	\$7,637.52	Labor Burden @	0.0%						\$7,637.52
Material Cost	\$127.00	Material Tax @	0.00%	\$0.00					\$127.00
Equipment Cost	\$14,168.78	Equipment Tax @	0.00%	\$0.00					\$14,168.78
Subcontractors	\$0.00								\$0.00
<b>DIRECT COST SUBTOTALS</b>	<b>\$21,933</b>			<b>\$0</b>			<b>DIRECT COST SUBTOTALS</b>		<b>\$21,933</b>
<b>Additional Pay Item Notes :</b>									
Crew markup is based on blasting from the down stream side to avoid using divers due to the safety risk from the high flow.									





### 1.001 Removal of Diversion Conduit Bulkheads

SUMMARY OF COSTS									
Labor Cost	\$7,637.52	Labor Burden @	0.0%						\$7,637.52
Material Cost	\$127.00	Material Tax @	0.00%	\$0.00					\$127.00
Equipment Cost	\$14,168.78	Equipment Tax @	0.00%	\$0.00					\$14,168.78
Subcontractors	\$0.00								\$0.00
<b>DIRECT COST SUBTOTALS</b>	<b>\$21,933</b>			<b>\$0</b>			<b>DIRECT COST SUBTOTALS</b>		<b>\$21,933</b>
<b>Additional Pay Item Notes :</b>									
Crew markup is based on blasting from the down stream side to avoid using divers due to the safety risk from the high flow.									

### Details

**Other Notes**  
Material for cofferdam is expected to come from surrounding built up areas that were built up during the construction of the power house. This item is expected to be double shifted due to the Oregon in water wet work permit restrictions.

### 1.005 Remove Spillway Concrete

[illegible]

Description	Active Idle	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Labor Foreman	Active	1.00	7.0	20	140.00	L	\$58.87	incl. in rate	incl. in rate	\$8,242.08
Laborer	Active	4.00	7.0	20	560.00	L	\$51.07	incl. in rate	incl. in rate	\$28,600.88
Equipment Operator (medium)	Active	2.00	7.0	20	280.00	L	\$72.34	incl. in rate	incl. in rate	\$20,254.08
Truck Driver (heavy)	Active	1.00	6.7	20	42.00	L	\$66.92	incl. in rate	incl. in rate	\$2,810.81
Truck, Off-Road, Articulated Rear, 20cy	Active	1.00	6.7	20	42.00	E	\$117.28	incl. in rate	incl. in rate	\$4,925.76
Air Compressor 900 cfm	Active	1.00	7.0	20	140.00	E	\$38.87	incl. in rate	incl. in rate	\$5,441.65
Air Tool, Chipping Hammer	Active	4.00	7.0	20	560.00	E	\$1.64	incl. in rate	incl. in rate	\$917.86
Generator, Small Generator, 10 - 15 kW	Active	2.00	7.0	20	280.00	E	\$7.04	incl. in rate	incl. in rate	\$1,971.20
Hydraulic Excavator (2.5cy)	Active	2.00	7.0	20	280.00	E	\$205.40	incl. in rate	incl. in rate	\$57,512.00
Hydraulic Impact Breaker Attachment (5k+ ft-lb)	Active	1.00	7.0	20	140.00	E	\$63.28	incl. in rate	incl. in rate	\$8,859.20
Hydraulic Thumbs/Shear Attachment	Active	1.00	7.0	20	140.00	E	\$24.92	incl. in rate	incl. in rate	\$3,488.80
					Labor Hours	1022				\$59,907.85
					Equipment Hours	1582				\$83,116.47
							TOTAL LABOR			
							TOTAL EQUIPMENT			

Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost
Consumables (10% labor)	1.00	LS	1.000	1.00	\$5,990.78	\$5,990.78
<b>TOTAL MATERIAL</b>						<b>\$5,990.78</b>

Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount
Concrete Saw Cutting	1	AL	Allowance	\$5,000.00	\$5,000.00
TOTAL SUBCONTRACTS					\$5,000.00

Labor Cost	\$59,907.85	Labor Burden @	0.0%		\$59,907.85
Material Cost	\$5,990.78	Material Tax @	0.00%	\$0.00	\$5,990.78
Equipment Cost	\$83,116.47	Equipment Tax @	0.00%	\$0.00	\$83,116.47
Subcontractors	\$5,000.00				\$5,000.00
<b>DIRECT COST SUBTOTALS</b>	<b>\$154,015</b>		<b>\$0</b>		<b>\$154,015</b>

[See Details Page](#)

1.005 Remove Spillway Concrete				
Details				
High Cost Factors			Low Cost Factors	
Bad Weather	0%		No Bad Weather	0%
Gas Price Increase	10%		Gas Price Decrease	10%
Unforeseen Contaminated Mats/ Access Issues	10%		No Unforeseen Contaminated Mats/ Access Issues	5%
	20%			15%
Production Per Hour		Hours	Overall Production	
		15	8	120
			20	300
Haul Notes		Excavator Loading Production per shift		
CY	2,100.00	CY per Hour		25.00
Swell Factor	60%	CY Bucket Size		2.50
Bulk CY	3360	Buckets Per Hour		10
Haul Vehicle 60% Capacity (2 tons per CY)	12	# of Excavators		1.00
# of Haul Vehicles	1	CY per Hour (2.5 CY Bucket)		25
Load Time (Includes Spot Time, Maneuver Time, & Loading) (Minutes)	5	CY Per Hour Ideal Production Per 8 Hour Shift		95
Dump Time (Includes Spot Time, Maneuver Time, & Unloading) (Minutes)	3	Efficient Compared to Ideal Production		26%
Haul Speed (Loaded MPH)	15	Inefficiencies Compared to Ideal Production		74%
Return Speed (Unloaded MPH)	20			
Haul Distance (Miles) Along Power Canal	3			
Shift Length (Hours)	20			
Cyce Time		Breaker Production per shift		
Load Time (Load Time Minutes / 60mins)	0.08			
Haul Time (Haul Distance / Haul Speed)	0.17	Hydraulic Hammer CY per Hour		15
Dump Time (Dump Time Minutes / 60 Mins)	0.05	# of Hammers		1.00
Return Time (Haul Distance / Return Speed)	0.13	CY per Hour		15
Hours Per Cycle	0.43	CY per Hour Back Check		15
Efficiency Factor (Night Work, Traffic Retrictions, Coffee Breaks, ECT)	90%	32CY per HR per 8hr shift (Ideal prod)		32
Actual Hours Per Cycle (Hours per Cycle / Efficiency Factor)	0.48	Efficient Compared to Ideal Production		47%
Number of Cycles( Bulk CY/ (Haul Vehicle Cap X # of Haul Vehicles)	280	Inefficiencies Compared to Ideal Production		53%
Total Number of Haul Hours ( Actual Cycle Hours X Number of Cycles)	134.4			
Loads Per Hour (Number of Cycles / Total Number of Haul Hours)	2.08			
Number of Haul Days	6.72			
Speed Loaded				
	Max Weight lbs of loaded 725	103,707.00		
	Tons	52		
	20lbs/Ton Rolling weighth	3		
	Rolling Resitance ( 1% for each 20lbs/Ton)	3%		
	Slope Grade	8%		
	Total Resistance	11%		
	Max Gear per CAT Chart	4		
	Max MPH	15		
Speed Empty				
	Max Weight lbs of Empty 725	50,795.00		
	Tons Empty	25		
	20lbs/Ton Rolling weight Empty	1		
	Rolling Resitance ( 1% per 20lbs/Ton) Empty	1%		
	Average Slope Empty	8%		
	Total Resistance Empty	9%		
	Max Gear per CAT Chart Empty	6		
	Max MPH Empty	20		
Other Notes				
Due to the amount of reinforcement in the concrete it is expected that demolition production will be inefficient when compared to ideal productions. It is expected that hauling will occur at night only due to the small amount of demolished material. All work has been double shifted to account for the Oregon wet work permit restrictions. The existing haul route along the power canal will be used to haul material to the scour hole.				



PAY ITEM INFORMATION									
PAY ITEM NUMBER	:	1.006	Project	:	KRRP - JC Boyle				
Description	:	Remove Monorail Structural Steel Components	Group	:	D10				
Quantity	:	15,000.00 LBS	Project #	:	1				
Daily Production	:	23,125.00 LBS per	Estimator	:	Mihaela Tomulescu	LBS per	Total Cost	Unit Price Per LBS	
Work Days	:	0.6 Days	Probable Low Cost Parameter	:		25,437.50	\$5,189	\$0.20	
Unit Price	:	\$0.38 per LBS	Probable High Cost Parameter	:		15,031.25	\$7,783	\$0.52	
Total Cost	:	\$5,765		:					

CREW COSTS											
Description	Active Idle	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost	
Labor Foreman	Active	1.00	0.6	10	6.00	L	\$58.87	incl. in rate	incl. in rate	\$353.23	
Laborer	Active	3.00	0.6	10	18.00	L	\$51.07	incl. in rate	incl. in rate	\$919.31	
Steelworker	Active	2.00	0.6	10	12.00	L	\$78.10	incl. in rate	incl. in rate	\$937.20	
Equipment Operator (crane)	Active	1.00	0.6	10	6.00	L	\$81.60	incl. in rate	incl. in rate	\$489.59	
Equipment Operator (medium)	Active	1.00	0.6	10	6.00	L	\$72.34	incl. in rate	incl. in rate	\$434.02	
Crawler Crane (130tn)	Active	1.00	0.6	10	6.00	E	\$262.91	incl. in rate	incl. in rate	\$1,577.46	
Loader, FE Rubber Tire (3.5cy)	Active	1.00	0.6	10	6.00	E	\$63.11	incl. in rate	incl. in rate	\$378.66	
Acetylene Torches	Active	2.00	0.6	10	12.00	E	\$0.47	incl. in rate	incl. in rate	\$5.64	
Labor Hours					48	TOTAL LABOR					\$3,133.35
Equipment Hours					24	TOTAL EQUIPMENT					\$1,961.76

MATERIAL COSTS						
Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost
Consumables 15% labor (saw blades, drill bits, torch gas, etc)	1.00	LS	1.000	1.00	\$470.00	\$470.00
TOTAL MATERIAL						\$470.00

SUBCONTRACT COSTS					
Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount
Hauling Disposal Cost	1.00	Loads	20 tons a load	\$200.00	\$200.00
TOTAL SUBCONTRACTS					\$200.00

SUMMARY OF COSTS							
Labor Cost	\$3,133.35	Labor Burden @	49.7%	\$0.00			\$3,133.35
Material Cost	\$470.00	Material Tax @	0.0%	\$0.00			\$470.00
Equipment Cost	\$1,961.76	Equipment Tax @	0.0%	\$0.00			\$1,961.76
Subcontractors	\$200.00						\$200.00
DIRECT COST SUBTOTALS	\$5,765			\$0		DIRECT COST SUBTOTALS	\$5,765

Additional Pay Item Notes :	

### 1.007 Remove Fish Ladder Concrete

SUMMARY OF COSTS					
Labor Cost	\$62,412.13	Labor Burden @	0.00%		\$62,412.13
Material Cost	\$6,241.21	Material Tax @	0.00%	\$0.00	\$6,241.21
Equipment Cost	\$91,680.06	Equipment Tax @	0.00%	\$0.00	\$91,680.06
Subcontractors	\$10,000.00				\$10,000.00
<b>DIRECT COST SUBTOTALS</b>	<b>\$170,333</b>		<b>\$0</b>		<b>DIRECT COST SUBTOTALS \$170,333</b>
Additional Pay Item Notes :					
<a href="#">See Details Page</a>					

### Details

**Other Notes**  
It is expected that trucks will haul material half of the demolition duration to achieve better hauling productions. It is expected that 1 of the excavators will be used half of the time to load the trucks.

### 1.008 Remove Gravity Dam Section Concrete

SUMMARY OF COSTS					
Labor Cost	\$16,952.86	Labor Burden @	0.0%		\$16,952.86
Material Cost	\$1,695.29	Material Tax @	0.00%	\$0.00	\$1,695.29
Equipment Cost	\$33,407.37	Equipment Tax @	0.00%	\$0.00	\$33,407.37
Subcontractors	\$5,000.00				\$5,000.00
<b>DIRECT COST SUBTOTALS</b>	<b>\$57,056</b>		<b>\$0</b>		<b>DIRECT COST SUBTOTALS \$57,056</b>
Additional Pay Item Notes :					
<a href="#">See Details Page</a>					

1.008 Remove Gravity Dam Section Concrete Details			
High Cost Factors		Low Cost Factors	
Bad Weather	0%	No Bad Weather	0%
Gas Price Increase	10%	Gas Price Decrease	10%
Unforeseen Contaminated Mats/ Access Issues	10%	No Unforeseen Contaminated Mats/ Access Issues	5%
20%		15%	
Production Per Hour		Overall Production	
	Hours		
	13	8	104.00
		20	260.00
Haul Notes		Excavator Loading Production per shift	
CY	600.00	CY per Hour	44.44
Swell Factor	60%	CY Bucket Size	2.50
Bulk CY	960	Buckets Per Hour	9
Haul Vehicle 60% Capacity (2 tons per CY)	12	# of Excavators	0.50
# of Haul Vehicles	1	CY per Hour (2.5 CY Bucket)	44
Load Time (Includes Spot Time, Maneuver Time, & Loading) (Minutes)	5	CY Per Hour Ideal Production Per 8 Hour Shift	95
Dump Time (Includes Spot Time, Maneuver Time, & Unloading) Minutes)	3	Efficient Compared to Ideal Production	47%
Haul Speed (Loaded MPH)	15	Inefficiencies Compared to Ideal Production	53%
Return Speed (Unloaded MPH)	20		
Haul Distance (Miles) Along Power Canal	2.58		
Shift Length (Hours)	20		
Cyce Time		Breaker Production	
Load Time (Load Time Minutes / 60mins)	0.08	Hydraulic Hammer CY per Hour	13
Haul Time (Haul Distance / Haul Speed)	0.17	# of Hammers	1.00
Dump Time (Dump Time Minutes / 60 Mins)	0.05	CY per Hour	13
Return Time (Haul Distance / Return Speed)	0.13	CY per Hour Back Check	13
Hours Per Cycle	0.43	32CY per HR per 8hr shift (Ideal prod)	32
Efficiency Factor (Night Work, Traffic Retrictions, Coffee Breaks, ECT)	80%	Efficient Compared to Ideal Production	41%
Actual Hours Per Cycle (Hours per Cycle / Efficiency Factor)	0.54	Inefficiencies Compared to Ideal Production	59%
Number of Cycles/Bulk CY (Haul Vehicle Cap X # of Haul Vehicles)	80		
Total Number of Haul Hours ( Actual Cycle Hours X Number of Cycles)	43.2		
Loads Per Hour (Number of Cycles / Total Number of Haul Hours)	1.85		
Number of Haul Days	2.16		
Speed Loaded			
	Max Weight lbs of loaded 725	103,707.00	
	Tons	52	
	20lbs/Ton Rolling weighth	3	
	Rolling Resitance ( 1% for each 20lbs/Ton)	3%	
	Average Slope	2%	
	Total Resistance	5%	
	Max Gear per CAT Chart	4	
	Max MPH	15	
Speed Empty			
	Max Weight lbs of Empty 725	50,795.00	
	Tons Empty	25	
	20lbs/Ton Rolling weight Empty	1	
	Rolling Resitance ( 1% per 20lbs/Ton) Empty	1%	
	Average Slope Empty	2%	
	Total Resistance Empty	3%	
	Max Gear per CAT Chart Empty	5	
	Max MPH Empty	20	
Other Notes			
The production on the breaker is reduced due to the amount of reinforcement in the concrete. Excavator's loading production is low due to This item will be double shifted because it is considered as in channel work and has a restricted window due to the Oregon in water work permit.			

PAY ITEM INFORMATION									
PAY ITEM NUMBER	:	1.009			Project	:	KRRP - JC Boyle		
Description	:	Remove Timber Equipment Ramp on left side of Dam			Group	:	D10		
Quantity	:	10,500.00 LBS							
Daily Production	:	18,750.00 LBS per			10	hour shift			
Work Days	:	0.6 Days			Project #	:	1		
Unit Price	:	\$0.38 per LBS			Estimator	:	Mihaela Tomulescu	LBS per	Total Cost
Total Cost	:	\$3,990			Probable Low Cost Parameter			21,562.50	\$3,391
					Probable High Cost Parameter			12,187.50	\$5,386
								Unit Price Per LBS	\$0.16
									\$0.44

CREW COSTS										
Description	Active Idle	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Labor Foreman	Active	1.00	0.6	10	6.00	L	\$58.87	incl. in rate	incl. in rate	\$353.23
Electrician	Active	1.00	0.6	10	6.00	L	\$55.80	incl. in rate	incl. in rate	\$334.82
Carpenters, Journeyman	Active	1.00	0.6	10	6.00	L	\$77.54	incl. in rate	incl. in rate	\$465.23
Laborer	Active	2.00	0.6	10	12.00	L	\$51.07	incl. in rate	incl. in rate	\$612.88
Hydraulic Crane (50tn)	Active	1.00	0.6	10	6.00	E	\$136.20	incl. in rate	incl. in rate	\$817.20
Loader, FE Rubber Tire (3.5cy)	Active	1.00	0.6	10	6.00	E	\$63.11	incl. in rate	incl. in rate	\$378.66
Equipment Operator (crane)	Active	1.00	0.6	10	6.00	L	\$81.60	incl. in rate	incl. in rate	\$489.59
Labor Hours					36	TOTAL LABOR				\$2,255.75
Equipment Hours					12	TOTAL EQUIPMENT				\$1,195.86

MATERIAL COSTS						
Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost
Consumables 15% labor (saw blades, drill bits, etc)	1.00	LS	1.000	1.00	\$338.36	\$338.36
						TOTAL MATERIAL
						\$338.36

SUBCONTRACT COSTS					
Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount
Hauling Disposal Cost	1.00	Loads	20 tons a load	\$200.00	\$200.00
					TOTAL SUBCONTRACTS
					\$200.00

SUMMARY OF COSTS									
Labor Cost	\$2,255.75	Labor Burden @	49.7%	\$0.00					\$2,255.75
Material Cost	\$338.36	Material Tax @	0.0%	\$0.00					\$338.36
Equipment Cost	\$1,195.86	Equipment Tax @	0.0%	\$0.00					\$1,195.86
Subcontractors	\$200.00								\$200.00
DIRECT COST SUBTOTALS	\$3,990			\$0				DIRECT COST SUBTOTALS	\$3,990
Additional Pay Item Notes :									

### 1.01 Remove Pressure-Treated Lumber from Footbridge around Intake Structure

SUMMARY OF COSTS					
Labor Cost	\$14,189.56	Labor Burden @	0.0%		\$14,189.56
Material Cost	\$0.00	Material Tax @	0.00%	\$0.00	\$0.00
Equipment Cost	\$5,448.00	Equipment Tax @	0.00%	\$0.00	\$5,448.00
Subcontractors	\$644.00				\$644.00
DIRECT COST SUBTOTALS		\$20,282		\$0	DIRECT COST SUBTOTALS
Additional Pay Item Notes :					





### 1.012 Remove Warehouse, North Residence, and South Residence Near Dam Access Road

SUMMARY OF COSTS							
Labor Cost	\$40,783.60	Labor Burden @	0.0%				\$40,783.60
Material Cost	\$0.00	Material Tax @	0.00%	\$0.00			\$0.00
Equipment Cost	\$33,961.00	Equipment Tax @	0.00%	\$0.00			\$33,961.00
Subcontractors	\$63,492.00						\$63,492.00
DIRECT COST SUBTOTALS		\$138,237	\$0		DIRECT COST SUBTOTALS		\$138,237
Additional Pay Item Notes :							
Demolition is to be done using excavators and a loader. Building Demolition will be hauled to Klamath County landfill							

**1.013 Remove Fire System Control Bldg. on left abutment**

SUMMARY OF COSTS									
Labor Cost	\$2,039.18	Labor Burden @	0.0%						\$2,039.18
Material Cost	\$0.00	Material Tax @	0.00%	\$0.00					\$0.00
Equipment Cost	\$1,698.05	Equipment Tax @	0.00%	\$0.00					\$1,698.05
Subcontractors	\$3,886.00								\$3,886.00
<b>DIRECT COST SUBTOTALS</b>	<b>\$7,623</b>			<b>\$0</b>			<b>DIRECT COST SUBTOTALS</b>		<b>\$7,623</b>
Additional Pay Item Notes :									

**1.014 Remove Dam Communication Bldg. on left abutment**

### 1.015 Remove Concrete Slab on left abutment for former Control House

SUMMARY OF COSTS					
Labor Cost	\$1,490.46	Labor Burden @	0.0%		\$1,490.46
Material Cost	\$0.00	Material Tax @	0.00%	\$0.00	\$0.00
Equipment Cost	\$2,694.76	Equipment Tax @	0.00%	\$0.00	\$2,694.76
Subcontractors	\$0.00				\$0.00
<b>DIRECT COST SUBTOTALS</b>	<b>\$4,185</b>		<b>\$0</b>	<b>DIRECT COST SUBTOTALS</b>	<b>\$4,185</b>
<b>Additional Pay Item Notes :</b>					
.5 day to demolish and removal all concrete material, 1 excavator with breaker, 1 excavator loading materials in to dump truck, 2 laborers to direct trucks and assist equipment with demolition operation, 1 foreman to oversee operation.					

**1.016 Remove 4'x5' Metal Hatch on top of Concrete Pull Box on left abutment**

SUMMARY OF COSTS					
Labor Cost	\$747.62	Labor Burden @	0.0%		\$747.62
Material Cost	\$0.00	Material Tax @	0.00%	\$0.00	\$0.00
Equipment Cost	\$1,001.73	Equipment Tax @	0.00%	\$0.00	\$1,001.73
Subcontractors	\$0.00				\$0.00
<b>DIRECT COST SUBTOTALS</b>	<b>\$1,749</b>		<b>\$0</b>	<b>DIRECT COST SUBTOTALS</b>	<b>\$1,749</b>
Additional Pay Item Notes :					
3 hours to complete operation, using 1 excavator to demo and load material, laborer to support equipment, dump truck to haul material to scour haul, foreman to oversee operation.					

### 1.017 Remove Reservoir Level Gauge House on Dam Crest

SUMMARY OF COSTS					
Labor Cost	\$1,631.34	Labor Burden @	0.0%		\$1,631.34
Material Cost	\$0.00	Material Tax @	0.00%	\$0.00	\$0.00
Equipment Cost	\$1,358.44	Equipment Tax @	0.00%	\$0.00	\$1,358.44
Subcontractors	\$348.00				\$348.00
<b>DIRECT COST SUBTOTALS</b>	<b>\$3,338</b>		<b>\$0</b>	<b>DIRECT COST SUBTOTALS</b>	<b>\$3,338</b>
<b>Additional Pay Item Notes :</b>					
<p>Operation will take 1/2 of a day to complete including mobilizing to area, excavator will be used to demolish and load material, truck will haul off material, to dump location, laborer to support equipment and truck coordination, foreman to oversee operation.</p>					

### 1.018 Downstream Riprap

SUMMARY OF COSTS					
Labor Cost	\$12,400.87	Labor Burden @	0.0%		\$12,400.87
Material Cost	\$0.00	Material Tax @	0.00%	\$0.00	\$0.00
Equipment Cost	\$18,507.71	Equipment Tax @	0.00%	\$0.00	\$18,507.71
Subcontractors	\$0.00				\$0.00
<b>DIRECT COST SUBTOTALS</b>	<b>\$30,909</b>		<b>\$0</b>		<b>DIRECT COST SUBTOTALS \$30,909</b>
Additional Pay Item Notes :					
See Additional production notes for breakdown.					

1.018 Downstream Riprap Details				
High Cost Factors			Low Cost Factors	
Bad Weather	0%		No Bad Weather	0%
Gas Price Increase	10%		Gas Price Decrease	10%
Unforeseen Contaminated Mats/ Access Issues	0%		No Unforeseen Contaminated Mats/ Access Issues	0%
	10%			10%
Production Per Hour	Hours	Efficiency Factor (Access, Activity, Qty, High Rebar Density, Breaks, Ect)	Overall Production	
	75	8	70%	420
		10	70%	525
Haul Notes		Excavator Loading Production per shift		
CY	2,200.00	CY per Hour		74
Swell Factor	30%	CY Bucket Size		5.00
Bulk CY	2,860.00	Buckets Per Hour		15
Haul Vehicle 85% Capacity (1.3 tons per CY)		# of Excavators		1.00
# of Haul Vehicles	27.3	CY per Hour (5 CY Bucket)		74
Load Time (Includes Spot Time, Maneuver Time, & Loading) (Minutes)		CY Per Hour Ideal Production Per 8 Hour Shift		160
Dump Time (Includes Spot Time, Maneuver Time, & Unloading) (Minutes)		Efficient Compared to Ideal Production		46%
Haul Speed (Loaded MPH)		Inefficiencies Compared to Ideal Production		54%
Return Speed (Unloaded MPH)				
Haul Distance (Miles)	0.50			
Shift Length (Hours)	10			
Cycle Time				
Load Time (Load Time Minutes / 60mins)	0.08			
Haul Time (Haul Distance / Haul Speed)	0.06			
Dump Time (Dump Time Minutes / 60 Mins)	0.07			
Return Time (Haul Distance / Return Speed)	0.05			
Hours Per Cycle	0.26			
Efficiency Factor (Night Work, Traffic Restrictions, Coffee Breaks, ECT)	70%			
Actual Hours Per Cycle (Hours per Cycle / Efficiency Factor)	0.37			
Number of Cycles (Bulk CY) (Haul Vehicle Cap X # of Haul Vehicles)	105			
Total Number of Haul Hours (Actual Cycle Hours X Number of Cycles)	38.85			
Loads Per Hour (Number of Cycles / Total Number of Haul Hours)	2.70			
Number of Haul Days	3.9			
Speed Loaded				
	Max Weight lbs of loaded 745	164,500.00		
	Tons	82.25		
	20lbs/Ton Rolling weighth	4		
	Rolling Resistance ( 1% for each 20lbs/Ton)	4%		
	Slope Grade	8%		
	Total Resistance	12%		
	Max Gear per CAT Chart	4		
	Max MPH	8.8		
Speed Empty				
	Max Weight lbs of Empty 745	74,100.00		
	Tons	37.05		
	20lbs/Ton Rolling weighth	2		
	Rolling Resistance ( 1% for each 20lbs/Ton)	2%		
	Slope Grade	8%		
	Total Resistance	10%		
	Max Gear per CAT Chart	6		
	Max MPH	10		
Other Notes				



### 1.019 Upstream Riprap

SUMMARY OF COSTS					
Labor Cost	\$10,853.15	Labor Burden @	0.0%		\$10,853.15
Material Cost	\$0.00	Material Tax @	0.00%	\$0.00	\$0.00
Equipment Cost	\$10,983.66	Equipment Tax @	0.00%	\$0.00	\$10,983.66
Subcontractors	\$0.00				\$0.00
<b>DIRECT COST SUBTOTALS</b>	<b>\$21,837</b>		<b>\$0</b>		<b>DIRECT COST SUBTOTALS \$21,837</b>
<b>Additional Pay Item Notes :</b>					
Based on using 2 excavators loading 5 trucks each truck is expected to get 10 loads a day,					

1.019 Upstream Riprap				
Details				
High Cost Factors		Low Cost Factors		
Bad Weather	0%	No Bad Weather		0%
Gas Price Increase	10%	Gas Price Decrease		10%
Unforeseen Contaminated Mats/ Access Issues	0%	No Unforeseen Contaminated Mats/ Access Issues		0%
	10%			10%
Production Per Hour		Hours	Efficiency Factor (Access, Activity, Qty, High Rebar Density, Breaks, Ect)	Overall Production
		75	8	420
			10	525
Haul Notes		Excavator Loading Production per shift		
CY	1,300.00		CY per Hour	74
Swell Factor	30%		CY Bucket Size	5.00
Bulk CY	1,690.00		Buckets Per Hour	15
Haul Vehicle 85% Capacity (1.3 tons per CY)	27.2		# of Excavators	1.00
# of Haul Vehicles			CY per Hour (5 CY Bucket)	74
Load Time (Includes Spot Time, Maneuver Time, & Loading) (Minutes)	5		CY Per Hour Ideal Production Per 8 Hour Shift	160
Dump Time (Includes Spot Time, Maneuver Time, & Unloading) Minutes	4		Efficient Compared to Ideal Production	46%
Haul Speed (Loaded MPH)	9		Inefficiencies Compared to Ideal Production	54%
Return Speed (Unloaded MPH)	10			
Haul Distance (Miles)	0.50			
Shift Length (Hours)	10			
Cyce Time				
Load Time (Load Time Minutes / 60mins)	0.08			
Haul Time (Haul Distance / Haul Speed)	0.06			
Dump Time (Dump Time Minutes / 60 Mins)	0.07			
Return Time (Haul Distance / Return Speed)	0.05			
Hours Per Cycle	0.26			
Efficiency Factor (High Work, Traffic Retractions, Coffee Breaks, ECT)	70%			
Actual Hours Per Cycle (Hours per Cycle / Efficiency Factor)	0.37			
Number of Cycles (Bulk CY/ Haul Vehicle Cap X # of Haul Vehicles)	62			
Total Number of Haul Hours ( Actual Cycle Hours X Number of Cycles)	22.94			
Loads Per Hour (Number of Cycles / Total Number of Haul Hours)	2.70			
Number of Haul Days	2.5			
Speed Loaded				
	Max Weight lbs of loaded 745	164,500.00		
	Tons	82.25		
	20lbs/Ton Rolling weighth	4		
	Rolling Resistance ( 1% for each 20lbs/Ton)	4%		
	Slope Grade	8%		
	Total Resistance	12%		
	Max Gear per CAT Chart	4		
	Max MPH	8.6		
Speed Empty				
	Max Weight lbs of Empty 745	74,100.00		
	Tons Empty	37.05		
	20lbs/Ton Rolling weight Empty	2		
	Rolling Resistance ( 1% per 20lbs/Ton) Empty	2%		
	Average Slope Empty	8%		
	Total Resistance Empty	10%		
	Max Gear per CAT Chart Empty	5		
	Max MPH Empty	10		
Other Notes				

### 1.020 Miscellaneous Excavation (Dam Earth Section)

[illegible]

Description	Active Idle	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Hydraulic Excavator (5.0cy)	Active	1.00	47.3	10	473.00	E	\$276.50	incl. in rate	incl. in rate	\$130,784.50
Loader, FE Rubber Tire (5.25cy)	Active	2.00	47.3	10	946.00	E	\$76.00	incl. in rate	incl. in rate	\$71,896.00
Equipment Operator (medium)	Active	4.00	47.3	10	1,892.00	L	\$72.34	incl. in rate	incl. in rate	\$136,859.71
Truck Driver (heavy)	Active	5.00	43.1	10	2,153.90	L	\$66.92	incl. in rate	incl. in rate	\$144,147.60
Laborer	Active	2.00	47.3	10	946.00	L	\$51.07	incl. in rate	incl. in rate	\$48,315.06
Labor Foreman	Active	1.00	47.3	10	473.00	L	\$58.87	incl. in rate	incl. in rate	\$27,846.46
CAT 745 (32 CY) OFF ROAD TRUCK	Active	5.00	43.1	10	2,153.90	E	\$177.47			\$382,252.63
Labor Hours					5464.9	TOTAL LABOR				\$357,168.83
Equipment Hours					3572.9	TOTAL EQUIPMENT				\$584,933.13

Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost
TOTAL MATERIAL						\$0.00

Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount
TOTAL SUBCONTRACTS					\$0.00

Labor Cost	\$357,168.83	Labor Burden @	0.0%			\$357,168.83
Material Cost	\$0.00	Material Tax @	0.00%	\$0.00		\$0.00
Equipment Cost	\$584,933.13	Equipment Tax @	0.00%	\$0.00		\$584,933.13
Subcontractors	\$0.00					\$0.00
<b>DIRECT COST SUBTOTALS</b>	<b>\$942,102</b>			<b>\$0</b>	<b>DIRECT COST SUBTOTALS</b>	<b>\$942,102</b>

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1.020 Miscellaneous Excavation (Dam Earth Section)			
High Cost Factors		Low Cost Factors	
Bad Weather	0%	No Bad Weather	0%
Gas Price Increase	10%	Gas Price Decrease	10%
Unforeseen Contaminated Mat'l Access Issues	10%	No Unforeseen Contaminated Mat'l Access Issues	0%
	20%		10%
Production Per Hour			
Hours	400	Efficiency Factor (Access, Activity, Qty, High Rebar Density, Breaks, Etc)	Overall Production
		8	70%
		10	70%
			2240
			2800
Haul Notes		Excavator Loading Production per shift	
CY	132,500.00	CY per Hour	80
Swirl Factor	50%	CY Bucket Size	5.00
Bank CY	172,250.00	Buckets Per Hour	16
Haul Vehicle 85% Capacity (1.3 tons per CY)	27.3	# of Excavators	1.00
# of Haul Vehicles	5	CY per Hour (5 CY Bucket)	80
Load Time (Includes Spot Time, Maneuver Time, & Loading) (Minutes)	5	CY Per Hour Ideal Production Per 8 Hour Shift	160
Dump Time (Includes Spot Time, Maneuver Time, & Unloading) (Minutes)	3	Efficient Compared to Ideal Production	50%
Haul Speed (Loaded MPH)	9	Inefficiencies Compared to Ideal Production	50%
Return Speed (Unloaded MPH)	10		
Haul Distance (Miles)	0.58		
Shift Length (Hours)	10		
Cycle Time			
Load Time (Load Time Minutes / 60mins)	0.08		
Haul Time (Haul Distance / Haul Speed)	0.06		
Dump Time (Dump Time Minutes / 60 Mins)	0.05		
Return Time (Haul Distance / Return Speed)	0.05		
Hours Per Cycle	0.24		
Efficiency Factor (steep Work, Traffic Restrictions, Coffin Breaks, ETC)	10%		
Actual Hours Per Cycle (hours per Cycle / Efficiency Factor)	0.34		
Number of Cycles, Bank CY (Haul Vehicle Cap X # of Haul Vehicles)	1267		
Total Number of Haul Hours (Actual Cycle Hours X Number of Cycles)	430.78		
Loads Per Hour (Number of Cycles / Total Number of Haul Hours)	2.34		
Number of Haul Days	43.078		
Speed Loaded			
Max Weight lbs of loaded 745	164,500.00		
Tons	82		
20lbs/Ton Rolling weighlt	4		
Rolling Resistance ( 1% for each 20lbs/Ton)	4%		
Slope Grade	8%		
Total Resistance	12%		
Max Gear per CAT Chart	4		
Max MPH	8.8		
Speed Empty			
Max Weight lbs of Empty 745	74,100.00		
Tons Empty	37		
20lbs/Ton Rolling weight Empty	2		
Rolling Resistance ( 1% per 20lbs/Ton) Empty	2%		
Average Slope Empty	8%		
Total Resistance Empty	4%		
Max Gear per CAT Chart Empty N/A			
Max MPH Empty N/A			
Notes Due to weight and Grade Speed Calculation is not applicable			
Other Notes			
Overall efficiency is reduced to account for developing initial access for trucks, maintaining access as dam elevation lowers, and any down time. Disposal site is roughly 1/2 mile away from earth dam location trucks are expected to run slower loaded due to rolling resistance being high and driving up a slight incline to disposal site (Roughly a 7% Slope)			

### 1.021 Cutoff Wall Concrete Demolition

SUMMARY OF COSTS				
Labor Cost	\$3,353.53	Labor Burden @	0.0%	\$3,353.53
Material Cost	\$0.00	Material Tax @	0.00%	\$0.00
Equipment Cost	\$5,475.15	Equipment Tax @	0.00%	\$5,475.15
Subcontractors	\$0.00			\$0.00
<b>DIRECT COST SUBTOTALS</b>	<b>\$8,829</b>		<b>\$0</b>	<b>DIRECT COST SUBTOTALS \$8,829</b>
<b>Additional Pay Item Notes :</b>				

1.021 Cutoff Wall Concrete Demolition Details				
High Cost Factors		Low Cost Factors		
Bad Weather	0%	No Bad Weather		0%
Gas Price Increase	10%	Gas Price Decrease		0%
Unforeseen Contaminated Mats/ Access Issues	5%	No Unforeseen Contaminated Mats/ Access Issues		0%
	15%			5%
Production Per Hour		Overall Production		
	8	8	64	
		10	80	
Haul Notes		Excavator Loading Production per shift		
CY	70.00	CY per Hour	20.69	
Swell Factor		60% CY Bucket Size	2.50	
Bulk CY		112 Buckets Per Hour	8	
Haul Vehicle 60% Capacity (2 tons per CY)		12 # of Excavators	1.00	
# of Haul Vehicles		1 CY per Hour (2.5 CY Bucket)	21	
Load Time (Includes Spot Time, Maneuver Time, & Loading) (Minutes)		5 CY Per Hour Ideal Production Per 8 Hour Shift	95	
Dump Time (Includes Spot Time, Maneuver Time, & Unloading) (Minutes)		5 Efficient Compared to Ideal Production	22%	
Haul Speed (Loaded MPH)		15 Inefficiencies Compared to Ideal Production	78%	
Return Speed (Unloaded MPH)	20			
Haul Distance (Miles) Along Power Canal	2.58			
Shift Length (Hours)	10			
Cycle Time		Breaker Production		
Load Time (Load Time Minutes / 60mins)		0.08 Hydraulic Hammer CY per Hour	8	
Haul Time (Haul Distance / Haul Speed)		0.17 # of Hammers	1.00	
Dump Time (Dump Time Minutes / 60 Mins)		0.08 CY per Hour	8	
Return Time (Haul Distance / Return Speed)		0.13 CY per Hour Back Check	8	
Hours Per Cycle	0.46	32CY per HR per 8hr shift (Ideal prod)	32	
Efficiency Factor (Night Work, Traffic Restrictions, Coffee Breaks, ECT)	80%	Efficient Compared to Ideal Production	25%	
Actual Hours Per Cycle (Hours per Cycle / Efficiency Factor)	0.58	Inefficiencies Compared to Ideal Production	75%	
Number of Cycles( Bulk CY/ Haul Vehicle Cap X # of Haul Vehicles)	9			
Total Number of Haul Hours (Actual Cycle Hours X Number of Cycles)	5.22			
Loads Per Hour (Number of Cycles / Total Number of Haul Hours)	1.72			
Number of Haul Days	0.522			
Speed Loaded				
	Max Weight lbs of loaded 725	103,707.00		
	Tons	52		
	20lbs/Ton Rolling weighth	3		
	Rolling Resistance ( 1% for each 20lbs/Ton)	3%		
	Average Slope	2%		
	Total Resistance	5%		
	Max Gear per CAT Chart	4		
	Max MPH	15		
Speed Empty				
	Max Weight lbs of Empty 725	50,795.00		
	Tons Empty	25		
	20lbs/Ton Rolling weight Empty	1		
	Rolling Resistance ( 1% per 20lbs/Ton) Empty	1%		
	Average Slope Empty	2%		
	Total Resistance Empty	3%		
	Max Gear per CAT Chart Empty	5		
	Max MPH Empty	20		
Other Notes				
Due to the low demolition quantity it is expected that the equipment will be less efficient when compared to ideal productions.				

### 1.022 Cutoff Wall Anchors

SUMMARY OF COSTS									
Labor Cost	\$3,896.64	Labor Burden @	49.7%	\$0.00					\$3,896.64
Material Cost	\$584.50	Material Tax @	0.0%	\$0.00					\$584.50
Equipment Cost	\$640.50	Equipment Tax @	0.0%	\$0.00					\$640.50
Subcontractors	\$200.00								\$200.00
DIRECT COST SUBTOTALS	\$5,322			\$0				DIRECT COST SUBTOTALS	\$5,322
Additional Pay Item Notes :									

PAY ITEM INFORMATION									
PAY ITEM NUMBER	:	1.023	Project	:	KRRP - JC Boyle				
Description	:	Remove & Dispose Hand Rails and Light Poles	Group	:	D10				
Quantity	:	5,000.00 LBS							
Daily Production	:	10,000.00 LBS per	10	hour shift	Project #	:	1		
Work Days	:	0.5 Days			Estimator	:	Mihaela Tomulescu	LBS per	
Unit Price	:	\$0.78 per LBS			Probable Low Cost Parameter			10,500.00	Total Cost
Total Cost	:	\$3,917			Probable High Cost Parameter			8,500.00	\$4,505
									Unit Price Per LBS
									\$0.35
									\$0.53

CREW COSTS										
Description	Active Idle	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Labor Foreman	Active	1.00	0.5	10	5.00	L	\$58.87	incl. in rate	incl. in rate	\$294.36
Laborer	Active	2.00	0.5	10	10.00	L	\$51.07	incl. in rate	incl. in rate	\$510.73
Ironworkers	Active	1.00	0.5	10	5.00	L	\$78.16	incl. in rate	incl. in rate	\$390.78
Equipment Operator (crane)	Active	1.00	0.5	10	5.00	L	\$81.60	incl. in rate	incl. in rate	\$407.99
Equipment Operator (medium)	Active	1.00	0.5	10	5.00	L	\$72.34	incl. in rate	incl. in rate	\$361.68
Hydraulic Crane (80tn)	Active	1.00	0.5	10	5.00	E	\$197.66	incl. in rate	incl. in rate	\$988.30
Loader, FE Rubber Tire (3.5cy)	Active	1.00	0.5	10	5.00	E	\$63.11	incl. in rate	incl. in rate	\$315.55
Acetylene Torches	Active	1.00	0.5	10.00	5.00	E	\$0.47	incl. in rate	incl. in rate	\$2.35
					Labor Hours	30	TOTAL LABOR			\$1,965.54
					Equipment Hours	15	TOTAL EQUIPMENT			\$1,306.20

MATERIAL COSTS							
Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price		Material Cost
Consumables 10% labor (saw blades, drill bits, torch gas, etc)	1.00	LS	1.000	1.00	\$196.55		\$196.55
							TOTAL MATERIAL
							\$196.55

SUBCONTRACT COSTS					
Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount
Hazardous waste cleanup/pickup/disposal, solid pickup, bulk material, maximum (10%)					
	0.25	ton	1.000	0.25	\$595.00
Hauling Disposal Cost 30 Miles to Klamath County Landfill	1.00	Loads	20 tons a load	\$300.00	\$148.75
					\$300.00
					TOTAL SUBCONTRACTS
					\$448.75

SUMMARY OF COSTS									
Labor Cost	\$1,965.54	Labor Burden @	49.7%	\$0.00					\$1,965.54
Material Cost	\$196.55	Material Tax @	0.0%	\$0.00					\$196.55
Equipment Cost	\$1,306.20	Equipment Tax @	0.0%	\$0.00					\$1,306.20
Subcontractors	\$448.75								\$448.75
DIRECT COST SUBTOTALS	\$3,917			\$0				DIRECT COST SUBTOTALS	\$3,917
Additional Pay Item Notes :									



PAY ITEM COST DETAIL WORKSHEET

1.024 Remove & Dispose Spillway Radial Gates and Hoists

PAY ITEM INFORMATION

PAY ITEM NUMBER	:	1.024	Project	:	KRRP - JC Boyle				
Description	:	Remove & Dispose Spillway Radial Gates and Hoists	Group	:	D03				
Quantity	:	124,000.00 LBS							
Daily Production	:	25,000.00 LBS per	10	hour shift	Project #	:	1		
Work Days	:	5.0 Days			Estimator	:	Mihaela Tomulescu	LBS per	27,500.00
Unit Price	:	\$0.42 per LBS			Probable Low Cost Parameter			Total Cost	\$46,821
Total Cost	:	\$52,024			Probable High Cost Parameter			Unit Price Per LBS	\$1.70
									\$4.32

CREW COSTS

Description	Active Idle	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Labor Foreman	Active	1.00	5.0	10	50.00	L	\$58.87	incl. in rate	incl. in rate	\$2,943.60
Laborer	Active	2.00	5.0	10	100.00	L	\$51.07	incl. in rate	incl. in rate	\$5,107.30
Ironworkers	Active	2.00	5.0	10	100.00	L	\$78.16	incl. in rate	incl. in rate	\$7,815.50
Equipment Operator (crane)	Active	1.00	5.0	10	50.00	L	\$81.60	incl. in rate	incl. in rate	\$4,079.90
Equipment Operator (medium)	Active	1.00	5.0	10	50.00	L	\$72.34	incl. in rate	incl. in rate	\$3,616.80
Crawler Crane (130tn)	Active	1.00	5.0	10	50.00	E	\$262.91	incl. in rate	incl. in rate	\$13,145.50
Loader, FE Rubber Tire (3.5cy)	Active	1.00	5.0	10	50.00	E	\$63.11	incl. in rate	incl. in rate	\$3,155.50
Acetylene Torches	Active	2.00	5.0	10.00	100.00	E	\$0.47	incl. in rate	incl. in rate	\$47.00
Labor Hours					350	TOTAL LABOR				\$23,563.10
Equipment Hours					200	TOTAL EQUIPMENT				\$16,348.00

MATERIAL COSTS

Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost
Consumables 15% labor (saw blades, drill bits, torch gas, etc)	1.00	LS	1.000	1.00	\$3,534.47	\$3,534.47
						TOTAL MATERIAL
						\$3,534.47

SUBCONTRACT COSTS

Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount
Hazardous waste cleanup/pickup/disposal, solid pickup, bulk material, maximum (20% of material)	12.40	ton	1.000	12.40	\$595.00
Hauling Disposal Cost 30 Miles to Klamath County	4.00	Loads	20 tons a load		\$300.00
					\$7,378.00
					\$1,200.00
					TOTAL SUBCONTRACTS
					\$8,578.00

SUMMARY OF COSTS

Labor Cost	\$23,563.10	Labor Burden @	49.7%	\$0.00		\$23,563.10
Material Cost	\$3,534.47	Material Tax @	0.0%	\$0.00		\$3,534.47
Equipment Cost	\$16,348.00	Equipment Tax @	0.0%	\$0.00		\$16,348.00
Subcontractors	\$8,578.00					\$8,578.00
DIRECT COST SUBTOTALS	\$52,024			\$0	DIRECT COST SUBTOTALS	\$52,024

Additional Pay Item Notes :

### 1.025 Remove & Dispose Stop Logs and Slots (steel)

SUMMARY OF COSTS					
Labor Cost	\$14,137.86	Labor Burden @	49.7%	\$0.00	\$14,137.86
Material Cost	\$4,956.89	Material Tax @	0.0%	\$0.00	\$4,956.89
Equipment Cost	\$15,180.00	Equipment Tax @	0.0%	\$0.00	\$15,180.00
Subcontractors	\$6,374.00				\$6,374.00
<b>DIRECT COST SUBTOTALS</b>	<b>\$40,649</b>			<b>\$0</b>	<b>DIRECT COST SUBTOTALS \$40,649</b>
<b>Additional Pay Item Notes :</b>					

#### 1.026 Remove & Dispose of 24" Slide Gate at Entrance to Fish Ladder Structure

SUMMARY OF COSTS					
Labor Cost	\$1,965.54	Labor Burden @	49.7%	\$0.00	\$1,965.54
Material Cost	\$294.83	Material Tax @	0.0%	\$0.00	\$294.83
Equipment Cost	\$1,632.30	Equipment Tax @	0.0%	\$0.00	\$1,632.30
Subcontractors	\$1,549.50				\$1,549.50
<b>DIRECT COST SUBTOTALS</b>	<b>\$5,442</b>			<b>\$0</b>	<b>DIRECT COST SUBTOTALS \$5,442</b>
<b>Additional Pay Item Notes :</b>					

### 1.026a Remove petroleum products from Red Bam Area

PAY ITEM NUMBER	:	1.026a	Project	:	KRRP - JC Boyle
Description	:	Remove petroleum products from Red Barn Area	Group	:	D09
Quantity	:	1,600.00 GAL			
Daily Production	:	687.50 GAL per	10	hour shift	
Work Days	:	2.3	Days		
Unit Price	:	\$11.85	per GAL		
Total Cost	:	\$18,961			
			Project #	:	1
			Estimator	:	Mihaela Tomulescu
			Probable Low Cost Parameter		790.63
			Probable High Cost Parameter		481.25
				GAL per	Total Cost
					Unit Price Per GAL
					\$20.38
					\$51.22

Description	Active Idle	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Labor Foreman	Active	1.00	2.3	10	23.00	L	\$58.87	incl. in rate	incl. in rate	\$1,354.06
Electrician	Active	1.00	2.3	10	23.00	L	\$55.80	incl. in rate	incl. in rate	\$1,283.47
Laborer	Active	4.00	2.3	10	92.00	L	\$51.07	incl. in rate	incl. in rate	\$4,698.72
Pump, Centrifugal, 3"	Active	3.00	2.3	10	69.00	E	\$2.76	incl. in rate	incl. in rate	\$190.14
Truck Driver (heavy)	Active	1.00	2.3	10	23.00	L	\$75.72	incl. in rate	incl. in rate	\$1,741.65
Truck, Tractor (400hp)	Active	1.00	2.3	10	23.00	E	\$69.98	incl. in rate	incl. in rate	\$1,609.54
Equipment Operator (medium)	Active	1.00	2.3	10	23.00	L	\$72.34	incl. in rate	incl. in rate	\$1,663.73
Loader, FE Rubber Tire (3.5cy)	Active	1.00	2.3	10	23.00	E	\$63.11	incl. in rate	incl. in rate	\$1,451.53
Labor Hours					184	TOTAL LABOR				\$10,741.62
Equipment Hours					115	TOTAL EQUIPMENT				\$3,251.21

Description	Item	Order	Conversion	Order	Order		Material
	Quantity	Unit	Factor / Waste	Quantity	Price		Cost
TOTAL MATERIAL						\$0.00	

Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount
Hazardous waste cleanup/pickup/disposal, liquid pickup, vacuum truck, stainless steel tank, 5000 gallons, minimum charge, 4 hours, 2 compartment	18.40	hour	RSM Means 028120101260	\$270.00	\$4,968.00
TOTAL SUBCONTRACTS					\$4,968.00

Labor Cost	\$10,741.62	Labor Burden @	49.7%	\$0.00		\$10,741.62
Material Cost	\$0.00	Material Tax @	0.0%	\$0.00		\$0.00
Equipment Cost	\$3,251.21	Equipment Tax @	0.0%	\$0.00		\$3,251.21
Subcontractors	\$4,968.00					\$4,968.00
<b>DIRECT COST SUBTOTALS</b>	<b>\$18,961</b>			<b>\$0</b>	<b>DIRECT COST SUBTOTALS</b>	<b>\$18,961</b>

**Additional Pay Item Notes :**

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#### 1.027 Remove & Dispose of Spillway gate motor & control panel

PAY ITEM NUMBER	:	1.027	Project	:	KRRP - JC Boyle			
Description	:	Remove & Dispose of Spillway gate motor & control panel	Group	:	D04			
Quantity	:	1.00 EA						
Daily Production	:	1.25 EA per	10	hour shift	Project #	:	1	
Work Days	:	0.8	Days		Estimator	:	Mihaela Tomulescu	
Unit Price	:	\$1,151.05	per EA		Probable Low Cost Parameter	:	1.38	
Total Cost	:	\$1.151			Probable High Cost Parameter	:	1.00	
						Total Cost	\$1,036	
						Unit Price Per EA	\$753.41	
							\$1,381.26	

Description	Active Idle	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Laborer	Active	2.00	0.8	10	16.00	L	\$51.07	incl. in rate	incl. in rate	\$817.17
Labor Hours					16	TOTAL LABOR				\$817.17
Equipment Hours					0	TOTAL EQUIPMENT				\$0.00

Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost
Consumables 0.5% labor ( Side Cutter, Sharp-Nose Pliers, Sharp Tip Tweezers PCB Clamp, etc)	4.09	LS	1.000	4.09	\$81.72	\$333.88
TOTAL MATERIAL						\$333.88

Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount
TOTAL SUBCONTRACTS					\$0.00

Labor Cost	\$817.17	Labor Burden @	49.7%	\$0.00		\$817.17
Material Cost	\$333.88	Material Tax @	0.0%	\$0.00		\$333.88
Equipment Cost	\$0.00	Equipment Tax @	0.0%	\$0.00		\$0.00
Subcontractors	\$0.00					\$0.00
<b>DIRECT COST SUBTOTALS</b>	<b>\$1,151</b>			<b>\$0</b>	<b>DIRECT COST SUBTOTALS</b>	<b>\$1,151</b>
<b>Additional Pay Item Notes :</b>						
Assumed that two workers will work one day to unconnected and remove the control panel and the gate motor. They will discharge the control panel and the gate motor in an available truck used for the other scope of work on the construction site. Assumed weight:500 LBS						

### 1.028 Remove & Dispose of Distribution equipment, panelboards

SUMMARY OF COSTS									
Labor Cost	\$2,601.68	Labor Burden @	49.7%	\$0.00					\$2,601.68
Material Cost	\$0.00	Material Tax @	0.0%	\$0.00					\$0.00
Equipment Cost	\$824.30	Equipment Tax @	0.0%	\$0.00					\$824.30
Subcontractors	\$300.00								\$300.00
<b>DIRECT COST SUBTOTALS</b>	<b>\$3,726</b>			<b>\$0</b>			<b>DIRECT COST SUBTOTALS</b>		<b>\$3,726</b>
<b>Additional Pay Item Notes :</b>									
Assumed that electrical crew formed of 1 Foreman and 1 Electricians will work two days to unconnected and remove the distribution panels. They are going to use same crane and a truck for disposal of spillway intake, trash rake and radial motor & control panel. Assumed weight:500 LBS									

### 1.029 Remove Powerhouse Concrete down to Elevation 3324.0

[illegible]

Description	Active Idle	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Labor Foreman	Active	1.00	14.3	10	143.00	L	\$58.87	incl. in rate	incl. in rate	\$8,418.70
Laborer	Active	3.00	14.3	10	429.00	L	\$51.07	incl. in rate	incl. in rate	\$21,910.32
Equipment Operator (medium)	Active	2.00	14.3	10	286.00	L	\$72.34	incl. in rate	incl. in rate	\$20,688.10
Truck Driver (heavy)	Active	2.00	5.4	10	108.00	L	\$66.92	incl. in rate	incl. in rate	\$7,227.79
Air Compressor 900 cfm	Active	1.00	14.3	10	143.00	E	\$38.87	incl. in rate	incl. in rate	\$5,558.26
Air Tool, Chipping Hammer	Active	2.00	14.3	10	286.00	E	\$1.64	incl. in rate	incl. in rate	\$468.76
Generator, Small Generator, 10 - 15 kW	Active	1.00	14.3	10	143.00	E	\$7.04	incl. in rate	incl. in rate	\$1,006.72
Hydraulic Excavator (5.0cy)	Active	1.00	14.3	10	143.00	E	\$276.50	incl. in rate	incl. in rate	\$39,539.50
Hydraulic Excavator (2.5cy)	Active	1.00	14.3	10	143.00	E	\$205.40	incl. in rate	incl. in rate	\$29,372.20
Hydraulic Impact Breaker Attachment (5k+ ft-lb)	Active	1.00	14.3	10	143.00	E	\$63.28	incl. in rate	incl. in rate	\$9,049.04
Hydraulic Thumbs/Shear Attachment	Active	1.00	14.3	10	143.00	E	\$24.92	incl. in rate	incl. in rate	\$3,563.56
Truck, Off-Road, Articulated Rear, 20cy	Active	2.00	5.4	10	108.00	E	\$117.28	incl. in rate	incl. in rate	\$12,666.24
Drilling and Blasting Operator	Active	3.00	14.3	10	429.00	L	\$48.70	incl. in rate	incl. in rate	\$20,890.87
Air Track Drill 4"	Active	1.00	14.3	10	143.00	E	\$212.49	incl. in rate	incl. in rate	\$30,386.07
Hydraulic Crane (50tn)	Active	1.00	3.6	10	35.75	E	\$134.32	incl. in rate	incl. in rate	\$4,801.94
Labor Hours					1395	TOTAL LABOR				\$79,135.77
Equipment Hours					1430.75	TOTAL EQUIPMENT				\$136,412.29

Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost
						\$0.00
Consumables (5% labor)	1.00	LS	1.000	1.00	\$6,820.61	\$6,820.61
Blasting Material	16,400.00	CY	1.050	17,220.00	\$5.56	\$95,777.64
Drill Bit Wear Allowance (10% of Drilling Eq)	1.00	LS	1.000	1.00	\$3,038.61	\$3,038.61
<b>TOTAL MATERIAL</b>						<b>\$105,636.86</b>

Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount
Concrete Saw Cutting (assumption)	1	AL	Allowance	\$20,000.00	\$20,000.00
	1.00	AL	Allowance	10,000.00	\$10,000.00
TOTAL SUBCONTRACTS					\$30,000.00

Labor Cost	\$79,135.77	Labor Burden @	0.0%		\$79,135.77
Material Cost	\$105,636.86	Material Tax @	0.00%	\$0.00	\$105,636.86
Equipment Cost	\$136,412.29	Equipment Tax @	0.00%	\$0.00	\$136,412.29
Subcontractors	\$30,000.00				\$30,000.00
<b>DIRECT COST SUBTOTALS</b>	<b>\$351,185</b>			<b>\$0</b>	<b>DIRECT COST SUBTOTALS \$351,185</b>

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1.029 Remove Powerhouse Concrete down to Elevation 3324.0

Details

High Cost Factors				Low Cost Factors			
Bad Weather	0%			No Bad Weather	0%		
Gas Price Increase	10%			Gas Price Decrease	10%		
Unforeseen Contaminated Mats/ Access Issues	10%			No Unforeseen Contaminated Mats/ Access Issues	0%		
	20%						10%

Production Per Hour	Hours	Efficiency Factor (Access, Activity, Qty, High Rebar Density, Breaks, Etc)	Overall Production
	30	8	35% 84.00
		10	35% 105.00

Haul Notes		Excavator Loading Production per shift	
CY	1,500.00	CY per Hour	22
Swell Factor	60%	CY Bucket Size	2.50
Bulk CY	2400	Buckets Per Hour	9
Haul Vehicle 60% Capacity (2 tons per CY)	12	# of Excavators	1.00
# of Haul Vehicles	2	CY per Hour (5 CY Bucket)	22
Load Time (Includes Spot Time, Maneuver Time, & Loading) (Minutes)	5	CY Per Hour Ideal Production Per 8 Hour Shift	95
Dump Time (Includes Spot Time, Maneuver Time, & Unloading) (Minutes)	3	Efficient Compared to Ideal Production	23%
Haul Speed (Loaded MPH)	15.00	Inefficiencies Compared to Ideal Production	77%
Return Speed (Unloaded MPH)	20.00		
Haul Distance (Miles) Along Power Canal	2.58		
Shift Length (Hours)	10		
		Breaker Production	
Cycle Time		Hydraulic Hammer CY per Hour	1
Load Time (Load Time Minutes / 60mins)	0.08	# of Hammers	10.50
Haul Time (Haul Distance / Haul Speed)	0.17	CY per Hour	10.5
Dump Time (Dump Time Minutes / 60 Mins)	0.05	CY per Hour Back Check	32
Return Time (Haul Distance / Return Speed)	0.13	32CY per HR per 8hr shift (ideal prod)	0.328125
Hours Per Cycle	0.43	Efficient Compared to Ideal Production	67%
Efficiency Factor (Night Work, Traffic Restrictions, Coffee Breaks, ECT)	80%	Inefficiencies Compared to Ideal Production	0%
Actual Hours Per Cycle (Hours per Cycle / Efficiency Factor)	0.54		
Number of Cycles( Bulk CY/ Haul Vehicle Cap X # of Haul Vehicles)	100		
Total Number of Haul Hours ( Actual Cycle Hours X Number of Cycles)	94	Drilling and Blasting Production per shift	
Loads Per Hour (Number of Cycles / Total Number of Haul Hours)	1.85	Drilling and Blasting CY per Hour	10.5
Number of Haul Days	5	# of Drills	1.00
		CY per Hour	10.5
		CY per Hour Back Check	10.5
		36CY per HR per 8hr shift (ideal prod)	38
		Efficient Compared to Ideal Production	28%
		Inefficiencies Compared to Ideal Production	72%

Speed Loaded			
Max Weight lbs of loaded 725	103,707.00		
Tons	52		
20lbs/Ton Rolling weighth	3		
Rolling Resistance ( 1% for each 20lbs/Ton)	3%		
Slope Grade	7%		
Total Resistance	9%		
Max Gear per CAT Chart	4		
Max MPH	15		

Speed Empty			
Max Weight lbs of Empty 725	50,795.00		
Tons Empty	25		
20lbs/Ton Rolling weight Empty	1		
Rolling Resistance ( 1% per 20lbs/Ton) Empty	1%		
Average Slope Empty	7%		
Total Resistance Empty	8%		
Max Gear per CAT Chart Empty	5		
Max MPH Empty	20		



**Other Notes**  
This estimate presents that the power house concrete will be demolished by using a combination of blasting and concrete breakers/ Crushers. It is expected that the power house concrete will have dense reinforcement and other embedded items and the efficiency has been reduced to account for the time it will take for extra processing time. Steel cutting and a crane have been added for .25 of the time to account for removing the draft tube as the concrete demolition progresses.



**1.030 Remove Structural Steel Item associated with Powerhouse**

SUMMARY OF COSTS									
Labor Cost	\$25,589.03	Labor Burden @	49.7%	\$0.00					\$25,589.03
Material Cost	\$3,838.35	Material Tax @	0.0%	\$0.00					\$3,838.35
Equipment Cost	\$18,606.59	Equipment Tax @	0.0%	\$0.00					\$18,606.59
Subcontractors	\$6,371.50								\$6,371.50
<b>DIRECT COST SUBTOTALS</b>	<b>\$52,405</b>			<b>\$0</b>			<b>DIRECT COST SUBTOTALS</b>		<b>\$52,405</b>
<b>Additional Pay Item Notes :</b> <div style="border: 1px solid black; height: 100px; width: 100%;"></div>									

### 1.031 Remove Warehouse near Powerhouse

SUMMARY OF COSTS									
Labor Cost	\$19,571.31	Labor Burden @	0.0%					\$19,571.31	
Material Cost	\$0.00	Material Tax @	0.00%	\$0.00				\$0.00	
Equipment Cost	\$15,302.25	Equipment Tax @	0.00%	\$0.00				\$15,302.25	
Subcontractors	\$40,128.00							\$40,128.00	
DIRECT COST SUBTOTALS		\$75,002	\$0				DIRECT COST SUBTOTALS		\$75,002
Additional Pay Item Notes :									

PAY ITEM INFORMATION									
PAY ITEM NUMBER	:	1.032	Project	:	KRRP - JC Boyle				
Description	:	Remove & Dispose of 2 - Governor oil systems	Group	:	D03				
Quantity	:	52,500.00 LBS	Project #	:	1				
Daily Production	:	18,000.00 LBS per	Estimator	:	Mihaela Tomulescu				
Work Days	:	2.9 Days	Probable Low Cost Parameter	:	18,900.00				
Unit Price	:	\$0.97 per LBS	Probable High Cost Parameter	:	15,300.00				
Total Cost	:	\$50,951							

CREW COSTS										
Description	Active Idle	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Electrician Foreman	Active	1.00	2.9	10	29.00	L	\$55.80	incl. in rate	incl. in rate	\$1,618.29
Electrician	Active	1.00	2.9	10	29.00	L	\$55.80	incl. in rate	incl. in rate	\$1,618.29
Ironworkers	Active	4.00	2.9	10	116.00	L	\$78.16	incl. in rate	incl. in rate	\$9,065.98
Hydraulic Excavator (5.0cy)	Active	1.00	2.9	10	29.00	E	\$276.50	incl. in rate	incl. in rate	\$8,018.50
Hydraulic Crane (80tn)	Active	1.00	2.9	10	29.00	E	\$197.66	incl. in rate	incl. in rate	\$5,732.14
Equipment Operator (medium)	Active	1.00	2.9	10	29.00	L	\$72.34	incl. in rate	incl. in rate	\$2,097.74
Equipment Operator (crane)	Active	1.00	2.9	10	29.00	L	\$81.60	incl. in rate	incl. in rate	\$2,366.34
Labor Hours					232	TOTAL LABOR				\$16,766.64
Equipment Hours					58	TOTAL EQUIPMENT				\$13,750.64

MATERIAL COSTS						
Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost
Consumables 15% labor (saw blades, drill bits, etc)	1.00	LS	1.000	1.00	\$2,515.00	\$2,515.00
						TOTAL MATERIAL
						\$2,515.00

SUBCONTRACT COSTS					
Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount
Hazardous waste cleanup/pickup/disposal, solid pickup, bulk material, maximum					
	26.25	ton	1.000	26.25	\$595.00
Hauling Disposal Cost 30 Miles to Klamath County Landfill	2.00	Loads	20 tons a load		\$300.00
Selective demolition, torch cutting, steel, 1" thick plate (assumption)	2,000.00	LF	1.000	2,000.00	\$0.85
					TOTAL SUBCONTRACTS
					\$17,918.75

SUMMARY OF COSTS									
Labor Cost	\$16,766.64	Labor Burden @	49.7%	\$0.00				Labor Cost	\$16,766.64
Material Cost	\$2,515.00	Material Tax @	0.0%	\$0.00				Material Cost	\$2,515.00
Equipment Cost	\$13,750.64	Equipment Tax @	0.0%	\$0.00				Equipment Cost	\$13,750.64
Subcontractors	\$17,918.75							Subcontractors	\$17,918.75
DIRECT COST SUBTOTALS		\$50,951		\$0				DIRECT COST SUBTOTALS	\$50,951
Additional Pay Item Notes :									

PAY ITEM COST DETAIL WORKSHEET

1.033 Remove & Dispose of Cooling water and bearing oil systems

PAY ITEM INFORMATION									
PAY ITEM NUMBER	:	1.033			Project	:	KRRP - JC Boyle		
Description	:	Remove & Dispose of Cooling water and bearing oil systems			Group	:	D03		
Quantity	:	6,500.00 LBS							
Daily Production	:	14,000.00 LBS per		10	hour shift	Project #	:	1	
Work Days	:	0.5 Days			Estimator	:	Mihaela Tomulescu	LBS per	Total Cost
Unit Price	:	\$1.14 per LBS			Probable Low Cost Parameter	:	15,400.00	\$6,656	\$0.43
Total Cost	:	\$7,395			Probable High Cost Parameter	:	11,900.00	\$8,504	\$0.71

CREW COSTS										
Description	Active Idle	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Labor Foreman	Active	1.00	0.5	10	5.00	L	\$58.87	incl. in rate	incl. in rate	\$294.36
Laborer	Active	1.00	0.5	10	5.00	L	\$51.07	incl. in rate	incl. in rate	\$255.37
Steelworker	Active	1.00	0.5	10	5.00	L	\$78.10	incl. in rate	incl. in rate	\$390.50
Loader, FE Rubber Tire (8.6cy)	Active	1.00	0.5	10	5.00	E	\$225.40	incl. in rate	incl. in rate	\$1,127.00
Truck Driver (heavy)	Active	1.00	0.5	10	5.00	L	\$75.72	incl. in rate	incl. in rate	\$378.62
Truck, Off-Road, Articulated Rear, 20cy	Active	1.00	0.5	10	5.00	E	\$117.28	incl. in rate	incl. in rate	\$586.40
Equipment Operator (light)	Active	1.00	0.5	10	5.00	L	\$69.19	incl. in rate	incl. in rate	\$345.95
					Labor Hours	25	TOTAL LABOR			\$1,664.80
					Equipment Hours	10	TOTAL EQUIPMENT			\$1,713.40

MATERIAL COSTS						
Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost
Consumables 5% labor (saw blades, drill bits, etc)	1.00	LS	1.000	1.00	\$83.24	\$83.24
						TOTAL MATERIAL
						\$83.24

SUBCONTRACT COSTS						
Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount	
Hazardous waste cleanup/pickup/disposal, solid pickup, bulk material, maximum	3.25	ton	1.000	\$595.00	\$1,933.75	
Hauling Disposal Cost 30 Miles to Klamath County Landfill	1.00	Loads	20 tons a load	\$300.00	\$300.00	
Selective demolition, torch cutting, steel, 1" thick plate (assumption)	2,000.00	LF	1.000	\$0.85	\$1,700.00	
						TOTAL SUBCONTRACTS
						\$3,933.75

SUMMARY OF COSTS						
Labor Cost	\$1,664.80	Labor Burden @	49.7%	\$0.00		\$1,664.80
Material Cost	\$83.24	Material Tax @	0.0%	\$0.00		\$83.24
Equipment Cost	\$1,713.40	Equipment Tax @	0.0%	\$0.00		\$1,713.40
Subcontractors	\$3,933.75					\$3,933.75
DIRECT COST SUBTOTALS	\$7,395			\$0	DIRECT COST SUBTOTALS	\$7,395

Additional Pay Item Notes :

Used RS Means : Assumed " Pipe, metal pipe, to 1-1/2" diam., selective demolition", 2390 LF of 1 1/2" oil pipes at 2.72 Lbs/LF. Used 1 Forman, 1 Steelworkers to cut the pipes and 1 Laborers to load the pipes in the truck. The cooling and lubrication systems for the Hydroelectric Barge turbine, speed increaser and generator will be a combination of water and oil. These systems will be isolated from the water passages so that no contamination of passing water will occur. The following is a list of hazardous materials, substances, chemicals, and wastes normally found at a hydropower facility that may require disposal actions if not recycled or reused for their intended purpose:

1. Polychlorinated Biphenyls (PCBs)
2. Asbestos
3. Paint/abrasive blast grit (red lead paint)
4. Oil
5. Mercury
6. Antifreeze
7. Halogenated and non-halogenated solvents
8. Greases
9. Pesticides (includes herbicides, insecticides, and wood preservatives)
10. Petroleum contaminated
11. Chlorinated fluorocarbons (CFCs) Freon/Halon
12. Gasoline/diesel (includes product and sludge in tanks)
13. Batteries (includes acid)
14. Water treatment sludge (septic tanks/wastewater treatment). Assumed hazardous waste 100% of the total lbs

PAY ITEM INFORMATION									
PAY ITEM NUMBER	:	1.034	Project	:	KRRP - JC Boyle				
Description	:	Remove & Dispose of 2 - Francis Turbines	Group	:	D03				
Quantity	:	560,000.00 LBS	Project #	:	1				
Daily Production	:	28,000.00 LBS per	Estimator	:	Mihaela Tomulescu	LBS per	Total Cost	Unit Price Per LBS	
Work Days	:	20.0 Days	Probable Low Cost Parameter	:		32,200.00	\$221,915	\$6.89	
Unit Price	:	\$0.47 per LBS	Probable High Cost Parameter	:		21,000.00	\$326,345	\$15.54	
Total Cost	:	\$261,076		:					

CREW COSTS										
Description	Active Idle	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Labor Foreman	Active	1.00	20.0	10	200.00	L	\$58.87	incl. in rate	incl. in rate	\$11,774.40
Laborer	Active	3.00	20.0	10	600.00	L	\$51.07	incl. in rate	incl. in rate	\$30,643.80
Electrician Foreman	Active	1.00	20.0	10	200.00	L	\$55.80	incl. in rate	incl. in rate	\$11,160.60
Electrician	Active	2.00	20.0	10	400.00	L	\$55.80	incl. in rate	incl. in rate	\$22,321.20
Steelworker	Active	2.00	20.0	10	400.00	L	\$78.10	incl. in rate	incl. in rate	\$31,240.00
Millwright	Active	2.00	20.0	10	400.00	L	\$82.04	incl. in rate	incl. in rate	\$32,815.20
Equipment Operator (medium)	Active	1.00	20.0	10	200.00	L	\$72.34	incl. in rate	incl. in rate	\$14,467.20
Equipment Operator (crane)	Active	1.00	20.0	10	200.00	L	\$81.60	incl. in rate	incl. in rate	\$16,319.60
Hydraulic Crane (50tn)	Active	1.00	20.0	10	200.00	E	\$136.20	incl. in rate	incl. in rate	\$27,240.00
Loader, FE Rubber Tire (3.5cy)	Active	1.00	20.0	10	200.00	E	\$63.11	incl. in rate	incl. in rate	\$12,622.00
Acetylene Torches	Active	2.00	20.0	10.00	400.00	E	\$0.47	incl. in rate	incl. in rate	\$188.00
Labor Hours					2600	TOTAL LABOR				\$170,742.00
Equipment Hours					800	TOTAL EQUIPMENT				\$40,050.00

MATERIAL COSTS						
Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost
Consumables 10% labor (saw blades, drill bits, etc)	1.00	LS	1.000	1.00	\$17,074.20	\$17,074.20
(assumption)	3,000.00	LF	1.000	3,000.00	\$0.85	\$2,550.00
TOTAL MATERIAL						\$19,624.20

SUBCONTRACT COSTS					
Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount
Hazardous waste cleanup/pickup/disposal, solid pickup, bulk material, maximum (10%)	28.00	ton	1.000	28.00	\$595.00
Hauling Disposal Cost 30 Miles to Klamath County Landfill (wide Load)	14.00	Loads	1.000	14.00	\$1,000.00
TOTAL SUBCONTRACTS					\$30,660.00

SUMMARY OF COSTS						
Labor Cost	\$170,742.00	Labor Burden @	49.7%	\$0.00		\$170,742.00
Material Cost	\$19,624.20	Material Tax @	0.0%	\$0.00		\$19,624.20
Equipment Cost	\$40,050.00	Equipment Tax @	0.0%	\$0.00		\$40,050.00
Subcontractors	\$30,660.00					\$30,660.00
DIRECT COST SUBTOTALS	\$261,076			\$0	DIRECT COST SUBTOTALS	\$261,076

Additional Pay Item Notes :	
The crew will open the engine side panels, and remove the nacelle access panels. Then they will disconnect the engine thermocouple leads at the terminal board. Before disconnecting any lines all fuel, oil, and hydraulic fluid valves are closed. All lines will be plug as they are disconnected to prevent entrance of foreign material. Remove the clamps securing the bleed-air ducts at the firewall. Then, disconnect the electrical connector plugs, engine breather and vent lines, and fuel, oil, and hydraulic lines. Disconnect the engine power lever and propeller control rods or cables. Remove the covers from the lift points, attach the sling, and remove slack from the cables using a suitable hoist. The sling must be adjusted to position. Remove the engine mount bolts then the engine is ready to be removed. Move the engine forward, out of the nacelle structure. Lower the engine into position on the stand, and secure it prior to removing the engine sling. The crew will cut into manageable pieces and the overhead crane with support of a crawler crane will load the turbines on to disposal trucks. Due to size of the loads it is expected to have extra hauling cost to account for lead cars and potential permits.	

PAY ITEM INFORMATION									
PAY ITEM NUMBER	:	1.035	Project	:	KRRP - JC Boyle				
Description	:	Remove & Dispose of 150 Ton crane	Group	:	D10				
Quantity	:	240,000.00 LBS	Project #	:	1				
Daily Production	:	30,000.00 LBS per	Estimator	:	Mihaela Tomulescu				
Work Days	:	8.0 Days	Probable Low Cost Parameter	:	LBS per 34,500.00				
Unit Price	:	\$0.43 per LBS	Probable High Cost Parameter	:	24,000.00				
Total Cost	:	\$102,116		:	Total Cost \$86,799				
				:	Unit Price Per LBS \$2.52				
				:	\$122,539				
				:	\$5.11				

CREW COSTS										
Description	Active Idle	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Labor Foreman	Active	1.00	8.0	10	80.00	L	\$58.87	incl. in rate	incl. in rate	\$4,709.76
Laborer	Active	3.00	8.0	10	240.00	L	\$51.07	incl. in rate	incl. in rate	\$12,257.52
Ironworkers	Active	3.00	8.0	10	240.00	L	\$78.16	incl. in rate	incl. in rate	\$18,757.20
Equipment Operator (medium)	Active	1.00	8.0	10	80.00	L	\$72.34	incl. in rate	incl. in rate	\$5,786.88
Equipment Operator (crane)	Active	1.00	8.0	10	80.00	L	\$81.60	incl. in rate	incl. in rate	\$6,527.84
Crawler Crane (130tn)	Active	1.00	8.0	10	80.00	E	\$262.91	incl. in rate	incl. in rate	\$21,032.80
Hydraulic Excavator (2.5cy)	Active	1.00	8.0	10	80.00	E	\$205.40	incl. in rate	incl. in rate	\$16,432.00
					Labor Hours	720	TOTAL LABOR			\$48,039.20
					Equipment Hours	160	TOTAL EQUIPMENT			\$37,464.80

MATERIAL COSTS						
Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost
Consumables 5% labor (saw blades, drill bits, etc)	1.00	LS	1.000	1.00	\$2,401.96	\$2,401.96
						TOTAL MATERIAL
						\$2,401.96

SUBCONTRACT COSTS					
Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount
Hazardous waste cleanup/pickup/disposal, solid pickup, bulk material, maximum (15% of total weight)	18.00	ton	1.000	18.00	\$595.00
Hauling Disposal Cost 30 Miles to Klamath County Landfill	6.00	Loads	20 tons a load		\$300.00
(assumption)	2,000.00	LF	1.000	2,000.00	\$0.85
					TOTAL SUBCONTRACTS
					\$14,210.00

SUMMARY OF COSTS					
Labor Cost	\$48,039.20	Labor Burden @	49.7%	\$0.00	\$48,039.20
Material Cost	\$2,401.96	Material Tax @	0.0%	\$0.00	\$2,401.96
Equipment Cost	\$37,464.80	Equipment Tax @	0.0%	\$0.00	\$37,464.80
Subcontractors	\$14,210.00				\$14,210.00
DIRECT COST SUBTOTALS	\$102,116			\$0	DIRECT COST SUBTOTALS
					\$102,116
Additional Pay Item Notes :					

## PAY ITEM INFORMATION

PAY ITEM NUMBER	: 1.036	Project	: KRRP - JC Boyle
Description	: Remove & Dispose of Compressed Air systems	Group	: D03
Quantity	: 1,100.00 LBS		
Daily Production	: 7,500.00 LBS per	Project #	: 1
Work Days	: 0.147 Days	Estimator	: Mihaela Tomulescu
Unit Price	: \$0.88 per LBS	Probable Low Cost Parameter	LBS per 8,250.00
Total Cost	: \$965	Probable High Cost Parameter	5,625.00
			Total Cost \$868
			Unit Price Per LBS \$0.11
			\$0.21

## CREW COSTS

Description	Active Idle	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Loader, FE Rubber Tire (5.25cy)	Active	1.00	0.1	10	1.47	E	\$76.00	incl. in rate	incl. in rate	\$111.47
Laborer	Active	3.00	0.1	10	4.40	L	\$51.07	incl. in rate	incl. in rate	\$224.72
Steelworker	Active	1.00	0.1	10	1.47	L	\$78.10	incl. in rate	incl. in rate	\$114.55
Equipment Operator (light)	Active	1.00	0.1	10	1.47	L	\$69.19	incl. in rate	incl. in rate	\$101.48
Labor Foreman	Active	1.00	0.1	10	1.47	L	\$58.87	incl. in rate	incl. in rate	\$86.35
Labor Hours					8.8	TOTAL LABOR				\$527.09
Equipment Hours					1.466666667	TOTAL EQUIPMENT				\$111.47

## MATERIAL COSTS

Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost
Consumables 5% labor (saw blades, drill bits, etc)	1.00	LS	1.000	1.00	\$26.35	\$26.35
						TOTAL MATERIAL
						\$26.35

## SUBCONTRACT COSTS

Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount
Hauling Disposal Cost 30 Miles to Klamath County Landfill	1.00	Loads	20 tons a load	\$300.00	\$300.00
					TOTAL SUBCONTRACTS
					\$300.00

## SUMMARY OF COSTS

Labor Cost	\$527.09	Labor Burden @	49.7%	\$0.00	\$527.09
Material Cost	\$26.35	Material Tax @	0.0%	\$0.00	\$26.35
Equipment Cost	\$111.47	Equipment Tax @	0.0%	\$0.00	\$111.47
Subcontractors	\$300.00				\$300.00
DIRECT COST SUBTOTALS	\$965			\$0	DIRECT COST SUBTOTALS
					\$965

## Additional Pay Item Notes :

Used RS Means : Pipe, metal pipe, to 1-1/2" diam., selective demolition, 400 LF of 1 1/2" pipes at 2.72 Lbs/LF. Used 1 Steelworkers to cut the pipes and 3 Laborers for hauling.

PAY ITEM INFORMATION									
PAY ITEM NUMBER	:	1.037			Project	:	KRRP - JC Boyle		
Description	:	Remove & Dispose of 2 - CO2 systems			Group	:	D03		
Quantity	:	6,600.00 LBS							
Daily Production	:	7,500.00 LBS per			10	hour shift	Project #	:	1
Work Days	:	0.9 Days			Estimator	:	Mihaela Tomulescu		LBS per
Unit Price	:	\$0.68 per LBS			Probable Low Cost Parameter		8,250.00		Total Cost
Total Cost	:	\$4,520			Probable High Cost Parameter		6,000.00		\$5,423
									Unit Price Per LBS
									\$0.49
									\$0.90

CREW COSTS										
Description	Active Idle	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Labor Foreman	Active	1.00	0.9	10	9.00	L	\$58.87	incl. in rate	incl. in rate	\$529.85
Laborer	Active	2.00	0.9	10	18.00	L	\$51.07	incl. in rate	incl. in rate	\$919.31
Steelworker	Active	2.00	0.9	10	18.00	L	\$78.10	incl. in rate	incl. in rate	\$1,405.80
Equipment Operator (light)	Active	1.00	0.9	10	9.00	L	\$69.19	incl. in rate	incl. in rate	\$622.71
Loader, FE Rubber Tire (3.5cy)	Active	1.00	0.9	10	9.00	E	\$63.11	incl. in rate	incl. in rate	\$567.99
Labor Hours					54	TOTAL LABOR				\$3,477.67
Equipment Hours					9	TOTAL EQUIPMENT				\$567.99

MATERIAL COSTS						
Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost
Consumables 5% labor (saw blades, drill bits, etc)	1.00	LS	1.000	1.00	\$173.88	\$173.88
TOTAL MATERIAL						\$173.88

SUBCONTRACT COSTS					
Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount
Hauling Disposal Cost 30 Miles to Klamath County Landfill	1.00	Loads	20 tons a load	\$300.00	\$300.00
TOTAL SUBCONTRACTS					\$300.00

SUMMARY OF COSTS									
Labor Cost	\$3,477.67	Labor Burden @	49.7%	\$0.00				\$3,477.67	
Material Cost	\$173.88	Material Tax @	0.0%	\$0.00				\$173.88	
Equipment Cost	\$567.99	Equipment Tax @	0.0%	\$0.00				\$567.99	
Subcontractors	\$300.00							\$300.00	
DIRECT COST SUBTOTALS	\$4,520			\$0			DIRECT COST SUBTOTALS	\$4,520	
Additional Pay Item Notes :									
Used RS Means : Pipe, metal pipe, to 1-1/2" diam., selective demolition, 2430 LF of 1 1/2" pipes at 2.72 Lbs. Used 1 Forman, 2 Steelworkers to cut the pipes and 2 Laborers to load the pipes in the truck.									





PAY ITEM INFORMATION									
PAY ITEM NUMBER	:	1,039	Project	:	KRRP - JC Boyle				
Description	:	Remove & Dispose of Transformer Oil Fire Protection	Group	:	D09				
Quantity	:	6,500.00 LBS	Project #	:	1				
Daily Production	:	7,500.00 LBS per 10 hour shift	Estimator	:	Mihaela Tomulescu				
Work Days	:	0.9 Days	Probable Low Cost Parameter	:	LBS per	8,625.00	Total Cost	\$3,214	Unit Price Per LBS
Unit Price	:	\$0.58 per LBS	Probable High Cost Parameter	:		6,000.00		\$4,537	\$0.76
Total Cost	:	\$3,781		:					

CREW COSTS										
Description	Active Idle	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Labor Foreman	Active	1.00	0.9	10	9.00	L	\$58.87	incl. in rate	incl. in rate	\$529.85
Laborer	Active	2.00	0.9	10	18.00	L	\$51.07	incl. in rate	incl. in rate	\$919.31
Steelworker	Active	2.00	0.9	10	18.00	L	\$78.10	incl. in rate	incl. in rate	\$1,405.80
Labor Hours					45	TOTAL LABOR				\$2,854.96
Equipment Hours					0	TOTAL EQUIPMENT				\$0.00

MATERIAL COSTS						
Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost
Consumables 5% labor (saw blades, drill bits, etc)	1.00	LS	1.000	1.00	\$142.75	\$142.75
TOTAL MATERIAL						\$142.75

SUBCONTRACT COSTS					
Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount
Hazardous waste cleanup/pickup/disposal, solid pickup, bulk material, maximum	0.81	ton	1.000	0.81	\$595.00
Hauling Disposal Cost 30 Miles to Klamath County Landfill	1.00	Loads	20 tons a load	\$300.00	\$300.00
					TOTAL SUBCONTRACTS
					\$783.44

SUMMARY OF COSTS									
Labor Cost	\$2,854.96	Labor Burden @	49.7%	\$0.00					\$2,854.96
Material Cost	\$142.75	Material Tax @	0.0%	\$0.00					\$142.75
Equipment Cost	\$0.00	Equipment Tax @	0.0%	\$0.00					\$0.00
Subcontractors	\$783.44								\$783.44
DIRECT COST SUBTOTALS	\$3,781			\$0				DIRECT COST SUBTOTALS	\$3,781

## Additional Pay Item Notes :

Used RS Means : Pipe, metal pipe, to 1-1/2" diam., selective demolition, 2390 LF of 1 1/2" fire protection pipes at 2.72 Lbs. Used 1 Forman, 2 Steelworkers to cut the pipes and 3 Laborers to load the pipes in the truck. Calculated 58.6 miles from JC Boyle to Yreka Transfer Recycling. Each hydropower facility has at least 150,000 gallons to 250,000 gallon of oil currently in use. This oil would have to be properly disposed of in the event of decommissioning. Oil removed from the turbines and other equipment, including transformer oil, would be either a waste oil or used oil, depending on prior use and contaminants found in the oil. Containerized oil containing contaminants such as solvents are commonly encountered at hydropower facilities. Oil sludge are common in tanks. Oil disposal would likely be costly due to the large volumes found at hydropower facilities and the ease of contamination with other regulated hazardous wastes.

#### 1.04 Remove & Dispose of Unwatering Piping

Additional Pay Item Notes :

PAY ITEM INFORMATION									
PAY ITEM NUMBER	:	1.041			Project	:	KRRP - JC Boyle		
Description	:	Remove & Dispose of Drainage Piping			Group	:	D05		
Quantity	:	10,000.00 LBS							
Daily Production	:	10,000.00 LBS per			10	hour shift	Project #	:	1
Work Days	:	1.0 Days			Estimator	:	Mihaela Tomulescu	LBS per	Total Cost
Unit Price	:	\$0.53 per LBS			Probable Low Cost Parameter		11,500.00	\$4,467	\$0.39
Total Cost	:	\$5,255			Probable High Cost Parameter		8,000.00	\$6,306	\$0.79

CREW COSTS										
Description	Active Idle	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Labor Foreman	Active	1.00	1.0	10	10.00	L	\$58.87	incl. in rate	incl. in rate	\$588.72
Laborer	Active	1.00	1.0	10	10.00	L	\$51.07	incl. in rate	incl. in rate	\$510.73
Steelworker	Active	1.00	1.0	10	10.00	L	\$78.10	incl. in rate	incl. in rate	\$781.00
Loader, FE Rubber Tire (8.6cy)	Active	1.00	1.0	10	10.00	E	\$225.40	incl. in rate	incl. in rate	\$2,254.00
Equipment Operator (light)	Active	1.00	1.0	10	10.00	L	\$69.19	incl. in rate	incl. in rate	\$691.90
Labor Hours					40	TOTAL LABOR				\$2,572.35
Equipment Hours					10	TOTAL EQUIPMENT				\$2,254.00

MATERIAL COSTS						
Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost
Consumables 5% labor (saw blades, drill bits, etc)	1.00	LS	1.000	1.00	\$128.62	\$128.62
TOTAL MATERIAL						\$128.62

SUBCONTRACT COSTS					
Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount
Hauling Disposal Cost 30 Miles to Klamath County Landfill	1.00	Loads	20 tons a load	\$300.00	\$300.00
					TOTAL SUBCONTRACTS
					\$300.00

SUMMARY OF COSTS							
Labor Cost	\$2,572.35	Labor Burden @	49.7%	\$0.00			\$2,572.35
Material Cost	\$128.62	Material Tax @	0.0%	\$0.00			\$128.62
Equipment Cost	\$2,254.00	Equipment Tax @	0.0%	\$0.00			\$2,254.00
Subcontractors	\$300.00						\$300.00
DIRECT COST SUBTOTALS	\$5,255			\$0		DIRECT COST SUBTOTALS	\$5,255
Additional Pay Item Notes :							
2750 LF of 1 " drainage pipes at 3.66 Lbs. Used 1 Loader and 1 Forman, 1 Steelworkers to cut the pipes and 1 Laborers to load the pipes in the truck.							

## PAY ITEM INFORMATION

PAY ITEM NUMBER	: 1.042	Project	: KRRP - JC Boyle
Description	: Remove & Dispose of 2-Oil Sump pumps	Group	: D05
Quantity	: 2,000.00 LBS		
Daily Production	: 7,500.00 LBS per 10 hour shift	Project #	: 1
Work Days	: 0.3 Days	Estimator	: Mihaela Tomulescu
Unit Price	: \$1.03 per LBS	Probable Low Cost Parameter	LBS per 8,250.00
Total Cost	: \$2,053	Probable High Cost Parameter	Total Cost \$1,848
			Unit Price Per LBS \$0.22
			\$0.37

## CREW COSTS

Description	Active Idle	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Labor Foreman	Active	1.00	0.3	10	3.00	L	\$58.87	incl. in rate	incl. in rate	\$176.62
Electrician	Active	1.00	0.3	10	3.00	L	\$55.80	incl. in rate	incl. in rate	\$167.41
Laborer	Active	2.00	0.3	10	6.00	L	\$51.07	incl. in rate	incl. in rate	\$306.44
Hydraulic Crane (17tn)	Active	1.00	0.3	10	3.00	E	\$82.43	incl. in rate	incl. in rate	\$247.29
Equipment Operator (medium)	Active	1.00	0.3	10	3.00	L	\$72.34	incl. in rate	incl. in rate	\$217.01
Labor Hours					15	TOTAL LABOR				\$867.47
Equipment Hours					3	TOTAL EQUIPMENT				\$247.29

## MATERIAL COSTS

Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost
Consumables 5% labor (saw blades, drill bits, etc)	1.00	LS	1.000	1.00	\$43.37	\$43.37
						TOTAL MATERIAL
						\$43.37

## SUBCONTRACT COSTS

Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount
Hazardous waste cleanup/pickup/disposal, solid pickup, bulk material, maximum (assumed weight)					
	1.00	ton	1.000	\$595.00	\$595.00
Hauling Disposal Cost 30 Miles to Klamath County Landfill	1.00	Loads	20 tons a load	\$300.00	\$300.00
					TOTAL SUBCONTRACTS
					\$895.00

## SUMMARY OF COSTS

Labor Cost	\$867.47	Labor Burden @	49.7%	\$0.00	\$867.47
Material Cost	\$43.37	Material Tax @	0.0%	\$0.00	\$43.37
Equipment Cost	\$247.29	Equipment Tax @	0.0%	\$0.00	\$247.29
Subcontractors	\$895.00				\$895.00
DIRECT COST SUBTOTALS	\$2,053			\$0	DIRECT COST SUBTOTALS
					\$2,053

Additional Pay Item Notes :

PAY ITEM INFORMATION												
Description Quantity Daily Production Work Days Unit Price Total Cost	PAY ITEM NUMBER	1.043			Project	KRRP - JC Boyle						
		Remove & Dispose of Draft Tube Bulk Head Gates and Hoists at the Powerhouse			Group	D04						
		65,000.00	LBS		Project #	1						
		31,250.00	LBS per	10	Estimator		LBS per	Total Cost	Unit Price Per LBS			
			2.1	Days	hour shift	Probable Low Cost Parameter	35,937.50	\$20,148	\$0.56			
					Unit Price		\$0.36	per LBS	Probable High Cost Parameter	23,437.50	\$29,630	\$1.26
					Total Cost		\$23,704					

CREW COSTS										
Description	Active Idle	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Labor Foreman	Active	1.00	2.1	10	21.00	L	\$58.87	incl. in rate	incl. in rate	\$1,236.31
Electrician	Active	1.00	2.1	10	21.00	L	\$55.80	incl. in rate	incl. in rate	\$1,171.86
Ironworkers	Active	2.00	2.1	10	42.00	L	\$78.16	incl. in rate	incl. in rate	\$3,282.51
Millwright	Active	2.00	2.1	10	42.00	L	\$82.04	incl. in rate	incl. in rate	\$3,445.60
Crawler Crane (270tn)	Active	1.00	2.1	10	21.00	E	\$454.10	incl. in rate	incl. in rate	\$9,536.10
Gas Welding Machine	Active	4.00	2.1	10	84.00	E	\$2.88	incl. in rate	incl. in rate	\$241.67
Equipment Operator (crane)	Active	1.00	2.1	10	21.00	L	\$81.60	incl. in rate	incl. in rate	\$1,713.56
Labor Hours					147	TOTAL LABOR				\$10,849.84
Equipment Hours					105	TOTAL EQUIPMENT				\$9,777.77

MATERIAL COSTS						
Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost
Consumables 5% labor (saw blades, drill bits, etc)	1.00	LS	1.000	1.00	\$542.49	\$542.49
						TOTAL MATERIAL
						\$542.49

SUBCONTRACT COSTS					
Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount
Hazardous waste cleanup/pickup/disposal, solid pickup, bulk material, maximum	3.25	ton	1.000	3.25	\$595.00
Hauling Disposal Cost 30 Miles to Klamath County Landfill	2.00	Loads	20 tons a load	\$300.00	\$600.00
					\$0.00
					\$0.00
					TOTAL SUBCONTRACTS
					\$2,533.75

SUMMARY OF COSTS						
Labor Cost	\$10,849.84	Labor Burden @	49.7%	\$0.00		\$10,849.84
Material Cost	\$542.49	Material Tax @	0.0%	\$0.00		\$542.49
Equipment Cost	\$9,777.77	Equipment Tax @	0.0%	\$0.00		\$9,777.77
Subcontractors	\$2,533.75					\$2,533.75
DIRECT COST SUBTOTALS	\$23,704			\$0	DIRECT COST SUBTOTALS	\$23,704

Additional Pay Item Notes :

PAY ITEM INFORMATION									
PAY ITEM NUMBER	:	1.043a			Project	:	KRRP - JC Boyle		
Description	:	Remove petroleum products from Mechanical Equipment			Group	:	D09		
Quantity	:	2,700.00 GAL							
Daily Production	:	687.50 GAL per			10	hour shift			
Work Days	:	3.9			Days	Project #	:	1	
Unit Price	:	\$12.33 per GAL			Estimator	:	Mihaela Tomulescu		
Total Cost	:	\$33,278				Probable Low Cost Parameter		GAL per	Total Cost
						Probable High Cost Parameter		Unit Price Per GAL	
						790.63	\$28,286		
						481.25	\$43,261		

CREW COSTS										
Description	Active Idle	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Labor Foreman	Active	1.00	3.9	10	39.00	L	\$58.87	incl. in rate	incl. in rate	\$2,296.01
Electrician	Active	1.00	3.9	10	39.00	L	\$55.80	incl. in rate	incl. in rate	\$2,176.32
Laborer	Active	4.00	3.9	10	156.00	L	\$51.07	incl. in rate	incl. in rate	\$7,967.39
Pump, Centrifugal, 3"	Active	3.00	3.9	10	117.00	E	\$2.76	incl. in rate	incl. in rate	\$322.41
Truck Driver (heavy)	Active	1.00	3.9	10	39.00	L	\$75.72	incl. in rate	incl. in rate	\$2,953.24
Truck, Tractor (400hp)	Active	1.00	3.9	10	39.00	E	\$69.98	incl. in rate	incl. in rate	\$2,729.22
Equipment Operator (medium)	Active	1.00	3.9	10	39.00	L	\$72.34	incl. in rate	incl. in rate	\$2,821.10
Loader, FE Rubber Tire (3.5cy)	Active	1.00	3.9	10	39.00	E	\$63.11			\$2,461.29
			3.9	10	0.00	0	\$0.00			\$0.00
			3.9	10	0.00	0	\$0.00			\$0.00
			3.9	10	0.00	0	\$0.00			\$0.00
			3.9	10	0.00	0	\$0.00			\$0.00
Labor Hours					312	TOTAL LABOR				\$18,214.05
Equipment Hours					195	TOTAL EQUIPMENT				\$5,512.92

MATERIAL COSTS							
Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost	
Consumables 5% labor (filters, pads, etc)	1.00	LS	1.000	1.00	\$910.70	\$910.70	
						TOTAL MATERIAL	\$910.70

SUBCONTRACT COSTS					
Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount
Hazardous waste cleanup/pickup/disposal, liquid pickup, vacuum truck, stainless steel tank, 5000 gallons, minimum charge, 4 hours, 2 compartment	32.00	hour	RSM Means 028120101260	\$270.00	\$8,640.00
TOTAL SUBCONTRACTS					\$8,640.00

SUMMARY OF COSTS						
Labor Cost	\$18,214.05	Labor Burden @	49.7%	\$0.00		\$18,214.05
Material Cost	\$910.70	Material Tax @	0.0%	\$0.00		\$910.70
Equipment Cost	\$5,512.92	Equipment Tax @	0.0%	\$0.00		\$5,512.92
Subcontractors	\$8,640.00					\$8,640.00
DIRECT COST SUBTOTALS	\$33,278			\$0	DIRECT COST SUBTOTALS	\$33,278
Additional Pay Item Notes :						
The petroleum waste is saved in drums using the loader they are sent to recycling or disposal. Used a crew formed of 1 Foreman, 4 Laborers to takeout the petroleum waste with a pump from the mech equipment, 1 Electrician to unplug the power and to assure the temporary power at the construction site.						

PAY ITEM INFORMATION									
PAY ITEM NUMBER	:	1,044	Project	:	KRRP - JC Boyle				
Description	:	Remove & Dispose of Outdoor Vertical AC Generator, Unit 1: 53 MVA	Group	:	D04				
Quantity	:	2.00 EA	Project #	:	1	Estimator	:	Mihaela Tomulescu	EA per
Daily Production	:	0.40 EA per	10	hour shift		Probable Low Cost Parameter	:	0.46	Total Cost
Work Days	:	5.0 Days				Probable High Cost Parameter	:	0.34	Unit Price Per EA
Unit Price	:	\$52,105.28 per EA						\$88,579	\$192,562.97
Total Cost	:	\$104,211						\$119,842	\$352,476.86

CREW COSTS										
Description	Active Idle	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Crawler Crane (270tn)	Active	1.00	5.0	10	50.00	E	\$454.10	incl. in rate	incl. in rate	\$22,705.00
Electrician	Active	4.00	5.0	10	200.00	L	\$55.80	incl. in rate	incl. in rate	\$11,160.60
Equipment Operator (oiler)	Active	1.00	5.0	10	50.00	L	\$73.43	incl. in rate	incl. in rate	\$3,671.25
Equipment Operator (crane)	Active	1.00	5.0	10	50.00	L	\$81.60	incl. in rate	incl. in rate	\$4,079.90
Steelworker	Active	5.00	5.0	10	250.00	L	\$78.10	incl. in rate	incl. in rate	\$19,525.00
Loader, FE Rubber Tire (8.6cy)	Active	2.00	5.0	10	100.00	E	\$225.40	incl. in rate	incl. in rate	\$22,540.00
Labor Foreman	Active	1.00	5.0	10	50.00	L	\$58.87	incl. in rate	incl. in rate	\$2,943.60
Electrician Foreman	Active	1.00	5.0	10	50.00	L	\$55.80	incl. in rate	incl. in rate	\$2,790.15
Welder	Active	4.00	5.0	10	200.00	E	\$7.84	incl. in rate	incl. in rate	\$1,568.00
					Labor Hours	650			TOTAL LABOR	\$44,170.50
					Equipment Hours	350			TOTAL EQUIPMENT	\$46,813.00

MATERIAL COSTS						
Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost
Consumables 10% labor (saw blades, drill bits, etc)	1.00	LS	1.000	1.00	\$4,417.05	\$4,417.05
						TOTAL MATERIAL
						\$4,417.05

SUBCONTRACT COSTS					
Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount
Disposal fee (for 115 tons)	115	tons	1.000	115.00	\$74.00
Hauling Disposal Cost 30 Miles to Klamath County Landfill	1.00	Loads	20 tons a load		\$300.00
					TOTAL SUBCONTRACTS
					\$8,810.00

SUMMARY OF COSTS						
Labor Cost	\$44,170.50	Labor Burden @	49.7%	\$0.00		\$44,170.50
Material Cost	\$4,417.05	Material Tax @	0.0%	\$0.00		\$4,417.05
Equipment Cost	\$46,813.00	Equipment Tax @	0.0%	\$0.00		\$46,813.00
Subcontractors	\$8,810.00					\$8,810.00
DIRECT COST SUBTOTALS	\$104,211			\$0	DIRECT COST SUBTOTALS	\$104,211
Additional Pay Item Notes :						
Used RS Means, 4- R13 Crew formed of 1 Forman, 3 Electricians, 1 Oiler, 0 .25 Equipment Crane, 5 Steelworkers to cut adjacent appurtenances and 1 Welder to cut pipes. Calculated 85.6 miles from JC Boyle to Yreka Transfer Recycling (back and forth). Total Weight 650,000 LBS; Heaviest lift around: 300,000 LBS.						



PAY ITEM INFORMATION									
PAY ITEM NUMBER	:	1.045			Project	:	KRRP - JC Boyle		
Description	:	Remove & Dispose of Excitation equipment for 53/50 MVA Generator			Group	:	D04		
Quantity	:	2.00 EA							
Daily Production	:	1.25 EA per			10	hour shift	Project #	:	1
Work Days	:	1.6 Days			Estimator	:	Mihaela Tomulescu	EA per	Total Cost
Unit Price	:	\$10,372.15 per EA			Probable Low Cost Parameter		1.38	\$18,670	\$13,578.08
Total Cost	:	\$20,744			Probable High Cost Parameter		1.13	\$22,819	\$20,283.31

CREW COSTS										
Description	Active Idle	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Electrician Foreman	Active	2.00	1.6	10	32.00	L	\$55.80	incl. in rate	incl. in rate	\$1,785.70
Electrician	Active	4.00	1.6	10	64.00	L	\$55.80	incl. in rate	incl. in rate	\$3,571.39
Laborer	Active	4.00	1.6	10	64.00	L	\$51.07	incl. in rate	incl. in rate	\$3,268.67
Loader, FE Rubber Tire (8.6cy)	Active	1.00	1.6	10	16.00	E	\$225.40	incl. in rate	incl. in rate	\$3,606.40
Hydraulic Crane (120tn)	Active	1.00	1.6	10	16.00	E	\$242.08	incl. in rate	incl. in rate	\$3,873.28
Welder	Active	1.00	1.6	10	16.00	E	\$7.84	incl. in rate	incl. in rate	\$125.44
Gas Welding Machine	Active	1.00	1.6	10	16.00	E	\$2.88	incl. in rate	incl. in rate	\$46.03
Equipment Operator (medium)	Active	1.00	1.6	10	16.00	L	\$72.34	incl. in rate	incl. in rate	\$1,157.38
Equipment Operator (crane)	Active	1.00	1.6	10	16.00	L	\$81.60	incl. in rate	incl. in rate	\$1,305.57
Labor Hours					192	TOTAL LABOR				\$11,088.70
Equipment Hours					64	TOTAL EQUIPMENT				\$7,651.15

MATERIAL COSTS						
Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost
Consumables 5% labor (saw blades, drill bits, etc)	1.00	LS	1.000	1.00	\$554.44	\$554.44
Selective demolition, torch cutting, steel, 1" thick plate (assumed qty)	1,000.00	LF	1.000	1,000.00	\$0.85	\$850.00
TOTAL MATERIAL						\$1,404.44

SUBCONTRACT COSTS					
Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount
Hauling Disposal Cost 30 Miles to Klamath County Landfill	2.00	Loads	20 tons a load	\$300.00	\$600.00
TOTAL SUBCONTRACTS					\$600.00

SUMMARY OF COSTS						
Labor Cost	\$11,088.70	Labor Burden @	49.7%	\$0.00		\$11,088.70
Material Cost	\$1,404.44	Material Tax @	0.0%	\$0.00		\$1,404.44
Equipment Cost	\$7,651.15	Equipment Tax @	0.0%	\$0.00		\$7,651.15
Subcontractors	\$600.00					\$600.00
DIRECT COST SUBTOTALS	\$20,744			\$0	DIRECT COST SUBTOTALS	\$20,744
Additional Pay Item Notes :						
2 sections, weight 1000LBS - Used 2 Crew of 1 Forman, 1 Electrician, 1 Welder to cut to remove the electrical equipment and 1 laborer to haul. Equipment used 1 Loader and 1 Crane for disposal.						

#### 1.046 Remove & Dispose of Surge protection equip. for 53/50 MVA Generator

Additional Pay Item Notes :

Used 1 Forman, 1 Electrician to remove the electrical equipment and 1 laborer to haul.
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PAY ITEM INFORMATION									
PAY ITEM NUMBER	:	1.048			Project	:	KRRP - JC Boyle		
Description	:	Remove & Dispose of Generator Switchgear, 15kV - (6 sections)			Group	:	D04		
Quantity	:	1.00 EA							
Daily Production	:	1.25 EA per			10	hour shift	Project #	:	1
Work Days	:	0.8 Days			Estimator	:	Mihaela Tomulescu	EA per	Total Cost
Unit Price	:	\$14,212.64 per EA			Probable Low Cost Parameter		1.44	\$12,081	\$8,404.00
Total Cost	:	\$14,213			Probable High Cost Parameter		0.94	\$17,766	\$18,950.19

CREW COSTS										
Description	Active Idle	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Electrician Foreman	Active	3.00	0.8	10	24.00	L	\$55.80	incl. in rate	incl. in rate	\$1,339.27
Electrician	Active	9.00	0.8	10	72.00	L	\$55.80	incl. in rate	incl. in rate	\$4,017.82
Laborer	Active	6.00	0.8	10	48.00	L	\$51.07	incl. in rate	incl. in rate	\$2,451.50
Loader, FE Rubber Tire (8.6cy)	Active	1.00	0.8	10	8.00	E	\$225.40	incl. in rate	incl. in rate	\$1,803.20
Hydraulic Crane (120tn)	Active	1.00	0.8	10	8.00	E	\$242.08	incl. in rate	incl. in rate	\$1,936.64
Welder	Active	1.00	0.8	10	8.00	E	\$7.84	incl. in rate	incl. in rate	\$62.72
Gas Welding Machine	Active	1.00	0.8	10	8.00	E	\$2.88	incl. in rate	incl. in rate	\$23.02
Equipment Operator (medium)	Active	1.00	0.8	10	8.00	L	\$72.34	incl. in rate	incl. in rate	\$578.69
Equipment Operator (crane)	Active	1.00	0.8	10	8.00	L	\$81.60	incl. in rate	incl. in rate	\$652.78
Labor Hours					160	TOTAL LABOR				\$9,040.06
Equipment Hours					32	TOTAL EQUIPMENT				\$3,825.58

MATERIAL COSTS						
Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost
Consumables 5% labor (saw blades, drill bits, etc)	1.00	LS	1.000	1.00	\$452.00	\$452.00
						TOTAL MATERIAL
						\$452.00

SUBCONTRACT COSTS					
Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount
Hazardous waste cleanup/pickup/disposal, solid pickup, bulk material, maximum (assumed qty)					
Hauling Disposal Cost 30 Miles to Klamath County Landfill	1.00	ton	1.000	1.00	\$595.00
	1.00	Loads	20 tons a load		\$300.00
					TOTAL SUBCONTRACTS
					\$895.00

SUMMARY OF COSTS					
Labor Cost	\$9,040.06	Labor Burden @	49.7%	\$0.00	\$9,040.06
Material Cost	\$452.00	Material Tax @	0.0%	\$0.00	\$452.00
Equipment Cost	\$3,825.58	Equipment Tax @	0.0%	\$0.00	\$3,825.58
Subcontractors	\$895.00				\$895.00
DIRECT COST SUBTOTALS	\$14,213			\$0	DIRECT COST SUBTOTALS
					\$14,213

Additional Pay Item Notes :

Used 3 Crews (2 sections each) formed of 1 Foreman, 3 Electrician, 2 laborer to haul with the crane in the truck. Assumed containing hazardous waste that will be disposed at 85.6 miles away from the construction site. In normal circumstances, decontaminated residual components could be accepted at landfill sites but Polychlorinated biphenyl, otherwise known as PCB, is a synthetic chemical that is widely used for industrial and commercial use as dielectric fluid in transformers and capacitors because of its high resistance to decomposition, low electrical conductivity, low flammability and high heat capacity. Transformer repair, reconditioning and retro-filling facilities are the major industry sectors that contributes to the spread of PCB contamination. Types of PCB Wastes: PCB wastes are discarded materials that contain PCB or have been contaminated with PCBs and that are without any commercial, industrial, or economic use. For the purpose of this Code of Practice, PCBs wastes are classified as follows: Liquid PCB wastes  
o PCB-based dielectric fluids removed from transformers and other equipment  
o PCB-based heat transfer and hydraulic fluids Metallic solid wastes  
o PCB equipment such as capacitors, transformers, switchgears, circuit breakers, heat transfer systems, etc.  
o Contaminated components removed from electrical equipment such as windings; PCB-contaminated containers and equipment such as metal drums, tanks, pumps, metal filters, etc. Calculated 85.6 miles from JC Boyle to Yreka Transfer Recycling

PAY ITEM COST DETAIL WORKSHEET

1.049 Remove & Dispose of Station Service Switchgear, 600 volt - (5 sections)

PAY ITEM INFORMATION									
PAY ITEM NUMBER	:	1.049	Project : KRRP - JC Boyle						
Description	:	Remove & Dispose of Station Service Switchgear, 600 volt - (5 sections)	Group : D04						
Quantity	:	1.00 EA							
Daily Production	:	1.25 EA per	10	hour shift					
Work Days	:	0.8	Days	Project # : 1					
Unit Price	:	\$7,793.83	per EA	Estimator : Mihaela Tomulescu		EA per	Total Cost	Unit Price Per EA	
Total Cost	:	\$7,794		Probable Low Cost Parameter		1.38	\$7,014	\$5,101.41	
				Probable High Cost Parameter		1.13	\$8,573	\$7,620.63	

CREW COSTS										
Description	Active Idle	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Electrician Foreman	Active	3.00	0.8	10	24.00	L	\$55.80	incl. in rate	incl. in rate	\$1,339.27
Electrician	Active	4.00	0.8	10	32.00	L	\$55.80	incl. in rate	incl. in rate	\$1,785.70
Laborer	Active	4.00	0.8	10	32.00	L	\$51.07	incl. in rate	incl. in rate	\$1,634.34
Loader, FE Rubber Tire (8.6cy)	Active	1.00	0.8	10	8.00	E	\$225.40	incl. in rate	incl. in rate	\$1,803.20
Equipment Operator (medium)	Active	1.00	0.8	10	8.00	L	\$72.34	incl. in rate	incl. in rate	\$578.69
Welder	Active	1.00	0.8	10	8.00	E	\$7.84	incl. in rate	incl. in rate	\$62.72
Gas Welding Machine	Active	1.00	0.8	10	8.00	E	\$2.88	incl. in rate	incl. in rate	\$23.02
					Labor Hours	96	TOTAL LABOR			\$5,337.99
					Equipment Hours	24	TOTAL EQUIPMENT			\$1,888.94

MATERIAL COSTS						
Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost
Consumables 5% labor (saw blades, drill bits, et	1.00	LS	1.000	1.00	\$266.90	\$266.90
						TOTAL MATERIAL
						\$266.90

SUBCONTRACT COSTS					
Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount
Hauling Disposal Cost 30 Miles to Klamath County Landfill	1.00	Loads	20 tons a load	\$300.00	\$300.00
					TOTAL SUBCONTRACTS
					\$300.00

SUMMARY OF COSTS						
Labor Cost	\$5,337.99	Labor Burden @	49.7%	\$0.00		\$5,337.99
Material Cost	\$266.90	Material Tax @	0.0%	\$0.00		\$266.90
Equipment Cost	\$1,888.94	Equipment Tax @	0.0%	\$0.00		\$1,888.94
Subcontractors	\$300.00					\$300.00
DIRECT COST SUBTOTALS	\$7,794			\$0	DIRECT COST SUBTOTALS	\$7,794
Additional Pay Item Notes :						
Used 3 Crews (2 sections each) formed of 1 Foreman, 2 Electrician, 1 welder to cut, 2 laborer to haul with the loader in the truck. Assumed containing hazardous waste that will be disposed . Calculated 85.6 miles from JC Boyle to Yreka Transfer Recycling						

PAY ITEM INFORMATION									
PAY ITEM NUMBER	:	1.050			Project	:	KRRP - JC Boyle		
Description	:	Remove & Dispose of Unit and plant control switchboard			Group	:	D05		
Quantity	:	1.00 EA							
Daily Production	:	1.25 EA per 10 hour shift			Project #	:	1		
Work Days	:	0.8 Days			Estimator	:	Mihaela Tomulescu		
Unit Price	:	\$4,117.06 per EA			Probable Low Cost Parameter		EA per	Total Cost	Unit Price Per EA
Total Cost	:	\$4,117			Probable High Cost Parameter		1.38	\$3,705	\$2,694.80
							1.13	\$4,529	\$4,025.57

CREW COSTS										
Description	Active Idle	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Electrician Foreman	Active	1.00	0.8	10	8.00	L	\$55.80	incl. in rate	incl. in rate	\$446.42
Electrician	Active	2.00	0.8	10	16.00	L	\$55.80	incl. in rate	incl. in rate	\$892.85
Equipment Operator (medium)	Active	1.00	0.8	10	8.00	L	\$72.34	incl. in rate	incl. in rate	\$578.69
Loader, FE Rubber Tire (8.6cy)	Active	1.00	0.8	10	8.00	E	\$225.40	incl. in rate	incl. in rate	\$1,803.20
					Labor Hours	32	TOTAL LABOR			\$1,917.96
					Equipment Hours	8	TOTAL EQUIPMENT			\$1,803.20

MATERIAL COSTS						
Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost
Consumables 5% labor (saw blades, drill bits, etc)	1.00	LS	1.000	1.00	\$95.90	\$95.90
						TOTAL MATERIAL
						\$95.90

SUBCONTRACT COSTS					
Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount
Hauling Disposal Cost 30 Miles to Klamath County Landfill	1.00	Loads	20 tons a load	\$300.00	\$300.00
					TOTAL SUBCONTRACTS
					\$300.00

SUMMARY OF COSTS						
Labor Cost	\$1,917.96	Labor Burden @	49.7%	\$0.00		\$1,917.96
Material Cost	\$95.90	Material Tax @	0.0%	\$0.00		\$95.90
Equipment Cost	\$1,803.20	Equipment Tax @	0.0%	\$0.00		\$1,803.20
Subcontractors	\$300.00					\$300.00
DIRECT COST SUBTOTALS	\$4,117			\$0	DIRECT COST SUBTOTALS	\$4,117
Additional Pay Item Notes :						

# PAY ITEM COST DETAIL WORKSHEET

1.051 Remove & Dispose - Battery system

## PAY ITEM INFORMATION

PAY ITEM NUMBER	: 1.051	Project	: KRRP - JC Boyle
Description	: Remove & Dispose - Battery system	Group	: D05
Quantity	: 1.00 EA		
Daily Production	: 0.63 EA per 10 hour shift	Project #	: 1
Work Days	: 1.6 Days	Estimator	: Mihaela Tomulescu
Unit Price	: \$6,515.03 per EA	Probable Low Cost Parameter	0.69
Total Cost	: \$6,515	Probable High Cost Parameter	0.56
		EA per	Total Cost
			\$5,864
		Unit Price Per EA	\$8,528.76
			\$12,740.49

## CREW COSTS

Description	Active Idle	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Labor Foreman	Active	1.00	1.6	10	16.00	L	\$58.87	\$0.00		\$941.95
Electrician	Active	1.00	1.6	10	16.00	L	\$55.80	\$0.00		\$892.85
Laborer	Active	2.00	1.6	10	32.00	L	\$51.07	\$0.00		\$1,634.34
Loader, FE Rubber Tire (3.5cy)	Active	1.00	1.6	10	16.00	E	\$63.11	\$64.23		\$1,009.76
Equipment Operator (light)	Active	1.00	1.6	10	16.00	L	\$69.19	\$0.00		\$1,107.04
Welder	Active	1.00	1.6	10	16.00	E	\$7.84	\$7.84		\$125.44
Gas Welding Machine	Active	1.00	1.6	10	16.00	E	\$2.88	\$2.88		\$46.03
Labor Hours					80	TOTAL LABOR				\$4,576.18
Equipment Hours					48	TOTAL EQUIPMENT				\$1,181.23

## MATERIAL COSTS

Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost
Consumables 10% labor (saw blades, drill bits, etc)	1.00	LS	1.000	1.00	\$457.62	\$457.62
						TOTAL MATERIAL
						\$457.62

## SUBCONTRACT COSTS

Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount
Hauling Disposal Cost 30 Miles to Klamath County Landfill	1.00	Loads	20 tons a load	\$300.00	\$300.00
					\$0.00
					TOTAL SUBCONTRACTS
					\$300.00

## SUMMARY OF COSTS

Labor Cost	\$4,576.18	Labor Burden @	49.7%	\$0.00	\$4,576.18
Material Cost	\$457.62	Material Tax @	0.0%	\$0.00	\$457.62
Equipment Cost	\$1,181.23	Equipment Tax @	0.0%	\$0.00	\$1,181.23
Subcontractors	\$300.00				\$300.00
DIRECT COST SUBTOTALS	\$6,515			\$0	DIRECT COST SUBTOTALS
					\$6,515

Additional Pay Item Notes :

PAY ITEM INFORMATION									
PAY ITEM NUMBER	:	1.052		Project	:	KRRP - JC Boyle			
Description	:	Remove & Dispose of Raceways, Conduit and Cable		Group	:	D05			
Quantity	:	1.00 EA							
Daily Production	:	0.63 EA per		10	hour shift	Project #	:	1	
Work Days	:	1.6		Days	Estimator	:	Mihaela Tomulescu		EA per
Unit Price	:	\$9,226.89 per EA		Probable Low Cost Parameter		EA per		0.69	Total Cost
Total Cost	:	\$9,227		Probable High Cost Parameter		0.56		\$10,150	Unit Price Per EA
								\$8,304	\$12,078.84
								\$18,043.69	

CREW COSTS										
Description	Active Idle	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Labor Foreman	Active	1.00	1.6	10	16.00	L	\$58.87	incl. in rate	incl. in rate	\$941.95
Electrician	Active	1.00	1.6	10	16.00	L	\$55.80	incl. in rate	incl. in rate	\$892.85
Laborer	Active	2.00	1.6	10	32.00	L	\$51.07	incl. in rate	incl. in rate	\$1,634.34
Loader, FE Rubber Tire (8.6cy)	Active	1.00	1.6	10	16.00	E	\$225.40	incl. in rate	incl. in rate	\$3,606.40
Equipment Operator (medium)	Active	1.00	1.6	10	16.00	L	\$72.34	incl. in rate	incl. in rate	\$1,157.38
					Labor Hours	80	TOTAL LABOR			\$4,626.51
					Equipment Hours	16	TOTAL EQUIPMENT			\$3,606.40

MATERIAL COSTS						
Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost
Consumables 15% labor (saw blades, drill bits, etc)	1.00	LS	1.000	1.00	\$693.98	\$693.98
						TOTAL MATERIAL
						\$693.98

SUBCONTRACT COSTS					
Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount
Hauling Disposal Cost 30 Miles to Klamath County Landfill	1.00	Loads	20 tons a load	\$300.00	\$300.00
					TOTAL SUBCONTRACTS
					\$300.00

SUMMARY OF COSTS									
Labor Cost	\$4,626.51	Labor Burden @	49.7%	\$0.00					\$4,626.51
Material Cost	\$693.98	Material Tax @	0.0%	\$0.00					\$693.98
Equipment Cost	\$3,606.40	Equipment Tax @	0.0%	\$0.00					\$3,606.40
Subcontractors	\$300.00								\$300.00
DIRECT COST SUBTOTALS		\$9,227		\$0		DIRECT COST SUBTOTALS		\$9,227	
Additional Pay Item Notes :									
Used 1 Forman, 2 Electrician, 1 Laborer hauling with the loader in the truck.									





## PAY ITEM COST DETAIL WORKSHEET

1.054 Remove &amp; Dispose of 5 Gantry Crane motors - hoist (50Hp\*), aux hoist

PAY ITEM INFORMATION									
PAY ITEM NUMBER	:	1.054	Project	:	KRRP - JC Boyle				
Description	:	Remove & Dispose of 5 Gantry Crane motors - hoist (50Hp*), aux hoist	Group	:	D10				
Quantity	:	1.00 EA	Project #	:	1	Estimator	:	Mihaela Tomulescu	EA per
Daily Production	:	6.25 EA per	Probable Low Cost Parameter	:	6.88	Total Cost	:	\$766	Unit Price Per EA
Work Days	:	0.2 Days	Probable High Cost Parameter	:	5.00	\$1,021	:	\$204.17	
Unit Price	:	\$850.72 per EA							
Total Cost	:	\$851							

CREW COSTS										
Description	Active Idle	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Hydraulic Crane (17tn)	Active	1.00	0.2	10	2.00	E	\$82.43	\$81.52		\$164.86
Laborer	Active	2.00	0.2	10	4.00	L	\$51.07	\$0.00		\$204.29
Equipment Operator (crane)	Active	1.00	0.2	10	2.00	L	\$81.60	\$0.00		\$163.20
Labor Hours					6	TOTAL LABOR				\$367.49
Equipment Hours					2	TOTAL EQUIPMENT				\$164.86

MATERIAL COSTS						
Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost
Consumables 5% labor (saw blades, drill bits, etc)	1.00	LS	1.000	1.00	\$18.37	\$18.37
TOTAL MATERIAL						\$18.37

SUBCONTRACT COSTS					
Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount
Hauling Disposal Cost 30 Miles to Klamath County Landfill	1.00	Loads	20 tons a load	\$300.00	\$300.00
					TOTAL SUBCONTRACTS
					\$300.00

SUMMARY OF COSTS									
Labor Cost	\$367.49	Labor Burden @	49.7%	\$0.00					\$367.49
Material Cost	\$18.37	Material Tax @	0.0%	\$0.00					\$18.37
Equipment Cost	\$164.86	Equipment Tax @	0.0%	\$0.00					\$164.86
Subcontractors	\$300.00								\$300.00
DIRECT COST SUBTOTALS	\$851			\$0				DIRECT COST SUBTOTALS	\$851

Additional Pay Item Notes :

Assumed removal of hoist, hoist trolley, gantry: 2 Laborers to load the overhead crane motors in the truck using the crane.





PAY ITEM INFORMATION									
PAY ITEM NUMBER	:	1.057	Project	:	KRRP - JC Boyle				
Description	:	Remove & Dispose of Exterior Lighting	Group	:	D05				
Quantity	:	1.00 EA	Project #	:	1				
Daily Production	:	1.25 EA per 10 hour shift	Estimator	:	Mihaela Tomulescu				
Work Days	:	0.8 Days	Probable Low Cost Parameter	:	EA per	1.38	Total Cost	:	\$6,478
Unit Price	:	\$7,197.84 per EA	Probable High Cost Parameter	:	1.06	\$8,278	Unit Price Per EA	:	\$4,711.31
Total Cost	:	\$7,198							\$7,790.60

CREW COSTS										
Description	Active Idle	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Labor Foreman	Active	1.00	0.8	10	8.00	L	\$58.87	incl. in rate	incl. in rate	\$470.98
Electrician	Active	1.00	0.8	10	8.00	L	\$55.80	incl. in rate	incl. in rate	\$446.42
Hydraulic Crane (17tn)	Active	1.00	0.8	10	8.00	E	\$82.43	incl. in rate	incl. in rate	\$659.44
Equipment Operator (medium)	Active	1.00	0.8	10	8.00	L	\$72.34	incl. in rate	incl. in rate	\$578.69
Laborer	Active	2.00	0.8	10	16.00	L	\$51.07	incl. in rate	incl. in rate	\$817.17
Hydraulic Excavator (1.5cy)	Active	1.00	0.8	10	8.00	E	\$140.73	incl. in rate	incl. in rate	\$1,125.84
Truck, Utility, with Man-Basket	Active	1.00	0.8	10	8.00	E	\$31.90	incl. in rate	incl. in rate	\$255.20
Labor Hours					40	TOTAL LABOR				\$2,313.26
Equipment Hours					24	TOTAL EQUIPMENT				\$2,040.48

MATERIAL COSTS						
Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost
Consumables 5% labor (saw blades, drill bits, etc)	1.00	LS	1.000	1.00	\$115.66	\$115.66
Topsoil placement and grading, loam or topsoil, F.E. loader, 1-1/2 C.Y., remove and stockpile on site, spread from pile to rough finish grade	6.00	CY	1.000	6.00	\$4.74	\$28.44
TOTAL MATERIAL						\$144.10

SUBCONTRACT COSTS				
Description	Quantity	Units	Notes / Company	Contract or Quote Amount
line work - Rent per day	0.80	days		\$2,400.00
Hauling Disposal Cost 30 Miles to Klamath County Landfill	1.00	Loads	20 tons a load	\$300.00
TOTAL SUBCONTRACTS				\$2,700.00

SUMMARY OF COSTS					
Labor Cost	\$2,313.26	Labor Burden @	49.7%	\$0.00	\$2,313.26
Material Cost	\$144.10	Material Tax @	0.0%	\$0.00	
Equipment Cost	\$2,040.48	Equipment Tax @	0.0%	\$0.00	
Subcontractors	\$2,700.00				
DIRECT COST SUBTOTALS	\$7,198			\$0	DIRECT COST SUBTOTALS \$7,198

Additional Pay Item Notes :				
6 Poles with lights, weight 1500 LBS. Production is based of RSMs using Crew R3 (1 Foreman and 1 Electrician,1 Crane and 1 man-basket truck to help untie the line) for one day work. Considered 2 laborer and 1 Excavator for demolish the pole foundation, helping placing poles in a designated place and loading them in the truck for disposal. This process includes filling in pole locations with gravel, clean fill and topsoil.				

### 1.058 Remove & Dispose of Transmission Line No. 59

When a transmission line is decommissioned and is not converted to another use, the decommissioning typically includes the removal of all infrastructure if it is no longer required, or has reached end-of-life conditions. Removed parts will be re-used, recycled or disposed. Production is based off of RSMs using Crew B-1C and B-3 (1 Foreman, 2 laborer, 1 Excavator & 1 crane for lift, position and load in the truck, 1 Hydraulic rock-splitting/rock-drilling equipment to break equipment foundations and concrete for demo :2 Electrician,, 1 utility truck to access poles, string conductor, modify structure arms, provide guard structures, etc. Crews may be working simultaneously along the project alignment and substations, hydro plant and switchyard. Transmission line poles or structures are commonly between 60 and 140 feet tall. There are several different kinds of transmission structures. Transmission structures can be constructed of metal or wood. They can be single-poled or multi-poled. They can be single-circuit, carrying one set of transmission lines or double-circuit with two sets of lines. Assumed based on RSMs we have "Communications transmission tower, radio towers self-supporting, wind load 70 mph basic wind speed, 120' high" (33811310). Pole height and load capacity limitations determine the distance between poles (span length) either on the basis of ground clearance or ability to support heavy wind and ice loads. Assumed average span between structures to be 275 feet so for 1.66 miles of overhead transmission we will have approximately 31 structures. In areas where single-pole structures are preferred, weak or wet soils may require concrete foundations for support. Where a transmission line must cross a street or slightly change direction, larger angle structures or guy wires may be required. Poles with guy wires impact a much larger area. Angle structures are usually more than double the diameter of other steel poles. They are made of steel, usually five to six feet in diameter, and have a large concrete base. The base may be buried ten or more feet below the ground surface. The diameter of the pole and the depth the base is buried depends on the condition of the soils and the voltage of the line. Assumed the structures are disposed to Yreka recycling, 85.6 miles away. This estimate is made as the best AECOM assumption, as actual pricing would occur during the detailed engineering and construction bid process.

PAY ITEM INFORMATION									
PAY ITEM NUMBER	:	1.059	Project	:	KRRP - JC Boyle				
Description	:	Remove & Dispose of Transmission Line No. 98	Group	:	D05				
Quantity	:	0.24 Mile							
Daily Production	:	0.63 Mile per	10	hour shift					
Work Days	:	0.4 Days			Project #	:	1		
Unit Price	:	\$21,480.84 per Mile			Estimator	:	Mihaela Tomulescu	Mile per	Total Cost
					Probable Low Cost Parameter		0.72	\$4,382	Unit Price Per Mile
Total Cost	:	\$5,155			Probable High Cost Parameter		0.47	\$6,444	\$13,747.73

CREW COSTS										
Description	Active Idle	# In crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Electrician Foreman	Active	1.00	0.4	10	3.80	L	\$55.80	incl. in rate	incl. in rate	\$212.05
Electrician	Active	2.00	0.4	10	7.60	L	\$55.80	incl. in rate	incl. in rate	\$424.10
Truck, Utility, with Man-Basket	Active	2.00	0.4	10	7.60	E	\$31.90	incl. in rate	incl. in rate	\$242.44
Laborer	Active	2.00	0.4	10	7.60	L	\$51.07	incl. in rate	incl. in rate	\$388.15
Hydraulic Excavator (2.5cy)	Active	1.00	0.4	10	3.80	E	\$205.40	incl. in rate	incl. in rate	\$780.52
Hydraulic Crane (80tn)	Active	1.00	0.4	10	3.80	E	\$197.66	incl. in rate	incl. in rate	\$751.11
Equipment Operator (crane)	Active	1.00	0.4	10	3.80	L	\$81.60	incl. in rate	incl. in rate	\$310.07
Equipment Operator (light)	Active	1.00	0.4	10	3.80	L	\$69.19	incl. in rate	incl. in rate	\$262.92
Hydraulic Impact Breaker Attachment (5k+ ft-lb)	Active	1.00	0.4	10	3.80	E	\$63.28	incl. in rate	incl. in rate	\$240.46
Labor Hours					26.6	TOTAL LABOR				\$1,597.30
Equipment Hours					19	TOTAL EQUIPMENT				\$2,014.53

MATERIAL COSTS						
Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost
Consumables 5% labor (saw blades, drill bits, etc)	1.00	LS	1.000	1.00	\$79.87	\$79.87
Topsoil placement and grading, loam or topsoil, F.E. loader, 1-1/2 C.Y., remove and stockpile on site, spread from pile to rough finish grade	5.00	CY	1.000	5.00	\$4.74	\$23.70
TOTAL MATERIAL						\$103.57

SUBCONTRACT COSTS				
Description	Quantity	Units	Notes / Company	Contract or Quote Amount
Rent trailer with cable pulling rig, for high voltage line work - Rent per day	0.38	days		\$3,000.00
Hauling Disposal Cost 30 Miles to Klamath County Landfill	1.00	Loads		\$300.00
TOTAL SUBCONTRACTS				\$1,440.00

SUMMARY OF COSTS					
Labor Cost	\$1,597.30	Labor Burden @	49.7%	\$0.00	
Material Cost	\$103.57	Material Tax @	0.0%	\$0.00	
Equipment Cost	\$2,014.53	Equipment Tax @	0.0%	\$0.00	
Subcontractors	\$1,440.00				
DIRECT COST SUBTOTALS	\$5,155			\$0	DIRECT COST SUBTOTALS
					\$5,155

Additional Pay Item Notes :

When a transmission line is decommissioned and is not converted to another use, the decommissioning typically includes the removal of all infrastructure if it is no longer required, or has reached end-of-life conditions. Removed parts will be re-used, recycled or disposed. Production is based off of RSMs using Crew B-1C and B-3 ( 1 Foreman, 2 laborer, 1 Excavator & 1 crane for lift, position and load in the truck, 1 Hydraulic rock-splitting/rock-drilling equipment to break equipment foundations and concrete for demo :2 Electrician,, 1 utility truck to access poles, string conductor, modify structure arms, provide guard structures, etc. Crews may be working simultaneously along the project alignment and substations, hydro plant and switchyard. Transmission line poles or structures are commonly between 60 and 140 feet tall. There are several different kinds of transmission structures. Transmission structures can be constructed of metal or wood, assumed we have wood. They can be single-poled or multi-poled. They can be single-circuited, carrying one set of transmission lines or double-circuited with two sets of lines. Assumed based on RSMs we have "Communications transmission tower, radio towers self-supporting, wind load 70 mph basic wind speed, 120' high" (33811310). Pole height and load capacity limitations determine the distance between poles (span length) either on the basis of ground clearance or ability to support heavy wind and ice loads. Assumed average span between structures to be 275 feet so for 0.24 miles of overhead transmission we will have approximately 5 structures. In areas where single-pole structures are preferred, weak or wet soils may require concrete foundations for support. Where a transmission line must cross a street or slightly change direction, larger angle structures or guy wires may be required. Poles with guy wires impact a much larger area. Angle structures are usually more than double the diameter of other steel poles. They are made of steel, usually five to six feet in diameter, and have a large concrete base. The base may be buried ten or more feet below the ground surface. The diameter of the pole and the depth the base is buried depends on the condition of the soils and the voltage of the line. Assumed the structures are disposed to Yreka recycling, 85.6 miles away. This estimate is made as the best AECOM assumption, as actual pricing would occur during the detailed engineering and construction bid process.

### 1.060 Remove & Dispose of Transmission Line No. 58

[illegible]

Description	Active Idle	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Electrician Foreman	Active	1.00	2.7	10	26.60	L	\$55.80	incl. in rate	incl. in rate	\$1,484.36
Electrician	Active	2.00	2.7	10	53.20	L	\$55.80	incl. in rate	incl. in rate	\$2,968.72
Truck, Utility, with Man-Basket	Active	2.00	2.7	10	53.20	E	\$31.90	incl. in rate	incl. in rate	\$1,697.08
Laborer	Active	2.00	2.7	10	53.20	L	\$51.07	incl. in rate	incl. in rate	\$2,717.08
Hydraulic Excavator (2.5cy)	Active	1.00	2.7	10	26.60	E	\$205.40	incl. in rate	incl. in rate	\$5,463.64
Hydraulic Crane (80tn)	Active	1.00	2.7	10	26.60	E	\$197.66	incl. in rate	incl. in rate	\$5,257.76
Equipment Operator (crane)	Active	1.00	2.7	10	26.60	L	\$81.60	incl. in rate	incl. in rate	\$2,170.51
Equipment Operator (light)	Active	1.00	2.7	10	26.60	L	\$69.19	incl. in rate	incl. in rate	\$1,840.45
Hydraulic Impact Breaker Attachment (5k+ ft-lb)	Active	1.00	2.7	10	26.60	E	\$63.28	incl. in rate	incl. in rate	\$1,683.25
					Labor Hours	186.2	TOTAL LABOR			\$11,181.12
					Equipment Hours	133	TOTAL EQUIPMENT			\$14,101.72

Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost
Consumables 5% labor (saw blades, drill bits, etc)	1.00	LS	1.000	1.00	\$559.06	\$559.06
Topsoil placement and grading, loam or topsoil, F.E. loader, 1-1/2 C.Y., remove and stockpile on site, spread from pile to rough finish grade	31.00	CY	1.000	31.00	\$4.74	\$146.94
TOTAL MATERIAL						\$706.00

Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount
Rent trailer with cable pulling rig, for high voltage line work - Rent per day	2.66	days		\$3,000.00	\$7,980.00
Hauling Disposal Cost 30 Miles to Klamath County Landfill	1.00	Loads		\$300.00	\$300.00
TOTAL SUBCONTRACTS					\$8,280.00

Labor Cost	\$11,181.12	Labor Burden @	49.7%	\$0.00		\$11,181.12
Material Cost	\$706.00	Material Tax @	0.0%	\$0.00		\$706.00
Equipment Cost	\$14,101.72	Equipment Tax @	0.0%	\$0.00		\$14,101.72
Subcontractors	\$8,280.00					\$8,280.00
<b>DIRECT COST SUBTOTALS</b>	<b>\$34,269</b>			<b>\$0</b>	<b>DIRECT COST SUBTOTALS</b>	<b>\$34,269</b>

When a transmission line is decommissioned and is not converted to another use, the decommissioning typically includes the removal of all infrastructure if it is no longer required, or has reached end-of-life conditions. Removed parts will be re-used, recycled or disposed. Production is based off of RSMs using Crew B-1C and B-3 ( 1 Forman, 2 laborer, 1 Excavator & 1 crane for lift, position and load in the truck, 1 Hydraulic rock-splitting/rock-drilling equipment to break equipment foundations and concrete for demo :2 Electrician,, 1 utility truck to access poles, string conductor, modify structure arms, provide guard structures, etc. Crews may be working simultaneously along the project alignment and substations, hydro plant and switchyard. Transmission line poles or structures are commonly between 60 and 140 feet tall. There are several different kinds of transmission structures. Transmission structures can be constructed of metal or wood. They can be single-poled or multi-poled. They can be single-circuited, carrying one set of transmission lines or double-circuited with two sets of lines. Assumed based on RSMs we have

\* Communications transmission tower, radio towers self-supporting, wind load 70 mph basic wind speed, 120" high" (33811310). Pole height and load capacity limitations determine the distance between poles (span length) either on the basis of ground clearance or ability to support heavy wind and ice loads. Assumed average span between structures to be 275 feet so for 1.66 miles of overhead transmission we will have approximately 31 structures. In areas where single-pole structures are preferred, weak or wet soils may require concrete foundations for support. Where a transmission line must cross a street or slightly change direction, larger angle structures or guy wires may be required. Poles with guy wires impact a much larger area. Angle structures are usually more than double the diameter of other steel poles. They are made of steel, usually five to six feet in diameter, and have a large concrete base. The base may be buried ten or more feet below the ground surface. The diameter of the pole and the depth the base is buried depends on the condition of the soils and the voltage of the line. Assumed the structures are disposed to Yreka recycling, 85.6 miles away. This estimate is made as the best AECOM assumption, as actual pricing would occur during the detailed engineering and construction bid process.



### 1.061 Remove Intake Structure Concrete

[illegible]

Description	Active Idle	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Labor Foreman	Active	1.00	10.7	20	214.00	L	\$58.87	incl. in rate	incl. in rate	\$12,598.61
Laborer	Active	4.00	10.7	20	856.00	L	\$51.07	incl. in rate	incl. in rate	\$43,718.49
Equipment Operator (medium)	Active	2.00	10.7	20	428.00	L	\$72.34	incl. in rate	incl. in rate	\$30,959.81
Truck Driver (heavy)	Active	1.00	8.4	20	167.80	L	\$66.92	incl. in rate	incl. in rate	\$11,229.85
Truck, Off-Road, Articulated Rear, 20cy	Active	1.00	8.4	20	167.80	E	\$117.28	incl. in rate	incl. in rate	\$19,679.58
Air Compressor 900 cfm	Active	1.00	10.7	20	214.00	E	\$38.87	incl. in rate	incl. in rate	\$8,317.95
Air Tool, Chipping Hammer	Active	4.00	10.7	20	856.00	E	\$1.64	incl. in rate	incl. in rate	\$1,403.01
Generator, Small Generator, 10 - 15 kW	Active	2.00	10.7	20	428.00	E	\$7.04	incl. in rate	incl. in rate	\$3,013.12
Hydraulic Excavator (5.0cy)	Active	1.00	10.7	20	214.00	E	\$276.50	incl. in rate	incl. in rate	\$59,171.00
Hydraulic Impact Breaker Attachment (5k+ ft-lb)	Active	1.00	10.7	20	214.00	E	\$63.28	incl. in rate	incl. in rate	\$13,541.92
Hydraulic Thumbs/Shear Attachment	Active	1.00	10.7	20	214.00	E	\$24.92	incl. in rate	incl. in rate	\$5,332.88
Hydraulic Excavator (2.5cy)	Active	1.00	10.7	20	214.00	E	\$205.40	incl. in rate	incl. in rate	\$43,955.60
Labor Hours					1665.8	TOTAL LABOR				\$98,506.75
Equipment Hours					2521.8	TOTAL EQUIPMENT				\$154,415.07

Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost
Consumables (10% labor)	1.00	LS	1.000	1.00	\$9,850.68	\$9,850.68
TOTAL MATERIAL						\$9,850.68

Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount
Concrete Saw Cutting	2	EA	Cost Per Mob	\$5,000.00	\$10,000.00
TOTAL SUBCONTRACTS					\$10,000.00

Labor Cost	\$98,506.75	Labor Burden @	0.0%		\$98,506.75
Material Cost	\$9,850.68	Material Tax @	0.00%	\$0.00	\$9,850.68
Equipment Cost	\$154,415.07	Equipment Tax @	0.00%	\$0.00	\$154,415.07
Subcontractors	\$10,000.00				\$10,000.00
<b>DIRECT COST SUBTOTALS</b>	<b>\$272,772</b>			<b>\$0</b>	<b>DIRECT COST SUBTOTALS \$272,772</b>

The work is done by two 6-men crew (foreman, 4 laborers, and 2 equipment operators), one crew will be working a 10 hour day shift and one crew will be working a 10 hour night shift sharing the same equipment. Concrete demo is to be hauled to scour hole. Demolition is done using hydraulic chipping hammers and excavator mounted claw. Production is based on getting 125 CY demolished each shift. Over the 11 days dump trucks would haul 3 loads per shift. It is expected that material will fall into channel and will be scooped out with excavator. This item is scheduled to be double shifted 5 days a week with 2 each 10 hours shifts to complete the activity with in the time restrictions' established by the Oregon In Water Work Permit. ( Note that if this was single shifted it would take 21 days).

## Details

**Other Notes**  
Expected work sequence is to have excavator with breaker start demolition and have the excavator with bucket support the operation. Once enough material is ready to haul trucks will then be loaded and material will be dumped at the scour hole. Excavator is anticipated to be at demo location entire time to support breaker and ground crew. Concrete breakers are expected to run inefficient due to extra processing to remove reinforcement. Loading excavators are expected to run inefficient due to situating demo'd material, supporting ground crews, and separating reinforcement from concrete. (Ideal productions are based on equipment being used in best working conditions).

### 1.062 Remove Fish Screen Building

PAY ITEM NUMBER	:	1.062	Project	:	KRRP - JC Boyle			
Description	:	Remove Fish Screen Building	Group	:	D10			
Quantity	1.062	2,010.00 SF						
Daily Production	1.062	680.00 SF per	10	hour shift	Project #	:	1	
Work Days	1.062	3.0 Days			Estimator	:	Eric Jones	
Unit Price	1.062	\$22.23 per SF				SF per	Total Cost	
Total Cost	1.062	\$44,683			Probable Low Cost Parameter	714.00	\$42,449	
					Probable High Cost Parameter	612.00	\$49,151	
							\$59.45	
							\$80.31	

Description	Active Idle	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Labor Foreman	Active	1.00	3.0	10	30.00	L	\$58.87	incl. in rate	incl. in rate	\$1,766.16
Laborer	Active	4.00	3.0	10	120.00	L	\$51.07	incl. in rate	incl. in rate	\$6,128.76
Equipment Operator (medium)	Active	1.00	3.0	10	30.00	L	\$72.34	incl. in rate	incl. in rate	\$2,170.08
Equipment Operator (crane)	Active	1.00	3.0	10	30.00	L	\$81.60	incl. in rate	incl. in rate	\$2,447.94
Hydraulic Crane (80tn)	Active	1.00	3.0	10	30.00	E	\$197.66	incl. in rate	incl. in rate	\$5,929.80
Hydraulic Excavator (5.0cy)	Active	1.00	3.0	10	30.00	E	\$276.50	incl. in rate	incl. in rate	\$8,295.00
Loader, FE Rubber Tire (3.5cy)	Active	1.00	3.0	10	30.00	E	\$63.11	incl. in rate	incl. in rate	\$1,893.30
Labor Hours					210	TOTAL LABOR				\$12,512.94
Equipment Hours					90	TOTAL EQUIPMENT				\$16,118.10

Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost
TOTAL MATERIAL						\$0.00

Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount
Dump Fee Coverson (SFXH*. 33/27)	295	CY			\$0.00
Conversion CY to Tons (2 tons per CY)	148.00	tons	Klamath County LandFill	\$74.00	\$10,952.00
Hauling cost to landfill	17.00	Loads	18 CY per load	\$300.00	\$5,100.00
					\$0.00
TOTAL SUBCONTRACTS					\$16,052.00

Labor Cost	\$12,512.94	Labor Burden @	0.0%		\$12,512.94
Material Cost	\$0.00	Material Tax @	0.00%	\$0.00	\$0.00
Equipment Cost	\$16,118.10	Equipment Tax @	0.00%	\$0.00	\$16,118.10
Subcontractors	\$16,052.00				\$16,052.00
<b>DIRECT COST SUBTOTALS</b>	<b>\$44,683</b>			<b>\$0</b>	<b>\$44,683</b>
<b>Additional Pay Item Notes :</b>					
Duration accounts for mobilization and demobilization, crane is to be used for flying material out of the demolition area as the excavator tears building down building, some of the building will need to be taken down by hand with crane support due to excavator not be able to reach certain sections. Due to the building being near water limiting access the production has been reduced when compared to other buildings being demolished.					

PAY ITEM INFORMATION									
PAY ITEM NUMBER	:	1.063			Project	:	KRRP - JC Boyle		
Description	:	Remove 24" Steel Fish Discahrge Pipe			Group	:	D03		
Quantity	:	37,978.00 LBS							
Daily Production	:	62,500.00 LBS per			20	hour shift	Project #	:	1
Work Days	:	0.6 Days							
Unit Price	:	\$0.23 per LBS			Estimator	:	Mihaela Tomulescu	LBS per	Total Cost
Total Cost	:	\$8,563			Probable Low Cost Parameter	:		71,875.00	\$7,279
					Probable High Cost Parameter	:		46,875.00	\$10,704
									Unit Price Per LBS
									\$0.10
									\$0.23

CREW COSTS										
Description	Active Idle	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Labor Foreman	Active	1.00	0.6	20	12.00	L	\$58.87	incl. in rate	incl. in rate	\$706.46
Laborer	Active	1.00	0.6	20	12.00	L	\$51.07	incl. in rate	incl. in rate	\$612.88
Steelworker	Active	1.00	0.6	20	12.00	L	\$78.10	incl. in rate	incl. in rate	\$937.20
Loader, FE Rubber Tire (8.6cy)	Active	1.00	0.6	20	12.00	E	\$225.40	incl. in rate	incl. in rate	\$2,704.80
Equipment Operator (light)	Active	1.00	0.6	20	12.00	L	\$69.19	incl. in rate	incl. in rate	\$830.28
Hydraulic Crane (17tn)	Active	1.00	0.6	20	12.00	E	\$82.43	incl. in rate	incl. in rate	\$989.16
Equipment Operator (crane)	Active	1.00	0.6	20	12.00	L	\$81.60	incl. in rate	incl. in rate	\$979.18
					Labor Hours	60	TOTAL LABOR			\$4,066.00
					Equipment Hours	24	TOTAL EQUIPMENT			\$3,693.96

MATERIAL COSTS						
Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost
Consumables 5% labor (saw blades, drill bits, et	1.00	LS	1.000	1.00	\$203.30	\$203.30
						TOTAL MATERIAL
						\$203.30

SUBCONTRACT COSTS					
Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount
Hauling Disposal Cost 30 Miles to Klamath County Landfill	2.00	Loads		\$300.00	\$600.00
					TOTAL SUBCONTRACTS
					\$600.00

SUMMARY OF COSTS									
Labor Cost	\$4,066.00	Labor Burden @		49.7%	\$0.00				\$4,066.00
Material Cost	\$203.30	Material Tax @		0.0%	\$0.00				\$203.30
Equipment Cost	\$3,693.96	Equipment Tax @		0.0%	\$0.00				\$3,693.96
Subcontractors	\$600.00								\$600.00
DIRECT COST SUBTOTALS		\$8,563		\$0		DIRECT COST SUBTOTALS		\$8,563	
Additional Pay Item Notes :									
340 LF of 24" iron drainage pipes at 111.7Lbs/LF. Used 1 Loader and 1 Forman, 1 Steelworkers to cut the pipes and 1 Laborers to load the pipes in the truck.									

#### 1.064 Remove Concrete Items associated with the 14-ft-diameter Steel Pipe

PAY ITEM NUMBER	:	1.064	Project	:	KRRP - JC Boyle
Description	:	Remove Concrete Items associated with the 14-ft-diameter Steel Pipe	Group	:	D03
Quantity	1.064	1,100.00	CY		
Daily Production	1.064	128.00	CY per	10	hour shift
Work Days	1.064	8.6	Days		
Unit Price	1.064	\$111.58	per CY		
Total Cost	1.064	\$122,740			
			Project #	:	1
			Estimator	:	Eric Jones
			Probable Low Cost Parameter		CY per Total Cost Unit Price Per CY
			Probable High Cost Parameter	147.20	\$104,329 \$708.76
				108.80	\$141,151 \$1,297.35

Description	Active Idle	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Labor Foreman	Active	1.00	8.6	10	86.00	L	\$58.87	incl. in rate	incl. in rate	\$5,062.99
Laborer	Active	3.00	8.6	10	258.00	L	\$51.07	incl. in rate	incl. in rate	\$13,176.83
Equipment Operator (medium)	Active	2.00	8.6	10	172.00	L	\$72.34	incl. in rate	incl. in rate	\$12,441.79
Truck Driver (heavy)	Active	1.00	9.7	10	97.02	L	\$66.92	incl. in rate	incl. in rate	\$6,492.97
Air Compressor 600 cfm	Active	1.00	8.6	10	86.00	E	\$21.74	incl. in rate	incl. in rate	\$1,869.55
Air Tool, Chipping Hammer	Active	1.00	8.6	10	86.00	E	\$1.64	incl. in rate	incl. in rate	\$140.96
Acetylene Torches	Active	1.00	8.6	10	86.00	E	\$0.44	incl. in rate	incl. in rate	\$37.84
Hydraulic Excavator (5.0cy)	Active	1.00	8.6	10	86.00	E	\$276.50	incl. in rate	incl. in rate	\$23,779.00
Hydraulic Impact Breaker Attachment (5k+ ft-lb)	Active	1.00	8.6	10	86.00	E	\$63.28	incl. in rate	incl. in rate	\$5,442.08
Hydraulic Excavator (2.5cy)	Active	1.00	8.6	10	86.00	E	\$205.40	incl. in rate	incl. in rate	\$17,664.40
Loader, FE Rubber Tire (5.25cy)	Active	1.00	8.6	10	86.00	E	\$76.00	incl. in rate	incl. in rate	\$6,536.00
Truck, Off-Road, Articulated Rear, 20cy	Active	1.00	9.7	10	97.02	E	\$117.28	incl. in rate	incl. in rate	\$11,378.51
Labor Hours					613.02	TOTAL LABOR				\$37,174.58
Equipment Hours					699.02	TOTAL EQUIPMENT				\$66,848.33

Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost
Consumables (10% labor)	1.00	LS	1.000	1.00	\$3,717.46	\$3,717.46
TOTAL MATERIAL						\$3,717.46

Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount
Concrete Saw Cutting	1	AL	Allowance	\$15,000.00	\$15,000.00
TOTAL SUBCONTRACTS					\$15,000.00

Labor Cost	\$37,174.58	Labor Burden @	0.0%		\$37,174.58
Material Cost	\$3,717.46	Material Tax @	0.00%	\$0.00	\$3,717.46
Equipment Cost	\$66,848.33	Equipment Tax @	0.00%	\$0.00	\$66,848.33
Subcontractors	\$15,000.00				\$15,000.00
<b>DIRECT COST SUBTOTALS</b>	<b>\$122,740</b>			<b>\$0</b>	<b>DIRECT COST SUBTOTALS \$122,740</b>

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1.064 Remove Concrete Items associated with the 14-ft-diameter Steel Pipe

Details

High Cost Factors		Low Cost Factors	
Bad Weather	0%	No Bad Weather	0%
Gas Price Increase	10%	Gas Price Decrease	10%
Unforeseen Contaminated Mats/ Access Issues	5%	No Unforeseen Contaminated Mats/ Access Issues	5%
	15%		15%

CY Per Hour Demolished	Hours	Efficiency Factor (Access, Activity, Qty, High Rebar Density, Breaks, Ect)	Overall Production
32	8	40%	102.40
	10	40%	128.00

Haul Notes		Excavator Loading Production per shift	
CY	1,100.00	CY per Hour	18.18
Swell Factor	60%	CY Bucket Size	2.50
Bulk CY	1760	Buckets Per Hour	7
Haul Vehicle 60% Capacity (2 tons per CY)	12	# of Excavators	1.00
# of Haul Vehicles		CY per Hour (2.5 CY Bucket)	18
Load Time (Includes Spot Time, Maneuver Time, & Loading) (Minutes)	5	CY Per Hour Ideal Production Per 8 Hour Shift	95
Dump Time (Includes Spot Time, Maneuver Time, & Unloading) (Minutes)	3	Efficient Compared to Ideal Production	19%
Haul Speed (Loaded MPH)	10	Inefficiencies Compared to Ideal Production	81%
Return Speed (Unloaded MPH)	15		
Haul Distance (Miles) Along Power Canal	2		
Shift Length (Hours)	10		
Cycle Time		Breaker Production	
Load Time (Load Time Minutes / 60mins)	0.08	Hydraulic Hammer CY per Hour	12.8
Haul Time (Haul Distance / Haul Speed)	0.20	# of Hammers	1.00
Dump Time (Dump Time Minutes / 60 Mins)	0.05	CY per Hour	12.8
Return Time (Haul Distance / Return Speed)	0.13	CY per Hour Back Check	12.8
Hours Per Cycle	0.46	EXCY per HR per 8hr shift (Ideal prod)	32
Efficiency Factor (Highly Work, Traffic Restrictions, Coffers Breaks, ECT)	70%	Efficient Compared to Ideal Production	40%
Actual Hours Per Cycle (hours per cycle / Efficiency Factor)	0.66	Inefficiencies Compared to Ideal Production	60%
Number of Cycles/ Bulk CY (Haul Vehicle Cap X # of Haul Vehicles)	147		
Total Number of Haul Hours (Actual Cycle Hours X Number of Cycles)	97.02		
Loads Per Hour (Number of Cycles / Total Number of Haul Hours)	1.52		
Number of Haul Days	9.702		

CAT 725 Articulated Truck			
Speed Loaded	Max Weight lbs. of loaded 725	103,707.00	
	Tons	52	
	20lbs/Ton Rolling weight	3	
	Rolling Resistance ( 1% for each 20lbs/Ton)	3%	
	Average Slope	5%	
	Total Resistance	8%	
	Max Gear per CAT Chart	3	
	Max MPH	14	
	Speed Empty	Max Weight lbs. of Empty 725	50,795.00
		Tons Empty	25
20lbs/Ton Rolling weight Empty		1	
Rolling Resistance ( 1% per 20lbs/Ton) Empty		1%	
Average Slope Empty		5%	
Total Resistance Empty		6%	
Max Gear per CAT Chart Empty		4	
Max MPH Empty		25	

### Other Notes

This activity is to demolish the concrete supports for the 14' penstock from the JCB dam to the Concrete Power Canal. Demolition is expected to be 40% efficient due to repositioning the equipment to demolish each item. The hauling operation is expected to be 70% efficient because it is intended to have a haul truck on stand by to haul material to ensure access is still achievable. The Haul operations is not expected to run the entire demolition duration and is reflected in the estimate. The Haul trucks max speed is listed for reference and has been reduced to account for working area. It is expected the 2.5 CY excavator will load trucks and support the demolition operation.

### 1.065 Remove Open Concrete Flume

PAY ITEM NUMBER	:	1.065	Project	:	KRRP - JC Boyle
Description	:	Remove Open Concrete Flume	Group	:	D07
Quantity	:	1.065			
Daily Production	:	1.065			
Work Days	:	1.065			
Unit Price	:	1.065			
Total Cost	:	1.065			

26,300.00	CY				
300.00	CY per	10	hour shift		
87.7	Days				
\$106.26	per CY				
\$2,794,622					

Project #	:	1			
Estimator	:	Eric Jones	CY per	Total Cost	Unit Price Per CY
Probable Low Cost Parameter			330.00	\$2,515,160	\$7,621.70
Probable High Cost Parameter			240.00	\$3,353,547	\$13,973.11

Description	Active Idle	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Labor Foreman	Active	3.00	87.7	10	2,631.00	L	\$58.87	incl. in rate	incl. in rate	\$154,892.23
Laborer	Active	6.00	87.7	10	5,262.00	L	\$51.07	incl. in rate	incl. in rate	\$268,746.13
Equipment Operator (medium)	Active	7.00	87.7	10	6,139.00	L	\$72.34	incl. in rate	incl. in rate	\$444,070.70
Truck Driver (heavy)	Active	3.00	63.1	10	1,893.90	L	\$66.92	incl. in rate	incl. in rate	\$126,747.36
Air Compressor 600 cfm	Active	3.00	87.7	10	2,631.00	E	\$21.74	incl. in rate	incl. in rate	\$57,195.10
Air Tool, Chipping Hammer	Active	3.00	87.7	10	2,631.00	E	\$1.64	incl. in rate	incl. in rate	\$4,312.30
Generator, Small Generator, 10 - 15 kW	Active	3.00	87.7	10	2,631.00	E	\$7.04	incl. in rate	incl. in rate	\$18,522.24
Hydraulic Excavator (2.5cy)	Active	6.00	87.7	10	5,262.00	E	\$205.40	incl. in rate	incl. in rate	\$1,080,814.80
Hydraulic Impact Breaker Attachment (3k-4k ft-lb)	Active	3.00	87.7	10	2,631.00	E	\$36.81	incl. in rate	incl. in rate	\$96,847.11
Hydraulic Thumbs/Shear Attachment	Active	3.00	87.7	10	2,631.00	E	\$24.92	incl. in rate	incl. in rate	\$65,564.52
Loader, FE Rubber Tire (3.5cy)	Active	1.00	87.7	10	877.00	E	\$63.11	incl. in rate	incl. in rate	\$55,347.47
Truck, Off-Road, Articulated Rear, 20cy	Active	3.00	63.1	10	1,893.90	E	\$117.28	incl. in rate	incl. in rate	\$222,116.59
Labor Hours					15925.9	TOTAL LABOR				\$994,456.43
Equipment Hours					21187.9	TOTAL EQUIPMENT				\$1,600,720.13

Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost
						\$0.00
Consumables (10% labor)	1.00	LS	1.000	1.00	\$99,445.64	\$99,445.64
TOTAL MATERIAL						\$99,445.64

Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount
Concrete Saw Cutting	1	AL	Allowance	\$100,000.00	\$100,000.00
TOTAL SUBCONTRACTS					\$100,000.00

Labor Cost	\$994,456.43	Labor Burden @	0.0%			\$994,456.43
Material Cost	\$99,445.64	Material Tax @	0.00%	\$0.00		\$99,445.64
Equipment Cost	\$1,600,720.13	Equipment Tax @	0.00%	\$0.00		\$1,600,720.13
Subcontractors	\$100,000.00					\$100,000.00
<b>DIRECT COST SUBTOTALS</b>	<b>\$2,794,622</b>			<b>\$0</b>	<b>DIRECT COST SUBTOTALS</b>	<b>\$2,794,622</b>

See Addition Notes for expected operation coordination

1.065 Remove Open Concrete Flume Details				
High Cost Factors		Low Cost Factors		
Bad Weather	0%	No Bad Weather		0%
Gas Price Increase	10%	Gas Price Decrease		10%
Unforeseen Contaminated Mats/ Access Issues	10%	No Unforeseen Contaminated Mats/ Access Issues		0%
	20%			10%
Production Per Hour		Efficiency Factor (Access, Activity, Qty, High Rebar Density, Breaks, Etc)		Overall Production
	Hours			
	60	8	50%	240.00
		10	50%	300.00
Haul Notes		Excavator Loading Production per shift		
CY	26,300.00	CY per Hour		22
Swell Factor		CY Bucket Size		2.50
Bulk CY	42080	Buckets Per Hour		9
Haul Vehicle 60% Capacity (2 tons per CY)		# of Excavators		6.00
# of Haul Vehicles		3 CY per Hour (5 CY Bucket)		4
Load Time (Includes Spot Time, Maneuver Time at Load site) (Minutes)		3 CY Per Hour Ideal Production Per 8 Hour Shift		85
Dump Time (Includes Spot Time, Maneuver Time at Dump site) (Minutes)		3 Efficient Compared to Ideal Production		4%
Haul Speed (Loaded MPH)		10 Inefficiencies Compared to Ideal Production		96%
Return Speed (Unloaded MPH)		15		
Haul Distance (Miles) Along Power Canal		2		
Shift Length (Hours)		10		
Cyce Time		Breaker Production		
Load Time (Load Time Minutes / 60mins)		0.05 Hydraulic Hammer CY per Hour		30
Haul Time (Haul Distance / Haul Speed)		0.20 # of Hammers		3.00
Dump Time (Dump Time Minutes / 60 Mins)		0.05 CY per Hour		10
Return Time (Haul Distance / Return Speed)		0.13 CY per Hour Back Check		10
Hours Per Cycle		0.43 20CY per HR per 8hr shift (Ideal prod)		20
Efficiency Factor (Night Work, Traffic Restrictions, Coffee Breaks, ECT)		80% Efficient Compared to Ideal Production		50%
Actual Hours Per Cycle (Hours per Cycle / Efficiency Factor)		0.54 Inefficiencies Compared to Ideal Production		50%
Number of Cycles (Bulk CY/Haul Vehicle Cap X # of Haul Vehicles)		1160		
Total Number of Haul Hours (Actual Cycle Hours X Number of Cycles)		631.26		
Loads Per Hour (Number of Cycles / Total Number of Haul Hours)		1.85		
Number of Haul Days		63		
Speed Loaded				
	Max Weight lbs of loaded 745	#N/A		
	Tons	52		
	20lbs/Ton Rolling weighh	3		
	Rolling Resistance ( 1% for each 20lbs/Ton)	3%		
	Slope Grade	2%		
	Total Resistance	5%		
	Max Gear per CAT Chart	6		
	Max MPH	12		
Speed Empty				
	Max Weight lbs of Empty 745	#N/A		
	Tons Empty	25		
	20lbs/Ton Rolling weight Empty	1		
	Rolling Resistance ( 1% per 20lbs/Ton) Empty	1%		
	Average Slope Empty	2%		
	Total Resistance Empty	3%		
	Max Gear per CAT Chart Empty	8		
	Max MPH Empty	20		

**Other Notes**  
This pay item is for demolition of the power canal from the upstream penstock near the dam to the forebay. It is expected that 3 crews will be need to achieve the demolition operation using the productions provided. The demolition operation will be 50% efficient due to creating access to the demo areas, repositioning of equipment, rebar density, personnel breaks, and machine maintenance. The hauling operation is expected to occur roughly 1/4 of the time and is expected to be 80% efficient after accounting for personnel breaks, equipment maintenance, and Traffic Coordination. The max haul speeds are listed for informational use and the actual speeds have been adjusted to account for the intended speeds of the hauling equipment.



### 1.065.1 Power Canal Backfill

PAY ITEM NUMBER	:	1.065.1	Project	:	KRRP - JC Boyle
Description	:	Power Canal Backfill	Group	:	D07
Quantity	1.065.1	63,519.00	CY		
Daily Production	1.065.1	2,600.00	CY per	10	hour shift
Work Days	1.065.1	24.4	Days		
Unit Price	1.065.1	\$5.77	per CY		
Total Cost	1.065.1	\$366,379			
			Project #	:	1
			Estimator	:	Eric Jones
			Probable Low Cost Parameter		CY per 2,990.00
			Probable High Cost Parameter		2,210.00
					Total Cost \$311,422
					Unit Price Per CY \$104.15
					\$190.65

Description	Active Idle	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Hydraulic Excavator (2.5cy)	Active	2.00	24.4	10	488.00	E	\$205.40	incl. in rate	incl. in rate	\$100,235.20
Dozer (235hp)(CATD7)	Active	2.00	24.4	10	488.00	E	\$171.07	incl. in rate	incl. in rate	\$83,482.16
Roller, Single Drum (steel wheel, 12.0 - 14.9 MTn)	Active	2.00	24.4	10	488.00	E	\$76.79	incl. in rate	incl. in rate	\$37,473.52
Equipment Operator (medium)	Active	6.00	24.4	10	1,464.00	L	\$72.34	incl. in rate	incl. in rate	\$105,899.90
Labor Foreman	Active	1.00	24.4	10	244.00	L	\$58.87	incl. in rate	incl. in rate	\$14,364.77
Laborer	Active	2.00	24.4	10	488.00	L	\$51.07	incl. in rate	incl. in rate	\$24,923.62
Labor Hours					2196	TOTAL LABOR				\$145,188.30
Equipment Hours					1464	TOTAL EQUIPMENT				\$221,190.88

Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost
						\$0.00
						\$0.00
						\$0.00
						\$0.00
						\$0.00
						\$0.00
						\$0.00
						\$0.00
						\$0.00
						\$0.00
						\$0.00
						\$0.00
						\$0.00
						\$0.00
						\$0.00
						\$0.00
						\$0.00
TOTAL MATERIAL						\$0.00

Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount
					\$0.00
					\$0.00
					\$0.00
					\$0.00
TOTAL SUBCONTRACTS					\$0.00

Labor Cost	\$145,188.30	Labor Burden @	0.0%		\$145,188.30
Material Cost	\$0.00	Material Tax @	0.00%	\$0.00	\$0.00
Equipment Cost	\$221,190.88	Equipment Tax @	0.00%	\$0.00	\$221,190.88
Subcontractors	\$0.00				\$0.00
<b>DIRECT COST SUBTOTALS</b>	<b>\$366,379</b>			<b>\$0</b>	<b>DIRECT COST SUBTOTALS \$366,379</b>
<b>Additional Pay Item Notes :</b>					

### 1.065.2 Power Canal Backfill Trucking From Disposal Site

PAY ITEM NUMBER	:	1.065.2	Project	:	KRPP - JC Boyle			
Description	:	Power Canal Backfill Trucking From Disposal Site	Group	:	D07			
Quantity	1.065.2	39,144.00 CY						
Daily Production	1.065.2	2,600.00 CY per	10	hour shift	Project #	:	1	
Work Days	1.065.2	19.7 Days			Estimator	:	Eric Jones	
Unit Price	1.065.2	\$6.24 per CY				CY per		
Total Cost	1.065.2	\$244,385			Probable Low Cost Parameter		2,990.00	
					Probable High Cost Parameter		2,210.00	
							\$207,728	
							\$281,043	
							\$69.47	
							\$127.17	

Description	Active Idle	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Hydraulic Excavator (2.5cy)	Active	1.00	19.7	10	196.56	E	\$205.40	incl. in rate	incl. in rate	\$40,373.42
Equipment Operator (medium)	Active	1.00	19.7	10	196.56	L	\$72.34	incl. in rate	incl. in rate	\$14,218.36
Truck Driver (heavy)	Active	4.00	19.7	10	786.24	L	\$66.92	incl. in rate	incl. in rate	\$52,618.33
CAT 745 (32 CY) OFF ROAD TRUCK	Active	4.00	19.7	10	786.24	E	\$174.47	incl. in rate	incl. in rate	\$137,175.29
Labor Hours					982.8	TOTAL LABOR				\$66,836.69
Equipment Hours					982.8	TOTAL EQUIPMENT				\$177,548.72

Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost
						\$0.00
TOTAL MATERIAL						\$0.00

Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount
					\$0.00
					\$0.00
					\$0.00
					\$0.00
TOTAL SUBCONTRACTS					\$0.00

Labor Cost	\$66,836.69	Labor Burden @	0.0%		\$66,836.69
Material Cost	\$0.00	Material Tax @	0.00%	\$0.00	\$0.00
Equipment Cost	\$177,548.72	Equipment Tax @	0.00%	\$0.00	\$177,548.72
Subcontractors	\$0.00				\$0.00
<b>DIRECT COST SUBTOTALS</b>	<b>\$244,385</b>		<b>\$0</b>	<b>DIRECT COST SUBTOTALS</b>	<b>\$244,385</b>
Additional Pay Item Notes :					

### 1.066 Remove Structural Steel items associated with Forebay Trash Rack Piers

PAY ITEM NUMBER	:	1.066	Project	:	KRRP - JC Boyle
Description	:	Remove Structural Steel items associated with Forebay Trash Rack Piers	Group	:	D10
Quantity	:	11,500.00 LBS			
Daily Production	:	31,250.00 LBS per	10	hour shift	
Work Days	:	0.4 Days	Project #	:	1
Unit Price	:	\$0.22 per LBS	Estimator	:	Mihaela Tomulescu
Total Cost	:	\$2,492	LBS per	:	35,937.50
			Total Cost	:	\$2,118
			Unit Price Per LBS	:	\$0.06
			Probable Low Cost Parameter	:	23,437.50
			Probable High Cost Parameter	:	\$2,115
				:	\$0.13

Description	Active Idle	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Labor Foreman	Active	1.00	0.4	10	4.00	L	\$58.87	incl. in rate	incl. in rate	\$235.49
Laborer	Active	2.00	0.4	10	8.00	L	\$51.07	incl. in rate	incl. in rate	\$408.58
Steelworker	Active	1.00	0.4	10	4.00	L	\$78.10	incl. in rate	incl. in rate	\$312.40
Crawler Crane (90tn)	Active	1.00	0.4	10	4.00	E	\$211.22	incl. in rate	incl. in rate	\$844.88
Equipment Operator (crane)	Active	1.00	0.4	10	4.00	L	\$81.60	incl. in rate	incl. in rate	\$326.39
Labor Hours					20	TOTAL LABOR				\$1,282.86
Equipment Hours					4	TOTAL EQUIPMENT				\$844.88

Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost
Consumables 5% labor (saw blades, drill bits, et	1.00	LS	1.000	1.00	\$64.14	\$64.14
TOTAL MATERIAL						\$64.14

Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount
Hauling Disposal Cost 30 Miles to Klamath County Landfill	1.00	Loads	20 tons a load	\$300.00	\$300.00
TOTAL SUBCONTRACTS					\$300.00

Labor Cost	\$1,282.86	Labor Burden @	49.7%	\$0.00		\$1,282.86
Material Cost	\$64.14	Material Tax @	0.0%	\$0.00		\$64.14
Equipment Cost	\$844.88	Equipment Tax @	0.0%	\$0.00		\$844.88
Subcontractors	\$300.00					\$300.00
<b>DIRECT COST SUBTOTALS</b>	<b>\$2,492</b>			<b>\$0</b>	<b>DIRECT COST SUBTOTALS</b>	<b>\$2,492</b>

Used 1 Crane and 1 Foreman, 1 Steelworkers to cut the beams that support the trash rack and 2 Laborers to load the pipes in the truck.

### 1.067 Remove Forebay Concrete

Additional Pay Item Notes :

1.067 Remove Forebay Concrete				
Details				
High Cost Factors			Low Cost Factors	
Bad Weather	0%		No Bad Weather	0%
Gas Price Increase	10%		Gas Price Decrease	10%
Unforeseen Contaminated Mats/ Access Issues	10%		No Unforeseen Contaminated Mats/ Access Issues	0%
	20%			10%
Production Per Hour	Hours	Efficiency Factor (Access, Activity, Qty, High Rebar Density, Breaks, Ect)	Overall Production	
	20	8	50%	80.00
		10	50%	100.00
Haul Notes		Excavator Loading Production per shift		
CY	2,520.00	CY per Hour		52
Swell Factor	60%	CY Bucket Size		2.50
Bulk CY	4032	Buckets Per Hour		21
Haul Vehicle 60% Capacity (2 tons per CY)		# of Excavators		2.00
# of Haul Vehicles	12	CY per Hour (5 CY Bucket)		26
Load Time (Includes Spot Time, Maneuver Time at Load site) (Minutes)	5	CY Per Hour Ideal Production Per 8 Hour Shift		95
Dump Time (Includes Spot Time, Maneuver Time at Dump site) (Minutes)	5	Efficient Compared to Ideal Production		27%
Haul Speed (Loaded MPH)	15	Inefficiencies Compared to Ideal Production		73%
Return Speed (Unloaded MPH)	20			
Haul Distance (Miles) Along Power Canal	0.0			
Shift Length (Hours)	10			
		Breaker Production		
Cyce Time		Hydraulic Hammer CY per Hour		10
Load Time (Load Time Minutes / 60mins)	0.08	# of Hammers		1.00
Haul Time (Haul Distance / Haul Speed)	0.00	CY per Hour		10
Dump Time (Dump Time Minutes / 60 Mins)	0.08	CY per Hour Back Check		10
Return Time (Haul Distance / Return Speed)	0.00	30 CY per HR per 8hr shift (Ideal prod)		20
Hours Per Cycle	0.16	Efficient Compared to Ideal Production		50%
Efficiency Factor (Night Work, Traffic Restrictions, Coffee Breaks, ECT)	70%	Inefficiencies Compared to Ideal Production		50%
Actual Hours Per Cycle (Hours per Cycle / Efficiency Factor)		0.23		
Number of Cycles (Bulk CY/ (Haul Vehicle Cap X # of Haul Vehicles)		336		
Total Number of Haul Hours (Actual Cycle Hours X Number of Cycles)		77.28		
Loads Per Hour (Number of Cycles / Total Number of Haul Hours)		4.35		
Number of Haul Days		8		
Speed Loaded				
	Max Weight lbs of loaded 725	103,707.00		
	Tons	52		
	20lbs/Ton Rolling weigh	3		
	Rolling Resistance ( 1% for each 20lbs/Ton)	3%		
	Slope Grade	2%		
	Total Resistance	5%		
	Max Gear per CAT Chart	6		
	Max MPH	15		
Speed Empty				
	Max Weight lbs of Empty 745	50,795.00		
	Tons Empty	25		
	20lbs/Ton Rolling weights Empty	1		
	Rolling Resistance ( 1% per 20lbs/Ton) Empty	1%		
	Average Slope Empty	2%		
	Total Resistance Empty	3%		
	Max Gear per CAT Chart Empty	8		
	Max MPH Empty	20		

**Other Notes**  
This pay item is to demolish the forebay area of the concrete flume. The demolition operation is expected to be 50% efficient and hauling is expected to 70% efficient.

### 1.068 Place Concrete Plugs at Tunnel Portals

PAY ITEM NUMBER	:	1.068	Project	:	KRRP - JC Boyle
Description	:	Place Concrete Plugs at Tunnel Portals	Group	:	D02
Quantity	1.068	75.00 CY			
Daily Production	1.068	4.40 CY per	10	hour shift	
Work Days	1.068	17.0	Days		
Unit Price	1.068	\$2,159.63	per CY		
Total Cost	1.068	\$161,972			
			Project #	:	1
			Estimator	:	Eric Jones
			Probable Low Cost Parameter	4.62	\$153,874
			Probable High Cost Parameter	4.18	\$170,071
					Unit Price Per CY
					\$33,306.03
					\$40,686.87

Description	Active Idle	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Carpenter Foreman (out)	Active	1.00	17.0	10	170.00	L	\$85.49	incl. in rate	incl. in rate	\$14,533.64
Carpenters	Active	2.00	17.0	10	340.00	L	\$85.49	incl. in rate	incl. in rate	\$29,067.28
Carpenters, Journeyman	Active	2.00	17.0	10	340.00	L	\$77.54	incl. in rate	incl. in rate	\$26,363.26
Equipment Operator (crane)	Active	1.00	8.5	10	85.00	L	\$81.60	incl. in rate	incl. in rate	\$6,935.83
Equipment Operator (light)	Active	1.00	2.0	10	20.00	L	\$69.19	incl. in rate	incl. in rate	\$1,383.80
Hydraulic Crane (80tn)	Active	1.00	8.5	10	85.00	E	\$197.66	incl. in rate	incl. in rate	\$16,801.10
Conc Pump (small)	Active	1.00	2.0	10	20.00	E	\$121.58	incl. in rate	incl. in rate	\$2,431.60
Steelworker	Active	4.00	5.0	10	200.00	L	\$78.16	\$0.00		\$15,631.00
Labor Hours					1155	TOTAL LABOR				\$93,914.81
Equipment Hours					105	TOTAL EQUIPMENT				\$19,232.70

[illegible]

Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount
TOTAL SUBCONTRACTS					\$0.00

Labor Cost	\$93,914.81	Labor Burden @	0.0%			\$93,914.81
Material Cost	\$48,824.98	Material Tax @	0.00%	\$0.00		\$48,824.98
Equipment Cost	\$19,232.70	Equipment Tax @	0.00%	\$0.00		\$19,232.70
Subcontractors	\$0.00					\$0.00
<b>DIRECT COST SUBTOTALS</b>	<b>\$161,972</b>			<b>\$0</b>	<b>DIRECT COST SUBTOTALS</b>	<b>\$161,972</b>

This estimate accounts for two concrete plugs that are estimated to be 16' in diameter and 5' thick. Please see production and sequence notes for further details.

1.068 Place Concrete Plugs at Tunnel Portals  
Details

High Cost Factors		Low Cost Factors	
Bad Weather	0%	No Bad Weather	0%
Gas Price Increase	5%	Gas Price Decrease	5%
Unforeseen Contaminated Mats/ Access Issues	0%	No Unforeseen Contaminated Mats/ Access Issues	0%
	5%		5%

Production Per Hour	Hours	Overall Production
	0.44	8
		10
		3.52
		4.4

**Production & Sequence Notes**  
The Plugs are expected to be formed in two sections. The inner sections will be formed and braced off of the tunnel walls. After the inner form (set form) is installed the face form will be built similar to the set form by bracing off of the tunnel walls. To ensure consolidation a high slump small aggregate mix will be used and concrete vibrators will have access through the Bat opening blockout at the top. One 5 man crew will be used to construct the formwork, place the concrete, and strip the form work. One crew of 4 rodbusters will be used to tie and brace reinforcement. Expected duration is 1 week to form each plug (Total of 2 weeks), 1 Week to reinforce both plugs inbetween forming operation, 2 days to pour each plug, and 1 week to strip each plug. Crane will be used 1/2 of time to support crew by flying material close to plug location. A small pump will be used to install concrete. Please note the production is adjusted to account for the duration as listed above.

#### 1.069 Remove Concrete Items associated with Penstocks D/S from Tunnel

SUMMARY OF COSTS				
Labor Cost	\$60,101.26	Labor Burden @	0.0%	\$60,101.26
Material Cost	\$6,010.13	Material Tax @	0.00%	\$6,010.13
Equipment Cost	\$108,176.54	Equipment Tax @	0.00%	\$108,176.54
Subcontractors	\$15,000.00			\$15,000.00
<b>DIRECT COST SUBTOTALS</b>	<b>\$189,288</b>		<b>\$0</b>	<b>DIRECT COST SUBTOTALS</b>
<b>Additional Pay Item Notes :</b>				



1.069 Remove Concrete Items associated with Penstocks D/S from Tunnel Details				
High Cost Factors		Low Cost Factors		
Bad Weather	0%	No Bad Weather		0%
Gas Price Increase	10%	Gas Price Decrease		10%
Unforeseen Contaminated Mats/ Access Issues	10%	No Unforeseen Contaminated Mats/ Access Issues		0%
	20%			10%
CY Per Hour Demolished		Efficiency Factor (Access, Activity, Qty, High Rebar Density, Breaks, Etc)		Overall Production
	Hours			
	32	8	40%	102.40
		10	40%	128.00
Haul Notes		Excavator Loading Production per shift		
CY	1,800.00	CY per Hour		19.67
Swell Factor	60%	CY Bucket Size		2.50
Bulk CY	2,880.00	Buckets Per Hour		8
Haul Vehicle 60% Capacity (2 tons per CY)		# of Excavators		1.00
# of Haul Vehicles		CY per Hour (2.5 CY Bucket)		20
Load Time (Includes Spot Time, Maneuver Time, & Loading) (Minutes)		CY Per Hour Ideal Production Per 8 Hour Shift		95
Dump Time (Includes Spot Time, Maneuver Time, & Unloading) Minutes		Efficient Compared to Ideal Production		21%
Haul Speed (Loaded MPH)		Inefficiencies Compared to Ideal Production		79%
Return Speed (Unloaded MPH)				
Haul Distance (Miles) Down Slope and Along Power Canal				
Shift Length (Hours)				
Cycle Time		Breaker Production		
Load Time (Load Time Minutes / 60mins)	0.08	Hydraulic Hammer CY per Hour		12.8
Haul Time (Haul Distance / Haul Speed)	0.20	# of Hammers		1.00
Dump Time (Dump Time Minutes / 60 Mins)	0.05	CY per Hour		12.8
Return Time (Haul Distance / Return Speed)	0.13	CY per Hour Back Check		12.8
Hours Per Cycle	0.46	2CY per HR per 8hr shift (Ideal prod)		32
Efficiency Factor (Night Work, Traffic Restrictions, Coffee Breaks, ECT)	75%	Efficient Compared to Ideal Production		40%
Actual Hours Per Cycle (Hours per Cycle / Efficiency Factor)	0.61	Inefficiencies Compared to Ideal Production		60%
Number of Cycles (Bulk CY/ (Haul Vehicle Cap X # of Haul Vehicles)	240			
Total Number of Haul Hours ( Actual Cycle Hours X Number of Cycles)	146.4			
Loads Per Hour (Number of Cycles / Total Number of Haul Hours)	1.64			
Number of Haul Days	14.64			
CAT 725 Articulated Truck				
Speed Loaded (Down Hill)				
	Max Weight lbs. of loaded 725	103,707.00		
	Tons	52		
	20lbs/Ton Rolling weight	3		
	Rolling Resistance ( 1% for each 20lbs/Ton)	3%		
	Average Slope	6%		
	Total Resistance	9%		
	Max Gear per CAT Chart	3		
	Max MPH	14		
Speed Empty (Up Hill)				
	Max Weight lbs. of Empty 725	50,795.00		
	Tons Empty	25		
	20lbs/Ton Rolling weight Empty	1		
	Rolling Resistance ( 1% per 20lbs/Ton) Empty	1%		
	Average Slope Empty	6%		
	Total Resistance Empty	7%		
	Max Gear per CAT Chart Empty	3		
	Max MPH Empty	14		
Other Notes				
This activity is for the demolition of the concrete supports for the 14" diameter penstock down stream from the surge tank. The supports are located at three different locations and it is expected that existing haul roads from when the supports were constructed will be used to gain access. The overall production of the activity is based on the demolition operation which is expected to only be 40% efficient due to repositioning equipment 3 different times, expectation of high density of reinforcement, and the restricted access for a stockpile area for the demolished material. The Hauling operation is expected to be 70% efficient due to the long sloped haul road, extra time for on ground spotters, and due to the limited access for maneuverability. The hauling is expected to start after the demolition has started and the duration of the haul truck and the truck driver reflect the expected haul duration.				

### 1.070 Remove Head gate Control Building at Flume Entrance

SUMMARY OF COSTS					
Labor Cost	\$2,039.18	Labor Burden @	0.0%		\$2,039.18
Material Cost	\$0.00	Material Tax @	0.00%	\$0.00	\$0.00
Equipment Cost	\$1,698.05	Equipment Tax @	0.00%	\$0.00	\$1,698.05
Subcontractors	\$4,238.00				\$4,238.00
<b>DIRECT COST SUBTOTALS</b>	<b>\$7,975</b>		<b>\$0</b>	<b>DIRECT COST SUBTOTALS</b>	<b>\$7,975</b>
<b>Additional Pay Item Notes :</b>					

### 1.071 Remove Fore bay Spillway Gate House

SUMMARY OF COSTS					
Labor Cost	\$2,447.02	Labor Burden @	0.0%		\$2,447.02
Material Cost	\$0.00	Material Tax @	0.00%	\$0.00	\$0.00
Equipment Cost	\$2,037.66	Equipment Tax @	0.00%	\$0.00	\$2,037.66
Subcontractors	\$4,830.00				\$4,830.00
<b>DIRECT COST SUBTOTALS</b>	<b>\$9,315</b>		<b>\$0</b>	<b>DIRECT COST SUBTOTALS</b>	<b>\$9,315</b>
Additional Pay Item Notes :					

### 1.072 Remove Fore bay Control Building

SUMMARY OF COSTS					
Labor Cost	\$4,078.36	Labor Burden @	0.0%		\$4,078.36
Material Cost	\$0.00	Material Tax @	0.00%	\$0.00	\$0.00
Equipment Cost	\$3,396.10	Equipment Tax @	0.00%	\$0.00	\$3,396.10
Subcontractors	\$4,608.00				\$4,608.00
<b>DIRECT COST SUBTOTALS</b>	<b>\$12,082</b>		<b>\$0</b>	<b>DIRECT COST SUBTOTALS</b>	<b>\$12,082</b>
Additional Pay Item Notes :					

#### 1.074 Remove Insulated Generator Building next to Fore bay Control Building

PAY ITEM NUMBER	:	1.074	Project	:	KRRP - JC Boyle				
Description	:	Remove Insulated Generator Building next to Fore bay Control Building	Group	:	D10				
Quantity	1.074	90.00	SF						
Daily Production	1.074	1,000.00	SF per	10	hour shift	Project #	1		
Work Days	1.074	0.1	Days		Estimator	Eric Jones	SF per	Total Cost	Unit Price Per SF
Unit Price	1.074	\$17.39	per SF		Probable Low Cost Parameter	1,100.00	\$1,409	\$1.28	
Total Cost	1.074	\$1,565			Probable High Cost Parameter	800.00	\$1,879	\$2.35	

Description	Active Idle	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Labor Foreman	Active	1.00	0.1	10	1.00	L	\$58.87	incl. in rate	incl. in rate	\$58.87
Laborer	Active	4.00	0.1	10	4.00	L	\$51.07	incl. in rate	incl. in rate	\$204.29
Equipment Operator (medium)	Active	2.00	0.1	10	2.00	L	\$72.34	incl. in rate	incl. in rate	\$144.67
Hydraulic Excavator (5.0cy)	Active	1.00	0.1	10	1.00	E	\$276.50	incl. in rate	incl. in rate	\$276.50
Loader, FE Rubber Tire (3.5cy)	Active	1.00	0.1	10	1.00	E	\$63.11	incl. in rate	incl. in rate	\$63.11
Labor Hours					7	TOTAL LABOR				\$407.84
Equipment Hours					2	TOTAL EQUIPMENT				\$339.61

Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price		Material Cost
<b>TOTAL MATERIAL</b>							\$0.00

Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount
Dump Fee Coverage (SFXH*.33/27)	13	CY			\$0.00
Conversion CY to Tons (2 tons per CY)	7.00	tons	Klamath County LandFill	\$74.00	\$518.00
Hauling Disposal Cost 30 Miles to Klamath County Landfill					
	1.00	Loads	18 CY per load	\$300.00	\$300.00
					\$0.00
			TOTAL SUBCONTRACTS		\$818.00

Labor Cost	\$407.84	Labor Burden @	0.0%		\$407.84
Material Cost	\$0.00	Material Tax @	0.00%	\$0.00	\$0.00
Equipment Cost	\$339.61	Equipment Tax @	0.00%	\$0.00	\$339.61
Subcontractors	\$818.00				\$818.00
<b>DIRECT COST SUBTOTALS</b>	<b>\$1,565</b>		<b>\$0</b>	<b>DIRECT COST SUBTOTALS</b>	<b>\$1,565</b>

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### 1.075 Remove Fixed Wheel Gate (Gate, Frame, and Hoist)

PAY ITEM NUMBER	:	1.075	Project	:	KRRP - JC Boyle
Description	:	Remove Fixed Wheel Gate (Gate, Frame, and Hoist)	Group	:	D03
Quantity	:	55,000.00 LBS			
Daily Production	:	37,500.00 LBS per	10	hour shift	
Work Days	:	1.5	Days		
Unit Price	:	\$0.37 per LBS			
Total Cost	:	\$20,109			
			Project #	:	1
			Estimator	:	Mihaela Tomulescu
			Probable Low Cost Parameter	:	45,000.00
			Probable High Cost Parameter	:	28,125.00
					\$16,087
					\$0.36
					\$25,137
					\$0.89

Description	Active Idle	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Labor Foreman	Active	1.00	1.5	10	15.00	L	\$58.87	incl. in rate	incl. in rate	\$883.08
Laborer	Active	2.00	1.5	10	30.00	L	\$51.07	incl. in rate	incl. in rate	\$1,532.19
Steelworker	Active	2.00	1.5	10	30.00	L	\$78.10	incl. in rate	incl. in rate	\$2,343.00
Loader, FE Rubber Tire (5.25cy)	Active	1.00	1.5	10	15.00	E	\$76.00	incl. in rate	incl. in rate	\$1,140.00
		0.00	1.5	10	0.00	0	\$0.00			\$0.00
Truck, Off-Road, Articulated Rear, 20cy	Active	1.00	1.5	10	15.00	E	\$117.28	incl. in rate	incl. in rate	\$1,759.20
Hydraulic Crane (120tn)	Active	1.00	1.5	10	15.00	E	\$242.08	incl. in rate	incl. in rate	\$3,631.20
Welder	Active	1.00	1.5	10	15.00	E	\$7.84	incl. in rate	incl. in rate	\$117.60
Gas Welding Machine	Active	1.00	1.5	10	15.00	E	\$2.88	incl. in rate	incl. in rate	\$43.15
Equipment Operator (medium)	Active	1.00	1.5	10	15.00	L	\$72.34	incl. in rate	incl. in rate	\$1,085.04
Equipment Operator (crane)	Active	1.00	1.5	10	15.00	L	\$81.60	incl. in rate	incl. in rate	\$1,223.97
Labor Hours					105	TOTAL LABOR				\$7,067.28
Equipment Hours					75	TOTAL EQUIPMENT				\$6,691.15

Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost
Consumables 5% labor (saw blades, drill bits, etc)	1.00	LS	1.000	1.00	\$353.36	\$353.36
Selective demolition, torch cutting, steel, 1" thick plate (assumed qty)	2,500.00	LF	1.000	2,500.00	\$0.85	\$2,125.00
TOTAL MATERIAL						\$2,478.36

Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount
Hazardous waste cleanup/pickup/disposal, solid pickup, bulk material, maximum	5.50	ton	1.000	5.50	\$595.00
Hauling Disposal Cost 30 Miles to Klamath County Landfill	2.00	Loads	20 tons a load		\$300.00
TOTAL SUBCONTRACTS					\$3,872.50

Labor Cost	\$7,067.28	Labor Burden @	49.7%	\$0.00			\$7,067.28
Material Cost	\$2,478.36	Material Tax @	0.0%	\$0.00			\$2,478.36
Equipment Cost	\$6,691.15	Equipment Tax @	0.0%	\$0.00			\$6,691.15
Subcontractors	\$3,872.50						\$3,872.50
<b>DIRECT COST SUBTOTALS</b>	<b>\$20,109</b>			<b>\$0</b>		<b>DIRECT COST SUBTOTALS</b>	<b>\$20,109</b>

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PAY ITEM INFORMATION									
PAY ITEM NUMBER	:	1.076	Project	:	KRRP - JC Boyle				
Description	:	Remove Trash rack and trash rake (steel)	Group	:	D03				
Quantity	:	75,000.00 LBS							
Daily Production	:	25,000.00 LBS per	10	hour shift	Project #	:	1		
Work Days	:	3.0 Days			Estimator	:	Mihaela Tomulescu	LBS per	Total Cost
Unit Price	:	\$0.47 per LBS			Probable Low Cost Parameter			30,000.00	\$28,431
Total Cost	:	\$35,538			Probable High Cost Parameter			18,750.00	\$44,423
									Unit Price Per LBS
									\$0.95
									\$2.37

CREW COSTS										
Description	Active Idle	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Labor Foreman	Active	1.00	3.0	10	30.00	L	\$58.87	incl. in rate	incl. in rate	\$1,766.16
Laborer	Active	1.00	3.0	10	30.00	L	\$51.07	incl. in rate	incl. in rate	\$1,532.19
Steelworker	Active	3.00	3.0	10	90.00	L	\$78.10	incl. in rate	incl. in rate	\$7,029.00
Equipment Operator (crane)	Active	1.00	3.0	10	30.00	L	\$81.60	incl. in rate	incl. in rate	\$2,447.94
Equipment Operator (medium)	Active	1.00	3.0	10	30.00	L	\$72.34	incl. in rate	incl. in rate	\$2,170.08
Loader, FE Rubber Tire (5.25cy)	Active	1.00	3.0	10	30.00	E	\$76.00	incl. in rate	incl. in rate	\$2,280.00
Hydraulic Crane (120tn)	Active	1.00	3.0	10	30.00	E	\$242.08	incl. in rate	incl. in rate	\$7,262.40
Acetylene Torches	Active	1.00	3.0	10	30.00	E	\$0.47	incl. in rate	incl. in rate	\$14.10
Air Compressor 600 cfm	Active	1.00	3.0	10	30.00	E	\$21.74	incl. in rate	incl. in rate	\$652.20
Generator, Small Generator, 10 - 15 kW	Active	1.00	3.0	10	30.00	E	\$7.04	incl. in rate	incl. in rate	\$211.20
Labor Hours					210	TOTAL LABOR				\$14,945.37
Equipment Hours					150	TOTAL EQUIPMENT				\$10,419.90

MATERIAL COSTS						
Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost
Consumables 15% labor (saw blades, drill bits, etc)	1.00	LS	1.000	1.00	\$2,241.81	\$2,241.81
Selective demolition, torch cutting, steel, 1" thick plate (assumed qty)	6,000.00	LF	1.000	6,000.00	\$0.85	\$5,100.00
						TOTAL MATERIAL
						\$7,341.81

SUBCONTRACT COSTS					
Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount
Hazardous waste cleanup/pickup/disposal, solid pickup, bulk material, maximum (10%)	3.75	ton	1.000	\$595.00	\$2,231.25
Hauling Disposal Cost 30 Miles to Klamath County Landfill	2.00	Loads	20 tons a load	\$300.00	\$600.00
					TOTAL SUBCONTRACTS
					\$2,831.25

SUMMARY OF COSTS						
Labor Cost	\$14,945.37	Labor Burden @	49.7%	\$0.00		\$14,945.37
Material Cost	\$7,341.81	Material Tax @	0.0%	\$0.00		\$7,341.81
Equipment Cost	\$10,419.90	Equipment Tax @	0.0%	\$0.00		\$10,419.90
Subcontractors	\$2,831.25					\$2,831.25
DIRECT COST SUBTOTALS	\$35,538			\$0	DIRECT COST SUBTOTALS	\$35,538
Additional Pay Item Notes :						

PAY ITEM INFORMATION									
PAY ITEM NUMBER	:	1.077			Project	:	KRRP - JC Boyle		
Description	:	Remove Stop Logs and Slots (steel)			Group	:	D03		
Quantity	:	136,000.00 LBS							
Daily Production	:	54,000.00 LBS per			20	hour shift	Project #	:	1
Work Days	:	2.5 Days			Estimator	:	Mihaela Tomulescu	LBS per	Total Cost
Unit Price	:	\$0.42 per LBS			Probable Low Cost Parameter		59,400.00	\$51,948	Unit Price Per LBS
Total Cost	:	\$57,720			Probable High Cost Parameter		40,500.00	\$72,150	\$0.87
									\$1.78

CREW COSTS										
Description	Active Idle	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Labor Foreman	Active	1.00	2.5	20	50.00	L	\$58.87	incl. in rate	incl. in rate	\$2,943.60
Laborer	Active	4.00	2.5	20	200.00	L	\$51.07	incl. in rate	incl. in rate	\$10,214.60
Steelworker	Active	2.00	2.5	20	100.00	L	\$78.10	incl. in rate	incl. in rate	\$7,810.00
Equipment Operator (crane)	Active	1.00	2.5	20	50.00	L	\$81.60	incl. in rate	incl. in rate	\$4,079.90
Equipment Operator (medium)	Active	1.00	2.5	20	50.00	L	\$72.34	incl. in rate	incl. in rate	\$3,616.80
Hydraulic Crane (120tn)	Active	1.00	2.5	20	50.00	E	\$242.08	incl. in rate	incl. in rate	\$12,104.00
Loader, FE Rubber Tire (3.5cy)	Active	1.00	2.5	20	50.00	E	\$63.11	incl. in rate	incl. in rate	\$3,155.50
					Labor Hours	450			TOTAL LABOR	\$28,664.90
					Equipment Hours	100			TOTAL EQUIPMENT	\$15,259.50

MATERIAL COSTS						
Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost
Consumables 15% labor (saw blades, drill bits, etc)	1.00	LS	1.000	1.00	\$4,299.74	\$4,299.74
Selective demolition, torch cutting, steel, 1" thick plate (assumed qty)	5,000.00	LF	1.000	5,000.00	\$0.85	\$4,250.00
						TOTAL MATERIAL
						\$8,549.74

SUBCONTRACT COSTS					
Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount
Hazardous waste cleanup/pickup/disposal, solid pickup, bulk material, maximum (10%)					
	6.80	ton	1.000	6.80	\$595.00
Hauling Disposal Cost 30 Miles to Klamath County Landfill	4.00	Loads	20 tons a load		\$300.00
					\$0.00
					\$0.00
					TOTAL SUBCONTRACTS
					\$5,246.00

SUMMARY OF COSTS						
Labor Cost	\$28,664.90	Labor Burden @	49.7%	\$0.00		\$28,664.90
Material Cost	\$8,549.74	Material Tax @	0.0%	\$0.00		\$8,549.74
Equipment Cost	\$15,259.50	Equipment Tax @	0.0%	\$0.00		\$15,259.50
Subcontractors	\$5,246.00					\$5,246.00
DIRECT COST SUBTOTALS	\$57,720			\$0	DIRECT COST SUBTOTALS	\$57,720

Additional Pay Item Notes :

The process of removing stop logs is not manual, but done with hydraulic stop log lifters and hoists. The gate side guides and invert assumed having a minimum weight of 4 lbs./ft. for wall mounted and 3 lbs./ft. for embedded in concrete. The gate invert should contain a removable neoprene seal. Including stop log grooves, lifter, guide - weight around 136,000 lbs.



### 1.078 Remove Traveling Water Screen

PAY ITEM NUMBER	:	1.078	Project	:	KRRP - JC Boyle
Description	:	Remove Traveling Water Screen	Group	:	D03
Quantity	:	124,000.00 LBS			
Daily Production	:	37,500.00 LBS per	10	hour shift	
Work Days	:	3.3	Days	Project #	: 1
Unit Price	:	\$0.39	per LBS	Estimator	: Mihaela Tomulescu
Total Cost	:	\$48,607		LBS per	41,250.00
				Total Cost	\$43,747
				Unit Price Per LBS	\$1.06
				Probable Low Cost Parameter	28,125.00
				Probable High Cost Parameter	\$60,759
					\$2.16

Description	Active Idle	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Labor Foreman	Active	2.00	3.3	10	66.00	L	\$58.87	incl. in rate	incl. in rate	\$3,885.55
Electrician	Active	1.00	3.3	10	33.00	L	\$55.80	incl. in rate	incl. in rate	\$1,841.50
Steelworker	Active	6.00	3.3	10	198.00	L	\$78.10	incl. in rate	incl. in rate	\$15,463.80
Loader, FE Rubber Tire (8.6cy)	Active	1.00	3.3	10	33.00	E	\$225.40	incl. in rate	incl. in rate	\$7,438.20
Hydraulic Crane (120tn)	Active	1.00	3.3	10	33.00	E	\$242.08	incl. in rate	incl. in rate	\$7,988.64
Welder	Active	2.00	3.3	10	66.00	E	\$7.84	incl. in rate	incl. in rate	\$517.44
Gas Welding Machine	Active	2.00	3.3	10	66.00	E	\$2.88	incl. in rate	incl. in rate	\$189.88
Equipment Operator (medium)	Active	1.00	3.3	10	33.00	L	\$72.34	incl. in rate	incl. in rate	\$2,387.09
Equipment Operator (crane)	Active	1.00	3.3	10	33.00	L	\$81.60	incl. in rate	incl. in rate	\$2,692.73
Labor Hours					363	TOTAL LABOR				\$26,270.67
Equipment Hours					198	TOTAL EQUIPMENT				\$16,134.16

Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost
Consumables 5% labor (saw blades, drill bits, etc)	1.00	LS	1.000	1.00	\$1,313.53	\$1,313.53
TOTAL MATERIAL						\$1,313.53

Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount
Hazardous waste cleanup/pickup/disposal, solid pickup, bulk material, maximum (10%)					
	6.20	ton	1.000	\$595.00	\$3,689.00
Hauling Disposal Cost 30 Miles to Klamath County Landfill	4.00	Loads	20 tons a load	\$300.00	\$1,200.00
TOTAL SUBCONTRACTS					\$4,889.00

Labor Cost	\$26,270.67	Labor Burden @	49.7%	\$0.00					\$26,270.67
Material Cost	\$1,313.53	Material Tax @	0.0%	\$0.00					\$1,313.53
Equipment Cost	\$16,134.16	Equipment Tax @	0.0%	\$0.00					\$16,134.16
Subcontractors	\$4,889.00								\$4,889.00
<b>DIRECT COST SUBTOTALS</b>	<b>\$48,607</b>			<b>\$0</b>			<b>DIRECT COST SUBTOTALS</b>		<b>\$48,607</b>

**Additional Pay Item Notes :**

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### 1.079 Remove Fish By-Pass and Supports (steel)

Additional Pay Item Notes :	
	<p>This is to remove the 4 pronged inlet for forebay, spillway steel, and deer escape flume</p>

PAY ITEM INFORMATION									
PAY ITEM NUMBER	:	1.080	Project	:	KRRP - JC Boyle				
Description	:	Remove Gates and Hoists	Group	:	D03				
Quantity	:	18,500.00 LBS							
Daily Production	:	31,250.00 LBS per	10	hour shift	Project #	:	1		
Work Days	:	0.6 Days			Estimator	:	Mihaela Tomulescu	LBS per	Total Cost
Unit Price	:	\$0.34 per LBS			Probable Low Cost Parameter			35,937.50	\$5,342
Total Cost	:	\$6,285			Probable High Cost Parameter			21,875.00	\$8,170
									Unit Price Per LBS
									\$0.15
									\$0.37

CREW COSTS										
Description	Active Idle	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Electrician Foreman	Active	1.00	0.6	10	6.00	L	\$55.80	incl. in rate	incl. in rate	\$334.82
Electrician	Active	1.00	0.6	10	6.00	L	\$55.80	incl. in rate	incl. in rate	\$334.82
Steelworker	Active	2.00	0.6	10	12.00	L	\$78.10	incl. in rate	incl. in rate	\$937.20
Loader, FE Rubber Tire (8.6cy)	Active	1.00	0.6	10	6.00	E	\$225.40	incl. in rate	incl. in rate	\$1,352.40
Crawler Crane (90tn)	Active	1.00	0.6	10	6.00	E	\$211.22	incl. in rate	incl. in rate	\$1,267.32
Welder	Active	1.00	0.6	10	6.00	E	\$7.84	incl. in rate	incl. in rate	\$47.04
Gas Welding Machine	Active	1.00	0.6	10	6.00	E	\$2.88	incl. in rate	incl. in rate	\$17.26
Equipment Operator (medium)	Active	1.00	0.6	10	6.00	L	\$72.34	incl. in rate	incl. in rate	\$434.02
Equipment Operator (crane)	Active	1.00	0.6	10	6.00	L	\$81.60	incl. in rate	incl. in rate	\$489.59
Laborer	Active	2.00	0.6	10	12.00	L	\$51.07	incl. in rate	incl. in rate	\$612.88
					Labor Hours	48	TOTAL LABOR			\$3,143.32
					Equipment Hours	24	TOTAL EQUIPMENT			\$2,684.02

MATERIAL COSTS						
Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost
Consumables 5% labor (saw blades, drill bits, etc)	1.00	LS	1.000	1.00	\$157.17	\$157.17
						TOTAL MATERIAL
						\$157.17

SUBCONTRACT COSTS					
Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount
Hauling Disposal Cost 30 Miles to Klamath County Landfill	1.00	Loads	20 tons a load	\$300.00	\$300.00
					TOTAL SUBCONTRACTS
					\$300.00

SUMMARY OF COSTS									
Labor Cost	\$3,143.32	Labor Burden @	49.7%	\$0.00					\$3,143.32
Material Cost	\$157.17	Material Tax @	0.0%	\$0.00					\$157.17
Equipment Cost	\$2,684.02	Equipment Tax @	0.0%	\$0.00					\$2,684.02
Subcontractors	\$300.00								\$300.00
DIRECT COST SUBTOTALS	\$6,285			\$0				DIRECT COST SUBTOTALS	\$6,285
Additional Pay Item Notes :									
Production based on crew 1 Forman, 2 Steelworkers and 1 Welder to cut and attach hooks to 2 gates and 2 hoists for disposal, 2 Laborers to rigging wire rope slings, 1 Electrician to provide power for tools, 1 Truck for disposal to Yreka facility. Assuming 1/2 days of work;									

**1.081 Remove Trash rack and trash rake (steel)**

PAY ITEM NUMBER	:	1.081	Project	:	KRRP - JC Boyle
Description	:	Remove Trash rack and trash rake (steel)	Group	:	D03
Quantity	:	47,249.00 LBS			
Daily Production	:	23,100.00 LBS per		Project #	: 1
Work Days	:	2.0 Days		Estimator	: Mihaela Tomulescu
Unit Price	:	\$0.45 per LBS		LBS per	Total Cost
Total Cost	:	\$21,336		Probable Low Cost Parameter	\$18,136
				Probable High Cost Parameter	\$27,737
					\$0.68
					\$1.72

Description	Active Idle	# In crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Labor Foreman	Active	1.00	2.0	10	20.00	L	\$58.87	incl. in rate	incl. in rate	\$1,177.44
Laborer	Active	3.00	2.0	10	60.00	L	\$51.07	incl. in rate	incl. in rate	\$3,064.38
Steelworker	Active	2.00	2.0	10	40.00	L	\$78.10	incl. in rate	incl. in rate	\$3,124.00
Equipment Operator (crane)	Active	1.00	2.0	10	20.00	L	\$81.60	incl. in rate	incl. in rate	\$1,631.96
Equipment Operator (medium)	Active	1.00	2.0	10	20.00	L	\$72.34	incl. in rate	incl. in rate	\$1,446.72
Crawler Crane (130tn)	Active	1.00	2.0	10	20.00	E	\$262.91	incl. in rate	incl. in rate	\$5,258.20
Loader, FE Rubber Tire (5.25cy)	Active	1.00	2.0	10	20.00	E	\$76.00	incl. in rate	incl. in rate	\$1,520.00
Acetylene Torches	Active	2.00	2.0	10	40.00	E	\$0.47	incl. in rate	incl. in rate	\$18.80
Labor Hours					160	TOTAL LABOR				\$10,444.50
Equipment Hours					80	TOTAL EQUIPMENT				\$6,797.00

Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost
Consumables 20% labor (saw blades, drill bits, electrodes, wrenches, hard hats, torch gas, etc)	1.00	LS	1.000	1.00	\$2,088.90	\$2,088.90
TOTAL MATERIAL						\$2,088.90

Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount
Hazardous waste cleanup/pickup/disposal, solid pickup, bulk material, maximum (25%)					
	2.36	ton	1.000	\$595.00	\$1,405.66
Hauling Disposal Cost 30 Miles to Klamath County Landfill	2.00	Loads	20 tons a load	\$300.00	\$600.00
TOTAL SUBCONTRACTS					\$2,005.66

Labor Cost	\$10,444.50	Labor Burden @	49.7%	\$0.00		\$10,444.50
Material Cost	\$2,088.90	Material Tax @	0.0%	\$0.00		\$2,088.90
Equipment Cost	\$6,797.00	Equipment Tax @	0.0%	\$0.00		\$6,797.00
Subcontractors	\$2,005.66					\$2,005.66
<b>DIRECT COST SUBTOTALS</b>	<b>\$21,336</b>			<b>\$0</b>	<b>DIRECT COST SUBTOTALS</b>	<b>\$21,336</b>

This pay item is to remove trash rack steel by cutting lose with torches and loading on a contracted haul truck to recycle facility

### 1.082 Remove stop Logs and slots (steel)

[illegible]

Description	Active Idle	# In crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Labor Foreman	Active	1.00	1.9	10	19.00	L	\$58.87	incl. in rate	incl. in rate	\$1,118.57
Laborer	Active	3.00	1.9	10	57.00	L	\$51.07	incl. in rate	incl. in rate	\$2,911.16
Steelworker	Active	2.00	1.9	10	38.00	L	\$78.10	incl. in rate	incl. in rate	\$2,967.80
Equipment Operator (crane)	Active	1.00	1.9	10	19.00	L	\$81.60	incl. in rate	incl. in rate	\$1,550.36
Equipment Operator (medium)	Active	1.00	1.9	10	19.00	L	\$72.34	incl. in rate	incl. in rate	\$1,374.38
Crawler Crane (130tn)	Active	1.00	1.9	10	19.00	E	\$262.91	incl. in rate	incl. in rate	\$4,995.29
Loader, FE Rubber Tire (5.25cy)	Active	1.00	1.9	10	19.00	E	\$76.00	incl. in rate	incl. in rate	\$1,444.00
Acetylene Torches	Active	2.00	1.9	10	38.00	E	\$0.47	incl. in rate	incl. in rate	\$17.86
Labor Hours					152	TOTAL LABOR				\$9,922.28
Equipment Hours					76	TOTAL EQUIPMENT				\$6,457.15

Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost
Consumables 15% labor (saw blades, drill bits, electrodes, wrenches, hard hats etc)	1.00	LS	1.000	1.00	\$1,488.34	\$1,488.34
TOTAL MATERIAL						\$1,488.34

Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount
Hazardous waste cleanup/pickup/disposal, solid pickup, bulk material, maximum (10%)	4.63	ton	1.000	\$595.00	\$2,757.01
Hauling Disposal Cost 30 Miles to Klamath County Landfill	1.00	Loads	20 tons a load	\$300.00	\$300.00
TOTAL SUBCONTRACTS					\$3,057.01

Labor Cost	\$9,922.28	Labor Burden @	49.7%	\$0.00	\$9,922.28
Material Cost	\$1,488.34	Material Tax @	0.0%	\$0.00	\$1,488.34
Equipment Cost	\$6,457.15	Equipment Tax @	0.0%	\$0.00	\$6,457.15
Subcontractors	\$3,057.01				\$3,057.01
<b>DIRECT COST SUBTOTALS</b>	<b>\$20,925</b>			<b>\$0</b>	<b>DIRECT COST SUBTOTALS \$20,925</b>

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**1.083 Remove & Dispose 14' Diversion Pipe**

**Additional Pay Item Notes :**

This payitem is to demolish penstock and haul off site. This activity is expected to be 60% efficient to account for prepping sections of the pipe for cutting due to coating, staff breaks, equipment maintenance, temp shoring, equipment repositioning, and ect. A 90 ton crawler crane will be rigged to the cut section of pipe and once cut it will track near loading location. 130 ton crawler crane will be used as a support crane / hold crane for the adjacent pipe section. There has been a access allowance added to the estimate to account for the section of the penstock going over the Klamath River. This should not affect duration due to one crew being able to work up stream while this access is being created. A shoring allowance has been added for potential sag areas depending where the penstock is cut. Expecting 1 steel worker and 2 laborers to be on either side of the penstock section to prep and cut section.

1.083 Remove & Dispose 14' Diversion Pipe	
Details	

High Cost Factors		Low Cost Factors	
Bad Weather	0%	No Bad Weather	0%
Gas Price Increase	10%	Gas Price Decrease	10%
Unforeseen Contaminated Mats/ Access Issues	10%	No Unforeseen Contaminated Mats/ Access Issues	5%
	20%		15%

Production Per Hour	Hours	Efficiency Factor (Access, Activity, Qty, High Rebar Density, Breaks, Ect)	Overall Production
5,050.00	8	60%	24240
4,000.00	10	60%	24000

Total Lbs	484,200.00		
Assumed Pipe Thickness is 3/4" thick	#N/A		
14" diameter pipe			
lbs per ft	#N/A	36000	#N/A
Total LF	600.00		
Each Piece at 36k length	#N/A		
Number of pieces	#N/A		

### 1.083.1 Remove & Dispose 9'-6" to 10'-6" Penstocks

**Additional Pay Item Notes :**

This payitem is to demolish the 9'-6" to 10'-6" penstock and haul off site. This activity is expected to be 60% efficient to account for prepping sections of the pipe for cutting due to coating, staff breaks, equipment maintenance, temp shoring, equipment repositioning, and ect. A 90 ton crawler crane will be rigged to the cut section of pipe and once cut it will track near loading location. 130 ton crawler crane will be used as a support crane to load trucks and other misc requirements. A shoring allowance has been added for potential sag areas depending where the penstock is cut. Expecting 1 steel worker and 2 laborers to be on either side of the penstock section to prep and cut section.



High Cost Factors			Low Cost Factors		
Bad Weather	0%		No Bad Weather	0%	
Gas Price Increase	10%		Gas Price Decrease	10%	
Unforeseen Contaminated Mats/ Access Issues	10%		No Unforeseen Contaminated Mats/ Access Issues	5%	
20%			15%		

Production Per Hour	Hours	Efficiency Factor (Access, Activity, Qty, High Rebar Density, Breaks, Ect)	Overall Production
5,050.00	8	60%	24240
5,050.00	10	60%	30300

Total Lbs	953,250.00	
Wall Thickness 3/8" (Plan Sheet AA78164)	0.375	
10'-8" AVG diameter pipe	0	
lbs per ft pipe	512	
Lbs per Ft Allowance for Connections & Flanges 20%	103	
Total Lbs Per FT	615	
Total LF	1,550	
Length of Pipe Each Load	40	Length of Trailer 48'
Weight Per Load	24,600	Max Weight 36K Lbs
Number of Loads	39	

**1.084 Remove & Dispose Surge Tank (steel)**

PAY ITEM NUMBER	:	1.084	Project	:	KRRP - JC Boyle
Description	:	Remove & Dispose Surge Tank (steel)	Group	:	D03
Quantity	:	79,000.00 LBS			
Daily Production	:	15,000.00 LBS per	10	hour shift	
Work Days	:	5.3	Days		
Unit Price	:	\$0.77	per LBS		
Total Cost	:	\$61,152			
			Project #	:	1
			Estimator	:	Mihaela Tomulescu
			LBS per	:	
			Probable Low Cost Parameter	:	16,500.00
			Probable High Cost Parameter	:	10,500.00
			Total Cost	:	\$55,037
			Unit Price Per LBS	:	\$3.34
				:	\$7.57

Description	Active Idle	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Labor Foreman	Active	1.00	5.3	10	53.00	L	\$58.87	incl. in rate	incl. in rate	\$3,120.22
Laborer	Active	2.00	5.3	10	106.00	L	\$51.07	incl. in rate	incl. in rate	\$5,413.74
Steelworker	Active	2.00	5.3	10	106.00	L	\$78.10	incl. in rate	incl. in rate	\$8,278.60
Equipment Operator (crane)	Active	1.00	5.3	10	53.00	L	\$81.60	incl. in rate	incl. in rate	\$4,324.69
Equipment Operator (medium)	Active	1.00	5.3	10	53.00	L	\$72.34	incl. in rate	incl. in rate	\$3,833.81
Hydraulic Crane (120tn)	Active	1.00	5.3	10	53.00	E	\$242.08	incl. in rate	incl. in rate	\$12,830.24
Loader, FE Rubber Tire (5.25cy)	Active	1.00	5.3	10	53.00	E	\$76.00	incl. in rate	incl. in rate	\$4,028.00
Boomlift (JLG 60')	Active	2.00	5.3	10	106.00	E	\$52.87	incl. in rate	incl. in rate	\$5,604.22
Acetylene Torches	Active	2.00	5.3	10	106.00	E	\$0.47	incl. in rate	incl. in rate	\$49.82
Air Compressor 600 cfm	Active	1.00	5.3	10	53.00	E	\$21.74	incl. in rate	incl. in rate	\$1,152.22
Generator, Small Generator, 10 - 15 kW	Active	2.00	5.3	10	106.00	E	\$7.04	incl. in rate	incl. in rate	\$746.24
Hepa Vac System	Active	3.00	5.3	10	159.00	E	\$0.47	incl. in rate	incl. in rate	\$74.73
Labor Hours					371	TOTAL LABOR				\$24,971.06
Equipment Hours					636	TOTAL EQUIPMENT				\$24,485.47

Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost
Consumables 15% labor (saw blades, drill bits, electrodes, wrenches, hard hats etc)						
	1.00	LS	1.000	1.00	\$3,745.66	\$3,745.66
HEPA Vac Systems For Grinders	4.00	EA	1.000	4.00	\$1,000.00	\$4,000.00
Handheld Grinders	4.00	EA	1.000	4.00	\$250.00	\$1,000.00
TOTAL MATERIAL						\$8,745.66

Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount
Hazardous waste cleanup/pickup/disposal, solid pickup, bulk material, maximum (10%)	3.95	ton	1.000	\$595.00	\$2,350.25
Hauling Disposal Cost 30 Miles to Klamath County Landfill	2.00	Loads	20 tons a load	\$300.00	\$600.00
TOTAL SUBCONTRACTS					\$2,950.25

Labor Cost	\$24,971.06	Labor Burden @	49.7%	\$0.00		\$24,971.06
Material Cost	\$8,745.66	Material Tax @	0.0%	\$0.00		\$8,745.66
Equipment Cost	\$24,485.47	Equipment Tax @	0.0%	\$0.00		\$24,485.47
Subcontractors	\$2,950.25					\$2,950.25
<b>DIRECT COST SUBTOTALS</b>	<b>\$61,152</b>			<b>\$0</b>	<b>DIRECT COST SUBTOTALS</b>	<b>\$61,152</b>

**Additional Pay Item Notes :**

This payitem is to remove the surge tank down stream from the concrete power canal. The cost to create access to the surge take is covered under the temp access road payitem. The activity production is expected to be 60% efficient to account for mobilizing equipment at the tank, equipment maintenance, employee breaks, and tank preparation for cutting. It is expected that tank will be demolished by cutting into 20K lb pieces and load on truck to haul to recycle plant.

PAY ITEM INFORMATION									
PAY ITEM NUMBER	:	1.085	Project	:	KRRP - JC Boyle				
Description	:	Remove & Dispose 2 - 108" Butterfly valves	Group	:	D03				
Quantity	:	148,000.00 LBS							
Daily Production	:	28,800.00 LBS per	10	hour shift	Project #	:	1		
Work Days	:	5.1 Days			Estimator	:	Mihaela Tomulescu	LBS per	Total Cost
Unit Price	:	\$0.53 per LBS			Probable Low Cost Parameter			31,680.00	\$70,691
Total Cost	:	\$78,546			Probable High Cost Parameter			20,160.00	\$102,110
									Unit Price Per LBS
									\$2.23
									\$5.06

CREW COSTS										
Description	Active Idle	# In crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Labor Foreman	Active	1.00	5.1	10	51.00	L	\$58.87	incl. in rate	incl. in rate	\$3,002.47
Steelworker	Active	2.00	5.1	10	102.00	L	\$78.10	incl. in rate	incl. in rate	\$7,966.20
Laborer	Active	4.00	5.1	10	204.00	L	\$51.07	incl. in rate	incl. in rate	\$10,418.89
Equipment Operator (crane)	Active	1.00	5.1	10	51.00	L	\$81.60	incl. in rate	incl. in rate	\$4,161.50
Equipment Operator (medium)	Active	1.00	5.1	10	51.00	L	\$72.34	incl. in rate	incl. in rate	\$3,689.14
Crawler Crane (130tn)	Active	1.00	5.1	10	51.00	E	\$262.91	incl. in rate	incl. in rate	\$13,408.41
Loader, FE Rubber Tire (5.25cy)	Active	1.00	5.1	10	51.00	E	\$76.00	incl. in rate	incl. in rate	\$3,876.00
Acetylene Torches	Active	2.00	5.1	10	102.00	E	\$0.47	incl. in rate	incl. in rate	\$47.94
Air Compressor 600 cfm	Active	1.00	5.1	10	51.00	E	\$21.74	incl. in rate	incl. in rate	\$1,108.74
Generator, Small Generator, 10 - 15 kW	Active	2.00	5.1	10	102.00	E	\$7.04	incl. in rate	incl. in rate	\$718.08
Hepa Vac System	Active	2.00	5.1	10	102.00	E	\$0.47	incl. in rate	incl. in rate	\$47.94
Labor Hours					459	TOTAL LABOR				\$29,238.20
Equipment Hours					459	TOTAL EQUIPMENT				\$19,207.11

MATERIAL COSTS						
Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost
Consumables 15% labor (saw blades, electrodes, drill bits, torch gas, etc)	1.00	LS	1.000	1.00	\$4,385.73	\$4,385.73
HEPA Vac Systems For Grinders	2.00	EA	1.000	2.00	\$1,000.00	\$2,000.00
Handheld Grinders	2.00	EA	1.000	2.00	\$250.00	\$500.00
						TOTAL MATERIAL
						\$6,885.73

SUBCONTRACT COSTS				
Description	Quantity	Units	Notes / Company	Unit Price
Hazardous waste cleanup/pickup/disposal, solid pickup, bulk material, maximum (50%)	37.00	ton	1.000	\$595.00
Hauling Disposal Cost 30 Miles to Klamath County Landfill	4.00	Loads	20 tons a load	\$300.00
				TOTAL SUBCONTRACTS
				\$23,215.00

SUMMARY OF COSTS					
Labor Cost	\$29,238.20	Labor Burden @	49.7%	\$0.00	\$29,238.20
Material Cost	\$6,885.73	Material Tax @	0.0%	\$0.00	\$6,885.73
Equipment Cost	\$19,207.11	Equipment Tax @	0.0%	\$0.00	\$19,207.11
Subcontractors	\$23,215.00				\$23,215.00
DIRECT COST SUBTOTALS	\$78,546			\$0	DIRECT COST SUBTOTALS
					\$78,546
Additional Pay Item Notes :					

### 1.086 Remove & Dispose Gate, Stem and Frame

PAY ITEM NUMBER	:	1.086	Project	:	KRRP - JC Boyle
Description	:	Remove & Dispose Gate, Stem and Frame	Group	:	D03
Quantity	:	28,000.00 LBS			
Daily Production	:	13,875.00 LBS per	10	hour shift	
Work Days	:	2.0	Days		
Unit Price	:	\$0.74 per LBS	Project #	:	1
Total Cost	:	\$20,823	Estimator	:	Mihaela Tomulescu
			Probable Low Cost Parameter	:	LBS per 15,262.50
			Probable High Cost Parameter	:	Total Cost \$18,741
				:	Unit Price Per LBS \$1.23
				:	\$24,987
				:	\$2.25

Description	Active Idle	# In crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Labor Foreman	Active	1.00	2.0	10	20.00	L	\$58.87	incl. in rate	incl. in rate	\$1,177.44
Laborer	Active	2.00	2.0	10	40.00	L	\$51.07	incl. in rate	incl. in rate	\$2,042.92
Steelworker	Active	1.00	2.0	10	20.00	L	\$78.10	incl. in rate	incl. in rate	\$1,562.00
Equipment Operator (crane)	Active	1.00	2.0	10	20.00	L	\$81.60	incl. in rate	incl. in rate	\$1,631.96
Equipment Operator (medium)	Active	1.00	2.0	10	20.00	L	\$72.34	incl. in rate	incl. in rate	\$1,446.72
Hydraulic Crane (80tn)	Active	1.00	2.0	10	20.00	E	\$197.66	incl. in rate	incl. in rate	\$3,953.20
Loader, FE Rubber Tire (5.25cy)	Active	1.00	2.0	10	20.00	E	\$76.00	incl. in rate	incl. in rate	\$1,520.00
Acetylene Torches	Active	1.00	2.0	10	20.00	E	\$0.47	incl. in rate	incl. in rate	\$9.40
Air Compressor 600 cfm	Active	1.00	2.0	10	20.00	E	\$21.74	incl. in rate	incl. in rate	\$434.80
Generator, Small Generator, 10 - 15 kW	Active	1.00	2.0	10	20.00	E	\$7.04	incl. in rate	incl. in rate	\$140.80
Hepa Vac System	Active	1.00	2.0	10	20.00	E	\$0.47	incl. in rate	incl. in rate	\$9.40
Labor Hours					120	TOTAL LABOR				\$7,861.04
Equipment Hours					120	TOTAL EQUIPMENT				\$6,067.60

Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost
drill bits, torch gas, etc)	1.00	LS	1.000	1.00	\$1,179.16	\$1,179.16
HEPA Vac Systems For Grinders	1.00	EA	1.000	1.00	\$1,000.00	\$1,000.00
Handheld Grinders	1.00	EA	1.000	1.00	\$250.00	\$250.00
TOTAL MATERIAL						\$2,429.16

Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount
Hazardous waste cleanup/pickup/disposal, solid pickup, bulk material, maximum (50%)					
	7.00	ton	1.000	\$595.00	\$4,165.00
Hauling Disposal Cost 30 Miles to Klamath County Landfill	1.00	Loads	20 tons a load	\$300.00	\$300.00
TOTAL SUBCONTRACTS					\$4,465.00

Labor Cost	\$7,861.04	Labor Burden @	49.7%	\$0.00		\$7,861.04
Material Cost	\$2,429.16	Material Tax @	0.0%	\$0.00		\$2,429.16
Equipment Cost	\$6,067.60	Equipment Tax @	0.0%	\$0.00		\$6,067.60
Subcontractors	\$4,465.00					\$4,465.00
<b>DIRECT COST SUBTOTALS</b>	<b>\$20,823</b>			<b>\$0</b>	<b>DIRECT COST SUBTOTALS</b>	<b>\$20,823</b>

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PAY ITEM COST DETAIL WORKSHEET

1.087 Remove & Dispose of Steel Transition Manifolds on Upstream and Downstream

PAY ITEM INFORMATION

PAY ITEM NUMBER	: 1.087	Project	: KRRP - JC Boyle
Description	: Remove & Dispose of Steel Transition Manifolds on Upstream and Downstream	Group	: D03
Quantity	: 250,000.00 LBS	Project #	: 1
Daily Production	: 37,500.00 LBS per 10 hour shift	Estimator	: Mihaela Tomulescu
Work Days	: 6.7 Days	Probable Low Cost Parameter	LBS per 43,125.00
Unit Price	: \$0.35 per LBS	Probable High Cost Parameter	Total Cost \$74,329
Total Cost	: \$87,446		Unit Price Per LBS \$1.72
			\$4.33

CREW COSTS

Description	Active Idle	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Labor Foreman	Active	1.00	6.7	10	67.00	L	\$58.87	incl. in rate	incl. in rate	\$3,944.42
Millwright	Active	3.00	6.7	10	201.00	L	\$82.04	incl. in rate	incl. in rate	\$16,489.64
Equipment Operator (crane)	Active	1.00	6.7	10	67.00	L	\$81.60	incl. in rate	incl. in rate	\$5,467.07
Crawler Crane (130tn)	Active	1.00	6.7	10	67.00	E	\$262.91	incl. in rate	incl. in rate	\$17,614.97
Electrician	Active	1.00	6.7	10	67.00	L	\$55.80	incl. in rate	incl. in rate	\$3,738.80
Equipment Operator (medium)	Active	1.00	6.7	10	67.00	L	\$72.34	incl. in rate	incl. in rate	\$4,846.51
Hydraulic Excavator (5.0cy)	Active	1.00	6.7	10	67.00	E	\$276.50	incl. in rate	incl. in rate	\$18,525.50
Steelworker	Active	1.00	6.7	10	67.00	L	\$78.10	incl. in rate	incl. in rate	\$5,232.70
Acetylene Torches	Active	2.00	6.7	10	134.00	E	\$0.47	incl. in rate	incl. in rate	\$62.98
					Labor Hours	536	TOTAL LABOR			\$39,719.14
					Equipment Hours	268	TOTAL EQUIPMENT			\$36,203.45

MATERIAL COSTS

Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost
Consumables 5% labor (saw blades, drill bits, etc)	1.00	LS	1.000	1.00	\$1,985.96	\$1,985.96
						TOTAL MATERIAL
						\$1,985.96

SUBCONTRACT COSTS

Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount
Hazardous waste cleanup/pickup/disposal, solid pickup, bulk material, maximum (10%)					
	12.50	ton	1.000	\$595.00	\$7,437.50
Hauling Disposal Cost 30 Miles to Klamath County Landfill	7.00	Loads	20 tons a load	\$300.00	\$2,100.00
					TOTAL SUBCONTRACTS
					\$9,537.50

SUMMARY OF COSTS

Labor Cost	\$39,719.14	Labor Burden @	49.7%	\$0.00	\$39,719.14
Material Cost	\$1,985.96	Material Tax @	0.0%	\$0.00	\$1,985.96
Equipment Cost	\$36,203.45	Equipment Tax @	0.0%	\$0.00	\$36,203.45
Subcontractors	\$9,537.50				\$9,537.50
DIRECT COST SUBTOTALS	\$87,446			\$0	DIRECT COST SUBTOTALS
					\$87,446

Additional Pay Item Notes :

### 1.087a Remove petroleum products from Mechanical Equipment

petroleum-based products, ranging from fuel oil and hydraulic fluid to lubricating greases and oils, are found throughout every type of power generating plant or system. Lubrication supports bearings and moving parts in all sorts of equipment: pumps, conveyors, feeders, scrubbers, cranes, turbines, and more. A good oil/water separation system will result in a flow of concentrated waste oil to a collection area and a flow of oil-free water ready for secondary processing or discharge. Once an oil layer has been separated from free water, it must be removed for recycling or disposal. Many plants use one or more of these oil removal methods, but each has costly limitations:

- 1. Absorbent materials. Absorbent mats or materials are frequently used to dam up and absorb excess oils and greases resulting from accidents or the routine operation of machinery. These materials are very effective for preventing the spread of a source leak and very efficient in terms of oil pickup. Yet, their use on large volumes of waste oil results in multiple, recurring costs that can make them impractical as an everyday solution:
  - the costs of the materials themselves
  - the labor costs for ordering, stocking, application, and removal
  - the costs of used-media collection, disposal, or re-processing/recycling.
- 2. Manually operated "slotted pipes." Many separators feature a "slotted pipe," a pipe located near the top of the vessel that has a horizontal opening. Oil is removed by turning the horizontal opening downward until it meets the floating oil layer, which drains through the pipe to a collection receptacle. These pipes work well on thick layers of oil, but cannot drain off a sheen of oil without draining off a large amount of water as well.

AECOM assumed the best is Vacuum truck removal method. Used a crew formed of 1 Forman, 5 Laborers to takeout the petroleum waste. 1 Electrician to unplug the power and to assure the temporary power at the construction site. Vacuum-equipped tank trucks are used to remove waste oil from collection points at plants so that it can be transported to recycling or disposal locations. If the waste oil has been thoroughly separated, highly concentrated, and stored in an appropriate receptacle, this service can be used very efficiently. However, vacuum disposal units are often used to pump oil layers directly off of water. This results in the intake of a significant amount free water along with the waste oil – and a significantly higher cost.

### 1.088 Install and Remove Temporary Access Roads for Penstock Demo

SUMMARY OF COSTS									
Labor Cost	\$51,728.60	Labor Burden @	0.0%					\$51,728.60	
Material Cost	\$64,155.00	Material Tax @	0.00%	\$0.00				\$64,155.00	
Equipment Cost	\$47,251.00	Equipment Tax @	0.00%	\$0.00				\$47,251.00	
Subcontractors	\$4,900.00							\$4,900.00	
DIRECT COST SUBTOTALS	\$168,035			\$0			DIRECT COST SUBTOTALS	\$168,035	
Additional Pay Item Notes :									

### 1.097 Clear and Grub Disposal Area (Embankment)

SUMMARY OF COSTS					
Labor Cost	\$14,683.35	Labor Burden @	0.0%		\$14,683.35
Material Cost	\$0.00	Material Tax @	0.00%	\$0.00	\$0.00
Equipment Cost	\$16,826.04	Equipment Tax @	0.00%	\$0.00	\$16,826.04
Subcontractors	\$0.00				\$0.00
<b>DIRECT COST SUBTOTALS</b>	<b>\$31,509</b>		<b>\$0</b>	<b>DIRECT COST SUBTOTALS</b>	<b>\$31,509</b>
Additional Pay Item Notes :					
<p>Hauling material to 1/2 mile onsite dump location, 2 excavators clearing trees and brush, 2 loaders loading dump trucks, laborers will be directing trucks, foreman will oversee operation.</p>					



### 1.098 Clear and Grub, 40' width for Haul Roads

SUMMARY OF COSTS					
Labor Cost	\$3,559.60	Labor Burden @	0.0%		\$3,559.60
Material Cost	\$0.00	Material Tax @	0.00%	\$0.00	\$0.00
Equipment Cost	\$4,079.04	Equipment Tax @	0.00%	\$0.00	\$4,079.04
Subcontractors	\$0.00				\$0.00
<b>DIRECT COST SUBTOTALS</b>	<b>\$7,639</b>		<b>\$0</b>	<b>DIRECT COST SUBTOTALS</b>	<b>\$7,639</b>
<b>Additional Pay Item Notes :</b>					
<p>Hauling material to 1/2 mile onsite dump location, 2 excavators clearing trees and brush, 2 loaders loading dump trucks, laborers will be directing trucks, foreman will oversee operation.</p>					

### 1.103 Soil/ Rock Cover Relocation For Concrete Rubble at Scour Hole

PAY ITEM NUMBER	:	1.103	Project	:	KRRP - JC Boyle
Description	:	Soil/ Rock Cover Relocation For Concrete Rubble at Scour Hole	Group	:	D15
Quantity	1.103	13,000.00 CY			
Daily Production	1.103	450.00 CY per	10	hour shift	
Work Days	1.103	28.9 Days			
Unit Price	1.103	\$16.98 per CY			
Total Cost	1.103	\$220,690			

Project #	:	1			
Estimator	:	Eric Jones	CY per	Total Cost	Unit Price Per CY
Probable Low Cost Parameter			495.00	\$198,621	\$401.25
Probable High Cost Parameter			360.00	\$264,827	\$735.63

Description	Active Idle	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Hydraulic Excavator (2.5cy)	Active	1.00	28.9	10	289.00	E	\$205.40	incl. in rate	incl. in rate	\$59,360.60
Dozer (235hp)(CATD7)	Active	1.00	28.9	10	289.00	E	\$171.07	incl. in rate	incl. in rate	\$49,439.23
Truck, Off-Road, Articulated Rear, 20cy	Active	2.00	16.1	10	321.44	E	\$117.28	incl. in rate	incl. in rate	\$37,698.48
Labor Foreman	Active	1.00	28.9	10	289.00	L	\$58.87	incl. in rate	incl. in rate	\$17,014.01
Laborer	Active	1.00	28.9	10	289.00	L	\$51.07	incl. in rate	incl. in rate	\$14,760.10
Equipment Operator (medium)	Active	1.00	28.9	10	289.00	L	\$72.34	incl. in rate	incl. in rate	\$20,905.10
Truck Driver (heavy)	Active	2.00	16.1	10	321.44	L	\$66.92	incl. in rate	incl. in rate	\$21,512.05
Labor Hours					1188.44	TOTAL LABOR				\$74,191.26
Equipment Hours					899.44	TOTAL EQUIPMENT				\$146,498.31

Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost
TOTAL MATERIAL						\$0.00

Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount
TOTAL SUBCONTRACTS					\$0.00

Labor Cost	\$74,191.26	Labor Burden @	0.0%			\$74,191.26
Material Cost	\$0.00	Material Tax @	0.00%	\$0.00		\$0.00
Equipment Cost	\$146,498.31	Equipment Tax @	0.00%	\$0.00		\$146,498.31
Subcontractors	\$0.00					\$0.00
<b>DIRECT COST SUBTOTALS</b>	<b>\$220,690</b>			<b>\$0</b>	<b>DIRECT COST SUBTOTALS</b>	<b>\$220,690</b>

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1.103 Soil/ Rock Cover Relocation For Concrete Rubble at Scour Hole

Details

High Cost Factors		Low Cost Factors	
Bad Weather	0%	No Bad Weather	0%
Gas Price Increase	10%	Gas Price Decrease	10%
Unforeseen Contaminated Mats/ Access Issues	10%	No Unforeseen Contaminated Mats/ Access Issues	0%
	20%		10%

Production Per Hour	Hours	Efficiency Factor (Access, Activity, Qty, High Rebar Density, Breaks, Etc.)	Overall Production
	90	8	50%
		10	50%
			360
			450

Haul Notes	
CY	13,000.00
Swell Factor	50%
Bulk CY	19,500.00
Haul Vehicle 85% Capacity (1.3 tons per CY)	17.00
# of Haul Vehicles	2.00
Load Time (Includes Spot Time, Maneuver Time, & Loading) (Minutes)	4.00
Dump Time (Includes Spot Time, Maneuver Time, & Unloading) (Minutes)	4.00
Haul Speed (Loaded MPH)	5.00
Return Speed (Unloaded MPH)	5.00
Haul Distance (Miles)	0.25
Shift Length (Hours)	10.00
Cycle Time	
Load Time (Load Time Minutes / 60mins)	0.07
Haul Time (Haul Distance / Haul Speed)	0.05
Dump Time (Dump Time Minutes / 60 Mins)	0.07
Return Time (Haul Distance / Return Speed)	0.05
Hours Per Cycle	0.24
Efficiency Factor (Night Work, Traffic Restrictions, Coffee Breaks, ECT)	85%
Actual Hours Per Cycle (Hours per Cycle / Efficiency Factor)	0.28
Number of Cycles( Bulk CY/ (Haul Vehicle Cap X # of Haul Vehicles)	574
Total Number of Haul Hours ( Actual Cycle Hours X Number of Cycles)	160.72
Loads Per Hour (Number of Cycles / Total Number of Haul Hours)	3.57
Number of Haul Days	16.072

**Other Notes**  
This pay item is to account for moving existing material from bottom of scour hole to top of scour hole near the forebay. It is expected that the existing haul road will be restored and used to transport material from the bottom to the top. The efficiency of this operation is has been reduced to 50% to account for redevelopment of the existing haul road which will be done with a dozer and excavator. Due to the steep slopped road it is expected a dozer will need to be used to maintain a rideable surface for the articulated haul truck.

### 1.103.1 Rock/Soil Cover Placement Over Concrete Rubble at Scour Hole

PAY ITEM NUMBER	:	1.103.1	Project	:	KRRP - JC Boyle
Description	:	Rock/Soil Cover Placement Over Concrete Rubble at Scour Hole	Group	:	D11
Quantity	1.103.1	13,000.00 CY			
Daily Production	1.103.1	1,200.00 CY per	10	hour shift	
Work Days	1.103.1	10.8 Days			
Unit Price	1.103.1	\$5.67 per CY			
Total Cost	1.103.1	\$73,673	Project #	:	1
			Estimator	:	Eric Jones
			Probable Low Cost Parameter		CY per Total Cost Unit Price Per CY
			Probable High Cost Parameter		1,320.00 \$66,306 \$50.23
					960.00 \$88,408 \$92.09

Description	Active Idle	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Hydraulic Excavator (2.5cy)	Active	1.00	10.8	10	108.00	E	\$205.40	incl. in rate	incl. in rate	\$22,183.20
Dozer (235hp)(CATD7)	Active	1.00	10.8	10	108.00	E	\$171.07	incl. in rate	incl. in rate	\$18,475.56
Labor Foreman	Active	1.00	10.8	10	108.00	L	\$58.87	incl. in rate	incl. in rate	\$6,358.18
Laborer	Active	2.00	10.8	10	216.00	L	\$51.07	incl. in rate	incl. in rate	\$11,031.77
Equipment Operator (medium)	Active	2.00	10.8	10	216.00	L	\$72.34	incl. in rate	incl. in rate	\$15,624.58
Labor Hours					540	TOTAL LABOR				\$33,014.52
Equipment Hours					216	TOTAL EQUIPMENT				\$40,658.76

Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost
TOTAL MATERIAL						\$0.00

Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount
TOTAL SUBCONTRACTS					\$0.00

Labor Cost	\$33,014.52	Labor Burden @	0.0%			\$33,014.52
Material Cost	\$0.00	Material Tax @	0.00%	\$0.00		\$0.00
Equipment Cost	\$40,658.76	Equipment Tax @	0.00%	\$0.00		\$40,658.76
Subcontractors	\$0.00					\$0.00
<b>DIRECT COST SUBTOTALS</b>	<b>\$73,673</b>			<b>\$0</b>	<b>DIRECT COST SUBTOTALS</b>	<b>\$73,673</b>

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1.103.1 Rock/Soil Cover Placement Over Concrete Rubble at Scour Hole

Details

High Cost Factors			Low Cost Factors		
Bad Weather	0%		No Bad Weather	0%	
Gas Price Increase	10%		Gas Price Decrease	10%	
Unforeseen Contaminated Mats/ Access Issues	10%		No Unforeseen Contaminated Mats/ Access Issues	0%	
20%			10%		

Production Per Hour	Hours	Efficiency Factor (Access, Activity, Qty, High Rebar Density, Breaks, Etc.)	Overall Production
	150	8	960
		10	1200

**Other Notes**  
This Pay Item is to account for placing covering material over the concrete rubble at the scour hole. It is expected that the material will be placed with a dozer with excavator assistance. The operation is expected to be 80% efficient.

### 1.107 Process Demolished Concrete for Scour Hole

PAY ITEM NUMBER	:	1.107	Project	:	KRPP - JC Boyle			
Description	:	Process Demolished Concrete for Scour Hole	Group	:	D11			
Quantity	1.107	55,900.00 CY						
Daily Production	1.107	700.00 CY per	10	hour shift	Project #	1		
Work Days	1.107	79.9 Days			Estimator	Eric Jones	CY	Total Cost
Unit Price	1.107	\$11.76 per CY			Probable Low Cost Parameter	770.00	\$591,658	Unit Price Per CY
Total Cost	1.107	\$657,398			Probable High Cost Parameter	630.00	\$723,138	\$1,147.84

Description	Active Idle	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Hydraulic Excavator (5.0cy)	Active	1.00	79.9	10	799.00	E	\$276.50	incl. in rate	incl. in rate	\$220,923.50
Labor Foreman	Active	1.00	79.9	10	799.00	L	\$58.87	incl. in rate	incl. in rate	\$47,038.73
Laborer	Active	2.00	79.9	10	1,598.00	L	\$51.07	incl. in rate	incl. in rate	\$81,614.65
Equipment Operator (medium)	Active	2.00	79.9	10	1,598.00	L	\$72.34	incl. in rate	incl. in rate	\$115,592.93
Terex Track  Crusher	Active	1.00	79.9	10	799.00	E	\$103.99	incl. in rate	incl. in rate	\$83,085.35
Kobelco SK260LC-10 Ex With CP100 Magnet	Active	1.00	79.9	10	799.00	E	\$89.29	incl. in rate	incl. in rate	\$71,342.71
Labor Hours					3995	TOTAL LABOR				\$244,246.31
Equipment Hours					2397	TOTAL EQUIPMENT				\$375,351.56

Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price		Material Cost
						TOTAL MATERIAL	\$0.00

Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount
Reinforcement Disposal Fee	5,031,000	lbs.	90lbs Rebar per CY of Concrete		
Rebar Hauling to Facility (30 Miles)	3,780	Miles	Klamath County Landfill		
Hauling Cost by Load	126.00	loads	40,000lbs per load	\$300.00	\$37,800.00
TOTAL SUBCONTRACTS					\$37,800.00

Labor Cost	\$244,246.31	Labor Burden @	0.0%		\$244,246.31
Material Cost	\$0.00	Material Tax @	0.00%	\$0.00	\$0.00
Equipment Cost	\$375,351.56	Equipment Tax @	0.00%	\$0.00	\$375,351.56
Subcontractors	\$37,800.00				\$37,800.00
<b>DIRECT COST SUBTOTALS</b>	<b>\$657,398</b>		<b>\$0</b>	<b>DIRECT COST SUBTOTALS</b>	<b>\$657,398</b>

See Sequence notes for detailed explanation for placing material.

### 1.107 Process Demolished Concrete for Scour Hole Details

High Cost Factors		Low Cost Factors	
Bad Weather	0%	No Bad Weather	0%
Gas Price Increase	10%	Gas Price Decrease	10%
Unforeseen Contaminated Mats/ Access Issues	0%	No Unforeseen Contaminated Mats/ Access Issues	0%
	10%		10%

Production Per Hour	Hours	Efficiency Factor (Access, Activity, Qty, High Rebar Density, Breaks, Etc.)	Overall Production
	100	8	70%
		10	70%

Track Crusher Production		Excavator Loading Production per shift	
CY per Hour	70.00	CY per Hour	70.00
Lbs per Hour (4050lbs per CF)	283,500.00	CY Bucket Size	2.50
Tons per Hour	142	Buckets Per Hour	28.00
# of Crushers	1.00	# of Excavators	1.00
Tons per hour	142	CY per Hour	70.00
Tons Per Hour Ideal Production Per 8 Hour Shift	300	Ideal Production	150.00
Efficient Compared to Ideal Production	47%	Efficient Compared to Ideal Production	47%
Inefficiencies Compared to Ideal Production	53%	Inefficiencies Compared to Ideal Production	53%
		Excavator Crusher Production	
		Hydraulic Hammer CY per Hour	70
		# of Hammers	1.00
		CY per Hour	70
		CY per Hour Back Check	70
		Ideal Production	150
		Efficient Compared to Ideal Production	47%
		Inefficiencies Compared to Ideal Production	53%

### Other Notes

This pay item is to account for the processing of the demolished concrete related to the JCB facility. Estimate currently reflects using three pieces of equipment to support operation; a Kobelco excavator with a CP100 crusher/ Magnet attachment, a Terex Track Crusher with a magnetic over belt, rebar deflector, and a rip stop belt, and a 5CY excavator. The Kobelco with the CP100 crusher will break concrete into manageable pieces for the 5CY excavator to load into the Crusher. The CP100 crusher will have a magnet attachment to remove any loose reinforcement. The crusher production is expected to drive the operations duration and the overall operation is expected to be 70% efficient to account for equipment maintenance, staff breaks, equipment repositioning, etc.. Reinforcement haul off has been included in this activity. Rebar recycling credit has been included in this estimate based off of the national average recycling cost of \$0.93 per lb. of rebar

### 1.107.1 Haul Road Construction for Scour Hole Backfill

SUMMARY OF COSTS				
Labor Cost	\$106,567.60	Labor Burden @	0.0%	\$106,567.60
Material Cost	\$0.00	Material Tax @	0.00%	\$0.00
Equipment Cost	\$141,212.50	Equipment Tax @	0.00%	\$141,212.50
Subcontractors	\$0.00			\$0.00
<b>DIRECT COST SUBTOTALS</b>	<b>\$247,780</b>		<b>\$0</b>	<b>DIRECT COST SUBTOTALS</b>
<b>Additional Pay Item Notes :</b>				



### 1.107.1 Haul Road Construction for Scour Hole Backfill Details

High Cost Factors		Low Cost Factors	
Bad Weather	0%	No Bad Weather	0%
Gas Price Increase	10%	Gas Price Decrease	10%
Unforeseen Contaminated Mats/ Access Issues	0%	No Unforeseen Contaminated Mats/ Access Issues	0%
	10%		10%

Production Per Hour	Hours	Efficiency Factor (Access, Activity, Qty, High Rebar Density, Breaks, Etc)	Overall Production
	50	8	70%
		10	70%
			280
			350

Haul Notes	Excavator Loading Production per shift	
CY	10,000.00	CY per Hour 0.00
Swell Factor	60%	CY Bucket Size 2.50
Bulk CY	16,000.00	Buckets Per Hour 0.00
Haul Vehicle 60% Capacity (2 tons per CY)	12.00	# of Excavators 1.00
# of Haul Vehicles	0.00	CY per Hour (2.5 CY Bucket) 0.00
Load Time (Includes Spot Time, Maneuver Time, & Loading) (Minutes)	5.00	CY Per Hour Ideal Production Per 8 Hour Shift 95.00
Dump Time (Includes Spot Time, Maneuver Time, & Unloading) (Minutes)	3.00	Efficient Compared to Ideal Production 0%
Haul Speed (Loaded MPH)	5.00	Inefficiencies Compared to Ideal Production 100%
Return Speed (Unloaded MPH)	5.00	
Haul Distance (Miles)	0.50	
Shift Length (Hours)	10.00	
Cycle Time		

Cycle time was not calculated due to the truck need to be at the location the whole duration to avoid double handling dirt.

### Other Notes

Overall cy used was calculated expecting an average of 40% to 50% Slope. The material is expected to be stockpiled near forebay area to be reused to restore the area. The cost to restore the area is accounted for in Pay item 1.107.3

### 1.107.2 Backfilling Scour Hole With Processed Concrete

PAY ITEM INFORMATION							
PAY ITEM NUMBER	:	1.107.2		Project	:	KRRP - JC Boyle	
Description	:	Backfilling Scour Hole With Processed Concrete		Group	:	D11	
Quantity	1.107.2	55,900.00	CY				
Daily Production	1.107.2	2,000.00	CY per	10	hour shift		
Work Days	1.107.2	28.0	Days	Project #	:	1	
Unit Price	1.107.2	\$4.38	per CY	Estimator	:	Eric Jones	
Total Cost	1.107.2	\$245,052		Probable Low Cost Parameter		2,200.00	Total Cost \$220,547 Unit Price Per CY \$100.25
				Probable High Cost Parameter		1,800.00	\$269,558 \$149.75

CREW COSTS										
Description	Active Idle	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Hydraulic Excavator (2.5cy)	Active	1.00	28.0	10	280.00	E	\$205.40	incl. in rate	incl. in rate	\$57,512.00
Dozer (235hp)(CATD7)	Active	1.00	28.0	10	280.00	E	\$171.07	incl. in rate	incl. in rate	\$47,899.60
Water Tanker (5,000gal)	Active	1.00	28.0	10	280.00	E	\$75.03	incl. in rate	incl. in rate	\$21,008.40
Labor Foreman	Active	1.00	28.0	10	280.00	L	\$58.87	incl. in rate	incl. in rate	\$16,484.16
Laborer	Active	3.00	28.0	10	840.00	L	\$51.07	incl. in rate	incl. in rate	\$42,901.32
Equipment Operator (medium)	Active	2.00	28.0	10	560.00	L	\$72.34	incl. in rate	incl. in rate	\$40,508.16
Truck Driver (heavy)	Active	1.00	28.0	10	280.00	L	\$66.92	incl. in rate	incl. in rate	\$18,738.72
Labor Hours					1960	TOTAL LABOR				\$118,632.36
Equipment Hours					840	TOTAL EQUIPMENT				\$126,420.00

[illegible]

SUBCONTRACT COSTS					
Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount
TOTAL SUBCONTRACTS					\$0.00

SUMMARY OF COSTS					
Labor Cost	\$118,632.36	Labor Burden @	0.0%		\$118,632.36
Material Cost	\$0.00	Material Tax @	0.00%	\$0.00	\$0.00
Equipment Cost	\$126,420.00	Equipment Tax @	0.00%	\$0.00	\$126,420.00
Subcontractors	\$0.00				\$0.00
<b>DIRECT COST SUBTOTALS</b>	<b>\$245,052</b>		<b>\$0</b>	<b>DIRECT COST SUBTOTALS</b>	<b>\$245,052</b>
<b>Additional Pay Item Notes :</b>					

## Details

Production Per Hour	Hours	Efficiency Factor (Access, Activity, Qty, High Rebar Density, Breaks, Ect)	Overall Production
	250	8	1600
		10	2000

This pay item is to account for the placement of the processed concrete into the forebay scour hole. It is expected the material will be stock piled on newly cut haul road and a dozer will push the material over the edge until the material is high enough for the dozer to access the pile material. An excavator will supply material to the dozer from the processed material stock pile. A water tanker will be used to mitigate dust from the operation. The overall operation is expected to be 80% efficient after accounting for machine maintenance, employee breaks, and equipment repositioning. The soil covering activity will occur simultaneously to take advantage of the access road.

### 1.107.3 Scour Hole Backfill Haul Road Restoration

SUMMARY OF COSTS					
Labor Cost	\$50,886.02	Labor Burden @	0.0%		\$50,886.02
Material Cost	\$0.00	Material Tax @	0.00%	\$0.00	\$0.00
Equipment Cost	\$63,703.73	Equipment Tax @	0.00%	\$0.00	\$63,703.73
Subcontractors	\$0.00				\$0.00
<b>DIRECT COST SUBTOTALS</b>	<b>\$114,590</b>		<b>\$0</b>	<b>DIRECT COST SUBTOTALS</b>	<b>\$114,590</b>
<b>Additional Pay Item Notes :</b>					

1.107.3 Scour Hole Backfill Haul Road Restoration  
Details

High Cost Factors		Low Cost Factors	
Bad Weather	0%	No Bad Weather	0%
Gas Price Increase	10%	Gas Price Decrease	10%
Unforeseen Contaminated Mats/ Access Issues	0%	No Unforeseen Contaminated Mats/ Access Issues	0%
Total	10%	Total	10%

Production Per Hour	Hours	Efficiency Factor (Access, Activity, Qty, High Rebar Density, Breaks, Ect)	Overall Production
	50	8	70%
		10	70%
			280
			350

Haul Notes		Excavator Loading Production per shift	
CY	3,540.00	CY per Hour	0.00
Swell Factor	60%	CY Bucket Size	2.50
Bulk CY	5,664.00	Buckets Per Hour	0.00
Haul Vehicle 60% Capacity (2 tons per CY)	19.20	# of Excavators	1.00
# of Haul Vehicles	1.00	CY per Hour (2.5 CY Bucket)	0.00
Load Time (Includes Spot Time, Maneuver Time, & Loading) (Minutes)	5.00	CY Per Hour Ideal Production Per 8 Hour Shift	95.00
Dump Time (Includes Spot Time, Maneuver Time, & Unloading) Minutes)	3.00	Efficient Compared to Ideal Production	0.00
Haul Speed (Loaded MPH)	5.00	Inefficiencies Compared to Ideal Production	1.00
Return Speed (Unloaded MPH)	5.00		
Haul Distance (Miles)	0.50		
Shift Length (Hours)	10.00		
Cycle Time			

Cycle time was not calculated due to the truck need to be at the location the whole duration to avoid double handling dirt.

Other Notes  
This pay item is to account for restoring the excavated haul road that will be used to backfill the scour hole. It is expected that this will be backfilled using the previous excavated material (pay item 107.1) in compacted lifts.

### 1.108 Topsy Recreational Area - Concrete total

SUMMARY OF COSTS					
Labor Cost	\$2,542.12	Labor Burden @	0.0%		\$2,542.12
Material Cost	\$0.00	Material Tax @	0.00%	\$0.00	\$0.00
Equipment Cost	\$2,680.32	Equipment Tax @	0.00%	\$0.00	\$2,680.32
Subcontractors	\$0.00				\$0.00
<b>DIRECT COST SUBTOTALS</b>	<b>\$5,222</b>		<b>\$0</b>		<b>DIRECT COST SUBTOTALS \$5,222</b>
Additional Pay Item Notes :					

**1.109 Topsy Recreational Area - 6'x80' Floating dock made of lumber and composite decking**

[illegible]

Description	Active Idle	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Hydraulic Crane (80tn)	Active	1.00	1.0	10	10.00	E	\$197.66	incl. in rate	incl. in rate	\$1,976.60
Truck, On-Highway Dump (6x4, 12cy)	Active	1.00	1.0	10	10.00	E	\$57.41	incl. in rate	incl. in rate	\$574.10
Truck Driver (heavy)	Active	1.00	1.0	10	10.00	L	\$66.92	incl. in rate	incl. in rate	\$669.24
Equipment Operator (crane)	Active	1.00	1.0	10	10.00	L	\$81.60	incl. in rate	incl. in rate	\$815.98
Labor Foreman	Active	1.00	1.0	10	10.00	L	\$58.87	incl. in rate	incl. in rate	\$588.72
Laborer	Active	3.00	1.0	10	30.00	L	\$51.07	incl. in rate	incl. in rate	\$1,532.19
Labor Hours					60	TOTAL LABOR				\$3,606.13
Equipment Hours					20	TOTAL EQUIPMENT				\$2,550.70

MATERIAL COSTS						
Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost
TOTAL MATERIAL						\$0.00

Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount
Dump Fee Allowance	5	Ton	Klamath Landfill	\$74.00	\$370.00
Haul Allowance	1	Load	Klamath Landfill	\$200.00	\$200.00
					\$0.00
					\$0.00
TOTAL SUBCONTRACTS					\$570.00

Summary of Costs									
Labor Cost	\$3,606.13	Labor Burden @	0.0%						\$3,606.13
Material Cost	\$0.00	Material Tax @	0.00%	\$0.00					\$0.00
Equipment Cost	\$2,550.70	Equipment Tax @	0.00%	\$0.00					\$2,550.70
Subcontractors	\$570.00								\$570.00
<b>DIRECT COST SUBTOTALS</b>	<b>\$6,727</b>			<b>\$0</b>			<b>DIRECT COST SUBTOTALS</b>		<b>\$6,727</b>
<b>Additional Pay Item Notes :</b>									
Carpenters and laborers will be on ground disassembling the dock and rigging dock pieces to crane. Crane will load floating dock on to truck to haul off. Figured 3 trucks 1 load per truck.									

**1.110 Topsy Recreational Area - 5'x20' Walkway leading to hex fishing platform**

PAY ITEM NUMBER	:	1.110	Project	:	KRRP - JC Boyle			
Description	:	Topsy Recreational Area - 5'x20' Walkway leading to hex fishing platform	Group	:	D16			
Quantity	1.110	200.00 SF						
Daily Production	1.11	800.00 SF per	10	hour shift	Project #	:	1	
Work Days	1.11	0.3 Days			Estimator	:	Eric Jones	
Unit Price	1.11	\$7.44 per SF			Probable Low Cost Parameter	840.00	\$1,413	
Total Cost	1.11	\$1,487			Probable High Cost Parameter	760.00	\$1,562	
							Unit Price Per SF	
							\$1.68	
							\$2.05	

Description	Active Idle	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Forklift, Rough Terrain (9,000 lb capacity)	Active	1.00	0.3	10	3.00	E	\$55.50	incl. in rate	incl. in rate	\$166.50
Truck, Flatbed (4x4, 10,000 gvw)	Active	1.00	0.3	10	3.00	E	\$27.09	incl. in rate	incl. in rate	\$81.27
Truck Driver (heavy)	Active	1.00	0.3	10	3.00	L	\$66.92	incl. in rate	incl. in rate	\$200.77
Equipment Operator (light)	Active	1.00	0.3	10	3.00	L	\$69.19	incl. in rate	incl. in rate	\$207.57
Labor Foreman	Active	1.00	0.3	10	3.00	L	\$58.87	incl. in rate	incl. in rate	\$176.62
Laborer	Active	2.00	0.3	10	6.00	L	\$51.07	incl. in rate	incl. in rate	\$306.44
Labor Hours					15	TOTAL LABOR				\$891.40
Equipment Hours					6	TOTAL EQUIPMENT				\$247.77

Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost
TOTAL MATERIAL						\$0.00

Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount
Dump Fee Allowance	2	Ton	Klamath Landfill	\$74.00	\$148.00
Haul Allowance	1	Load	Klamath Landfill	\$200.00	\$200.00
					\$0.00
					\$0.00
TOTAL SUBCONTRACTS					\$348.00

Labor Cost	\$891.40	Labor Burden @	0.0%			\$891.40
Material Cost	\$0.00	Material Tax @	0.00%	\$0.00		\$0.00
Equipment Cost	\$247.77	Equipment Tax @	0.00%	\$0.00		\$247.77
Subcontractors	\$348.00					\$348.00
<b>DIRECT COST SUBTOTALS</b>	<b>\$1,487</b>			<b>\$0</b>	<b>DIRECT COST SUBTOTALS</b>	<b>\$1,487</b>
<b>Additional Pay Item Notes :</b>						



### 1.111 Topsy Recreational Area - Regrade to natural contour

SUMMARY OF COSTS					
Labor Cost	\$1,273.09	Labor Burden @	0.0%		\$1,273.09
Material Cost	\$0.00	Material Tax @	0.00%	\$0.00	\$0.00
Equipment Cost	\$836.35	Equipment Tax @	0.00%	\$0.00	\$836.35
Subcontractors	\$0.00				\$0.00
<b>DIRECT COST SUBTOTALS</b>	<b>\$2,109</b>			<b>\$0</b>	<b>DIRECT COST SUBTOTALS \$2,109</b>

**Additional Pay Item Notes :**

[illegible]

### 1.112 Pioneer Park - Picnic tables to be removed and hauled away

SUMMARY OF COSTS									
Labor Cost	\$1,201.11	Labor Burden @	0.0%					\$1,201.11	
Material Cost	\$0.00	Material Tax @	0.00%	\$0.00				\$0.00	
Equipment Cost	\$482.08	Equipment Tax @	0.00%	\$0.00				\$482.08	
Subcontractors	\$148.00							\$148.00	
DIRECT COST SUBTOTALS	\$1,831			\$0			DIRECT COST SUBTOTALS	\$1,831	
Additional Pay Item Notes :									

### 1.113 Pioneer Park - 12 Concrete fire rings

PAY ITEM NUMBER	:	1.113	Project	:	KRRP - JC Boyle
Description	:	Pioneer Park - 12 Concrete fire rings	Group	:	D16
Quantity	1.113	5.00 CY			
Daily Production	1.113	50.00 CY per	10 hour shift	Project #	: 1
Work Days	1.113	0.1 Days		Estimator	: Eric Jones
Unit Price	1.113	\$88.75 per CY		CY per	Total Cost
Total Cost	1.113	\$444		Probable Low Cost Parameter	\$2.50
				Probable High Cost Parameter	\$8.03
					\$9.81

Description	Active Idle	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Loader, FE Rubber Tire (3.5cy)	Active	1.00	0.1	10	1.00	E	\$63.11	incl. in rate	incl. in rate	\$63.11
Truck, On-Highway Dump (6x4, 12cy)	Active	1.00	0.1	10	1.00	E	\$57.41	incl. in rate	incl. in rate	\$57.41
Equipment Operator (medium)	Active	1.00	0.1	10	1.00	L	\$72.34	incl. in rate	incl. in rate	\$72.34
Labor Foreman	Active	1.00	0.1	10	1.00	L	\$58.87	incl. in rate	incl. in rate	\$58.87
Laborer	Active	1.00	0.1	10	1.00	L	\$51.07	incl. in rate	incl. in rate	\$51.07
Truck Driver (heavy)	Active	1.00	0.1	10	1.00	L	\$66.92	incl. in rate	incl. in rate	\$66.92
Labor Hours					4	TOTAL LABOR				\$249.21
Equipment Hours					2	TOTAL EQUIPMENT				\$120.52

Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost
TOTAL MATERIAL						\$0.00

Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount
Dump Fee Allowance	1	Ton	Klamath Landfill	\$74.00	\$74.00
TOTAL SUBCONTRACTS					\$74.00

Labor Cost	\$249.21	Labor Burden @	0.0%			\$249.21
Material Cost	\$0.00	Material Tax @	0.00%	\$0.00		\$0.00
Equipment Cost	\$120.52	Equipment Tax @	0.00%	\$0.00		\$120.52
Subcontractors	\$74.00					\$74.00
<b>DIRECT COST SUBTOTALS</b>	<b>\$444</b>		<b>\$0</b>		<b>DIRECT COST SUBTOTALS</b>	<b>\$444</b>
<b>Additional Pay Item Notes :</b>						

**1.114 Pioneer Park - Portable toilets to be removed and hauled away**

SUMMARY OF COSTS									
Labor Cost	\$99.68	Labor Burden @	0.0%					\$99.68	
Material Cost	\$0.00	Material Tax @	0.00%	\$0.00				\$0.00	
Equipment Cost	\$36.08	Equipment Tax @	0.00%	\$0.00				\$36.08	
Subcontractors	\$74.00							\$74.00	
DIRECT COST SUBTOTALS	\$210			\$0		DIRECT COST SUBTOTALS		\$210	
Additional Pay Item Notes :									

PAY ITEM INFORMATION									
PAY ITEM NUMBER		1.115		Project		: KRRP - JC Boyle			
Description		Pioneer Park - Signs to be removed and hauled away		Group		: D16			
Quantity	1.115	6.00	EA						
Daily Production	1.115	50.00	EA per						
Work Days	1.115	0.1	Days	Project #		: 1			
Unit Price	1.115	\$114.58	per EA	Estimator		: Eric Jones	EA per	Total Cost	Unit Price Per EA
Total Cost	1.115	\$687	Probable Low Cost Parameter		52.50	\$653	\$12.44		
			Probable High Cost Parameter		47.50	\$722	\$15.20		

CREW COSTS										
Description	Active Idle	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Loader, FE Rubber Tire (3.5cy)	Active	1.00	0.1	10	1.00	E	\$63.11	incl. in rate	incl. in rate	\$63.11
Truck, Pickup (4x4, 3/4tn)	Active	1.00	0.1	10	1.00	E	\$16.99	incl. in rate	incl. in rate	\$16.99
Labor Foreman	Active	1.00	0.1	10	1.00	L	\$58.87	incl. in rate	incl. in rate	\$58.87
Laborer	Active	2.00	0.1	10	2.00	L	\$51.07	incl. in rate	incl. in rate	\$102.15
Equipment Operator (medium)	Active	1.00	0.1	10	1.00	L	\$72.34	incl. in rate	incl. in rate	\$72.34

**1.116 Pioneer Park - Dumpster to be removed and hauled away**

SUMMARY OF COSTS									
Labor Cost	\$300.28	Labor Burden @	0.0%						\$300.28
Material Cost	\$0.00	Material Tax @	0.00%		\$0.00				\$0.00
Equipment Cost	\$303.59	Equipment Tax @	0.00%		\$0.00				\$303.59
Subcontractors	\$522.00								\$522.00
<b>DIRECT COST SUBTOTALS</b>	<b>\$1,126</b>			<b>\$0</b>		<b>DIRECT COST SUBTOTALS</b>			<b>\$1,126</b>
Additional Pay Item Notes :									

### 1.118 Pioneer Park - Regrade to natural contour

SUMMARY OF COSTS					
Labor Cost	\$2,546.17	Labor Burden @	0.0%		\$2,546.17
Material Cost	\$0.00	Material Tax @	0.00%	\$0.00	\$0.00
Equipment Cost	\$1,672.70	Equipment Tax @	0.00%	\$0.00	\$1,672.70
Subcontractors	\$0.00				\$0.00
<b>DIRECT COST SUBTOTALS</b>	<b>\$4,219</b>		<b>\$0</b>	<b>DIRECT COST SUBTOTALS</b>	<b>\$4,219</b>
Additional Pay Item Notes :					

PAY ITEM INFORMATION									
PAY ITEM NUMBER	:	5.000		Project	:	KRRP - JC Boyle			
Description	:	Remove Frame dead end structures 60-80 ft high		Group	:	D05			
Quantity	:	2.00	EA						
Daily Production	:	1.25	EA per	10	hour shift	Project #	:	1	
Work Days	:	1.6	Days			Estimator	:	Mihaela Tomulescu	EA per
Unit Price	:	\$10,715.20 per EA				Probable Low Cost Parameter		1.38	Total Cost
Total Cost	:	\$21,430				Probable High Cost Parameter		1.00	Unit Price Per EA
								\$19,287	\$14,027.17
								\$25,716	\$25,716.47

CREW COSTS										
Description	Active Idle	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Labor Foreman	Active	1.00	1.6	10	16.00	L	\$58.87	incl. in rate	incl. in rate	\$941.95
Electrician	Active	1.00	1.6	10	16.00	L	\$55.80	incl. in rate	incl. in rate	\$892.85
Hydraulic Excavator (2.5cy)	Active	1.00	1.6	10	16.00	E	\$205.40	incl. in rate	incl. in rate	\$3,286.40
Equipment Operator (medium)	Active	1.00	1.6	10	16.00	L	\$72.34	incl. in rate	incl. in rate	\$1,157.38
Water Tanker (5,000gal)	Active	1.00	1.6	10	16.00	E	\$75.03	incl. in rate	incl. in rate	\$1,200.48
Gas Welding Machine	Active	1.00	1.6	10	16.00	E	\$2.88	incl. in rate	incl. in rate	\$46.03
Laborer	Active	2.00	1.6	10	32.00	L	\$51.07	incl. in rate	incl. in rate	\$1,634.34
Vibratory Hammer & Extractor	Active	1.00	1.6	10	16.00	E	\$94.14	incl. in rate	incl. in rate	\$1,506.24
Hydraulic Crane (80tn)	Active	1.00	1.6	10	16.00	E	\$197.66	incl. in rate	incl. in rate	\$3,162.66
Equipment Operator (crane)	Active	1.00	1.6	10	16.00	L	\$81.60	incl. in rate	incl. in rate	\$1,305.57
Labor Hours					96	TOTAL LABOR				\$5,932.08
Equipment Hours					80	TOTAL EQUIPMENT				\$9,201.71

MATERIAL COSTS							Material Cost
Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price		
Consumables 5% labor (saw blades, drill bits, etc)	1.00	LS	1.000	1.00	\$296.60		\$296.60
							\$0.00
							\$0.00
							\$0.00
							\$0.00
							\$0.00
TOTAL MATERIAL							\$296.60

SUBCONTRACT COSTS						Contract or Quote Amount
Description	Quantity	Units	Notes / Company	Unit Price		
Hauling Disposal Cost	20.00	Loads	20 tons a load	\$300.00		\$0.00
						\$6,000.00
						\$0.00
						\$0.00
TOTAL SUBCONTRACTS						\$6,000.00

SUMMARY OF COSTS						
Labor Cost	\$5,932.08	Labor Burden @	49.7%	\$0.00		\$5,932.08
Material Cost	\$296.60	Material Tax @	0.0%	\$0.00		\$296.60
Equipment Cost	\$9,201.71	Equipment Tax @	0.0%	\$0.00		\$9,201.71
Subcontractors	\$6,000.00					\$6,000.00
DIRECT COST SUBTOTALS	\$21,430			\$0	DIRECT COST SUBTOTALS	\$21,430

Additional Pay Item Notes :		Production is based off of RSMs using Crew formed of 1 Foreman, 1 Electrician, 1 Excavator, 1 Hammer. Considered one welder for cutting frame/ support of equipment, 2 laborer to load demolished equipment /materials in the truck for disposal.
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### 5.001 Remove (incl foundation) and Save Transformers 230KV

SUMMARY OF COSTS					
Labor Cost	\$2,174.07	Labor Burden @	49.7%	\$0.00	\$2,174.07
Material Cost	\$108.70	Material Tax @	0.0%	\$0.00	\$108.70
Equipment Cost	\$2,333.94	Equipment Tax @	0.0%	\$0.00	\$2,333.94
Subcontractors	\$1,500.00				\$1,500.00
<b>DIRECT COST SUBTOTALS</b>	<b>\$6,117</b>			<b>\$0</b>	<b>DIRECT COST SUBTOTALS \$6,117</b>
<b>Additional Pay Item Notes :</b>					
Production is based off of RSMs using Crew formed of 1 Foreman, 1 Electrician, 1 Crane to load the transformer in the truck for disposal. In normal circumstances, decontaminated residual components could be accepted at landfill sites.					

### 5.002 Remove (incl foundation) and Save Power Circuit Breakers 230KV

SUMMARY OF COSTS					
Labor Cost	\$3,809.34	Labor Burden @	49.7%	\$0.00	\$3,809.34
Material Cost	\$190.47	Material Tax @	0.0%	\$0.00	\$190.47
Equipment Cost	\$2,317.76	Equipment Tax @	0.0%	\$0.00	\$2,317.76
Subcontractors	\$1,500.00				\$1,500.00
<b>DIRECT COST SUBTOTALS</b>	<b>\$7,818</b>			<b>\$0</b>	<b>DIRECT COST SUBTOTALS \$7,818</b>
<b>Additional Pay Item Notes :</b>					
Production is based off of RSMs using Crew formed of 1 Foreman, 1 Electrician, 1 Crane. Considered 1 laborer to help loading circuit breakers in the truck for saving it in the designated place.					

### 5.003 Substation Tie Structure 230KV

[illegible]

Description	Active Idle	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Electrician Foreman	Active	2.00	3.2	10	64.00	L	\$55.80	incl. in rate	incl. in rate	\$3,571.39
Electrician	Active	4.00	3.2	10	128.00	L	\$55.80	incl. in rate	incl. in rate	\$7,142.78
Hydraulic Crane (35tn)	Active	2.00	3.2	10	64.00	E	\$117.77	incl. in rate	incl. in rate	\$7,537.28
Equipment Operator (medium)	Active	2.00	3.2	10	64.00	L	\$72.34	incl. in rate	incl. in rate	\$4,629.50
Truck, Utility, with Man-Basket	Active	2.00	3.2	10	64.00	E	\$31.90	incl. in rate	incl. in rate	\$2,041.60
Labor Hours					256	TOTAL LABOR				\$15,343.68
Equipment Hours					128	TOTAL EQUIPMENT				\$9,578.88

Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost
Consumables 5% labor (saw blades, drill bits, etc)	1.00	LS	1.000	1.00	\$767.18	\$767.18
Ceramic Insulators	96.00	Bells	1.000	96.00	\$18.00	\$1,728.00
V-String Hardware	3.00	EA	1.000	3.00	\$230.00	\$690.00
Grounding	1.00	EA	1.000	1.00	\$150.00	\$150.00
TOTAL MATERIAL						\$3,335.18

Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount
Rent trailer with cable tensioning rig, for high voltage line work - Rent per day	2.00	days		\$535.00	\$1,070.00
Rent trailer with cable pulling rig, for high voltage line work - Rent per day	2.00	days		\$3,000.00	\$6,000.00
Hauling Disposal Cost	5.00	Loads	20 tons a load	\$300.00	\$1,500.00
TOTAL SUBCONTRACTS					\$8,570.00

Labor Cost	\$15,343.68	Labor Burden @	49.7%	\$0.00		\$15,343.68
Material Cost	\$3,335.18	Material Tax @	0.0%	\$0.00		\$3,335.18
Equipment Cost	\$9,578.88	Equipment Tax @	0.0%	\$0.00		\$9,578.88
Subcontractors	\$8,570.00					\$8,570.00
<b>DIRECT COST SUBTOTALS</b>	<b>\$36,828</b>			<b>\$0</b>	<b>DIRECT COST SUBTOTALS</b>	<b>\$36,828</b>

Production is based off of RSMs using 2 Crew formed of 1 Forman, 1 Electrician, 1 Crane.

### 5.004 Remove Chain Link Fence

Additional Pay Item Notes :

Production is based off of RSMs using Crew B80c, 2 laborers and 1 truck driver light. Considered using an excavator for the CLF foundation removal.

A: Primary power lines' side B: Secondary power lines' side  
1. Primary power lines 2. Ground wire 3. Overhead lines  
4. Transformer for measurement of electric voltage  
5. Disconnect switch 6. Circuit breaker  
7. Current transformer 8. Lightning arrester  
9. Main transformer 10. Control building 11. Security fence 12. Secondary power lines

**5.005 Demolish overhead distribution 2.5 miles (30-45 poles)**

**Additional Pay Item Notes :**

Production is based off of RSMs using Crew R3 (1 Forman and 1 Electrician, 1 Crane and 1 man-basket truck to help untie the line). Considered 2 laborer and 1 Vibratory Hammer for demolish the pole foundation, helping placing poles in a designated place and loading them in the truck for disposal. This process includes filling in pole locations with gravel, clean fill and topsoil. Overall production accounts for reduced efficiency due to employee breaks, equipment maintenance, equipment repositioning, ect.

### 5.032 Install 230kV strain transmission structures outside JC Boyle Substation

**Additional Pay Item Notes :**

This payitem is to install 2 each transmission towers just outside of JC Boyle. This cost estimate is for installation of the towers and foundations only. An allowance has been carried over for the foundations of the structure due to current design stage. It is expected it will take 3 weeks to install the two structures completely. 1 week for foundations, 1 week for tower one assembly and 1 week for tower two assembly. It is figured that majority of the work will be conducted by the structural steel crews and electricians. It is expected that foundations will be installed by subcontractor and there will be a GC crew to provide access and assistance during foundation installation.

### 5.033 Upstream Cofferdam to be Removed in the Wet

[illegible]

Description	Active Idle	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Hydraulic Excavator (5.0cy)	Active	1.00	9.3	20	186.00	E	\$276.50	incl. in rate	incl. in rate	\$51,429.00
Dozer (235hp)(CATD7)	Active	1.00	9.3	20	186.00	E	\$171.07	incl. in rate	incl. in rate	\$31,819.02
Loader, FE Rubber Tire (5.25cy)	Active	1.00	9.3	20	186.00	E	\$76.00	incl. in rate	incl. in rate	\$14,136.00
Truck Driver (heavy)	Active	2.00	8.3	20	331.20	L	\$66.92	incl. in rate	incl. in rate	\$22,165.23
Labor Foreman	Active	1.00	9.3	20	186.00	L	\$58.87	incl. in rate	incl. in rate	\$10,950.19
Laborer	Active	1.00	9.3	20	186.00	L	\$51.07	incl. in rate	incl. in rate	\$9,499.58
Equipment Operator (medium)	Active	3.00	9.3	20	558.00	L	\$72.34	incl. in rate	incl. in rate	\$40,363.49
CAT 745 (32 CY) OFF ROAD TRUCK	Active	2.00	8.3	20	331.20	E	\$174.47	incl. in rate	incl. in rate	\$57,784.46
Labor Hours					1261.2	TOTAL LABOR				\$82,978.49
Equipment Hours					889.2	TOTAL EQUIPMENT				\$155,168.48

Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost
						\$0.00
						\$0.00
						\$0.00
						\$0.00
						\$0.00
						\$0.00
						\$0.00
						\$0.00
						\$0.00
						\$0.00
						\$0.00
						\$0.00
						\$0.00
						\$0.00
						\$0.00
						\$0.00
						\$0.00
						\$0.00
						\$0.00
TOTAL MATERIAL						\$0.00

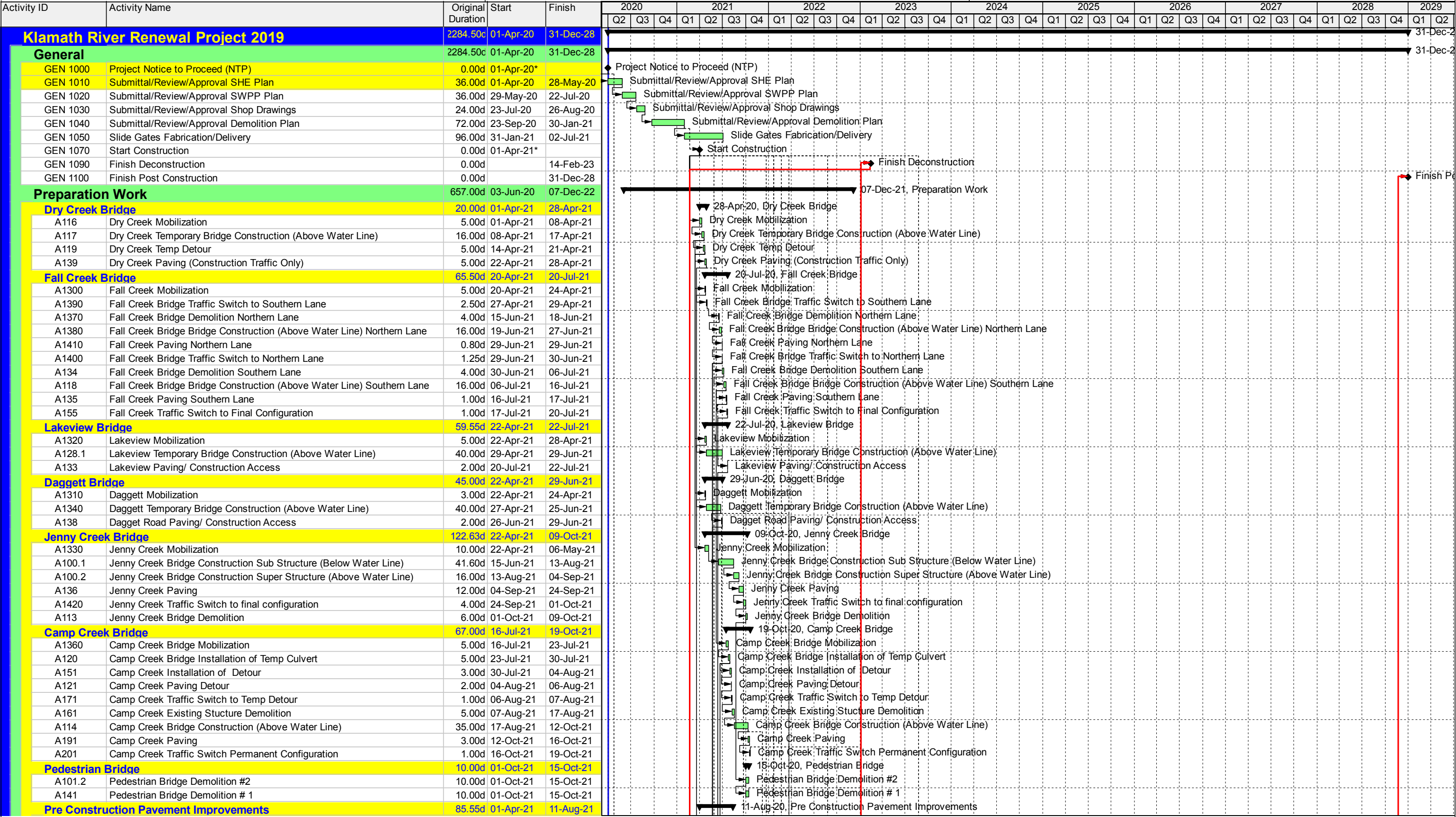
Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount
					\$0.00
					\$0.00
					\$0.00
					\$0.00
TOTAL SUBCONTRACTS					\$0.00

Labor Cost	\$82,978.49	Labor Burden @	0.0%		\$82,978.49
Material Cost	\$0.00	Material Tax @	0.00%	\$0.00	\$0.00
Equipment Cost	\$155,168.48	Equipment Tax @	0.00%	\$0.00	\$155,168.48
Subcontractors	\$0.00				\$0.00
<b>DIRECT COST SUBTOTALS</b>	<b>\$238,147</b>			<b>\$0</b>	<b>DIRECT COST SUBTOTALS \$238,147</b>
<b>Additional Pay Item Notes :</b>					

5.033 Upstream Cofferdam to be Removed in the Wet Details				
High Cost Factors			Low Cost Factors	
Bad Weather	0%		No Bad Weather	0%
Gas Price Increase	10%		Gas Price Decrease	10%
Unforeseen Contaminated Mats/ Access Issues	5%		No Unforeseen Contaminated Mats/ Access Issues	5%
	15%			15%
Production Per Hour		Hours	Efficiency Factor (Access, Activity, Qty, High Rebar Density, Breaks, Ect)	Overall Production
		120	8	624
		20	65%	1560
			65%	
Haul Notes		Excavator Loading Production per shift		
CY	14,450.00	CY per Hour		57
Swell Factor	30%	CY Bucket Size		5
Bulk CY	18,785.00	Buckets Per Hour		11
Haul Vehicle 85% Capacity (1.3 tons per CY)	27.20	# of Excavators		1
# of Haul Vehicles	2.00	CY per Hour (5 CY Bucket)		57
Load Time (Includes Spot Time, Maneuver Time, & Loading) (Minutes)	5.00	CY Per Hour Ideal Production Per 8 Hour Shift		160
Dump Time (Includes Spot Time, Maneuver Time, & Unloading) Minutes)	3.00	Efficient Compared to Ideal Production		35%
Haul Speed (Loaded MPH)	8.80	Inefficiencies Compared to Ideal Production		65%
Return Speed (Unloaded MPH)	15.00			
Haul Distance (Miles)	1.00			
Shift Length (Hours)	20.00			
Cycle Time				
Load Time (Load Time Minutes / 60mins)	0.08			
Haul Time (Haul Distance / Haul Speed)	0.11			
Dump Time (Dump Time Minutes / 60 Mins)	0.05			
Return Time (Haul Distance / Return Speed)	0.07			
Hours Per Cycle	0.31			
Efficiency Factor (Night Work, Traffic Restrictions, Coffee Breaks, ECT)	65%			
Actual Hours Per Cycle (Hours per Cycle / Efficiency Factor)	0.48			
Number of Cycles Bulk CY (Haul Vehicle Cap X # of Haul Vehicles)	345			
Total Number of Haul Hours ( Actual Cycle Hours X Number of Cycles)	165.6			
Loads Per Hour (Number of Cycles / Total Number of Haul Hours)	2.08			
Number of Haul Days	8.3			
Speed Loaded				
	Max Weight lbs of loaded 745	164,500.00		
	Tons	82.25		
	20lbs/Ton Rolling weight	4		
	Rolling Resistance ( 1% for each 20lbs/Ton)	4%		
	Slope Grade	8%		
	Total Resistance	12%		
	Max Gear per CAT Chart	4		
	Max MPH	8.8		
Speed Empty				
	Max Weight lbs of Empty 745	74,100.00		
	Tons Empty	37.05		
	20lbs/Ton Rolling weight Empty	2		
	Rolling Resistance ( 1% per 20lbs/Ton) Empty	2%		
	Average Slope Empty	8%		
	Total Resistance Empty	-6%		
	Max Gear per CAT Chart Empty	N/A		
	Max MPH Empty	N/A		
Other Notes				
This is for removal of Up stream coffer dam. Total CY is expected to be 28,900 and assumption is that 50% of that Quantity will be washed out when the coffer dam is breached. It is expected that the remaining 14,450 CY can be removed with excavators and haul trucks. The efficiency of this pay item is expected to be lower than other excavation items due to haul road maintenance or temp construction due to the material traveled on will be wet.				



## Attachment C Construction Schedule

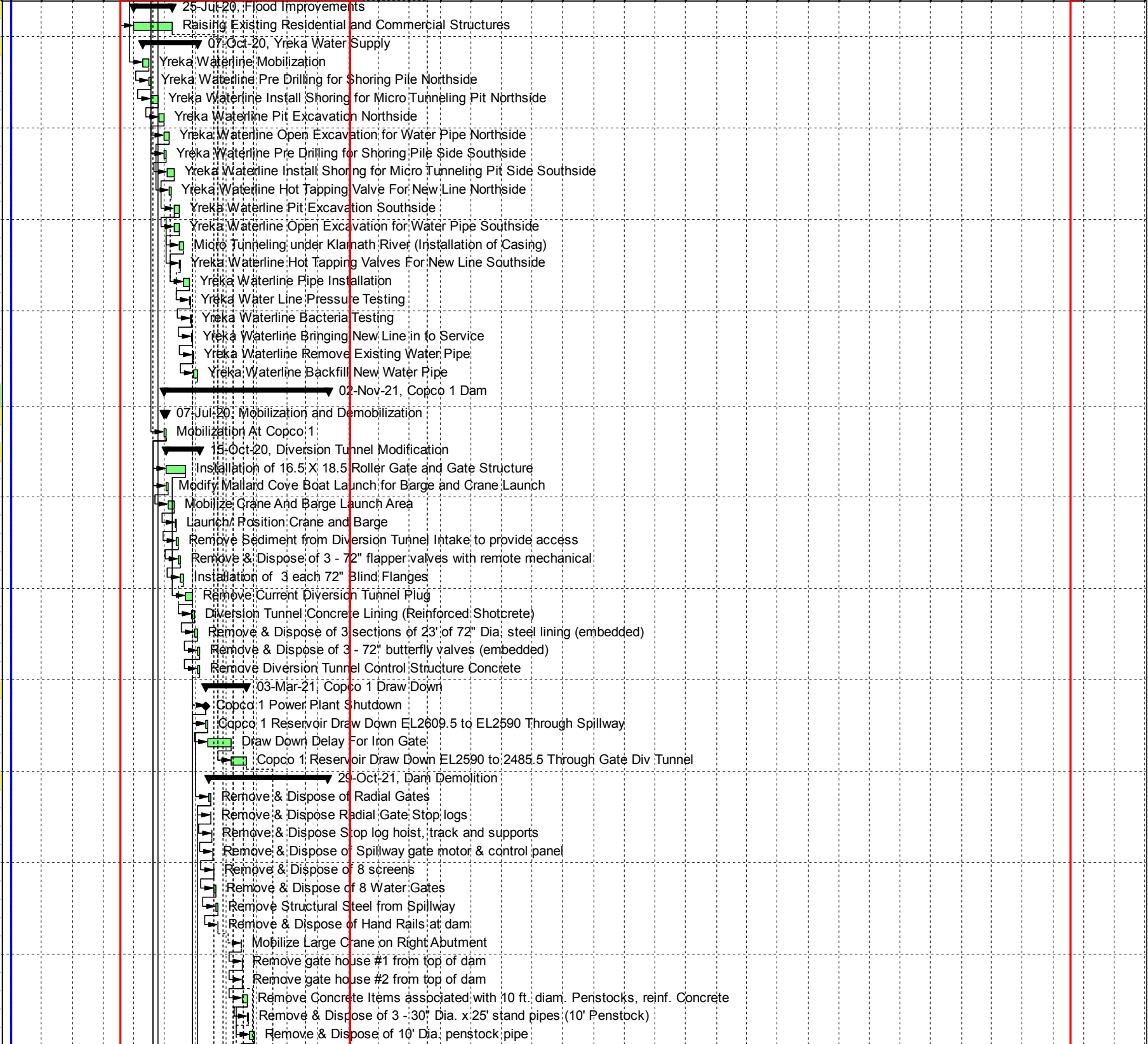


 Remaining Level of Effort      Remaining Work      Summary  
 Actual Level of Effort      Critical Remaining Work  
 Actual Work      Milestone



Klamath River Renewal Project 2019																					02-July-19																				
Activity ID	Activity Name	Original Duration	Start	Finish	2020			2021				2022				2023				2024				2025				2026				2027				2028				2029	
					Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2				
<div><div></div><div></div><div></div></div>	4.142	Wanaka Springs - Wood picnic tables to be removed and hauled	1.00d	26-Jun-21	29-Jun-21																																				
	Dutch Creek		1.30d	13-Aug-21	14-Aug-21																																				
	4.170	Dutch Creek - 50'4'3' Dock Concrete Abutment	0.12d	13-Aug-21	13-Aug-21																																				
	4.171	Dutch Creek - Double Pipe Railing	1.00d	13-Aug-21	14-Aug-21																																				
	Juniper Point		14.46d	29-Jun-21	20-Jul-21																																				
	4.147	Juniper Point - Concrete Total	0.25d	29-Jun-21	30-Jun-21																																				
	4.148	Juniper Point - 2, 4x4 Toilet Vaults	1.00d	30-Jun-21	01-Jul-21																																				
	4.149	Juniper Point - Wood picnic tables to be removed and hauled	1.00d	01-Jul-21	02-Jul-21																																				
	4.150	Juniper Point - Signs to be removed and hauled away	1.00d	02-Jul-21	06-Jul-21																																				
	4.151	Juniper Point - Dock pile railing	1.00d	06-Jul-21	07-Jul-21																																				
	4.152	Juniper Point - 50'x5' Composite dock with poly floats	1.11d	07-Jul-21	08-Jul-21																																				
	4.153	Juniper Point - 20'x5' Composite gangplank with railings	1.00d	08-Jul-21	09-Jul-21																																				
	4.154	Demo Juniper Point - Bury 3' Dia. boulders on site	4.00d	09-Jul-21	16-Jul-21																																				
	4.155	Juniper Point - Regrade to Natural Contour	2.00d	16-Jul-21	20-Jul-21																																				
	Camp Creek		17.76d	20-Jul-21	13-Aug-21																																				
	4.156	Camp Creek - Concrete Total	0.73d	20-Jul-21	21-Jul-21																																				
	4.157	Camp Creek - 180'Lx16'Wx8'D Earth jetty to remove and/or regrade	5.70d	21-Jul-21	28-Jul-21																																				
	4.158	Camp Creek - Well house 10'x16' concrete block building	0.14d	28-Jul-21	28-Jul-21																																				
	4.159	Camp Creek - 2, 20'x5' Composite decking gangplanks	1.00d	28-Jul-21	29-Jul-21																																				
	4.160	Camp Creek - 2, 20'x5' Floating composite w/ aluminum frame	1.00d	29-Jul-21	30-Jul-21																																				
	4.161	Camp Creek - Concrete block double toilet bldg 10'x16'	0.14d	30-Jul-21	31-Jul-21																																				
	4.162	Camp Creek - Dump stations and approx. 2000 gal buried	0.50d	31-Jul-21	31-Jul-21																																				
	4.163	Camp Creek - Power poles and lines	1.20d	31-Jul-21	03-Aug-21																																				
	4.164	Camp Creek - Remove waterlines and 3 faucets and regrade	1.00d	03-Aug-21	04-Aug-21																																				
	4.165	Demo Camp Creek - Recycle/bury 3' Dia. boulders	0.80d	04-Aug-21	05-Aug-21																																				
	4.166	Camp Creek - Steel pipe/plank picnic tables to be removed and hauled aw	1.00d	05-Aug-21	06-Aug-21																																				
	4.167	Camp Creek - Relocate concrete tables	1.00d	06-Aug-21	07-Aug-21																																				
	4.168	Camp Creek-Regrade	1.60d	07-Aug-21	11-Aug-21																																				
	4.169	Camp Creek - Signs to be removed and hauled away	1.00d	11-Aug-21	13-Aug-21																																				
	Mirror Cove		7.29d	14-Aug-21	25-Aug-21																																				
	4.172	Mirror Cove - Concrete Total	0.47d	14-Aug-21	14-Aug-21																																				
	4.173	Mirror Cove - 10'x16' Toilet Vault	0.14d	14-Aug-21	17-Aug-21																																				
	4.174	Mirror Cove - 2, 30'x5' Composite Gangplanks w/ aluminum	0.80d	17-Aug-21	18-Aug-21																																				
	4.175	Mirror Cove - Double pipe railings on dock	1.00d	18-Aug-21	18-Aug-21																																				
	4.176	Demo Mirror Cove - Bury 3' Dia. boulders	0.80d	19-Aug-21	19-Aug-21																																				
	4.177	Mirror Cove - Regrade site	3.00d	19-Aug-21	24-Aug-21																																				
	4.178	Mirror Cove - Signs to be removed and hauled away	1.00d	24-Aug-21	25-Aug-21																																				
	Overlook Point		2.50d	25-Aug-21	28-Aug-21																																				
	4.179	Overlook Point - 1 concrete picnic table base	1.00d	25-Aug-21	26-Aug-21																																				
	4.180	Overlook Point - Steel frame table to be removed and hauled away	1.00d	26-Aug-21	27-Aug-21																																				
	4.181	Overlook Point - Regrade steep access road and site to natural contours	0.50d	27-Aug-21	28-Aug-21																																				
	Long Gulch		2.38d	28-Aug-21	01-Sep-21																																				
	4.182	Long Gulch - 80'x25x4" Concrete boat ramp to be removed	0.20d	28-Aug-21	28-Aug-21																																				
	4.183	Long Gulch - Remove picnic tables (steel frames with planks) and haul aw	1.00d	28-Aug-21	31-Aug-21																																				
	4.184	Long Gulch - Regrade ramp area to natural contours, rip, reseed	1.00d	31-Aug-21	01-Sep-21																																				
Topsy Recreational Area		2.38d	01-Sep-21	04-Sep-21																																					
1.108	Demo Topsy Recreational Area - Concrete total	0.60d	01-Sep-21	02-Sep-21																																					
1.109	Demo Topsy Recreational Area - 6'x80' Floating dock made of lumber and c	1.00d	02-Sep-21	03-Sep-21																																					
1.110	Demo Topsy Recreational Area - 5'x20' Walkway leading to hex fishing plat	0.30d	03-Sep-21	03-Sep-21																																					
1.111	Demo Topsy Recreational Area - Regrade to natural contour and reseed	0.50d	03-Sep-21	04-Sep-21																																					
Pioneer Park		5.74d	04-Sep-21	14-Sep-21																																					
1.112	Demo Pioneer Park - Picnic tables to be removed and hauled away	0.40d	04-Sep-21	04-Sep-21																																					
1.113	Demo Pioneer Park - 12 Concrete fire rings	0.10d	04-Sep-21	04-Sep-21																																					
1.114	Demo Pioneer Park - Portable toilets to be removed and hauled away	0.04d	04-Sep-21	04-Sep-21																																					
1.115	Demo Pioneer Park - Signs to be removed and hauled away	0.10d	04-Sep-21	04-Sep-21																																					

<b>Flood Improvements</b>		<b>180.00d</b>	<b>01-Apr-21</b>	<b>25-Jul-21</b>
10.001	Raising Existing Residential and Commercial Structures	180.00d	01-Apr-21	25-Jul-21
<b>Yreka Water Supply</b>		<b>116.00d</b>	<b>29-Apr-21</b>	<b>07-Oct-21</b>
6.011	Yreka Waterline Mobilization	10.00d	29-Apr-21	14-May-21
6.002	Yreka Waterline Pre Drilling for Shoring Pile Northside	5.00d	15-May-21	21-May-21
6.003	Yreka Waterline Install Shoring for Micro Tunneling Pit Northside	15.00d	22-May-21	12-Jun-21
6.005	Yreka Waterline Pit Excavation Northside	10.00d	15-Jun-21	29-Jun-21
6.14	Yreka Waterline Open Excavation for Water Pipe Northside	10.00d	30-Jun-21	14-Jul-21
6.24	Yreka Waterline Pre Drilling for Shoring Pile Side Southside	5.00d	30-Jun-21	07-Jul-21
6.34	Yreka Waterline Install Shoring for Micro Tunneling Pit Side Southside	15.00d	08-Jul-21	29-Jul-21
6.74	Yreka Waterline Hot Tapping Valve For New Line Northside	3.00d	16-Jul-21	20-Jul-21
6.44	Yreka Waterline Pit Excavation Southside	10.00d	30-Jul-21	13-Aug-21
6.54	Yreka Waterline Open Excavation for Water Pipe Southside	10.00d	30-Jul-21	13-Aug-21
6.001	Micro Tunneling under Klamath River (Installation of Casing)	24.80d	13-Aug-21	28-Aug-21
6.84	Yreka Waterline Hot Tapping Valves For New Line Southside	3.00d	14-Aug-21	18-Aug-21
6.004	Yreka Waterline Pipe Installation	24.00d	28-Aug-21	14-Sep-21
6.005.11	Yreka Water Line Pressure Testing	2.00d	14-Sep-21	15-Sep-21
6.005.41	Yreka Waterline Bacteria Testing	2.00d	17-Sep-21	18-Sep-21
6.005.31	Yreka Waterline Bringing New Line in to Service	1.00d	21-Sep-21	21-Sep-21
6.005.21	Yreka Waterline Remove Existing Water Pipe	4.00d	21-Sep-21	25-Sep-21
6.005.1	Yreka Waterline Backfill New Water Pipe	16.00d	26-Sep-21	07-Oct-21
<b>Copco 1 Dam</b>		<b>349.88d</b>	<b>30-Jun-21</b>	<b>02-Nov-22</b>
<b>Mobilization and Demobilization</b>		<b>4.00d</b>	<b>30-Jun-21</b>	<b>07-Jul-21</b>
1050	Mobilization At Copco 1	4.00d	30-Jun-21	07-Jul-21
<b>Diversion Tunnel Modification</b>		<b>72.50d</b>	<b>07-Jul-21</b>	<b>15-Oct-21</b>
2.009.2	Installation of 16.5 X 18.5 Roller Gate and Gate Structure	40.00d	07-Jul-21	03-Sep-21
2.001.1	Modify Mallard Cove Boat Launch for Barge and Crane Launch	4.00d	07-Jul-21	11-Jul-21
2.001	Mobilize Crane And Barge Launch Area	14.00d	13-Jul-21	31-Jul-21
2.001.2	Launch/ Position Crane and Barge	2.00d	03-Aug-21	04-Aug-21
2.002	Remove Sediment from Diversion Tunnel Intake to provide access	5.00d	05-Aug-21	11-Aug-21
2.021	Remove & Dispose of 3 - 72" flapper valves with remote mechanical	3.70d	13-Aug-21	18-Aug-21
2.009	Installation of 3 each 72" Blind Flanges	7.60d	18-Aug-21	28-Aug-21
2.007	Remove Current Diversion Tunnel Plug	13.00d	03-Sep-21	23-Sep-21
2.100	Diversion Tunnel Concrete Lining (Reinforced Shotcrete)	7.00d	21-Sep-21	30-Sep-21
2.019	Remove & Dispose of 3 sections of 23' of 72" Dia. steel lining (embedded)	5.00d	30-Sep-21	07-Oct-21
2.02	Remove & Dispose of 3 - 72" butterfly valves (embedded)	5.10d	07-Oct-21	14-Oct-21
2.014	Remove Diversion Tunnel Control Structure Concrete	5.80d	08-Oct-21	15-Oct-21
<b>Copco 1 Draw Down</b>		<b>122.00d</b>	<b>01-Nov-21</b>	<b>03-Mar-22</b>
DD1000	Copco 1 Power Plant Shutdown	0.00d	01-Nov-21*	
DD1010	Copco 1 Reservoir Draw Down EL2609.5 to EL2590 Through Spillway	6.00d	01-Nov-21	07-Nov-21
DD1020	Draw Down Delay For Iron Gate	68.90d	07-Nov-21	15-Jan-22
DD1030	Copco 1 Reservoir Draw Down EL2590 to 2485.5 Through Gate Div Tunnel	47.00d	15-Jan-22	03-Mar-22
<b>Dam Demolition</b>		<b>254.88d</b>	<b>09-Nov-21</b>	<b>29-Oct-22</b>
2.016	Remove & Dispose of Radial Gates	5.00d	09-Nov-21	16-Nov-21
2.017	Remove & Dispose Radial Gate Stop logs	1.00d	17-Nov-21	17-Nov-21
2.018	Remove & Dispose Stop log hoist, track and supports	2.00d	19-Nov-21	20-Nov-21
2.022	Remove & Dispose of Spillway gate motor & control panel	1.00d	23-Nov-21	23-Nov-21
2.067	Remove & Dispose of 8 screens	0.80d	25-Nov-21	25-Nov-21
2.068	Remove & Dispose of 8 Water Gates	0.80d	25-Nov-21	30-Nov-21
2.012	Remove Structural Steel from Spillway	4.00d	30-Nov-21	07-Dec-21
2.015	Remove & Dispose of Hand Rails at dam	0.80d	07-Dec-21	08-Dec-21
2.003	Mobilize Large Crane on Right Abutment	1.00d	16-Feb-22	16-Feb-22*
2.063	Remove gate house #1 from top of dam	0.60d	18-Feb-22	18-Feb-22
2.064	Remove gate house #2 from top of dam	0.60d	18-Feb-22	19-Feb-22
2.065	Remove Concrete Items associated with 10 ft. diam. Penstocks, reinf. Co	8.20d	19-Feb-22	04-Mar-22
2.069	Remove & Dispose of 3 - 30" Dia. x 25' stand pipes (10' Penstock)	0.80d	04-Mar-22	08-Mar-22
2.071	Remove & Dispose of 10' Dia. penstock pipe	8.90d	12-Mar-22	26





 Remaining Level of Effort    
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 Actual Level of Effort    
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Activity ID	Activity Name	Original Duration	Start	Finish	2020				2021				2022				2023				2024				2025				2026				2027				2028				2029																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																
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<div></div>	5.033	Upstream Cofferdam to be Removed in the Wet	7.30d	16-Aug-22	26-Aug-22																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																				



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Activity ID	Activity Name	Original Duration	Start	Finish	2020			2021			2022			2023			2024			2025			2026			2027			2028			2029				
					Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2			
	3.073	Remove & Dispose of 2 - 138" Butterfly valves	4.70d	03-May-22	10-May-22																															
	3.071	Remove & Dispose of Penstock after bifurcation to butterfly valves	28.40d	10-May-22	23-Jun-22																															
	3.072	Remove & Dispose of Bifurcated vent pipes and support structure	0.40d	23-Jun-22	23-Jun-22																															
	3.064	Remove Concrete Items associated with Penstocks D/S from Tunnel No. 2	35.00d	23-Jun-22	13-Aug-22																															
	3.070	Remove & Dispose of Bands (steel)	6.00d	13-Aug-22	24-Aug-22																															
	3.068	Remove & Dispose of Wood Staves Soaked in Creosote	22.00d	24-Aug-22	07-Sep-22																															
	3.069	Remove & Dispose of Cradles (steel)	9.30d	07-Sep-22	21-Sep-22																															
	3.062	Remove Concrete Items associated with 16-foot I.D. Wood Stave Pipe	10.20d	21-Sep-22	08-Oct-22																															
	3.063	Place Concrete Plugs for Tunnels	7.30d	11-Oct-22	22-Oct-22																															
	Power House Demolition		99.50d	03-May-22	17-Sep-22																															
	3.037	Remove & Dispose - 2 - Francis Turbines	23.60d	03-May-22	08-Jun-22																															
	3.044	Remove & Dispose - Drainage Piping	1.80d	10-May-22	11-May-22																															
	3.033	Remove & Dispose - 2 - Governor oil systems	1.20d	11-May-22	12-May-22																															
	3.034	Remove & Dispose - Cooling water and bearing oil systems	0.40d	14-May-22	14-May-22																															
	3.035	Remove & Dispose - Oil / Water separator tank and piping	0.10d	14-May-22	14-May-22																															
	3.041	Remove & Dispose - Plant Water and Fire Protection	0.40d	14-May-22	14-May-22																															
	3.042	Remove & Dispose - Transformr Oil Fire Protection	0.30d	14-May-22	17-May-22																															
	3.043	Remove & Dispose - Unwatering Piping	1.40d	17-May-22	18-May-22																															
	3.036	Remove & Dispose - 12 - Cast Iron Columns	2.00d	18-May-22	20-May-22																															
	3.039	Remove & Dispose - Compressed Air Systems	0.13d	20-May-22	20-May-22																															
	3.040	Remove & Dispose - 2 - CO2 Systems	0.30d	20-May-22	21-May-22																															
	3.058a	Remove Oil from Oil-Filled Step-up Transformers	1.80d	21-May-22	24-May-22																															
	3.044a	Remove & Dispose - Petroleum Products from Mechanical Equip.	2.40d	24-May-22	27-May-22																															
	3.044b	Remove & Dispose - Remove Petroleum Products at or near the Power Hc	2.40d	27-May-22	01-Jun-22																															
	3.027	Remove Copper Shingles from Roof of Powerhouse	1.60d	08-Jun-22	10-Jun-22																															
	3.029	Remove Structural Steel items associated with Powerhouse	11.60d	08-Jun-22	25-Jun-22																															
	3.038	Remove & Dispose - 2 - 40 Ton indoor cranes	5.00d	28-Jun-22	06-Jul-22																															
	3.031	Remove Control House Structural Steel Items	0.20d	06-Jul-22	06-Jul-22																															
	3.055	Remove & Dispose - 7 - 40-Ton Travelling Crane motors-hoist (2-30Hp)	0.40d	07-Jul-22	07-Jul-22																															
	3.056	Remove & Dispose - 40-Ton Travelling Crane control equipment	0.70d	07-Jul-22	07-Jul-22																															
	3.057	Remove & Dispose - 40-Ton Travelling Crane Festoon Cable	0.40d	07-Jul-22	07-Jul-22																															
	3.032	Remove Shop Building	3.80d	07-Jul-22	13-Jul-22																															
	3.030	Remove Control House Concrete	0.80d	13-Jul-22	13-Jul-22																															
	3.045	Remove & Dispose - AC Generator, Indoor Vertical	8.00d	15-Jul-22	26-Jul-22																															
	3.046	Remove & Dispose - Excitation equipment for 15 MVA Generator	1.10d	27-Jul-22	28-Jul-22																															
	3.047	Remove & Dispose - Surge protection equip. for 15 MVA Generator	1.10d	28-Jul-22	29-Jul-22																															
	3.048	Remove & Dispose - Neutral grounding equip. for 15 MVA Generator	0.80d	29-Jul-22	29-Jul-22																															
	3.049	Remove & Dispose - Generator Switchgear, 7.2kV-includes unit breakers	2.00d	30-Jul-22	02-Aug-22																															
	3.050	Remove & Dispose - Station Service Switchgear, 600-volt (5 sections)	2.00d	03-Aug-22	04-Aug-22																															
	3.051	Remove & Dispose - Unit and plant control switchboard	0.80d	05-Aug-22	05-Aug-2																															



 Remaining Level of Effort      Remaining Work      Summary  
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 Actual Level of Effort    
  Critical Remaining Work

 Actual Work    
  Milestone





Activity ID	Activity Name	Original Duration	Start	Finish	2020			2021				2022				2023				2024				2025				2026				2027				2028				2029	
					Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2				
	2.183	Salvage & Plantting of Existing Ripar/wetl. Veg	78.00d	01-Mar-22*	30-Jun-22																																				
	2.223	Irrigation Installation	20.00d	01-Mar-22*	31-Mar-22																																				
	2.173	Ariel Pioneer Crop Seeding	37.00d	01-Apr-22*	28-May-22																																				
	2.453	Tributary Connectivity Actions Ph1	131.00d	01-Apr-22*	30-Sep-22																																				
	2.373	Pole Cutting Phase Transition Period	164.00d	03-May-22*	28-Jan-23																																				
	2.123	Bank Stability & Channel Fringe Actions Ph 1	130.00d	03-May-22*	29-Oct-22																																				
	2.133	Install Large Wood Ph1	109.00d	03-May-22*	30-Sep-22																																				
	2.203	Cover Crop Rolling	17.00d	04-Oct-22*	29-Oct-22																																				
	2.213	Native Vegetation Zone Mixes Seeding Phase 1	16.00d	01-Nov-22	30-Nov-22																																				
	2.333	Native Vegetation Zone Mixes Downtime Period PH 1 to PH 2	48.00d	01-Dec-22*	28-Feb-23																																				
	2.273	Pole Cutting Installation Phase 2	73.00d	01-Feb-23*	31-May-23																																				
	2.343	Native Vegetation Zone Mixes Seeding Phase 2	38.00d	01-Mar-23*	29-Apr-23																																				
	2.463	Tributary Connectivity Actions Ph2	131.00d	01-Apr-23*	30-Sep-23																																				
	2.383	Native Vegetation Zone Mixes Downtime Period PH 2 to PH 3	100.00d	02-May-23*	30-Sep-23																																				
	2.433	Bank Stability & Channel Fringe Actions Ph 2	88.00d	01-Jun-23*	30-Sep-23																																				
	2.443	Install Large Wood Ph2	88.00d	01-Jun-23*	30-Sep-23																																				
	2.393	Native Vegetation Zone Mixes Seeding Phase 3	32.00d	03-Oct-23*	30-Nov-23																																				
2.413	Construction and Performance Monitoring	1051.50d	03-Jan-24*	12-Mar-28																																					
2.473	Demob Irrigation And Deer Fencing	44.00d	01-Nov-28*	30-Dec-28																																					

 Remaining Work

## Attachment D Risk Analysis Methodology

## RISK ANALYSIS METHODOLOGY

### Risk Analysis Model

For this risk assessment, the AECOM Risk Team identified a “risk set” comprised of cost estimate uncertainties and potential risk events via a risk workshop session and used it to perform quantitative risk analyses. The Risk Team utilized a stochastic risk model for these analyses that employs probabilistic methods to forecast project cost as a function of confidence level. To develop inputs for the risk model, risk workshop participants identified potential risk events and concurrent risk event impacts catalogued as ranges of dollars or days of delay that could result from each risk events.

The AECOM Risk Team constructed this risk model by creating a binomial distribution per risk that either happens (value of 1) or doesn't happen (value of 0) based on predetermined probabilities of occurrence. Both cost and schedule consequences are modeled using a Laplace distribution defined by two points: minimum and maximum.

The project's base cost estimate serves as the first building block of the risk analysis model. In order to turn this static cost estimate into a platform for the model, it is first necessary to capture the uncertainty within the general requirements / conditions line item of the estimate. Once the Risk Team quantifies this uncertainty (by setting a range over which it is expected to exist), it adds risk events identified during the workshop to the model.

Four types of correlations are considered in the risk model. Two of them are applicable to the components of cost exposure and are applied to risk events in the risk register. These two correlations are defined as Pearson Coefficients. They are assigned to risks in pairs and range between negative one (-1) and one (1). A coefficient of 1 represents a perfectly positively correlated pair of risks; a -1 represents a perfectly negatively correlated pair of risks; values between -1 and 1 represent various levels of correlation that allow for imperfections in the relationship between the risks; and zero (0) represents a pair of risks that are uncorrelated.

The first correlation is applied to the occurrence of pairs of risks. A positive correlation between the paired risks implies that if one risk happens in the simulated model the other must happen as well; a negatively correlated pair means that if one risk happens in the simulated model the other may not happen. These cases are important to consider when a model implies that a trigger that could activate another risk without the two risks occurring simultaneously.

A second correlation is applied to relationships between impacts of certain risk pairs that have cost and schedule consequences. A positive correlation between such a pair implies that when the selected risk happens and results in a high cost consequence, a high schedule consequence is also likely to result. Alternatively, a negative correlation between such a pair suggests that a high cost consequence from the selected risk would likely have a low schedule impact. This is a particularly useful model to suggest cases where the project may suffer from either a delay or an additional cost as a consequence of a risk and may thus incur costs to mitigate the delay.

The next two correlations considered in the model are used in the “cost estimate uncertainty” analysis, and affect the cost estimate uncertainty calculations. The first of these correlations is also represented with a Pearson Coefficient and is applied to a pair of cost components that may have a relationship. A positive correlation of this type of cost element implies that when the selected cost uncertainty trends upwards in one cost category, a related cost category may observe upward trends of cost growth as well. For example, if steel prices trend higher than was forecast, steel unit prices will be affected in all areas of the cost estimate where steel is applicable.

Conversely, a negative correlation between such related cost categories means they will trend in opposite directions. These types of correlations are particularly important for modeling the cost uncertainty of commodity prices, labor agreements and market conditions.

The last correlation applied in the cost uncertainty calculations is represented by cost elements that are calculated as a dependent of hard costs or other cost elements, a function typically applied to cost-per-day. For example, the cost of administrative staff is directly correlated to the duration of the project. Such elements in the cost uncertainty calculations have been linked to modeled costs and schedule, meaning that if one component of the project is significantly delayed, the administration cost of the management of the project will inevitably increase. Alternatively, uncorrelated cases fix those cost elements to the project's baseline estimates and so do not vary in value based on the simulation of the project.



## **Monte Carlo Simulations**

Once the Risk Team incorporates variations within the base estimate and potential impacts of external risks into the risk model, a Monte Carlo simulation can be performed. Monte Carlo simulations turn static numbers into ranges by applying causal relationships to variables and using a random number generator to simulate what might happen in reality. They also allow for multi-faceted analysis of the simulation results.

The Risk Team uses a Monte Carlo simulation to forecast project results such as total project cost, potential total cost risk exposure, and other relevant statistics. This risk assessment's Monte Carlo simulation generated thousands of random scenarios of project performance variables related to cost and schedule. Utilizing all data collected, the simulation results in a single file that details wide ranges of cost impacts and schedule impacts.

The statistics generated by the Monte Carlo simulation comprise the quantitative part of this report, visualized as output curves which forecast cost as a function of confidence level. An 80% confidence level is the industry standard for the output of these analyses and is thus the value reported in this analysis. An 80% confidence level is considered a conservative value to compare the current allocations in cost and schedule contingency budgets and determine their appropriateness.

## **Schedule Modeling and Simulation**

The schedule component is modeled in similar fashion to that of cost, and during the Monte Carlo simulation construction durations are modified based on the number of risks that are simulated to occur and their random consequences. Each simulation generates a number of delay days based on the duration of the project, and those are multiplied by a cost-per-day and added to the cost distribution. The distribution of end date for each contract is reported in that range and at the 80% confidence level.

## Attachment E Cost Summary Presentation

# High-Level Comparison

## Definite Plan to July 2019

- Numerous BOC workshops/iterations
- Indicative pricing for Liability Transfer (LTC, Mitigation Fund & Insurance)
- One-year construction delay (with additional year of operations)
- PDB Agreement execution & preliminary services bid
- Actuals ~\$37M (8.5%) through June 2019 (included in numbers below)

Line Item / Cost Category	Estimate of Project Costs (Year of Construction Dollars)				P80 Delta (Vs. Definite Plan)
	Definite Plan (P80)	Full Removal (P80)	Full Removal (P90)	Full Removal (P99)	
Project Oversight (non PDB)	29,581,000	40,718,000	40,718,000	40,718,000	+ 11,137,000
Liability Transfer	-	35,530,000	35,530,000	35,530,000	35,530,000
Environmental Compliance (KRRC-Managed)	8,637,000	8,097,000	8,097,000	8,097,000	(540,000)
Technical Support	9,119,000	14,220,000	14,220,000	14,220,000	+ 5,101,000
Construction Management	10,617,000	13,167,000	13,167,000	13,167,000	+ 2,550,000
Progressive Design-Build Contract	234,493,000	237,612,000	237,612,000	237,612,000	+ 3,119,000
Mitigation Measures	18,407,000	17,141,000	17,141,000	17,141,000	(1,266,000)
Monitoring & Reporting (KRRC)	18,405,000	4,406,000	4,406,000	4,406,000	(13,999,000)
Subtotal	329,259,000	370,891,000	370,891,000	370,891,000	41,632,000
Contingency	147,441,000	62,757,000	67,063,000	81,454,000	(84,684,000)
<b>TOTAL</b>	<b>476,700,000</b>	<b>433,648,000</b>	<b>437,954,000</b>	<b>452,345,000</b>	<b>(43,052,000)</b>

# High-Level Comparison

## Definite Plan to July 2019

- Both the P80 and P90 are below the State Cost Cap
- The P99 is only ~\$2M over the State Cost Cap

Line Item / Cost Category	Estimate of Project Costs (Year of Construction Dollars)				P80 Delta (Vs. Definite Plan)
	Definite Plan (P80)	Full Removal (P80)	Full Removal (P90)	Full Removal (P99)	
Project Oversight (non PDB)	29,581,000	40,718,000	40,718,000	40,718,000	+ 11,137,000
Liability Transfer	-	35,530,000	35,530,000	35,530,000	35,530,000
Environmental Compliance (KRRC-Managed)	8,637,000	8,097,000	8,097,000	8,097,000	(540,000)
Technical Support	9,119,000	14,220,000	14,220,000	14,220,000	+ 5,101,000
Construction Management	10,617,000	13,167,000	13,167,000	13,167,000	+ 2,550,000
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Mitigation Measures	18,407,000	17,141,000	17,141,000	17,141,000	(1,266,000)
Monitoring & Reporting (KRRC)	18,405,000	4,406,000	4,406,000	4,406,000	(13,999,000)
Subtotal	329,259,000	370,891,000	370,891,000	370,891,000	41,632,000
Contingency	147,441,000	62,757,000	67,063,000	81,454,000	(84,684,000)
<b>TOTAL</b>	<b>476,700,000</b>	<b>433,648,000</b>	<b>437,954,000</b>	<b>452,345,000</b>	<b>(43,052,000)</b>

Industry standard for planning,  
creating \$16M Reserve (within Cap)

# High-Level Comparison

## Definite Plan to July 2019

### Liability Transfer:

- +\$35.5M for LTC (Natural Resources) and Local Impact Mitigation Fund
- +\$7M for added insurance (higher premiums) – Within “PDB Contract” total

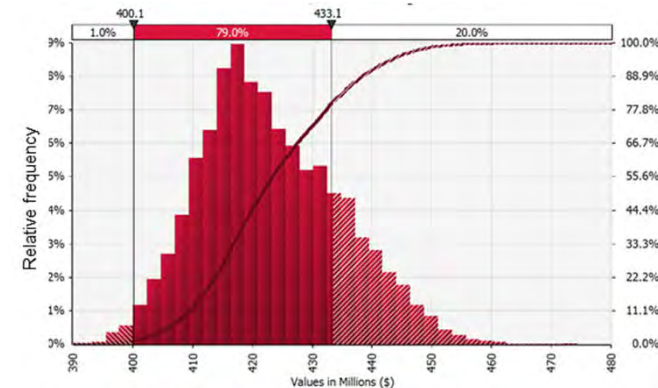
Line Item / Cost Category	Estimate of Project Costs (Year of Construction Dollars)				P80 Delta (Vs. Definite Plan)
	Definite Plan (P80)	Full Removal (P80)	Full Removal (P90)	Full Removal (P99)	
Project Oversight (non PDB)	29,581,000	40,718,000	40,718,000	40,718,000	+ 11,137,000
Liability Transfer	-	35,530,000	35,530,000	35,530,000	35,530,000
Environmental Compliance (KRRC-Managed)	8,637,000	8,097,000	8,097,000	8,097,000	(540,000)
Technical Support	9,119,000	14,220,000	14,220,000	14,220,000	+ 5,101,000
Construction Management	10,617,000	13,167,000	13,167,000	13,167,000	+ 2,550,000
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Mitigation Measures	18,407,000	17,141,000	17,141,000	17,141,000	(1,266,000)
Monitoring & Reporting (KRRC)	18,405,000	4,406,000	4,406,000	4,406,000	(13,999,000)
Subtotal	329,259,000	370,891,000	370,891,000	370,891,000	41,632,000
Contingency	147,441,000	62,757,000	67,063,000	81,454,000	(84,684,000)
<b>TOTAL</b>	<b>476,700,000</b>	<b>433,648,000</b>	<b>437,954,000</b>	<b>452,345,000</b>	<b>(43,052,000)</b>

# High-Level Comparison

## Definite Plan to July 2019

Monte Carlo Risk Contingency P80/90 ~\$63-67M:

- Includes price uncertainty, pre- and post- GMP risks
- Involves construction start delays up to 2 years



Line Item / Cost Category	Estimate of Project Costs (Year of Construction Dollars)				P80 Delta (Vs. Definite Plan)
	Definite Plan (P80)	Full Removal (P80)	Full Removal (P90)	Full Removal (P99)	
Project Oversight (non PDB)	29,581,000	40,718,000	40,718,000	40,718,000	+ 11,137,000
Liability Transfer	-	35,530,000	35,530,000	35,530,000	35,530,000
Environmental Compliance (KRRC-Managed)	8,637,000	8,097,000	8,097,000	8,097,000	(540,000)
Technical Support	9,119,000	14,220,000	14,220,000	14,220,000	+ 5,101,000
Construction Management	10,617,000	13,167,000	13,167,000	13,167,000	+ 2,550,000
Progressive Design-Build Contract	234,493,000	237,612,000	237,612,000	237,612,000	+ 3,119,000
Mitigation Measures	18,407,000	17,141,000	17,141,000	17,141,000	(1,266,000)
Monitoring & Reporting (KRRC)	18,405,000	4,406,000	4,406,000	4,406,000	(13,999,000)
Subtotal	329,259,000	370,891,000	370,891,000	370,891,000	41,632,000
Contingency	147,441,000	62,757,000	67,063,000	81,454,000	(84,684,000)
Estimate Uncertainty		9,474,000	10,134,000	10,318,000	
Pre-GMP Contingency	147,441,000	18,208,000	19,435,000	24,020,000	
Post GMP Contingency		35,075,000	37,494,000	47,116,000	
TOTAL	476,700,000	433,648,000	437,954,000	452,345,000	(43,052,000)

# High-Level Comparison

## Definite Plan to July 2019

RES's expertise in compliance and mitigating impacts to natural resource results in significant savings (and includes indemnification)

Monte Carlo Risk Contingency reduced by ~\$85M due to:

- Higher price certainty
- Risks being retired over past year, or probability/impact being refined
- Risks transferred to insurance, LTC or Local Impact Mitigation Fund

Line Item / Cost Category	Estimate of Project Costs (Year of Construction Dollars)				P80 Delta (Vs. Definite Plan)
	Definite Plan (P80)	Full Removal (P80)	Full Removal (P90)	Full Removal (P99)	
Project Oversight (non PDB)	29,581,000	40,718,000	40,718,000	40,718,000	+ 11,137,000
Liability Transfer	-	35,530,000	35,530,000	35,530,000	35,530,000
Environmental Compliance (KRRC-Managed)	8,637,000	8,097,000	8,097,000	8,097,000	(540,000)
Technical Support	9,119,000	14,220,000	14,220,000	14,220,000	+ 5,101,000
Construction Management	10,617,000	13,167,000	13,167,000	13,167,000	+ 2,550,000
Progressive Design-Build Contract	234,493,000	237,612,000	237,612,000	237,612,000	+ 3,119,000
Mitigation Measures	18,407,000	17,141,000	17,141,000	17,141,000	(1,266,000)
Monitoring & Reporting (KRRC)	18,405,000	4,406,000	4,406,000	4,406,000	(13,999,000)
Subtotal	329,259,000	370,891,000	370,891,000	370,891,000	41,632,000
Contingency	147,441,000	62,757,000	67,063,000	81,454,000	(84,684,000)
Estimate Uncertainty		9,474,000	10,134,000	10,318,000	
Pre-GMP Contingency	147,441,000	18,208,000	19,435,000	24,020,000	
Post GMP Contingency		35,075,000	37,494,000	47,116,000	
TOTAL	476,700,000	433,648,000	437,954,000	452,345,000	(43,052,000)

# High-Level Comparison

## Definite Plan to July 2019

### Contingency:

- By early 2020, estimate and design uncertainty will be resolved

Line Item / Cost Category	Estimate of Project Costs (Year of Construction Dollars)				P80 Delta (Vs. Definite Plan)
	Definite Plan (P80)	Full Removal (P80)	Full Removal (P90)	Full Removal (P99)	
Project Oversight (non PDB)	29,581,000	40,718,000	40,718,000	40,718,000	+ 11,137,000
Liability Transfer	-	35,530,000	35,530,000	35,530,000	35,530,000
Environmental Compliance (KRRC-Managed)	8,637,000	8,097,000	8,097,000	8,097,000	(540,000)
Technical Support	9,119,000	14,220,000	14,220,000	14,220,000	+ 5,101,000
Construction Management	10,617,000	13,167,000	13,167,000	13,167,000	+ 2,550,000
Progressive Design-Build Contract	234,493,000	237,612,000	237,612,000	237,612,000	+ 3,119,000
Mitigation Measures	18,407,000	17,141,000	17,141,000	17,141,000	(1,266,000)
Monitoring & Reporting (KRRC)	18,405,000	4,406,000	4,406,000	4,406,000	(13,999,000)
Subtotal	329,259,000	370,891,000	370,891,000	370,891,000	41,632,000
Contingency	147,441,000	62,757,000	67,063,000	81,454,000	(84,684,000)
Estimate Uncertainty		9,474,000	10,134,000	10,318,000	
Pre-GMP Contingency	147,441,000	18,208,000	19,435,000	24,020,000	
Post GMP Contingency		35,075,000	37,494,000	47,116,000	
TOTAL	476,700,000	433,648,000	437,954,000	452,345,000	(43,052,000)



# High-Level Comparison

## Definite Plan to July 2019

### Management, Legal & Consulting Services:

- Have increased due to escalation, added year of operations, and additional technical support required for unforeseen conditions, FERC, CEQA & NEPA

Line Item / Cost Category	Estimate of Project Costs (Year of Construction Dollars)				P80 Delta (Vs. Definite Plan)
	Definite Plan (P80)	Full Removal (P80)	Full Removal (P90)	Full Removal (P99)	
Project Oversight (non PDB)	29,581,000	40,718,000	40,718,000	40,718,000	+ 11,137,000
Liability Transfer	-	35,530,000	35,530,000	35,530,000	35,530,000
Environmental Compliance (KRRC-Managed)	8,637,000	8,097,000	8,097,000	8,097,000	(540,000)
Technical Support	9,119,000	14,220,000	14,220,000	14,220,000	+ 5,101,000
Construction Management	10,617,000	13,167,000	13,167,000	13,167,000	+ 2,550,000
Progressive Design-Build Contract	234,493,000	237,612,000	237,612,000	237,612,000	+ 3,119,000
Mitigation Measures	18,407,000	17,141,000	17,141,000	17,141,000	(1,266,000)
Monitoring & Reporting (KRRC)	18,405,000	4,406,000	4,406,000	4,406,000	(13,999,000)
Subtotal	329,259,000	370,891,000	370,891,000	370,891,000	41,632,000
Contingency	147,441,000	62,757,000	67,063,000	81,454,000	(84,684,000)
<b>TOTAL</b>	<b>476,700,000</b>	<b>433,648,000</b>	<b>437,954,000</b>	<b>452,345,000</b>	<b>(43,052,000)</b>

# High-Level Comparison

## Definite Plan to July 2019

### Mitigation, Monitoring & Reporting:

- Majority of monitoring and portion of mitigation transferred to LTC and Local Impact Mitigation Fund

Line Item / Cost Category	Estimate of Project Costs (Year of Construction Dollars)				P80 Delta (Vs. Definite Plan)
	Definite Plan (P80)	Full Removal (P80)	Full Removal (P90)	Full Removal (P99)	
Project Oversight (non PDB)	29,581,000	40,718,000	40,718,000	40,718,000	+ 11,137,000
Liability Transfer	-	35,530,000	35,530,000	35,530,000	35,530,000
Environmental Compliance (KRRC-Managed)	8,637,000	8,097,000	8,097,000	8,097,000	(540,000)
Technical Support	9,119,000	14,220,000	14,220,000	14,220,000	+ 5,101,000
Construction Management	10,617,000	13,167,000	13,167,000	13,167,000	+ 2,550,000
Progressive Design-Build Contract	234,493,000	237,612,000	237,612,000	237,612,000	+ 3,119,000
Mitigation Measures	18,407,000	17,141,000	17,141,000	17,141,000	(1,266,000)
Monitoring & Reporting (KRRC)	18,405,000	4,406,000	4,406,000	4,406,000	(13,999,000)
Subtotal	329,259,000	370,891,000	370,891,000	370,891,000	41,632,000
Contingency	147,441,000	62,757,000	67,063,000	81,454,000	(84,684,000)
<b>TOTAL</b>	<b>476,700,000</b>	<b>433,648,000</b>	<b>437,954,000</b>	<b>452,345,000</b>	<b>(43,052,000)</b>



# High-Level Comparison

## Definite Plan to July 2019

### PDB Contract:

- Design fees increased considerably (+\$15M)
- Specialty insurance increase (+\$7M)
- 1-year of escalation across all line items (+\$9M)
- Refined or new items - Yreka, Fire Management, Spawning Gravel (+\$10M)
- Dam removal fees went down due to BOC input (-\$9M)
- Vegetation monitoring, maintenance and reporting to LTC (-\$25M)
- Downstream flood control mitigation to Local Impact Mitigation Fund (-\$1.5M)

Line Item / Cost Category		Estimate of Project Costs (Year of Construction Dollars)				P80 Delta (Vs. Definite Plan)
		Definite Plan (P80)	Full Removal (P80)	Full Removal (P90)	Full Removal (P99)	
Progressive Design-Build Contract		234,493,000	237,612,000	237,612,000	237,612,000	+ 3,119,000
40	Final Design & Permitting Support (PDB)	6,513,000	21,799,000	21,799,000	21,799,000	+ 15,286,000
40A	Project Insurance	-	6,989,000	6,989,000	6,989,000	+ 6,989,000
41	Dam Removals	106,827,000	97,751,000	97,751,000	97,751,000	(9,076,000)
42	Reservoir Area Improvements	21,051,000	21,779,000	21,779,000	21,779,000	+ 728,000
43	Reservoir Area Restoration	57,957,000	32,821,000	32,821,000	32,821,000	(25,136,000)
44	Yreka Water Line Replacement	2,900,000	6,060,000	6,060,000	6,060,000	+ 3,160,000
45	Transportation Improvements	30,799,000	32,717,000	32,717,000	32,717,000	+ 1,918,000
46	Recreation Improvements	4,584,000	6,481,000	6,481,000	6,481,000	+ 1,897,000
47	Downstream Flood Control Improvemen	1,499,000	-	-	-	(1,499,000)
48	Public Health And Safety Fencing	2,363,000	2,665,000	2,665,000	2,665,000	+ 302,000
49	Fire Management Plan	-	3,006,000	3,006,000	3,006,000	+ 3,006,000
49A	Spawning Gravel Augmentation	-	5,544,000	5,544,000	5,544,000	+ 5,544,000

# High-Level Comparison

## Full versus Partial Removal

### Partial Removal:

- Approximately \$18.5M lower for dam removal construction, and nearly \$23M lower overall

Line Item / Cost Category	Estimate of Project Costs (Year of Construction Dollars)		
	Definite Plan (P80)	Full Removal (P80)	Partial Removal (P80)
Project Oversight (non PDB)	29,581,000	40,718,000	40,718,000
Liability Transfer	-	35,530,000	35,530,000
Environmental Compliance (KRRRC-Managed)	8,637,000	8,097,000	8,097,000
Technical Support	9,119,000	14,220,000	14,220,000
Construction Management	10,617,000	13,167,000	13,167,000
Progressive Design-Build Contract	234,493,000	237,612,000	219,150,000
Mitigation Measures	18,407,000	17,141,000	17,141,000
Monitoring & Reporting (KRRRC)	18,405,000	4,406,000	4,406,000
Subtotal	329,259,000	370,891,000	352,429,000
Contingency	147,441,000	62,757,000	58,621,000
Estimate Uncertainty		9,474,000	8,687,000
Pre-GMP Contingency	147,441,000	18,208,000	17,209,000
Post GMP Contingency		35,075,000	32,725,000
TOTAL	476,700,000	433,648,000	411,050,000



**Exhibit D-2**

**Guaranteed Maximum Price Commitments**

**February 2020**

## Guaranteed Maximum Price Report

### GMP - SUMMARY

DESCRIPTION	TOTAL
<b>Klamath River Renewal Project (GMP) - COST ESTIMATE</b>	\$173,343,343
<b>PROJECT COMPANY FEE (10% OF ALL NON-GENERAL CONDITION COSTS)</b>	\$16,139,301
<b>TOTAL GMP ESTIMATE - INCLUDING FEE</b>	\$189,482,645
<b>PROJECT COMPANY CONTINGENCY (5% OF TOTAL ESTIMATE)</b>	\$9,474,132
<b>TOTAL GMP ESTIMATE - INCLUDING FEE &amp; CONTINGENCY</b>	\$198,956,777

Within this cost estimate, Kiewit has included all materials, labor, equipment, subcontractors, management, overhead, insurance, and fee to complete civil, infrastructure, and dam removal aspects of the project scope. This estimate is compiled consistent with the Project Agreement and Kiewit's standard industry practice.

Kiewit's GMP estimate was compiled within InEight HardDollar Estimating software with an accompanying CPM schedule developed in Primavera P6. The estimate and corresponding schedule were structured to logically group similarly scoped items together for ease of review and convey construction sequence, logic, and approach.

The graphic below describes how to read our estimate format.

Our HardDollar Estimating System provides an estimate including parent (summary) and subordinate cost lines that sum upward. As an example, in the graphic below, line items 1.1.1 through 1.1.7 sum upward to line 1.1. Line items 1.1 through 1.4 (only 1.1 shown below), sum upward to line 1.

<b>DAM REMOVAL</b>	4.00	PLS	\$107,180,642.74	4.00	PLS	\$68,321,220.58
1 JC BOYLE DAM REMOVAL	1.00	PLS	\$32,325,054.60	1.00	PLS	\$11,186,839.70
1.1 ACCESS / SITE WORK	1.00	PLS	\$12,333,516.73	1.00	PLS	\$6,303,795.55
1.1.1 SITE PREP / SITE SET UP	1.00	PLS	\$2,862,807.85	1.00	PLS	\$1,532,606.87
1.1.2 ACCESS ROADS	1.00	PLS	\$3,971,370.59	1.00	PLS	\$856,107.35
1.1.3 TEMP DAMS	1.00	PLS	\$3,302,863.50	1.00	PLS	\$3,197,863.56
1.1.4 EROSION CONTROL	1.00	PLS	\$865,904.37	1.00	PLS	\$136,646.35
1.1.5 DEWATERING	35.00	Wk	\$530,471.95	35.00	Wk	\$530,471.95
1.1.6 MISC. SUBCONTRACTOR SUPPORT (16 MONTHS)(4 MH/WK)	70.00	Wk	\$50,098.48	70.00	Wk	\$50,098.48
1.1.7 WATER TREATMENT SYSTEM - TREAT PROCESS WATER	1.00	PLS	\$750,000.00	1.00	PLS	\$1.00

## Addressing Board of Consultant Questions/Comments

In the paragraphs below, Kiewit addresses the five (5) BOC questions and comments as drafted relating to KRRC's 7/29/19 FERC filing. The comments below provide information related specifically to Kiewit's estimate or scope of work on the project, but may not address all project aspects as separately managed by KRRC. It is Kiewit's intent that this information be added or used to supplement any broader response KRRC provides to each of the BOC's inquiries.

## **QUESTION 1 – “The updated maximum and probable cost estimate, and the probability that each will occur”**

### **Estimate**

Kiewit has provided a cost estimate in support of all civil, infrastructure, and dam removal operations required by the project.

This estimate is based upon a 60% design deliverable produced by Knight Piesold, Kiewit's Engineer of Record. Kiewit produced this estimate consistent with its standard practices of estimating similar large and complex dam and infrastructure projects. This process includes breaking down the project into many small scopes, deriving quantities of work for each scope, then assigning labor, equipment, and material resources as appropriate to complete each scope. Constructibility, development of safe access, and addressing a preferred work sequence were also addressed as part of the estimating process. Lastly, Kiewit solicited and received material and subcontract quotes for particular scopes of work. Applicable quotes were incorporated into the estimate. The project price also includes onsite supervision and management necessary to complete the work and includes anticipated cost escalation corresponding to our CPM schedule.

We are confident in the cost as detailed and that we will achieve completion of all civil, infrastructure, and dam removal scopes included in our estimate.

### **Schedule**

Kiewit has developed a CPM schedule concurrent with its estimating effort. This schedule takes into account anticipated permitting timelines, and details activities for pre-drawdown, drawdown, and dam removal. The schedule is compiled using Kiewit's standard scheduling processes and achieves a level of detail consistent with projects we undertake of this magnitude and complexity.

Schedule generally:

#### **2021**

- Infrastructure improvements and required pre-drawdown modifications, access roads, office/facilities setup, and mobilization.
- Work Period: May through December

#### **2022**

- Reservoir Drawdown
- Removal of dams and features at JC Boyle, Copco 1, Copco 1, and Irongate sites
- Work Period: January through December



## **QUESTION 2 – “The updated project contingency reserve based on updated project costs”**

In coordination with the Klamath River Renewal Corporation, Kiewit has included a 5% contingency within our GMP estimate. This contingency covers risks that Kiewit anticipates will be carried by the Project Company contractually. This contingency covers common issues we face in similarly complex construction project, including but not limited to above normal escalation of sub and material prices, material and labor availability, labor productivity, fuel escalation, certain scope growth, construction permitting, and etc.

## **QUESTION 3 – “The types and amounts of insurance policies and surety arrangements anticipated to be secured by the Renewal Corporation”**

### **Insurance**

Kiewit will be providing all required insurances to limits consistent with Appendix 9 of our Project Agreement. At this time, a consolidated insurance approach utilizing Kiewit's corporate program is priced within our estimate. We conclude this offers the most comprehensive and cost competitive insurance approach for the project. A Contractor Controlled Insurance Program (CCIP) has not been included in our pricing at this time, but coverage limits equal to those specified within the CCIP language in Appendix 9 are included as part of Kiewit's corporate program. Kiewit has consulted with Aon, KRRC's insurance advisor, who concurs in this approach. We understand that Aon will be updating it's own documentation in an Updated Insurance Plan.

### **Surety**

Kiewit will be providing 100% Payment and Performance bonds covering all our project work.

## **QUESTION 4 – “The risk register and risk management plan”**

For the duration of design, estimating, and permitting support to date, Kiewit has collaboratively taken part in risk planning and mitigation with KRRC. A project risk register has been created and used as a tool to focus on mitigating risk through design and planning. Risks remaining have been assigned and are anticipated to be carried contractually by the project entity (KRRC, Kiewit, or RES) which is most able to manage and mitigate those risks. The GMP covers all risks that are anticipated to be assigned contractually to Kiewit.

## **QUESTION 5 – “The adequacy of funds and the funding mechanism described in the data package”**

Kiewit not addressing funding in this report as funding is a KRRC responsibility.

## Explanation of Estimate

This section of the report describes the summary cost estimate inclusions in greater detail, providing a brief narrative on estimate scope carried within summary (or rollout) line items.

	Description	TOTAL COST
<b>1</b>	<b>DAM REMOVAL</b>	\$76,505,075.17
1.1	JC BOYLE DAM REMOVAL	\$20,370,922.23
1.2	COPCO 1 DAM REMOVAL	\$24,994,785.39
1.3	COPCO 2 DAM REMOVAL	\$7,841,958.99
1.4	IRON GATE DAM REMOVAL	\$23,297,408.55
<b>2</b>	<b>RESTORATION WORK</b>	\$0.00
<b>3</b>	<b>TRANSPORTATION</b>	\$23,905,217.95
3.1	BRIDGES	\$9,820,120.74
3.2	CIVIL IMPROVEMENTS	\$9,856,097.19
3.3	RECREATION IMPROVEMENTS	\$0.02
3.4	YREKA WATERLINE REPLACEMENT	\$4,229,000.00
<b>4</b>	<b>FIRE MANAGEMENT</b>	\$1,385,000.00
<b>5</b>	<b>DESIGN &amp; CONSULTING</b>	\$3,000,000.06
<b>6</b>	<b>PROJECT SPECIFIC INSURANCE &amp; TAX</b>	\$3,813,960.00
<b>7</b>	<b>QUALITY CONTROL, ENVIRONMENTAL, SURVEY</b>	\$8,356,776.37
<b>8</b>	<b>MOBILIZATION / DEMOBILIZATION</b>	\$4,307,277.58
<b>9</b>	<b>SITE SECURITY</b>	\$2,820,000.00
<b>10</b>	<b>SHOP &amp; MAINTENANCE EQUIPMENT</b>	\$3,960,280.29
<b>11</b>	<b>CAMP FACILITY</b>	\$8,235,027.04
<b>12</b>	<b>SITE SERVICES / SUPPORT</b>	\$6,167,204.60
<b>13</b>	<b>INDIRECT</b>	\$28,367,705.78
13.2	Job Related Overhead	\$19,466,936.37
13.3	Operational Support	\$8,900,763.41

### ITEM 1 – DAM REMOVAL

This item includes costs for all four dam locations: JC Boyle, Copco 1, Copco 2, and Irongate.

**Access and Sitework** – Includes development/improvement of access roads needed to facilitate safe removal of site features, provide for haul roads, construct and maintain temporary cofferdams for water management, temporary and permanent erosion control and dewatering of construction areas.

**Dam Modification** – Includes preparing the dams for safe drawdown and plugging/abandoning features once drawdown is complete. Scope at JC Boyle will consist of blasting out existing stop logs below the concrete spillway and plugging the ends of the existing penstock tunnel. Scope at Copco 1 includes



excavating adit(s) through the dam and blasting the remaining plug at the upstream end of the adit to allow low level water to drain from the reservoir and for passage of sediment. Once drawdown is complete, the existing water diversion tunnel and penstock tunnels will be plugged and abandoned. Scope at Copco 2 consists of removal of one of the five existing bays of the concrete spillway monolith to allow for drawdown. Once the dam is removed, concrete or steel plugs will be used to close off and abandon (with the exception of bat access as required), existing penstock tunnels. Lastly, work at Irongate will include necessary modifications to ensure safe drawdown through the existing low-level outlet diversion tunnel. Once drawdown and river diversion are complete, plugs will be placed to close off and abandon the existing tunnel.

**Dam Removal** – Includes removing concrete and earthen embankments at all sites, powerhouse features, mechanical and electrical equipment, structural steel, and hazardous materials. Line also includes removal of miscellaneous site features such as asphalt, fencing, residential and commercial buildings, and tanks. Sites will be re-seeded and stabilized upon completion of the removal scopes listed.

## **ITEM 2 – RESTORATION**

**Restoration** – No costs included – Kiewit understands Resource Environmental Solutions (RES) will complete all project restoration required through a separate contract with KRRC.

## **ITEM 3 – TRANSPORTATION**

**Bridges / Roads / Culverts** – Includes temporary bridges and infrastructure improvements to Copco Road and project access road so that heavy loads may be transported to and from the project site. Also, in coordination with Siskiyou County to date, Kiewit has included costs to maintain portions of Copco Road due to the poor existing condition and potential of additional asphalt surfacing degradation from the numerous loads the road will see during construction.

**City of Yreka, CA waterline upgrade** – Includes allowance to realign the Yreka waterline as needed to protect the utility post drawdown and in the final Klamath River condition.

## **ITEM 4 – FIRE MANAGEMENT**

**Fire Management** – Includes an allowance amount as coordinated with KRRC to cover anticipated and potential costs in providing additional fire management capability the area including building riverine pools and installing detection and monitoring equipment.

## **ITEM 5 – DESIGN & CONSULTING**

**Design** – Includes engineering services for temporary construction needs such as maintenance of traffic, work platforms, support of excavation, and etc. Also includes maintaining a presence during construction of Kiewit's Engineer of Record Knight Piesold to support the project.

**Consulting** – Includes services from outside consultants for California QSD/QSD certifications and inspections, legal reviews, blasting, and etc.

## **ITEM 6 – PROJECT SPECIFIC INSURANCE & TAX**

**Insurance** – Includes estimated cost to implement Builders Risk insurance coverage to a Probable Maximum Loss (PML) utilizing Kiewit's corporate program. Also includes purchase of a project specific professional liability policy as a supplement to Kiewit's practice policy

Tax – Includes 0.57% Oregon Corporate Activity Tax for any revenues for work at the JC Boyle site.

## **ITEM 7 – QUALITY CONTROL / ENVIRONMENTAL / SURVEY**

Quality Control – Includes setting up and managing an onsite quality control program to assure compliance with project specifications and standards. Quality management programs and processes will be established, and estimate includes numerous QC technicians at each site to facilitate and complete necessary inspections and documentation.

Environmental – Includes project staff to manage and document inspections and ensure environmental compliance. Best Management Practices (BMP's) for erosion control and monitoring are completed within this item.

Survey – Includes onsite survey, creating of three-dimensional models, utilization of automatic machine control, and setting of hard survey stakes/limits to assure project is completed within limits specified and to lines and grades established in the design plans.

## **ITEM 8 – MOBILIZATION / DEMOBILIZATION**

Mobilization and Demobilization – Includes bringing, setting up, dismantling and removing large equipment fleet that will be required to complete the project. Equipment will be brought to several individual construction sites, moved between sites as work progresses, and removed once no longer necessary to complete the work.

## **ITEM 9 – SITE SECURITY**

Site Security – Includes multiple posted guards at each project site, installation of gates to control traffic and jobsite personnel, and to provide protection against non-authorized entry into the project site. Security is provided at each site for both the 2021 and 2022 construction seasons.

## **ITEM 10 – SHOP AND MAINTENANCE EQUIPMENT**

Maintenance Shop and Facilities – Includes setup of temporary enclosure/covering, connexes, and tooling to provide onsite maintenance shops at multiple project sites. Maintenance shops will be able to support the equipment fleet needed for the project and ensure productive operations.

## **ITEM 11 – CAMP FACILITY**

Camp Facility – Includes setting up and maintaining a worker camp facility at the Copco work site to house and feed personnel working at the remote Copco location.

## **ITEM 12 – SITE SERVICES / SUPPORT**

Support Services – Includes many ancillary operations and cost that will be incurred by the project that do not fall within a particular demolition or construction effort. For example, snow removal, temporary lighting for night shift operations, providing heaters for work in winter months, and specialty equipment modifications.

Craft Labor Support – Includes subsistence needed to mobilize key craftsmen to the area to manage crews and field operations. Also carries craft incentive costs and anticipated pay over area wage scale to assure adequate labor can be supplied to the project.

## ITEM 13 – INDIRECT

Onsite Project Management - Includes onsite staff supervision and costs associated with mobilizing a management team to the project and staffing for the duration of the project schedule. This includes coordination with RES and KRRC to assure related works and the project as a whole, are aligned.

Onsite Construction Offices – Includes setting up and providing equipment to maintain onsite project offices at multiple dam locations for the duration of the project schedule.

Escalation – Includes anticipated escalations to Labor, Equipment, Fuel, and Materials purchases commensurate with developing an estimate in 2020 for work in 2021/2022.



1210 G Street  
Sacramento, CA 95814

**Corporate Headquarters**  
6575 West Loop South, Suite 300  
Bellaire, TX 77401  
Main: 713.520.5400

February 28, 2020

Laura Hazlett  
Klamath River Renewal Corporation  
2001 Addison Street, Suite 317  
Berkeley, CA 94704

## RE: GMP Report

Resource Environmental Solutions, LLC (RES), has provided for Klamath River Renewal Corporation (KRRRC)'s consideration the following GMP Report and cost proposal. This GMP is based on the 60%-level design completed by RES, input from the relevant governmental authorities regarding the anticipated permitting terms and conditions, and other governmental approvals discussions with KRRRC and its advisors.

### GMP Summary

Description	TOTAL
<b>Restoration</b>	<b>\$48,097,244</b>
Vegetative Restoration	\$7,371,163
Stream Restoration	\$36,956,166
Engineering Services	\$3,769,915
<b>Local Impact Mitigation Fund (LIMF)</b>	<b>\$29,861,270</b>
Monitoring	\$16,009,568
Maintenance	\$13,851,702
<b>Total GMP</b>	<b>\$77,958,514</b>

Within this GMP, RES has included all materials, labor, equipment, subcontractors, management, and overhead. The GMP includes an appropriate level of contingency to complete the restoration aspects of the project scope. This estimate is compiled consistently with RES' standard industry practice.

### GMP Components

#### RESTORATION

- Vegetative Restoration**

This component includes revegetation of all lands currently inundated by the JC Boyle Reservoir, Copco Lake, and Iron Gate Reservoirs. No revegetation is included for Copco 2 explicitly because it is essentially a run-of-river dam with no accumulated sediment. The purpose of the revegetation work is to promote landscape succession by promoting soil formation and reducing runoff generated erosion.





Revegetation is further broken down by vegetative cover types, or planting zones. These include zones for upland, riparian, and wetland planting. Final planting zones will be delineated following drawdown. Immediately following drawdown, all exposed reservoir sediment will be seeded with a pioneer seed mix that has been formulated for success on the clay and silt rich sediment.

Included in the revegetation component is the cost for collecting and propagating native seed to ensure adequate supply for restoration and adaptive management activities.

- **Invasive Exotic Vegetation (IEV) Management**

This component includes management of invasive exotic vegetation (IEV) in and around the reservoirs during the pre-drawdown, implementation, and maintenance & monitoring phases of the project.

- **Supplemental Sediment Evacuation**

This component includes activities to promote sediment evacuation during the current drawdown window. Activities may include sediment-water jetting using airboats outfitted with water cannons or ATVs outfitted with high volume pumps and fire hoses, boat prop and wake wash, and hand clearing of sediment blockages in tributaries within the reservoirs and between Iron Gate dam and Cottonwood Creek.

- **Grading**

This component includes both general and fine grading to support stabilization of the proposed restoration areas that include Spencer Creek, Beaver Creek, Jenny Creek, Scotch Creek, and Camp Creek. General grading is focused on reworking and removing reservoir sediments that remain on the floodplains of the target stream restoration areas. Fine grading includes reconfiguring the tributary channels to promote a stable planform, profile, and section that will promote volitional fish passage.

- **Habitat Features**

This component includes the acquisition of materials, preparation, and installation of habitat enhancement features in the targeted restoration areas. Habitat enhancement features include large wood (both helicopter and ground placed), boulder clusters, and willow baffles.

- **Engineering Services**

This component includes engineering and consulting services for drawdown and post drawdown activities which include primarily post-drawdown topographic surveying and surface model generation, and final restoration design and plan set preparation. Services also include Engineer of Record presence (Stantec) during RES' construction activities.

## **LIMF**

- **Monitoring**

This component includes pre-drawdown, drawdown, and post-drawdown monitoring activities associated with water quality and various terrestrial and aquatic resource measures required by federal and state governmental approvals (permits, MOUs, agreements, etc.).

- **Maintenance**

This component includes maintenance activities for the following project components through the duration of the LIMF: fish barrier removal, temporary access roads, floodplain and stream habitat enhancement (grading and habitat features), IEV, irrigation, fencing, and vegetation (riparian, wetland and upland).

## **Explanation of Restoration Obligations**

Because the areas that will be restored cannot be fully investigated until reservoir drawdown, RES has used an adaptive approach to restoration design. This is consistent with industry and regulatory practices. Upon drawdown, RES will apply or update current designs, as appropriate, to include site-appropriate stream restoration for historically fish-bearing tributaries within the current reservoir footprint (Camp Creek, Scotch Creek, Jenny Creek, Beaver Creek, and Spencer Creek).



Based on conversations with governmental authorities regarding the restoration objectives and conditions that will be included in the applicable permits and governmental approvals for the project, RES' GMP accounts for the level of effort required to restore formerly inundated lands and establish free-flowing conditions on the Klamath River and in key fish-bearing tributaries. The assumptions used to create the GMP are based on several months of conversations with governmental authorities regarding the restoration objectives and conditions that will be included in the applicable permits and governmental approvals for the project.



**Exhibit D-3**  
**Letters of Sufficiency**  
**February 2020**



February 28, 2020

Mr. David E. Capka, P.E.  
Director, Division of Dam Safety and Inspection  
Federal Energy Regulatory Commission  
Office of Energy Projects  
Division of Dam Safety and Inspections – Headquarters Office  
888 First Street, N.E.  
Washington, D.C. 20426

**Subject:** Klamath Project No. 2082 and the Lower Klamath Project No. 14803  
Owner's Representative Letter of Assurance regarding Fiscal Capacity

Dear Mr. Capka:

McMillen Jacobs Associates (McMillen Jacobs) was retained by the Klamath River Renewal Corporation (KRRC) to serve as Owner's Representative for the Klamath River Renewal Project (Project). In this role, McMillen Jacobs is responsible for oversight on the Preliminary Services work, which includes, but is not limited to preparation of final plans and specifications, design report, schedule, and cost. We are responsible for oversight during construction. The Project work will be executed through two contracts: (1) Kiewit Infrastructure West will be responsible for the flow bypass and dam removal; and (2) Resource Environmental Solutions (RES) will be responsible for construction of the Klamath River habitat restoration work, and operation and maintenance of the completed habitat work through a Liability Transfer Corporation (LTC).

McMillen Jacobs is a full-service engineering, construction management, environmental, and self-performing construction firm operating in the water resources, hydropower, fisheries, water conveyance, irrigation, transportation, heavy civil, and underground markets. McMillen Jacobs has extensive relevant experience with the elements required for the Project. Given our experience as a design engineer, Owner's Representative, design-builder, and general contractor, we have hands-on relevant experience that can be directly applied to the Project. Our experience ranges from initial flow bypass and dewatering to dam removal and fish passage restoration.

Since joining the KRRC team in December 2019, McMillen Jacobs has completed a thorough review of the Project documents prepared by the Kiewit, RES, and the KRRC Project team. In effect, our review represented a completely independent review since McMillen Jacobs was not involved in developing the Project Definite Plan or the work completed by Kiewit and RES. As a starting point, our team reviewed the Definite Plan and related appendices. We then reviewed the documents prepared as part of the 60% design report submittal by Kiewit and RES, which included the following:

- Construction Plans and Specifications in 60% Design Report
- Construction Schedule
- Updated Risk Register
- Guaranteed Maximum Price (GMP) for construction, habitat restoration, and LTC functions

- Local Impact Management Fund Budget
- Regulatory and Permitting Matrix and Planning Documents

We have worked closely with Kiewit and RES to complete a detailed review of each of these documents. Our review included an in-depth assessment of the Project Risk Register to ensure that the potential risks associated with Project implementation are clearly identified, the risk assigned to the appropriate party, and the mitigation measures incorporated into the Project design and execution to effectively eliminate the risk, where possible. For those risks that could not be fully mitigated within the Project design and execution, a contingency amount adequate to cover the potential financial impact of the risk, if it occurred, was allocated within the Project budget. Altogether, more than \$50 million of contingency is included in the Project budget, consisting of amounts embedded in the GMP as well as an amount carried by the KRRC.

In our role as Owner's Representative, we also reviewed the KRRC-managed work activities, which included KRRC required regulatory and permitting activities, development of the Project Agreements, internal budgets for the KRRC staff, as well as the Technical Representative (AECOM) and Owner's Representative budget, required through final Project completion. The focus of this review was to ensure that the overall Project budget is representative of the level of effort required to implement the Project.

McMillen Jacobs has designed, built, maintained, and operated many projects licensed by the Federal Energy Regulatory Commission, as well as other complex water resources facilities. Our track record with GMPs is outstanding.

Based on our extensive review, including review of the 60% design report, we are confident in providing an assurance that Project implementation will be completed within KRRC's \$450 million budget, and the contingency budget is adequate and even conservative to cover potential uncontrollable events that may occur during such implementation. We are confident that further development of the construction specifications will remain within the GMP as a result of value engineering that reduces cost or schedule for various tasks.

If you have any questions or need additional information, please do not hesitate to contact me at (208) 342-4214.

Sincerely,

A handwritten signature in blue ink that reads "Morton D. McMillen". The signature is fluid and cursive, with the first name "Morton" and last name "McMillen" clearly legible.

Morton D. McMillen, P.E.  
Executive Vice President

cc: Mark Bransom, CEO, KRRC  
Laura Hazlett, COO and CFO, KRRC  
File

February 24, 2020

Mr. David E. Capka, P.E.  
Director  
Division of Dam Safety and Inspection  
Federal Energy Regulatory Commission  
Office of Energy Projects  
Division of Dam Safety and Inspections – Headquarters Office  
888 First St, N.E.  
Washington, D.C. 20426

**Subject: Klamath Project No. 2082 and the Lower Klamath Project No. 14803  
Progressive Design Builder Letter of Assurance**

Dear Mr. Capka:

Kiewit Infrastructure West Co. (Kiewit) was retained by the Klamath River Renewal Corporation (KRRC) to serve as Progressive Design Builder for the Klamath River Renewal Project (Project). In this role, Kiewit is responsible for designing and constructing all dam removal and infrastructure related aspects of the project.

Since joining the KRRC team in April 2019, Kiewit and our Engineer of Record, Knight Piesold, have conducted site investigations, advanced design criteria, completed a 60% level design package, and provided a Guaranteed Maximum Price (GMP) proposal to KRRC. Our covered project work within this GMP includes infrastructure improvements, project access, decommissioning the dams, managing of river flow through the project site, and providing for a volitional fish channel through the dam footprints.

Based on the preconstruction planning, design, constructability reviews, regulatory agency coordination, and field investigations completed to date, we have established a GMP that is complete and consistent with industry standard practices and matching of Kiewit's estimating and approach to other similarly complex projects. As such, we believe the GMP is sufficient to complete the scope above from both a cost and schedule standpoint.

This Klamath River Renewal Project is very similar to many other complex, resource intensive, water projects Kiewit has successfully undertaken, including:

- Oroville Dam Spillway Emergency Repair Project, Department of Water Resources, \$675 Million
- Crane Valley Dam, Pacific Gas and Electric Company, \$63 Million
- Folsom Dam Spillway and Gates, Phases II/IV, U.S. Bureau of Reclamation / U.S. Army Corps of Engineers, \$354 Million



Additionally, Kiewit is well versed and confident of our performance under the GMP contracting model, reflected in the many successful projects Kiewit has completed, including:

- SR 58 Kramer Junction, Caltrans, \$165 Million
- Northern Rail Extension, Alaska Railroad Corporation, \$153 Million
- San Diego Airport Landside Improvements, San Diego Airport Authority, \$227 Million
- US 34 Big Thompson, Colorado Department of Transportation, \$196 Million

Based on our successful preconstruction and design period to date, Kiewit's history and expertise in completing complex dam related projects and our experience and positive results utilizing the GMP contracting model, we are confident that the GMP we've provided can achieve the project goals and be completed within budget and on time.

If you have any questions or need additional information, please do not hesitate to contact me at (360) 693-1478.

Sincerely,

Jamie D. Wisenbaker.  
Senior Vice-President

cc: Mark Bransom, CEO KRRC  
Laura Hazlett, COO and CFO KRRC



CONTRACT AMENDMENT NO. 3  
TO THE  
PROJECT AGREEMENT  
FOR  
DESIGN, CONSTRUCTION, DEMOLITION AND HABITAT RESTORATION SERVICES  
IN CONNECTION WITH  
THE REMOVAL OF THE LOWER KLAMATH RIVER DAMS

THIS CONTRACT AMENDMENT NO. 3 TO THE PROJECT AGREEMENT FOR DESIGN, CONSTRUCTION, DEMOLITION AND HABITAT RESTORATION SERVICES IN CONNECTION WITH THE REMOVAL OF THE LOWER KLAMATH RIVER DAMS ("**Contract Amendment No. 3**") is entered into as of February 24, 2020, between the Klamath River Renewal Corporation (the "**KRRC**"), and Kiewit Infrastructure West Co., a corporation organized and existing under the laws of the State of Delaware and authorized to do business in the State of California and the State of Oregon (the "**Project Company**").

RECITALS

WHEREAS, the KRRC and the Project Company executed the Project Agreement for Design, Construction, Demolition and Habitat Restoration Services in Connection with the Removal of the Lower Klamath River Dams, on April 24, 2019 (the "**Project Agreement**");

WHEREAS, the KRRC and the Project Company executed Contract Amendment No. 1 to the Project Agreement on September 18, 2019, and Contract Amendment No. 2 to the Project Agreement on January 13, 2020, to account for certain changes to the Preliminary Services work scope and Preliminary Services Fee;

WHEREAS, following the receipt of a notice to proceed from the KRRC on each respective date, the Project Company began work on the 30% design immediately following the Contract Date on April 24, 2019 and the Project Company began work on the 60% design on June 24, 2019;

WHEREAS, the Project Company and the KRRC have worked together to refine the draft terms and conditions of KRRC-Managed Governmental Approvals, complete the 60% design and resolve issues relating to the liability transfer, price certainty and long term habitat monitoring and maintenance concerns of the KRRC;

WHEREAS, in connection with the review by FERC of the application to transfer the FERC license from PacifiCorp to the KRRC, the KRRC is required to provide updated information and further assurances to FERC that that the KRRC will be able to comply with the terms and conditions of the license;

WHEREAS, Section 4.1(E) (Estimated Guaranteed Maximum Price) of the Project Agreement sets forth the estimated Guaranteed Maximum, as of April 24, 2019 (the Contract Date), based on information then available to the parties;

WHEREAS, subsequent to the Contract Date, the Project Company has performed Preliminary Services Tasks #1 through #8 of the Preliminary Services, which include developing the Project to the 60% design level and assisting the KRRC and its advisory team in advancing the process of applying for and obtaining the Governmental Approvals required for the Project;

WHEREAS, based on the performance of such Preliminary Services the Project Company made submittals to the KRRC in February providing its 60% complete design for the Project and the Base Guaranteed Maximum Price;

WHEREAS, Resource Environmental Services, LLC ("RES"), as a Subcontractor to Project Company, has developed a 60% design for the habitat restoration and maintenance work for the Project;

WHEREAS KRRC and RES have drafted and intend to execute a separate agreement under which RES will perform all further habitat restoration, including design, implementation, and maintenance, amending the scope of the Project Agreement accordingly; and

WHEREAS, both the KRRC and the Project Company agree that it is in their mutual interests to further amend the Project Agreement to establish the Base Guaranteed Maximum Price on or prior to February 28, 2020, the date on which the KRRC has committed to delivering a fully detailed Project update to FERC.

NOW THEREFORE, in consideration of the mutual covenants herein contained, the parties hereto, intending to be legally bound, agree as follows:

SECTION 1. DEFINITIONS. All capitalized terms used and not otherwise defined herein shall have the meanings set forth in the Project Agreement.

SECTION 2. INTERPRETATION. The interpretation provisions set forth in Section 1.2 (Interpretation) of the Project Agreement, will apply to any interpretation of this Contract Amendment No. 3.

SECTION 3. BASE GUARANTEED MAXIMUM PRICE ESTABLISHED IN CONNECTION WITH THE FEBRUARY 28, 2020 FERC SUBMITTAL. The parties acknowledge and agree that the Base Guaranteed Maximum Price established for the purpose of making the required February 28, 2020 submittal to FERC with respect to the license transfer application is \$198,956,777. The Project Company has developed the Base Guaranteed Maximum Price based on completion of Preliminary Services Tasks #1 through #8, including the completion of the 60% design for the Project and the submittal to the KRRC of the GMP Project Submittal. Any subsequent negotiations between the parties that are provided for in the Project Agreement, including those conducted pursuant to Article 5 of the Project Agreement regarding Early Work Packages and the GMP and Project Implementation Contract Amendments, shall be conducted on the basis of such Base Guaranteed Maximum Price.

SECTION 4. ADDITIONAL CONTEMPLATED REVISIONS TO THE PROJECT AGREEMENT. The parties acknowledge and agree that the Project Agreement will require further changes prior to the Project Implementation Contract Amendment Date to account for (A) the removal of all habitat restoration work from the Project Agreement, and as a result, the removal of RES as a Subcontractor of the Project Company; (B) the coordination of work and Governmental Approvals compliance responsibilities between the Project Company and RES as a Separate Contractor to the KRRC performing the habitat restoration, maintenance and liability transfer work; (C) the potential change from a guaranteed maximum price compensation structure to a fixed-price compensation structure; (D) incorporation of assumptions used to establish the Base Guaranteed Maximum Price; and (E) other necessary conforming changes, as approved by the parties acting in good faith, based on the negotiations pursuant to the terms of the Project Agreement relating to the establishment of the GMP Contract Amendment Date and the Project Implementation Contract Amendment Date.

SECTION 5. CONTRACT ADMINISTRATION MEMORANDUM. In order to maintain a complete file of all agreements made with respect to the administration of this Project Agreement, a Contract Administration Memorandum shall be prepared attaching and acknowledging this Contract Amendment No. 3.

SECTION 6. ENTIRE AGREEMENT. This Contract Amendment No. 3 contains the entire agreement between the parties with respect to the specific changes noted above and supersedes all oral negotiations and prior writings with respect thereto.

SECTION 7. INCONSISTENCIES AND CONFLICTS. Subject to Section 1.2(U) (Applicability, Stringency and Consistency of Contract Standards) of the Project Agreement, the changes made by this Contract Amendment No. 3 are incorporated into the Project Agreement and to the extent provisions of this Contract Amendment No. 3 are inconsistent with the provisions of the Project Agreement, the provisions of this Contract Amendment No. 3 shall control.

SECTION 8. OTHER TERMS OF THE PROJECT AGREEMENT REMAIN IN EFFECT. All terms and conditions of the Project Agreement which are not expressly modified or deleted by the terms of this Contract Amendment No. 3 shall remain in effect.

SECTION 9. BINDING EFFECT. This Contract Amendment No. 3 shall inure to the benefit of, and shall be binding upon, the respective successors and assigns of the parties.

SECTION 10. NO REFERENCE REQUIRED. All notices, communications, agreements, certificates, documents or other instruments executed and delivered after the execution and delivery of this Contract Amendment No. 3 may refer to the Project Agreement without making specific reference to this Contract Amendment No. 3, but nevertheless all such references shall include this Contract Amendment No. 3 unless the context requires otherwise.

SECTION 11. COUNTERPARTS AND DELIVERY BY ELECTRONIC MAIL. This Contract Amendment No. 3 may be executed in counterparts, which together shall constitute one and the same instrument. Any party may deliver an executed copy of this Contract Amendment No. 3 by electronic mail and such counterpart shall be deemed effective upon receipt.

[Signature Page Follows]



IN WITNESS WHEREOF, the parties have executed this Contract Amendment No. 3 as of the date first above written.

KLAMATH RIVER RENEWAL CORPORATION

KIEWIT INFRASTRUCTURE WEST CO.

By: \_\_\_\_\_



Printed Name: Laura Hazlett

Title: Chief Financial Officer

By: \_\_\_\_\_



Printed Name: Jamie D. Wisenbaker

Title: Senior Vice President



February 28, 2020

Mr. David E. Capka, P.E.  
Director  
Division of Dam Safety and Inspection  
Federal Energy Regulatory Commission  
Office of Energy Projects  
Division of Dam Safety and Inspections – Headquarters Office  
888 First Street, N.E.  
Washington, D.C. 20426

Subject: Klamath Project No. 2082 and the Lower Klamath Project No. 14803  
Restoration Company Letter of Assurance

Dear Mr. Capka:

Resource Environmental Solutions, LLC (RES) was retained by the Klamath River Renewal Corporation (KRRC) to serve as the Restoration Company for the Klamath River Renewal Project (Project). In this role, RES is responsible for designing, constructing, and maintaining the restoration aspects of the Project, including complying with the restoration obligations in all applicable permits and governmental approvals.

Since joining the KRRC team in April 2019, RES and its subcontractors—including the Yurok Tribe, Camas, Stantec, and ESA—have completed a thorough review of existing reports and data and performed fieldwork to inform our restoration design.

In completing our 60%-level design package and design criteria report, the RES team and Camas have worked alongside state and federal regulators to establish a common expectation for successful river restoration. These efforts included in-person regulatory workshops, conference calls, and field site visits to review RES' 30%-level design and draft the 60%-level design. This resulted in a common collaborative understanding regarding RES' (1) design and regulatory approach and (2) anticipated post-construction adaptive management measures. The RES team expects to continue to work collaboratively with state, federal and other stakeholders to ensure the key elements of restoration are captured in all applicable permits and other governmental approvals.

Based on the above, and following extensive negotiations with the KRRC, we have developed a Guaranteed Maximum Price (GMP) proposal to the KRRC. Our covered work within this GMP includes all restoration and monitoring actions following removal of the dams, as well as the long-term maintenance of that restoration, all in accordance with and as expected to be required by the applicable permits and other governmental approvals. This includes, without limitation, responsibility for responding to changing conditions after the dams are removed, including revegetation, as needed, and the removal of barriers to fish-passage in a manner that is consistent with the anticipated permit conditions and other governmental approvals and provides for a transfer of liability of natural resource impacts resulting from dam removal from the KRRC to RES.

RES has experience working on complex restoration projects requiring stream restoration, revegetation, and long-term stewardship. As such, the restoration components of the Project are similar to other complex projects that RES has undertaken, including:



- **Bois d'Arc Lake Project, Fannin County, TX.** This is a \$132 million restoration project covering 15,000 acres of habitat restoration including 70 miles of streams with 20+ years of maintenance and adaptive management.
- **Lake Maurepas Watershed Projects, Livingston, Ascension, Tangipahoa, and St. John the Baptist Parishes, LA.** These are two simultaneous rehabilitation, enhancement, and preservation projects covering over 9,000 acres with 15 years of federal long-term maintenance and adaptive management and 50 years of state long-term maintenance and adaptive management responsibilities.
- **Robinson Fork Mitigation Bank - Phase 1 Project, Washington County, PA.** This project involved over 20 miles of stream restoration with up to 10 years of maintenance and adaptive management.

Based on our successful preconstruction and design work to date, RES' history and our extensive expertise in completing complex restoration projects, along with our interactions with state and federal regulators, we are confident that we will achieve the habitat restoration requirements for the Project based on the GMP we have provided.

Our good faith and extensive negotiations have also yielded an advanced draft of a Habitat Restoration, Maintenance and Liability Transfer Agreement (HRM&LTA). The HRM&LTA version, submitted to the FERC on February 28, 2020, is substantially complete. The HRM&LTA reflects multiple telephonic meetings with the KRRC and its representatives, an exchange of multiple drafts among the parties, a two-day in-person negotiation among the parties, and the involvement of key stakeholders such as PacifiCorp, California, and Oregon. RES expects that continued good faith negotiations will lead to a fully executable version in a matter of a few additional weeks. RES is committed to continuing to work with the KRRC and the other stakeholders in good faith and expects that a final version can be reached on or before April 1, 2020.

If you have any questions or need additional information, please do not hesitate to contact me at (713) 986-9220.

Sincerely,

A handwritten signature in black ink, appearing to read "Elliott M. Bouillion", is written over a light blue circular background.

Elliott M. Bouillion

President & Chief Executive Officer

RES

cc: Mark Bransom, CEO KRRC  
Laura Hazlett, COO and CFO KRRC

**Exhibit D-4**

**Orders of the OPUC:**

**Order No. 17-018 (January 24, 2017)**

**Order No. 19-178 May 23, 2019)**

Oregon Public Utilities Commission

Order No. 17-018

January 24, 2017

**BEFORE THE PUBLIC UTILITY COMMISSION  
OF OREGON**

UE 219

In the Matter of

PACIFICORP, dba PACIFIC POWER,

Request for Approval of Klamath River  
Renewal Corporation Funding Agreement and  
Delegation of Authority to Disburse Customer  
Surcharge Trust Funds.

ORDER

**DISPOSITION: STAFF'S RECOMMENDATION ADOPTED**

This order memorializes our decision, made and effective at our January 24, 2017 Regular Public Meeting, to adopt Staff's recommendation in this matter. The Staff Report with the recommendation is attached as Appendix A.

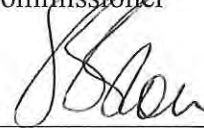
Dated this 24 day of January, 2017, at Salem, Oregon.



**Lisa D. Hardie**  
Chair



**John Savage**  
Commissioner



**Stephen M. Bloom**  
Commissioner

A party may request rehearing or reconsideration of this order under ORS 756.561. A request for rehearing or reconsideration must be filed with the Commission within 60 days of the date of service of this order. The request must comply with the requirements in OAR 860-001-0720. A copy of the request must also be served on each party to the proceedings as provided in OAR 860-001-0180(2). A party may appeal this order by filing a petition for review with the Circuit Court for Marion County in compliance with ORS 183.484.

ITEM NO. 1

PUBLIC UTILITY COMMISSION OF OREGON  
STAFF REPORT  
PUBLIC MEETING DATE: January 24, 2017

REGULAR X CONSENT \_\_\_\_\_ EFFECTIVE DATE \_\_\_\_\_ N/A

DATE: January 12, 2017

TO: Public Utility Commission

FROM: Lance Kaufman *LK*

THROUGH: Jason Eisdorfer and Marc Hellman *JE*

SUBJECT: PACIFICORP: (Docket No. UE 219)  
Approval of Klamath River Renewal Corporation Funding Agreement and  
delegation of authority to disburse customer surcharge trust funds as  
necessary.

**STAFF RECOMMENDATION:**

That the Commission approve execution of the Funding Agreement with the Klamath River Renewal Corporation (KRRRC) attached hereto and delegate authority to the Chief Operating Officer to implement the Funding Agreement, disbursing customer surcharge trust funds as necessary.

**DISCUSSION:**

Issues

1. Whether the Commission should approve execution of the Funding Agreement with the Klamath River Renewal Corporation as a mechanism for the disbursement of customer surcharge trust funds as necessary to pay the costs of removing the Klamath River dams pursuant to ORS 757.738(3).
2. Whether the Commission should delegate to the Chief Operating Officer the authority to implement the Funding Agreement, disbursing customer surcharge trust funds as necessary.

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### Applicable Law

Under ORS 757.736(2)(a), PacifiCorp was directed to file tariffs for two customer surcharges: one surcharge for the costs of removing the J.C. Boyle Dam on the Klamath River in Oregon and a second surcharge for the costs of removing the Copco 1 and 2 Dams and the Iron Gate Dam on the Klamath River in California. PacifiCorp filed Schedule 199 for this purpose in 2010. In Commission Order 10-364, Docket No. UE 219, the Commission determined that the KHSA surcharges in Schedule 199 are fair, just and reasonable. The Commission further adopted an annual review process to ensure the surcharges are correctly calculated to collect an amount that, with interest, will constitute Oregon's share of the \$200 million customer contribution for Klamath River dam removal by December 31, 2019, as required by ORS 757.736(7).

Under ORS 757.736(2), the customer surcharge is collected "for the purpose of paying the costs of removing Klamath River dams as described in [ORS 757.736(11)]." ORS 757.736(11) in turn states:

For the purposes of subsection (2) of this section, "the costs of removing Klamath River dams" includes costs of:

- (a) Physical removal of the dams;
- (b) Site remediation and restoration;
- (c) Avoiding downstream impacts of dam removal;
- (d) Downstream impacts of dam removal;
- (e) Permits that are required for the removal;
- (f) Removal and disposal of sediment, debris and other materials, if necessary;  
and
- (g) Compliance with environmental laws.

ORS 757.736(8) provides that the amounts collected in customer surcharges are to be paid into a trust account established by the Commission under the parameters of ORS 757.738. If amounts collected are in excess of funds needed or allowed, the Commission must take appropriate action under ORS 757.736(9). The Commission has a responsibility to ensure that trust account moneys are disbursed for dam removal costs as necessary. The process for the Commission to disburse trust funds is established in ORS 757.738(3), which states:

Upon request of an agency of the United States, or upon request of the designee of an agency of the United States, the commission shall require the trustee of the appropriate trust account established under this section to transfer to the agency or designee the amounts that are necessary to



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pay the costs of removing the Klamath River dams as described in ORS 757.736 (11).

Subject to the exemptions listed in subsection (2) of the statute, ORS 756.055(1) sets forth the authority of the Commission to delegate by order or rule to any commissioner or Commission employee the authority to exercise any of the Commission's duties and powers.

#### Background

PacifiCorp currently operates the Klamath Hydroelectric Project under a license issued by the Federal Energy Regulatory Commission (FERC), License No. 2082. The Klamath Hydroelectric Project includes four hydroelectric dams on the Klamath River known as the J.C. Boyle, Copco 1 and 2, and Iron Gate dams. PacifiCorp's project license expired in 2006, but FERC has, as standard practice, allowed the project to continue operating on an annual basis while the Company's application to relicense the project is pending.

#### KHSA, Effective 2010

Among other issues affecting the Klamath River Upper and Lower basins, the Klamath Hydroelectric Project blocks anadromous fish passage upstream. During settlement discussions in 2008 on the Company's application to relicense the Project with various parties concerned about the effects of the Project, PacifiCorp, the federal Department of the Interior, the states of Oregon and California reached an Agreement in Principal (AIP) for the removal of the dams. Other interested parties joined the discussions and the parties formalized the AIP in the Klamath Hydroelectric Settlement Agreement (KHSA), which took effect February 18, 2010. The KHSA establishes a process for the decommissioning and removal of the four hydro-electric dams on the Klamath River (Klamath River dam removal) in 2020. Under the KHSA, the Secretary of the Interior was to evaluate and develop a detailed plan for Klamath River dam removal. A dam removal entity (DRE) is to perform the work of dam removal.

A \$450 million state cost cap was established for funding dam removal activity, with an amount not to exceed \$200 million collected through a surcharge from PacifiCorp customers in Oregon (up to \$184 million) and California (up to \$16 million). The State of Oregon is providing 92 percent of the total customer contributions and the State of California is providing 8 percent of the total customer contributions. The State of California will contribute the remaining \$250 million of the state cost cap through a bond issue.

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Senate Bill 76, Collection of Customer Contributions

In 2009, in anticipation of the execution of the KHSA, the State of Oregon enacted Senate Bill 76. Codified at ORS 757.732 to ORS 757.744, Senate Bill 76 prescribes various actions, with specific timeframes, that must be taken by PacifiCorp and the Commission to implement the KHSA. Pursuant to ORS 757.736(2), on March 18, 2010, PacifiCorp filed Schedule 199, Klamath Dam Removal Surcharges. The tariff rates went into effect on the day they were filed, as the tariff was filed subsequent to January 1, 2010. In any year, the surcharges collected cannot exceed \$19,061,680 per ORS 757.736(3). This value is two percent of PacifiCorp's revenue requirement as determined by the Commission in the most recent case concluded prior to January 1, 2010.

In Commission Order 10-364, Docket No. UE 219, the Commission determined that the KHSA surcharges in Schedule 199 are fair, just and reasonable. The Commission established an annual review process to ensure the surcharges are correctly calculated to collect Oregon's share of the customer contribution by December 31, 2019. Rates have since been reviewed on an annual basis, with interested parties meeting to reassess the surcharge revenues, interest rates, updated load forecasts, and fund balances and to discuss other issues related to the annual surcharge review. In June 2016, annual revisions to Schedule 199 that raise the surcharges to the statutory cap were approved in Order 16-218.

The Commission established a trust account in 2010 with Wells Fargo Bank serving as trustee, and entered a letter agreement with PacifiCorp regarding deposits of the customer contributions into trust. In 2011, ORS 757.738(1) was amended to allow the Commission to direct the funds to the Oregon State Treasury (OST) for the potential of earning higher rates of interest. The customer contributions collected to date are currently held in the Treasury's short term fund – OSTF – and the intermediate term fund – OITP. In May 2012, the Commission directed \$30 million of the surcharge fund monies to be deposited in the Oregon Intermediate Term Pool (OITP). The transfer took place in September 2012.

KHSA, 2016 Amendments

For the KHSA, Congressional authorization was needed to fully implement the terms of the agreement. When Congress did not act, the parties to the KHSA met to confer on moving forward without Congressional action. After an agreement in principal was reached, amendments to the KHSA took effect April 6, 2016. The KHSA continues to provide that each party shall support implementation of Oregon's SB 76. Under the

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amended KHSA, the state cost cap and state funding mechanisms in Section 4 remain in place, with a reduced role in dam removal activity by the federal agencies involved.

To serve as the DRE, the Klamath River Renewal Corporation (KRRC) a domestic nonprofit public benefit corporation, was incorporated in California following amendment of the KHSA, and became a signatory to the KHSA. Under the April 2016 amendments to the KHSA, the Secretary of the Interior designated ODFW as the entity with authority under ORS 757.738(3) to request a transfer of Oregon's trust funds as necessary to pay for the cost of dam removal, hold the disbursed funds, and transfer the funds to the KRRC.

Accordingly, following the Commission's approval on August 30, 2016,<sup>1</sup> ODFW and the Commission executed an Interagency Agreement to govern the disbursement of trust funds to ODFW for purposes of providing funds to the KRRC. ODFW then executed a grant agreement with the KRRC in October 2016 to cover costs including professional services (legal, technical, interim staff assistance) for initial formation, funding arrangements and initial development of regulatory filings; travel; office expense and services and insurance (directors' and officers' liability, general liability). Pursuant to these two agreements, ODFW requested that the Commission direct disbursement of \$308,369.00 of the Customer Contribution, which ODFW then provided to the KRRC.

On November 30, 2016, the parties to the KHSA again amended the KHSA to modify the process for transferring trust funds to the KRRC. Under the amendment, the Secretary of the Interior designates the KRRC, in place of ODFW, as the entity with authority under ORS 757.738(3) to request transfer of funds held in trust accounts established under ORS 757.738 and to expend funds in the amounts necessary and as consistent with the KHSA and its Appendices to pay the costs of removing Klamath River dams, as described in ORS 757.736(11). Section 4.12.2 of the KHSA as amended November 30, 2016, now reads:

On or around June 15, 2016, and as is necessary at any time thereafter, the [KRRC] will enter into an agreement with the Oregon PUC pertaining to the use of funds from the Customer Contribution in a manner not inconsistent with the [KHSA] and ORS 757.738(3).

#### Regulatory Filings

As provided in Section 7 of the KHSA, KRRC was required to file a joint application with PacifiCorp to remove the four hydroelectric dams from the FERC license, re-designate the dams and associated facilities with a new project number under a license to be held

<sup>1</sup> Docket No. UE 219, Order No. 16-330.

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by KRRC. KRRC was also required to file a concurrent application to surrender and remove the dam facilities, with the original target date of 2020.

On September 23, 2016, KRRC and PacifiCorp filed with FERC a joint application for Amendment and Partial Transfer of License. Also on that date, KRRC filed an Application for Surrender of License. The FERC applications are pending at this time. Staff is monitoring this process.

A number of additional regulatory permits and approvals will be necessary for completion of facilities removal. KRRC has to date submitted applications for certification regarding decommissioning under Section 401 of the federal Clean Water Act with the California Water Resources Control Board and the Oregon Department of the Environmental Quality and will be consulting with those agencies and others.

#### Analysis

##### 1. Staff Recommends Execution of the Funding Agreement.

As noted above, the Trustee has disbursed \$308,369.00 of the Oregon Customer Contribution, which ODFW provided to the KRRC to cover certain initial costs. Since that time, the KHSA has been amended to designate the KRRC, rather than ODFW, as the entity that may request that the Commission transfer Customer Contribution funds, and to authorize OPUC to enter into a funding agreement with the KRRC. To provide a new framework for continued disbursements, Staff has negotiated over several months with the KRRC to develop the attached Funding Agreement.

Staff finds the resulting Funding Agreement to be in customers' interests and consistent with the Commission's obligation to disburse trust funds at the request of KRRC under ORS 757.738(3). The funding mechanism and other significant aspects of the Agreement are described below.

Under the Funding Agreement, the remainder of the Customer Contribution funds may be disbursed to KRRC in one of three funding phases: Phase 1, which encompasses funding for the start-up costs of the KRRC, evaluation of risk mitigation such as insurance for the dam removal activities, certain regulatory actions and preparation work for the KRRC's Definite Plan, a requirement under the KHSA; Phase 2, which encompasses funding for the development of the Definite Plan, including preparation of procurement documents for final design, deconstruction and risk management and completion of regulatory actions; and Phase 3, which consists of funding for the Facilities Removal through deconstruction and restoration.

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Disbursement Requests under the Funding Agreement

Per Section 7 of the Funding Agreement, KRRC may only apply Customer Contribution funds to Eligible Project Costs, a term defined in the Funding Agreement consistent with ORS 757.736(11):

**"Eligible Project Costs"** include the costs necessary for: (i) physical removal of the dams, (ii) site remediation and restoration; (iii) avoiding downstream impacts of dam removal; (iv) downstream impacts of dam removal; (v) permits that are required for the removal; (vi) removal and disposal of sediment, debris and other materials, if necessary; and (vii) compliance with environmental laws. Eligible Project Costs include the repayment of interim funding received from other sources and applied to Eligible Project Costs.

The categories of Eligible Project Costs for Phase 1 are described in Exhibit A1 to the Funding Agreement. Exhibit B1 contains the budget for Phase 1, detailing the project activities, estimated costs and the time period for completion of each activity. The Phase 1 budget for Eligible Project Costs is a total of \$4.3 million, of which \$308,369 has been disbursed from the Oregon Customer Contributions funds. Staff has reviewed the Phase 1 Exhibits and finds they contain all information required by the Funding Agreement.

Provisions for disbursements are set forth in Sections 6 and 7 of the Funding Agreement. KRRC may make a request to OPUC by submitting a request form (Exhibit E to the Agreement) with a certification that the request is for payment of Eligible Project Costs included in the budget and that the KRRC expects to incur for the Project activities to be completed within 210 days after the date of the request. Ongoing disbursement request may be made on a biannual basis.

Before disbursements may be made for Phase 2 or Phase 3 activities, KRRC must submit, at least 90 days prior to a disbursement request, an Exhibit A2 or A3 describing project activities and Exhibit B2 or B3. Similar certifications to a Phase 1 disbursement request must be included with Phase 2 and Phase 3 requests. In addition, for Phase 3, Facilities Removal, KRRC must include a certification that all of the conditions in Section 7.1.4 of the KHSRA have been met or, to the extent any such conditions have not been met as of the date of such certification, an explanation of how the conditions in Section 7.1.4 of the KHSRA are expected to be met in a timeframe consistent with continued progress on the Project and with appropriate documentation. Section 7.1.4 of the KHSRA, currently in effect, is set forth here:

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"Before the FERC license transfer to the [KRRC] will become effective, the [KRRC] must demonstrate to PacifiCorp's and the States' reasonable satisfaction that the [KRRC] has met the obligations in Appendix L and the following conditions:

- A. The [KRRC] has provided Notices required under Section 7.2.1B;
- B. The [KRRC] has met the requirements of Section 7.1.3 and Appendix L;
- C. PacifiCorp and the States agree that the [KRRC] has made sufficient and Timely progress in obtaining necessary permits and approvals to effectuate Facilities Removal;
- D. The [KRRC], the States, and PacifiCorp are assured that sufficient funding is available to carry out Facilities Removal;
- E. The [KRRC], the States, and PacifiCorp are each assured that their respective risks associated with Facilities Removal have been sufficiently mitigated consistent with Appendix L;
- F. The [KRRC], the States, and PacifiCorp agree that no order of a court or FERC is in effect that would prevent Facilities Removal;
- G. The [KRRC] and PacifiCorp have executed documents conveying the property and rights necessary to carry out Facilities Removal; and
- H. The [KRRC] accepts license transfer under the conditions specified by FERC in its order approving transfer."

OPUC has no obligation under the Funding Agreement to disburse funds if sufficient funds are not currently deposited in the trust funds to fulfill a disbursement request. In addition, the Funding Agreement contains provisions in Section 7.b for the suspension of disbursements when the actual or foreseeable costs are estimated to exceed the State Cost Cap and sufficient additional funding is not available to carry out facilities removal.

KRRC is authorized under the Funding Agreement to make minor modifications to the budgets for Phases 1, 2 and 3, but modifications of an amount allocated to a category or Phase that is greater than 10 percent triggers reporting obligations for a major modification of budget under Section 7.e.

#### Management of Disbursed Funds under Funding Agreement

The Funding Agreement imposes a number of obligations on KRRC related to fiscal administration to ensure responsible management of disbursements. Section 4 requires, among other provisions, that KRRC provide organizational documents, internal

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policies related to financial controls, governance and internal operations, adopt and maintain a standard of conduct addressing conflicts of interest and gifts, and specific requirements to maintain funds disbursed from Oregon trust funds in one or more interest-bearing demand deposit accounts in a financial institution of high credit quality, with minimal risk of loss to principal.

On an annual basis, per Section 12.c, KRRC must retain a third-party professional audit firm to conduct a financial audit of all expenditures of disbursements from Oregon trust funds. A copy of the final report will be provided to OPUC no later than 90 calendar days after the end of the calendar year.

Finally, Section 13 of the Funding Agreement requires KRRC adopt and maintain procurement standards and policies governing the award and administration of subagreements. The standards and policies must implement and be consistent with goals of optimizing cost, efficiency, timing, expertise and quality of work performed, effectively executing the KRRC's obligations under the KHSR and maintaining consistency with industry standards. A competitive process is required for primary subagreements for the design or execution of physical removal of facilities and associated site remediation activity, with KRRC to provide OPUC with solicitation materials prior to issuance. Indemnity and insurance provisions are included for KRRC and for subcontractors.

#### Access to Information and Reporting Under Funding Agreement

Records maintenance, retention and access by OPUC are provided for in Section 12 of the Funding Agreement. Staff notes that OPUC will have access to the books, documents and records of KRRC and certain contractors directly related to the Agreement and may perform site reviews as needed.

In addition to the third-party audit report discussed above, KRRC must provide a number of periodic and final reports. Under Section 4.a, KRRC must provide OPUC with periodic reports or summaries of the fiscal status of KRRC, and an audited annual financial statement including a balance sheet, and a statement of budgeted and actual income and expenditures. Following the first disbursement, per Section 7.i, with each semi-annual disbursement request, KRRC will submit an expenditure report, showing expenses incurred in the prior period. And a final reporting is required within six months of completion of facilities removal under Section 8.

Besides written reports, Section 4.b. requires KRRC to provide periodic updates to OPUC Staff at least semi-annually, and more frequently as needed. In addition, KRRC will make an annual presentation to the Commission that provides a review of the

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project activities in the preceding year, relevant financial information and an overview of activities planned for the coming year.

Remedies and Protection of Customer Contributions Under Funding Agreement

The Funding Agreement, Section 16, identifies events of default, and provides for a dispute resolution process. If an event of default continues, and dispute resolution is not successful and timely, remedies available to OPUC include ceasing disbursements of funds, terminating the agreement, bringing an action at law or filing a claim, seeking equitable remedies, and pursuing any rights as a loss-payee on insurance or as a payee on a performance bond or letter of credit.

Other relevant sections under the Funding Agreement include: 1) Under Section 4, KRRC must promptly notify OPUC of a bankruptcy or receivership of a contractor or subcontractor engaged for the Project. 2) Section 7.j of the agreement provides for the recovery of unexpended funds disbursed to the KRRC. 3) Under Section 14, KRRC must include OPUC (i) as an additional insured on its liability insurance coverages and (ii) as a loss-payee on its property insurance and on any performance bonds, or letters of credit taken out to insure performance of the Project. Proceeds that are not eligible or expected to be applied to Eligible Project Costs by KRRC, if any, are to be paid to OPUC in trust for contributing PacifiCorp customers in proportion to any disbursement of Funds previously directed by OPUC and in proportion to other funding sources that are also loss-payees.

Coordination with Other Funding Sources

The KHSA, as amended, provides for other sources of funding for facilities removal. Specifically, pursuant to the KHSA, the California PUC has established a customer surcharge for PacifiCorp's customers, and the State of California has appropriated \$250 million in bond proceeds. The Funding Agreement acknowledges the other sources of funding and provides for coordination with other funding sources in Section 18.m. And, OPUC commits to manage the Oregon trust funds consistent with any account management and coordination agreement as may be jointly approved by the State of Oregon and State of California in Section 6.b.

Net Benefit of Dam Removal Project

In Commission Order 10-364, Docket No. UE 219, the Commission determined that the KHSA surcharges in Schedule 199 are fair, just and reasonable. Since Order 10-364 the KHSA was amended and the assumptions underlying the analysis of the dam removal project have changed. However, the dam removal project continues to be in



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customer interests. According to PacifiCorp, the amended KHSA retains the principle benefits for PacifiCorp and its customers as the original settlement:

- (1) the contribution to dam removal from PacifiCorp's Oregon and California customers remains capped at \$200 million;
- (2) a third party, rather than PacifiCorp, will conduct the dam removal;
- (3) PacifiCorp and its customers will be provided with liability and cost-overrun protections; and
- (4) PacifiCorp will continue to operate the facilities for the benefit of customers until dam removal is scheduled to begin.

Several assumptions underlying the original analysis of the dam removal project may have changed since Order No. 10-364. According to PacifiCorp, current market conditions, the Company's resource needs, and the FERC relicensing process support continued participation in the amended KHSA. Staff will continue to monitor the net benefit of this project to PacifiCorp's Oregon customers.

2. Staff Recommends Delegation of Authority to Implement Funding Agreement.

Implementation of the Funding Agreement will require extensive review of KRRRC submittals under the Agreement and related information. When a disbursement request is submitted in accord with the terms and conditions of the agreement, OPUC will be required to timely direct the Trustee to disburse funds to the KRRRC to pay for Eligible Project Costs. To facilitate implementation of the Funding Agreement, Staff recommends that the Commission delegate to the Chief Operating Officer the authority to implement the Funding Agreement, disbursing customer surcharge trust funds as necessary.

Conclusion

Staff finds that the attached Funding Agreement establishes appropriate process for the OPUC to process disbursement requests from the KRRRC under ORS 757.738(3). Appropriate documentation and certifications are required to support requests for disbursement. Appropriate standards for management of funds after disbursement are established. And the Funding Agreement contains adequate reporting and remedies to manage disbursements through three funding Phases. Staff recommends that the Commission approve execution of the Funding Agreement.

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Staff further recommends that the Commission delegate implementation of the agreement to the Chief Operating Officer to allow for disbursement of customer surcharge trust funds as necessary.

**PROPOSED COMMISSION MOTION:**

Approve execution of the Funding Agreement with the Klamath River Renewal Corporation and Delegate authority to the Chief Operating Officer to implement the Funding Agreement, disbursing Customer Contribution trust funds as necessary.

RA1 UE 219 Funding Agreement.docx

## FUNDING AGREEMENT

This Agreement is made and entered into by and between the **Public Utility Commission of Oregon**, the "OPUC," and the **Klamath River Renewal Corporation**, a California nonprofit public benefit corporation, hereinafter referred to as the "KRRC."

### RECITALS

WHEREAS, the States of Oregon and California, the United States, PacifiCorp, and other parties entered into the Klamath Hydroelectric Settlement Agreement, dated February 18, 2010, as subsequently amended (as amended, the "KHSA") to establish a process for the removal of four hydropower facilities within the jurisdictional boundary of FERC Project no. 2082 located on the Klamath River: Iron Gate Dam, Copco No. 1 Dam, Copco No. 2 Dam, J.C. Boyle Dam, and appurtenant works currently licensed to PacifiCorp (the "Project") and for the operation of the Klamath Hydroelectric Project until the completion of the Project; and

WHEREAS, pursuant to Section 4.1.1 of the KHSA, the OPUC and the California Public Utilities Commission (CPUC) have each established customer surcharges for PacifiCorp's customers for the purposes of paying the costs of Facilities Removal; and

WHEREAS pursuant to Section 4.1.2.A of the KHSA the State of California has appropriated \$250 million of the proceeds of the bonds authorized by California Proposition 1 for the purposes of paying the costs of Facilities Removal, to the extent that the costs of Facilities Removal exceed the Customer Contributions; and

WHEREAS in Oregon, ORS 757.732 to 757.744 authorized the "Customer Contribution[s]" and required PacifiCorp to file tariffs for the collection of two non-bypassable surcharges from its customers for the purpose of paying the costs of removing Klamath River dams. As specified in ORS 757.736(2) and in Section 4.4.4(d) of the KHSA, one surcharge is designed to collect removal costs for the J.C. Boyle Dam and the other surcharge collects removal costs for the other three dams. Facilities Removal costs include costs related to: (1) physical removal of the dams; (2) site remediation and restoration; (3) avoiding downstream impacts of dam removal; (4) downstream impacts of dam removal; (5) permits required for the removal; (6) removal and disposal of sediment, debris and other materials; and (7) compliance with environmental laws. ORS 757.736(8) provides that all amounts collected under the surcharges are to be remitted into the trust accounts created pursuant to ORS 757.738; and

WHEREAS, in accordance with ORS 757.736 and Section 4.1.1 of the KHSA, the OPUC has been collecting non-bypassable customer surcharges for the purpose of Facilities Removal and has a responsibility to ensure those funds are used in a manner consistent with ORS 757.732 to 757.744; and

WHEREAS the U.S. Department of the Interior has designated the KRRC as the entity authorized to request transfer of the funds necessary to pay the costs of removing the Klamath River dams as described in ORS 757.736(11); and

WHEREAS, section 4.12 of the KHSa provides that the States of Oregon and California will enter into funding agreements with the KRRC for the purpose of specifying how the Customer Contributions and the California Bond Funding will be released to pay for the costs of Facilities Removal; and

Whereas, section 4.2.4 of the KHSa provides that Oregon and California will prepare draft trustee instructions for submission to the Oregon and California PUCs concerning: (1) when funds will be disbursed from the trust accounts; (2) the methodology used to determine which accounts will be drawn from; (3) coordination with use of the California Bond Funds; (4) a protocol for reallocating funds between the trust accounts to pay for the costs of the removal of specific facilities (if necessary); and (5) a means for the return of Customer Contributions to PacifiCorp customers in the event that there are remaining funds in the trust accounts following completion of Facilities Removal; and

WHEREAS, the Facilities Removal is contemplated to take place pursuant to three funding phases, with Phase One expected to consist of the start-up of the KRRC, evaluating risk mitigation such as insurance for the Project, certain regulatory actions and preparation work for the Definite Plan; Phase Two is expected to consist of development of the Definite Plan, including preparation of procurement documents for final design, deconstruction and risk management and completion of regulatory actions; and Phase Three will consist of the Facilities Removal through deconstruction and restoration; and

WHEREAS, it is contemplated that up to \$4.4 million will be necessary to fund Phase One activities with Oregon funding 92% of the Phase One costs (\$4,048,000) and California funding 8% of the Phase One costs (\$352,000) and;

WHEREAS, the KRRC has already received \$308,369 of Phase One costs through the "Phase One A Grant Agreement" between Oregon Department of Fish and Wildlife and the KRRC dated October 5, 2016, and further that OPUC and ODFW entered into an Interagency Agreement dated August 25, 2016.

NOW THEREFORE, the parties enter into this Agreement as provided below.

## AGREEMENT

### 1. Defined Terms.

**"Applicable Law"** means general law that (1) exists outside of the KHSa including, but not limited to a Constitution, statute, regulation, court decision, or common law, and (2) applies to obligations or activities of Parties contemplated by this Agreement. The use of this term is not intended to create a contractual obligation to comply with any law that would not otherwise apply.

**"California Public Utilities Commission" or "CPUC"** means the public utilities commission for the State of California.

**"Definite Plan"** means a plan and timetable for Facilities Removal submitted by the DRE or any of its contractors or assigns under Section 7.2.1 of the KHSa.

**“Detailed Plan”** means the plan dated July 2012 that includes elements described in Section 7.2.2 of the KHSA.

**“Eligible Project Costs”** include the costs necessary for: (i) physical removal of the dams, (ii) site remediation and restoration; (iii) avoiding downstream impacts of dam removal; (iv) downstream impacts of dam removal; (v) permits that are required for the removal; (vi) removal and disposal of sediment, debris and other materials, if necessary; and (vii) compliance with environmental laws. Eligible Project Costs include the repayment of interim funding received from other sources and applied to Eligible Project Costs.

**“FERC”** refers to the Federal Energy Regulatory Commission.

**“FERC Project”** refers to the Klamath Hydroelectric Project as licensed by FERC under Project No. 2082.

**“Funds”** refers to funds disbursed to the KRRC from the Oregon Trust.

**“Klamath Hydroelectric Settlement Agreement”** or **“KHSA”** means the Klamath Hydroelectric Settlement Agreement, dated February 18, 2010, as it has been amended, and as may be amended in the future.

**“Klamath River Dams”** refers to the J.C. Boyle Dam, the Copco 1 Dam, the Copco 2 Dam and the Iron Gate Dam.

**“KRRC”** refers to the Klamath River Renewal Corporation, a California nonprofit public benefit corporation.

**“Material”** as applicable to an action or representation means an action or representation that would delay the Project, result in a budget overrun greater than ten percent, result in the misapplication or misexpenditure of Funds, or otherwise prevent the KRRC from performing duties under this Agreement.

**“Non-bypassable surcharge”** means a monetary surcharge authorized by the appropriate state utility commission through a tariff schedule that applies to all retail customers who rely on PacifiCorp’s transmission and distribution system for the delivery of electricity.

**“Notice”** means a written notice directed to the appropriate party that reasonably apprises that party of the intended action that may follow such notice.

**“ODFW”** means the Oregon Department of Fish and Wildlife.

**“Oregon Trust”** refers to the Customer Contribution established by the State of Oregon, acting by and through its Public Utility Commission, collected by PacifiCorp as a non-bypassable surcharge and held in segregated trust accounts.

**“Parties”** or **“Party”** means the signatories of this Agreement.

**“Phase 1”** refers to the funding phase under this Agreement for which the budget is expected to consist of the start-up costs of the KRRC, evaluating risk mitigation such as insurance for the Project, certain regulatory actions and preparation work for the Definite Plan.

**“Phase 2”** refers to the funding phase under this Agreement for which the budget is expected to consist of development of the Definite Plan, including preparation of procurement documents for final design, deconstruction and risk management and completion of regulatory actions.

**“Phase 3”** refers to the funding phase under this Agreement for which the budget is expected to consist of the Facilities Removal through deconstruction and restoration.

**“Project”** refers to the responsibilities of the KRRC under the KHSA.

**“Public Utility Commission of Oregon”** or **“OPUC”** means the public utility commission for the State of Oregon.

**“State Cost Cap”** means the collective maximum monetary contribution from the states of California and Oregon as described in Section 4.1.3 of the KHSA.

**“States”** refers to the State of Oregon or the State of California.

**“Trustee”** means the Wells Fargo Bank.

**2. Effective Date and Expiration.** This Agreement shall become effective on the date this Agreement is fully executed. This Agreement shall expire upon the earlier of January 31, 2022, or the date the KHSA terminates (the “Expiration Date”).

**3. Agreement Documents.** This Agreement consists of the Agreement through the signature page, together with the following Exhibits, all of which are attached hereto and incorporated herein by reference:

- Exhibit A1: Project Activities**
- Exhibit B1: Project Budget Form**
- Exhibit C: [RESERVED]**
- Exhibit D: ODFW-KRRC Grant Agreement**
- Exhibit E: Disbursement Request Form**

In the event of a conflict between portions of this Agreement, the following order of precedence, listed from highest precedence to lowest precedence, will prevail: this Agreement without Exhibits; Exhibit A; Exhibit B; Exhibit D; Exhibit E; Exhibit C.

**4. KRRC Fiscal Administration.**

- a. Administrative Practices.** As soon as practicable after execution of this Agreement and thereafter upon preparation of each of the following, the KRRC shall provide to the

OPUC copies of the following documents and any amendments that may be made thereto:

(i) Agenda and Minutes of KRRC's regular and special meetings, in each case to the extent made publicly available;

(ii) KRRC Bylaws;

(iii) KRRC internal policies addressing financial controls, governance and internal operations;

(iv) Periodic reports or summaries of the fiscal status of the KRRC; and

(v) An audited annual financial statement for the KRRC that must include a balance sheet showing all funds, a statement of budgeted and actual income and expenditures, indicating thereon any changes in fund balances, and any appropriate notes of explanation or disclosure.

**b. Status Updates to OPUC.** KRRC shall provide to OPUC Staff periodic updates on at least a semi-annual basis, and more frequently if necessary, regarding the KRRC and the Project, which may be either oral or in writing. KRRC shall make an annual presentation before the OPUC that includes a review of Project activities in the preceding year, relevant financial information, and an overview of Project activities planned for the coming year.

**c. Conflicts of Interest and Gifts.** KRRC shall adopt and maintain a written standard of conduct under which an employee, officer, or agent of the KRRC shall not participate in the selection, award, or administration of a contract if a real or apparent conflict of interest would be involved, unless otherwise consistent with Applicable Law.

Further, KRRC shall adopt and maintain a written standard of conduct under which the officers, employees, and agents of the KRRC shall neither solicit nor accept gratuities, favors, or anything of monetary value from contractors or subcontractors. KRRC may set a different standard for situations in which the gift is an unsolicited item of nominal value.

Finally, KRRC certifies that it has and will maintain and enforce a standard of conduct requiring compliance with the conflict of interest standards set forth above and that provides for disciplinary action to be applied for violations.

**d. Management of Disbursements from Oregon Trust.** KRRC shall maintain funds disbursed to the KRRC from the Oregon Trust in one or more interest-bearing demand deposit accounts in a financial institution of high credit quality, with minimal risk of loss to principal at all times, prior to expenditure on Eligible Project Costs as provided in this Agreement.

- e. **Notice of Bankruptcy or Receivership.** KRRC shall promptly notify OPUC and provide a copy of any notice or other knowledge the KRRC receives of a bankruptcy or receivership of a contractor or subcontractor engaged for the Project.

**5. Business Status.**

- a. **Registry.** KRRC shall apply for registration as a foreign nonprofit corporation with the Oregon Secretary of State under ORS 65.707 and maintain such registration and file annual reports with the Secretary of State's office for so long as required by Oregon law.
- b. **Registry and status as a Charitable Organization.** KRRC shall register as a charitable organization with the Charitable Activities Section of the Oregon Department of Justice if such registration is required pursuant to the laws of Oregon. Further, KRRC shall immediately notify OPUC of any change in its status as a tax-exempt public benefit non-profit corporation.
- c. **Corporate Dissolution.** KRRC shall take the necessary steps to ensure that when the KRRC is dissolved or its legal existence terminated, either voluntarily or involuntarily, or upon final liquidation of the KRRC, none of its assets shall inure to the benefit of any private individual, and all of its assets remaining after payment of all of its liabilities shall be distributed to one or more organizations which the KRRC Board of Directors then determines is qualified both as an exempt organization under Internal Revenue Code Section 501(c)(3), and as an organization engaged in activities substantially similar to those of the KRRC or return to OPUC as may be required by Section 7.f.

**6. Disbursements for Eligible Project Costs.**

- a. **Trust Accounts.** The Customer Contributions, as they are collected, are held in segregated trust accounts (the "Oregon Trust") established by the State of Oregon, acting by and through the OPUC. The Wells Fargo Bank is the current trustee of the Trust. The Customer Contributions derive from surcharges currently being collected by PacifiCorp at rates approved by OPUC, but which may not exceed more than two percent of PacifiCorp's annual revenue requirement as determined in PacifiCorp's last case under ORS 757.210 decided by the OPUC before January 1, 2010. The amount of each surcharge is based on a collection schedule that was designed to fund, by December 31, 2019, Oregon's share of the Customer Contribution of \$200 million.
- b. **Trust Account Management.** OPUC shall manage the Oregon Trust consistent with any account management and coordination agreement as may be jointly approved by the State of Oregon and the State of California. If OPUC is a party to any such agreement, it shall provide to the KRRC an opportunity to review and comment on any draft account management and coordination agreement before it is finalized.
- c. **Trust Disbursement Directions.** In accordance with the terms and conditions of this Agreement, the OPUC will timely direct the Trustee to disburse funds from the Oregon Trust to the KRRC to pay for Eligible Project Costs.

**7. Use of Funds.** KRRC shall use the Funds for Eligible Project Costs.



- a. **Phase 1 Costs.** The categories of Eligible Project Costs for Phase 1 are described in Exhibit A1. The total Eligible Project Costs for Phase 1 are estimated to be \$4.4 million, of which \$308,369 has already been disbursed to the KRRC under the Grant Agreement between the KRRC and ODFW attached as Exhibit D. Exhibit B1 includes a budget for Phase 1.
- b. **Phase 2 and Phase 3 Costs.** Ninety days prior to making an initial semi-annual request for disbursements for Phases 2 and 3, KRRC will submit to the OPUC an Exhibit A2 (Project Activities) and A3 (Project Activities), respectively, describing categories of Eligible Project Costs for Phases 2 and 3 and will also provide Exhibit B2 (Budget) and B3 (Budget), respectively providing a proposed budget for each phase. KRRC must submit, with either an Exhibit A3 or Exhibit B3 to OPUC, a certification that all of the conditions in Section 7.1.4 of the KHSa have been met or, to the extent any such conditions have not been met as of the date of such certification, an explanation of how the conditions in Section 7.1.4 of the KHSa are expected to be met in a timeframe consistent with continued progress on the Project and with appropriate documentation.
  - (i) In the event that at any time actual or foreseeable costs associated with physical performance of Facilities Removal or the combined Project budget for all three Phases is estimated to exceed the State Cost Cap and sufficient additional funding is not available to carry out Facilities Removal, the KRRC:
    - (A) Shall promptly initiate the meet and confer process with the parties to the KHSa under Section 7.2.1(5) of the KHSa and diligently pursue resolution of that process;
    - (B) Shall not enter any new contractual obligations until the process of meeting and conferring under Section 7.2.1(5) of the KHSa is resolved, unless the Parties agree that it is reasonable, necessary and consistent with the KHSa and ORS 757.738(3) for the KRRC to enter into one or more additional contracts; and
    - (C) Shall promptly notify OPUC it has initiated the meet and confer process, and keep OPUC Staff reasonable apprised of the progress of the KHSa parties towards a resolution.
  - (ii) Upon finding that actual or foreseeable costs associated with physical performance of Facilities Removal or the combined Project budget for all three Phases is estimated to exceed the State Cost Cap and sufficient funding is not available to carry out Facilities Removal, KRRC may thereafter, in the regular course, submit one disbursement request under Section 7.f while it is engaged in the process of meeting and conferring with the parties to the KHSa. Before submitting any further disbursement requests while the process of meeting and conferring under Section 7.2.1(5) of the KHSa remains unresolved, KRRC shall meet with the OPUC and present a plan supporting continued disbursements. OPUC may, in its discretion, suspend further disbursements until the meet and confer process is resolved.
- c. **Budget forms.** Exhibit budget forms for each Phase shall identify the projected Project activities for such Phase and how each activity will be completed in Exhibit A, and set forth, in Exhibit B, the estimated Eligible Project Costs associated with each program activity identified in Exhibit A for such Phase, and the originating source of funds to be applied to the aggregate costs, and include or be accompanied by an estimate of the time period within such Phase in which each Exhibit A activity will be conducted. Exhibit budget forms A1 and B1 for Phase 1 are attached to this Agreement.

- d. **Minor Modifications of Budget.** The KRRC may, in its reasonable discretion, make minor modifications to the budgets for Phases 1 through 3, including but not limited to reallocating costs within categories in each budget; provided, however, if the KRRC modifies the amount of funds allocated to a category or Phase by an amount that is greater than ten percent then the KRRC will provide an updated Exhibit to the OPUC for its review as specified in the following paragraph (e).
- e. **Major Modifications of Budget.** A major modification of the budget is: (a) any increase in the amount being requested for a particular Phase of more than ten percent, or (b) an increase in the amount being requested for a particular category of expenses of more than fifteen percent. The KRRC shall notify the OPUC when it becomes aware of a need for a major modification of a budget and provide OPUC with a revised Exhibit B and a certification that such a major modification is necessary for Facilities Removal.
- f. **Disbursement Requests.** The KRRC will make requests for disbursements to the OPUC on a semi-annual basis by submitting a disbursement request in the form and containing the information required on Exhibit E (Disbursement Request Form), and by submitting a certification from the KRRC that the request is for payment of Eligible Project Costs included in the budget that the KRRC expects to incur for the Project activities to be completed by the KRRC or under subagreement during the period within 210 days after the date of the request. The certification shall also certify that no material authorization, consent, license, approval of, filing or registration with or notification to any governmental body or regulatory or supervisory authority is required for the Project activities to be completed by the KRRC or under subagreement during the period within 210 days after the request. If the KRRC cannot make such a certification, KRRC shall explain how any outstanding material authorization, consent, license, approval of, filing or registration with or notification to any governmental body or regulatory or supervisory authority not yet obtained or given, as applicable, that is required for the Project activities is expected to be met in a timeframe consistent with Project activities to be conducted within 210 days and provide appropriate documentation. The KRRC will, contemporaneously with its request to the OPUC, make a corresponding request to the CPUC.
- g. **Proportional Disbursements.** The Parties understand and agree that 92% of the Customer Contribution funds for the Project will be disbursed from the Oregon Trust, except however, in no event will the total funding from the Oregon Trust and the California Trust exceed \$200 million. OPUC's direction to disburse funds from the Oregon Trust shall not be subject to a corresponding disbursement from the California Trust, unless expressly required by any account management and coordination agreement as may be jointly approved by the State of Oregon and the State of California.
- h. **Action on Disbursement Requests.** Except as provided in Section 7.b, disbursement requests will be processed by the OPUC if the disbursement request includes all of the information required under Section 7.f.

- i. **Expenditure Reports.** With each semi-annual disbursement request, the KRRC will submit an expenditure report, showing the expenses incurred during the prior semi-annual period.
  - j. **Recovery of Funds.** Any funds disbursed to KRRC that remain unexpended on the earlier of the completion of Facilities Removal, termination or expiration of this Agreement ("Unexpended Funds") or that remain unexpended due to the suspension of disbursement requests under Section 7.b of this Agreement for a period of two years or longer must be returned to the OPUC upon its request. Unexpended Funds shall not include funds set aside for ongoing monitoring following facilities removal or other similar activities as may be required under the Definite Plan or as a condition of a license or permit required for the Project. Recipient shall return all Unexpended Funds and associated interest to the OPUC within 15 days after the earlier of expiration or termination of this Agreement, or upon the demand of the OPUC following the suspension of disbursement requests for a period of two years or longer, consistent with this Section.
8. **Final Reporting.** Within six months of the completion of Facilities Removal, the KRRC will file a final report (the "Final Report") with the OPUC. The Final Report must include a summary of all Project costs compared to the Project Budget, together with reasonable supporting documentation that evidences KRRC's expenditure of the funds disbursed from the Oregon Trust. The Final Report shall include a summary of the Project as completed as well as an explanation for any Project cost variances that are greater than 10 percent from the Project Budget. The Final Report shall also document the amount of funding received from CPUC and the California Natural Resources Agency.
9. **Conditions Precedent.**
- a. **Conditions Precedent to State's Obligations.** The OPUC's obligations under this Agreement are subject to the receipt by the OPUC of the following item, all in form and substance satisfactory to the OPUC and its counsel:
    - (i) A copy of the resolution of the KRRC's board of directors authorizing the execution and delivery of this Agreement and performance by KRRC of its obligations hereunder.
  - b. **Conditions to Disbursement.** OPUC's obligation to disburse any of the Funds to KRRC is subject to the following conditions.
    - (i) **Disbursement Request.** The KRRC has filed a disbursement request with the OPUC, consistent with section 7.f, above.
    - (ii) **Availability of Funds.** Sufficient funds are currently deposited in the Oregon Trust to fulfill the OPUC's obligation to disburse funds under this Agreement.
    - (iii) **No Default.** No event of default has occurred or is occurring.

- (iv) **Representations.** KRRC's representations and warranties set forth in Section 10 hereof are true and correct in all material respects on the date of disbursement with the same effect as though made on the date of disbursement.

**10. Representations, Warranties and Covenants of KRRC.**

**a. KRRC Representations, Warranties.** KRRC makes the following representations and warranties to the OPUC.

- (i) **Organization and Authority.** KRRC is a duly organized and validly existing nonprofit public benefit corporation under the California Corporations Code. KRRC has full power, authority, and legal right to make this Agreement and to incur and perform its obligations hereunder; and the making and performance by KRRC of this Agreement (1) have been duly authorized by all necessary action of KRRC, (2) do not and will not violate any provision of any applicable law, rule, regulation, or order of any court, regulatory commission, board, or other administrative agency or any provision of KRRC's organizational documents, and (3) do not and will not result in the breach of, or constitute a default or require any consent under, any other agreement or instrument to which KRRC is a party or by which KRRC or any of its properties may be bound or affected. No authorization, consent, license, approval of, filing or registration with or notification to any governmental body or regulatory or supervisory authority is required for the execution, delivery or performance by KRRC of this Agreement. Certain additional authorizations, consents, licenses, approvals of, filings or registrations with or notifications to a governmental body or regulatory or supervisory authority shall be required for certain Project activities.
- (ii) **Binding Obligation.** This Agreement has been duly executed and delivered by KRRC and, when executed and delivered by the OPUC, constitutes a legal, valid and binding obligation of KRRC, enforceable in accordance with its terms, subject to the application of bankruptcy, insolvency or similar laws relating to the rights of creditors generally and general principles of equity.

- b. KRRC's Inspections; Information.** During the term of this Agreement, KRRC shall permit the OPUC, at any reasonable time and with reasonable notice, to inspect and make copies of any accounts, books and records, including, without limitation, its records regarding receipts, disbursements, contracts, investment of Funds, if any, and any other matters related to the use of Funds or the Project. The KRRC shall supply related reports and information relating to the Project as the OPUC may reasonably require. The KRRC shall promptly respond to requests for information and provide an explanation regarding submissions to the OPUC upon its request.

**11. Representations, Warranties and Covenants of OPUC.** OPUC makes the following representations and warranties to the KRRC.

- a. OPUC is a state agency validly created and existing under the laws of the State of Oregon.
- b. OPUC has all necessary right, power, authority, approvals and consents under its applicable enabling statutes, or other Oregon law to (a) execute and deliver this Agreement, and (b) incur and perform its obligations under this Agreement.
- c. This Agreement has been duly authorized by a vote, resolution or other act of the OPUC, is executed by an authorized representative of OPUC, and is legal, valid and binding, and enforceable in accordance with its terms without the need for any further vote, resolution or act of the OPUC.

**12. Records Maintenance and Access; Audit Requirements.**

- a. **Records Maintenance and Access.** KRRC shall make and retain proper and complete books of record, and account and maintain all fiscal records related to this Agreement, the Funds, and the Project in accordance with all applicable generally accepted accounting principles. KRRC shall create and maintain all expenditure records in sufficient detail in such a manner as to clearly document KRRC's performance and to permit the OPUC and the KRRC's third party auditor to verify how the Funds were expended. KRRC shall ensure that each of its subrecipients, and subcontractors that is engaged by the KRRC following a competitive procurement complies with these requirements, provided that such subrecipients and subcontractors with whom KRRC has entered into a lump sum contract, under which KRRC agrees to pay a fixed price for specific services with the risk of cost overrun borne by the contractor, shall not be obligated to permit the audit of its books and records except in the event of a dispute or a claim for additional compensation or a reduction in work provided for the agreed amount paid. The State of Oregon, the OPUC and their duly authorized representatives shall have access to the books, documents, papers and records of KRRC that are directly related to this Agreement, the funds provided hereunder, or the Project for the purpose of making audits and examinations. In addition, OPUC and its duly authorized representatives may make and retain excerpts, copies, and transcriptions of the foregoing books, documents, papers, and records. KRRC shall permit authorized representatives of the OPUC to perform site reviews of the Project as needed to determine compliance with the terms of this Agreement.
- b. **Retention of Records.** KRRC shall retain and keep accessible all books, documents, papers, and records that are directly related to this Agreement, the Funds, or the Project for a minimum of six (6) years, or such longer period as may be required by other provisions of this Agreement or applicable law, following the termination of this Agreement. If there are unresolved disputes or audit questions at the end of the retention period, KRRC shall retain the records until the disputes or questions are resolved. These records will be made available, without restriction, to both the OPUC and Oregon Secretary of State.

- c. **Audit Requirements.** KRRC must retain the services of a professional third-party audit firm to conduct a financial audit of all expenditures of the Funds made by KRRC on an annual basis and provide to the OPUC, not later than 90 calendar days after the end of each calendar year, beginning in 2017, a true and correct copy of the auditor's final report. Each audit must apply Generally Accepted Accounting Principles. KRRC shall cooperate with all requests from the auditor for data and other related requests from the auditor. Disputed points not resolved between KRRC and the auditor, and any exceptions from, qualifications of, or exclusions from the audit must be noted in the final audit report. KRRC shall include third-party audit expenses as appropriate in expense and budget forms submitted under Sections 7.a. and 7.b.

### 13. KRRC Subagreements.

- a. **Subagreements.** KRRC may enter into agreements with sub-recipients, contractors, subcontractors, consultants, advisors, agents, representatives and other providers of services or materials (collectively, "subagreements") reasonably necessary or desirable for performance of the Project, including agreements with an executive director and other staff or employees of KRRC. Notwithstanding the foregoing, the use of a subagreement shall not relieve KRRC of its responsibilities under this Agreement.
- b. **Procurement standards and policies.** KRRC shall adopt, maintain, provide to OPUC, and comply with written standards of conduct and appropriate policies governing the performance of its employees, agents, consultants, directors, officers or contractors engaged in the award and administration of subagreements.

(i) All such standards and policies shall implement and be consistent with the following goals:

- (A) optimizing the cost, efficiency, timing, expertise and quality of work performed under subagreements;
- (B) effectively executing the Project; and
- (C) maintaining consistency with industry standards.

(ii) Such standards and policies shall include a competitive process for all primary subagreements for the design or execution of physical removal of facilities and associated site remediation activity under the Project ("Major Subagreements"). Upon selection of a competitive process to be used to award a Major Subagreement, KRRC shall notify OPUC of the subject matter, selected process, and provide an explanation as to how the selected process meets the goals listed in Section 13.b.i of this Agreement. KRRC shall provide OPUC with a substantially final form of the solicitation materials for each Major Subagreement sufficiently prior to issuance as to allow for OPUC review, in no event less than 15 business days.

- c. Any breach of a term or condition of a Major Subagreement relating material misapplication, misexpenditure or loss of Funds must be reported by KRRC to OPUC within ten (10) days of its being discovered by KRRC.
- d. **Indemnity.** KRRC's Major Subagreement(s) shall require the other party to such subagreement(s) to indemnify the OPUC on substantially the same terms as KRRC is indemnifying the OPUC as set forth in Section 14(a).
- e. **Insurance.** KRRC shall cause the other party, or parties, to each of its Major Subagreements to obtain and maintain insurance of the types set forth in Section 14(b) and in commercially reasonable amounts.

**14. Indemnity; Insurance.**

- a. **Indemnity.** KRRC and OPUC acknowledge and agree that the indemnity provided in Section 7.1.3 of the KHSa shall be applicable to this Agreement.

Neither KRRC, nor any attorney engaged by KRRC shall defend any Claim in the name of the State or any agency of the State of Oregon, nor purport to act as legal representative of the State of Oregon or any of its agencies, without the prior written consent of the Oregon Attorney General. The OPUC may, at any time at its election, assume its own defense and settlement in the event that it determines that KRRC is prohibited from defending State or that KRRC is not adequately defending State's interests, or that an important governmental principle is at issue or that it is in the best interests of State to do so. OPUC reserves all rights to pursue claims it may have against KRRC if State elects to assume its own defense.

- b. **Insurance.** KRRC shall maintain, or cause to be maintained, insurance policies with responsible insurers or self-insurance programs, insuring against directors' and officers' liability and sufficient to insure the Project. KRRC shall provide a summary of any insurance coverage to the OPUC within ten days following the effective date of this agreement and upon the execution of any additional insurance agreements. KRRC shall include OPUC (i) as an additional insured on its liability insurance coverages and (ii) as a loss-payee on its property insurance and on any performance bonds, or letters of credit taken out to insure performance of the Project, provided, however, that for so long as this Agreement is in effect and no Event of Default exists, OPUC shall have no claim to any proceeds of property insurance, performance bonds or letters of credit that are recovered in respect of Eligible Project Costs and that KRRC applies or intends to apply toward Eligible Project Costs in connection with the completion or restoration following any casualty of the Project. Proceeds of any of the foregoing that are not eligible or expected to be applied to Eligible Project Costs by KRRC, if any, shall be paid to OPUC in trust for contributing PacifiCorp customers in proportion to any disbursement of Funds previously directed by OPUC and in proportion to other funding sources that are also loss-payees.

- c. **Survival.** Following any termination of this Agreement, for so long as KRRC has an ownership interest in the Project site, KRRC shall maintain, or cause to be maintained commercially reasonable insurance that will name OPUC as additional insured or loss-payee as its interests may appear.

**15. Compliance with Laws.**

- a. **Compliance with Laws.** KRRC shall comply with all Applicable Law, including, to the extent such laws are applicable without being a requirement of this agreement:

- (i) (A) Title VI of Civil Rights Act of 1964; (B) Title V and Section 504 of the Rehabilitation Act of 1973; (C) the Americans with Disabilities Act of 1990 and ORS 659A.142; (D) all regulations and administrative rules established pursuant to the foregoing laws; and (E) all other applicable requirements of federal and state civil rights and rehabilitation statutes, rules and regulations.

- (ii) (A) prevailing wage rate requirements set forth in ORS 279C.800 through 279C.870 and the administrative rules promulgated thereunder ("Prevailing Wage Rate Law" or "PWR"), or, if applicable, 40 U.S.C. 3141 et seq. ("Davis-Bacon Act"), (B) the requirement that KRRC's contractors and subcontractors to pay the applicable prevailing wage rate and comply with all other applicable Oregon Bureau of Labor and Industries ("BOLI") requirements pursuant to the Prevailing Wage Rate Law, including on all contracts and subcontracts and in filing separate works bonds with the Construction Contractors Board, unless exempt under ORS 279C.836 and OAR 839-025-0015, (C) if the Project is subject to the Davis-Bacon Act, the requirement that require its contractors and subcontractors to comply with the Davis-Bacon Act and any applicable provisions of Oregon PWR. If the Project is or becomes subject to both PWR and the Davis-Bacon Act, all subject workers must be paid the higher of applicable state or federal prevailing wage rate. The applicable rates are those in effect on the Effective Date of this Agreement. PWR and Davis-Bacon Act prevailing wage rates may be accessed via:  
[http://www.oregon.gov/boli/WHI/PWR/Pages/pwr\\_state.aspx](http://www.oregon.gov/boli/WHI/PWR/Pages/pwr_state.aspx) and  
<http://www.wdol.gov>.

KRRC represents and warrants that it is not on the BOLI current List of Contractors Ineligible to Receive Public Works Contracts and that it will not contract with any contractor on this List. KRRC agrees to indemnify, hold harmless and reimburse the State and its officers, employees and agents for any liability, cost, expense, fine, fee or penalty payable to a person or private or governmental entity, including another agency of the State of Oregon (collectively "liability") incurred to comply with, to obtain a determination under, or in any other way resulting from the Prevailing Wage Rate Law or Davis-Bacon Act.

- b. KRRC agrees to contract with, and require any subrecipients to contract with, competent, properly licensed and bonded contractors and professionals for the performance of the Project.



- c. All subagreements that KRRC may enter which are funded wholly or in part with the Funds must be subcontractual in nature, with the other party engaged in the role of a subcontractor. KRRC will administer all contracts with its subcontractors to ensure compliance by any subcontractors with the terms of this Agreement with respect to requirements that flow through to subcontractors.

## 16. Termination; Default

- a. **Termination by OPUC.** OPUC may terminate this Agreement effective upon delivery of written notice of termination to KRRC, or at such later date as may be established by OPUC in such written notice, only if:

- (i) A change in law makes performance or completion of Facilities Removal in compliance with the KHSa no longer possible; or
- (ii) The occurrence and continuance of an Event of Default as provided below.

- b. **Event of Default.** The occurrence of any of the following listed events shall constitute an Event of Default under this Agreement:

- (i) Any material representation is made by KRRC in this Agreement or in any document provided by or on behalf of KRRC related to this Agreement or the Project that is false or misleading in any material respect when made; or
- (ii) A petition, proceeding or case is filed by or against KRRC (for purposes of this section, "Debtor") under any federal or state bankruptcy or insolvency law, and in the case of a petition filed against the Debtor, the Debtor acquiesces to such petition or such petition is not dismissed within 90 calendar days after such filing; Debtor files a petition seeking to take advantage of any other law relating to bankruptcy, insolvency, reorganization, liquidation, dissolution, winding-up or composition or adjustment of debts; Debtor admits in writing its inability to pay its debts as they become due, or makes an assignment for the benefit of its creditors; Debtor applies for or consents to the appointment of, or taking of possession by, a custodian (including, without limitation, a receiver, liquidator or trustee) of Debtor or any substantial portion of its property; or Debtor takes any action for the purpose of effecting any of the above; or
- (iii) KRRC fails to perform any material obligation required under this Agreement and that failure continues for a period of 30 calendar days after written notice specifying such failure is given to KRRC by OPUC, except with respect to any shorter period expressly provided in this Agreement, provided that so long as KRRC is diligently seeking to cure such failure to perform such 30 day period shall be extended.

- c. **Remedies.** Upon the occurrence and continuance of an Event of Default, and dispute

resolution under section 18.a is not successful in a timely manner, the OPUC may, at its option, pursue any or all of the following remedies:

- (i) Ceasing disbursement of Funds under this Agreement until the Event of Default has been cured or the Agreement is terminated;
- (ii) Terminating this Agreement with KRRC;
- (iii) Bringing an action at law or filing a claim in a court with jurisdiction to recover damages incurred as a result of the Event of Default, in order to recover Funds disbursed to the KRRC hereunder, with interest thereon, that have not been expended on Eligible Project Costs prior to an event of default or that were misexpended;
- (iv) Seeking any equitable remedies, including specific performance, which may be available to the OPUC; and
- (v) Pursuing any rights as loss payee on insurance or as payee on a performance bond, letter of credit or any similar performance or payment guarantor, if any.

- d. **No Termination by KRRC.** KRRC may not terminate this Agreement unless the KHSA has been terminated or the Project has been abandoned, terminated, or is otherwise unable to proceed.

**17. Oregon Trust is Sole Source of Funding.** The Oregon Trust is the sole source of funding for this Agreement, with respect to funding from Oregon, and KRRC shall have no recourse to, and the OPUC shall have no obligation to pay, any amounts under this Agreement from moneys deposited in the State Treasury, including but not limited to the General Fund; nor will the OPUC have any obligation to seek an appropriation or other expenditure authority from the Oregon Legislative Assembly in the event there are insufficient moneys in the Oregon Trust.

## **18. General Provisions.**

- a. **Dispute Resolution.** The Parties shall attempt in good faith to resolve any dispute arising out of this Agreement. In addition, the Parties may agree to utilize a jointly selected mediator or arbitrator (for non-binding arbitration) to resolve the dispute short of litigation.
- b. **Amendments.** This Agreement may be amended or extended only by a written instrument signed by both Parties and approved by the Department of Justice as required by applicable law.
- c. **No Third Party Beneficiaries.** OPUC and KRRC are the only Parties to this Agreement and are the only Parties entitled to enforce its terms. Nothing in this Agreement gives, is intended to give, or shall be construed to give or provide any benefit or right, whether directly or indirectly, to a third person unless such a third person is

individually identified by name herein and expressly described as an intended beneficiary of the terms of this Agreement.

- d. **Notices.** Except as otherwise expressly provided in this Agreement, any communications between the Parties hereto or notices to be given hereunder shall be given in writing by personal delivery, facsimile, email, or mailing the same, postage prepaid, to KRRC Contact or OPUC Contact at the address or number set forth on the signature page of this Agreement, or to such other addresses or numbers as either Party may hereafter indicate pursuant to this Section 18.d. Any communication or notice personally delivered shall be deemed to be given when actually delivered. Any communication or notice delivered by facsimile shall be deemed to be given when receipt of the transmission is generated by the transmitting machine, and to be effective against OPUC, such facsimile transmission must be confirmed by telephone notice to OPUC Contact. Any communication by email shall be deemed to be given when the recipient of the email acknowledges receipt of the email. Any communication or notice mailed shall be deemed to be given when received.
- e. **Choice of Law; Designation of Forum; Federal Forum.**
  - (i) The laws of the State of Oregon (without giving effect to its conflicts of law principles) govern all matters arising out of or relating to this Agreement, including, without limitation, its validity, interpretation, construction, performance, and enforcement.
  - (ii) Any Party bringing a legal action or proceeding against any other Party arising out of or relating to this Agreement shall bring the legal action or proceeding in the Circuit Court of the State of Oregon for Marion County (unless Oregon law requires that it be brought and conducted in another county). Each Party hereby consents to the exclusive jurisdiction of such court, waives any objection to venue, and waives any claim that such forum is an inconvenient forum.
  - (iii) Notwithstanding the prior paragraph, if a claim must be brought in a federal forum, then it must be brought and adjudicated solely and exclusively within the United States District Court for the District of Oregon. This paragraph applies to a claim brought against the State of Oregon only to the extent Congress has appropriately abrogated the State of Oregon's sovereign immunity, and is not consent by the State of Oregon to be sued in federal court. This paragraph is also not a waiver by the State of Oregon of any form of defense or immunity, including but not limited to sovereign immunity and immunity based on the Eleventh Amendment to the Constitution of the United States.
- f. **Survival.** The following sections or subsections of this Agreement shall survive the Expiration Date and any earlier termination of this Agreement: Sections 7.b, 7.h, 7.i, 7.j, 8, 12, 14.a, 16.c, 18.a, 18.d, 18.e, 18.f, 18.h and 18.i and any other section or provision that by its terms is stated to survive.

- h. **Severability.** If any term or provision of this Agreement is declared by a court of competent jurisdiction to be illegal or in conflict with any law, the validity of the remaining terms and provisions shall not be affected, and the rights and obligations of the Parties shall be construed and enforced as if this Agreement did not contain the particular term or provision held to be invalid.
- i. **Counterparts.** This Agreement may be executed in two or more counterparts (by facsimile or otherwise), each of which is an original and all of which together are deemed one agreement binding on all Parties, notwithstanding that all Parties are not signatories to the same counterpart.
- j. **Integration and Waiver.** This Agreement and the KHSA, as they may be amended from time to time, including all Exhibits, constitute the entire agreement between the Parties on the subject matter hereof. There are no understandings, agreements, or representations, oral or written, not specified herein regarding this Agreement. The delay or failure of either Party to enforce any provision of this Agreement shall not constitute a waiver by that Party of that or any other provision.
- k. **KHSA.** This Agreement is intended to facilitate the implementation of the KHSA. Nothing in this Agreement shall be construed in a way that is inconsistent with or conflicts with the terms of the KHSA. In the event of any such conflict or inconsistency the applicable terms shall be deemed waived or modified to the extent necessary to comply with the requirements of the KHSA insofar as the KHSA's requirements are consistent with law.
- l. **Non-Disclosure Agreements.** Nothing in this Agreement shall be construed as requiring KRRC to violate any confidentiality, non-disclosure agreement or similar agreement.
- m. **Coordination with Other Funding Sources.** OPUC acknowledges that pursuant to the KHSA, the Project will have several sources of funds and agrees to reasonably cooperate with the other Project funding sources as reasonably requested by KRRC. In the event conflicting positions or interpretations with respect to any matter or Approval among the Project's funding sources, OPUC agrees to meet and confer with such other funding sources and to make good faith efforts to promptly resolve any such disputes or conflicts. The pendency of any such dispute or conflict and any resulting delay or other impact on the Project shall be deemed to be beyond KRRC's control and shall not be a breach of this Agreement or give rise to an Event of Default.

**THE PARTIES**, by execution of this Agreement, hereby acknowledge that each Party has read this Agreement, understands it, and agrees to be bound by its terms and conditions.

SIGNATURE PAGE TO FOLLOW

ORDER NO. 17 018

**Klamath River Renewal Corporation**

**STATE OF OREGON**, acting by and through its  
Public Utility Commission of Oregon

By \_\_\_\_\_

By \_\_\_\_\_

Name \_\_\_\_\_  
(printed)

Name: \_\_\_\_\_  
(printed)

Title \_\_\_\_\_

Title: \_\_\_\_\_

Date \_\_\_\_\_

Date \_\_\_\_\_

**APPROVED**

(If required)

By \_\_\_\_\_

KRRC's Legal Counsel

Date \_\_\_\_\_

**KRRC Contact:**

Name: \_\_\_\_\_

Title: \_\_\_\_\_

Address: \_\_\_\_\_

Address: \_\_\_\_\_

Phone: \_\_\_\_\_

Email: \_\_\_\_\_

**OPUC Contacts:**

Name: David Poston

Title: Chief Financial Officer

Address: Public Utility Commission of Oregon

P O Box 1088

201 High Street SE

Salem, OR 97308-1088

Phone: 503-378-6661

Email: [david.poston@state.or.us](mailto:david.poston@state.or.us)

ORDER NO. 17 018

Name: Michael Dougherty  
Title: Chief Operating Officer  
Address: Public Utility Commission of Oregon  
P O Box 1088  
201 High Street SE  
Salem, OR 97308-1088  
Phone: 503-373-1303  
Email: michael.dougherty@state.or.us

ORDER NO. 17 018

**EXHIBIT A1  
PHASE 1 ACTIVITIES**

**EXHIBIT A**  
**PHASE 1 PROGRAM ACTIVITIES**

**1. Start-up Costs of the KRRC -- Establish and administer personnel, office and budget**

- A. KRRC will hire, as employees or independent contractors, personnel to perform the duties of its executive director and such other organizational functions as are necessary to operate and to perform its obligations under the amended KHSA and any other agreements to which KRRC is a party. Such personnel will include personnel with the expertise in the appropriate technical, legal, financial management and other disciplines.
- B. KRRC will continue to take such other measures as are reasonably necessary or convenient for the commencement of its operations and the performance of its obligations under the amended KHSA and otherwise in connection with the Project.

**2. Risk Management & Insurance**

- A. KRRC will obtain and maintain commercially reasonable insurance, including Directors' and Officers' liability insurance and such other insurance as is required of it by law or any agreements to which KRRC is a party.
- B. KRRC will work with a qualified insurance management company to assess and execute the necessary insurance products to minimize risks for the Project.

**3. Undertake certain Regulatory Actions**

- A. At the Federal Energy Regulatory Commission, monitor and provide information as requested on the Transfer and Surrender applications, filed on September 23, 2016.
- B. Work with the California Water Resources Control Board and the Oregon Department of the Environmental Quality to ensure timely consideration of and ultimate approval of the KRRC's application submitted under the provisions of the Section 401 of the federal Clean Water Act.
- C. Begin consultations with other governmental agencies that may have jurisdiction over KRRC's performance of its obligations under the amended KHSA, including environmental agencies, tribal nations and local and regional governmental authorities.

**4. Undertake Preparation work for the Definite Plan**

- A. Hire a firm to serve as the KRRC's Technical Representative to guide the preparation of the Definite Plan.
- B. Develop and begin the implementation of an integrated work plan to guide the legal, policy and technical aspects of the preparation of the Definite Plan and refine the KRRC's budget estimates accordingly.



ORDER NO. 17 018

**EXHIBIT B  
PHASE 1 PROJECT BUDGET**

**EXHIBIT B  
PHASE 1 PROJECT BUDGET**

Klamath River Renewal Corporation			
Phase 1	2016-17 Fiscal Year		Through June 30, 2017
	2017 Q1 Jan-Mar	2017 Q2 Apr-Jun	
<b>Total Eligible Project Costs -- Phase 1</b>			<b>\$4,951,500</b>
Balance of Oregon Phase 1 Funding ( \$ 4,048,000 less \$ 308,369 already advanced)			\$3,739,000
California PUC Phase 1 funding			\$ 352,000
Advance of California Proposition 1 Funds			\$ 860,500
<b>Expenses</b>			
5000 Compensation & Benefits	\$ 50,000	\$ 175,000	
5500 Travel and Meetings	\$ 30,000	\$ 36,000	
5800 Agency Fees and Reimbursements	\$ 320,000	\$ 320,000	
6000 Professional Services Technical Representative, Legal, Financial Management, Accounting, Auditing, Recrutiment, Program Implementation, & Ongoing Risk Management Analysis	\$ 1,155,000	\$ 2,180,000	
7000 Initial Insurance & Risk Management	\$ 8,500	\$ -	
7500 Information Technology	\$ 12,000	\$ 2,000	
8000 Office and Facilities	\$ 2,000	\$ 7,500	
8500 Taxes, Licenses, Fees	\$ 2,000	\$ 1,000	
Contingency & Miscellaneous (15%)	\$ 237,000.00	\$ 408,250.00	
<b>Total Expenses</b>	<b>\$1,816,500.00</b>	<b>\$3,135,000.00</b>	<b>\$4,951,500</b>

## Klamath River Renewal Corporation Program Activities &amp; Illustrative Timeline for Phase 1 Activities(1)

	Oregon's Share of Eligible Project Costs	2017 Q1			2017 Q2		
		January	February	March	April	May	June
<b>1. Continue Start-Up Operations of the Corporation</b>	<b>\$ 1,510,000</b>						
a. Recruitment of the General Manager							
b. Onboarding of FERC counsel		★					
c. Recruit/contract to carry out other staff and legal functions							
e. Undertake policy analyses necessary to fulfill the mission							
f. Manage Board Meetings & Board Process			★		★		★
g. Establish Financial Controls & Audit Procedures							
<b>2. Risk Management &amp; Insurance Activities</b>	<b>\$ 94,000</b>						
a. Develop consulting arrangements for risk management advisory services		★					
b. Review and Assess other types of necessary insurance							
c. Review and Assess Additional D&O Insurance							
<b>3. Undertake certain Regulatory Actions</b>	<b>\$ 1,240,000</b>						
a. Continue to refine joint license transfer & surrender applications							
b. File informational update with FERC, per KHS					★		
c. Monitor CA 401 application & environmental review							
d. Monitor OR 401 application & environmental review							
e. Begin Section 404 consultation process							
f. Carry out ESA & CZM consultations							
<b>4. Undertake Preparation Work for the Definite Plan</b>	<b>\$ 895,000</b>						
a. Recruit Technical Representative			★				
b. Recruit Construction Counsel			★				
c. Develop integrated workplan for the Definite Plan							
d. Background work necessary to undertake the Definite Plan							
<b>Total Eligible Project Costs for Oregon Phase 1</b>	<b>\$ 3,739,000</b>						

(1) This represents the best available estimate of the timing and magnitude of each program activity. These amounts may be modified in the future upon consultation with the Oregon PUC staff.

ORDER NO. 17 018

EXHIBIT C  
[RESERVED]

ORDER NO. 17 018

**EXHIBIT D**  
**ODFW-KRRC GRANT AGREEMENT FOR PHASE 1A**

KLAMATH DAM REMOVAL  
PHASE 1A GRANT AGREEMENT

This Agreement is made and entered into by and between the **State of Oregon**, acting by and through its Department of Fish and Wildlife, hereinafter referred to as "State," and the **Klamath River Renewal Corporation**, a California nonprofit public benefit corporation, hereinafter referred to as "Recipient." State and Recipient are referred to individually without distinction as "Party" and collectively as the "Parties."

RECITALS

WHEREAS, the States of Oregon and California, the United States, PacifiCorp, and other parties entered into the Klamath Hydroelectric Settlement Agreement, dated February 18, 2010 and amended April 6, 2016 (as amended, the "KHSa") to establish a process for the removal of four hydropower facilities within the jurisdictional boundary of FERC Project no. 2082 located on the Klamath River: Iron Gate Dam, Copco No. 1 Dam, Copco No. 2 Dam, J.C. Boyle Dam, and appurtenant works currently licensed to PacifiCorp (the "Project") and for the operation of the Klamath Hydroelectric Project until the completion of the Project; and

WHEREAS Recipient has been selected as the "Dam Removal Entity" contemplated by the KHSa to carry out the Project and has become a party to the KHSa by its signature to the KHSa on July 19, 2016; and

WHEREAS, pursuant to Section 4 of the KHSa, the States of Oregon and California have each agreed to provide funding from specified sources to Recipient for the purpose of carrying out the Project; and

WHEREAS in Oregon, SB 76 authorizes the "Customer Contribution[s]" and requires PacifiCorp to file tariffs for the collection of two nonbypassable surcharges from its customers for the purpose of paying the costs of removing Klamath River dams. As specified by the statute, one surcharge is designed to collect removal costs for the J.C. Boyle Dam and the other surcharge collects removal costs for the other three dams. Removal costs may include costs related to: (1) physical removal of the dams; (2) site remediation and restoration; (3) avoiding downstream impacts of dam removal; (4) downstream impacts of dam removal; (5) permits required for the removal; (6) removal and disposal of sediment, debris and other materials; and (7) compliance with environmental laws. SB 76 provides that all amounts collected under the surcharges are to be remitted into specially created trust accounts; and

WHEREAS, in accordance with Section 4 of the KHSa the Oregon Public Utilities Commission ("OPUC") has been collecting non-bypassable customer surcharges for the purpose of "Facilities Removal" as defined in the KHSa; and

WHEREAS, the KHSa provides that the States of Oregon and California would enter into grant agreements with Recipient as the designated dam removal entity to include conditions not inconsistent with the KHSa pertaining to the use of the Customer Contribution moneys;

WHEREAS, the Facilities Removal is contemplated to take place pursuant to three funding phases, with Phase One expected to consist of the start-up of the Recipient, evaluating risk mitigation such as insurance for the Facilities Removal, certain regulatory actions and preparation work for the Definite Plan; Phase Two expected to consist of development of the Definite Plan, including preparation of procurement documents for final design, deconstruction and risk management and completion of regulatory actions; and Phase Three to consist of the Facilities Removal through deconstruction and restoration; and

WHEREAS, it is contemplated that up to \$ 4.4 million will be necessary to fund Phase One activities with Oregon funding 92% of the Phase One costs (\$4,048,000) and California funding 8% of the Phase One costs (\$352,000) and;

WHEREAS, this agreement will partially fund Oregon's portion of the Phase One costs with further disbursements anticipated under additional funding agreements, the form of which shall be negotiated without reference to the form of this Agreement, and, further that this agreement shall be called "Phase One A Grant Agreement".

NOW THEREFORE, the parties enter into this Agreement as provided below.

#### AGREEMENT

1. **Effective Date and Expiration.** This Agreement shall become effective on the date this Agreement is fully executed and approved as required by applicable law. Subject to the terms and conditions of this Agreement, Grant Funds (defined below) under this Agreement shall be available for Eligible Project Costs (defined below) incurred on or after the effective date of this Agreement except that the Recipient may be reimbursed for certain expenditures incurred before the effective date, as provided in Exhibit E. This Agreement shall expire upon the earlier of January 31, 2017 or the date the KHSa terminates (the "Expiration Date").
2. **Agreement Documents.** This Agreement consists of the Grant Agreement through the signature page, together with the following Exhibits, all of which are attached hereto and incorporated herein by reference:

Exhibit A: Project Activities  
Exhibit B: Project Budget Form  
Exhibit C: [RESERVED]  
Exhibit D: [RESERVED]  
Exhibit E: Reimbursable Expenditures

In the event of a conflict between portions of this Agreement, the following order of precedence, listed from highest precedence to lowest precedence, will prevail: this Agreement without Exhibits; Exhibit A; Exhibit B; Exhibit E; Exhibit C; Exhibit D.

3. **Defined Terms.** Capitalized terms used in this Agreement shall have the meanings ascribed to them in this Agreement or as ascribed in the KHSa.



4. **Project Costs; Grant Funds.** In accordance with the terms and conditions of this Agreement, State shall provide Recipient an amount equal to \$308,369 the "Grant Funds") for Eligible Project Costs as provided in this Agreement, and the eligible reimbursements as listed in Exhibit E. The Parties further understand and agree that the Customer Contributions that comprise the Grant Funds were collected pursuant to ORS 757.736 to be used for the purposes described in ORS 757.736(11) as further described in the KHSA. The Customer Contributions are held in segregated trust accounts (the "Trust") established by the State of Oregon, acting by and through its Public Utilities Commission ("PUC"). The Wells Fargo Bank is trustee of the Grant Funds ("Trustee") and releases funds from the Trust as instructed by the PUC consistent with the terms of the Interagency Agreement for KHSA Dam Removal Funding Phase 1A, a copy of which is attached to this Agreement.
5. **Project.** Recipient shall use the Grant Funds, as more fully described in Exhibit A, to hire employees or independent contractors to carry out the administrative functions of Recipient, such as depositing, accounting for and disbursing the Grant Funds, to obtain Recipient's Directors' and Officers' insurance; and other organizational and operating expenses of the Recipient. Additional elements of the Project are also described in Exhibit A. Recipient understands and agrees that it will only expend Grant Funds on project activities and Recipient represents that all such expenditures are necessary to pay costs relating to the Project
6. **Disbursement; Recovery of Grant Funds.**
  - a. **Project Budget/Disbursements.** Grant Funds may be used by Recipient only to pay the costs and expenses of the Project in accord with the Project Budget as described in Exhibits B & E, attached hereto and by this reference made a part of this Agreement. The State has reviewed and approved the attached Project Budget. Recipient may, in its reasonable discretion, modify the Project Budget, including but not limited to reallocating costs within the Project Budget; provided, however, if Recipient modifies a line item in the Project Budget or the total Project Budget by an amount that is greater than 10% then Recipient shall provide an updated budget to the State.
  - b. **Proportional Disbursements.** The Parties understand and agree that the total project cost for Phase One is currently estimated by Recipient to be approximately \$4,400,000 and that Oregon's contribution shall constitute 92 percent of the Phase One costs and that California's contribution shall constitute 8 percent of the total Phase One. The Parties further understand and agree that the Grant Funds to be disbursed under this Agreement constitute a portion of Oregon's contribution of the Phase One funding such that additional disbursements under one or more additional agreement(s) yet to be executed will be necessary to fulfill Oregon's contribution to Phase One costs. The Parties acknowledge that the allocation of funding between the State and the State of California shall apply on a Project basis but shall not require that funds to be expended on any particular Project Costs on a prorata basis based on the allocation of funding for Phase One between the State and the State of California.
  - c. **Frequency of Disbursements.** As soon as practicable after the execution of this Agreement, the State shall request the PUC to instruct the Trustee to disburse the full



amount set forth in Section 4 above to the State in accord with that certain Interagency Agreement executed with OPUC. Upon receipt of this disbursement, the State shall disburse the funds to Recipient.

**d. Expenditure Reports. [RESERVED]**

**e. Definition of Eligible Project Costs.** "Eligible Project Costs" are the Project costs incurred by Recipient in performance of the Project that are consistent with the Project Budget and reasonably necessary for leading to the removal of the Klamath River dams. In the event that Recipient has received interim funding from other sources (other than the State of California and applied such funding to Eligible Project Costs then Eligible Project Costs shall include repayment of such interim funding.

(i) State may request additional documentation or clarification of an expenditure from Recipient, to which Recipient shall promptly respond. If State reasonably determines that an expenditure by Recipient was made to cover a cost that is not an Eligible Project Cost State shall promptly issue a Notice of Concern to Recipient identifying the questioned expenditure or project activities. Recipient shall respond to a Notice of Concern within 30 days with any relevant information regarding the expenditure or project activity, and identifying any corrective action taken. If, following receipt of Recipient's explanation and any supporting documentation, State finds that an expenditure was not an Eligible Project Cost, the State will consider the matter to constitute a "cost dispute." Subsequent agreements with Recipient may be affected by Phase 1A cost disputes, and may include a corresponding reduction in subsequent funding by the State of Oregon or additional reporting requirements.

**f. Recovery of Grant Funds.** Any funds disbursed to Recipient under this Agreement that are expended in violation or contravention of one or more of the provisions of this Agreement ("Misexpended Funds") including disallowed expenditures under section 6.e.i. must be returned to State for return to the appropriate trust. Recipient shall return all Misexpended Funds to State for return to the appropriate trust within 15 days of the State's written demand. Recipient shall apply any unexpended funds as provided in paragraph g. or return any unexpended funds to State within 15 days after the earlier of expiration or termination of this Agreement.

**g. Unexpended Grant Funds.** Any funds disbursed to Recipient under this Agreement that have not be expended on Eligible Project Costs prior to the termination of this Agreement may be retained by Recipient for future expenditure on costs incurred to carry out the Phase One activities described in the Recitals of this Agreement. Recipient shall report the expenditure of such funds in, as applicable, its Final Report or any expenditure reports it is required to submit under future funding agreements related to Phase One of the Project.

**7. Reports.** Within 30 days after the Expiration Date, Recipient shall file with State a final report (the "Final Report") and provide the PUC with a copy of the Final Report. The Final Report must include a summary of all Project costs compared to the Project Budget, together

with reasonable supporting documentation that evidences Recipient's expenditure of the Grant Funds. The Final Report shall include a summary of the Project as completed as well as an explanation for any Project Cost variances that are greater than 10 percent from the Project Budget. The Final Report shall also document the amount of funding received from California for Phase One. The final report shall also include a summary of the Project as completed. The Final Report must be timely submitted to the State Contact and PUC Contact listed below the signature blocks.

**8. Conditions Precedent.**

**a. Conditions Precedent to State's Obligations.** State's obligations under this Agreement are subject to the receipt by State of the following items, all in form and substance satisfactory to State and its counsel:

(i) A copy of the resolution of the Recipient's board of directors authorizing the execution and delivery of this Agreement and performance by Recipient of its obligations hereunder.

**b. Conditions to Disbursement.** State's obligation to disburse any of the Grant Funds to Recipient is subject to the following conditions.

(i) **Expenditure Authority.** Sufficient funds are currently deposited in the Trust Account to fulfill the State's obligation to disburse the Grant Funds under this Agreement. The Trust Account is the sole source of funding for this Agreement and Recipient shall have no recourse to, and the State shall have no obligation to pay, any amounts under this Agreement from, moneys deposited in the State Treasury, including but not limited to the General Fund; nor will the State have any obligation to seek an appropriation or other expenditure authority from the Oregon Legislative Assembly in the event there are insufficient moneys in the Trust Account.

(iii) **No Default.** Recipient is in compliance with the terms of this Agreement.

(iv) **Representations.** Recipient's representations and warranties set forth in Section 9 hereof are true and correct on the date of disbursement with the same effect as though made on the date of disbursement.

(v) **Release of Funds.** The PUC has instructed the Trustee to release in accordance with the IAA, and the Trustee has released from the Trust, an amount sufficient to fund the disbursement, provided that State shall promptly notify Recipient of any failure or delay by the PUC or the Trustee in carrying out any of the foregoing.

**9. Representations, Warranties and Covenants of Recipient.**

**a. Recipient Representations, Warranties.** Recipient makes the following representations and warranties to the State. The warranties set forth in this section are in addition to, and

not in lieu of, any other warranties set forth in this Agreement, the KHSA or implied by law.

- (i) **Organization and Authority.** Recipient is a duly organized and validly existing nonprofit public benefit corporation under the California Corporations Code and is eligible to receive the Grant Funds. Recipient has full power, authority, and legal right to make this Agreement and to incur and perform its obligations hereunder; and the making and performance by Recipient of this Agreement (1) have been duly authorized by all necessary action of Recipient, (2) do not and will not violate any provision of any applicable law, rule, regulation, or order of any court, regulatory commission, board, or other administrative agency or any provision of Recipient's organizational documents, and (3) do not and will not result in the breach of, or constitute a default or require any consent under, any other agreement or instrument to which Recipient is a party or by which Recipient or any of its properties may be bound or affected. No authorization, consent, license, approval of, filing or registration with or notification to any governmental body or regulatory or supervisory authority is required for the execution, delivery or performance by Recipient of this Agreement.
- (ii) **Binding Obligation.** This Agreement has been duly executed and delivered by Recipient and, when executed and delivered by State, constitutes a legal, valid and binding obligation of Recipient, enforceable in accordance with its terms, subject to the application of bankruptcy, insolvency or similar laws relating to the rights of creditors generally and general principles of equity.

- b. **Recipient's Inspections; Information.** During the term of this Agreement, Recipient shall permit the State, at any reasonable time and with reasonable notice, to inspect and make copies of any accounts, books and records, including, without limitation, its records regarding receipts, disbursements, contracts, investment of Grant Funds, if any, and any other matters related to the use of Grant Funds or the Project. The Recipient shall supply related reports and information relating to the Project as the State may reasonably require.

#### 10. **Records Maintenance and Access; Audit Requirements.**

- a. **Records Maintenance and Access.** Recipient shall make and retain proper and complete books of record, and account and maintain all fiscal records related to this Agreement, the Grant Funds, and the Project in accordance with all applicable generally accepted accounting principles. Recipient shall create and maintain all expenditure records in sufficient detail in such a manner as to clearly document Recipient's performance and to permit State to verify how the Grant Funds were expended. Recipient shall ensure that each of its subrecipients, and subcontractors complies with these requirements. State, the Public Utility Commission of Oregon and the Secretary of State of the State of Oregon ("Secretary of State") and their duly authorized representatives shall have access to the books, documents, papers and records of Recipient that are directly related to this Agreement, the funds provided hereunder, or the Project for the purpose of making audits and examinations. In addition, State and the Secretary of State and their duly authorized representatives may make and retain

excerpts, copies, and transcriptions of the foregoing books, documents, papers, and records. Recipient shall permit authorized representatives of State and the Secretary of State to perform site reviews of the Project as needed to determine compliance with the terms of this Agreement.

- b. **Retention of Records.** Recipient shall retain and keep accessible all books, documents, papers, and records that are directly related to this Agreement, the Grant Funds, or the Project for a minimum of six (6) years, or such longer period as may be required by other provisions of this Agreement or applicable law, following the termination of this Agreement. If there are unresolved disputes or audit questions at the end of the retention period, Recipient shall retain the records until the disputes or questions are resolved.
- c. **Audit Requirements.** Recipient shall save, protect and hold harmless State from the cost and expenses of any audits or special investigations performed by the Secretary of State or the federal government with respect to the expenditure by Recipient of Grant Funds disbursed under this Agreement. Recipient acknowledges and agrees that any costs and expenses incurred by Recipient as a result of proven allegations of fraud, waste or abuse are ineligible for reimbursement under this or any other agreement between Recipient and State.

#### 11. Recipient Subagreements.

- a. **Subagreements.** Recipient may enter into agreements with sub-recipients, contractors or subcontractors (collectively, "subagreements") for performance of the Project, including an agreement for the position of executive director. Any material breach of a term or condition of a subagreement relating to use of the Grant Funds must be reported by Recipient to State within ten (10) days of its being discovered. Use of a subagreement does not relieve Recipient of its responsibilities under this Agreement.
- b. **Indemnity.** Recipient's subagreement(s) shall require the other party to such subagreements(s) to indemnify State on substantially the same terms as Recipient is indemnifying State as set forth in Section 12(a).
- c. **Insurance.** Recipient shall cause the other party, or parties, to each of its subagreements to obtain and maintain insurance of the types and in the amounts as set forth in Section 12(b).

#### 12. Indemnity; Insurance.

- a. **Indemnity.** Recipient and State acknowledge and agree that the indemnity provided in Section 7.1.3 of the KHSa shall be applicable to this Agreement.

Neither Recipient, nor any attorney engaged by Recipient shall defend any Claim in the name of the State or any agency of the State of Oregon, nor purport to act as legal representative of the State of Oregon or any of its agencies, without the prior written consent of the Oregon Attorney General. The State may, at any time at its election,

assume its own defense and settlement in the event that it determines that Recipient is prohibited from defending State or that Recipient is not adequately defending State's interests, or that an important governmental principle is at issue or that it is in the best interests of State to do so. State reserves all rights to pursue claims it may have against Recipient if State elects to assume its own defense.

- b. **Insurance.** Recipient shall maintain, or cause to be maintained, insurance policies with responsible insurers or self-insurance programs, insuring against directors' and officers' liability. Recipient shall provide a summary of any insurance coverage to State within ten days following the effective date of this agreement and upon the execution of any additional insurance agreements.

**13. Compliance with Laws.**

- a. **Compliance with Laws.** Recipient shall comply with all Applicable Laws, as that term is defined in the KHSa Section 1.4 and if not included with the Applicable Laws, all other laws, rules, regulations and orders of any court or governmental authority that relate to this Agreement and the Project, including without limitation, to the extent otherwise applicable:

- (i) To the extent applicable, the prevailing wage rate requirements set forth in ORS 279C.800 through 279C.870 and the administrative rules promulgated thereunder ("Prevailing Wage Rate Law" or "PWR"), or, if applicable, 40 U.S.C. 3141 et seq. ("Davis-Bacon Act"). Recipient shall require its contractors and subcontractors to pay the applicable prevailing wage rate and to comply with all other applicable Oregon Bureau of Labor and Industries ("BOLI") requirements pursuant to the Prevailing Wage Rate Law, including on all contracts and subcontracts and in filing separate works bonds with the Construction Contractors Board, unless exempt under ORS 279C.836 and OAR 839-025-0015. If the Project is subject to the Davis-Bacon Act, Recipient shall comply with and require its contractors and subcontractors to comply with the Davis-Bacon Act and any applicable provisions of Oregon PWR. If the Project is or becomes subject to both PWR and the Davis-Bacon Act, all subject workers must be paid the higher of applicable state or federal prevailing wage rate. The applicable rates are those in effect on the Effective Date of this Agreement. PWR and Davis-Bacon Act prevailing wage rates may be accessed via: [http://www.oregon.gov/boli/WHd/PWR/Pages/pwr\\_state.aspx](http://www.oregon.gov/boli/WHd/PWR/Pages/pwr_state.aspx) and <http://www.wdol.gov>.

Recipient represents and warrants that it is not on the BOLI current List of Contractors Ineligible to Receive Public Works Contracts and that it will not contract with any contractor on this list at the time it enters into such contract. Recipient agrees to indemnify, hold harmless and reimburse the State and its officers, employees and agents for any liability, cost, expense, fine, fee or penalty payable to a person or private or governmental entity, including another agency of the State of Oregon (collectively "liability") incurred to comply with, to obtain a



determination under, or in any other way related to the Prevailing Wage Rate Law or Davis-Bacon Act.

- (ii) Other applicable law and local contracting procedures including but not limited to: procurement, site acquisition, site development, construction, equipping and implementation of the Project. In particular, and without limiting the foregoing, Recipient shall comply, and require its subrecipients, and contractors to comply, with all applicable procurement regulations found in the Oregon Public Contracting Code, ORS chapters 279A, 279B and 279C. These laws, rules, regulations and orders are incorporated by reference in this Agreement to the extent required by law.
  - (iii) Without limiting the generality of the foregoing, Recipient expressly agrees to comply with (i) Title VI of Civil Rights Act of 1964; (ii) Title V and Section 504 of the Rehabilitation Act of 1973; (iii) the Americans with Disabilities Act of 1990 and ORS 659A.142; (iv) all regulations and administrative rules established pursuant to the foregoing laws; and (v) all other applicable requirements of federal and state civil rights and rehabilitation statutes, rules and regulations.
- b. Recipient agrees to contract with, and require any subrecipients to contract with, competent, properly licensed and bonded contractors and professionals for the performance of the Project.
  - c. All subagreements that Recipient may enter which are funded wholly or in part with the Grant Funds must be subcontractual in nature, with the other party engaged in the role of a subcontractor. Recipient will administer all contracts with its subcontractors to ensure compliance by any subcontractors with the terms of this Agreement with respect to requirements that flow through to subcontractors.

#### 14. Termination; Default

- a. **Termination by State.** State may terminate this Agreement effective upon delivery of written notice of termination to Recipient, or at such later date as may be established by State in such written notice, only if:
  - (i) State fails to receive funding, appropriations, limitations or other expenditure authority sufficient to allow State, in the exercise of its reasonable administrative discretion, to continue to make payments for performance of this Agreement; or
  - (ii) Federal or state laws, rules, regulations or guidelines are modified or interpreted in a non-stayed or otherwise effective judgment binding on the State by a court of competent jurisdiction in such a way that the Project is no longer allowable or no longer eligible for funding under this Agreement;
  - (iii) The occurrence of an Event of Default listed below; or

- (iv) If PUC fails for any reason to direct the Trustee to release Grant Funds in response to a request from State to effect a disbursement under Section 6.a. of this Agreement, or indicates to the State that it is unwilling to disburse the Grant Funds, provided that, in such case, the State shall immediately notify the Recipient of such occurrence. The State will not terminate this Agreement under this provision until at least thirty (30) days after the date of its notice to Recipient.
- b. **Event of Default.** The occurrence of any of the following listed events shall constitute an Event of Default under this Agreement:
- (i) Any materially false or misleading representation is made by Recipient in this Agreement or in any document provided by or on behalf of Recipient related to this Agreement or the Project; or
  - (ii) A petition, proceeding or case is filed by or against Recipient, or a construction manager or Successor Entity described in Section 7.b of this Agreement (for purposes of this section, each a "Debtor") under any federal or state bankruptcy or insolvency law, and in the case of a petition filed against the Debtor, the Debtor acquiesces to such petition or such petition is not dismissed within 90 calendar days after such filing;; Debtor files a petition seeing to take advantage of any other law relating to bankruptcy, insolvency, reorganization, liquidation, dissolution, winding-up or composition or adjustment of debts; Debtor admits in writing its inability to pay its debts as they become due, or makes an assignment for the benefit of its creditors; Debtor applies for or consents to the appointment of, or taking of possession by, a custodian (including, without limitation, a receiver, liquidator or trustee) of Debtor or any substantial portion of its property; or Debtor takes any action for the purpose of effecting any of the above; or
  - (iii) Recipient fails to perform any material obligation required under this Agreement and that failure continues for a period of 30 calendar days after written notice specifying such failure is given to Recipient by State, except with respect to any shorter period expressly provided in this Agreement, provided that so long as Recipient is diligently seeking to cure such failure to perform such 30 day period shall be extended.
- c. **Remedies.** Upon the occurrence of an Event of Default the State, may, at its option, pursue any or all of the remedies available under this Agreement and at law or in equity, including but not limited to:
- (i) Ceasing disbursement of Grant Funds under any grant agreement between the Parties, whether this Agreement or a grant agreement executed after the effective date of this Agreement;
  - (ii) Terminating this Agreement with Recipient;
  - (iii) bringing an action at law to recover damages incurred as a result of the Event of Default, in

order to recover all Grant Funds disbursed to the Recipient hereunder, with interest thereon; and

(iv) seeking any equitable remedies, including specific performance, which may be available to the State.

d. **No Termination by Recipient.** Recipient may not terminate this Agreement.

#### 15. General Provisions

a. **Dispute Resolution.** The Parties shall attempt in good faith to resolve any dispute arising out of this Agreement. In addition, the Parties may agree to utilize a jointly selected mediator or arbitrator (for non-binding arbitration) to resolve the dispute short of litigation.

b. **Amendments.** This Agreement may be amended or extended only by a written instrument signed by both Parties and approved by the Department of Justice as required by applicable law.

c. **No Third Party Beneficiaries.** State and Recipient are the only Parties to this Agreement and are the only Parties entitled to enforce its terms. Nothing in this Agreement gives, is intended to give, or shall be construed to give or provide any benefit or right, whether directly or indirectly, to a third person unless such a third person is individually identified by name herein and expressly described as an intended beneficiary of the terms of this Agreement.

d. **Notices.** Except as otherwise expressly provided in this Agreement, any communications between the Parties hereto or notices to be given hereunder shall be given in writing by personal delivery, facsimile, email, or mailing the same, postage prepaid, to Recipient Contact or State Contact at the address or number set forth on the signature page of this Agreement, or to such other addresses or numbers as either Party may hereafter indicate pursuant to this Section 15.d. Any communication or notice personally delivered shall be deemed to be given when actually delivered. Any communication or notice delivered by facsimile shall be deemed to be given when receipt of the transmission is generated by the transmitting machine, and to be effective against State, such facsimile transmission must be confirmed by telephone notice to State Contact. Any communication by email shall be deemed to be given when the recipient of the email acknowledges receipt of the email. Any communication or notice mailed shall be deemed to be given when received.

e. **Choice of Law; Designation of Forum; Federal Forum.**

(i) The laws of the State of Oregon (without giving effect to its conflicts of law principles) govern all matters arising out of or relating to this Agreement, including, without limitation, its validity, interpretation, construction, performance, and enforcement.



- (ii) Any Party bringing a legal action or proceeding against any other Party arising out of or relating to this Agreement shall bring the legal action or proceeding in the Circuit Court of the State of Oregon for Marion County (unless Oregon law requires that it be brought and conducted in another county). Each Party hereby consents to the exclusive jurisdiction of such court, waives any objection to venue, and waives any claim that such forum is an inconvenient forum.
  - (iii) Notwithstanding the prior paragraph, if a claim must be brought in a federal forum, then it must be brought and adjudicated solely and exclusively within the United States District Court for the District of Oregon. This paragraph applies to a claim brought against the State of Oregon only to the extent Congress has appropriately abrogated the State of Oregon's sovereign immunity, and is not consent by the State of Oregon to be sued in federal court. This paragraph is also not a waiver by the State of Oregon of any form of defense or immunity, including but not limited to sovereign immunity and immunity based on the Eleventh Amendment to the Constitution of the United States.
- f. **Survival.** The following sections or subsections of this Agreement shall survive the Expiration Date and any earlier termination of this Agreement: Sections 6.e.i, 6.f and g; 7, 10, 12, 13, 14.c, 15.a., e., f., h. and any other section or provision that by its terms is intended to survive.
- h. **Severability.** If any term or provision of this Agreement is declared by a court of competent jurisdiction to be illegal or in conflict with any law, the validity of the remaining terms and provisions shall not be affected, and the rights and obligations of the Parties shall be construed and enforced as if this Agreement did not contain the particular term or provision held to be invalid.
- i. **Counterparts.** This Agreement may be executed in two or more counterparts (by facsimile or otherwise), each of which is an original and all of which together are deemed one agreement binding on all Parties, notwithstanding that all Parties are not signatories to the same counterpart.
- j. **Integration and Waiver.** This Agreement and the KHSA, as they may be amended from time to time, including all Exhibits, constitute the entire agreement between the Parties on the subject matter hereof. There are no understandings, agreements, or representations, oral or written, not specified herein regarding this Agreement. The delay or failure of either Party to enforce any provision of this Agreement shall not constitute a waiver by that Party of that or any other provision.
- k. **KHSA.** This Agreement is intended to facilitate the implementation of the KHSA. Nothing in this Agreement shall be construed in a way that is inconsistent with or conflicts with the terms of the KHSA. In the event of any such conflict or inconsistency the applicable terms shall be deemed waived or modified to the extent necessary to comply with the requirements of the KHSA insofar as the KHSA's requirements are consistent with law.

ORDER NO. 17 018

**THE PARTIES**, by execution of this Agreement, hereby acknowledge that each Party has read this Agreement, understands it, and agrees to be bound by its terms and conditions.

SIGNATURE PAGE TO FOLLOW

ORDER NO. 17 018

Klamath River Renewal Corporation

By Michael Carrier  
Name Michael Carrier  
(printed)  
Title President, Board of Directors  
Date October 5, 2016

**APPROVED**

(If required)

By \_\_\_\_\_  
Recipient's Legal Counsel

Date \_\_\_\_\_

**Recipient Contact:**

Name: Kirk Marckwald  
Title: Principal, California Environmental Associates  
Address: 423 Washington St, 3rd Floor  
Address: San Francisco, CA 94111  
Phone: 415-820-4412  
Email: kirk@ceaconsulting.com

**State Contact:**

Name: \_\_\_\_\_  
Title: \_\_\_\_\_  
Address: \_\_\_\_\_  
Salem OR 973 \_\_\_\_\_  
Phone: 503- \_\_\_\_\_  
Email: \_\_\_\_\_

**PUC Contact:**

Name: \_\_\_\_\_

STATE OF OREGON, acting by and through its  
Department of Fish and Wildlife

By William Herber  
Name: William Herber  
(printed)  
Title: Deputy Director for Administration  
Date October 7, 2016

**APPROVAL RECOMMENDED**

By \_\_\_\_\_

Date \_\_\_\_\_

By \_\_\_\_\_

Date \_\_\_\_\_

**APPROVED AS TO LEGAL SUFFICIENCY**  
(For funding over \$150,000)

By \_\_\_\_\_  
Assistant Attorney General

Name \_\_\_\_\_  
(printed)

Date \_\_\_\_\_

ORDER NO. 17 018

Title: \_\_\_\_\_

Address: \_\_\_\_\_

Salem OR 973 \_\_\_\_\_

Phone: 503- \_\_\_\_\_

Email: \_\_\_\_\_

**EXHIBIT A  
THE PROJECT ACTIVITIES**

**1. Establish and administer personnel, office and budget**

A. Recipient shall hire as an employee or contract for the services of an independent contractor to perform the duties of its executive director.

B. Recipient shall open an account in a financial institution for the deposit of Grant Funds.

C. Recipient shall take such other measures as are reasonably necessary or convenient for the commencement of its operations and the performance of its obligations under the KHSA.

**2. Insurance**

A. Recipient shall maintain Directors' and Officers' liability insurance in commercially reasonable amounts and will cover all present and future officers and directors.

**3. FERC Informational Filing**

Recipient shall submit to the State a copy of the FERC license transfer application as described in the KHSA section 7.1.2.C

**EXHIBIT B  
PROJECT BUDGET**

September	October	Total
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**Expenses**

Compensation of officers, directors, and trustees	\$ -	\$ -
Salaries and Benefits	\$ -	\$ 22,000
Occupancy	\$ -	\$ 1,000
Professional Services		
Legal	\$ 35,500	\$ 35,500
Technical	\$ 10,000	\$ 10,000
Interim Staff Assistance	\$ 36,000	\$ 34,000
	\$ -	\$ -
Other Expenses	\$ -	\$ -
Travel	\$ 5,000	\$ 5,000
Office Expense and Services	\$ 3,000	\$ 3,000
Insurance (Directors and Officers, General Liability)	\$ -	\$ -

**Total Estimated Expenses**                      \$ 89,500      \$110,500      \$ 200,000

**Balance Needed to Cover  
Expenditures to Date & Ongoing  
Obligations ( Exhibit E)**

\$ 108,369

**Total needed for Phase 1A**

**\$ 308,369**

ORDER NO. 17 018

EXHIBIT C

[RESERVED]

EXHIBIT D

[RESERVED]

**EXHIBIT E**  
**AUTHORIZED KRRC EXPENSE REIMBURSEMENTS**

	April-July 2016	August	Total
<b>Expenses</b>			
Compensation of officers, directors, and trustees	\$ -	\$ -	
Salaries and Benefits	\$ -	\$ -	
Occupancy	\$ -	\$ -	
Professional Services			
Legal	\$ 16,000	\$ 30,000	
Technical	\$ 1,000	\$ 4,000	
Interim Staff Assistance	\$ 34,000	\$ 46,000	
		\$ -	
Other Expenses		\$ -	
Travel	\$ 2,326	\$ 3,000	
Office Expense and Services	\$ 2,000	\$ 3,000	
Insurance (Directors and Officers, General Liability)	\$ 9,543		
<b>Total Expenses</b>	<b>\$ 64,869</b>	<b>\$ 86,000</b>	<b>\$ 150,869</b>
<b>State Funding to Date</b>			
California			\$ 20,000
Oregon			\$ 22,500
Advanced to Pacific Cascade	\$ 7,906		
Balance of Oregon Funding	\$ 14,594		
Total Initial State Funding Available			\$ 42,500
<b>Needed to Cover Expenditures to Date &amp; Ongoing Obligations</b>			<b>\$ 108,369</b>



ORDER NO. 17 018



## CONFIRMATION OF INSURANCE

July 22, 2016

Willis of Illinois, Inc. - Chicago  
Charina L. Almeyda  
233 South Wacker Drive Suite 2000  
Chicago, IL 60606

FROM: John Delaplane for Jonathan Reiner

I am pleased to confirm that your Directors & Officers/EPL Package insurance has been bound pursuant to your request. The attached Confirmation of Insurance will serve as evidence of coverage until the insurance carrier issues the policy. This insurance document summarizes the policy referenced above and is not intended to reflect all the terms and conditions or exclusions of the referenced policy. In the event of a claim, coverage will be determined by the referenced policy, subject to all the terms, exclusions and conditions of such. Moreover, the information contained in this document reflects bound coverage as of the effective date of the referenced policy and does not include subsequent changes by the insurer or changes in the applicable rates for taxes or governmental fees.

<b>NAMED INSURED:</b>	Klamath River Renewal Corporation 600 Wilshire Blvd. Suite 980 Los Angeles, CA 90014	
<b>PRIMARY RISK ZIP CODE:</b>	90014	
<b>COVERAGE:</b>	Directors & Officers/EPL Package	
<b>INSURER:</b>	Underwriters at Lloyds (Non-Admitted) - Non-Admitted	
<b>POLICY NUMBER:</b>	ANV109585A	
<b>POLICY TERM:</b>	7/21/2016 - 1/31/2017	
<b>POLICY PREMIUM:</b>	\$5,000.00	
<b>TRIA:</b>	MEP	
<b>FEES:</b>	<b>TOTAL FEES:</b>	
<b>SURPLUS LINES TAX:</b>	Surplus Lines Tax	\$150.00
	Stamping Office Fee	\$10.00
	<b>TOTAL TAXES:</b>	<b>\$160.00</b>
<b>TOTAL:</b>	\$5,160.00	
<b>AGENT COMMISSION:</b>	11%	

ORDER NO. 17 018



**SUBJECTIVIES DUE PRIOR TO POLICY ISSUANCE:**

- Complete signed & dated ANV Application
- Most recent audited financials with notes

**SPECIAL CONDITIONS / OTHER COVERAGES:**

- NO FLAT CANCELLATIONS
- ALL FEES ARE FULLY EARNED AT INCEPTION

For R-T Specialty to file the surplus lines taxes on your behalf, please complete the surplus lines tax document and return with your request to bind. Due to state regulations, R-T Specialty requires tax document to be completed within 24 to 48 hours of binding. Please be diligent returning tax forms.

A handwritten signature in black ink, appearing to be "C. L. Turner", written over a horizontal line.

Authorized Representative

**HOME STATE FOR NON-ADMITTED RISKS**

Taxes and governmental fees are estimates and subject to change based upon current rates of the Home State and risk information available at the date of binding. The Home State of the Insured for a non-admitted risk shall be determined in accordance with the Non-admitted and Reinsurance Act of 2010, 15. U.S.C §8201, etc. ("NRRA"). Some states require the producing broker to submit a written verification of the insured's Home State for our records. The applicable law of the Home State governing cancellation or non-renewal of insurance shall apply to this Policy.

Any amendments to coverage must be specifically requested in writing or by submitting a policy change request form and then approved by the Insurer. Coverage cannot be affected, amended, extended or altered through the issuance of certificates of insurance. Underlying Insurers must be rated A- VII or better by A.M. Best.

ORDER NO. 17 018



**PREMIUM FINANCE** If the insured and the Insurer agree to bind coverage and the premium will be financed, we will need the following information and, upon binding, please instruct the premium finance company to send documents to our attention. Premium Finance funds should always be paid to R-T Specialty, LLC:

Name of Premium Finance Company:	
Premium Finance Account Number:	

In order to place the insurance requested we may charge a reasonable fee for additional services that may include performing a risk analysis, comparing policies, processing submissions, communication expenses, inspections, working with underwriters on the coverage proposal, issuing policies or servicing the policy after issuance. We have extensive insurance experience and will represent you honestly and competently in rendering services. Third-party inspection or other fees may be separately itemized upon request. If the insured recommends an inspection company we will endeavor to determine if it is approved by the Insurer. To the extent the insured paid us a fee for services, we represent the insured in performing those services. Our fees are fully earned and nonrefundable, except when required by applicable law. Our fees are applied to new policies, renewal policies, endorsements and certificates. Fees applicable to each renewal, endorsement and certificate will be explained in the quotes. In the event that the premium is adjustable upwards, our fees are adjustable as well and will be collected against any additional premium. The fee charged by us does not obligate the insured to purchase the proposed insurance or the Insurer to bind the proposed insurance. Our fee is not imposed by state law or the Insurer. This fee authorization shall remain operative until terminated by written notice. Depending upon the Insurer involved with your placement, we may also receive a commission from the Insurer.

We may also have an agreement with the Insurer that we are proposing for your insurance that may pay us future additional compensation. This type of compensation is in addition to any fees and/or commissions that we have agreed to accept for servicing your insurance. This compensation could be based on formulas that consider the volume of business placed with the company, the profitability of that business, how much of the business is retained for the company's account each year, and other factors. The agreements frequently consider total eligible premium from all clients placed during a calendar year and any profit-sharing payment is usually received after the end of the following calendar year. Because of variables in these programs, we have no accurate way at this time to determine the amount of any additional compensation that might be attributable to your insurance.

Insurers may choose to delegate their authority for some classes of business to underwriting managers. Some affiliates of Ryan Specialty Group, LLC (RSG) have been delegated authority for underwriting or other services on behalf of Insurers. An underwriting manager (UM) is a segregated business unit separate from the brokering, sales and service teams within RSG. If you need additional information about the compensation arrangements for RSG affiliated UM's or producers please contact your RSG representative.

R-T Specialty, LLC (RT), a subsidiary of Ryan Specialty Group, LLC, provides wholesale brokerage and other services to agents and brokers. RT is a Delaware limited liability company based in Illinois. As a wholesale broker, RT does not solicit insurance from the public. Some products may only be available in certain states, and some products may only be available from surplus lines Insurers. In California: R-T Specialty Insurance Services, LLC License #0G97516.

© 2014 Ryan Specialty Group, LLC

17 018

ORDER NO.

**INSURANCE BINDER**

Policy Number: ANV109585A

Named Insured: Klamath River Renewal Corporation

**CERTIFICATES OF INSURANCE**

The Company will not review, accept or retain copies of any certificates of insurance or additional insured endorsements prepared by anyone. Moreover, the Company will not be responsible for any liability resulting from the issuance of any unauthorized endorsement or the issuance of an endorsement which has been authorized by the Company but where the authorized wording is amended or revised in any way, without the prior written approval of the Company. The Company will not be responsible for any liability resulting from the issuance of any certificate of insurance. In no event does anyone have the authority to issue certificates of insurance which include any addition and/or modification of the policy terms and conditions, additional named insureds, waivers of subrogation or any special additional coverages unless expressly approved in writing by the Company.

Copies of all certificates of insurance and any endorsement sent with those certificates must be retained by the issuer for the time period required by state law or regulation in the state in which the certificate of insurance is issued, but in no event less than five years from the date indicated on the certificate.

Unless this policy is physically endorsed, the issuance of a certificate of insurance does not amend, extend, or alter the coverage provided by this policy or change the person(s) or entities to whom such coverage is afforded under this policy. No one without the express written authority of the Company has the authority to issue certificates of insurance or endorsements of any kind including without limitation additional insured endorsements, which include any addition and/or modification of this policy's terms and conditions, or purport to add any additional insured(s) and/or change any term, condition, or provision of this policy unless such policy changes or modifications are first approved by the Company and a policy endorsement is issued by the Company and signed by an officer of the Company.



ANV GLOBAL SERVICES INC

ON BEHALF OF

ANV SYNDICATE 1861 AT LLOYD'S - 50%

RENAISSANCE RE SYNDICATE 1458 AT LLOYD'S - 50%

UMP: B007515A22T5001

ANV109585A



ORDER NO. 17 018

**ANV**

**INSURANCE BINDER**

Policy Number: ANV109585A

Klamath River Renewal Corporation  
600 Wilshire Blvd Suite 980  
Los Angeles, CA 90014

*Policy Period:* From **July 21, 2016 to January 31, 2017** at 12:01 A.M. Standard Time at your mailing address shown above.

**COVERAGES**

Not For Profit Individual and Organization Management Liability Insurance Liability Insurance Policy CLAIMS MADE

<b>LIMITS OF LIABILITY*</b>	<b>Shared Limit</b>	<b>Separate Limit</b>	<b>Aggregate Limit</b>
Aggregate Limit for all <b>Loss</b> under all Coverages combined			\$1,000,000
Limit for all <b>Loss</b> for all <b>Claims</b> other than <b>Employment Practices Claims</b>	\$1,000,000	N/A	
Limit for all <b>Loss</b> for all <b>Claims</b> for <b>Employment Practices Wrongful Acts</b>	Not Covered	Not Covered	
Limit for all <b>Loss</b> for all <b>Claims</b> for <b>Third Party Discrimination</b>	Not Covered		
<b>SUBLIMITS OF LIABILITY*</b>			
Sublimit for all <b>Excess Benefit Transaction Excise Taxes</b>	\$125,000		
Sublimit for all <b>Loss</b> for all <b>Crisis Management Expenses</b>	Not Covered		

*\*Includes Costs of Defense*



RETENTION*	
COVERAGE PART	RETENTION
Each <b>Claim</b>	\$15,000
Each <b>Claim</b> alleging an <b>Employment Practices Wrongful Act</b>	Not Covered
Each <b>Claim</b> alleging <b>Third Party Discrimination</b>	Not Covered

*\*Applies to Costs of Defense*

PRIOR AND PENDING LITIGATION DATE	
COVERAGE PART	DATE
<b>Employment Practices Claims:</b>	Not Covered
All other <b>Claims:</b>	July 21, 2016

**PREMIUM: \$5,000**

All premiums applicable to additional coverage(s) as required during the policy period will be invoiced separately and will not apply toward the estimated policy premiums. **The collection and filing of all surplus lines taxes and fees as well as any other applicable surcharges shall be the sole responsibility of the Excess and Surplus Lines Broker and not included as part of the premiums set forth above.**

**SUBJECTIVITIES**

Please be advised that coverage has been bound conditional upon receipt, review, verification and approval of the following items within 30 days of binding coverage:

Complete signed & dated ANV Application

Most recent audited financials with notes

In order to complete the underwriting process, we require that you send us the subjectivities requested above. We are not required to bind coverage prior to our receipt, review and underwriting approval of the above information. However, if we do bind coverage prior to such approval, it shall be for a temporary period of not more than 30 days. Such temporary binding of coverage shall be void ab initio ("from the beginning") if we have not received, reviewed and approved in writing such material within 30 days from the effective date of the temporary binder.

**Failure to provide ANV with any of the above listed items, within the specified time frame, can result in the automatic issuance of a Notice of Cancellation.**

17 018

**ENDORSEMENTS:**

ENDORSEMENT #	ENDORSEMENT NAME
ANV CA 0100	California Policyholders Notice
ANV NP 0001	ANV Not for Profit Organization Management Liability Policy
ANV PL 0047	Exclusion of Certified Acts of Terrorism
ANV PL 0102	U.S. Treasury Department OFAC Advisory Notice
ANV NP 0012	Accreditation and Related Activities Exclusion
ANV PL 1000	General Change Endorsement: Any <b>Claim</b> brought by Doug LaMalf and/or Hoopa Valley Tribe will be subpect to a \$25,000 retention
ANV PL 0010	Absolute Bodily Injury And Property Damage Exclusion
ANV PL 0147	Deceptive Business Practices Exclusion
ANV PL 0026	Broadcasting, Advertising & Publishing Liability Exclusion
ANV CA 0101	Amended Service Of Suit Clause - California



**MINUTES OF THE BOARD OF DIRECTORS MEETING OF  
KLAMATH RIVER RENEWAL CORPORATION**  
August 17, 2016

1. Time and Place. The Board of Directors ("Board") of Klamath River Renewal Corporation (the "Corporation") held its organizational meeting on August 17, 2016 at Oregon Department of Environmental Quality, Northwest Regional Office, 700 NE Multnomah Street, Suite 600, Conference Room #610 Portland, OR 97232 at 10:00 a.m. Pacific time.
2. Attendance. The following Directors of the Corporation were present:

<b>Board Member</b>	<b>Appointing Authority</b>
Lester Snow	State of California
Wendy George	Karuk Tribe
Thomas Jensen	Institute for Fisheries Resources and Pacific Coast Federation of Fishermen's Associations
Theodore Kulongoski	State of Oregon
Richard Roos-Collins	American Rivers, California Trout, Klamath Riverkeeper, Northern California Council Federation of Fly Fishers, Salmon River Restoration Council, Sustainable Northwest, Trout Unlimited
Scott Williams	Yurok Tribe

The following Directors of the Corporation were absent:

<b>Board Member</b>	<b>Appointing Authority</b>
Michael Carrier	State of Oregon
James Root	State of Oregon

The following guests were also present by invitation of the Board:

<b>Name</b>	<b>Title and Affiliation</b>
Glen Spain (Board alternate)	Northwest Regional Director, Pacific Coast Federation of Fishermen's Associations and the Institute for Fisheries Resources
Joshua Adrian	Partner, Duncan, Weinberg, Genzer & Pembroke; California Natural Resources Agency Counsel
Charlton Bonham	Director, California Department of Fish and Wildlife
Jennifer Frozena	Attorney, United States Department of Interior
Kurt Burkholder	Technical Consultant, Klamath River Renewal Corporation
Thomas Gibson	Deputy Secretary and General Counsel, California Natural Resources Agency
Bob Gravely	Manager of Communications and Public Affairs, PacifiCorp
Sarah Kamman	Vice President General Counsel, Pacific Power



Lloyd Lowy (via phone)	Partner, Hawkins, Delafield, and Wood LLP
Dennis Lynch	Associate Regional Director, Northwest Region, United States Geological Survey
Olivia Mahony	Associate, California Environmental Associates
Kirk Marckwald	Principal, California Environmental Associates
Anika Marriott	Assistant Attorney General, Oregon Department of Justice
Peter Okurowski	Director, California Environmental Associates
Eric Petersen (via phone)	Partner, Hawkins, Delafield, and Wood LLP
Dustin Till	Senior Counsel, Pacific Power
Craig Tucker (via phone)	Natural Resources Policy Advocate, Karuk Tribe
Darcy Wheelles (via phone)	Director, California Environmental Associates
Richard Whitman	Natural Resources Policy Director, State of Oregon

3. Call to Order. Mr. Snow called the meeting to order and acted as Chair thereof, and Ms. Mahony acted as Recording Secretary of the meeting. Mr. Snow announced that a quorum of the Directors was present, and that the meeting, having been duly convened, was ready to proceed with its business.
4. Approval of Agenda. Mr. Snow asked for any changes and reordering of agenda. With no suggested changes from the Board, the agenda was approved.
5. Approval of Minutes. Mr. Snow presented to the Board the minutes of the July 19, 2016 meeting of the Board for approval, whereupon motion duly made by Mr. Roos-Collins, seconded by Mr. Spain and unanimously carried, the minutes were approved as presented.

*10:17 a.m. Thomas Jensen joined the meeting.*

*10:20 a.m. Eric Petersen and Lloyd Lowy joined the meeting.*

6. Resolutions. Upon motion duly made by Mr. Roos-Collins, seconded by Mr. Williams and unanimously carried, the following resolutions to amend the Bylaws of the Corporation were adopted, as amended:

**WHEREAS**, the Board of Directors of the Klamath River Renewal Corporation deems it to be in the best interests of the organization that the following actions be taken by the Directors of this corporation pursuant to this Resolution;

**NOW, THEREFORE, BE IT RESOLVED** that Section 4.6 of Article IV of the Bylaws of this corporation be amended as shown on the black-lined version of this section.

Section 4.6. Fees and Compensation. Non-Directors who are appointed to Board Committees may receive reasonable compensation of up to an

amount to be determined by the Board. Reimbursement for expenses incurred in performance of duties may be fixed or determined by the Board.

**BE IT FURTHER RESOLVED** that the citation in the last sentence of Section 3.2(b) of Article III be corrected from "Part B of Exhibit 2" to "Part B of Exhibit 1."

**BE IT FURTHER RESOLVED** that all other provisions of the Bylaws as adopted shall remain in effect and the foregoing amendment shall be incorporated into the standing Bylaws of the Klamath River Renewal Corporation.

7. FERC. Mr. Whitman, along with Mr. Burkholder, Mr. Gibson, and Mr. Bonham, provided an update to the Board on the August 10, 2016 introductory meeting between the Corporation, PacifiCorp, and the Federal Energy Regulatory Commission ("FERC"). Mr. Adrian then presented on the status of the License Transfer and License Surrender Applications. There was discussion regarding the timing of and next steps with regard to the filing of the Applications with FERC, as well as the Corporation's communications strategy surrounding the filing.

Upon motion duly made by Mr. Jensen, seconded by Mr. Williams, and unanimously carried, the Board authorized the Executive Committee of the Board to send correspondence to FERC in tandem with PacifiCorp to notify FERC of the intention to file the License Transfer and License Surrender Applications by September 23, 2016. Ms. George abstained from the vote.

8. Status Updates. Mr. Snow updated the Board on the acquiring of Directors and Officers Insurance, the Expense Reimbursement Policy, and introduced the Board to Mr. Burkholder, KRRC Technical Consultant.

*11:45 p.m. Darcy Wheelles left the meeting.*

*11:55 p.m. Eric Petersen and Lloyd Lowy left the meeting.*

*12:00 p.m. Dennis Lynch, Jennifer Frozena, Sarah Kamman, Dustin Till, and Bob Gravely joined the meeting.*

*12:32 p.m. Darcy Wheelles rejoined the meeting.*

9. PacifiCorp Presentation. Ms. Kamman, Mr. Till, and Mr. Gravely provided an overview of PacifiCorp's organizational structure and history. There was discussion about the coordinating efforts between PacifiCorp and the Corporation with regard to the filing of the License Transfer and License Surrender Applications to FERC, including scheduling additional meetings with FERC staff and commissioners and a joint communications strategy.

*12:54 p.m. Craig Tucker joined the meeting.*

*1:48 p.m. Sarah Kamman, Dustin Till, Bob Gravely, Anika Marriott, Thomas Gibson, and Joshua Adrian left the meeting.*

10. USGS Presentation. Mr. Lynch presented on the federal science process, plans, and technical findings on the Klamath River dam removal, including a summary of the Detailed Plan of dam removal and costs, reservoir sediment studies, technical findings, environmental compliance, and the next steps for the United States Geological Survey ("USGS") and Department of Interior.

*2:15 p.m. Eric Petersen and Thomas Gibson rejoined the meeting.*

*2:22 p.m. Chuck Bonham left the meeting.*

*2:45 p.m. Chuck Bonham rejoined the meeting.*

*2:50 p.m. Lloyd Lowy rejoined the meeting.*

*2:52 p.m. Anika Marriott and Joshua Adrian rejoined the meeting.*

*2:58 p.m. Dennis Lynch, Jennifer Frozena, and Thomas Gibson left the meeting.*

11. Review of Operations. Mr. Whitman presented on the status of the Oregon Funding Agreement and Mr. Bonham and Mr. Gibson presented on the status of the California Funding Agreement. There was discussion about the next steps of the Funding Agreements. Upon motion duly made by Mr. Roos-Collins, seconded by Mr. Williams, and unanimously passed, the Board approved the Executive Committee of the Board to sign Funding Agreements in between Board meetings, with the assistance of legal and technical counsel.

Mr. Snow presented on the potential staffing needs of the Corporation. There was discussion of the timeline of tasks moving forward and various skill sets desired in potential hires for the Corporation.

12. New Business. Upon motion duly made by Mr. Roos-Collins, seconded by Mr. Williams, and unanimously carried, the KRRC logo was approved for use by the Corporation.
13. Potential Next Meeting Date(s) and Location. After discussion of dates, the Board approved the next meeting in Sacramento, CA on October 27, 2016. It was decided that the Board would have an interim update meeting the week of September 19, 2016 before the License Transfer and License Surrender Applications are filed with FERC.

Upon motion duly made by Mr. Williams, seconded by Mr. Roos-Collins, and unanimously passed, the Board authorized the Executive Committee of the Board to file the California and Oregon 401 Certification Applications in between Board meetings, with the assistance of legal and technical counsel.

*3:18 p.m. Chuck Bonham left the meeting.*

*3:38 p.m. Thomas Gibson rejoined the meeting.*

*3:39 p.m. Eric Petersen and Lloyd Lowy left the meeting.*

14. Adjourn. There being no further business to come before the Board, the meeting was adjourned at 3:51 p.m. Pacific time.

DRAFT

ORDER NO. 17 018

**EXHIBIT E**

**Disbursement Request Form**

Date: \_\_\_\_\_

Attn: \_\_\_\_\_

Address: \_\_\_\_\_

Phone: \_\_\_\_\_

Email: \_\_\_\_\_

Re: Disbursement for Klamath Dam Removal Funding Agreement Phase \_\_\_\_\_

The Klamath River Renewal Corporation requests the Public Utility Commission to submit a request for disbursement from the Customer Contribution Trust Accounts under ORS 757.738(3) in the amount of \$ \_\_\_\_\_ as outlined below:

Note: Disbursements are made through wire transfers only.

Recipient Name: \_\_\_\_\_

Wire Transfer Acct. #: \_\_\_\_\_

Bank Name: \_\_\_\_\_

ABA # \_\_\_\_\_

For Benefit of: \_\_\_\_\_

FBO Acct #: \_\_\_\_\_

Attn: \_\_\_\_\_

Phone #: \_\_\_\_\_

**KLAMATH RIVER RENEWAL CORPORATION**

By: \_\_\_\_\_  
Signature

Name & Title (print): \_\_\_\_\_



Respectfully submitted,

---

Olivia Mahony, Recording Secretary

---

Lester Snow, Vice President of the Corporation

DRAFT

Oregon Public Utilities Commission

Order No. 19-178

May 23, 2019

ORDER NO. 19-178

ENTERED May 23 2019

**BEFORE THE PUBLIC UTILITY COMMISSION  
OF OREGON**

UE 219

In the Matter of

PACIFICORP, dba PACIFIC POWER,

Request to Amend the Duration of the  
Funding Agreement Between the Oregon  
Public Utility Commission and the Klamath  
River Renewal Corporation.

ORDER

DISPOSITION: STAFF'S RECOMMENDATION ADOPTED

At its public meeting on May 21, 2019, the Public Utility Commission of Oregon adopted Staff's recommendation in this matter. The Staff Report with the recommendation is attached as Appendix A.

BY THE COMMISSION:



A handwritten signature in blue ink, appearing to read "Nolan Moser".

**Nolan Moser**  
Chief Administrative Law Judge

A party may request rehearing or reconsideration of this order under ORS 756.561. A request for rehearing or reconsideration must be filed with the Commission within 60 days of the date of service of this order. The request must comply with the requirements in OAR 860-001-0720. A copy of the request must also be served on each party to the proceedings as provided in OAR 860-001-0180(2). A party may appeal this order by filing a petition for review with the Circuit Court for Marion County in compliance with ORS 183.484.



PUBLIC UTILITY COMMISSION OF OREGON  
STAFF REPORT  
PUBLIC MEETING DATE: May 21, 2019

REGULAR   X   CONSENT        EFFECTIVE DATE                      N/A

DATE: May 8, 2019

TO: Public Utility Commission

FROM: Brian Fjeldheim *BF*

THROUGH: *JE* Jason Eisdorfer and *MG* Marianne Gardner

SUBJECT: PACIFIC POWER: (Docket No. UE 219) Klamath River Renewal Corporation (KRRC) request to amend the duration of the OPUC/KRRC Funding Agreement.

**STAFF RECOMMENDATION:**

That the Public Utility Commission of Oregon (OPUC or Commission) approve execution of Amendment Number 1 to the Funding Agreement between the Commission and the Klamath River Renewal Corporation's (KRRC) attached hereto.

**DISCUSSION:**

Issue

Whether the Commission should approve execution of Amendment Number 1 to the Funding Agreement, which will amend the expiration date of the Funding Agreement to provide that it shall expire on the earlier of December 31, 2024 or the date the Klamath Hydroelectric Settlement Agreement (KHSA) terminates.

Applicable Law

ORS 757.736 (8) states that "except as provided in ORS 757.738 (2), all amounts collected under the surcharges imposed under this section shall be paid into the appropriate trust account established under ORS 757.738."

Under ORS 757.736 (11), Klamath River dam removal costs include:

- a) Physical removal of the dams;
- b) Site remediation and restoration;

Docket No. UE 219

May 8, 2019

Page 2

- c) Avoiding downstream impacts of dam removal;
- d) Downstream impacts of dam removal;
- e) Permits that are required for the removal;
- f) Removal and disposal of sediment, debris and other materials, if necessary; and
- g) Compliance with environmental laws.

ORS 757.738 (3) states:

Upon request of an agency of the United States, or upon request of the designee of an agency of the United States, the commission shall require the trustee of the appropriate trust account established under this section to transfer to the agency or designee the amounts that are necessary to pay the costs of removing the Klamath River dams as described in ORS 757.736 (11).

With Order No. 17-018 in Docket No. UE 219, the Commission approved execution of a Funding Agreement with the KRRC as a mechanism for the disbursement of the customer surcharge trust funds as necessary to pay the costs of dam removal under ORS 757.738(3).

### Analysis

#### *Background*

In March of 2010, as part of the KHSA, Pacific Power (PacifiCorp or Company) began collecting two non-by-passable customer surcharges under the Company's Schedule 199 tariff. These surcharges are dedicated to solely funding the costs necessary to remove four PacifiCorp dams on the Klamath River and are remitted monthly to the State of Oregon.

KRRC is a California not-for-profit 501(c)(3) corporation and was formed in 2016 to be the sole dam removal entity (DRE) under the KHSA.

#### *Funding Agreement*

The current Funding Agreement was executed on January 24, 2017, and per its terms, will expire on the earlier of January 31, 2022, or the date the KHSA terminates. In light of subsequent developments, on April 17, 2019, KRRC submitted a request to amend Section 2 of the Funding Agreement by extending the expiration date to December 31, 2024. Per KRRC, the amendment is needed to accommodate completion of facilities removal per the terms of the KHSA. The KRRC notes that Phase 2 (development of definite plan, including preparation of procurement documents for final design, deconstruction and risk management and completion of regulatory actions) has advanced significantly. The KRRC must secure all regulatory approvals before proceeding with Phase 3 (Facilities Removal).

Docket No. UE 219

May 8, 2019

Page 3

PacifiCorp's and KRRC's joint license transfer application is currently under review by the Federal Energy Regulatory Commission (FERC) and KRRC plans to file updated plans and a progress report with FERC by July 29, 2019. KRRC notes that if FERC approves the license transfer, FERC must then act upon KRRC's separate license surrender application before KRRC can proceed with Phase 3.

Once the regulatory approvals are complete, KRRC projects that it will take more than a year to complete deconstruction and restoration activities at all four dam sites. KRRC noted that timing of reservoir drawdowns can only occur at specific times of the year. If dam removal efforts fall behind schedule and the window for reservoir drawdown is missed, KRRC will have to wait an additional year for their next drawdown opportunity.

#### Conclusion

Based on consideration of KRRC's request, Staff finds the requested amendment to be reasonable and will not impact customer rates. Extension of the expiration date will not affect the amount of the funds collected under the Funding Agreement and Oregon's share of the customer contribution remains unchanged at \$184 million. Staff supports KRRC's request to extend the Funding Agreement expiration date to December 31, 2024. Included with this memo is Amendment Number One to the Funding Agreement, which amends the expiration terms in Section 2 of the agreement.<sup>1</sup>

#### **PROPOSED COMMISSION MOTION:**

Approve execution of Amendment Number 1 to the Funding Agreement between the Commission and the KRRC, as attached, amending the expiration date of the Funding Agreement to provide that it shall expire on the earlier of December 31, 2024, or the date the Klamath Hydroelectric Settlement Agreement (KHSA) terminates.

PAC UE 219/KRRC

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<sup>1</sup> See Attachment A.

Funding Agreement Number 7810225

**AMENDMENT NUMBER 1  
TO FUNDING AGREEMENT**

This is amendment number 1 to the Funding Agreement (No. 7810225) between the State of Oregon, **Public Utility Commission of Oregon**, the "OPUC," and the **Klamath River Renewal Corporation**, a California nonprofit public benefit corporation, hereinafter referred to as the "KRRC."

1. This amendment shall become effective on the date this amendment has been fully executed by every party and, when required, approved by the Department of Justice.
  2. The Funding Agreement is hereby amended as follows: language to be deleted or replaced is struck through; new language is underlined and bold.
    2. **Effective Date and Expiration.** This Agreement shall become effective on the date this Agreement is fully executed. This Agreement shall expire upon the earlier of ~~January 31, 2022~~, **December 31, 2024**, or the date the KHSA terminates (the "Expiration Date").
  3. Except as expressly amended above, all other terms and conditions of the original Funding Agreement are hereby ratified and confirmed and remain in full force and effect.
- THE PARTIES**, by execution of this Amendment, hereby acknowledge that each Party has read this Amendment, understands it, and agrees to be bound by its terms and conditions.
4. Signatures.

SIGNATURE PAGE TO FOLLOW

**Klamath River Renewal Corporation**

**STATE OF OREGON**, acting by and through its  
Public Utility Commission of Oregon

By: \_\_\_\_\_

By: \_\_\_\_\_

Name: \_\_\_\_\_  
(printed)

Name: \_\_\_\_\_  
(printed)

Title: \_\_\_\_\_

Title: \_\_\_\_\_

Date: \_\_\_\_\_

Date: \_\_\_\_\_

**APPROVED**

(If required)

By: \_\_\_\_\_

KRRC's Legal Counsel

Date: \_\_\_\_\_

**Exhibit D-5**

**Oregon Funding Agreements**

**January 2017; October 2016**



## FUNDING AGREEMENT

This Agreement is made and entered into by and between the **Public Utility Commission of Oregon**, the "OPUC," and the **Klamath River Renewal Corporation**, a California nonprofit public benefit corporation, hereinafter referred to as the "KRRC,"

### RECITALS

WHEREAS, the States of Oregon and California, the United States, PacifiCorp, and other parties entered into the Klamath Hydroelectric Settlement Agreement, dated February 18, 2010, as subsequently amended (as amended, the "KHSA") to establish a process for the removal of four hydropower facilities within the jurisdictional boundary of FERC Project no. 2082 located on the Klamath River: Iron Gate Dam, Copco No. 1 Dam, Copco No. 2 Dam, J.C. Boyle Dam, and appurtenant works currently licensed to PacifiCorp (the "Project") and for the operation of the Klamath Hydroelectric Project until the completion of the Project; and

WHEREAS, pursuant to Section 4.1.1 of the KHSA, the OPUC and the California Public Utilities Commission (CPUC) have each established customer surcharges for PacifiCorp's customers for the purposes of paying the costs of Facilities Removal; and

WHEREAS pursuant to Section 4.1.2.A of the KHSA the State of California has appropriated \$250 million of the proceeds of the bonds authorized by California Proposition 1 for the purposes of paying the costs of Facilities Removal, to the extent that the costs of Facilities Removal exceed the Customer Contributions; and

WHEREAS in Oregon, ORS 757.732 to 757.744 authorized the "Customer Contribution[s]" and required PacifiCorp to file tariffs for the collection of two non-bypassable surcharges from its customers for the purpose of paying the costs of removing Klamath River dams. As specified in ORS 757.736(2) and in Section 4.4.4(d) of the KHSA, one surcharge is designed to collect removal costs for the J.C. Boyle Dam and the other surcharge collects removal costs for the other three dams. Facilities Removal costs include costs related to: (1) physical removal of the dams; (2) site remediation and restoration; (3) avoiding downstream impacts of dam removal; (4) downstream impacts of dam removal; (5) permits required for the removal; (6) removal and disposal of sediment, debris and other materials; and (7) compliance with environmental laws. ORS 757.736(8) provides that all amounts collected under the surcharges are to be remitted into the trust accounts created pursuant to ORS 757.738; and

WHEREAS, in accordance with ORS 757.736 and Section 4.1.1 of the KHSA, the OPUC has been collecting non-bypassable customer surcharges for the purpose of Facilities Removal and has a responsibility to ensure those funds are used in a manner consistent with ORS 757.732 to 757.744; and

WHEREAS the U.S. Department of the Interior has designated the KRRC as the entity authorized to request transfer of the funds necessary to pay the costs of removing the Klamath River dams as described in ORS 757.736(11); and

WHEREAS, section 4.12 of the KHSA provides that the States of Oregon and California will enter into funding agreements with the KRRC for the purpose of specifying how the Customer Contributions and the California Bond Funding will be released to pay for the costs of Facilities Removal; and

Whereas, section 4.2.4 of the KHSA provides that Oregon and California will prepare draft trustee instructions for submission to the Oregon and California PUCs concerning: (1) when funds will be disbursed from the trust accounts; (2) the methodology used to determine which accounts will be drawn from; (3) coordination with use of the California Bond Funds; (4) a protocol for reallocating funds between the trust accounts to pay for the costs of the removal of specific facilities (if necessary); and (5) a means for the return of Customer Contributions to PacifiCorp customers in the event that there are remaining funds in the trust accounts following completion of Facilities Removal; and

WHEREAS, the Facilities Removal is contemplated to take place pursuant to three funding phases, with Phase One expected to consist of the start-up of the KRRC, evaluating risk mitigation such as insurance for the Project, certain regulatory actions and preparation work for the Definite Plan; Phase Two is expected to consist of development of the Definite Plan, including preparation of procurement documents for final design, deconstruction and risk management and completion of regulatory actions; and Phase Three will consist of the Facilities Removal through deconstruction and restoration; and

WHEREAS, it is contemplated that up to \$4.4 million will be necessary to fund Phase One activities with Oregon funding 92% of the Phase One costs (\$4,048,000) and California funding 8% of the Phase One costs (\$352,000) and;

WHEREAS, the KRRC has already received \$308,369 of Phase One costs through the "Phase One A Grant Agreement" between Oregon Department of Fish and Wildlife and the KRRC dated October 5, 2016, and further that OPUC and ODFW entered into an Interagency Agreement dated August 25, 2016.

NOW THEREFORE, the parties enter into this Agreement as provided below.

## AGREEMENT

### 1. Defined Terms.

**"Applicable Law"** means general law that (1) exists outside of the KHSA including, but not limited to a Constitution, statute, regulation, court decision, or common law, and (2) applies to obligations or activities of Parties contemplated by this Agreement. The use of this term is not intended to create a contractual obligation to comply with any law that would not otherwise apply.

**"California Public Utilities Commission" or "CPUC"** means the public utilities commission for the State of California.

**"Definite Plan"** means a plan and timetable for Facilities Removal submitted by the DRE or any of its contractors or assigns under Section 7.2.1 of the KHSA.



**“Detailed Plan”** means the plan dated July 2012 that includes elements described in Section 7.2.2 of the KHSA.

**“Eligible Project Costs”** include the costs necessary for: (i) physical removal of the dams, (ii) site remediation and restoration; (iii) avoiding downstream impacts of dam removal; (iv) downstream impacts of dam removal; (v) permits that are required for the removal; (vi) removal and disposal of sediment, debris and other materials, if necessary; and (vii) compliance with environmental laws. Eligible Project Costs include the repayment of interim funding received from other sources and applied to Eligible Project Costs.

**“FERC”** refers to the Federal Energy Regulatory Commission.

**“FERC Project”** refers to the Klamath Hydroelectric Project as licensed by FERC under Project No. 2082.

**“Funds”** refers to funds disbursed to the KRRC from the Oregon Trust.

**“Klamath Hydroelectric Settlement Agreement”** or **“KHSA”** means the Klamath Hydroelectric Settlement Agreement, dated February 18, 2010, as it has been amended, and as may be amended in the future.

**“Klamath River Dams”** refers to the J.C. Boyle Dam, the Copco 1 Dam, the Copco 2 Dam and the Iron Gate Dam.

**“KRRC”** refers to the Klamath River Renewal Corporation, a California nonprofit public benefit corporation.

**“Material”** as applicable to an action or representation means an action or representation that would delay the Project, result in a budget overrun greater than ten percent, result in the misapplication or misexpenditure of Funds, or otherwise prevent the KRRC from performing duties under this Agreement.

**“Non-bypassable surcharge”** means a monetary surcharge authorized by the appropriate state utility commission through a tariff schedule that applies to all retail customers who rely on PacifiCorp’s transmission and distribution system for the delivery of electricity.

**“Notice”** means a written notice directed to the appropriate party that reasonably apprises that party of the intended action that may follow such notice.

**“ODFW”** means the Oregon Department of Fish and Wildlife.

**“Oregon Trust”** refers to the Customer Contribution established by the State of Oregon, acting by and through its Public Utility Commission, collected by PacifiCorp as a non-bypassable surcharge and held in segregated trust accounts.

**“Parties”** or **“Party”** means the signatories of this Agreement.



**"Phase 1"** refers to the funding phase under this Agreement for which the budget is expected to consist of the start-up costs of the KRRC, evaluating risk mitigation such as insurance for the Project, certain regulatory actions and preparation work for the Definite Plan.

**"Phase 2"** refers to the funding phase under this Agreement for which the budget is expected to consist of development of the Definite Plan, including preparation of procurement documents for final design, deconstruction and risk management and completion of regulatory actions.

**"Phase 3"** refers to the funding phase under this Agreement for which the budget is expected to consist of the Facilities Removal through deconstruction and restoration.

**"Project"** refers to the responsibilities of the KRRC under the KHSA.

**"Public Utility Commission of Oregon" or "OPUC"** means the public utility commission for the State of Oregon.

**"State Cost Cap"** means the collective maximum monetary contribution from the states of California and Oregon as described in Section 4.1.3 of the KHSA.

**"States"** refers to the State of Oregon or the State of California.

**"Trustee"** means the Wells Fargo Bank.

**2. Effective Date and Expiration.** This Agreement shall become effective on the date this Agreement is fully executed. This Agreement shall expire upon the earlier of January 31, 2022, or the date the KHSA terminates (the "Expiration Date").

**3. Agreement Documents.** This Agreement consists of the Agreement through the signature page, together with the following Exhibits, all of which are attached hereto and incorporated herein by reference:

- Exhibit A1: Project Activities**
- Exhibit B1: Project Budget Form**
- Exhibit C: [RESERVED]**
- Exhibit D: ODFW-KRRC Grant Agreement**
- Exhibit E: Disbursement Request Form**

In the event of a conflict between portions of this Agreement, the following order of precedence, listed from highest precedence to lowest precedence, will prevail: this Agreement without Exhibits; Exhibit A; Exhibit B; Exhibit D; Exhibit E; Exhibit C.

**4. KRRC Fiscal Administration.**

**a. Administrative Practices.** As soon as practicable after execution of this Agreement and thereafter upon preparation of each of the following, the KRRC shall provide to the



OPUC copies of the following documents and any amendments that may be made thereto:

- (i) Agenda and Minutes of KRRC's regular and special meetings, in each case to the extent made publicly available;
- (ii) KRRC Bylaws;
- (iii) KRRC internal policies addressing financial controls, governance and internal operations;
- (iv) Periodic reports or summaries of the fiscal status of the KRRC; and
- (v) An audited annual financial statement for the KRRC that must include a balance sheet showing all funds, a statement of budgeted and actual income and expenditures, indicating thereon any changes in fund balances, and any appropriate notes of explanation or disclosure.

- b. **Status Updates to OPUC.** KRRC shall provide to OPUC Staff periodic updates on at least a semi-annual basis, and more frequently if necessary, regarding the KRRC and the Project, which may be either oral or in writing. KRRC shall make an annual presentation before the OPUC that includes a review of Project activities in the preceding year, relevant financial information, and an overview of Project activities planned for the coming year.
- c. **Conflicts of Interest and Gifts.** KRRC shall adopt and maintain a written standard of conduct under which an employee, officer, or agent of the KRRC shall not participate in the selection, award, or administration of a contract if a real or apparent conflict of interest would be involved, unless otherwise consistent with Applicable Law.

Further, KRRC shall adopt and maintain a written standard of conduct under which the officers, employees, and agents of the KRRC shall neither solicit nor accept gratuities, favors, or anything of monetary value from contractors or subcontractors. KRRC may set a different standard for situations in which the gift is an unsolicited item of nominal value.

Finally, KRRC certifies that it has and will maintain and enforce a standard of conduct requiring compliance with the conflict of interest standards set forth above and that provides for disciplinary action to be applied for violations.

- d. **Management of Disbursements from Oregon Trust.** KRRC shall maintain funds disbursed to the KRRC from the Oregon Trust in one or more interest-bearing demand deposit accounts in a financial institution of high credit quality, with minimal risk of loss to principal at all times, prior to expenditure on Eligible Project Costs as provided in this Agreement.

- e. **Notice of Bankruptcy or Receivership.** KRRC shall promptly notify OPUC and provide a copy of any notice or other knowledge the KRRC receives of a bankruptcy or receivership of a contractor or subcontractor engaged for the Project.

**5. Business Status.**

- a. **Registry.** KRRC shall apply for registration as a foreign nonprofit corporation with the Oregon Secretary of State under ORS 65.707 and maintain such registration and file annual reports with the Secretary of State's office for so long as required by Oregon law.
- b. **Registry and status as a Charitable Organization.** KRRC shall register as a charitable organization with the Charitable Activities Section of the Oregon Department of Justice if such registration is required pursuant to the laws of Oregon. Further, KRRC shall immediately notify OPUC of any change in its status as a tax-exempt public benefit nonprofit corporation.
- c. **Corporate Dissolution.** KRRC shall take the necessary steps to ensure that when the KRRC is dissolved or its legal existence terminated, either voluntarily or involuntarily, or upon final liquidation of the KRRC, none of its assets shall inure to the benefit of any private individual, and all of its assets remaining after payment of all of its liabilities shall be distributed to one or more organizations which the KRRC Board of Directors then determines is qualified both as an exempt organization under Internal Revenue Code Section 501(c)(3), and as an organization engaged in activities substantially similar to those of the KRRC or return to OPUC as may be required by Section 7.f.

**6. Disbursements for Eligible Project Costs.**

- a. **Trust Accounts.** The Customer Contributions, as they are collected, are held in segregated trust accounts (the "Oregon Trust") established by the State of Oregon, acting by and through the OPUC. The Wells Fargo Bank is the current trustee of the Trust. The Customer Contributions derive from surcharges currently being collected by PacifiCorp at rates approved by OPUC, but which may not exceed more than two percent of PacifiCorp's annual revenue requirement as determined in PacifiCorp's last case under ORS 757.210 decided by the OPUC before January 1, 2010. The amount of each surcharge is based on a collection schedule that was designed to fund, by December 31, 2019, Oregon's share of the Customer Contribution of \$200 million.
- b. **Trust Account Management.** OPUC shall manage the Oregon Trust consistent with any account management and coordination agreement as may be jointly approved by the State of Oregon and the State of California. If OPUC is a party to any such agreement, it shall provide to the KRRC an opportunity to review and comment on any draft account management and coordination agreement before it is finalized.
- c. **Trust Disbursement Directions.** In accordance with the terms and conditions of this Agreement, the OPUC will timely direct the Trustee to disburse funds from the Oregon Trust to the KRRC to pay for Eligible Project Costs.

**7. Use of Funds.** KRRC shall use the Funds for Eligible Project Costs.



- a. **Phase 1 Costs.** The categories of Eligible Project Costs for Phase 1 are described in Exhibit A1. The total Eligible Project Costs for Phase 1 are estimated to be \$4.4 million, of which \$308,369 has already been disbursed to the KRRC under the Grant Agreement between the KRRC and ODFW attached as Exhibit D. Exhibit B1 includes a budget for Phase 1.
- b. **Phase 2 and Phase 3 Costs.** Ninety days prior to making an initial semi-annual request for disbursements for Phases 2 and 3, KRRC will submit to the OPUC an Exhibit A2 (Project Activities) and A3 (Project Activities), respectively, describing categories of Eligible Project Costs for Phases 2 and 3 and will also provide Exhibit B2 (Budget) and B3 (Budget), respectively providing a proposed budget for each phase. KRRC must submit, with either an Exhibit A3 or Exhibit B3 to OPUC, a certification that all of the conditions in Section 7.1.4 of the KHSa have been met or, to the extent any such conditions have not been met as of the date of such certification, an explanation of how the conditions in Section 7.1.4 of the KHSa are expected to be met in a timeframe consistent with continued progress on the Project and with appropriate documentation.
  - (i) In the event that at any time actual or foreseeable costs associated with physical performance of Facilities Removal or the combined Project budget for all three Phases is estimated to exceed the State Cost Cap and sufficient additional funding is not available to carry out Facilities Removal, the KRRC:
    - (A) Shall promptly initiate the meet and confer process with the parties to the KHSa under Section 7.2.1(5) of the KHSa and diligently pursue resolution of that process;
    - (B) Shall not enter any new contractual obligations until the process of meeting and conferring under Section 7.2.1(5) of the KHSa is resolved, unless the Parties agree that it is reasonable, necessary and consistent with the KHSa and ORS 757.738(3) for the KRRC to enter into one or more additional contracts; and
    - (C) Shall promptly notify OPUC it has initiated the meet and confer process, and keep OPUC Staff reasonable apprised of the progress of the KHSa parties towards a resolution.
  - (ii) Upon finding that actual or foreseeable costs associated with physical performance of Facilities Removal or the combined Project budget for all three Phases is estimated to exceed the State Cost Cap and sufficient funding is not available to carry out Facilities Removal, KRRC may thereafter, in the regular course, submit one disbursement request under Section 7.f while it is engaged in the process of meeting and conferring with the parties to the KHSa. Before submitting any further disbursement requests while the process of meeting and conferring under Section 7.2.1(5) of the KHSa remains unresolved, KRRC shall meet with the OPUC and present a plan supporting continued disbursements. OPUC may, in its discretion, suspend further disbursements until the meet and confer process is resolved.
- c. **Budget forms.** Exhibit budget forms for each Phase shall identify the projected Project activities for such Phase and how each activity will be completed in Exhibit A, and set forth, in Exhibit B, the estimated Eligible Project Costs associated with each program activity identified in Exhibit A for such Phase, and the originating source of funds to be applied to the aggregate costs, and include or be accompanied by an estimate of the time period within such Phase in which each Exhibit A activity will be conducted. Exhibit budget forms A1 and B1 for Phase 1 are attached to this Agreement.



- d. **Minor Modifications of Budget.** The KRRC may, in its reasonable discretion, make minor modifications to the budgets for Phases 1 through 3, including but not limited to reallocating costs within categories in each budget; provided, however, if the KRRC modifies the amount of funds allocated to a category or Phase by an amount that is greater than ten percent then the KRRC will provide an updated Exhibit to the OPUC for its review as specified in the following paragraph (e).
- e. **Major Modifications of Budget.** A major modification of the budget is: (a) any increase in the amount being requested for a particular Phase of more than ten percent, or (b) an increase in the amount being requested for a particular category of expenses of more than fifteen percent. The KRRC shall notify the OPUC when it becomes aware of a need for a major modification of a budget and provide OPUC with a revised Exhibit B and a certification that such a major modification is necessary for Facilities Removal.
- f. **Disbursement Requests.** The KRRC will make requests for disbursements to the OPUC on a semi-annual basis by submitting a disbursement request in the form and containing the information required on Exhibit E (Disbursement Request Form), and by submitting a certification from the KRRC that the request is for payment of Eligible Project Costs included in the budget that the KRRC expects to incur for the Project activities to be completed by the KRRC or under subagreement during the period within 210 days after the date of the request. The certification shall also certify that no material authorization, consent, license, approval of, filing or registration with or notification to any governmental body or regulatory or supervisory authority is required for the Project activities to be completed by the KRRC or under subagreement during the period within 210 days after the request. If the KRRC cannot make such a certification, KRRC shall explain how any outstanding material authorization, consent, license, approval of, filing or registration with or notification to any governmental body or regulatory or supervisory authority not yet obtained or given, as applicable, that is required for the Project activities is expected to be met in a timeframe consistent with Project activities to be conducted within 210 days and provide appropriate documentation. The KRRC will, contemporaneously with its request to the OPUC, make a corresponding request to the CPUC.
- g. **Proportional Disbursements.** The Parties understand and agree that 92% of the Customer Contribution funds for the Project will be disbursed from the Oregon Trust, except however, in no event will the total funding from the Oregon Trust and the California Trust exceed \$200 million. OPUC's direction to disburse funds from the Oregon Trust shall not be subject to a corresponding disbursement from the California Trust, unless expressly required by any account management and coordination agreement as may be jointly approved by the State of Oregon and the State of California.
- h. **Action on Disbursement Requests.** Except as provided in Section 7.b, disbursement requests will be processed by the OPUC if the disbursement request includes all of the information required under Section 7.f.



- i. **Expenditure Reports.** With each semi-annual disbursement request, the KRRC will submit an expenditure report, showing the expenses incurred during the prior semi-annual period.
  - j. **Recovery of Funds.** Any funds disbursed to KRRC that remain unexpended on the earlier of the completion of Facilities Removal, termination or expiration of this Agreement (“Unexpended Funds”) or that remain unexpended due to the suspension of disbursement requests under Section 7.b of this Agreement for a period of two years or longer must be returned to the OPUC upon its request. Unexpended Funds shall not include funds set aside for ongoing monitoring following facilities removal or other similar activities as may be required under the Definite Plan or as a condition of a license or permit required for the Project. Recipient shall return all Unexpended Funds and associated interest to the OPUC within 15 days after the earlier of expiration or termination of this Agreement, or upon the demand of the OPUC following the suspension of disbursement requests for a period of two years or longer, consistent with this Section.
8. **Final Reporting.** Within six months of the completion of Facilities Removal, the KRRC will file a final report (the “Final Report”) with the OPUC. The Final Report must include a summary of all Project costs compared to the Project Budget, together with reasonable supporting documentation that evidences KRRC’s expenditure of the funds disbursed from the Oregon Trust. The Final Report shall include a summary of the Project as completed as well as an explanation for any Project cost variances that are greater than 10 percent from the Project Budget. The Final Report shall also document the amount of funding received from CPUC and the California Natural Resources Agency.
9. **Conditions Precedent.**
- a. **Conditions Precedent to State’s Obligations.** The OPUC’s obligations under this Agreement are subject to the receipt by the OPUC of the following item, all in form and substance satisfactory to the OPUC and its counsel:
    - (i) A copy of the resolution of the KRRC’s board of directors authorizing the execution and delivery of this Agreement and performance by KRRC of its obligations hereunder.
  - b. **Conditions to Disbursement.** OPUC’s obligation to disburse any of the Funds to KRRC is subject to the following conditions.
    - (i) **Disbursement Request.** The KRRC has filed a disbursement request with the OPUC, consistent with section 7.f, above.
    - (ii) **Availability of Funds.** Sufficient funds are currently deposited in the Oregon Trust to fulfill the OPUC’s obligation to disburse funds under this Agreement.
    - (iii) **No Default.** No event of default has occurred or is occurring.

- (iv) **Representations.** KRRC's representations and warranties set forth in Section 10 hereof are true and correct in all material respects on the date of disbursement with the same effect as though made on the date of disbursement.

**10. Representations, Warranties and Covenants of KRRC.**

**a. KRRC Representations, Warranties.** KRRC makes the following representations and warranties to the OPUC.

- (i) **Organization and Authority.** KRRC is a duly organized and validly existing nonprofit public benefit corporation under the California Corporations Code. KRRC has full power, authority, and legal right to make this Agreement and to incur and perform its obligations hereunder; and the making and performance by KRRC of this Agreement (1) have been duly authorized by all necessary action of KRRC, (2) do not and will not violate any provision of any applicable law, rule, regulation, or order of any court, regulatory commission, board, or other administrative agency or any provision of KRRC's organizational documents, and (3) do not and will not result in the breach of, or constitute a default or require any consent under, any other agreement or instrument to which KRRC is a party or by which KRRC or any of its properties may be bound or affected. No authorization, consent, license, approval of, filing or registration with or notification to any governmental body or regulatory or supervisory authority is required for the execution, delivery or performance by KRRC of this Agreement. Certain additional authorizations, consents, licenses, approvals of, filings or registrations with or notifications to a governmental body or regulatory or supervisory authority shall be required for certain Project activities.
- (ii) **Binding Obligation.** This Agreement has been duly executed and delivered by KRRC and, when executed and delivered by the OPUC, constitutes a legal, valid and binding obligation of KRRC, enforceable in accordance with its terms, subject to the application of bankruptcy, insolvency or similar laws relating to the rights of creditors generally and general principles of equity.

- b. KRRC's Inspections; Information.** During the term of this Agreement, KRRC shall permit the OPUC, at any reasonable time and with reasonable notice, to inspect and make copies of any accounts, books and records, including, without limitation, its records regarding receipts, disbursements, contracts, investment of Funds, if any, and any other matters related to the use of Funds or the Project. The KRRC shall supply related reports and information relating to the Project as the OPUC may reasonably require. The KRRC shall promptly respond to requests for information and provide an explanation regarding submissions to the OPUC upon its request.



**11. Representations, Warranties and Covenants of OPUC.** OPUC makes the following representations and warranties to the KRRC.

- a. OPUC is a state agency validly created and existing under the laws of the State of Oregon.
- b. OPUC has all necessary right, power, authority, approvals and consents under its applicable enabling statutes, or other Oregon law to (a) execute and deliver this Agreement, and (b) incur and perform its obligations under this Agreement.
- c. This Agreement has been duly authorized by a vote, resolution or other act of the OPUC, is executed by an authorized representative of OPUC, and is legal, valid and binding, and enforceable in accordance with its terms without the need for any further vote, resolution or act of the OPUC.

**12. Records Maintenance and Access; Audit Requirements.**

- a. **Records Maintenance and Access.** KRRC shall make and retain proper and complete books of record, and account and maintain all fiscal records related to this Agreement, the Funds, and the Project in accordance with all applicable generally accepted accounting principles. KRRC shall create and maintain all expenditure records in sufficient detail in such a manner as to clearly document KRRC's performance and to permit the OPUC and the KRRC's third party auditor to verify how the Funds were expended. KRRC shall ensure that each of its subrecipients, and subcontractors that is engaged by the KRRC following a competitive procurement complies with these requirements, provided that such subrecipients and subcontractors with whom KRRC has entered into a lump sum contract, under which KRRC agrees to pay a fixed price for specific services with the risk of cost overrun borne by the contractor, shall not be obligated to permit the audit of its books and records except in the event of a dispute or a claim for additional compensation or a reduction in work provided for the agreed amount paid. The State of Oregon, the OPUC and their duly authorized representatives shall have access to the books, documents, papers and records of KRRC that are directly related to this Agreement, the funds provided hereunder, or the Project for the purpose of making audits and examinations. In addition, OPUC and its duly authorized representatives may make and retain excerpts, copies, and transcriptions of the foregoing books, documents, papers, and records. KRRC shall permit authorized representatives of the OPUC to perform site reviews of the Project as needed to determine compliance with the terms of this Agreement.
- b. **Retention of Records.** KRRC shall retain and keep accessible all books, documents, papers, and records that are directly related to this Agreement, the Funds, or the Project for a minimum of six (6) years, or such longer period as may be required by other provisions of this Agreement or applicable law, following the termination of this Agreement. If there are unresolved disputes or audit questions at the end of the retention period, KRRC shall retain the records until the disputes or questions are resolved. These records will be made available, without restriction, to both the OPUC and Oregon Secretary of State.

- c. **Audit Requirements.** KRRC must retain the services of a professional third-party audit firm to conduct a financial audit of all expenditures of the Funds made by KRRC on an annual basis and provide to the OPUC, not later than 90 calendar days after the end of each calendar year, beginning in 2017, a true and correct copy of the auditor's final report. Each audit must apply Generally Accepted Accounting Principles. KRRC shall cooperate with all requests from the auditor for data and other related requests from the auditor. Disputed points not resolved between KRRC and the auditor, and any exceptions from, qualifications of, or exclusions from the audit must be noted in the final audit report. KRRC shall include third-party audit expenses as appropriate in expense and budget forms submitted under Sections 7.a. and 7.b.

### 13. KRRC Subagreements.

- a. **Subagreements.** KRRC may enter into agreements with sub-recipients, contractors, subcontractors, consultants, advisors, agents, representatives and other providers of services or materials (collectively, "subagreements") reasonably necessary or desirable for performance of the Project, including agreements with an executive director and other staff or employees of KRRC. Notwithstanding the foregoing, the use of a subagreement shall not relieve KRRC of its responsibilities under this Agreement.

- b. **Procurement standards and policies.** KRRC shall adopt, maintain, provide to OPUC, and comply with written standards of conduct and appropriate policies governing the performance of its employees, agents, consultants, directors, officers or contractors engaged in the award and administration of subagreements.

(i) All such standards and policies shall implement and be consistent with the following goals:

(A) optimizing the cost, efficiency, timing, expertise and quality of work performed under subagreements;

(B) effectively executing the Project; and

(C) maintaining consistency with industry standards.

(ii) Such standards and policies shall include a competitive process for all primary subagreements for the design or execution of physical removal of facilities and associated site remediation activity under the Project ("Major Subagreements"). Upon selection of a competitive process to be used to award a Major Subagreement, KRRC shall notify OPUC of the subject matter, selected process, and provide an explanation as to how the selected process meets the goals listed in Section 13.b.i of this Agreement. KRRC shall provide OPUC with a substantially final form of the solicitation materials for each Major Subagreement sufficiently prior to issuance as to allow for OPUC review, in no event less than 15 business days.



- c. Any breach of a term or condition of a Major Subagreement relating material misapplication, misexpenditure or loss of Funds must be reported by KRRC to OPUC within ten (10) days of its being discovered by KRRC.
- d. **Indemnity.** KRRC's Major Subagreement(s) shall require the other party to such subagreement(s) to indemnify the OPUC on substantially the same terms as KRRC is indemnifying the OPUC as set forth in Section 14(a).
- e. **Insurance.** KRRC shall cause the other party, or parties, to each of its Major Subagreements to obtain and maintain insurance of the types set forth in Section 14(b) and in commercially reasonable amounts.

**14. Indemnity; Insurance.**

- a. **Indemnity.** KRRC and OPUC acknowledge and agree that the indemnity provided in Section 7.1.3 of the KHSa shall be applicable to this Agreement.

Neither KRRC, nor any attorney engaged by KRRC shall defend any Claim in the name of the State or any agency of the State of Oregon, nor purport to act as legal representative of the State of Oregon or any of its agencies, without the prior written consent of the Oregon Attorney General. The OPUC may, at any time at its election, assume its own defense and settlement in the event that it determines that KRRC is prohibited from defending State or that KRRC is not adequately defending State's interests, or that an important governmental principle is at issue or that it is in the best interests of State to do so. OPUC reserves all rights to pursue claims it may have against KRRC if State elects to assume its own defense.

- b. **Insurance.** KRRC shall maintain, or cause to be maintained, insurance policies with responsible insurers or self-insurance programs, insuring against directors' and officers' liability and sufficient to insure the Project. KRRC shall provide a summary of any insurance coverage to the OPUC within ten days following the effective date of this agreement and upon the execution of any additional insurance agreements. KRRC shall include OPUC (i) as an additional insured on its liability insurance coverages and (ii) as a loss-payee on its property insurance and on any performance bonds, or letters of credit taken out to insure performance of the Project, provided, however, that for so long as this Agreement is in effect and no Event of Default exists, OPUC shall have no claim to any proceeds of property insurance, performance bonds or letters of credit that are recovered in respect of Eligible Project Costs and that KRRC applies or intends to apply toward Eligible Project Costs in connection with the completion or restoration following any casualty of the Project. Proceeds of any of the foregoing that are not eligible or expected to be applied to Eligible Project Costs by KRRC, if any, shall be paid to OPUC in trust for contributing PacifiCorp customers in proportion to any disbursement of Funds previously directed by OPUC and in proportion to other funding sources that are also loss-payees.

- c. **Survival.** Following any termination of this Agreement, for so long as KRRC has an ownership interest in the Project site, KRRC shall maintain, or cause to be maintained commercially reasonable insurance that will name OPUC as additional insured or loss-payee as its interests may appear.

**15. Compliance with Laws.**

- a. **Compliance with Laws.** KRRC shall comply with all Applicable Law, including, to the extent such laws are applicable without being a requirement of this agreement:

- (i) (A) Title VI of Civil Rights Act of 1964; (B) Title V and Section 504 of the Rehabilitation Act of 1973; (C) the Americans with Disabilities Act of 1990 and ORS 659A.142; (D) all regulations and administrative rules established pursuant to the foregoing laws; and (E) all other applicable requirements of federal and state civil rights and rehabilitation statutes, rules and regulations.
- (ii) (A) prevailing wage rate requirements set forth in ORS 279C.800 through 279C.870 and the administrative rules promulgated thereunder ("Prevailing Wage Rate Law" or "PWR"), or, if applicable, 40 U.S.C. 3141 et seq. ("Davis-Bacon Act"), (B) the requirement that KRRC's contractors and subcontractors to pay the applicable prevailing wage rate and comply with all other applicable Oregon Bureau of Labor and Industries ("BOLI") requirements pursuant to the Prevailing Wage Rate Law, including on all contracts and subcontracts and in filing separate works bonds with the Construction Contractors Board, unless exempt under ORS 279C.836 and OAR 839-025-0015, (C) if the Project is subject to the Davis-Bacon Act, the requirement that require its contractors and subcontractors to comply with the Davis-Bacon Act and any applicable provisions of Oregon PWR. If the Project is or becomes subject to both PWR and the Davis-Bacon Act, all subject workers must be paid the higher of applicable state or federal prevailing wage rate. The applicable rates are those in effect on the Effective Date of this Agreement. PWR and Davis-Bacon Act prevailing wage rates may be accessed via:  
[http://www.oregon.gov/boli/WHI/PWR/Pages/pwr\\_state.aspx](http://www.oregon.gov/boli/WHI/PWR/Pages/pwr_state.aspx) and  
<http://www.wdol.gov>.

KRRC represents and warrants that it is not on the BOLI current List of Contractors Ineligible to Receive Public Works Contracts and that it will not contract with any contractor on this List. KRRC agrees to indemnify, hold harmless and reimburse the State and its officers, employees and agents for any liability, cost, expense, fine, fee or penalty payable to a person or private or governmental entity, including another agency of the State of Oregon (collectively "liability") incurred to comply with, to obtain a determination under, or in any other way resulting from the Prevailing Wage Rate Law or Davis-Bacon Act.

- b. KRRC agrees to contract with, and require any subrecipients to contract with, competent, properly licensed and bonded contractors and professionals for the performance of the Project.



- c. All subagreements that KRRC may enter which are funded wholly or in part with the Funds must be subcontractual in nature, with the other party engaged in the role of a subcontractor. KRRC will administer all contracts with its subcontractors to ensure compliance by any subcontractors with the terms of this Agreement with respect to requirements that flow through to subcontractors.

## 16. Termination; Default

- a. **Termination by OPUC.** OPUC may terminate this Agreement effective upon delivery of written notice of termination to KRRC, or at such later date as may be established by OPUC in such written notice, only if:

- (i) A change in law makes performance or completion of Facilities Removal in compliance with the KHSa no longer possible; or
- (ii) The occurrence and continuance of an Event of Default as provided below.

- b. **Event of Default.** The occurrence of any of the following listed events shall constitute an Event of Default under this Agreement:

- (i) Any material representation is made by KRRC in this Agreement or in any document provided by or on behalf of KRRC related to this Agreement or the Project that is false or misleading in any material respect when made; or
- (ii) A petition, proceeding or case is filed by or against KRRC (for purposes of this section, "Debtor") under any federal or state bankruptcy or insolvency law, and in the case of a petition filed against the Debtor, the Debtor acquiesces to such petition or such petition is not dismissed within 90 calendar days after such filing; Debtor files a petition seeking to take advantage of any other law relating to bankruptcy, insolvency, reorganization, liquidation, dissolution, winding-up or composition or adjustment of debts; Debtor admits in writing its inability to pay its debts as they become due, or makes an assignment for the benefit of its creditors; Debtor applies for or consents to the appointment of, or taking of possession by, a custodian (including, without limitation, a receiver, liquidator or trustee) of Debtor or any substantial portion of its property; or Debtor takes any action for the purpose of effecting any of the above; or
- (iii) KRRC fails to perform any material obligation required under this Agreement and that failure continues for a period of 30 calendar days after written notice specifying such failure is given to KRRC by OPUC, except with respect to any shorter period expressly provided in this Agreement, provided that so long as KRRC is diligently seeking to cure such failure to perform such 30 day period shall be extended.

- c. **Remedies.** Upon the occurrence and continuance of an Event of Default, and dispute



resolution under section 18.a is not successful in a timely manner, the OPUC may, at its option, pursue any or all of the following remedies:

- (i) Ceasing disbursement of Funds under this Agreement until the Event of Default has been cured or the Agreement is terminated;
- (ii) Terminating this Agreement with KRRC;
- (iii) Bringing an action at law or filing a claim in a court with jurisdiction to recover damages incurred as a result of the Event of Default, in order to recover Funds disbursed to the KRRC hereunder, with interest thereon, that have not been expended on Eligible Project Costs prior to an event of default or that were misexpended;
- (iv) Seeking any equitable remedies, including specific performance, which may be available to the OPUC; and
- (v) Pursuing any rights as loss payee on insurance or as payee on a performance bond, letter of credit or any similar performance or payment guarantor, if any.

- d. **No Termination by KRRC.** KRRC may not terminate this Agreement unless the KHSA has been terminated or the Project has been abandoned, terminated, or is otherwise unable to proceed.

**17. Oregon Trust is Sole Source of Funding.** The Oregon Trust is the sole source of funding for this Agreement, with respect to funding from Oregon, and KRRC shall have no recourse to, and the OPUC shall have no obligation to pay, any amounts under this Agreement from moneys deposited in the State Treasury, including but not limited to the General Fund; nor will the OPUC have any obligation to seek an appropriation or other expenditure authority from the Oregon Legislative Assembly in the event there are insufficient moneys in the Oregon Trust.

## **18. General Provisions.**

- a. **Dispute Resolution.** The Parties shall attempt in good faith to resolve any dispute arising out of this Agreement. In addition, the Parties may agree to utilize a jointly selected mediator or arbitrator (for non-binding arbitration) to resolve the dispute short of litigation.
- b. **Amendments.** This Agreement may be amended or extended only by a written instrument signed by both Parties and approved by the Department of Justice as required by applicable law.
- c. **No Third Party Beneficiaries.** OPUC and KRRC are the only Parties to this Agreement and are the only Parties entitled to enforce its terms. Nothing in this Agreement gives, is intended to give, or shall be construed to give or provide any benefit or right, whether directly or indirectly, to a third person unless such a third person is



individually identified by name herein and expressly described as an intended beneficiary of the terms of this Agreement.

- d. **Notices.** Except as otherwise expressly provided in this Agreement, any communications between the Parties hereto or notices to be given hereunder shall be given in writing by personal delivery, facsimile, email, or mailing the same, postage prepaid, to KRRC Contact or OPUC Contact at the address or number set forth on the signature page of this Agreement, or to such other addresses or numbers as either Party may hereafter indicate pursuant to this Section 18.d. Any communication or notice personally delivered shall be deemed to be given when actually delivered. Any communication or notice delivered by facsimile shall be deemed to be given when receipt of the transmission is generated by the transmitting machine, and to be effective against OPUC, such facsimile transmission must be confirmed by telephone notice to OPUC Contact. Any communication by email shall be deemed to be given when the recipient of the email acknowledges receipt of the email. Any communication or notice mailed shall be deemed to be given when received.
- e. **Choice of Law; Designation of Forum; Federal Forum.**
  - (i) The laws of the State of Oregon (without giving effect to its conflicts of law principles) govern all matters arising out of or relating to this Agreement, including, without limitation, its validity, interpretation, construction, performance, and enforcement.
  - (ii) Any Party bringing a legal action or proceeding against any other Party arising out of or relating to this Agreement shall bring the legal action or proceeding in the Circuit Court of the State of Oregon for Marion County (unless Oregon law requires that it be brought and conducted in another county). Each Party hereby consents to the exclusive jurisdiction of such court, waives any objection to venue, and waives any claim that such forum is an inconvenient forum.
  - (iii) Notwithstanding the prior paragraph, if a claim must be brought in a federal forum, then it must be brought and adjudicated solely and exclusively within the United States District Court for the District of Oregon. This paragraph applies to a claim brought against the State of Oregon only to the extent Congress has appropriately abrogated the State of Oregon's sovereign immunity, and is not consent by the State of Oregon to be sued in federal court. This paragraph is also not a waiver by the State of Oregon of any form of defense or immunity, including but not limited to sovereign immunity and immunity based on the Eleventh Amendment to the Constitution of the United States.
- f. **Survival.** The following sections or subsections of this Agreement shall survive the Expiration Date and any earlier termination of this Agreement: Sections 7.b, 7.h, 7.i, 7.j, 8, 12, 14.a, 16.c, 18.a, 18.d, 18.e, 18.f, 18.h and 18.l and any other section or provision that by its terms is stated to survive.

- h. **Severability.** If any term or provision of this Agreement is declared by a court of competent jurisdiction to be illegal or in conflict with any law, the validity of the remaining terms and provisions shall not be affected, and the rights and obligations of the Parties shall be construed and enforced as if this Agreement did not contain the particular term or provision held to be invalid.
- i. **Counterparts.** This Agreement may be executed in two or more counterparts (by facsimile or otherwise), each of which is an original and all of which together are deemed one agreement binding on all Parties, notwithstanding that all Parties are not signatories to the same counterpart.
- j. **Integration and Waiver.** This Agreement and the KHSA, as they may be amended from time to time, including all Exhibits, constitute the entire agreement between the Parties on the subject matter hereof. There are no understandings, agreements, or representations, oral or written, not specified herein regarding this Agreement. The delay or failure of either Party to enforce any provision of this Agreement shall not constitute a waiver by that Party of that or any other provision.
- k. **KHSA.** This Agreement is intended to facilitate the implementation of the KHSA. Nothing in this Agreement shall be construed in a way that is inconsistent with or conflicts with the terms of the KHSA. In the event of any such conflict or inconsistency the applicable terms shall be deemed waived or modified to the extent necessary to comply with the requirements of the KHSA insofar as the KHSA's requirements are consistent with law.
- l. **Non-Disclosure Agreements.** Nothing in this Agreement shall be construed as requiring KRRC to violate any confidentiality, non-disclosure agreement or similar agreement.
- m. **Coordination with Other Funding Sources.** OPUC acknowledges that pursuant to the KHSA, the Project will have several sources of funds and agrees to reasonably cooperate with the other Project funding sources as reasonably requested by KRRC. In the event conflicting positions or interpretations with respect to any matter or Approval among the Project's funding sources, OPUC agrees to meet and confer with such other funding sources and to make good faith efforts to promptly resolve any such disputes or conflicts. The pendency of any such dispute or conflict and any resulting delay or other impact on the Project shall be deemed to be beyond KRRC's control and shall not be a breach of this Agreement or give rise to an Event of Default.

**THE PARTIES**, by execution of this Agreement, hereby acknowledge that each Party has read this Agreement, understands it, and agrees to be bound by its terms and conditions.

SIGNATURE PAGE TO FOLLOW



ORDER NO. 17 018

**Klamath River Renewal Corporation**

**STATE OF OREGON**, acting by and through its  
Public Utility Commission of Oregon

By \_\_\_\_\_

By \_\_\_\_\_

Name \_\_\_\_\_  
(printed)

Name: \_\_\_\_\_  
(printed)

Title \_\_\_\_\_

Title: \_\_\_\_\_

Date \_\_\_\_\_

Date \_\_\_\_\_

**APPROVED**

(If required)

By \_\_\_\_\_

KRRC's Legal Counsel

Date \_\_\_\_\_

**KRRC Contact:**

Name: \_\_\_\_\_

Title: \_\_\_\_\_

Address: \_\_\_\_\_

Address: \_\_\_\_\_

Phone: \_\_\_\_\_

Email: \_\_\_\_\_

**OPUC Contacts:**

Name: David Poston

Title: Chief Financial Officer

Address: Public Utility Commission of Oregon

P O Box 1088

201 High Street SE

Salem, OR 97308-1088

Phone: 503-378-6661

Email: [david.poston@state.or.us](mailto:david.poston@state.or.us)

ORDER NO. 17 018

Name: Michael Dougherty  
Title: Chief Operating Officer  
Address: Public Utility Commission of Oregon  
P O Box 1088  
201 High Street SE  
Salem, OR 97308-1088  
Phone: 503-373-1303  
Email: michael.dougherty@state.or.us

ORDER NO. 17 018

**EXHIBIT A1  
PHASE 1 ACTIVITIES**

**EXHIBIT A  
PHASE 1 PROGRAM ACTIVITIES**

**1. Start-up Costs of the KRRC -- Establish and administer personnel, office and budget**

- A. KRRC will hire, as employees or independent contractors, personnel to perform the duties of its executive director and such other organizational functions as are necessary to operate and to perform its obligations under the amended KHSA and any other agreements to which KRRC is a party. Such personnel will include personnel with the expertise in the appropriate technical, legal, financial management and other disciplines.
- B. KRRC will continue to take such other measures as are reasonably necessary or convenient for the commencement of its operations and the performance of its obligations under the amended KHSA and otherwise in connection with the Project.

**2. Risk Management & Insurance**

- A. KRRC will obtain and maintain commercially reasonable insurance, including Directors' and Officers' liability insurance and such other insurance as is required of it by law or any agreements to which KRRC is a party.
- B. KRRC will work with a qualified insurance management company to assess and execute the necessary insurance products to minimize risks for the Project.

**3. Undertake certain Regulatory Actions**

- A. At the Federal Energy Regulatory Commission, monitor and provide information as requested on the Transfer and Surrender applications, filed on September 23, 2016.
- B. Work with the California Water Resources Control Board and the Oregon Department of the Environmental Quality to ensure timely consideration of and ultimate approval of the KRRC's application submitted under the provisions of the Section 401 of the federal Clean Water Act.
- C. Begin consultations with other governmental agencies that may have jurisdiction over KRRC's performance of its obligations under the amended KHSA, including environmental agencies, tribal nations and local and regional governmental authorities.

**4. Undertake Preparation work for the Definite Plan**

- A. Hire a firm to serve as the KRRC's Technical Representative to guide the preparation of the Definite Plan.
- B. Develop and begin the implementation of an integrated work plan to guide the legal, policy and technical aspects of the preparation of the Definite Plan and refine the KRRC's budget estimates accordingly.

ORDER NO. 17 018

**EXHIBIT B**  
**PHASE 1 PROJECT BUDGET**

**EXHIBIT B  
PHASE 1 PROJECT BUDGET**

Klamath River Renewal Corporation			
Phase 1	2016-17 Fiscal Year		Through June 30, 2017
	2017 Q1 Jan-Mar	2017 Q2 Apr-Jun	
<b>Total Eligible Project Costs -- Phase 1</b>			<b>\$4,951,500</b>
Balance of Oregon Phase 1 Funding ( \$ 4,048,000 less \$ 308,369 already advanced)			\$3,739,000
California PUC Phase 1 funding			\$ 352,000
Advance of California Proposition 1 Funds			\$ 860,500
<b>Expenses</b>			
5000 Compensation & Benefits	\$ 50,000	\$ 175,000	
5500 Travel and Meetings	\$ 30,000	\$ 36,000	
5800 Agency Fees and Reimbursements	\$ 320,000	\$ 320,000	
6000 Professional Services Technical Representative, Legal, Financial Management, Accounting, Auditing, Recrutiment, Program Implementation, & Ongoing Risk Management Analysis	\$ 1,155,000	\$ 2,180,000	
7000 Initial Insurance & Risk Management	\$ 8,500	\$ -	
7500 Information Technology	\$ 12,000	\$ 2,000	
8000 Office and Facilities	\$ 2,000	\$ 7,500	
8500 Taxes, Licenses, Fees	\$ 2,000	\$ 1,000	
Contingency & Miscellaneous (15%)	\$ 237,000.00	\$ 408,250.00	
<b>Total Expenses</b>	<b>\$1,816,500.00</b>	<b>\$3,135,000.00</b>	<b>\$4,951,500</b>

Klamath River Renewal Corporation Program Activities & Illustrative Timeline for Phase 1 Activities(1)

	Oregon's Share of Eligible Project Costs	2017 Q1			2017 Q2		
		January	February	March	April	May	June
<b>1. Continue Start-Up Operations of the Corporation</b>	<b>\$ 1,510,000</b>						
a. Recruitment of the General Manager							
b. Onboarding of FERC counsel							
c. Recruit/contract to carry out other staff and legal functions							
d. Undertake policy analyses necessary to fulfill the mission							
e. Manage Board Meetings & Board Process							
f. Establish Financial Controls & Audit Procedures							
<b>2. Risk Management &amp; Insurance Activities</b>	<b>\$ 94,000</b>						
a. Develop consulting arrangements for risk management advisory services							
b. Review and Assess other types of necessary insurance							
c. Review and Assess Additional D&O Insurance							
<b>3. Undertake certain Regulatory Actions</b>	<b>\$ 1,240,000</b>						
a. Continue to refine joint license transfer & surrender applications							
b. File informational update with FERC, per KHSA							
c. Monitor CA 401 application & environmental review							
d. Monitor OR 401 application & environmental review							
e. Begin Section 404 consultation process							
f. Carry out ESA & CZM consultations							
<b>4. Undertake Preparation Work for the Definite Plan</b>	<b>\$ 895,000</b>						
a. Recruit Technical Representative							
b. Recruit Construction Counsel							
c. Develop integrated workplan for the Definite Plan							
d. Background work necessary to undertake the Definite Plan							
<b>Total Eligible Project Costs for Oregon Phase 1</b>	<b>\$ 3,739,000</b>						

(1) This represents the best available estimate of the timing and magnitude of each program activity. These amounts may be modified in the future upon consultation with the Oregon PUC staff.

ORDER NO. 17 018

EXHIBIT C  
[RESERVED]



ORDER NO. 17 018

**EXHIBIT D**  
**ODFW-KRRC GRANT AGREEMENT FOR PHASE 1A**

KLAMATH DAM REMOVAL  
PHASE 1A GRANT AGREEMENT

This Agreement is made and entered into by and between the **State of Oregon**, acting by and through its Department of Fish and Wildlife, hereinafter referred to as "State," and the **Klamath River Renewal Corporation**, a California nonprofit public benefit corporation, hereinafter referred to as "Recipient." State and Recipient are referred to individually without distinction as "Party" and collectively as the "Parties."

**RECITALS**

WHEREAS, the States of Oregon and California, the United States, PacifiCorp, and other parties entered into the Klamath Hydroelectric Settlement Agreement, dated February 18, 2010 and amended April 6, 2016 (as amended, the "KHSa") to establish a process for the removal of four hydropower facilities within the jurisdictional boundary of FERC Project no. 2082 located on the Klamath River: Iron Gate Dam, Copco No. 1 Dam, Copco No. 2 Dam, J.C. Boyle Dam, and appurtenant works currently licensed to PacifiCorp (the "Project") and for the operation of the Klamath Hydroelectric Project until the completion of the Project; and

WHEREAS Recipient has been selected as the "Dam Removal Entity" contemplated by the KHSa to carry out the Project and has become a party to the KHSa by its signature to the KHSa on July 19, 2016; and

WHEREAS, pursuant to Section 4 of the KHSa, the States of Oregon and California have each agreed to provide funding from specified sources to Recipient for the purpose of carrying out the Project; and

WHEREAS in Oregon, SB 76 authorizes the "Customer Contribution[s]" and requires PacifiCorp to file tariffs for the collection of two nonbypassable surcharges from its customers for the purpose of paying the costs of removing Klamath River dams. As specified by the statute, one surcharge is designed to collect removal costs for the J.C. Boyle Dam and the other surcharge collects removal costs for the other three dams. Removal costs may include costs related to: (1) physical removal of the dams; (2) site remediation and restoration; (3) avoiding downstream impacts of dam removal; (4) downstream impacts of dam removal; (5) permits required for the removal; (6) removal and disposal of sediment, debris and other materials; and (7) compliance with environmental laws. SB 76 provides that all amounts collected under the surcharges are to be remitted into specially created trust accounts; and

WHEREAS, in accordance with Section 4 of the KHSa the Oregon Public Utilities Commission ("OPUC") has been collecting non-bypassable customer surcharges for the purpose of "Facilities Removal" as defined in the KHSa; and

WHEREAS, the KHSa provides that the States of Oregon and California would enter into grant agreements with Recipient as the designated dam removal entity to include conditions not inconsistent with the KHSa pertaining to the use of the Customer Contribution moneys;



WHEREAS, the Facilities Removal is contemplated to take place pursuant to three funding phases, with Phase One expected to consist of the start-up of the Recipient, evaluating risk mitigation such as insurance for the Facilities Removal, certain regulatory actions and preparation work for the Definite Plan; Phase Two expected to consist of development of the Definite Plan, including preparation of procurement documents for final design, deconstruction and risk management and completion of regulatory actions; and Phase Three to consist of the Facilities Removal through deconstruction and restoration; and

WHEREAS, it is contemplated that up to \$ 4.4 million will be necessary to fund Phase One activities with Oregon funding 92% of the Phase One costs (\$4,048,000) and California funding 8% of the Phase One costs (\$352,000) and;

WHEREAS, this agreement will partially fund Oregon's portion of the Phase One costs with further disbursements anticipated under additional funding agreements, the form of which shall be negotiated without reference to the form of this Agreement, and, further that this agreement shall be called "Phase One A Grant Agreement".

NOW THEREFORE, the parties enter into this Agreement as provided below.

#### AGREEMENT

- 1. Effective Date and Expiration.** This Agreement shall become effective on the date this Agreement is fully executed and approved as required by applicable law. Subject to the terms and conditions of this Agreement, Grant Funds (defined below) under this Agreement shall be available for Eligible Project Costs (defined below) incurred on or after the effective date of this Agreement except that the Recipient may be reimbursed for certain expenditures incurred before the effective date, as provided in Exhibit E. This Agreement shall expire upon the earlier of January 31, 2017 or the date the KHSa terminates (the "Expiration Date").
- 2. Agreement Documents.** This Agreement consists of the Grant Agreement through the signature page, together with the following Exhibits, all of which are attached hereto and incorporated herein by reference:

Exhibit A:	Project Activities
Exhibit B:	Project Budget Form
Exhibit C:	[RESERVED]
Exhibit D:	[RESERVED]
Exhibit E:	Reimbursable Expenditures

In the event of a conflict between portions of this Agreement, the following order of precedence, listed from highest precedence to lowest precedence, will prevail: this Agreement without Exhibits; Exhibit A; Exhibit B; Exhibit E; Exhibit C; Exhibit D.

- 3. Defined Terms.** Capitalized terms used in this Agreement shall have the meanings ascribed to them in this Agreement or as ascribed in the KHSa.



4. **Project Costs; Grant Funds.** In accordance with the terms and conditions of this Agreement, State shall provide Recipient an amount equal to \$308,369 the "Grant Funds") for Eligible Project Costs as provided in this Agreement, and the eligible reimbursements as listed in Exhibit E. The Parties further understand and agree that the Customer Contributions that comprise the Grant Funds were collected pursuant to ORS 757.736 to be used for the purposes described in ORS 757.736(11) as further described in the KHSA. The Customer Contributions are held in segregated trust accounts (the "Trust") established by the State of Oregon, acting by and through its Public Utilities Commission ("PUC"). The Wells Fargo Bank is trustee of the Grant Funds ("Trustee") and releases funds from the Trust as instructed by the PUC consistent with the terms of the Interagency Agreement for KHSA Dam Removal Funding Phase 1A, a copy of which is attached to this Agreement.
5. **Project.** Recipient shall use the Grant Funds, as more fully described in Exhibit A, to hire employees or independent contractors to carry out the administrative functions of Recipient, such as depositing, accounting for and disbursing the Grant Funds, to obtain Recipient's Directors' and Officers' insurance; and other organizational and operating expenses of the Recipient. Additional elements of the Project are also described in Exhibit A. Recipient understands and agrees that it will only expend Grant Funds on project activities and Recipient represents that all such expenditures are necessary to pay costs relating to the Project
6. **Disbursement; Recovery of Grant Funds.**
  - a. **Project Budget/Disbursements.** Grant Funds may be used by Recipient only to pay the costs and expenses of the Project in accord with the Project Budget as described in Exhibits B & E, attached hereto and by this reference made a part of this Agreement. The State has reviewed and approved the attached Project Budget. Recipient may, in its reasonable discretion, modify the Project Budget, including but not limited to reallocating costs within the Project Budget; provided, however, if Recipient modifies a line item in the Project Budget or the total Project Budget by an amount that is greater than 10% then Recipient shall provide an updated budget to the State.
  - b. **Proportional Disbursements.** The Parties understand and agree that the total project cost for Phase One is currently estimated by Recipient to be approximately \$4,400,000 and that Oregon's contribution shall constitute 92 percent of the Phase One costs and that California's contribution shall constitute 8 percent of the total Phase One. The Parties further understand and agree that the Grant Funds to be disbursed under this Agreement constitute a portion of Oregon's contribution of the Phase One funding such that additional disbursements under one or more additional agreement(s) yet to be executed will be necessary to fulfill Oregon's contribution to Phase One costs. The Parties acknowledge that the allocation of funding between the State and the State of California shall apply on a Project basis but shall not require that funds to be expended on any particular Project Costs on a prorata basis based on the allocation of funding for Phase One between the State and the State of California.
  - c. **Frequency of Disbursements.** As soon as practicable after the execution of this Agreement, the State shall request the PUC to instruct the Trustee to disburse the full



amount set forth in Section 4 above to the State in accord with that certain Interagency Agreement executed with OPUC. Upon receipt of this disbursement, the State shall disburse the funds to Recipient.

**d. Expenditure Reports. [RESERVED]**

**e. Definition of Eligible Project Costs.** "Eligible Project Costs" are the Project costs incurred by Recipient in performance of the Project that are consistent with the Project Budget and reasonably necessary for leading to the removal of the Klamath River dams. In the event that Recipient has received interim funding from other sources (other than the State of California and applied such funding to Eligible Project Costs then Eligible Project Costs shall include repayment of such interim funding.

(i) State may request additional documentation or clarification of an expenditure from Recipient, to which Recipient shall promptly respond. If State reasonably determines that an expenditure by Recipient was made to cover a cost that is not an Eligible Project Cost State shall promptly issue a Notice of Concern to Recipient identifying the questioned expenditure or project activities. Recipient shall respond to a Notice of Concern within 30 days with any relevant information regarding the expenditure or project activity, and identifying any corrective action taken. If, following receipt of Recipient's explanation and any supporting documentation, State finds that an expenditure was not an Eligible Project Cost, the State will consider the matter to constitute a "cost dispute." Subsequent agreements with Recipient may be affected by Phase 1A cost disputes, and may include a corresponding reduction in subsequent funding by the State of Oregon or additional reporting requirements.

**f. Recovery of Grant Funds.** Any funds disbursed to Recipient under this Agreement that are expended in violation or contravention of one or more of the provisions of this Agreement ("Misexpended Funds") including disallowed expenditures under section 6.e.i, must be returned to State for return to the appropriate trust. Recipient shall return all Misexpended Funds to State for return to the appropriate trust within 15 days of the State's written demand. Recipient shall apply any unexpended funds as provided in paragraph g. or return any unexpended funds to State within 15 days after the earlier of expiration or termination of this Agreement.

**g. Unexpended Grant Funds.** Any funds disbursed to Recipient under this Agreement that have not be expended on Eligible Project Costs prior to the termination of this Agreement may be retained by Recipient for future expenditure on costs incurred to carry out the Phase One activities described in the Recitals of this Agreement. Recipient shall report the expenditure of such funds in, as applicable, its Final Report or any expenditure reports it is required to submit under future funding agreements related to Phase One of the Project.

**7. Reports.** Within 30 days after the Expiration Date, Recipient shall file with State a final report (the "Final Report") and provide the PUC with a copy of the Final Report. The Final Report must include a summary of all Project costs compared to the Project Budget, together

with reasonable supporting documentation that evidences Recipient's expenditure of the Grant Funds. The Final Report shall include a summary of the Project as completed as well as an explanation for any Project Cost variances that are greater than 10 percent from the Project Budget. The Final Report shall also document the amount of funding received from California for Phase One. The final report shall also include a summary of the Project as completed. The Final Report must be timely submitted to the State Contact and PUC Contact listed below the signature blocks.

**8. Conditions Precedent.**

**a. Conditions Precedent to State's Obligations.** State's obligations under this Agreement are subject to the receipt by State of the following items, all in form and substance satisfactory to State and its counsel:

- (i) A copy of the resolution of the Recipient's board of directors authorizing the execution and delivery of this Agreement and performance by Recipient of its obligations hereunder.

**b. Conditions to Disbursement.** State's obligation to disburse any of the Grant Funds to Recipient is subject to the following conditions.

- (i) **Expenditure Authority.** Sufficient funds are currently deposited in the Trust Account to fulfill the State's obligation to disburse the Grant Funds under this Agreement. The Trust Account is the sole source of funding for this Agreement and Recipient shall have no recourse to, and the State shall have no obligation to pay, any amounts under this Agreement from, moneys deposited in the State Treasury, including but not limited to the General Fund; nor will the State have any obligation to seek an appropriation or other expenditure authority from the Oregon Legislative Assembly in the event there are insufficient moneys in the Trust Account.
- (iii) **No Default.** Recipient is in compliance with the terms of this Agreement.
- (iv) **Representations.** Recipient's representations and warranties set forth in Section 9 hereof are true and correct on the date of disbursement with the same effect as though made on the date of disbursement.
- (v) **Release of Funds.** The PUC has instructed the Trustee to release in accordance with the IAA, and the Trustee has released from the Trust, an amount sufficient to fund the disbursement, provided that State shall promptly notify Recipient of any failure or delay by the PUC or the Trustee in carrying out any of the foregoing.

**9. Representations, Warranties and Covenants of Recipient.**

**a. Recipient Representations, Warranties.** Recipient makes the following representations and warranties to the State. The warranties set forth in this section are in addition to, and



not in lieu of, any other warranties set forth in this Agreement, the KHSA or implied by law.

- (i) **Organization and Authority.** Recipient is a duly organized and validly existing nonprofit public benefit corporation under the California Corporations Code and is eligible to receive the Grant Funds. Recipient has full power, authority, and legal right to make this Agreement and to incur and perform its obligations hereunder; and the making and performance by Recipient of this Agreement (1) have been duly authorized by all necessary action of Recipient, (2) do not and will not violate any provision of any applicable law, rule, regulation, or order of any court, regulatory commission, board, or other administrative agency or any provision of Recipient's organizational documents, and (3) do not and will not result in the breach of, or constitute a default or require any consent under, any other agreement or instrument to which Recipient is a party or by which Recipient or any of its properties may be bound or affected. No authorization, consent, license, approval of, filing or registration with or notification to any governmental body or regulatory or supervisory authority is required for the execution, delivery or performance by Recipient of this Agreement.
  - (ii) **Binding Obligation.** This Agreement has been duly executed and delivered by Recipient and, when executed and delivered by State, constitutes a legal, valid and binding obligation of Recipient, enforceable in accordance with its terms, subject to the application of bankruptcy, insolvency or similar laws relating to the rights of creditors generally and general principles of equity.
- b. **Recipient's Inspections; Information.** During the term of this Agreement, Recipient shall permit the State, at any reasonable time and with reasonable notice, to inspect and make copies of any accounts, books and records, including, without limitation, its records regarding receipts, disbursements, contracts, investment of Grant Funds, if any, and any other matters related to the use of Grant Funds or the Project. The Recipient shall supply related reports and information relating to the Project as the State may reasonably require.
10. **Records Maintenance and Access; Audit Requirements.**
- a. **Records Maintenance and Access.** Recipient shall make and retain proper and complete books of record, and account and maintain all fiscal records related to this Agreement, the Grant Funds, and the Project in accordance with all applicable generally accepted accounting principles. Recipient shall create and maintain all expenditure records in sufficient detail in such a manner as to clearly document Recipient's performance and to permit State to verify how the Grant Funds were expended. Recipient shall ensure that each of its subrecipients, and subcontractors complies with these requirements. State, the Public Utility Commission of Oregon and the Secretary of State of the State of Oregon ("Secretary of State") and their duly authorized representatives shall have access to the books, documents, papers and records of Recipient that are directly related to this Agreement, the funds provided hereunder, or the Project for the purpose of making audits and examinations. In addition, State and the Secretary of State and their duly authorized representatives may make and retain

excerpts, copies, and transcriptions of the foregoing books, documents, papers, and records. Recipient shall permit authorized representatives of State and the Secretary of State to perform site reviews of the Project as needed to determine compliance with the terms of this Agreement.

- b. **Retention of Records.** Recipient shall retain and keep accessible all books, documents, papers, and records that are directly related to this Agreement, the Grant Funds, or the Project for a minimum of six (6) years, or such longer period as may be required by other provisions of this Agreement or applicable law, following the termination of this Agreement. If there are unresolved disputes or audit questions at the end of the retention period, Recipient shall retain the records until the disputes or questions are resolved.
- c. **Audit Requirements.** Recipient shall save, protect and hold harmless State from the cost and expenses of any audits or special investigations performed by the Secretary of State or the federal government with respect to the expenditure by Recipient of Grant Funds disbursed under this Agreement. Recipient acknowledges and agrees that any costs and expenses incurred by Recipient as a result of proven allegations of fraud, waste or abuse are ineligible for reimbursement under this or any other agreement between Recipient and State.

#### 11. Recipient Subagreements.

- a. **Subagreements.** Recipient may enter into agreements with sub-recipients, contractors or subcontractors (collectively, "subagreements") for performance of the Project, including an agreement for the position of executive director. Any material breach of a term or condition of a subagreement relating to use of the Grant Funds must be reported by Recipient to State within ten (10) days of its being discovered. Use of a subagreement does not relieve Recipient of its responsibilities under this Agreement.
- b. **Indemnity.** Recipient's subagreement(s) shall require the other party to such subagreements(s) to indemnify State on substantially the same terms as Recipient is indemnifying State as set forth in Section 12(a).
- c. **Insurance.** Recipient shall cause the other party, or parties, to each of its subagreements to obtain and maintain insurance of the types and in the amounts as set forth in Section 12(b).

#### 12. Indemnity; Insurance.

- a. **Indemnity.** Recipient and State acknowledge and agree that the indemnity provided in Section 7.1.3 of the KHSa shall be applicable to this Agreement.

Neither Recipient, nor any attorney engaged by Recipient shall defend any Claim in the name of the State or any agency of the State of Oregon, nor purport to act as legal representative of the State of Oregon or any of its agencies, without the prior written consent of the Oregon Attorney General. The State may, at any time at its election,



assume its own defense and settlement in the event that it determines that Recipient is prohibited from defending State or that Recipient is not adequately defending State's interests, or that an important governmental principle is at issue or that it is in the best interests of State to do so. State reserves all rights to pursue claims it may have against Recipient if State elects to assume its own defense.

- b. **Insurance.** Recipient shall maintain, or cause to be maintained, insurance policies with responsible insurers or self-insurance programs, insuring against directors' and officers' liability. Recipient shall provide a summary of any insurance coverage to State within ten days following the effective date of this agreement and upon the execution of any additional insurance agreements.

**13. Compliance with Laws.**

- a. **Compliance with Laws.** Recipient shall comply with all Applicable Laws, as that term is defined in the KHSa Section 1.4 and if not included with the Applicable Laws, all other laws, rules, regulations and orders of any court or governmental authority that relate to this Agreement and the Project, including without limitation, to the extent otherwise applicable:

- (i) To the extent applicable, the prevailing wage rate requirements set forth in ORS 279C.800 through 279C.870 and the administrative rules promulgated thereunder ("Prevailing Wage Rate Law" or "PWR"), or, if applicable, 40 U.S.C. 3141 et seq. ("Davis-Bacon Act"). Recipient shall require its contractors and subcontractors to pay the applicable prevailing wage rate and to comply with all other applicable Oregon Bureau of Labor and Industries ("BOLI") requirements pursuant to the Prevailing Wage Rate Law, including on all contracts and subcontracts and in filing separate works bonds with the Construction Contractors Board, unless exempt under ORS 279C.836 and OAR 839-025-0015. If the Project is subject to the Davis-Bacon Act, Recipient shall comply with and require its contractors and subcontractors to comply with the Davis-Bacon Act and any applicable provisions of Oregon PWR. If the Project is or becomes subject to both PWR and the Davis-Bacon Act, all subject workers must be paid the higher of applicable state or federal prevailing wage rate. The applicable rates are those in effect on the Effective Date of this Agreement. PWR and Davis-Bacon Act prevailing wage rates may be accessed via: [http://www.oregon.gov/boli/WHDPWR/Pages/pwr\\_state.aspx](http://www.oregon.gov/boli/WHDPWR/Pages/pwr_state.aspx) and <http://www.wdol.gov>.

Recipient represents and warrants that it is not on the BOLI current List of Contractors Ineligible to Receive Public Works Contracts and that it will not contract with any contractor on this list at the time it enters into such contract. Recipient agrees to indemnify, hold harmless and reimburse the State and its officers, employees and agents for any liability, cost, expense, fine, fee or penalty payable to a person or private or governmental entity, including another agency of the State of Oregon (collectively "liability") incurred to comply with, to obtain a



determination under, or in any other way related to the Prevailing Wage Rate Law or Davis-Bacon Act.

- (ii) Other applicable law and local contracting procedures including but not limited to: procurement, site acquisition, site development, construction, equipping and implementation of the Project. In particular, and without limiting the foregoing, Recipient shall comply, and require its subrecipients, and contractors to comply, with all applicable procurement regulations found in the Oregon Public Contracting Code, ORS chapters 279A, 279B and 279C. These laws, rules, regulations and orders are incorporated by reference in this Agreement to the extent required by law.
  - (iii) Without limiting the generality of the foregoing, Recipient expressly agrees to comply with (i) Title VI of Civil Rights Act of 1964; (ii) Title V and Section 504 of the Rehabilitation Act of 1973; (iii) the Americans with Disabilities Act of 1990 and ORS 659A.142; (iv) all regulations and administrative rules established pursuant to the foregoing laws; and (v) all other applicable requirements of federal and state civil rights and rehabilitation statutes, rules and regulations.
- b. Recipient agrees to contract with, and require any subrecipients to contract with, competent, properly licensed and bonded contractors and professionals for the performance of the Project.
  - c. All subagreements that Recipient may enter which are funded wholly or in part with the Grant Funds must be subcontractual in nature, with the other party engaged in the role of a subcontractor. Recipient will administer all contracts with its subcontractors to ensure compliance by any subcontractors with the terms of this Agreement with respect to requirements that flow through to subcontractors.

#### 14. Termination; Default

- a. **Termination by State.** State may terminate this Agreement effective upon delivery of written notice of termination to Recipient, or at such later date as may be established by State in such written notice, only if:
  - (i) State fails to receive funding, appropriations, limitations or other expenditure authority sufficient to allow State, in the exercise of its reasonable administrative discretion, to continue to make payments for performance of this Agreement; or
  - (ii) Federal or state laws, rules, regulations or guidelines are modified or interpreted in a non-stayed or otherwise effective judgment binding on the State by a court of competent jurisdiction in such a way that the Project is no longer allowable or no longer eligible for funding under this Agreement;
  - (iii) The occurrence of an Event of Default listed below; or

- (iv) If PUC fails for any reason to direct the Trustee to release Grant Funds in response to a request from State to effect a disbursement under Section 6.a. of this Agreement, or indicates to the State that it is unwilling to disburse the Grant Funds, provided that, in such case, the State shall immediately notify the Recipient of such occurrence. The State will not terminate this Agreement under this provision until at least thirty (30) days after the date of its notice to Recipient.
- b. **Event of Default.** The occurrence of any of the following listed events shall constitute an Event of Default under this Agreement:
  - (i) Any materially false or misleading representation is made by Recipient in this Agreement or in any document provided by or on behalf of Recipient related to this Agreement or the Project; or
  - (ii) A petition, proceeding or case is filed by or against Recipient, or a construction manager or Successor Entity described in Section 7.b of this Agreement (for purposes of this section, each a "Debtor") under any federal or state bankruptcy or insolvency law, and in the case of a petition filed against the Debtor, the Debtor acquiesces to such petition or such petition is not dismissed within 90 calendar days after such filing;; Debtor files a petition seeing to take advantage of any other law relating to bankruptcy, insolvency, reorganization, liquidation, dissolution, winding-up or composition or adjustment of debts; Debtor admits in writing its inability to pay its debts as they become due, or makes an assignment for the benefit of its creditors; Debtor applies for or consents to the appointment of, or taking of possession by, a custodian (including, without limitation, a receiver, liquidator or trustee) of Debtor or any substantial portion of its property; or Debtor takes any action for the purpose of effecting any of the above; or
  - (iii) Recipient fails to perform any material obligation required under this Agreement and that failure continues for a period of 30 calendar days after written notice specifying such failure is given to Recipient by State, except with respect to any shorter period expressly provided in this Agreement, provided that so long as Recipient is diligently seeking to cure such failure to perform such 30 day period shall be extended.
- c. **Remedies.** Upon the occurrence of an Event of Default the State, may, at its option, pursue any or all of the remedies available under this Agreement and at law or in equity, including but not limited to:
  - (i) Ceasing disbursement of Grant Funds under any grant agreement between the Parties, whether this Agreement or a grant agreement executed after the effective date of this Agreement;
  - (ii) Terminating this Agreement with Recipient;
  - (iii) bringing an action at law to recover damages incurred as a result of the Event of Default, in



order to recover all Grant Funds disbursed to the Recipient hereunder, with interest thereon; and

(iv) seeking any equitable remedies, including specific performance, which may be available to the State.

d. **No Termination by Recipient.** Recipient may not terminate this Agreement.

# 15. **General Provisions**

a. **Dispute Resolution.** The Parties shall attempt in good faith to resolve any dispute arising out of this Agreement. In addition, the Parties may agree to utilize a jointly selected mediator or arbitrator (for non-binding arbitration) to resolve the dispute short of litigation.

b. **Amendments.** This Agreement may be amended or extended only by a written instrument signed by both Parties and approved by the Department of Justice as required by applicable law.

c. **No Third Party Beneficiaries.** State and Recipient are the only Parties to this Agreement and are the only Parties entitled to enforce its terms. Nothing in this Agreement gives, is intended to give, or shall be construed to give or provide any benefit or right, whether directly or indirectly, to a third person unless such a third person is individually identified by name herein and expressly described as an intended beneficiary of the terms of this Agreement.

d. **Notices.** Except as otherwise expressly provided in this Agreement, any communications between the Parties hereto or notices to be given hereunder shall be given in writing by personal delivery, facsimile, email, or mailing the same, postage prepaid, to Recipient Contact or State Contact at the address or number set forth on the signature page of this Agreement, or to such other addresses or numbers as either Party may hereafter indicate pursuant to this Section 15.d. Any communication or notice personally delivered shall be deemed to be given when actually delivered. Any communication or notice delivered by facsimile shall be deemed to be given when receipt of the transmission is generated by the transmitting machine, and to be effective against State, such facsimile transmission must be confirmed by telephone notice to State Contact. Any communication by email shall be deemed to be given when the recipient of the email acknowledges receipt of the email. Any communication or notice mailed shall be deemed to be given when received.

e. **Choice of Law; Designation of Forum; Federal Forum.**

(i) The laws of the State of Oregon (without giving effect to its conflicts of law principles) govern all matters arising out of or relating to this Agreement, including, without limitation, its validity, interpretation, construction, performance, and enforcement.

- (ii) Any Party bringing a legal action or proceeding against any other Party arising out of or relating to this Agreement shall bring the legal action or proceeding in the Circuit Court of the State of Oregon for Marion County (unless Oregon law requires that it be brought and conducted in another county). Each Party hereby consents to the exclusive jurisdiction of such court, waives any objection to venue, and waives any claim that such forum is an inconvenient forum.
  - (iii) Notwithstanding the prior paragraph, if a claim must be brought in a federal forum, then it must be brought and adjudicated solely and exclusively within the United States District Court for the District of Oregon. This paragraph applies to a claim brought against the State of Oregon only to the extent Congress has appropriately abrogated the State of Oregon's sovereign immunity, and is not consent by the State of Oregon to be sued in federal court. This paragraph is also not a waiver by the State of Oregon of any form of defense or immunity, including but not limited to sovereign immunity and immunity based on the Eleventh Amendment to the Constitution of the United States.
- f. **Survival.** The following sections or subsections of this Agreement shall survive the Expiration Date and any earlier termination of this Agreement: Sections 6.e.i, 6.f and g; 7, 10, 12, 13, 14.c, 15.a., e, f, h. and any other section or provision that by its terms is intended to survive.
- h. **Severability.** If any term or provision of this Agreement is declared by a court of competent jurisdiction to be illegal or in conflict with any law, the validity of the remaining terms and provisions shall not be affected, and the rights and obligations of the Parties shall be construed and enforced as if this Agreement did not contain the particular term or provision held to be invalid.
- i. **Counterparts.** This Agreement may be executed in two or more counterparts (by facsimile or otherwise), each of which is an original and all of which together are deemed one agreement binding on all Parties, notwithstanding that all Parties are not signatories to the same counterpart.
- j. **Integration and Waiver.** This Agreement and the KHSA, as they may be amended from time to time, including all Exhibits, constitute the entire agreement between the Parties on the subject matter hereof. There are no understandings, agreements, or representations, oral or written, not specified herein regarding this Agreement. The delay or failure of either Party to enforce any provision of this Agreement shall not constitute a waiver by that Party of that or any other provision.
- k. **KHSA.** This Agreement is intended to facilitate the implementation of the KHSA. Nothing in this Agreement shall be construed in a way that is inconsistent with or conflicts with the terms of the KHSA. In the event of any such conflict or inconsistency the applicable terms shall be deemed waived or modified to the extent necessary to comply with the requirements of the KHSA insofar as the KHSA's requirements are consistent with law.

ORDER NO. 17 018

**THE PARTIES**, by execution of this Agreement, hereby acknowledge that each Party has read this Agreement, understands it, and agrees to be bound by its terms and conditions.

SIGNATURE PAGE TO FOLLOW



ORDER NO. 17 018

Klamath River Renewal Corporation

By Michael Carrier  
Name Michael Carrier  
(printed)  
Title President, Board of Directors  
Date October 5, 2016

**APPROVED**  
(If required)

By \_\_\_\_\_  
Recipient's Legal Counsel

Date \_\_\_\_\_

**Recipient Contact:**

Name: Kirk Marckwald  
Title: Principal, California Environmental Associates  
Address: 423 Washington St, 3rd Floor  
Address: San Francisco, CA 94111  
Phone: 415-820-4412  
Email: kirk@ceaconsulting.com

**State Contact:**

Name: \_\_\_\_\_  
Title: \_\_\_\_\_  
Address: \_\_\_\_\_  
Salem OR 973 \_\_\_\_\_  
Phone: 503- \_\_\_\_\_  
Email: \_\_\_\_\_

**PUC Contact:**

Name: \_\_\_\_\_

STATE OF OREGON, acting by and through its  
Department of Fish and Wildlife

By William Herber  
Name: William Herber  
(printed)  
Title: Deputy Director for Administration  
Date October 7, 2016

**APPROVAL RECOMMENDED**

By \_\_\_\_\_

Date \_\_\_\_\_

By \_\_\_\_\_

Date \_\_\_\_\_

**APPROVED AS TO LEGAL SUFFICIENCY**  
(For funding over \$150,000)

By \_\_\_\_\_  
Assistant Attorney General

Name \_\_\_\_\_  
(printed)

Date \_\_\_\_\_

ORDER NO. 17 018

Title: \_\_\_\_\_

Address: \_\_\_\_\_

Salem OR 973 \_\_\_\_\_

Phone: 503- \_\_\_\_\_

Email: \_\_\_\_\_



**EXHIBIT A  
THE PROJECT ACTIVITIES**

**1. Establish and administer personnel, office and budget**

A. Recipient shall hire as an employee or contract for the services of an independent contractor to perform the duties of its executive director.

B. Recipient shall open an account in a financial institution for the deposit of Grant Funds.

C. Recipient shall take such other measures as are reasonably necessary or convenient for the commencement of its operations and the performance of its obligations under the KHSA.

**2. Insurance**

A. Recipient shall maintain Directors' and Officers' liability insurance in commercially reasonable amounts and will cover all present and future officers and directors.

**3. FERC Informational Filing**

Recipient shall submit to the State a copy of the FERC license transfer application as described in the KHSA section 7.1.2.C

**EXHIBIT B  
PROJECT BUDGET**

September	October	Total
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**Expenses**

Compensation of officers, directors, and trustees	\$ -	\$ -
Salaries and Benefits	\$ -	\$ 22,000
Occupancy	\$ -	\$ 1,000
Professional Services		
Legal	\$ 35,500	\$ 35,500
Technical	\$ 10,000	\$ 10,000
Interim Staff Assistance	\$ 36,000	\$ 34,000
	\$ -	\$ -
Other Expenses	\$ -	\$ -
Travel	\$ 5,000	\$ 5,000
Office Expense and Services	\$ 3,000	\$ 3,000
Insurance (Directors and Officers, General Liability)	\$ -	\$ -

**Total Estimated Expenses**                      \$ 89,500      \$110,500      \$ 200,000

**Balance Needed to Cover  
Expenditures to Date & Ongoing  
Obligations ( Exhibit E)**

\$ 108,369

**Total needed for Phase 1A**

**\$ 308,369**

ORDER NO. 17 018

EXHIBIT C

[RESERVED]

EXHIBIT D

[RESERVED]

**EXHIBIT E  
AUTHORIZED KRRC EXPENSE REIMBURSEMENTS**

	April-July 2016	August	Total
<b>Expenses</b>			
Compensation of officers, directors, and trustees	\$ -	\$ -	
Salaries and Benefits	\$ -	\$ -	
Occupancy	\$ -	\$ -	
Professional Services			
Legal	\$ 16,000	\$ 30,000	
Technical	\$ 1,000	\$ 4,000	
Interim Staff Assistance	\$ 34,000	\$ 46,000	
		\$ -	
Other Expenses		\$ -	
Travel	\$ 2,326	\$ 3,000	
Office Expense and Services	\$ 2,000	\$ 3,000	
Insurance (Directors and Officers, General Liability)	\$ 9,543		
<b>Total Expenses</b>	<b>\$ 64,869</b>	<b>\$ 86,000</b>	<b>\$ 150,869</b>
<b>State Funding to Date</b>			
California			\$ 20,000
Oregon			\$ 22,500
Advanced to Pacific Cascade	\$ 7,906		
Balance of Oregon Funding	\$ 14,594		
Total Initial State Funding Available			\$ 42,500
<b>Needed to Cover Expenditures to Date &amp; Ongoing Obligations</b>			<b>\$ 108,369</b>

ORDER NO. 17 018



## CONFIRMATION OF INSURANCE

July 22, 2016

Willis of Illinois, Inc. - Chicago  
Charina L. Almeyda  
233 South Wacker Drive Suite 2000  
Chicago, IL 60606

FROM: John Delaplane for Jonathan Reiner

I am pleased to confirm that your Directors & Officers/EPL Package insurance has been bound pursuant to your request. The attached Confirmation of Insurance will serve as evidence of coverage until the insurance carrier issues the policy. This insurance document summarizes the policy referenced above and is not intended to reflect all the terms and conditions or exclusions of the referenced policy. In the event of a claim, coverage will be determined by the referenced policy, subject to all the terms, exclusions and conditions of such. Moreover, the information contained in this document reflects bound coverage as of the effective date of the referenced policy and does not include subsequent changes by the insurer or changes in the applicable rates for taxes or governmental fees.

<b>NAMED INSURED:</b>	Klamath River Renewal Corporation 600 Wilshire Blvd. Suite 980 Los Angeles, CA 90014	
<b>PRIMARY RISK ZIP CODE:</b>	90014	
<b>COVERAGE:</b>	Directors & Officers/EPL Package	
<b>INSURER:</b>	Underwriters at Lloyds (Non-Admitted) - Non-Admitted	
<b>POLICY NUMBER:</b>	ANV109585A	
<b>POLICY TERM:</b>	7/21/2016 - 1/31/2017	
<b>POLICY PREMIUM:</b>	\$5,000.00	
<b>TRIA:</b>	MEP	
<b>FEES:</b>	<b>TOTAL FEES:</b>	
<b>SURPLUS LINES TAX:</b>	Surplus Lines Tax	\$150.00
	Stamping Office Fee	\$10.00
	<b>TOTAL TAXES:</b>	<b>\$160.00</b>
<b>TOTAL:</b>	\$5,160.00	
<b>AGENT COMMISSION:</b>	11%	

ORDER NO. 17 018



**SUBJECTIVIES DUE PRIOR TO POLICY ISSUANCE:**

- Complete signed & dated ANV Application
- Most recent audited financials with notes

**SPECIAL CONDITIONS / OTHER COVERAGES:**

- NO FLAT CANCELLATIONS
- ALL FEES ARE FULLY EARNED AT INCEPTION

For R-T Specialty to file the surplus lines taxes on your behalf, please complete the surplus lines tax document and return with your request to bind. Due to state regulations, R-T Specialty requires tax document to be completed within 24 to 48 hours of binding. Please be diligent returning tax forms.

A handwritten signature in black ink, consisting of a series of loops and flourishes, positioned above a horizontal line.

Authorized Representative

**HOME STATE FOR NON-ADMITTED RISKS**

Taxes and governmental fees are estimates and subject to change based upon current rates of the Home State and risk information available at the date of binding. The Home State of the Insured for a non-admitted risk shall be determined in accordance with the Non-admitted and Reinsurance Act of 2010, 15. U.S.C §8201, etc. ("NRRA"). Some states require the producing broker to submit a written verification of the insured's Home State for our records. The applicable law of the Home State governing cancellation or non-renewal of insurance shall apply to this Policy.

Any amendments to coverage must be specifically requested in writing or by submitting a policy change request form and then approved by the Insurer. Coverage cannot be affected, amended, extended or altered through the issuance of certificates of insurance. Underlying Insurers must be rated A- VII or better by A.M. Best.



ORDER NO. 17 018



**PREMIUM FINANCE** If the Insured and the Insurer agree to bind coverage and the premium will be financed, we will need the following information and, upon binding, please instruct the premium finance company to send documents to our attention. Premium Finance funds should always be paid to R-T Specialty, LLC:

Name of Premium Finance Company:	
Premium Finance Account Number:	

In order to place the insurance requested we may charge a reasonable fee for additional services that may include performing a risk analysis, comparing policies, processing submissions, communication expenses, inspections, working with underwriters on the coverage proposal, issuing policies or servicing the policy after issuance. We have extensive insurance experience and will represent you honestly and competently in rendering services. Third-party inspection or other fees may be separately itemized upon request. If the Insured recommends an inspection company we will endeavor to determine if it is approved by the Insurer. To the extent the Insured paid us a fee for services, we represent the Insured in performing those services. Our fees are fully earned and nonrefundable, except when required by applicable law. Our fees are applied to new policies, renewal policies, endorsements and certificates. Fees applicable to each renewal, endorsement and certificate will be explained in the quotes. In the event that the premium is adjustable upwards, our fees are adjustable as well and will be collected against any additional premium. The fee charged by us does not obligate the Insured to purchase the proposed insurance or the Insurer to bind the proposed insurance. Our fee is not imposed by state law or the Insurer. This fee authorization shall remain operative until terminated by written notice. Depending upon the Insurer involved with your placement, we may also receive a commission from the Insurer.

We may also have an agreement with the Insurer that we are proposing for your insurance that may pay us future additional compensation. This type of compensation is in addition to any fees and/or commissions that we have agreed to accept for servicing your insurance. This compensation could be based on formulas that consider the volume of business placed with the company, the profitability of that business, how much of the business is retained for the company's account each year, and other factors. The agreements frequently consider total eligible premium from all clients placed during a calendar year and any profit-sharing payment is usually received after the end of the following calendar year. Because of variables in these programs, we have no accurate way at this time to determine the amount of any additional compensation that might be attributable to your insurance.

Insurers may choose to delegate their authority for some classes of business to underwriting managers. Some affiliates of Ryan Specialty Group, LLC (RSG) have been delegated authority for underwriting or other services on behalf of Insurers. An underwriting manager (UM) is a segregated business unit separate from the brokering, sales and service teams within RSG. If you need additional information about the compensation arrangements for RSG affiliated UM's or producers please contact your RSG representative.

R-T Specialty, LLC (RT), a subsidiary of Ryan Specialty Group, LLC, provides wholesale brokerage and other services to agents and brokers. RT is a Delaware limited liability company based in Illinois. As a wholesale broker, RT does not solicit insurance from the public. Some products may only be available in certain states, and some products may only be available from surplus lines Insurers. In California: R-T Specialty Insurance Services, LLC License #0G97516.

© 2014 Ryan Specialty Group, LLC



17 018  
ORDER NO.  
**ANV**  
**INSURANCE BINDER**  
Policy Number: ANV109585A

Named Insured: Klamath River Renewal Corporation

**CERTIFICATES OF INSURANCE**

The Company will not review, accept or retain copies of any certificates of insurance or additional insured endorsements prepared by anyone. Moreover, the Company will not be responsible for any liability resulting from the issuance of any unauthorized endorsement or the issuance of an endorsement which has been authorized by the Company but where the authorized wording is amended or revised in any way, without the prior written approval of the Company. The Company will not be responsible for any liability resulting from the issuance of any certificate of insurance. In no event does anyone have the authority to issue certificates of insurance which include any addition and/or modification of the policy terms and conditions, additional named insureds, waivers of subrogation or any special additional coverages unless expressly approved in writing by the Company.

Copies of all certificates of insurance and any endorsement sent with those certificates must be retained by the issuer for the time period required by state law or regulation in the state in which the certificate of insurance is issued, but in no event less than five years from the date indicated on the certificate.

Unless this policy is physically endorsed, the issuance of a certificate of insurance does not amend, extend, or alter the coverage provided by this policy or change the person(s) or entities to whom such coverage is afforded under this policy. No one without the express written authority of the Company has the authority to issue certificates of insurance or endorsements of any kind including without limitation additional insured endorsements, which include any addition and/or modification of this policy's terms and conditions, or purport to add any additional insured(s) and/or change any term, condition, or provision of this policy unless such policy changes or modifications are first approved by the Company and a policy endorsement is issued by the Company and signed by an officer of the Company.

**ANV**

ANV GLOBAL SERVICES INC ON BEHALF OF ANV SYNDICATE 1861 AT LLOYD'S - 50% RENAISSANCE RE SYNDICATE 1458 AT LLOYD'S - 50% LMP: 6007515A22T5001
<b>ANV109585A</b>



ORDER NO. 17 018

**ANW**

**INSURANCE BINDER**

Policy Number: ANV109585A

Klamath River Renewal Corporation  
600 Wilshire Blvd Suite 980  
Los Angeles, CA 90014

*Policy Period:* From **July 21, 2016 to January 31, 2017** at 12:01 A.M. Standard Time at your mailing address shown above.

**COVERAGES**

Not For Profit Individual and Organization Management Liability Insurance Liability Insurance Policy CLAIMS MADE

<b>LIMITS OF LIABILITY*</b>	<b>Shared Limit</b>	<b>Separate Limit</b>	<b>Aggregate Limit</b>
Aggregate Limit for all <b>Loss</b> under all Coverages combined			\$1,000,000
Limit for all <b>Loss</b> for all <b>Claims</b> other than <b>Employment Practices Claims</b>	\$1,000,000	N/A	
Limit for all <b>Loss</b> for all <b>Claims</b> for <b>Employment Practices Wrongful Acts</b>	Not Covered	Not Covered	
Limit for all <b>Loss</b> for all <b>Claims</b> for <b>Third Party Discrimination</b>	Not Covered		
<b>SUBLIMITS OF LIABILITY*</b>			
Sublimit for all <b>Excess Benefit Transaction Excise Taxes</b>	\$125,000		
Sublimit for all <b>Loss</b> for all <b>Crisis Management Expenses</b>	Not Covered		

*\*Includes Costs of Defense*





RETENTION*	
COVERAGE PART	RETENTION
Each <b>Claim</b>	\$15,000
Each <b>Claim</b> alleging an <b>Employment Practices Wrongful Act</b>	Not Covered
Each <b>Claim</b> alleging <b>Third Party Discrimination</b>	Not Covered

\*Applies to Costs of Defense

PRIOR AND PENDING LITIGATION DATE	
COVERAGE PART	DATE
<b>Employment Practices Claims:</b>	Not Covered
All other <b>Claims:</b>	July 21, 2016

**PREMIUM: \$5,000**

All premiums applicable to additional coverage(s) as required during the policy period will be invoiced separately and will not apply toward the estimated policy premiums. **The collection and filing of all surplus lines taxes and fees as well as any other applicable surcharges shall be the sole responsibility of the Excess and Surplus Lines Broker and not included as part of the premiums set forth above.**

#### SUBJECTIVITIES

Please be advised that coverage has been bound conditional upon receipt, review, verification and approval of the following items within 30 days of binding coverage:

Complete signed & dated ANV Application

Most recent audited financials with notes

In order to complete the underwriting process, we require that you send us the subjectivities requested above. We are not required to bind coverage prior to our receipt, review and underwriting approval of the above information. However, if we do bind coverage prior to such approval, it shall be for a temporary period of not more than 30 days. Such temporary binding of coverage shall be void ab initio ("from the beginning") if we have not received, reviewed and approved in writing such material within 30 days from the effective date of the temporary binder.

**Failure to provide ANV with any of the above listed items, within the specified time frame, can result in the automatic issuance of a Notice of Cancellation.**

ENDORSEMENT #	ENDORSEMENT NAME
ANV CA 0100	California Policyholders Notice
ANV NP 0001	ANV Not for Profit Organization Management Liability Policy
ANV PL 0047	Exclusion of Certified Acts of Terrorism
ANV PL 0102	U.S. Treasury Department OFAC Advisory Notice
ANV NP 0012	Accreditation and Related Activities Exclusion
ANV PL 1000	General Change Endorsement: Any <b>Claim</b> brought by Doug LaMalf and/or Hoopa Valley Tribe will be subsect to a \$25,000 retention
ANV PL 0010	Absolute Bodily Injury And Property Damage Exclusion
ANV PL 0147	Deceptive Business Practices Exclusion
ANV PL 0026	Broadcasting, Advertising & Publishing Liability Exclusion
ANV CA 0101	Amended Service Of Suit Clause - California



MINUTES OF THE BOARD OF DIRECTORS MEETING OF  
KLAMATH RIVER RENEWAL CORPORATION  
August 17, 2016

1. Time and Place. The Board of Directors ("Board") of Klamath River Renewal Corporation (the "Corporation") held its organizational meeting on August 17, 2016 at Oregon Department of Environmental Quality, Northwest Regional Office, 700 NE Multnomah Street, Suite 600, Conference Room #610 Portland, OR 97232 at 10:00 a.m. Pacific time.

2. Attendance. The following Directors of the Corporation were present:

Board Member	Appointing Authority
Lester Snow	State of California
Wendy George	Karuk Tribe
Thomas Jensen	Institute for Fisheries Resources and Pacific Coast Federation of Fishermen's Associations
Theodore Kulongoski	State of Oregon
Richard Roos-Collins	American Rivers, California Trout, Klamath Riverkeeper, Northern California Council Federation of Fly Fishers, Salmon River Restoration Council, Sustainable Northwest, Trout Unlimited
Scott Williams	Yurok Tribe

The following Directors of the Corporation were absent:

Board Member	Appointing Authority
Michael Carrier	State of Oregon
James Root	State of Oregon

The following guests were also present by invitation of the Board:

Name	Title and Affiliation
Glen Spain (Board alternate)	Northwest Regional Director, Pacific Coast Federation of Fishermen's Associations and the Institute for Fisheries Resources
Joshua Adrian	Partner, Duncan, Weinberg, Genzer & Pembroke; California Natural Resources Agency Counsel
Charlton Bonham	Director, California Department of Fish and Wildlife
Jennifer Frozena	Attorney, United States Department of Interior
Kurt Burkholder	Technical Consultant, Klamath River Renewal Corporation
Thomas Gibson	Deputy Secretary and General Counsel, California Natural Resources Agency
Bob Gravely	Manager of Communications and Public Affairs, PacifiCorp
Sarah Kamman	Vice President General Counsel, Pacific Power

Lloyd Lowy (via phone)	Partner, Hawkins, Delafield, and Wood LLP
Dennis Lynch	Associate Regional Director, Northwest Region, United States Geological Survey
Olivia Mahony	Associate, California Environmental Associates
Kirk Marckwald	Principal, California Environmental Associates
Anika Marriott	Assistant Attorney General, Oregon Department of Justice
Peter Okurowski	Director, California Environmental Associates
Eric Petersen (via phone)	Partner, Hawkins, Delafield, and Wood LLP
Dustin Till	Senior Counsel, Pacific Power
Craig Tucker (via phone)	Natural Resources Policy Advocate, Karuk Tribe
Darcy Wheelles (via phone)	Director, California Environmental Associates
Richard Whitman	Natural Resources Policy Director, State of Oregon

3. Call to Order. Mr. Snow called the meeting to order and acted as Chair thereof, and Ms. Mahony acted as Recording Secretary of the meeting. Mr. Snow announced that a quorum of the Directors was present, and that the meeting, having been duly convened, was ready to proceed with its business.
4. Approval of Agenda. Mr. Snow asked for any changes and reordering of agenda. With no suggested changes from the Board, the agenda was approved.
5. Approval of Minutes. Mr. Snow presented to the Board the minutes of the July 19, 2016 meeting of the Board for approval, whereupon motion duly made by Mr. Roos-Collins, seconded by Mr. Spain and unanimously carried, the minutes were approved as presented.

*10:17 a.m. Thomas Jensen joined the meeting.*

*10:20 a.m. Eric Petersen and Lloyd Lowy joined the meeting.*

6. Resolutions. Upon motion duly made by Mr. Roos-Collins, seconded by Mr. Williams and unanimously carried, the following resolutions to amend the Bylaws of the Corporation were adopted, as amended:

**WHEREAS**, the Board of Directors of the Klamath River Renewal Corporation deems it to be in the best interests of the organization that the following actions be taken by the Directors of this corporation pursuant to this Resolution;

**NOW, THEREFORE, BE IT RESOLVED** that Section 4.6 of Article IV of the Bylaws of this corporation be amended as shown on the black-lined version of this section.

Section 4.6. Fees and Compensation. Non-Directors who are appointed to Board Committees may receive reasonable compensation of up to an

amount to be determined by the Board. Reimbursement for expenses incurred in performance of duties may be fixed or determined by the Board.

**BE IT FURTHER RESOLVED** that the citation in the last sentence of Section 3.2(b) of Article III be corrected from "Part B of Exhibit 2" to "Part B of Exhibit 1."

**BE IT FURTHER RESOLVED** that all other provisions of the Bylaws as adopted shall remain in effect and the foregoing amendment shall be incorporated into the standing Bylaws of the Klamath River Renewal Corporation.

7. FERC. Mr. Whitman, along with Mr. Burkholder, Mr. Gibson, and Mr. Bonham, provided an update to the Board on the August 10, 2016 introductory meeting between the Corporation, PacifiCorp, and the Federal Energy Regulatory Commission ("FERC"). Mr. Adrian then presented on the status of the License Transfer and License Surrender Applications. There was discussion regarding the timing of and next steps with regard to the filing of the Applications with FERC, as well as the Corporation's communications strategy surrounding the filing.

Upon motion duly made by Mr. Jensen, seconded by Mr. Williams, and unanimously carried, the Board authorized the Executive Committee of the Board to send correspondence to FERC in tandem with PacifiCorp to notify FERC of the intention to file the License Transfer and License Surrender Applications by September 23, 2016. Ms. George abstained from the vote.

8. Status Updates. Mr. Snow updated the Board on the acquiring of Directors and Officers Insurance, the Expense Reimbursement Policy, and introduced the Board to Mr. Burkholder, KRRC Technical Consultant.

*11:45 p.m. Darcy Wheelles left the meeting.*

*11:55 p.m. Eric Petersen and Lloyd Lowy left the meeting.*

*12:00 p.m. Dennis Lynch, Jennifer Frozena, Sarah Kamman, Dustin Till, and Bob Gravely joined the meeting.*

*12:32 p.m. Darcy Wheelles rejoined the meeting.*

9. PacifiCorp Presentation. Ms. Kamman, Mr. Till, and Mr. Gravely provided an overview of PacifiCorp's organizational structure and history. There was discussion about the coordinating efforts between PacifiCorp and the Corporation with regard to the filing of the License Transfer and License Surrender Applications to FERC, including scheduling additional meetings with FERC staff and commissioners and a joint communications strategy.

*12:54 p.m. Craig Tucker joined the meeting.*



*1:48 p.m. Sarah Kamman, Dustin Till, Bob Gravely, Anika Marriott, Thomas Gibson, and Joshua Adrian left the meeting.*

10. USGS Presentation. Mr. Lynch presented on the federal science process, plans, and technical findings on the Klamath River dam removal, including a summary of the Detailed Plan of dam removal and costs, reservoir sediment studies, technical findings, environmental compliance, and the next steps for the United States Geological Survey ("USGS") and Department of Interior.

*2:15 p.m. Eric Petersen and Thomas Gibson rejoined the meeting.*

*2:22 p.m. Chuck Bonham left the meeting.*

*2:45 p.m. Chuck Bonham rejoined the meeting.*

*2:50 p.m. Lloyd Lowy rejoined the meeting.*

*2:52 p.m. Anika Marriott and Joshua Adrian rejoined the meeting.*

*2:58 p.m. Dennis Lynch, Jennifer Frozena, and Thomas Gibson left the meeting.*

11. Review of Operations. Mr. Whitman presented on the status of the Oregon Funding Agreement and Mr. Bonham and Mr. Gibson presented on the status of the California Funding Agreement. There was discussion about the next steps of the Funding Agreements. Upon motion duly made by Mr. Roos-Collins, seconded by Mr. Williams, and unanimously passed, the Board approved the Executive Committee of the Board to sign Funding Agreements in between Board meetings, with the assistance of legal and technical counsel.

Mr. Snow presented on the potential staffing needs of the Corporation. There was discussion of the timeline of tasks moving forward and various skill sets desired in potential hires for the Corporation.

12. New Business. Upon motion duly made by Mr. Roos-Collins, seconded by Mr. Williams, and unanimously carried, the KRRC logo was approved for use by the Corporation.
13. Potential Next Meeting Date(s) and Location. After discussion of dates, the Board approved the next meeting in Sacramento, CA on October 27, 2016. It was decided that the Board would have an interim update meeting the week of September 19, 2016 before the License Transfer and License Surrender Applications are filed with FERC.

Upon motion duly made by Mr. Williams, seconded by Mr. Roos-Collins, and unanimously passed, the Board authorized the Executive Committee of the Board to file the California and Oregon 401 Certification Applications in between Board meetings, with the assistance of legal and technical counsel.

*3:18 p.m. Chuck Bonham left the meeting.*

*3:38 p.m. Thomas Gibson rejoined the meeting.*

*3:39 p.m. Eric Petersen and Lloyd Lowy left the meeting.*

14. Adjourn. There being no further business to come before the Board, the meeting was adjourned at 3:51 p.m. Pacific time.

DRAFT



ORDER NO. 17 018

**EXHIBIT E**

**Disbursement Request Form**

Date: \_\_\_\_\_

Attn: \_\_\_\_\_

Address: \_\_\_\_\_

Phone: \_\_\_\_\_

Email: \_\_\_\_\_

Re: Disbursement for Klamath Dam Removal Funding Agreement Phase \_\_\_\_\_

The Klamath River Renewal Corporation requests the Public Utility Commission to submit a request for disbursement from the Customer Contribution Trust Accounts under ORS 757.738(3) in the amount of \$ \_\_\_\_\_ as outlined below:

Note: Disbursements are made through wire transfers only.

Recipient Name: \_\_\_\_\_

Wire Transfer Acct. #: \_\_\_\_\_

Bank Name: \_\_\_\_\_

ABA # \_\_\_\_\_

For Benefit of: \_\_\_\_\_

FBO Acct #: \_\_\_\_\_

Attn: \_\_\_\_\_

Phone #: \_\_\_\_\_

**KLAMATH RIVER RENEWAL CORPORATION**

By: \_\_\_\_\_  
Signature

Name & Title (print): \_\_\_\_\_

Respectfully submitted,

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Olivia Mahony, Recording Secretary

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Lester Snow, Vice President of the Corporation

DRAFT

**Exhibit D-6**

**Orders of the CPUC:**

**Decision 17-11-019 (December 4, 2017)**

**Funding Agreement Extension (July 10, 2019)**

California Public Utilities Commission

Decision 17-11-019

December 4, 2017

Decision 17-11-019 November 30, 2017

**BEFORE THE PUBLIC UTILITIES COMMISSION OF THE STATE OF CALIFORNIA**

In the Matter of the Application of PacifiCorp  
(U901E), an Oregon Company, for an Order  
Authorizing a Rate Increase Effective  
January 1, 2011 and Granting Conditional  
Authorization to Transfer Assets, pursuant to the  
Klamath Hydroelectric Settlement Agreement.

Application 10-03-015

**DECISION GRANTING IN PART AND DENYING IN PART THE  
PETITION FOR MODIFICATION OF DECISION 11-05-002 AND  
ADOPTING FUNDING AGREEMENT**

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Attachment A - Funding Agreement

**DECISION GRANTING IN PART AND DENYING IN PART THE  
PETITION FOR MODIFICATION OF DECISION 11-05-002 AND  
ADOPTING FUNDING AGREEMENT**

**Summary**

This decision grants in part and denies in part the petition for modification of Decision 11-05-002 filed by PacifiCorp on August 12, 2016. We grant PacifiCorp's request to modify Ordering Paragraphs 13 and 15 to reflect amendments made to the Klamath Hydroelectric Settlement Agreement. We deny PacifiCorp's request to add new Ordering Paragraph 18 to authorize the Commission's Executive Director to enter into agreements to facilitate the distribution of money from the California Trust Accounts. Rather, to ensure that there are proper ratepayer protections in place for the disbursement of funds, we adopt a Funding Agreement between the Commission and the Klamath River Renewal Corporation. We authorize the Commission's Executive Director and Deputy Executive Director to direct the disbursement of funds from the California Trust Accounts to the Klamath River Renewal Corporation or its successor in accordance with the requirements of the Funding Agreement.

**1. Factual and Procedural Background**

On March 18, 2010, PacifiCorp filed Application (A.) 10-03-015, its *Application for an Order Authorizing a Rate Increase Effective January 1, 2011 and Granting Conditional Authorization to Transfer Assets, pursuant to the Klamath Hydroelectric Settlement Agreement* (Application). PacifiCorp and over 40 federal, state, county, tribal, irrigation, conservation, and fishing organizations, including the states of California and Oregon, entered into the Klamath Hydroelectric Settlement Agreement (KHSa) in

February 2010. The KHSA established a process for potential removal of PacifiCorp's four main-stem dams on the Klamath River.<sup>1</sup>

In its Application, PacifiCorp requested authorization, pursuant to the KHSA, to: (1) institute a surcharge of \$13.76 million for the purpose of funding California's contribution to the removal of the four dams;<sup>2</sup> (2) institute two trust accounts for the deposit of the surcharge; (3) depreciate the rate base, and amortize the relicensing and settlement costs associated with the Lower Klamath Project on an accelerated basis; and (4) transfer the Lower Klamath Project assets<sup>3</sup> to an entity designated to remove the dams in question.

On May 5, 2011, the Commission issued Decision (D.) 11-05-002 approving: (1) a surcharge of \$13.76 million collected over nine years; (2) the institution of two trust accounts for the deposit of the surcharge;<sup>4</sup> and (3) the depreciation of the rate base of the Lower Klamath Project assets, and amortization of the relicensing and settlement costs associated with the Lower Klamath Project, on an accelerated basis.<sup>5</sup> D.11-05-002 also authorized PacifiCorp to file a Tier 3 advice letter to request authority to transfer each Klamath Hydroelectric Project asset once specific milestones are met.<sup>6</sup> D.11-05-002 built in specific reporting requirements that PacifiCorp must adhere to throughout the collection of the surcharge and the dam removal process outlined by the KHSA.<sup>7</sup>

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<sup>1</sup> J.C. Boyle, Copco No. 1, Copco No. 2, and Iron Gate; together the Klamath Hydroelectric Project or the Lower Klamath Project.

<sup>2</sup> The \$13.76 million surcharge represents approximately 8% of customer contributions with the remainder of customer contributions to be collected from PacifiCorp's Oregon customers.

<sup>3</sup> The Klamath Hydroelectric Project assets or Lower Klamath Project assets include the four PacifiCorp owned dams, as well as related plant.

<sup>4</sup> The California Copco I and II/Iron Gate Dams Trust Account and the California J.C. Boyle Dam Trust Account (collectively, California Trust Accounts).

<sup>5</sup> D.11-05-002 at 2.

<sup>6</sup> D.11-05-002 at Ordering Paragraph (OP) 13.

<sup>7</sup> D.11-05-002 at OPs 14-15.



On January 13, 2012, PacifiCorp filed a petition for modification of D.11-05-002, in which PacifiCorp requested that the \$13.76 million surcharge be recovered over eight years, instead of the originally authorized nine. In D.12-10-028, the Commission granted PacifiCorp's request and authorized recovery of the surcharge over a period of less than eight years.

On August 12, 2016, PacifiCorp filed its second petition for modification of D.11-05-002 (Petition) asking the Commission to act with expedited consideration to: (1) modify OPs 13 and 15 to reflect amendments made to the KHSA; and (2) add new OPs 18 and 19 to clarify the distribution of money from the two trust accounts created under D.11-05-002. The original KHSA contemplated U.S. Congressional authorization to proceed with removal of the Klamath assets. Due to the lack of Congressional action, the amended KHSA removes the need for Congressional action and allows for the dam removal to proceed through the traditional license transfer and surrender processes established by the Federal Energy Regulatory Commission (FERC).

The following parties filed Responses in support of PacifiCorp's Petition: California Natural Resources Agency and the California Department of Fish and Wildlife (jointly); American Rivers, California Trout, Trout Unlimited, Karuk Tribe, and Yurok Tribe (jointly); Pacific Coast Federation of Fishermen's Association; and the Klamath River Renewal Corporation (KRRC). The County of Siskiyou, Siskiyou County Flood Control and Water Conservation District, and Siskiyou Power Authority (jointly) (collectively "Siskiyou County"), and the Siskiyou County Water Users Association filed Responses in opposition to PacifiCorp's Petition. On September 22, 2016, PacifiCorp timely filed its Reply.

On March 2, 2017, the assigned Administrative Law Judges (ALJs) issued a ruling requesting additional information from PacifiCorp regarding its Petition, and giving other parties an opportunity to respond. The ruling requested: (1) a copy of the Amended KHSA in both regular and redlined format; (2) financial information for each trust; (3) a comparison of surcharge amounts collected from PacifiCorp's California customers and

deposits to trust accounts; and (4) information regarding past and current signatories to the KHSA and Amended KHSA. PacifiCorp submitted a response on March 13, 2017. Replies to PacifiCorp's Response were filed by California Trout, Institute for Fisheries Resources, American Rivers, Trout Unlimited, and Pacific Coast Federation of Fishermen's Associations (jointly) on March 22, 2017; California Natural Resources Agency and California Department of Fish and Wildlife (jointly) on March 24, 2017; and Siskiyou County and the Siskiyou County Water Users Association on March 27, 2017.

On March 30, 2017, the KRRC filed a motion requesting that this Commission officially notice the *Public Utility Commission of Oregon's Order UE 219 Approving the Funding Agreement with the Klamath River Renewal Corporation* (Oregon Order), which included the Funding Agreement.<sup>8</sup> No responses to this motion were filed. Pursuant to Rule 13.9 of the Commission's Rules of Practice and Procedure (Rules), "[o]fficial notice may be taken of such matters as may be judicially noticed by the courts of the State of California pursuant to Evidence Code section 450 et seq." Evidence Code § 452(c) permits judicial notice to be taken of any official act of any state of the United States. The Oregon Order constitutes an official act of the state of Oregon. Therefore, pursuant to Rule 13.9 and Evidence Code § 452(c), we take official notice of the Oregon Order.

## **2. Procedural Requirements Under Rule 16.4**

Rule 16.4 governs the process for the filing and consideration of petitions for modification. Rule 16.4(b) requires that a petition for modification concisely state the justification for the proposed relief and to propose specific wording for all requested modifications. Rule 16.4(d) states that if more than one year has elapsed since the effective date of the decision, then the petition must explain why it could not have been presented within one year of the effective date of the decision.

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<sup>8</sup> For the balance of this decision, we shall refer to this Funding Agreement as the Oregon Funding Agreement.

PacifiCorp states that it is submitting this Petition more than one year from the effective date of D.11-05-002 because the amendments to the KHSA were not made until 2016.<sup>9</sup> PacifiCorp seeks modification of D.11-05-002 to conform the original decision to the Amended KHSA by updating the required milestones for implementation of the settlement. PacifiCorp also requests that the same funds authorized in rates pursuant to D.11-05-002 be disbursed to the KRRC, which is identified in the Amended KHSA as the dam-removal entity, under authority delegated to the Executive Director.

We conclude that PacifiCorp's Petition complies with the procedural requirements of Rule 16.4 and provides adequate justification as to why the petition could not have been presented within one year of the effective date of D.11-05-002.

### **3. Requested Modifications**

The original KHSA contemplated Congressional authorization to remove PacifiCorp's four dams on the main stem of the Klamath River. Because of the lack of Congressional action, the signatories to the KHSA worked together to amend the KHSA, removing the need for Congressional action and allowing dam removal to proceed through traditional license transfer and surrender processes established by the FERC. The amended KHSA identifies the KRRC as the dam-removal entity that will become the FERC licensee and follow the FERC process to surrender the license and remove the Lower Klamath Project. It also provides that the States of California and Oregon will enter into funding agreements with the KRRC for the purpose of specifying how collected funds will be released to pay for the costs of dam removal.

PacifiCorp requests that OPs 13 and 15 of D.11-05-002 be modified to reflect the terms of the Amended KHSA. OP 13 of D.11-05-002 requires PacifiCorp to file a Tier 3 advice letter to dispose of each Lower Klamath Project asset after specified milestones are met. These milestones include the passage of federal legislation (OP 13.a); an

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<sup>9</sup> The KHSA was amended on April 6, 2016 and November 11, 2016.

affirmative determination by the United States Secretary of the Interior that the costs of the removal will not exceed available funds and that removal is in the public interest (OP 13.c); and with the exception of the Commission's approval, the obtainment of all necessary permits and approvals for the removal of a main-stem dam (OP 13.d).

PacifiCorp requests that these milestones be modified to reflect that under the amended KHSA, the dam removal will proceed under FERC's traditional license transfer and surrender processes.

OP 14 of D.11-05-002 requires PacifiCorp to file an annual status report. OP 15 of D.11-05-002 specifies the information that must be contained in the annual status report, including updates on the status of the milestones required pursuant to OP 13. Similar to the requested modifications to OP 13, PacifiCorp requests that OP 15 be modified to reflect the milestones required pursuant to the amended KHSA. PacifiCorp also requests that all references in OP 15 to the KHSA be modified to reference the Amended KHSA.

PacifiCorp further states that in order to accomplish the actions contemplated in the Amended KHSA, it is necessary to have clear direction regarding the disbursement of funds from the California Trust Accounts. The surcharge authorized in D.11-05-002 to fund dam removal is currently deposited in two California Trust Accounts. The KRRC will require timely disbursement of these funds in order to implement the Amended KHSA and proceed with removal of the Lower Klamath Project assets.

PacifiCorp contends that the distribution of funds from the California Trust Accounts will be largely ministerial and can be performed by the Commission's Executive Director without the need to return to the Commission to approve each disbursement. Accordingly, PacifiCorp requests that two new ordering paragraphs be added to D.11-05-002 to allow for this delegation. The proposed new OPs 18 and 19 would read as follows:

18. The Commission authorizes its Executive Director to enter into agreements with the California Natural Resources Agency,

and the KRRC or its successor, to facilitate the distribution of money from the Trust Accounts to the KRRC or its successor for purposes of implementing the KHSa.

19. The Commission authorizes its Executive Director and Deputy Executive Director, as the Commission's current designated representatives for the Trust Accounts, to direct the trustees of the Trust Accounts to disburse funds from the Trust Accounts to the KRRC or its successor for purposes of implementing the KHSa.

#### **4. Discussion**

##### **4.1. PacifiCorp's Proposed Modifications are Granted in Part and Denied in Part**

Based on the facts presented by PacifiCorp, we find that PacifiCorp's request to modify OPs 13 and 15 of D.11-05-002 should be adopted. We also adopt a new OP in this decision, which in substance adopts PacifiCorp's proposed new OP 19. As discussed in Section 4.2 below, we decline to adopt PacifiCorp's proposed new OP 18. In its stead, we adopt a Funding Agreement with the KRRC.

In D.11-05-002, the Commission authorized the \$13.76 million Klamath surcharge to provide sufficient funds for the dam-removal entity to begin removal of the Klamath assets as proposed in the KHSa. The Commission determined that the surcharge was in the best interest of ratepayers as the cost cap in the KHSa protected ratepayers from the uncertain costs related to relicensing, litigation, and decommissioning of the Klamath assets.<sup>10</sup> To protect ratepayer funds, the Commission also ordered that if the KHSa was terminated, the collected surcharge together with accrued interest should be refundable to California customers and must be used only for the benefit of ratepayers.<sup>11</sup>

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<sup>10</sup> D.11-05-002 at Finding of Fact 8.

<sup>11</sup> D.11-05-002 at OP 5.

OP 13 sets forth certain milestones based on provisions of the KHSA, which are no longer in effect. The Amended KHSA no longer contemplates the passage of federal legislation nor any action by the United States Secretary of the Interior. Consequently, the conditions precedent in OP 13 can no longer be met and the Lower Klamath Project assets would never be removed. Given that the objective of D.11-05-002 is to provide funding for removal of the Lower Klamath Project assets, it is necessary to modify the conditions precedent contained in OP 13 to conform to the provisions of the Amended KHSA.

Similarly, we find that the proposed modifications to OP 15 should be adopted. As with OP 13, OP 15 contains references to the enactment of federal legislation and actions by the United States Secretary of the Interior. Since these actions will no longer occur under the Amended KHSA, requiring that this information be included in an annual Status Report is nonsensical. The proposed modifications would require the annual Status Report to include the actions associated with the FERC license transfer and surrender processes. These proposed modifications would provide the relevant information to the Commission and parties in the proceeding concerning the removal of the Lower Klamath Project assets.

We further find that the substance of the new proposed OP 19 should be adopted in order to ensure timely and efficient disbursement of funds from the California Trust Accounts. D.11-05-002 did not establish a mechanism for disbursement of these funds to the dam-removal entity. Today's decision clarifies that the Executive Director and the Deputy Executive Director are authorized to direct the disbursement of funds in the California Trust Accounts to the KRRC for purposes of implementing the Amended KHSA, in accordance with the requirements of the Funding Agreement we adopt in today's decision.

However, as discussed further below, we deny PacifiCorp's request to add the new proposed OP 18. While the proposed OP directs the Executive Director to enter into an agreement with the KRRC or its successor regarding the disbursement of funds from the

California Trust Accounts, we find that it is more appropriate for the Commission to establish the necessary oversight requirements for disbursement of the funds by adopting a funding agreement between the Commission and the KRRC.

Siskiyou County and the Siskiyou County Water Users Association oppose the Petition and contend that the requested modifications are not in the ratepayers' best interests. Siskiyou County argues that dam removal is a speculative, moving target and that there are continuing questions about the sufficiency of funds for the proposed project and for mitigation of all associated environmental impacts.<sup>12</sup> The Siskiyou County Water Users Association argues that the modifications requested in the Petition raise new and unstudied safety concerns by removing the federal review and oversight contemplated in the original KHSA.<sup>13</sup>

Our consideration of PacifiCorp's Petition is limited to consideration of the modifications requested in the Petition. We do not reconsider all of the determinations made in D.11-05-002 nor do we consider issues that will be determined in other forums. PacifiCorp's Petition does not seek to increase or otherwise modify the surcharge authorized in D.11-05-002, as modified by D.12-10-028. The Petition also does not seek approval of the Amended KHSA or authorization to remove the Lower Klamath Project assets.

In D.11-05-002, the Commission determined that the surcharge pursuant to the KHSA was in the ratepayers' best interests. The modifications to D.11-05-002 requested in the Petition do not change the underlying basis for the Commission's determination in D.11-05-002.<sup>14</sup> The Amended KHSA retains the cost cap to California ratepayers.<sup>15</sup>

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<sup>12</sup> Siskiyou County Response to Petition at 3-4.

<sup>13</sup> Siskiyou County Water Users Association Response to Petition at 5.

<sup>14</sup> Siskiyou County identifies differences between the original KHSA and Amended KHSA and argues that there are questions as to whether the Amended KHSA provides the same protection and benefits to California ratepayers as the original agreement. (Siskiyou County March 27, 2017 Reply at 3-5.)

*Footnote continued on next page*

OP 5 of D.11-05-002, which requires that the collected surcharge only be used for ratepayer benefit, also remains unchanged. Moreover, the Funding Agreement we adopt in today's decision provides further protections for California ratepayer funds by requiring the KRRC to meet certain requirements in order to receive disbursements from the California Trust Accounts. Based on the foregoing, we are satisfied that there are adequate protections for California ratepayer funds.

We note that the issue of whether to authorize the removal of the Lower Klamath Project assets is not before us. This issue will be considered by FERC through its existing license transfer and surrender processes. These processes include consideration of costs, safety, and environmental impacts.

Contrary to Siskiyou County's contention,<sup>16</sup> none of the modifications we adopt today eliminate the need for PacifiCorp or KRRC as the dam-removal entity to obtain the necessary permits and approvals. In fact, pursuant to the Funding Agreement we adopt today, any disbursement request by the KRRC must include a certification that all necessary permits and approvals for the relevant project activities have been obtained. If the KRRC cannot make such a certification, the KRRC must provide an explanation supported by appropriate documentation as to how the necessary permits and approvals will be obtained in a timeframe consistent with the project activities being conducted within 210 days of the date of the disbursement request.

#### **4.2. A Funding Agreement Governing the Disbursement of Funds is Adopted**

PacifiCorp's proposed new OP 18 seeks to authorize the Commission's Executive Director to enter into an agreement with the KRRC or its successor, to facilitate the

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However, the Commission's decision to approve the surcharge in D.11-05-002 was not based on consideration of any of the provisions of the original KHSAs identified by Siskiyou County.

<sup>15</sup> PacifiCorp March 13, 2017 Response, Exhibit A at §§ 4.1.1 & 4.1.3.

<sup>16</sup> Siskiyou County Response to Petition at 3.



distribution of money from the California Trust Accounts to the KRRRC or its successor for purposes of implementing the Amended KHSA. We find that it is more appropriate for this Commission, rather than the Executive Director, to establish the oversight requirements necessary to ensure that any ratepayer funds disbursed are used for ratepayer benefit. The Commission may then delegate review and disbursement of funds, in accordance with these established oversight requirements, to the Executive Director or the Deputy Executive Director and the Energy Division Director or his/her designee.

As discussed above, we take official notice of the Oregon Funding Agreement filed in this docket by the KRRRC on March 30, 2017. Based on our review, we find that the Oregon Funding Agreement provides almost all of the terms necessary to ensure that all surcharge funds are used for ratepayer benefit. Therefore, we use the Oregon Funding Agreement as a basis for a funding agreement we adopt between this Commission and the KRRRC.<sup>17</sup> The Funding Agreement we adopt in today's Decision, however, includes specific procedures for the request and disbursement of funds and annual reporting requirements. These changes include:

1. Documentation Required for Disbursement Requests – KRRRC shall use Exhibit D (Disbursement Request Form) of the Funding Agreement when making its disbursement requests. This form requires the identification of the Project Phase (1, 2 or 3), Project Activity (identified in Exhibit A1, A2 or A3) and the Eligible Project Costs for that Project Activity (identified in Exhibit B1, B2 or B3), as well as the Amount Requested. KRRRC shall attach to the request form the following documents:
  - a. the projected Project activities to be performed and the estimated Eligible Project Costs associated with each activity;
  - b. an expenditure report, showing the expenses incurred during the prior semi-annual period;
  - c. a certification from the KRRRC that the request is for payment of Eligible Project Costs included in the budget that the KRRRC

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<sup>17</sup> The Funding Agreement is attached as Attachment A to this decision.

expects to incur for the Project activities to be completed by the KRRC or under subagreement during the period within 210 days after the date of the request. The certification shall also certify that no material authorization, consent, license, approval of, filing or registration with or notification to any governmental body or regulatory or supervisory authority is required for the Project activities to be completed by the KRRC or under subagreement during the period within 210 days after the request. If the KRRC cannot make such a certification, KRRC shall explain how any outstanding material authorization, consent, license, approval of, filing or registration with or notification to any governmental body or regulatory or supervisory authority not yet obtained or given, as applicable, that is required for the Project activities is expected to be met in a timeframe consistent with Project activities to be conducted within 210 days and provide appropriate documentation; and

- d. a certification that all expenditures will only be used for Ratepayer Benefit.
2. Review of Disbursement Request by Energy Division – Within 14 working days of receiving the Disbursement Request, the Energy Division Director, or his/her designee, shall review all Disbursement Request Forms for the purpose of confirming that:
- a. the disbursement request is to fund Project activities identified in the applicable Exhibit A for the applicable Project Phase; and
  - b. the funds requested, in combination with funds already disbursed for the identified Phase, do not exceed the budgeted amount for a particular Phase by more than ten percent.
3. Disbursement Procedures – Upon Energy Division review, one of the following shall occur:
- a. The Energy Division Director, or his/her designee, shall promptly notify the Executive Director that the funds may be released. The Executive Director shall then direct the trustees of the Trust Accounts to disburse the funds to KRRC; or
  - b. In the event the Energy Division Director, or his/her designee, has reasonably determined that the foregoing requirements have not been met with respect to any portion of the Funds requested, then the Energy Division Director, or his/her designee, shall promptly notify KRRC in writing and in reasonable detail of the

reason for such determination. In the event KRRC disagrees with such determination it shall provide such further information as it may elect, it being the intent that the Parties shall thereafter reasonably and promptly cooperate with each other to resolve any such disagreement, at which point the Executive Director shall direct the release of the requested funds.

4. Annual Audit Review – In addition to the annual reporting already provided for in the Oregon Funding Agreement, KRRC shall also provide annually its audited financial statements by a third party. These statements shall include a balance sheet showing all funds, a statement of budgeted and actual income and expenditures, indicating thereon any changes in fund balances, and any appropriate notes of explanation or disclosure. The Executive Director, or his/her designee, shall have 60 days to review the audited financial statements and notify the KRRC, in writing, of all concerns regarding the disbursement of funds in the prior year. KRRC shall address these concerns/proposed adjustments in writing to the Executive Director or his/her designee within 30 days or such longer period of time as may be necessary, with reasonable diligence, to do so. The Executive Director or his/her designee shall notify the KRRC in writing within 10 days after receipt of KRRC's response of any remaining concerns and whether any proposed adjustments should be made. The Executive Director and KRRC shall thereafter reasonably cooperate to address any remaining concerns of the Executive Director. In the event that notwithstanding such cooperation all matters have not been resolved within 30 days after the Executive Director's notice then the Executive Director shall notify the KRRC in writing of its final determination regarding its concerns. A copy of this communication shall be sent to the Energy Division Director or his/her designee and the service list of A.10-03-015.

## **5. Comments on the Proposed Decision**

The proposed decision of the ALJs in this matter was mailed to the parties in accordance with Section 311 of the Public Utilities Code and comments were allowed

under Rule 14.3. Opening comments were filed on November 20, 2017 by Siskiyou County.<sup>18</sup> Reply comments were filed on November 27, 2017 by PacifiCorp.

In its comments, Siskiyou County contends the proposed decision commits legal errors regarding the scope and process for reviewing PacifiCorp's Petition. Siskiyou County also contends the proposed decision is premature given FERC's pending review of the Amended KHSA. Finally, Siskiyou County alleges the proposed decision errs by deleting a necessary reporting requirement.<sup>19</sup> We have carefully considered Siskiyou County's comments and do not find a basis for modifying the proposed decision.

Siskiyou County fails to demonstrate that there is legal error in limiting our consideration of PacifiCorp's Petition to the requests contained in that filing. Siskiyou County does not cite to any legal authority that would require the Commission to reconsider other determinations made in D.11-05-002 or all other issues contained in the Amended KHSA.

Siskiyou County fails to demonstrate there are material contested issues of fact that would require evidentiary hearings per Rule 12.3. Consistent with the Commission's Rules, Siskiyou County was afforded the opportunity to file a response to PacifiCorp's Petition and raise any disputed legal or factual issues. As explained above, the modifications to D.11-05-002 requested in the Petition do not affect the underlying basis for the Commission's determinations in D.11-05-002, nor do they affect the protections for ratepayer funds adopted in D.11-05-002.

Moreover, by modifying OP15.f, the proposed decision does not delete a necessary reporting requirement. Instead of requiring status updates regarding PacifiCorp's dam removal progress, the proposed decision appropriately requires updates regarding the KRRC's dam removal progress.

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<sup>18</sup> Opening Comments by the Siskiyou County Water Users Association were not properly filed and served in accordance with Rules 1.9 and 14.3. Therefore, we do not consider these comments.

<sup>19</sup> D.11-05-002 at OP15.f.

## **6. Assignment of Proceeding**

Liane M. Randolph is the assigned Commissioner and Sophia J. Park and Sasha Goldberg are the assigned ALJs in this proceeding.

### **Findings of Fact**

1. In D.11-05-002, as modified by D.12-10-028, the Commission authorized a \$13.76 million surcharge pursuant to the KHSA, which established a process for potential removal of PacifiCorp's four main-stem dams on the Klamath River.
2. Amendments to the KHSA were made in 2016.
3. PacifiCorp's Petition seeks modification to OPs 13 and 15 of D.11-05-002 to reflect amendments made to the KHSA.
4. The Amended KHSA removes the need for federal legislation or any affirmative declaration by the United States Secretary of Interior.
5. Under the Amended KHSA, dam removal will proceed under FERC's traditional license transfer and surrender processes.
6. The Amended KHSA identifies the KRRC as the dam-removal entity.
7. The Amended KHSA provides that the States of California and Oregon will enter into funding agreements with the KRRC for the purpose of specifying how collected funds will be released to pay for the costs of dam removal.
8. In D.11-05-002, the Commission determined that the surcharge pursuant to the KHSA was in the best interests of ratepayers because the KHSA's cost cap provisions protected ratepayers from the uncertain costs related to relicensing, relitigation, and decommissioning of the Klamath assets.
9. The modifications to D.11-05-002 requested in the Petition do not change the underlying basis for the Commission's determination that the surcharge was in the ratepayers' best interests.
10. PacifiCorp's Petition does not seek to increase or otherwise modify the surcharge in D.11-05-002, as modified by D.12-10-028.

11. The Amended KHSA retains the cost cap for California ratepayers.
12. PacifiCorp's Petition does not seek modification of OP 5 of D.11-05-002, which requires that the surcharge collected pursuant to the KHSA only be used for ratepayer benefit.
13. None of the modifications requested by PacifiCorp eliminate the need for PacifiCorp or KRRC as the dam-removal entity to obtain the necessary permits and approvals for the Lower Klamath Project.
14. OP 13 of D.11-05-002 sets forth certain milestones based on provisions of the KHSA that are no longer in effect.
15. It is necessary to modify the conditions precedent contained in OP 13 of D.11-05-002 to conform to the provisions of the Amended KHSA.
16. OP 15 of D.11-05-002 requires annual status updates on actions that will no longer occur under the Amended KHSA.
17. It is necessary to modify OP 15 of D.11-05-002 to provide the relevant information to the Commission and the parties in the proceeding concerning the removal of the Lower Klamath Project assets.
18. It is more appropriate for the Commission, rather than its Executive Director, to establish the oversight requirements necessary to ensure that any ratepayer funds disbursed from the California Trust Accounts are used for ratepayer benefit.
19. The Oregon Funding Agreement provides almost all of the terms necessary to ensure that all surcharge funds are used for ratepayer benefit and can be used as a basis for a funding agreement between the Commission and the KRRC.
20. Changes to the Oregon Funding Agreement are necessary to include specific procedures for the request and disbursement of funds and annual reporting requirements.

### **Conclusions of Law**

1. PacifiCorp's Petition complies with the procedural requirements of Rule 16.4 of the Commission's Rules of Practice and Procedure and provides adequate justification as

to why the petition could not have been presented within one year of the effective date of D.11-05-002.

2. PacifiCorp's proposed modifications to OPs 13 and 15 should be adopted.

3. Official notice of the Oregon Order should be taken pursuant to Rule 13.9 of the Commission's Rules of Practice and Procedure.

4. A Funding Agreement between the Commission and the KRRC should be adopted in order to establish the oversight requirements necessary to ensure that any ratepayer funds disbursed are used for ratepayer benefit.

5. In order to ensure timely and efficient disbursement of funds from the California Trust Accounts, the Commission should authorize the Executive Director and the Deputy Executive Director to disburse the funds in the California Trust Accounts to the KRRC or its successor for purposes of implementing the Amended KHSA, in accordance with the provisions of the executed Funding Agreement between the Commission and KRRC.

## **O R D E R**

### **IT IS ORDERED** that:

1. PacifiCorp's Petition to Modify Decision (D.) 11-05-002 filed on August 12, 2016 is granted in part and denied in part as discussed in this Decision. Other than the modifications specified in this Decision, all other provisions of D.11-05-002 and D.12-10-028 remain unchanged.

2. Ordering Paragraph 13 of Decision 11-05-002 is modified to read as follows:

13. PacifiCorp must file a Tier 3 advice letter to request authority to dispose of each Klamath Hydroelectric Project asset no later than after the milestones listed below are met. These milestones are:

- a. The KRRC has demonstrated to PacifiCorp's and the State's reasonable satisfaction that the KRRC has met the obligations set out in Amended KHSA section 7.1.4 and Appendix L;
- b. FERC has issued the license transfer order identified in Amended KHSA section 7.1.5.D; and

- c. The availability of sufficient funds to cover estimated costs of dam removal, provided by California and Oregon, as set forth in Section 4.1 of the Amended Klamath Hydroelectric Settlement Agreement.
- 3. Ordering Paragraph 15 of Decision 11-05-002 is modified to read as follows:
  - 15. The annual Status Report must address, at a minimum, events regarding and progress toward achievement of:
    - a. All items listed in Exhibit 2 to Exhibit PPL-104;
    - b. The enactment of California legislation to authorize the issuance of a California Bond;
    - c. The availability of sufficient funds to cover estimated costs of dam removal, provided by California and Oregon customers, as set forth in Section 4.1 of the Amended KHSA;
    - d. The status of the joint license transfer application required under sections 7.1.4 and 7.1.5 of the Amended KHSA;
    - e. The status of the KRRC's license surrender application required under section 7.1.7 of the Amended KHSA;
    - f. The KRRC's progress made in making the demonstrations required under section 7.1.4 and Appendix L of the Amended KHSA;
    - g. The securing of California state funds through a California Bond or other form of state funding;
    - h. The Dam Removal Entity's development of a detailed plan to effect dam removal consistent with budget and liability controls;
    - i. The securing of all permits and funding necessary to perform the detailed plan;
    - j. The amount of surcharge revenue collected in California by year and cumulatively;
    - k. Both the amounts of interest accrued on the balances in the California Copco I and II/Iron Gate Dams Trust Account and the J.C. Boyle Dam Trust Account since the last Status Report and the cumulative total of interest earned to date;
    - l. Whether the combined total of surcharge collected and interest earned to date is expected to equal \$16 million by the start of dam removal;



- m. Based on the surcharge collected and interest earned to date, what adjustment, if any, should be made to the surcharge if it appears that there will be either more or less than \$16 million by the start of dam removal;
- n. Any other items that bear on the probability, schedule, and cost of implementing the Amended Klamath Hydroelectric Settlement Agreement; and
- o. Any other significant events related to the Amended Klamath Hydroelectric Settlement Agreement that have occurred in the past 12 months.

4. The Funding Agreement included as Attachment A is hereby adopted. The Commission's Executive Director shall execute the Funding Agreement with the Klamath River Renewal Corporation. The Klamath River Renewal Corporation shall be subject to the Commission's jurisdiction for purposes of complying with the requirements of the Funding Agreement.

5. The Commission's Legal Division is authorized to make any necessary, non-material conforming modifications to the Funding Agreement prior to its execution so long as the modifications are consistent with the Commission's directives regarding the use and distribution of funds set forth in Decision (D.) 11-05-002, as modified by D.12-10-028, and today's decision.

6. The Commission authorizes its Executive Director and Deputy Executive Director, as the Commission's current designated representatives for the California Trust Accounts, to direct the trustees of the Trust Accounts to disburse funds from the Trust Accounts to the Klamath River Renewal Corporation or its successor for purposes of implementing the Klamath Hydroelectric Settlement Agreement, in accordance with the requirements of the executed Funding Agreement between the Commission and the Klamath River Renewal Corporation.

7. The Klamath River Renewal Corporation's request for official notice of the *Public Utility Commission of Oregon's Order UE 219 Approving the Funding Agreement with the Klamath River Renewal Corporation* filed on March 30, 2017 is granted.

8. Application 10-03-015 is closed.

This order is effective today.

Dated November 30, 2017, at San Francisco, California.

MICHAEL PICKER

President

CARLA J. PETERMAN

LIANE M. RANDOLPH

MARTHA GUZMAN ACEVES

CLIFFORD RECHTSCHAFFEN

Commissioners

## **ATTACHMENT A**

### **FUNDING AGREEMENT**

This Agreement is made and entered into by and between the **California Public Utilities Commission**, the “CPUC,” and the **Klamath River Renewal Corporation**, a California nonprofit public benefit corporation, hereinafter referred to as the “KRRC.”

### **RECITALS**

WHEREAS, the States of California and Oregon, the United States, PacifiCorp, and other parties entered into the Klamath Hydroelectric Settlement Agreement, dated February 18, 2010, as subsequently amended (as amended, the “KHSa”) to establish a process for the removal of four hydropower facilities within the jurisdictional boundary of FERC Project no. 2082 located on the Klamath River: Iron Gate Dam, Copco No. 1 Dam, Copco No. 2 Dam, J.C. Boyle Dam, and appurtenant works currently licensed to PacifiCorp (the “Project”) and for the operation of the Klamath Hydroelectric Project until the completion of the Project; and

WHEREAS, pursuant to Section 4.1.1 of the KHSa, the CPUC and the Public Utility Commission of Oregon (OPUC) have each established customer surcharges for PacifiCorp’s customers for the purposes of paying the costs of Facilities Removal; and

WHEREAS, pursuant to Section 4.1.1 of the KHSa, the total amount of funds to be collected pursuant to the customer surcharges shall not exceed \$200,000,000, with the maximum amount of \$16,000,000 to be collected from California customers.

WHEREAS pursuant to Section 4.1.2.A of the KHSa the State of California has appropriated \$250,000,000 of the proceeds of the bonds authorized by California Proposition 1 for the purposes of paying the costs of Facilities Removal, to the extent that the costs of Facilities Removal exceed the Customer Contributions; and

WHEREAS in Decision (D.)11-05-002, as amended by D.12-10-028, the CPUC approved a request by PacifiCorp for a surcharge of \$13.76 million, collected over less than 8 years for the purpose of paying the costs of removing Klamath River dams. As specified in in Section 4.4.4(d) of the KHSa, one surcharge is designed to collect removal costs for the J.C. Boyle Dam and the other surcharge collects removal costs for the other three dams. Pursuant to D.11-05-002, Ordering Paragraph 9, the Commission has established two interest bearing trust accounts in which the customer surcharges are to be held and administered – the California Copco I and II/Iron Gate Dams Trust Account and the California J.C. Boyle Trust Account. Pursuant to D.11-05-002, Ordering Paragraph 5, the customer surcharge together with accrued interest must be used only for the benefit of ratepayers; and

WHEREAS, in accordance with D.11-05-002, as amended by D.12-10-028, and Section 4.1.1 of the KHSa, the CPUC has been collecting non-bypassable customer surcharges for the purpose of Facilities Removal and has a responsibility to ensure those funds are used in a manner consistent with D.11-05-002; and

WHEREAS, section 4.12 of the KHSa provides that the States of California and Oregon will enter into funding agreements with the KRRC for the purpose of specifying how the Customer Contributions and the California Bond Funding will be released to pay for the costs of Facilities Removal; and

WHEREAS, section 4.2.4 of the KHSa provides that California and Oregon will prepare draft trustee instructions for submission to the California and Oregon PUCs concerning: (1) when funds will be disbursed from the trust accounts; (2) the methodology used to determine which accounts will be drawn from; (3) coordination with use of the California Bond Funds; (4) a protocol for reallocating funds between the trust accounts to pay for the costs of the removal of specific facilities (if necessary); and (5) a means for the return of Customer Contributions to PacifiCorp customers in the event that there are remaining funds in the trust accounts following completion of Facilities Removal; and

WHEREAS, the Facilities Removal is contemplated to take place pursuant to three funding phases, with Phase One, which has already commenced, expected to consist of the start-up of the KRRC, evaluating risk mitigation such as insurance for the Project, certain regulatory actions and preparation work for the Definite Plan; Phase Two is expected to consist of development of the Definite Plan, including preparation of procurement documents for final design, deconstruction and risk management and completion of regulatory actions; and Phase Three will consist of the Facilities Removal through deconstruction and restoration; and

WHEREAS, it is contemplated that up to \$4.4 million will be necessary to fund Phase One activities with Oregon funding 92% of the Phase One costs (\$4,048,000) and California funding 8% of the Phase One costs (\$352,000).

NOW THEREFORE, the parties enter into this Agreement as provided below.

## **AGREEMENT**

### **1. Defined Terms.**

**“Applicable Law”** means general law that (1) exists outside of the KHSa including, but not limited to a Constitution, statute, regulation, court decision, or common law, and (2) applies to obligations or activities of Parties contemplated by this Agreement. The use of this term is not intended to create a contractual obligation to comply with any law that would not otherwise apply.

**“California Public Utilities Commission”** or **“CPUC”** means the public utilities commission for the State of California. References to actions or approvals by CPUC shall mean action or approval delegated to the Energy Division Director of CPUC or its designee by the Commission pursuant to this Agreement or otherwise, and not a vote of the Commissioners of the CPUC unless otherwise expressly stated.

**“California Trust”** refers to the two separate interest bearing trust accounts – the California Copco I and II/Iron Gate Dams Trust Account and the California J.C. Boyle Trust Account –

established pursuant to CPUC Decision 11-05-002, Ordering Paragraph 9, for the collection of the customer surcharges by PacifiCorp.

**“Definite Plan”** means a plan and timetable for Facilities Removal submitted by KRRC or any of its contractors or assigns under Section 7.2.1 of the KHSA.

**“Detailed Plan”** means the plan dated July 2012 that includes elements described in Section 7.2.2 of the KHSA.

**“Eligible Project Costs”** include the costs necessary for: (i) physical removal of the dams, (ii) site remediation and restoration; (iii) avoiding downstream impacts of dam removal; (iv) downstream impacts of dam removal; (v) permits that are required for the removal; (vi) removal and disposal of sediment, debris and other materials, if necessary; (vii) compliance with environmental laws; and (viii) matters otherwise in furtherance of the Project. Eligible Project Costs include costs of the foregoing items that have been incurred prior to the date of this Agreement and the repayment of amounts received from other sources and applied to Eligible Project Costs prior to the date of this Agreement.

**“FERC”** refers to the Federal Energy Regulatory Commission.

**“FERC Project”** refers to the Klamath Hydroelectric Project as licensed by FERC under Project No. 2082.

**“Funds”** refers to funds disbursed to the KRRC from the California Trust.

**“Klamath Hydroelectric Settlement Agreement”** or **“KHSA”** means the Klamath Hydroelectric Settlement Agreement, dated February 18, 2010, as amended on April 6, 2016 and November 11, 2016, and as may be amended in the future.

**“Klamath River Dams”** refers to the J.C. Boyle Dam, the Copco 1 Dam, the Copco 2 Dam and the Iron Gate Dam.

**“KRRC”** refers to the Klamath River Renewal Corporation, a California nonprofit public benefit corporation.

**“Material”** as applicable to an action or representation means an action or representation that would delay the Project, result in a budget overrun greater than ten percent, result in the misapplication or misexpenditure of Funds, or otherwise prevent the KRRC from performing duties under this Agreement.

**“Non-bypassable surcharge”** means a monetary surcharge authorized by the appropriate state utility commission through a tariff schedule that applies to all retail customers who rely on PacifiCorp’s transmission and distribution system for the delivery of electricity.

**“Notice”** means a written notice directed to the appropriate party that reasonably apprises that party of the intended action that may follow such notice.

**“ODFW”** means the Oregon Department of Fish and Wildlife.

**“Parties”** or **“Party”** means the signatories of this Agreement.

**“Phase 1”** refers to the funding phase under this Agreement for which the budget is expected to consist of the start-up costs of the KRRC, evaluating risk mitigation such as insurance for the Project, certain regulatory actions and preparation work for the Definite Plan.

**“Phase 2”** refers to the funding phase under this Agreement for which the budget is expected to consist of development of the Definite Plan, including preparation of procurement documents for final design, deconstruction and risk management and completion of regulatory actions.

**“Phase 3”** refers to the funding phase under this Agreement for which the budget is expected to consist of the Facilities Removal through deconstruction and restoration.

**“Project”** refers to the responsibilities of the KRRC under the KHSa.

**“Public Utility Commission of Oregon”** or **“OPUC”** means the public utility commission for the State of Oregon.

**“Ratepayer Benefit”** means, for purposes of this Agreement, the execution of the Project. For the avoidance of doubt, Funds disbursed for Eligible Project Costs shall be deemed to be used for Ratepayer Benefit.

**“State Cost Cap”** means the collective maximum monetary contribution from the states of California and Oregon as described in Section 4.1.3 of the KHSa.

**“States”** refers to the State of Oregon or the State of California.

**“Trustee”** means the Wells Fargo Bank.

**2. Effective Date and Expiration.** This Agreement shall become effective on the date this Agreement is fully executed. This Agreement shall expire upon the earlier of January 31, 2022, or the date the KHSa terminates (the “Expiration Date”).

**3. Agreement Documents.** This Agreement consists of the Agreement through the signature page, together with the following Exhibits, all of which are attached hereto and incorporated herein by reference:

<b>Exhibit A1:</b>	<b>Phase 1 Project Activities</b>
<b>Exhibit B1:</b>	<b>Phase 1 Project Budget Form</b>
<b>Exhibit C:</b>	<b>[RESERVED]</b>
<b>Exhibit D:</b>	<b>Disbursement Request Form</b>

In the event of a conflict between portions of this Agreement, the following order of precedence, listed from highest precedence to lowest precedence, will prevail: this Agreement without Exhibits; Exhibit A; Exhibit B; Exhibit D; Exhibit C.

**4. KRRC Fiscal Administration.**

**a. Administrative Practices.** As soon as practicable after execution of this Agreement and thereafter upon preparation of each of the following, the KRRC shall provide to the CPUC copies of the following documents and any amendments that may be made thereto:

(i) Agenda and Minutes of KRRC's regular and special meetings, in each case to the extent made publicly available;

(ii) KRRC Bylaws;

(iii) KRRC internal policies addressing financial controls, governance and internal operations;

(iv) Periodic reports or summaries of the fiscal status of the KRRC; and

(v) An audited annual financial statement for the KRRC that must include a balance sheet showing all funds, a statement of budgeted and actual income and expenditures, indicating thereon any changes in fund balances, and any appropriate notes of explanation or disclosure.

**b. Status Updates to CPUC.** KRRC shall provide to CPUC Staff periodic updates on at least a semi-annual basis, and more frequently if necessary, regarding the KRRC and the Project, which may be either oral or in writing. KRRC shall make an annual presentation before the CPUC that includes a review of Project activities in the preceding year, relevant financial information, and an overview of Project activities planned for the coming year.

**c. Conflicts of Interest and Gifts.** KRRC shall adopt and maintain a written standard of conduct under which an employee, officer, or agent of the KRRC shall not participate in the selection, award, or administration of a contract if a real or apparent conflict of interest would be involved, unless otherwise consistent with Applicable Law.

Further, KRRC shall adopt and maintain a written standard of conduct under which the officers, employees, and agents of the KRRC shall neither solicit nor accept gratuities, favors, or anything of monetary value from contractors or subcontractors. KRRC may set a different standard for situations in which the gift is an unsolicited item of nominal value.

Finally, KRRC certifies that it has and will maintain and enforce a standard of conduct requiring compliance with the conflict of interest standards set forth above and that provides for disciplinary action to be applied for violations.

**d. Management of Disbursements from California Trust Accounts.** KRRC shall maintain funds disbursed to the KRRC from the California Trust Accounts in one

or more interest-bearing demand deposit accounts in a financial institution of high credit quality, with minimal risk of loss to principal at all times, prior to expenditure on Eligible Project Costs as provided in this Agreement.

- e. **Notice of Bankruptcy or Receivership.** KRRC shall promptly notify CPUC and provide a copy of any notice or other knowledge the KRRC receives of a bankruptcy or receivership of a contractor or subcontractor engaged for the Project.

**5. Business Status.**

- a. **Registry.** KRRC has registered as a nonprofit corporation with the California Secretary of State.
- b. **Registry and status as a Charitable Organization.** KRRC has registered as a charitable organization.
- c. **Corporate Dissolution.** KRRC shall take the necessary steps to ensure that when the KRRC is dissolved or its legal existence terminated, either voluntarily or involuntarily, or upon final liquidation of the KRRC, none of its assets shall inure to the benefit of any private individual, and all of its assets remaining after payment of all of its liabilities shall be distributed to one or more organizations which the KRRC Board of Directors then determines is qualified both as an exempt organization under Internal Revenue Code Section 501(c)(3), and as an organization engaged in activities substantially similar to those of the KRRC or return to CPUC as may be required by Section 7.f.

**6. Disbursements for Eligible Project Costs.**

- a. **Trust Accounts.** The Customer Contributions, as they are collected, are held in segregated trust accounts (the “California Trust”) established by the CPUC. The Wells Fargo Bank is the current trustee of the Trust. The Customer Contributions derive from surcharges currently being collected by PacifiCorp at rates approved by CPUC, but which may not exceed more than \$13,760,000, as authorized in D.11-05-002. Pursuant to D.12-10-028, this surcharge is to be collected over a period of less than 8 years, starting in 2011.
- b. **Trust Account Management.** CPUC shall manage the California Trust consistent with any account management and coordination agreement as may be jointly approved by the State of Oregon and the State of California. If the CPUC is a party to any such agreement, it shall provide to the KRRC an opportunity to review and comment on any draft account management and coordination agreement before it is finalized.
- c. **Trust Disbursement Directions.** In accordance with the terms and conditions of this Agreement, the CPUC will timely direct the Trustee to disburse funds from the California Trust to the KRRC to pay for Eligible Project Costs.



**7. Use of Funds.** KRRC shall use the Funds for Eligible Project Costs.

- a. Phase 1 Costs.** The categories of Eligible Project Costs for Phase 1 are described in Exhibit A1. The total Eligible Project Costs for Phase 1 are estimated to be \$4.4 million, of which \$308,369 has already been disbursed to the KRRC under the “Phase 1A Grant Agreement” between the KRRC and ODFW. Exhibit B1 includes a budget for Phase 1, of which \$3,739,000<sup>1</sup> has been advanced by OPUC as of July 21, 2017.
- b. Phase 2 and Phase 3 Costs.** Ninety days prior to making an initial semi-annual request for disbursements for Phases 2 and 3, KRRC will submit to the CPUC an Exhibit A2 (Phase 2 Project Activities) and A3 (Phase 3 Project Activities), respectively, describing categories of Eligible Project Costs for Phases 2 and 3 and will also provide Exhibit B2 (Phase 2 Budget) and B3 (Phase 3 Budget), respectively providing a proposed budget for each phase. KRRC must submit, with either an Exhibit A3 or Exhibit B3 to CPUC, a certification that all of the conditions in Section 7.1.4 of the KHSa have been met or, to the extent any such conditions have not been met as of the date of such certification, an explanation of how the conditions in Section 7.1.4 of the KHSa are expected to be met in a timeframe consistent with continued progress on the Project and with appropriate documentation.

  - (i) In the event that at any time actual or foreseeable costs associated with physical performance of Facilities Removal or the combined Project budget for all three Phases is estimated to exceed the State Cost Cap and sufficient additional funding is not available to carry out Facilities Removal, the KRRC:

    - (A) Shall promptly initiate the meet and confer process with the parties to the KHSa under Section 7.2.1(5) of the KHSa and diligently pursue resolution of that process;
    - (B) Shall not enter any new contractual obligations until the process of meeting and conferring under Section 7.2.1(5) of the KHSa is resolved, unless the Parties agree that it is reasonable, necessary and consistent with the KHSa for the KRRC to enter into one or more additional contracts; and
    - (C) Shall promptly notify CPUC it has initiated the meet and confer process, and keep CPUC Staff reasonably apprised of the progress of the KHSa parties towards a resolution.
  - (ii) Upon finding that actual or foreseeable costs associated with physical performance of Facilities Removal or the combined Project budget for all three Phases is estimated to exceed the State Cost Cap and sufficient

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<sup>1</sup> Amounts advanced by OPUC to be updated at time of execution.

funding is not available to carry out Facilities Removal, KRRC may thereafter, in the regular course, submit one disbursement request under Section 7.f while it is engaged in the process of meeting and conferring with the parties to the KHSa. Before submitting any further disbursement requests while the process of meeting and conferring under Section 7.2.1(5) of the KHSa remains unresolved, KRRC shall meet with the CPUC and present a plan supporting continued disbursements. CPUC may, in its discretion, suspend further disbursements until the meet and confer process is resolved.

- c. **Budget forms.** Exhibit budget forms for each Phase shall identify the projected Project activities for such Phase and how each activity will be completed in Exhibit A, and set forth, in Exhibit B, the estimated Eligible Project Costs associated with each program activity identified in Exhibit A for such Phase, and the originating source of funds to be applied to the aggregate costs, and include or be accompanied by an estimate of the time period within such Phase in which each Exhibit A activity will be conducted. Exhibit budget forms A1 and B1 for Phase 1 are attached to this Agreement.
- d. **Minor Modifications of Budget.** The KRRC may, in its reasonable discretion, make minor modifications to the budgets for Phases 1 through 3, including but not limited to reallocating costs within categories in each budget; provided, however, if the KRRC modifies the amount of funds allocated to a category or Phase by an amount that is greater than ten percent then the KRRC will provide an updated Exhibit to the CPUC for its review as specified in the following paragraph (e).
- e. **Major Modifications of Budget.** A major modification of the budget is: (a) any increase in the amount being requested for a particular Phase of more than ten percent, or (b) an increase in the amount being requested for a particular category of expenses of more than fifteen percent. The KRRC shall notify the CPUC when it becomes aware of a need for a major modification of a budget and provide CPUC with a revised Exhibit B and a certification that such a major modification is necessary for Facilities Removal.
- f. **Disbursement Requests.**
  - (i) The KRRC will make requests for disbursements to the CPUC on a semi-annual basis by submitting a disbursement request (in both hard and electronic formats) in the form and containing the information required on Exhibit D (Disbursement Request Form). The Disbursement Request Form shall be submitted to the CPUC Executive Director and Energy Division Director. The following supporting documentation shall be submitted along with the Disbursement Request Form:
    - (A) the projected Project activities to be performed and the estimated Eligible Project Costs associated with each activity;

(B) an expenditure report, showing the expenses incurred during the prior semi-annual period;

(C) a certification from the KRRC that the request is for payment of Eligible Project Costs included in the budget that the KRRC expects to incur for the Project activities to be completed by the KRRC or under subagreement during the period within 210 days after the date of the request. The certification shall also certify that no material authorization, consent, license, approval of, filing or registration with or notification to any governmental body or regulatory or supervisory authority is required for the Project activities to be completed by the KRRC or under subagreement during the period within 210 days after the request. If the KRRC cannot make such a certification, KRRC shall explain how any outstanding material authorization, consent, license, approval of, filing or registration with or notification to any governmental body or regulatory or supervisory authority not yet obtained or given, as applicable, that is required for the Project activities is expected to be met in a timeframe consistent with Project activities to be conducted within 210 days and provide appropriate documentation.

(D) a certification that all expenditures will only be used for Ratepayer Benefit.

(ii) The KRRC will, contemporaneously with its request to the CPUC, make a corresponding request to the OPUC, to the extent appropriate.

**g. Proportional Disbursements.** The Parties understand and agree that 8% of the Customer Contribution funds for the Project will be disbursed from the California Trust, except however, in no event will the total funding from the California Trust and the Oregon Trust exceed \$200 million. CPUC's direction to disburse funds from the California Trust shall not be subject to a corresponding disbursement from the Oregon Trust, unless expressly required by any account management and coordination agreement as may be jointly approved by the State of Oregon and the State of California.

**h. Action on Disbursement Requests.**

(i) Except as provided in Section 7.b, disbursement requests will be processed by the CPUC within 14 working days after receipt of the disbursement request if the disbursement request includes all of the information required under Section 7.f.

(ii) The Energy Division Director, or his/her designee, shall review all Disbursement Request Forms for the purpose of confirming that:

(A) the disbursement request is to fund Project activities identified in the applicable Exhibit A for the applicable Project Phase;

(B) the Funds requested, in combination with Funds already disbursed for the identified Phase, do not exceed the budgeted amount for a particular Phase by more than ten percent.

(iii) Upon determination that the requirements of clause (ii) above are met, the Energy Division Director, or his/her designee, shall promptly notify the Executive Director that the funds may be released. In the event that the Energy Division Director, or his/her designee, has reasonably determined that the foregoing requirements have not been met with respect to any portion of the Funds requested, then the Energy Division Director, or his/her designee, shall promptly notify KRRC in writing and in reasonable detail of the reason for such determination. In the event KRRC disagrees with such determination it shall provide such further information as it may elect, it being the intent that the Parties shall thereafter reasonably and promptly cooperate with each other to resolve any such disagreement, at which point the Executive Director shall direct the release of the applicable Funds.

**i. Recovery of Funds.**

- (i) KRRC shall provide annually its audited financial statements by a third party in accordance with Section 12.c. of this Agreement. These statements shall include a balance sheet showing all funds, a statement of budgeted and actual income and expenditures, indicating thereon any changes in fund balances, and any appropriate notes of explanation or disclosure. The Executive Director, or his/her designee, shall have 60 days to review the audited financial statements and notify the KRRC in writing, of all concerns regarding the disbursement of funds in the prior year. KRRC shall address these concerns/proposed adjustments in writing to the Executive Director or his/her designee within 30 days or such longer period of time as may be necessary, with reasonable diligence, to do so. The Executive Director or his/her designee shall notify the KRRC in writing within 10 days after receipt of KRRC's response of any remaining concerns and whether any proposed adjustments should be made. The Executive Director and KRRC shall thereafter reasonably cooperate to address any remaining concerns of the Executive Director. In the event that notwithstanding such cooperation all matters have not been resolved within 30 days after the Executive Director's notice then the Executive Director shall notify the KRRC in writing of its final determination regarding its concerns. A copy of this communication shall be sent to the Energy Division Director or his/her designee and the service list of Application 10-03-015.
- (ii) Any funds disbursed to KRRC that remain unexpended on the earlier of the completion of Facilities Removal, termination or expiration of this Agreement ("Unexpended Funds") or that remain unexpended due to the suspension of disbursement requests under Section 7.b of this Agreement

for a period of two years or longer must be returned to the CPUC upon its request. Unexpended Funds shall not include funds set aside for ongoing monitoring following facilities removal or other similar activities as may be required under the Definite Plan or as a condition of a license or permit required for the Project. Recipient shall return all Unexpended Funds and associated interest to the CPUC within 15 days after the earlier of expiration or termination of this Agreement, or upon the demand of the CPUC following the suspension of disbursement requests for a period of two years or longer, consistent with this Section.

**8. Final Reporting.** Within six months of the completion of Facilities Removal, the KRRC will file a final report (the “Final Report”) with the CPUC. The Final Report must include a summary of all Project costs compared to the Project Budget, together with reasonable supporting documentation that evidences KRRC’s expenditure of the funds disbursed from the California Trust. The Final Report shall include a summary of the Project as completed as well as an explanation for any Project cost variances that are greater than 10 percent from the Project Budget. The Final Report shall also document the amount of funding received from OPUC and the California Natural Resources Agency.

**9. Conditions Precedent.**

- a. Conditions Precedent to the CPUC’s Obligations.** The CPUC’s obligations under this Agreement are subject to the receipt by the CPUC of the following item, all in form and substance satisfactory to the CPUC and its counsel:
  - (i) A copy of the resolution of the KRRC’s board of directors authorizing the execution and delivery of this Agreement and performance by KRRC of its obligations hereunder.
- b. Conditions to Disbursement.** CPUC’s obligation to disburse any of the Funds to KRRC is subject to the following conditions.
  - (i) **Disbursement Request.** The KRRC has filed a disbursement request with the CPUC, consistent with section 7.f, above.
  - (ii) **Availability of Funds.** Sufficient funds are currently deposited in the California Trust to fulfill the CPUC’s obligation to disburse funds under this Agreement.
  - (iii) **No Default.** No event of default has occurred or is occurring.
  - (iv) **Representations.** KRRC’s representations and warranties set forth in Section 10 hereof are true and correct in all material respects on the date of disbursement with the same effect as though made on the date of disbursement.

**10. Representations, Warranties and Covenants of KRRC.**

- a. KRRC Representations, Warranties.** KRRC makes the following representations and warranties to the CPUC.
- (i) **Organization and Authority.** KRRC is a duly organized and validly existing nonprofit public benefit corporation under the California Corporations Code. KRRC has full power, authority, and legal right to make this Agreement and to incur and perform its obligations hereunder; and the making and performance by KRRC of this Agreement (1) have been duly authorized by all necessary action of KRRC, (2) do not and will not violate any provision of any applicable law, rule, regulation, or order of any court, regulatory commission, board, or other administrative agency or any provision of KRRC's organizational documents, and (3) do not and will not result in the breach of, or constitute a default or require any consent under, any other agreement or instrument to which KRRC is a party or by which KRRC or any of its properties may be bound or affected. No authorization, consent, license, approval of, filing or registration with or notification to any governmental body or regulatory or supervisory authority is required for the execution, delivery or performance by KRRC of this Agreement. Certain additional authorizations, consents, licenses, approvals of, filings or registrations with or notifications to a governmental body or regulatory or supervisory authority shall be required for certain Project activities.
  - (ii) **Binding Obligation.** This Agreement has been duly executed and delivered by KRRC and, when executed and delivered by the CPUC, constitutes a legal, valid and binding obligation of KRRC, enforceable in accordance with its terms, subject to the application of bankruptcy, insolvency or similar laws relating to the rights of creditors generally and general principles of equity.
- b. KRRC's Inspections; Information.** During the term of this Agreement, KRRC shall permit the CPUC, at any reasonable time and with reasonable notice, to inspect and make copies of any accounts, books and records, including, without limitation, its records regarding receipts, disbursements, contracts, investment of Funds, if any, and any other matters related to the use of Funds or the Project. The KRRC shall supply related reports and information relating to the Project as the CPUC may reasonably require. The KRRC shall promptly respond to requests for information and provide an explanation regarding submissions to the CPUC upon its request.

**11. Representations, Warranties and Covenants of CPUC.** CPUC makes the following representations and warranties to the KRRC.

- a.** CPUC is a constitutional agency of the State of California.

- b. CPUC has all necessary right, power, authority, approvals and consents under its applicable enabling statutes, or other California law to (a) execute and deliver this Agreement, and (b) incur and perform its obligations under this Agreement.
- c. This Agreement has been duly authorized by a vote, resolution or other act of the Commissioners of the CPUC, is executed by an authorized representative of CPUC, and is legal, valid and binding, and enforceable in accordance with its terms without the need for any further vote, resolution or act of the CPUC or its Commissioners.

**12. Records Maintenance and Access; Audit Requirements.**

- a. **Records Maintenance and Access.** KRRC shall make and retain proper and complete books of record, and account and maintain all fiscal records related to this Agreement, the Funds, and the Project in accordance with all applicable generally accepted accounting principles. KRRC shall create and maintain all expenditure records in sufficient detail in such a manner as to clearly document KRRC's performance and to permit the CPUC and the KRRC's third party auditor to verify how the Funds were expended. The State of California, the CPUC and their duly authorized representatives shall have access to the books, documents, papers and records of KRRC that are directly related to this Agreement, the funds provided hereunder, or the Project for the purpose of making audits and examinations. In addition, CPUC and its duly authorized representatives may make and retain excerpts, copies, and transcriptions of the foregoing books, documents, papers, and records. KRRC shall permit authorized representatives of the CPUC to perform site reviews of the Project as needed to determine compliance with the terms of this Agreement.
- b. **Retention of Records.** KRRC shall retain and keep accessible all books, documents, papers, and records that are directly related to this Agreement, the Funds, or the Project for a minimum of six (6) years, or such longer period as may be required by other provisions of this Agreement or applicable law, following the termination of this Agreement. If there are unresolved disputes or audit questions at the end of the retention period, KRRC shall retain the records until the disputes or questions are resolved. These records will be made available, without restriction, to both the CPUC and California Secretary of State.
- c. **Audit Requirements.** KRRC must retain the services of a professional third-party audit firm to conduct a financial audit of all expenditures of the Funds made by KRRC on an annual basis and provide to the CPUC, not later than 90 calendar days after the end of each calendar year, beginning in 2017, a true and correct copy of the auditor's final report. Each audit must apply Generally Accepted Accounting Principles. KRRC shall cooperate with all requests from the auditor for data and other related requests from the auditor. Disputed points not resolved between KRRC and the auditor, and any exceptions from, qualifications of, or exclusions from the audit must be noted in the final audit

report. KRRC shall include third-party audit expenses as appropriate in expense and budget forms submitted under Sections 7.a. and 7.b.

**13. KRRC Subagreements.**

- a. Subagreements.** KRRC may enter into agreements with sub-recipients, contractors, subcontractors, consultants, advisors, agents, representatives and other providers of services or materials (collectively, “subagreements”) reasonably necessary or desirable for performance of the Project, including agreements with an executive director and other staff or employees of KRRC. Notwithstanding the foregoing, the use of a subagreement shall not relieve KRRC of its responsibilities under this Agreement.
- b. Procurement standards and policies.** KRRC shall adopt, maintain, provide to CPUC, and comply with written standards of conduct and appropriate policies governing the performance of its employees, agents, consultants, directors, officers or contractors engaged in the award and administration of subagreements.

  - (i) All such standards and policies shall implement and be consistent with the following goals:

    - (A) optimizing the cost, efficiency, timing, expertise and quality of work performed under subagreements;
    - (B) effectively executing the Project; and
    - (C) maintaining consistency with industry standards.
  - (ii) Such standards and policies shall include a competitive process for all primary subagreements for the design or execution of physical removal of facilities and associated site remediation activity under the Project (“Major Subagreements”). Upon selection of a competitive process to be used to award a Major Subagreement, KRRC shall notify CPUC of the subject matter, selected process, and provide an explanation as to how the selected process meets the goals listed in Section 13.b.i of this Agreement. KRRC shall provide CPUC with a substantially final form of the solicitation materials for each Major Subagreement sufficiently prior to issuance as to allow for CPUC review, in no event less than 15 business days.
- c.** Any breach of a term or condition of a Major Subagreement relating material misapplication, misexpenditure or loss of Funds must be reported by KRRC to CPUC within ten (10) days of its being discovered by KRRC.
- d. Insurance.** KRRC shall cause the other party, or parties, to each of its Major Subagreements to obtain and maintain insurance of the types set forth in Section 14(b) and in commercially reasonable amounts.



**14. Indemnity; Insurance.**

- a. Indemnity.** KRRC and CPUC acknowledge and agree that the indemnity provided in Section 7.1.3 of the KHSa shall be applicable to this Agreement.

Neither KRRC, nor any attorney engaged by KRRC shall defend any Claim in the name of the State or any agency of the State of California, nor purport to act as legal representative of the State of California or any of its agencies, without the prior written consent of the California Attorney General. The CPUC may, at any time at its election, assume its own defense and settlement in the event that it determines that KRRC is prohibited from defending State or that KRRC is not adequately defending State's interests, or that an important governmental principle is at issue or that it is in the best interests of State to do so. CPUC reserves all rights to pursue claims it may have against KRRC if State elects to assume its own defense.

- b. Insurance.** KRRC shall maintain, or cause to be maintained, insurance policies with responsible insurers or self-insurance programs, insuring against directors' and officers' liability and sufficient to insure the Project. KRRC shall provide a summary of any insurance coverage to the CPUC within ten days following the effective date of this agreement and upon the execution of any additional insurance agreements. KRRC shall include CPUC (i) as an additional insured on its liability insurance coverages and (ii) as a loss-payee on its property insurance and on any performance bonds, or letters of credit taken out to insure performance of the Project, provided, however, that for so long as this Agreement is in effect and no Event of Default exists, CPUC shall have no claim to any proceeds of property insurance, performance bonds or letters of credit that are recovered in respect of Eligible Project Costs and that KRRC applies or intends to apply toward Eligible Project Costs in connection with the completion or restoration following any casualty of the Project. Proceeds of any of the foregoing that are not eligible or expected to be applied to Eligible Project Costs by KRRC, if any, shall be paid to CPUC in trust for contributing PacifiCorp customers in proportion to any disbursement of Funds previously directed by CPUC and in proportion to other funding sources that are also loss-payees.
- c. Survival.** Following any termination of this Agreement, for so long as KRRC has an ownership interest in the Project site, KRRC shall maintain, or cause to be maintained commercially reasonable insurance that will name CPUC as additional insured or loss-payee as its interests may appear.

**15. Compliance with Laws.**

- a. Compliance with Laws.** KRRC shall comply with all Applicable Law, including, to the extent such laws are applicable without being a requirement of this agreement:

- (i) (A) Title VI of Civil Rights Act of 1964; (B) Title V and Section 504 of the Rehabilitation Act of 1973; (C) the Americans with Disabilities Act of 1990; (D) all regulations and administrative rules established pursuant to the foregoing laws; and (E) all other applicable requirements of federal and state civil rights and rehabilitation statutes, rules and regulations.
  - (ii) (A) if applicable, prevailing wage rate requirements set forth in 40 U.S.C. 3141 et seq. ("Davis-Bacon Act"), and (B) if the Project is subject to the Davis-Bacon Act, the requirement that require its contractors and subcontractors to comply with the Davis-Bacon Act.
- b. KRRC agrees to contract with, and require any subrecipients to contract with, competent, properly licensed and bonded contractors and professionals for the performance of the Project.
- c. All subagreements that KRRC may enter which are funded wholly or in part with the Funds must be subcontractual in nature, with the other party engaged in the role of a subcontractor. KRRC will administer all contracts with its subcontractors to ensure compliance by any subcontractors with the terms of this Agreement with respect to requirements that flow through to subcontractors.

#### **16. Termination; Default**

- a. **Termination by CPUC.** CPUC may terminate this Agreement effective upon delivery of written notice of termination to KRRC, or at such later date as may be established by CPUC in such written notice, only if:
  - (i) A change in law makes performance or completion of Facilities Removal in compliance with the KHSA no longer possible; or
  - (ii) The occurrence and continuance of an Event of Default as provided below.
- b. **Event of Default.** The occurrence of any of the following listed events shall constitute an Event of Default under this Agreement:
  - (i) Any material representation is made by KRRC in this Agreement or in any document provided by or on behalf of KRRC related to this Agreement or the Project that is false or misleading in any material respect when made; or
  - (ii) A petition, proceeding or case is filed by or against KRRC (for purposes of this section, "Debtor") under any federal or state bankruptcy or insolvency law, and in the case of a petition filed against the Debtor, the Debtor acquiesces to such petition or such petition is not dismissed within 90 calendar days after such filing; Debtor files a petition seeing to take advantage of any other law relating to bankruptcy, insolvency, reorganization, liquidation, dissolution, winding-up or composition or

adjustment of debts; Debtor admits in writing its inability to pay its debts as they become due, or makes an assignment for the benefit of its creditors; Debtor applies for or consents to the appointment of, or taking of possession by, a custodian (including, without limitation, a receiver, liquidator or trustee) of Debtor or any substantial portion of its property; or Debtor takes any action for the purpose of effecting any of the above; or

- (iii) KRRC fails to perform any material obligation required under this Agreement and that failure continues for a period of 30 calendar days after written notice specifying such failure is given to KRRC by CPUC, except with respect to any shorter period expressly provided in this Agreement, provided that so long as KRRC is diligently seeking to cure such failure to perform such 30-day period shall be extended.

**c. Remedies.** Upon the occurrence and continuance of an Event of Default, and dispute resolution under section 18.a is not successful in a timely manner, the CPUC may, at its option, pursue any or all of the following remedies:

- (i) Ceasing disbursement of Funds under this Agreement until the Event of Default has been cured or the Agreement is terminated;
- (ii) Terminating this Agreement with KRRC;
- (iii) Bringing an action at law or filing a claim in a court with jurisdiction to recover damages incurred as a result of the Event of Default, in order to recover Funds disbursed to the KRRC hereunder, with interest thereon, that have not been expended on Eligible Project Costs prior to an event of default or that were misexpended;
- (iv) Seeking any equitable remedies, including specific performance, which may be available to the CPUC; and
- (v) Pursuing any rights as loss payee on insurance or as payee on a performance bond, letter of credit or any similar performance or payment guarantor, if any.

**d. No Termination by KRRC.** KRRC may not terminate this Agreement unless the KHSA has been terminated or the Project has been abandoned, terminated, or is otherwise unable to proceed.

**17. California Trust is Sole Source of Funding.** The California Trust is the sole source of funding for this Agreement, with respect to funding from California, and KRRC shall have no recourse to, and the CPUC shall have no obligation to pay, any amounts under this Agreement from moneys deposited in the State Treasury, including but not limited to the General Fund; nor will the CPUC have any obligation to seek an appropriation or other expenditure authority from the Oregon Legislative Assembly in the event there are insufficient moneys in the California Trust.

**18. General Provisions.**

- a. Dispute Resolution.** The Parties shall attempt in good faith to resolve any dispute arising out of this Agreement. In addition, the Parties may agree to utilize a jointly selected mediator or arbitrator (for non-binding arbitration) to resolve the dispute short of litigation.
- b. Amendments.** This Agreement may be amended or extended only by a written instrument signed by both Parties and, in the case of amendments relating to the amount or application of the Funds, approved by a vote of the Commissioners of the CPUC. For the avoidance of doubt, a vote of the Commissioners shall not be required for extensions of time, contract administration matters, or to waive any provision of this Agreement.
- c. No Third Party Beneficiaries.** CPUC and KRRC are the only Parties to this Agreement and are the only Parties entitled to enforce its terms. Nothing in this Agreement gives, is intended to give, or shall be construed to give or provide any benefit or right, whether directly or indirectly, to a third person unless such a third person is individually identified by name herein and expressly described as an intended beneficiary of the terms of this Agreement.
- d. Notices.** Except as otherwise expressly provided in this Agreement, any communications between the Parties hereto or notices to be given hereunder shall be given in writing by personal delivery, facsimile, email, or mailing the same, postage prepaid, to KRRC Contact or CPUC Contact at the address or number set forth on the signature page of this Agreement, or to such other addresses or numbers as either Party may hereafter indicate pursuant to this Section 18.d. Any communication or notice personally delivered shall be deemed to be given when actually delivered. Any communication or notice delivered by facsimile shall be deemed to be given when receipt of the transmission is generated by the transmitting machine, and to be effective against CPUC, such facsimile transmission must be confirmed by telephone notice to CPUC Contact. Any communication by email shall be deemed to be given when the recipient of the email acknowledges receipt of the email. Any communication or notice mailed shall be deemed to be given when received.

**e. Choice of Law; Designation of Forum; Federal Forum.**

- (i) The laws of the State of California (without giving effect to its conflicts of law principles) govern all matters arising out of or relating to this Agreement, including, without limitation, its validity, interpretation, construction, performance, and enforcement.
- (ii) Any Party bringing a legal action or proceeding against any other Party arising out of or relating to this Agreement shall bring the legal action or proceeding in the Circuit Court of the State of California for the County of San Francisco. Each Party hereby consents to the exclusive jurisdiction of such court, waives any objection to venue, and waives any claim that such forum is an inconvenient forum.
- (iii) Notwithstanding the prior paragraph, if a claim must be brought in a federal forum, then it must be brought and adjudicated solely and exclusively within the United States District Court for the Northern District of California. This paragraph applies to a claim brought against the State of California only to the extent Congress has appropriately abrogated the State of California's sovereign immunity, and is not consent by the State of California to be sued in federal court. This paragraph is also not a waiver by the State of California of any form of defense or immunity, including but not limited to sovereign immunity and immunity based on the Eleventh Amendment to the Constitution of the United States.

**f. Survival.** The following sections or subsections of this Agreement shall survive the Expiration Date and any earlier termination of this Agreement: Sections 7.b, 7.h, 7.i, 7.j, 8, 12, 14.a, 16.c, 18.a, 18.d, 18.e, 18.f, 18.h and 18.l and any other section or provision that by its terms is stated to survive.

**g. Severability.** If any term or provision of this Agreement is declared by a court of competent jurisdiction to be illegal or in conflict with any law, the validity of the remaining terms and provisions shall not be affected, and the rights and obligations of the Parties shall be construed and enforced as if this Agreement did not contain the particular term or provision held to be invalid.

**h. Counterparts.** This Agreement may be executed in two or more counterparts (by facsimile or otherwise), each of which is an original and all of which together are deemed one agreement binding on all Parties, notwithstanding that all Parties are not signatories to the same counterpart.

**i. Integration and Waiver.** This Agreement and the KHSa, as they may be amended from time to time, including all Exhibits, constitute the entire agreement between the Parties on the subject matter hereof. There are no understandings, agreements, or representations, oral or written, not specified herein regarding this Agreement. The delay or failure of either Party to enforce any provision of this

Agreement shall not constitute a waiver by that Party of that or any other provision.

- j. KHSa.** This Agreement is intended to facilitate the implementation of the KHSa. Nothing in this Agreement shall be construed in a way that is inconsistent with or conflicts with the terms of the KHSa. In the event of any such conflict or inconsistency the applicable terms shall be deemed waived or modified to the extent necessary to comply with the requirements of the KHSa insofar as the KHSa's requirements are consistent with law.
- k. Non-Disclosure Agreements.** Nothing in this Agreement shall be construed as requiring KRRC to violate any confidentiality, non-disclosure agreement or similar agreement.
- l. Coordination with Other Funding Sources.** CPUC acknowledges that pursuant to the KHSa, the Project will have several sources of funds and agrees to reasonably cooperate with the other Project funding sources as reasonably requested by KRRC. In the event conflicting positions or interpretations with respect to any matter or Approval among the Project's funding sources, CPUC agrees to meet and confer with such other funding sources and to make good faith efforts to promptly resolve any such disputes or conflicts. The pendency of any such dispute or conflict and any resulting delay or other impact on the Project shall be deemed to be beyond KRRC's control and shall not be a breach of this Agreement or give rise to an Event of Default.

**THE PARTIES**, by execution of this Agreement, hereby acknowledge that each Party has read this Agreement, understands it, and agrees to be bound by its terms and conditions.

SIGNATURE PAGE TO FOLLOW

**Klamath River Renewal Corporation**

**California Public Utilities Commission**

By \_\_\_\_\_

By \_\_\_\_\_

Name: \_\_\_\_\_  
(printed)

Name: \_\_\_\_\_  
(printed)

Title: \_\_\_\_\_

Title \_\_\_\_\_

Date \_\_\_\_\_

Date \_\_\_\_\_

**APPROVED**

(If required)

By \_\_\_\_\_  
KRRC's Legal Counsel

Date \_\_\_\_\_

**KRRC Contact:**

Name: Mark Bransom  
Title: Executive Director  
Address: 423 Washington St. 3rd Floor  
Address: San Francisco, CA 94111  
Phone: 510 914-4199  
Email: mark@klamathrenewal.org

**CPUC Contacts:**

Name: Timothy Sullivan  
Title: Executive Director  
Address: California Public Utilities Commission  
505 Van Ness Avenue  
San Francisco, CA 94102  
Phone: 415-703-\_\_\_\_\_  
Email: timothy.sullivan@cpuc.ca.gov

Name: Edward Randolph  
Title: Director, Energy Division  
Address: California Public Utilities Commission  
505 Van Ness Avenue  
San Francisco, CA 94102  
Phone: 415-703-\_\_\_\_\_  
Email: edward.randolph@cpuc.ca.gov

**EXHIBIT A1**  
**PHASE 1 ACTIVITIES**



**EXHIBIT B**  
**PHASE 1 PROJECT BUDGET**

**EXHIBIT C**  
**[RESERVED]**

**EXHIBIT D**  
**Disbursement Request Form**

Date: \_\_\_\_\_

Attn: \_\_\_\_\_

Address: \_\_\_\_\_

Phone: \_\_\_\_\_

Email: \_\_\_\_\_

Re: Disbursement for Klamath Dam Removal Funding Agreement (the “Agreement”) Phase \_\_\_\_\_

The Klamath River Renewal Corporation requests the Public Utility Commission to submit a request for disbursement from the Customer Contribution Trust Accounts pursuant to D.17-XX-XXX in the amount of \$\_\_\_\_\_ as outlined below:

Phase	Project Activity		Eligible Project Costs	Amount Requested

Attached to this Disbursement Request Form are the supporting documents for this request as required by Section 7(f) of the Agreement.

Disbursement shall be made through wire transfers to the following:

Recipient Name: \_\_\_\_\_

Wire Transfer Acct. #: \_\_\_\_\_

Bank Name: \_\_\_\_\_

ABA #: \_\_\_\_\_

For Benefit of: \_\_\_\_\_

FBO Acct #: \_\_\_\_\_

Attn: \_\_\_\_\_

Phone #: \_\_\_\_\_

**KLAMATH RIVER RENEWAL CORPORATION**

**By:** \_\_\_\_\_  
**Signature**

**Name & Title (print):** \_\_\_\_\_

**(End of Attachment A)**

California Public Utilities Commission

Funding Agreement Extension

July 10, 2019

## PUBLIC UTILITIES COMMISSION

505 VAN NESS AVENUE  
SAN FRANCISCO, CA 94102-3298



July 10, 2019

Laura Hazlett  
Chief Financial Officer  
Klamath River Renewal Corporation  
2001 Addison St, Suite 317  
Berkeley, CA 94704

**Subject: Funding Agreement Extension Request**

Dear Ms. Hazlett,

On June 12, 2019, the Klamath River Renewal Corporation ("KRRC") requested an extension of the expiration date of the Funding Agreement approved by the Commission in Decision ("D.") 17-11-019. KRRC included with its request a Certificate of Service confirming service on the Administrative Law Judge Division and all parties to Application ("A.") 10-03-015.

Siskiyou County and Siskiyou County Water Users Association raised objections to KRRC's extension request. I have reviewed the issues raised in the objections and find that the requested amendment will not impact customer rates. An extension of the expiration date for the Funding Agreement provides for an extension of time to meet conditions previously approved by the Commission.

Pursuant to Rule 16.6 of the Commission's Rules of Practice and Procedure, I grant KRRC's request to extend the expiration date of the Funding Agreement to December 31, 2024. The Funding Agreement is amended as follows: "This Agreement shall expire upon the earlier of ~~January 31, 2022~~, December 31, 2024, or the date the [Klamath Hydroelectric Settlement Agreement] KHSa terminates (the "Expiration Date")."

Sincerely,

A handwritten signature in cursive script that reads "Alice Stebbins".

Alice Stebbins  
Executive Director

**Exhibit D-7**  
**CPUC Funding Agreement**  
**December 2017**

## **FUNDING AGREEMENT**

This Agreement is made and entered into by and between the **California Public Utilities Commission**, the "CPUC," and the **Klamath River Renewal Corporation**, a California nonprofit public benefit corporation, hereinafter referred to as the "KRRC."

### **RECITALS**

WHEREAS, the States of California and Oregon, the United States, PacifiCorp, and other parties entered into the Klamath Hydroelectric Settlement Agreement, dated February 18, 2010, as subsequently amended (as amended, the "KHSA") to establish a process for the removal of four hydropower facilities within the jurisdictional boundary of FERC Project no. 2082 located on the Klamath River: Iron Gate Dam, Copco No. 1 Dam, Copco No. 2 Dam, J.C. Boyle Dam, and appurtenant works currently licensed to PacifiCorp (the "Project") and for the operation of the Klamath Hydroelectric Project until the completion of the Project; and

WHEREAS, pursuant to Section 4.1.1 of the KHSA, the CPUC and the Public Utility Commission of Oregon (OPUC) have each established customer surcharges for PacifiCorp's customers for the purposes of paying the costs of Facilities Removal; and

WHEREAS, pursuant to Section 4.1.1 of the KHSA, the total amount of funds to be collected pursuant to the customer surcharges shall not exceed \$200,000,000, with the maximum amount of \$16,000,000 to be collected from California customers.

WHEREAS pursuant to Section 4.1.2.A of the KHSA the State of California has appropriated \$250,000,000 of the proceeds of the bonds authorized by California Proposition 1 for the purposes of paying the costs of Facilities Removal, to the extent that the costs of Facilities Removal exceed the Customer Contributions; and

WHEREAS in Decision (D.)11-05-002, as amended by D.12-10-028, the CPUC approved a request by PacifiCorp for a surcharge of \$13.76 million, collected over less than 8 years for the purpose of paying the costs of removing Klamath River dams. As specified in in Section 4.4.4(d) of the KHSA, one surcharge is designed to collect removal costs for the J.C. Boyle Dam and the other surcharge collects removal costs for the other three dams. Pursuant to D.11-05-002, Ordering Paragraph 9, the Commission has established two interest bearing trust accounts in which the customer surcharges are to be held and administered – the California Copco I and II/Iron Gate Dams Trust Account and the California J.C. Boyle Trust Account. Pursuant to D.11-05-002, Ordering Paragraph 5, the customer surcharge together with accrued interest must be used only for the benefit of ratepayers; and

WHEREAS, in accordance with D.11-05-002, as amended by D.12-10-028, and Section 4.1.1 of the KHSA, the CPUC has been collecting non-bypassable customer surcharges for the purpose of Facilities Removal and has a responsibility to ensure those funds are used in a manner consistent with D.11-05-002; and

WHEREAS, section 4.12 of the KHSA provides that the States of California and Oregon will enter into funding agreements with the KRRC for the purpose of specifying how the Customer Contributions and the California Bond Funding will be released to pay for the costs of Facilities Removal; and



WHEREAS, section 4.2.4 of the KHSA provides that California and Oregon will prepare draft trustee instructions for submission to the California and Oregon PUCs concerning: (1) when funds will be disbursed from the trust accounts; (2) the methodology used to determine which accounts will be drawn from; (3) coordination with use of the California Bond Funds; (4) a protocol for reallocating funds between the trust accounts to pay for the costs of the removal of specific facilities (if necessary); and (5) a means for the return of Customer Contributions to PacifiCorp customers in the event that there are remaining funds in the trust accounts following completion of Facilities Removal; and

WHEREAS, the Facilities Removal is contemplated to take place pursuant to three funding phases, with Phase One, which has already been completed, consisting of the start-up of the KRRC, evaluating risk mitigation such as insurance for the Project, certain regulatory actions and preparation work for the Definite Plan; Phase Two, which has already commenced and will primarily consist of development of the Definite Plan, including preparation of procurement documents for final design, deconstruction and risk management and completion of regulatory actions; and Phase Three which will consist of the Facilities Removal through deconstruction and restoration; and

WHEREAS, \$3,884,580 was necessary to fund Phase One activities and up to \$38,075,000 is projected to be required for Phase Two.

NOW THEREFORE, the parties enter into this Agreement as provided below.

## **AGREEMENT**

### **1. Defined Terms.**

**“Applicable Law”** means general law that (1) exists outside of the KHSA including, but not limited to a Constitution, statute, regulation, court decision, or common law, and (2) applies to obligations or activities of Parties contemplated by this Agreement. The use of this term is not intended to create a contractual obligation to comply with any law that would not otherwise apply.

**“California Public Utilities Commission”** or **“CPUC”** means the public utilities commission for the State of California. References to actions or approvals by CPUC shall mean action or approval delegated to the Energy Division Director of CPUC or its designee by the Commission pursuant to this Agreement or otherwise, and not a vote of the Commissioners of the CPUC unless otherwise expressly stated.

**“California Trust”** refers to the two separate interest bearing trust accounts – the California Copco I and II/Iron Gate Dams Trust Account and the California J.C. Boyle Trust Account – established pursuant to CPUC Decision 11-05-002, Ordering Paragraph 9, for the collection of the customer surcharges by PacifiCorp.

**“Definite Plan”** means a plan and timetable for Facilities Removal submitted by KRRC or any of its contractors or assigns under Section 7.2.1 of the KHSA.

**“Detailed Plan”** means the plan dated July 2012 that includes elements described in Section 7.2.2 of the KHSA.

**“Eligible Project Costs”** include the costs necessary for: (i) physical removal of the dams; (ii) site remediation and restoration; (iii) avoiding downstream impacts of dam removal; (iv) downstream impacts of dam removal; (v) permits that are required for the removal; (vi) removal and disposal of sediment, debris and other materials, if necessary; (vii) compliance with environmental laws; and (viii) matters otherwise in furtherance of the Project. Eligible Project Costs include costs of the foregoing items that have been incurred prior to the date of this Agreement and the repayment of amounts received from other sources and applied to Eligible Project Costs prior to the date of this Agreement.

**“FERC”** refers to the Federal Energy Regulatory Commission.

**“FERC Project”** refers to the Klamath Hydroelectric Project as licensed by FERC under Project No. 2082.

**“Funds”** refers to funds disbursed to the KRRC from the California Trust.

**“Klamath Hydroelectric Settlement Agreement”** or **“KHSA”** means the Klamath Hydroelectric Settlement Agreement, dated February 18, 2010, as amended on April 6, 2016 and November 11, 2016, and as may be amended in the future.

**“Klamath River Dams”** refers to the J.C. Boyle Dam, the Copco 1 Dam, the Copco 2 Dam and the Iron Gate Dam.

**“KRRC”** refers to the Klamath River Renewal Corporation, a California nonprofit public benefit corporation.

**“Material”** as applicable to an action or representation means an action or representation that would delay the Project, result in a budget overrun greater than ten percent, result in the misapplication or misexpenditure of Funds, or otherwise prevent the KRRC from performing duties under this Agreement.

**“Non-bypassable surcharge”** means a monetary surcharge authorized by the appropriate state utility commission through a tariff schedule that applies to all retail customers who rely on PacifiCorp’s transmission and distribution system for the delivery of electricity.

**“Notice”** means a written notice directed to the appropriate party that reasonably apprises that party of the intended action that may follow such notice.

**“ODFW”** means the Oregon Department of Fish and Wildlife.

**“Parties”** or **“Party”** means the signatories of this Agreement.

**“Phase 1”** refers to the funding phase under this Agreement for which the budget is expected to consist of the start-up costs of the KRRC, evaluating risk mitigation such as insurance for the Project, certain regulatory actions and preparation work for the Definite Plan.

**“Phase 2”** refers to the funding phase under this Agreement for which the budget is expected to consist of development of the Definite Plan, including preparation of procurement documents for final design, deconstruction and risk management and completion of regulatory actions.

**“Phase 3”** refers to the funding phase under this Agreement for which the budget is expected to consist of the Facilities Removal through deconstruction and restoration.

**“Project”** refers to the responsibilities of the KRRC under the KHSA.

**“Public Utility Commission of Oregon”** or **“OPUC”** means the public utility commission for the State of Oregon.

**“Ratepayer Benefit”** means, for purposes of this Agreement, the execution of the Project. For the avoidance of doubt, Funds disbursed for Eligible Project Costs shall be deemed to be used for Ratepayer Benefit.

**“State Cost Cap”** means the collective maximum monetary contribution from the states of California and Oregon as described in Section 4.1.3 of the KHSA.

**“States”** refers to the State of Oregon or the State of California.

**“Trustee”** means the Wells Fargo Bank.

**2. Effective Date and Expiration.** This Agreement shall become effective on the date this Agreement is fully executed. This Agreement shall expire upon the earlier of January 31, 2022, or the date the KHSA terminates (the “Expiration Date”).

**3. Agreement Documents.** This Agreement consists of the Agreement through the signature page, together with the following Exhibits, all of which are attached hereto and incorporated herein by reference:

<b>Exhibit A1:</b>	<b>Project Activities for Phase 1</b>
<b>Exhibit A2:</b>	<b>Project Activities for Phase 2</b>
<b>Exhibit B1:</b>	<b>Phase 1 Project Budget</b>
<b>Exhibit B2:</b>	<b>Phase 2 Project Budget</b>
<b>Exhibit C:</b>	<b>[RESERVED]</b>
<b>Exhibit D:</b>	<b>Disbursement Request Form</b>

In the event of a conflict between portions of this Agreement, the following order of precedence, listed from highest precedence to lowest precedence, will prevail: this Agreement without Exhibits; Exhibits A1 and A2 (as applicable); Exhibits B1 and B2 (as applicable); Exhibit D; Exhibit C.

#### **4. KRRC Fiscal Administration.**

**a. Administrative Practices.** As soon as practicable after execution of this Agreement and thereafter upon preparation of each of the following, the KRRC shall provide to the CPUC copies of the following documents and any amendments that may be made thereto:

- (i) Agenda and Minutes of KRRC’s regular and special meetings, in each case to the extent made publicly available;
- (ii) KRRC Bylaws;

(iii) KRRC internal policies addressing financial controls, governance and internal operations;

(iv) Periodic reports or summaries of the fiscal status of the KRRC; and

(v) An audited annual financial statement for the KRRC that must include a balance sheet showing all funds, a statement of budgeted and actual income and expenditures, indicating thereon any changes in fund balances, and any appropriate notes of explanation or disclosure.

b. **Status Updates to CPUC.** KRRC shall provide to CPUC Staff periodic updates on at least a semi-annual basis, and more frequently if necessary, regarding the KRRC and the Project, which may be either oral or in writing. KRRC shall make an annual presentation before the CPUC that includes a review of Project activities in the preceding year, relevant financial information, and an overview of Project activities planned for the coming year.

c. **Conflicts of Interest and Gifts.** KRRC shall adopt and maintain a written standard of conduct under which an employee, officer, or agent of the KRRC shall not participate in the selection, award, or administration of a contract if a real or apparent conflict of interest would be involved, unless otherwise consistent with Applicable Law.

Further, KRRC shall adopt and maintain a written standard of conduct under which the officers, employees, and agents of the KRRC shall neither solicit nor accept gratuities, favors, or anything of monetary value from contractors or subcontractors. KRRC may set a different standard for situations in which the gift is an unsolicited item of nominal value.

Finally, KRRC certifies that it has and will maintain and enforce a standard of conduct requiring compliance with the conflict of interest standards set forth above and that provides for disciplinary action to be applied for violations.

d. **Management of Disbursements from California Trust Accounts.** KRRC shall maintain funds disbursed to the KRRC from the California Trust Accounts in one or more interest-bearing demand deposit accounts in a financial institution of high credit quality, with minimal risk of loss to principal at all times, prior to expenditure on Eligible Project Costs as provided in this Agreement.

e. **Notice of Bankruptcy or Receivership.** KRRC shall promptly notify CPUC and provide a copy of any notice or other knowledge the KRRC receives of a bankruptcy or receivership of a contractor or subcontractor engaged for the Project.

## 5. **Business Status.**

a. **Registry.** KRRC has registered as a nonprofit corporation with the California Secretary of State.

- b. **Registry and status as a Charitable Organization.** KRRC has registered as a charitable organization.
- c. **Corporate Dissolution.** KRRC shall take the necessary steps to ensure that when the KRRC is dissolved or its legal existence terminated, either voluntarily or involuntarily, or upon final liquidation of the KRRC, none of its assets shall inure to the benefit of any private individual, and all of its assets remaining after payment of all of its liabilities shall be distributed to one or more organizations which the KRRC Board of Directors then determines is qualified both as an exempt organization under Internal Revenue Code Section 501(c)(3), and as an organization engaged in activities substantially similar to those of the KRRC or return to CPUC as may be required by Section 7.f.

**6. Disbursements for Eligible Project Costs.**

- a. **Trust Accounts.** The Customer Contributions, as they are collected, are held in segregated trust accounts (the "California Trust") established by the CPUC. The Wells Fargo Bank is the current trustee of the Trust. The Customer Contributions derive from surcharges currently being collected by PacifiCorp at rates approved by CPUC, but which may not exceed more than \$13,760,000, as authorized in D.11-05-002. Pursuant to D.12-10-028, this surcharge is to be collected over a period of less than 8 years, starting in 2011.
- b. **Trust Account Management.** CPUC shall manage the California Trust consistent with any account management and coordination agreement as may be jointly approved by the State of Oregon and the State of California. If the CPUC is a party to any such agreement, it shall provide to the KRRC an opportunity to review and comment on any draft account management and coordination agreement before it is finalized.
- c. **Trust Disbursement Directions.** In accordance with the terms and conditions of this Agreement, the CPUC will timely direct the Trustee to disburse funds from the California Trust to the KRRC to pay for Eligible Project Costs.

**7. Use of Funds.** KRRC shall use the Funds for Eligible Project Costs.

- a. **Phase 1 and Phase 2 Costs.** The categories of Eligible Project Costs for Phase 1 and Phase 2 are described in Exhibits A1 and A2, respectively. The total Eligible Project Costs for Phase 1 were \$3,884,580, for which an aggregate of \$4,047,369 was disbursed to the KRRC under the "Phase 1A Grant Agreement" between the KRRC and ODFW and the Funding Agreement between KRRC and OPUC. The total Eligible Project Costs for Phase 2 are estimated to be \$38,075,000 million, of which, as of November 30, 2017, \$9,606,922 has already been disbursed to the KRRC by OPUC under the Funding Agreement between the KRRC and OPUC. Exhibits B1 and B2 include budgets for Phase 1 and Phase 2, respectively.
- b. **Phase 3 Costs.** Ninety days prior to making an initial semi-annual request for disbursements for Phase 3, KRRC will submit to the CPUC an Exhibit A3 (Phase 3 Project Activities) describing categories of Eligible Project Costs for Phase 3 and will also provide Exhibit B3 (Phase 3 Budget) providing a proposed

budget for Phase 3. KRRC must submit, with Exhibit B3, to CPUC, a certification that all of the conditions in Section 7.1.4 of the KHSA have been met or, to the extent any such conditions have not been met as of the date of such certification, an explanation of how the conditions in Section 7.1.4 of the KHSA are expected to be met in a timeframe consistent with continued progress on the Project and with appropriate documentation.

- (i) In the event that at any time actual or foreseeable costs associated with physical performance of Facilities Removal or the combined Project budget for all three Phases is estimated to exceed the State Cost Cap and sufficient additional funding is not available to carry out Facilities Removal, the KRRC:

- (A) Shall promptly initiate the meet and confer process with the parties to the KHSA under Section 7.2.1(5) of the KHSA and diligently pursue resolution of that process;

- (B) Shall not enter any new contractual obligations until the process of meeting and conferring under Section 7.2.1(5) of the KHSA is resolved, unless the Parties agree that it is reasonable, necessary and consistent with the KHSA for the KRRC to enter into one or more additional contracts; and

- (C) Shall promptly notify CPUC it has initiated the meet and confer process, and keep CPUC Staff reasonable apprised of the progress of the KHSA parties towards a resolution.

- (ii) Upon finding that actual or foreseeable costs associated with physical performance of Facilities Removal or the combined Project budget for all three Phases is estimated to exceed the State Cost Cap and sufficient funding is not available to carry out Facilities Removal, KRRC may thereafter, in the regular course, submit one disbursement request under Section 7.f while it is engaged in the process of meeting and conferring with the parties to the KHSA. Before submitting any further disbursement requests while the process of meeting and conferring under Section 7.2.1(5) of the KHSA remains unresolved, KRRC shall meet with the CPUC and present a plan supporting continued disbursements. CPUC may, in its discretion, suspend further disbursements until the meet and confer process is resolved.

- c. **Budget forms.** Exhibit budget forms for each Phase shall identify the projected Project activities for such Phase and how each activity will be completed in Exhibit A, and set forth, in Exhibit B, the estimated Eligible Project Costs associated with each program activity identified in Exhibit A for such Phase, and the originating source of funds to be applied to the aggregate costs, and include or be accompanied by an estimate of the time period within such Phase in which each Exhibit A activity will be conducted. Exhibit budget forms A1, A2, B1 and B2 for Phases 1 and 2, respectively, are attached to this Agreement.

- d. **Minor Modifications of Budget.** The KRRC may, in its reasonable discretion, make minor modifications to the budgets for Phases 1 through 3, including but not limited to reallocating costs within categories in each budget; provided, however, if the KRRC modifies the amount of funds allocated to a category or Phase by an amount that is greater than ten percent then the KRRC will provide an updated Exhibit to the CPUC for its review as specified in the following paragraph (e).
- e. **Major Modifications of Budget.** A major modification of the budget is: (a) any increase in the amount being requested for a particular Phase of more than ten percent, or (b) an increase in the amount being requested for a particular category of expenses of more than fifteen percent. The KRRC shall notify the CPUC when it becomes aware of a need for a major modification of a budget and provide CPUC with a revised Exhibit B and a certification that such a major modification is necessary for Facilities Removal.
- f. **Disbursement Requests.**
- (i) The KRRC will make requests for disbursements to the CPUC on a semi-annual basis by submitting a disbursement request (in both hard and electronic formats) in the form and containing the information required on Exhibit D (Disbursement Request Form). The Disbursement Request Form shall be submitted to the CPUC Executive Director and Energy Division Director. The following supporting documentation shall be submitted along with the Disbursement Request Form:
- (A) the projected Project activities to be performed and the estimated Eligible Project Costs associated with each activity;
- (B) an expenditure report showing the expenses incurred during the prior semi-annual period, which report may be a pro forma expenditure report, provided that such pro forma report is updated with a finalized expenditure report when all necessary information is available;
- (C) a certification from the KRRC that the request is for payment of Eligible Project Costs included in the budget that the KRRC expects to incur for the Project activities to be completed by the KRRC or under subagreement during the period within 210 days after the date of the request. The certification shall also certify that no material authorization, consent, license, approval of, filing or registration with or notification to any governmental body or regulatory or supervisory authority is required for the Project activities to be completed by the KRRC or under subagreement during the period within 210 days after the request. If the KRRC cannot make such a certification, KRRC shall explain how any outstanding material authorization, consent, license, approval of, filing or registration with or notification to any governmental body or regulatory or supervisory authority not yet obtained or given, as applicable, that is required for the Project activities is expected to be met in a timeframe consistent with Project activities to be conducted within 210 days and provide appropriate documentation.

(D) a certification that all expenditures will only be used for Ratepayer Benefit.

(ii) The KRRC will, contemporaneously with its request to the CPUC, make a corresponding request to the OPUC, to the extent appropriate. CPUC acknowledges that KRRC's initial disbursement request will include reimbursement for CPUC's share of Phase 1 and Phase 2 Eligible Project Costs previously incurred and funded by advances from other sources.

**g. Proportional Disbursements.** The Parties understand and agree that 8% of the Customer Contribution funds for the Project will be disbursed from the California Trust, except however, in no event will the total funding from the California Trust and the Oregon Trust exceed \$200 million. CPUC's direction to disburse funds from the California Trust shall not be subject to a corresponding disbursement from the Oregon Trust, unless expressly required by any account management and coordination agreement as may be jointly approved by the State of Oregon and the State of California.

**h. Action on Disbursement Requests.**

(i) Except as provided in Section 7.b, disbursement requests will be processed by the CPUC within 14 working days after receipt of the disbursement request if the disbursement request includes all of the information required under Section 7.f.

(ii) The Energy Division Director, or his/her designee, shall review all Disbursement Request Forms for the purpose of confirming that:

(A) the disbursement request is to fund Project activities identified in the applicable Exhibit A for the for the applicable Project Phase;

(B) the Funds requested, in combination with Funds already disbursed for the identified Phase, do not exceed the budgeted amount for a particular Phase by more than ten percent.

(iii) Upon determination that the requirements of clause (ii) above are met, the Energy Division Director, or his/her designee, shall promptly notify the Executive Director that the funds may be released. In the event that the Energy Division Director, or his/her designee, has reasonably determined that the foregoing requirements have not been met with respect to any portion of the Funds requested, then the Energy Division Director, or his/her designee, shall promptly notify KRRC in writing and in reasonable detail of the reason for such determination. In the event KRRC disagrees with such determination it shall provide such further information as it may elect, it being the intent that the Parties shall thereafter reasonably and promptly cooperate with each other to resolve any such disagreement, at which point the Executive Director shall direct the release of the applicable Funds.



**i. Recovery of Funds.**

- (i) KRRC shall provide annually its audited financial statements by a third party in accordance with Section 12.c. of this Agreement. These statements shall include a balance sheet showing all funds, a statement of budgeted and actual income and expenditures, indicating thereon any changes in fund balances, and any appropriate notes of explanation or disclosure. The Executive Director, or his/her designee, shall have 60 days to review the audited financial statements and notify the KRRC in writing, of all concerns regarding the disbursement of funds in the prior year. KRRC shall address these concerns/proposed adjustments in writing to the Executive Director or his/her designee within 30 days or such longer period of time as may be necessary, with reasonable diligence, to do so. The Executive Director or his/her designee shall notify the KRRC in writing within 10 days after receipt of KRRC's response of any remaining concerns and whether any proposed adjustments should be made. The Executive Director and KRRC shall thereafter reasonably cooperate to address any remaining concerns of the Executive Director. In the event that notwithstanding such cooperation all matters have not been resolved within 30 days after the Executive Director's notice then the Executive Director shall notify the KRRC in writing of its final determination regarding its concerns. A copy of this communication shall be sent to the Energy Division Director or his/her designee and the service list of Application 10-03-015.
- (ii) Any funds disbursed to KRRC that remain unexpended on the earlier of the completion of Facilities Removal, termination or expiration of this Agreement ("Unexpended Funds") or that remain unexpended due to the suspension of disbursement requests under Section 7.b of this Agreement for a period of two years or longer must be returned to the CPUC upon its request. Unexpended Funds shall not include funds set aside for ongoing monitoring following facilities removal or other similar activities as may be required under the Definite Plan or as a condition of a license or permit required for the Project. Recipient shall return all Unexpended Funds and associated interest to the CPUC within 15 days after the earlier of expiration or termination of this Agreement, or upon the demand of the CPUC following the suspension of disbursement requests for a period of two years or longer, consistent with this Section.

**8. Final Reporting.** Within six months of the completion of Facilities Removal, the KRRC will file a final report (the "Final Report") with the CPUC. The Final Report must include a summary of all Project costs compared to the Project Budget, together with reasonable supporting documentation that evidences KRRC's expenditure of the funds disbursed from the California Trust. The Final Report shall include a summary of the Project as completed as well as an explanation for any Project cost variances that are greater than 10 percent from the Project Budget. The Final Report shall also document the amount of funding received from OPUC and the California Natural Resources Agency.

9. **Conditions Precedent.**

- a. **Conditions Precedent to the CPUC's Obligations.** The CPUC's obligations under this Agreement are subject to the receipt by the CPUC of the following item, all in form and substance satisfactory to the CPUC and its counsel:
- (i) A copy of the resolution of the KRRC's board of directors authorizing the execution and delivery of this Agreement and performance by KRRC of its obligations hereunder.
- b. **Conditions to Disbursement.** CPUC's obligation to disburse any of the Funds to KRRC is subject to the following conditions.
- (i) **Disbursement Request.** The KRRC has filed a disbursement request with the CPUC, consistent with section 7.f, above.
  - (ii) **Availability of Funds.** Sufficient funds are currently deposited in the California Trust to fulfill the CPUC's obligation to disburse funds under this Agreement.
  - (iii) **No Default.** No event of default has occurred or is occurring.
  - (iv) **Representations.** KRRC's representations and warranties set forth in Section 10 hereof are true and correct in all material respects on the date of disbursement with the same effect as though made on the date of disbursement.

10. **Representations, Warranties and Covenants of KRRC.**

- a. **KRRC Representations, Warranties.** KRRC makes the following representations and warranties to the CPUC.
- (i) **Organization and Authority.** KRRC is a duly organized and validly existing nonprofit public benefit corporation under the California Corporations Code. KRRC has full power, authority, and legal right to make this Agreement and to incur and perform its obligations hereunder; and the making and performance by KRRC of this Agreement (1) have been duly authorized by all necessary action of KRRC, (2) do not and will not violate any provision of any applicable law, rule, regulation, or order of any court, regulatory commission, board, or other administrative agency or any provision of KRRC's organizational documents, and (3) do not and will not result in the breach of, or constitute a default or require any consent under, any other agreement or instrument to which KRRC is a party or by which KRRC or any of its properties may be bound or affected. No authorization, consent, license, approval of, filing or registration with or notification to any governmental body or regulatory or supervisory authority is required for the execution, delivery or performance by KRRC of this Agreement. Certain additional authorizations, consents, licenses, approvals of, filings or registrations

with or notifications to a governmental body or regulatory or supervisory authority shall be required for certain Project activities.

- (ii) **Binding Obligation.** This Agreement has been duly executed and delivered by KRRC and, when executed and delivered by the CPUC, constitutes a legal, valid and binding obligation of KRRC, enforceable in accordance with its terms, subject to the application of bankruptcy, insolvency or similar laws relating to the rights of creditors generally and general principles of equity.

- b. **KRRC's Inspections; Information.** During the term of this Agreement, KRRC shall permit the CPUC, at any reasonable time and with reasonable notice, to inspect and make copies of any accounts, books and records, including, without limitation, its records regarding receipts, disbursements, contracts, investment of Funds, if any, and any other matters related to the use of Funds or the Project. The KRRC shall supply related reports and information relating to the Project as the CPUC may reasonably require. The KRRC shall promptly respond to requests for information and provide an explanation regarding submissions to the CPUC upon its request.

**11. Representations, Warranties and Covenants of CPUC.** CPUC makes the following representations and warranties to the KRRC.

- a. CPUC is a constitutional agency of the State of California.
- b. CPUC has all necessary right, power, authority, approvals and consents under its applicable enabling statutes, or other California law to (a) execute and deliver this Agreement, and (b) incur and perform its obligations under this Agreement.
- c. This Agreement has been duly authorized by a vote, resolution or other act of the Commissioners of the CPUC, is executed by an authorized representative of CPUC, and is legal, valid and binding, and enforceable in accordance with its terms without the need for any further vote, resolution or act of the CPUC or its Commissioners.

**12. Records Maintenance and Access; Audit Requirements.**

- a. **Records Maintenance and Access.** KRRC shall make and retain proper and complete books of record, and account and maintain all fiscal records related to this Agreement, the Funds, and the Project in accordance with all applicable generally accepted accounting principles. KRRC shall create and maintain all expenditure records in sufficient detail in such a manner as to clearly document KRRC's performance and to permit the CPUC and the KRRC's third party auditor to verify how the Funds were expended. The State of California, the CPUC and their duly authorized representatives shall have access to the books, documents, papers and records of KRRC that are directly related to this Agreement, the funds provided hereunder, or the Project for the purpose of making audits and examinations. In addition, CPUC and its duly authorized representatives may make and retain excerpts, copies, and transcriptions of the foregoing books, documents, papers, and records. KRRC shall permit authorized

representatives of the CPUC to perform site reviews of the Project as needed to determine compliance with the terms of this Agreement.

- b. **Retention of Records.** KRRC shall retain and keep accessible all books, documents, papers, and records that are directly related to this Agreement, the Funds, or the Project for a minimum of six (6) years, or such longer period as may be required by other provisions of this Agreement or applicable law, following the termination of this Agreement. If there are unresolved disputes or audit questions at the end of the retention period, KRRC shall retain the records until the disputes or questions are resolved. These records will be made available, without restriction, to both the CPUC and California Secretary of State.
- c. **Audit Requirements.** KRRC must retain the services of a professional third-party audit firm to conduct a financial audit of all expenditures of the Funds made by KRRC on an annual basis and provide to the CPUC, not later than 90 calendar days after the end of each calendar year, beginning in 2017, a true and correct copy of the auditor's final report. Each audit must apply Generally Accepted Accounting Principles. KRRC shall cooperate with all requests from the auditor for data and other related requests from the auditor. Disputed points not resolved between KRRC and the auditor, and any exceptions from, qualifications of, or exclusions from the audit must be noted in the final audit report. KRRC shall include third-party audit expenses as appropriate in expense and budget forms submitted under Sections 7.a. and 7.b.

### 13. **KRRC Subagreements.**

- a. **Subagreements.** KRRC may enter into agreements with sub-recipients, contractors, subcontractors, consultants, advisors, agents, representatives and other providers of services or materials (collectively, "subagreements") reasonably necessary or desirable for performance of the Project, including agreements with an executive director and other staff or employees of KRRC. Notwithstanding the foregoing, the use of a subagreement shall not relieve KRRC of its responsibilities under this Agreement.
- b. **Procurement standards and policies.** KRRC shall adopt, maintain, provide to CPUC, and comply with written standards of conduct and appropriate policies governing the performance of its employees, agents, consultants, directors, officers or contractors engaged in the award and administration of subagreements.
  - (i) All such standards and policies shall implement and be consistent with the following goals:
    - (A) optimizing the cost, efficiency, timing, expertise and quality of work performed under subagreements;
    - (B) effectively executing the Project; and
    - (C) maintaining consistency with industry standards.

(ii) Such standards and policies shall include a competitive process for all primary subagreements for the design or execution of physical removal of facilities and associated site remediation activity under the Project ("Major Subagreements"). Upon selection of a competitive process to be used to award a Major Subagreement, KRRC shall notify CPUC of the subject matter, selected process, and provide an explanation as to how the selected process meets the goals listed in Section 13.b.i of this Agreement. KRRC shall provide CPUC with a substantially final form of the solicitation materials for each Major Subagreement sufficiently prior to issuance as to allow for CPUC review, in no event less than 15 business days.

- c. Any breach of a term or condition of a Major Subagreement relating material misapplication, misexpenditure or loss of Funds must be reported by KRRC to CPUC within ten (10) days of its being discovered by KRRC.
- d. **Insurance.** KRRC shall cause the other party, or parties, to each of its Major Subagreements to obtain and maintain insurance of the types set forth in Section 14(b) and in commercially reasonable amounts.

#### **14. Indemnity; Insurance.**

- a. **Indemnity.** KRRC and CPUC acknowledge and agree that the indemnity provided in Section 7.1.3 of the KHSa shall be applicable to this Agreement.

Neither KRRC, nor any attorney engaged by KRRC shall defend any Claim in the name of the State or any agency of the State of California, nor purport to act as legal representative of the State of California or any of its agencies, without the prior written consent of the California Attorney General. The CPUC may, at any time at its election, assume its own defense and settlement in the event that it determines that KRRC is prohibited from defending State or that KRRC is not adequately defending State's interests, or that an important governmental principle is at issue or that it is in the best interests of State to do so. CPUC reserves all rights to pursue claims it may have against KRRC if State elects to assume its own defense.

- b. **Insurance.** KRRC shall maintain, or cause to be maintained, insurance policies with responsible insurers or self-insurance programs, insuring against directors' and officers' liability and sufficient to insure the Project. KRRC shall provide a summary of any insurance coverage to the CPUC within ten days following the effective date of this agreement and upon the execution of any additional insurance agreements. KRRC shall include CPUC (i) as an additional insured on its liability insurance coverages and (ii) as a loss-payee on its property insurance and on any performance bonds, or letters of credit taken out to insure performance of the Project, provided, however, that for so long as this Agreement is in effect and no Event of Default exists, CPUC shall have no claim to any proceeds of property insurance, performance bonds or letters of credit that are recovered in respect of Eligible Project Costs and that KRRC applies or intends to apply toward Eligible Project Costs in connection with the completion or restoration following any casualty of the Project. Proceeds of any of the foregoing that are not eligible or expected to be applied to Eligible Project Costs by KRRC, if any,

shall be paid to CPUC in trust for contributing PacifiCorp customers in proportion to any disbursement of Funds previously directed by CPUC and in proportion to other funding sources that are also loss-payees.

- c. **Survival.** Following any termination of this Agreement, for so long as KRRC has an ownership interest in the Project site, KRRC shall maintain, or cause to be maintained commercially reasonable insurance that will name CPUC as additional insured or loss-payee as its interests may appear.

## **15. Compliance with Laws.**

- a. **Compliance with Laws.** KRRC shall comply with all Applicable Law, including, to the extent such laws are applicable without being a requirement of this agreement:
  - (i) (A) Title VI of Civil Rights Act of 1964; (B) Title V and Section 504 of the Rehabilitation Act of 1973; (C) the Americans with Disabilities Act of 1990; (D) all regulations and administrative rules established pursuant to the foregoing laws; and (E) all other applicable requirements of federal and state civil rights and rehabilitation statutes, rules and regulations.
  - (ii) (A) if applicable, prevailing wage rate requirements set forth in 40 U.S.C. 3141 et seq. ("Davis-Bacon Act"), and (B) if the Project is subject to the Davis-Bacon Act, the requirement that require its contractors and subcontractors to comply with the Davis-Bacon Act.
- b. KRRC agrees to contract with, and require any subrecipients to contract with, competent, properly licensed and bonded contractors and professionals for the performance of the Project.
- c. All subagreements that KRRC may enter which are funded wholly or in part with the Funds must be subcontractual in nature, with the other party engaged in the role of a subcontractor. KRRC will administer all contracts with its subcontractors to ensure compliance by any subcontractors with the terms of this Agreement with respect to requirements that flow through to subcontractors.

## **16. Termination; Default**

- a. **Termination by CPUC.** CPUC may terminate this Agreement effective upon delivery of written notice of termination to KRRC, or at such later date as may be established by CPUC in such written notice, only if:
  - (i) A change in law makes performance or completion of Facilities Removal in compliance with the KHSA no longer possible; or
  - (ii) The occurrence and continuance of an Event of Default as provided below.
- b. **Event of Default.** The occurrence of any of the following listed events shall constitute an Event of Default under this Agreement:

- (i) Any material representation is made by KRRC in this Agreement or in any document provided by or on behalf of KRRC related to this Agreement or the Project that is false or misleading in any material respect when made; or
  - (ii) A petition, proceeding or case is filed by or against KRRC (for purposes of this section, "Debtor") under any federal or state bankruptcy or insolvency law, and in the case of a petition filed against the Debtor, the Debtor acquiesces to such petition or such petition is not dismissed within 90 calendar days after such filing; Debtor files a petition seeking to take advantage of any other law relating to bankruptcy, insolvency, reorganization, liquidation, dissolution, winding-up or composition or adjustment of debts; Debtor admits in writing its inability to pay its debts as they become due, or makes an assignment for the benefit of its creditors; Debtor applies for or consents to the appointment of, or taking of possession by, a custodian (including, without limitation, a receiver, liquidator or trustee) of Debtor or any substantial portion of its property; or Debtor takes any action for the purpose of effecting any of the above; or
  - (iii) KRRC fails to perform any material obligation required under this Agreement and that failure continues for a period of 30 calendar days after written notice specifying such failure is given to KRRC by CPUC, except with respect to any shorter period expressly provided in this Agreement, provided that so long as KRRC is diligently seeking to cure such failure to perform such 30 day period shall be extended.
- c. **Remedies.** Upon the occurrence and continuance of an Event of Default, and dispute resolution under section 18.a is not successful in a timely manner, the CPUC may, at its option, pursue any or all of the following remedies:
- (i) Ceasing disbursement of Funds under this Agreement until the Event of Default has been cured or the Agreement is terminated;
  - (ii) Terminating this Agreement with KRRC;
  - (iii) Bringing an action at law or filing a claim in a court with jurisdiction to recover damages incurred as a result of the Event of Default, in order to recover Funds disbursed to the KRRC hereunder, with interest thereon, that have not been expended on Eligible Project Costs prior to an event of default or that were misexpended;
  - (iv) Seeking any equitable remedies, including specific performance, which may be available to the CPUC; and
  - (v) Pursuing any rights as loss payee on insurance or as payee on a performance bond, letter of credit or any similar performance or payment guarantor, if any.

- d. **No Termination by KRRC.** KRRC may not terminate this Agreement unless the KHSA has been terminated or the Project has been abandoned, terminated, or is otherwise unable to proceed.

**17. California Trust is Sole Source of Funding.** The California Trust is the sole source of funding for this Agreement, with respect to funding from California, and KRRC shall have no recourse to, and the CPUC shall have no obligation to pay, any amounts under this Agreement from moneys deposited in the State Treasury, including but not limited to the General Fund; nor will the CPUC have any obligation to seek an appropriation or other expenditure authority from the Oregon Legislative Assembly in the event there are insufficient moneys in the California Trust.

**18. General Provisions.**

- a. **Dispute Resolution.** The Parties shall attempt in good faith to resolve any dispute arising out of this Agreement. In addition, the Parties may agree to utilize a jointly selected mediator or arbitrator (for non-binding arbitration) to resolve the dispute short of litigation.
- b. **Amendments.** This Agreement may be amended or extended only by a written instrument signed by both Parties and, in the case of amendments relating to the amount or application of the Funds, approved by a vote of the Commissioners of the CPUC. For the avoidance of doubt, a vote of the Commissioners shall not be required for extensions of time, contract administration matters, or to waive any provision of this Agreement.
- c. **No Third Party Beneficiaries.** CPUC and KRRC are the only Parties to this Agreement and are the only Parties entitled to enforce its terms. Nothing in this Agreement gives, is intended to give, or shall be construed to give or provide any benefit or right, whether directly or indirectly, to a third person unless such a third person is individually identified by name herein and expressly described as an intended beneficiary of the terms of this Agreement.
- d. **Notices.** Except as otherwise expressly provided in this Agreement, any communications between the Parties hereto or notices to be given hereunder shall be given in writing by personal delivery, facsimile, email, or mailing the same, postage prepaid, to KRRC Contact or CPUC Contact at the address or number set forth on the signature page of this Agreement, or to such other addresses or numbers as either Party may hereafter indicate pursuant to this Section 18.d. Any communication or notice personally delivered shall be deemed to be given when actually delivered. Any communication or notice delivered by facsimile shall be deemed to be given when receipt of the transmission is generated by the transmitting machine, and to be effective against CPUC, such facsimile transmission must be confirmed by telephone notice to CPUC Contact. Any communication by email shall be deemed to be given when the recipient of the email acknowledges receipt of the email. Any communication or notice mailed shall be deemed to be given when received.



**e. Choice of Law; Designation of Forum; Federal Forum.**

- (i) The laws of the State of California (without giving effect to its conflicts of law principles) govern all matters arising out of or relating to this Agreement, including, without limitation, its validity, interpretation, construction, performance, and enforcement.
- (ii) Any Party bringing a legal action or proceeding against any other Party arising out of or relating to this Agreement shall bring the legal action or proceeding in the Circuit Court of the State of California for the County of San Francisco. Each Party hereby consents to the exclusive jurisdiction of such court, waives any objection to venue, and waives any claim that such forum is an inconvenient forum.
- (iii) Notwithstanding the prior paragraph, if a claim must be brought in a federal forum, then it must be brought and adjudicated solely and exclusively within the United States District Court for the Northern District of California. This paragraph applies to a claim brought against the State of California only to the extent Congress has appropriately abrogated the State of California's sovereign immunity, and is not consent by the State of California to be sued in federal court. This paragraph is also not a waiver by the State of California of any form of defense or immunity, including but not limited to sovereign immunity and immunity based on the Eleventh Amendment to the Constitution of the United States.

**f. Survival.** The following sections or subsections of this Agreement shall survive the Expiration Date and any earlier termination of this Agreement: Sections 7.b, 7.h, 7.i, 7.j, 8, 12, 14.a, 16.c, 18.a, 18.d, 18.e, 18.f, 18.h and 18.l and any other section or provision that by its terms is stated to survive.

**g. Severability.** If any term or provision of this Agreement is declared by a court of competent jurisdiction to be illegal or in conflict with any law, the validity of the remaining terms and provisions shall not be affected, and the rights and obligations of the Parties shall be construed and enforced as if this Agreement did not contain the particular term or provision held to be invalid.

**h. Counterparts.** This Agreement may be executed in two or more counterparts (by facsimile or otherwise), each of which is an original and all of which together are deemed one agreement binding on all Parties, notwithstanding that all Parties are not signatories to the same counterpart.

**i. Integration and Waiver.** This Agreement and the KHSa, as they may be amended from time to time, including all Exhibits, constitute the entire agreement between the Parties on the subject matter hereof. There are no understandings, agreements, or representations, oral or written, not specified herein regarding this Agreement. The delay or failure of either Party to enforce any provision of this Agreement shall not constitute a waiver by that Party of that or any other provision.

- j. **KHSA.** This Agreement is intended to facilitate the implementation of the KHSA. Nothing in this Agreement shall be construed in a way that is inconsistent with or conflicts with the terms of the KHSA. In the event of any such conflict or inconsistency the applicable terms shall be deemed waived or modified to the extent necessary to comply with the requirements of the KHSA insofar as the KHSA's requirements are consistent with law.
- k. **Non-Disclosure Agreements.** Nothing in this Agreement shall be construed as requiring KRRC to violate any confidentiality, non-disclosure agreement or similar agreement.
- l. **Coordination with Other Funding Sources.** CPUC acknowledges that pursuant to the KHSA, the Project will have several sources of funds and agrees to reasonably cooperate with the other Project funding sources as reasonably requested by KRRC. In the event conflicting positions or interpretations with respect to any matter or Approval among the Project's funding sources, CPUC agrees to meet and confer with such other funding sources and to make good faith efforts to promptly resolve any such disputes or conflicts. The pendency of any such dispute or conflict and any resulting delay or other impact on the Project shall be deemed to be beyond KRRC's control and shall not be a breach of this Agreement or give rise to an Event of Default.

**THE PARTIES**, by execution of this Agreement, hereby acknowledge that each Party has read this Agreement, understands it, and agrees to be bound by its terms and conditions.

SIGNATURE PAGE TO FOLLOW

**Klamath River Renewal Corporation**

By

Name:

(printed)

Title:

Date

**California Public Utilities Commission**

By

Name:

(printed)

Title

Date

**KRRC Contact:**

Name:

Mark Bransom

Title:

Executive Director

Address:

423 Washington St. 3rd Floor

Address:

San Francisco, CA 94111

Phone:

510 914-4199

Email:

mark@klamathrenewal.org

**CPUC Contacts:**

Name: Timothy Sullivan

Title: Executive Director

Address: California Public Utilities Commission

505 Van Ness Avenue

San Francisco, CA 94102

Phone: 415-703-3472

Email: timothy.sullivan@cpuc.ca.gov

Name: Edward Randolph

Title: Director, Energy Division

Address: California Public Utilities Commission

505 Van Ness Avenue

San Francisco, CA 94102

Phone: 415-703-2083

Email: edward.randolph@cpuc.ca.gov

**Klamath River Renewal Corporation**

**California Public Utilities Commission**

By \_\_\_\_\_

By Timothy J Sullivan

Name: \_\_\_\_\_  
(printed)

Name: Timothy J. Sullivan  
(printed)

Title: \_\_\_\_\_

Title Executive Director

Date \_\_\_\_\_

Date December 13, 2017

**KRRC Contact:**

Name: Mark Bransom  
Title: Executive Director  
Address: 423 Washington St. 3rd Floor  
Address: San Francisco, CA 94111  
Phone: 510 914-4199  
Email: mark@klamathrenewal.org

**CPUC Contacts:**

Name: Timothy Sullivan  
Title: Executive Director  
Address: California Public Utilities Commission  
505 Van Ness Avenue  
San Francisco, CA 94102  
Phone: 415-703-3472  
Email: timothy.sullivan@cpuc.ca.gov

Name: Edward Randolph  
Title: Director, Energy Division  
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505 Van Ness Avenue  
San Francisco, CA 94102  
Phone: 415-703-2083  
Email: edward.randolph@cpuc.ca.gov

**EXHIBIT A1**  
**PHASE 1 ACTIVITIES**

*[See following page]*

**EXHIBIT A1**  
**PHASE 1 ACTIVITIES**

**1. Start-up Costs of the KRRC -- Establish and administer personnel, office and budget**

- A. KRRC will hire, as employees or independent contractors, personnel to perform the duties of its executive director and such other organizational functions as are necessary to operate and to perform its obligations under the amended KHSA and any other agreements to which KRRC is a party. Such personnel will include personnel with the expertise in the appropriate technical, legal, financial management and other disciplines.
- B. KRRC will continue to take such other measures as are reasonably necessary or convenient for the commencement of its operations and the performance of its obligations under the amended KHSA and otherwise in connection with the Project.

**2. Risk Management & Insurance**

- A. KRRC will obtain and maintain commercially reasonable insurance, including Directors' and Officer's liability insurance and such other insurance as is required of it by law or any agreements to which KRRC is a party.
- B. KRC will work with a qualified insurance management company to assess and execute the necessary insurance products to minimize risks for the Project.

**3. Undertake certain Regulatory Actions**

- A. At the Federal Energy Regulatory Commission, monitor and provide information as requested on the Transfer and Surrender applications, filed on September 23, 2016.
- B. Work with the California Water Resources Control Board and the Oregon Department of the Environmental Quality to ensure timely consideration of and ultimate approval of the KRRC's application submitted under the provisions of the Section 401 of the federal Clean Water Act.
- C. Begin consultations with other environmental agencies that may have jurisdiction over KRRC's performance of its obligations under the amended KHSA, including environmental agencies, tribal nations and local and regional governmental authorities.

**4. Undertake Preparation work for the Definite Plan**

- A. Hire a firm to serve as the KRRC's Technical Representative to guide the preparation of the Definite Plan.
- B. Develop and begin the implementation of an integrated work plan to guide the legal, policy and technical aspects of the preparation of the Definite Plan and refine the KRRC's budget estimates accordingly.

**EXHIBIT A2**  
**PHASE 2 ACTIVITIES**

*[See following page]*

**EXHIBIT A2**  
**PHASE 2 ACTIVITIES**

**1. Regulatory Approvals**

- A. The KRRC will diligently work to receive critical regulatory approvals:
  - i. From the Federal Energy Regulatory Commission approval of the dam transfer application and initial work of the surrender application.
  - ii. From the California State Resources Water Control Board and the Oregon Department of Environmental Quality for Section 401 water quality certifications.
  - iii. All other necessary approvals from governmental agencies.

**2. Technical Preparation for Dam Removal**

- A. Continuing work with the KRRC's Technical Representatives to complete necessary studies and analyses to support the creation of the Definite Plan and all regulatory approvals necessary for dam removal.
- B. Analyze various options to structure the dam removal process and consult with our funders and other stakeholders about the best way to proceed.
- C. Upon approval of the KRRC Board and funders, develop a selection process and criteria to choose the dam removal contractor or contractors.
- D. Negotiate final contract with selected contractor or contractors to carry out the dam removal.

**3. Dam Removal**

- A. Dam removal contractor or contractors will work with KRRC to fashion critical path management programs, along with options and budget implications of each. Final pathway will be selected in 2019 setting the course for dam removal in 2020.

**4. Stakeholder & Community Engagement**

- A. Continue engagement with KHSa signatories, Tribal Nations, stakeholders and interested parties through meetings, briefings and web communications.

**5. Project/Program Management**

- A. Ensure integrated workplan and budget are aligned and revised as necessary to promote efficient and timely dam removal.



## **6. Board & Corporation Management**

- A. Continue robust Corporation governance, decision-making processes and Board meetings.
- B. Ensure that all Board policies are up to date, reviewed and re-adopted as necessary, and that the Internal Revenue Service and any other state requirements are met as required.

## **7. Administrative, Financial & HR Management**

- A. Hire additional staff and contractors necessary to complete the KRRC's mission in a timely fashion.
- B. Ensure the Board and funders have timely and accurate financial information.
- C. Staff and Corporation's Treasurer to prepare and implement the FY 2018-19 annual operating and capital budget.
- D. Ensure the necessary audits of financial operations are prepared, approved and circulated to funders and the public alike.
- E. Annually review personnel and other HR policies to ensure they meet or exceed all requirements.

## **8. Risk Management**

- A. Continue to fully integrate our risk management advisors into the program planning and dam removal contractor procurement to ensure risks are properly assessed and managed through insurance products and other principles.

**EXHIBIT B1**  
**PHASE 1 PROJECT BUDGET**

*[See following page]*

**EXHIBIT B1  
PHASE 1**

**Klamath River Renewal Corporation  
Phase 1 Operating Budget (by 6 month period)**

Accrual based	July 1, 2016-June 30, 2017 Phase One		
	2016 Jul-Dec	2017 Jan-Jun	TOTAL
<b>Revenues</b>			
Oregon	350,641	2,806,575	3,157,216
California	509,561	216,052	725,613
Other	1,750		1,750
<b>Total Revenues</b>	<b>861,953</b>	<b>3,022,627</b>	<b>3,884,580</b>
<b>Expenses</b>			
Compensation & Benefits	-	29,017	29,017
Travel and Meetings	32,411	29,387	61,798
Agency Fees and Reimbursements	12,556	405,914	418,470
Technical Services			
Owners Technical Representative (AECOM)		1,118,596	1,118,596
Professional Services	788,182	1,384,603	2,172,786
Insurance & Risk Management	9,543	28,136	37,679
Admin: IT/Facilities/ Supplies/Printing/Taxes/Fees	19,260	26,974	46,234
Contingency (15%)			-
<b>Total Expenses</b>	<b>861,952</b>	<b>3,022,628</b>	<b>3,884,580</b>

\* The Budget for the purposes of this agreement represents actual expenses incurred; all numbers are pending final audits.

**EXHIBIT B2**  
**PHASE 2 PROJECT BUDGET**

*[See following page]*

EXHIBIT B2  
PHASE 2

**Klamath River Renewal Corporation**  
**Phase 2 Operating Budget (by 6 month period)**

Accrual based	July 1, 2017-December 31, 2018 Phase Two			
	2017 Jul-Dec	2018 Jan-Jun	2018 Jul-Dec*	TOTAL
<b>Revenues</b>				
Oregon PUC	10,540,500	8,060,200	16,428,100	35,028,800
California PUC	916,600	701,000	1,428,600	3,046,200
<b>Total Revenues</b>	<b>11,457,100</b>	<b>8,761,200</b>	<b>17,856,700</b>	<b>38,075,000</b>
<b>Expenses</b>				
<b>Compensation &amp; Benefits</b>	290,000	317,000	317,600	924,600
<b>Travel and Meetings</b>	64,800	71,300	98,500	234,600
<b>Agency Fees and Reimbursements</b>				
Oregon Department of Environmental Quality	36,000	36,000	36,000	108,000
CA State Water Resources Control Board	15,000	15,000	15,000	45,000
Still Water Sciences (SWRCB)	411,000	173,000	244,000	828,000
Other Environmental Studies	250,000	250,000	250,000	750,000
<b>Technical Services</b>				
Owners Technical Representative (AECOM)	6,553,200	4,368,900	5,679,800	16,601,900
<b>Dam Removal Contractor</b>			6,000,000	6,000,000
<b>Professional Services</b>				
CEA Services & Expenses	655,900	437,200	437,200	1,530,300
Legal Services				
General Counsel	490,000	490,000	490,000	1,470,000
Construction Counsel	650,000	750,000	300,000	1,700,000
Environmental/Regulatory Counsel	227,500	227,500	227,500	682,500
Accounting and Audit Fees	60,900	22,100	51,200	134,200
Risk Management Services	12,600	17,400	17,500	47,500
Communications External Services	150,000	100,000	100,000	350,000
<b>Insurance &amp; Risk Management</b>	33,600	298,400	1,192,800	1,524,800
<b>Admin: IT/Facilities/ Supplies/Printing/Taxes/Fees</b>	64,600	44,400	74,600	183,600
<b>Contingency (15%)</b>	1,492,000	1,143,000	2,325,000	4,960,000
<b>Total Expenses</b>	<b>11,457,100</b>	<b>8,761,200</b>	<b>17,856,700</b>	<b>38,075,000</b>

\* The July 1-Dec 31, 2018 period of the Phase 2 budget will be considered and approved by the Board of Directors in June 2018.

\\klamathrenewal.sharepoint.com@SSL\DawWWWRoot\Shared Documents\Admin and Operations\KRRC Budget Development\2017-18\OPUC Phase 2 budget 100217.xlsxExhibit B 2a

**EXHIBIT C**  
**[RESERVED]**

**EXHIBIT D**  
**Disbursement Request Form**

Date: \_\_\_\_\_

Attn: \_\_\_\_\_

Address: \_\_\_\_\_

Phone: \_\_\_\_\_

Email: \_\_\_\_\_

Re: Disbursement for Klamath Dam Removal Funding Agreement (the "Agreement") Phase \_\_\_\_\_

The Klamath River Renewal Corporation requests the Public Utility Commission to submit a request for disbursement from the Customer Contribution Trust Accounts pursuant to D.17-11-019 in the amount of \$ \_\_\_\_\_ as outlined below:

Phase	Project Activity		Eligible Project Costs	Amount Requested

Attached to this Disbursement Request Form are the supporting documents for this request as required by Section 7(f) of the Agreement.

Disbursement shall be made through wire transfers to the following:

Recipient Name: \_\_\_\_\_

Wire Transfer Acct. #: \_\_\_\_\_

Bank Name: \_\_\_\_\_

ABA #: \_\_\_\_\_

For Benefit of: \_\_\_\_\_

FBO Acct #: \_\_\_\_\_

Attn: \_\_\_\_\_

Phone #: \_\_\_\_\_

**KLAMATH RIVER RENEWAL CORPORATION**

By: \_\_\_\_\_  
Signature

Name & Title (print): \_\_\_\_\_

**Exhibit D-8**

**California Natural Resources Agency Funding Agreements**

**October 2016; December 2018**



STATE OF CALIFORNIA

THE NATURAL RESOURCES AGENCY  
GRANT AGREEMENT

Funding for Water Quality, Supply, Treatment, and Storage Projects of 2014 (Proposition 1)

GRANTEE NAME: KLAMATH RIVER RENEWAL CORPORATION

PROJECT TITLE: RESTORING THE KLAMATH RIVER: KLAMATH RIVER DAM REMOVAL PROJECT

AGREEMENT: P11601-0

PROJECT DESCRIPTION

**Project:** Phased plan to fund the implementation of the Klamath Hydroelectric Settlement Agreement (KHSa) and all amendments thereto, attached as Exhibit A. Specifically, pursuant to the KHSa the State of California, acting through the California Natural Resources Agency (State), has agreed to fund removal of four dams commonly referred to as follows: - J.C. Boyle, Copco 1, Copco 2, and Iron Gate - and associated restoration and mitigation projects (collectively referred to as the Klamath Facilities). Grantee is the "Dam Removal Entity" provided for and created pursuant to the KHSa for the sole purpose of implementing the dam removal as contemplated under the KHSa. Removal may include the Grantee's operating costs, planning costs, direct costs of deconstruction, as well as all associated costs including the purchase and maintenance of appropriate insurance and indemnification policies,. A more detailed, non-exclusive, list of eligible costs is identified in this Agreement. By agreeing to the terms of this Grant, Based on the KHSa, Grantee attests that if the Grant Funds are received and the project is carried out, the project will provide improved restoration of the Klamath River for a minimum period of **fifteen (15) years**. While this agreement fully encumbers **\$249,500,000** allocated and appropriated for this purpose, successful completion and compliance with Phase I will be a precondition to funding being issued by the State under Phase II.

TERMS AND CONDITIONS OF GRANT

Special Provisions

1. **Guidelines:** The Guidelines attached as Exhibit B will govern this Project, and may only be amended by the State at its discretion, provided that in the event of any conflict or inconsistency between Exhibit B and this Agreement the terms of this Agreement shall control.
2. **Effective Date:** The Effective Date of this Grant shall be as of **July 1, 2016**. No work performed before **July 1, 2016** can be approved, reimbursed, or funded by this Grant. Further, all funding herein is contingent upon adequate appropriation, provided that the State represents that all necessary appropriations have been obtained and that the funds are encumbered as described above..
3. **Interest Bearing Trust Account:** For all phases of the project, Grantee shall maintain an interest bearing trust account that segregates any State grant funds advanced for the



purposes identified in this grant from any other funds that the Grantee may have, naming the State as the third party beneficiary for the purposes of dissolution of the entity and disbursement of remaining funds in the account. Such trust account is subject to review and audit by the State at any time, and Grantee agrees that account balance statements will be provided monthly to the State, and that an annual audit will be performed using reasonable standards by a certified public accountant in accordance with, and as required by the laws of, the State of California. Any interest earned shall be reinvested into the project unless Grantee is directed otherwise, and at the completion of the project, all funds shall revert to the State fund allocated for debt service of the bond no later than 60 days after Project completion, or other appropriate account as determined by the State.

4. **Phased Agreement:** This Grant is administered and implemented in two Phases, Phase I (Planning) and Phase II (Deconstruction/Decommissioning). The parties acknowledge that there will also need to be procedures for accessing California rate-payer fees held in trust by the Public Utility Commission for the project pursuant to the KHSa, which may be established in a separate agreement or pursuant to an amendment to this Agreement. The parties further acknowledge and agree that this Agreement may need to be amended in connection with the start of Phase II in order to, among other things, more fully address certain matters that relate more particularly to Phase II.

5. **Preconditions for Phase II Funding:** As precedent to the State's obligation to provide deconstruction funding in Phase II, the "Definite Plan" as defined in the KHSa shall have been approved by the State and, to the extent necessary, FERC. In addition, Grantee shall provide to the State for review a revised detailed budget for the State's approval as consistent with the requirements of the KHSa, which approval will not be unreasonably withheld, delayed or conditioned. More information on Phase II is provided in section 12-14 of this agreement. The determination of consistency by State of such plans and specifications, or any other determinations or actions by State provided for in this Grant Agreement, shall be for scope and quality of work and shall not relieve Grantee of the obligation to deconstruct and maintain the facilities, indemnify this work, or carry out any other obligations required by this Grant Agreement, in accordance with applicable law or any other standards ordinarily applied to such work or activity by the Federal Energy Regulatory Commission (FERC).

As further precedent to the State's obligation to fund Phase II of this Agreement, Grantee shall provide evidence to the State that it will endeavor to implement a commercially reasonable plan for obtaining appropriate insurance coverage and indemnification (including the ability to indemnify, hold harmless, and defend the State), and for allocating cost-overrun risks to its contractors or other third parties.

6. **Performance:** Notwithstanding Section F, "Project Termination," and in consideration of the complexity of some of the components of this project, the State acknowledges that the appropriate remedy in the event of a breach by the Grantee of this Agreement shall be the specific performance of this Agreement, unless otherwise agreed to by the Grantee, or if the specific performance of a component is determined infeasible, as mutually agreed upon by the State and the Grantee.
7. **Funding Freeze:** Under no circumstances will advances under this Grant exceed 10% of the total award. Should Grantee require an infusion of cash greater than 10% of the total award, it will consult with the State, and upon such consultation, Grantee shall authorize the work to be performed, which will be directly paid for by the State upon receipt of an invoice or bill from a contractor or other party in agreement with Grantee. Grantee should ensure all contracts and other instruments used to develop the Project reflect the State's



process for payment, which includes a maximum 45 day processing period. Grantee further agrees that if at any time an audit uncovers grossly negligent misuse or misappropriation of advanced funds, or if quarterly receipts and invoices are unable to substantially verify the expenditures made with the advanced funds, the State shall initiate a meet and confer process and if the questions are not answered to the state's satisfaction, the state may order Grantee's Trust account to be frozen, in whole or in part, until such time as receipts or invoices can so verify. Grantee shall ensure State has permission to freeze the account at any time upon such audit or review, but State will have no other power or authority over the account. However, the State shall not exercise its right to freeze the account until it presents to Grantee, in writing, the full and complete basis for a potential action to freeze the account. Grantee will then have a reasonable opportunity, which shall be not less than 30 days, in which to respond and, if necessary to cure prior to any account being frozen. Freezing the account does not mean the Project has been terminated, it simply means advanced funds may not be used until it is clear funding is being used consistent with FERC's surrender order or the KHSA.

8. **Signage:** Recipients of Grant Funding pursuant to the Water Quality, Supply, Treatment, and Storage Projects of 2014 shall post signs acknowledging the source of the funds pursuant to the sign guidelines issued by the Secretary of the Resources Agency. Size, location and number of signs are subject to mutual written agreement by Grantee and the State. Signage must be placed simultaneously with, or before Grant Funds for Phase II/deconstruction are released.

#### Phase I-Planning

9. **Phase I Advance:** In accordance with section 79736 of the California Public Resources Code the State shall advance no more than 10% of the total amount awarded by this grant— (\$25,000,000)— to Grantee upon execution of this agreement. Such advance will contain an anticipated allocation toward the deliverables, milestones and tasks set forth in the project budget, as it may have been updated from time to time in consultation with the State. Phase I will include the following components and deliverables, which are essential to the implementation of the KHSA, and the ultimate deconstruction in Phase II:

- A. Development of a Budget and Staffing Costs for Grantee's successful day-to-day operation, including a list of employees and/or consultants who will be tasked with managing of Grantee itself, and their salaries or fees, and any indirect or overhead costs associated with the sound management of grantee, not to exceed 15% of the amount allocated for this phase;
- B. Development of a Phase I Work-Plan that includes milestones and deadlines for transfer and surrender of the PacifiCorp license to Grantee and approval by the Federal Energy Regulatory Commission of Decommissioning;
- C. Completion of an Application and supporting studies that will lead to a Water Quality Certificate;
- D. Development of a Definite Plan compliant with the Federal Energy Regulatory Commission's rules and regulations and the KHSA;
- E. Development of Feasibility studies, engineering documents, and any other studies or reports that would allow deconstruction to commence or otherwise be required for any other regulatory approval;
- G. Development of a risk-management/insurance strategy, and purchase of relevant products that would guarantee successful completion of this Project;
- H. Identification and negotiation of contracts for consultants for legal representation; engineering; design; and other aspects of the planning phase;
- I. Development and submittal of any applications for permits or authorizations needed to complete the Project.

10. **Quarterly Review and Receipts/Invoices:** Every quarter, Grantee shall provide to the State all invoices and receipts that support the allocation of advance funds in this section. Grantee will meet with the State quarterly to provide a progress report, providing information on funds spent, and on anticipated costs remaining for Phase I, and any interest accrued in the Trust Account held by Grantee for this purpose.
11. **Non-Exclusive List of Eligible Costs:** Eligible costs in Phase I include, but are not limited to:
  - Board travel and food for meetings consistent with Per Diem rates set by the Internal Revenue Service as referenced in the Grant Guidelines;
  - Development of Grantee as an operable organization sufficient to accept a license and transfer for the Klamath Facilities at issue;
  - Development of all documents, permits, plans, accounts, and other requirements the Federal Energy Regulatory Commission may require;
  - Continuing progress toward the Federal Energy Regulatory Commission's approvals for transfer and surrender of the Klamath Facilities;
  - Hiring of legal consultants, engineers, and other experts to help Grantee appropriately scope and request proposals for the work required under this Agreement, including hiring of a General Contractor;
  - Purchase of insurance, risk management premiums, or any other product to reduce the possibility of cost-overruns, unfunded liabilities, or unexpected environmental remediation, and guarantee the project will be within the State allocated costs developed during the KHSA;
  - Development of a budget and detailed work plan for Phase 2 "Deconstruction," that includes specific timelines, deliverables, and tasks;
  - Repaying recoverable grant funds that may be been advanced to the KRRC after July 1, 2016 that were used to pay for expenses that would have been eligible for payment under this agreement
  - Defending litigation, including claims by an entity that did not sign the KHSA against Grantee, or such litigation where Grantee may be a real party in interest.



## Phase II-Deconstruction/Decommissioning

12. **Incremental Advances:** In accordance with sections 79736 of the California Public Resources Code, the State shall advance in increments of no more than 10% of the total amount awarded by this grant— (\$25,000,000)-- to Grantee up to the total awarded amount of \$249,500,000, each increment being preconditioned upon the prior advance being fully documented, to the extent it has been expended by Grantee, such that the State can verify tasks and deliverables identified by the Phase II work plan and budget. Each advance will contain an anticipated allocation toward the deliverables, milestones and tasks set forth in the project budget, as it may have been updated from time to time. For amounts requested that are over 10% of the total award, the State will require Grantee to authorize work, and the State will agree to pay for that work directly on completion and submission of an invoice, consistent with State payment processes. All contracts or other instruments entered into by Grantee should reflect the State's process period for payment, which is between 30-45 days. At such time as it receives such invoices, the State shall pay the Grantee directly for that work upon its completion, and Grantee shall then disburse the funds to the contractor.
13. **Tasks:** Phase II will include the following components and deliverables, which are essential to the implementation of the KHSA, and the ultimate deconstruction in Phase II:
  - A. Selection and awarding of a General Contractor/Dam Removal Project Manager/or other Project Lead as determined by the Design-build process or any other process elected by Grantee for implementation of the Project;
  - B. A Deconstruction timeline and cost breakdown;
  - C. A mitigation and monitoring plan for all work, and a timeline for, or certification of implementation of those measures by Grantee;
  - D. A completion schedule;
  - E. All other tasks to be identified in the Definite Plan; and
  - F. All certifications and accounting records/reports required by Grantee under this Agreement, or by FERC.
14. **Eligible costs in Phase II:** Costs may include, but are not limited to:
  - All costs mentioned in Phase I;
  - Awarding of contracts necessary to implement decommissioning;
  - Continued costs of Grantee consistent with the requirements of this Agreement;
  - Further activities by Grantee to implement the KHSA not specifically mentioned in this Grant.

## General Provisions

### A. Definitions

1. The term "Act" means the Water Quality, Supply, Treatment, and Storage Projects of 2014 (Prop 1).
2. The term "Agreement" means this Agreement.
3. The phrase "completion of the project" and words and phrases of similar import mean such time as all work required pursuant to the KHSA and all applicable orders or requirements of FERC relating to the removal of the dams have been paid for and completed. Completion shall be deemed to have occurred notwithstanding that there remain to be performed work or other requirements in the nature of ongoing "post-completion" monitoring, operations, maintenance or similar matters for which funds (including Grant Funds) have been escrowed or otherwise set aside.



4. The terms "Development" or "Decommissioning" or Deconstruction means deconstruction of the four hydro-electric facilities on the Klamath River listed under the Klamath Hydro-electric Settlement Agreement, consistent with a Federal Energy Regulatory Commission (FERC) license surrender order.
5. The term "Grant Funds" means the money provided by the State to the Grantee in this Agreement.
6. The term "Grantee" means the Klamath River Renewal Corporation, or any successor entity who is the Dam Removal Entity (DRE) per the Klamath Agreement, and who will select and manage the subsequent facilities decommissioning project, and which has a signed agreement for grant funds.
7. The term Klamath Agreement means Klamath Hydro-electric Settlement Agreement, as amended (KHSA).
8. The term "Project" means the implementation of all actions required of the Dam Removal Entity as contemplated in the KHSA, including decommissioning activities consistent with the KHSA, any applicable FERC order authorizing decommissioning, and the Act.
9. The term "State" means the State of California Natural Resources Agency, acting by and through the Secretary.

#### **B. Project Execution**

1. Subject to the availability of Grant monies in the Act and all appropriations necessary to implement this Agreement, the State hereby grants to the Grantee a sum of money (Grant Funds) not to exceed the amount stated on the signature page (\$249,500,000, two-hundred and forty-nine million, five-hundred thousand) in consideration of and on condition that the sum be expended in carrying out the purposes as set forth in the description of Project in this Agreement, and its attachments and under the terms and conditions set forth in this Agreement. Grantee shall assume any obligation to furnish any additional funds that may be necessary to complete the Project. Phase II shall include a work plan with detailed timelines that allow orderly advancement of funds
1. Subject to force majeure and any other circumstances beyond its control (including but not limited to delays in funding or grant approvals from any source or disputes relating to the KHSA), Grantee shall ensure completion of the Project in accordance with the time of Project performance set forth in the Definite Plan, unless an extension has been formally granted by the State and under the terms and conditions of this Agreement. Extensions may be requested in advance and will be considered consistent with State encumbrance and expenditure deadlines, but in no event beyond **June 30, 2021**, or the appropriation reversion as determined in the enacted State budget for Fiscal Year 2016, or any budget year where the funds are re-appropriated, provided that, if requested by Grantee the State will use reasonable efforts to obtain any such extension or re-appropriation prior to the effectiveness of any such reversion.
2. Grantee shall comply with environmental laws, to the extent applicable, before any Grant Funds for decommissioning are made available, though funds advanced during Phase I shall be dispensed before this required showing is required to be made. The State anticipates that environmental review will be done in the context of FERC decommissioning processes.



3. Grantee does or shall certify that the Project plans comply with all current laws and regulations which apply to hydroelectric decommissioning of this sort, including, but not limited to, legal requirements for deconstruction contracts, all applicable codes, health and safety codes not preempted by, or otherwise modified by FERC's jurisdiction. Grantee shall certify to the State prior to commencement of deconstruction that all applicable permits required at that stage of the project have been obtained.
4. Grantee shall ensure periodic site visits by the State are permitted to determine if deconstruction work is in accordance with the approved Project Scope, including a final inspection upon Project completion.
5. Grantee agrees to submit in writing to the State for prior approval any material modification of the original Project Scope per Exhibit B, and the Definite Plan, as described in KHSA and completed by the DRE under the oversight of the Grantee prior to decommissioning. Changes in Project Scope must continue to meet the need cited in the KHSA or they will not be approved. Any modification or alteration of the major objectives of the Project as defined in the amended KHSA must be submitted to the State so that it may determine if the modification or alteration is consistent with the KHSA and/or the FERC order of surrender.
6. To the extent within its reasonable control, Grantee shall ensure that any entity acquiring fee-title of riparian properties surrounding the facilities shall agree to provide for public access to the Project area.
7. Where relevant and consistent with the Klamath Agreement, Grantee must have (1) fee title, (2) leasehold, or (3) other interest to or control of Project lands and demonstrate to the satisfaction of the State that the proposed Project will provide public benefits that are commensurate with the type and duration of the interest in land, provided that such benefits shall be presumed based on the KHSA.
8. Grantee shall provide photographs of the site and the project during and after implementation of Project at regular intervals, and will develop a detailed public outreach plan to illustrate the Project's progress.

#### C. Project Costs

1. The Grant Funds to be provided to Grantee under this Agreement will be disbursed for eligible costs as follows, but not to exceed in any event the amount set forth on the signature page of this Agreement (\$249,500,000):
  - a. Grant Funds shall be paid up to the total amount of the Grant Funds or the actual Project cost, whichever is less, receipt of a detailed summary of Project costs from the Grantee found to be satisfactory by the State, and the satisfactory completion of a site inspection by the State.
  - b. During Phase I, the State shall advance funds consistent with Exhibit B, and a commitment by Grantee to provide detailed receipts and invoices that support the use of those funds consistent with this Agreement. Additional advance payments may be made if warranted by compelling need at the discretion of the State in phases. The State reserves the right to reject advance payments in Phase II for expenditures over 10% of the total award, and/or to restructure how such payments are made, including requiring that work be authorized by Grantee, completed, and that evidence of completed work be furnished to the State for future payment. In no event shall a second phase of advance payment for previously authorized tasks be made unless the first phase is completed, to the extent previously funded, and documented to the State's reasonable satisfaction.



**D. Payment Documentation**

1. All payment requests must be submitted using a completed Payment Request Form. This form must be supplemented quarterly by an itemized list of all charges documenting check numbers, amounts, dates, recipients, purpose of expenditures and clearly identify charges to work plan tasks and elements. No future payments or advances will be approved without the itemization for previous payment requests being furnished to the State. If the itemization or documentation is incomplete, inadequate or inaccurate, the State will inform the Grantee and hold future payment requests until all required information is received or corrected.
2. Grant Funds in this award have a limited period in which they must be expended. All Grantee expenditures must occur prior to the end of the term of this Agreement, subject to force majeure and other circumstances beyond Grantee's control, and provided that such escrow or similar arrangements for ongoing "post-completion" type monitoring and operations as Grantee may establish shall be deemed to have been spent.
3. Except as otherwise provided herein, the Grantee shall expend Grant Funds in the manner described in the Project Budget that has been approved by the State in the form of, Exhibit B, which will be further amended and detailed for Phase II. The dollar amount of an item in the Project Budget may be increased by up to twenty percent (20%) through reallocation of funds from another item or items, without approval by the State; however, the Grantee shall notify the State in writing when any such reallocation is made, and shall identify both the item(s) being increased and those being decreased. Any increase or decrease of more than twenty percent (20%) in the amount of an item must be approved in writing by the State. In any event, the total amount of the Grant Funds may not be increased (\$249,000,000).

**E. Project Administration**

1. Grantee shall promptly submit written Project reports as the State may reasonably request. In any event Grantee shall provide State a report showing total final Project expenditures.
2. Grantee shall make property and facilities acquired or developed pursuant to this Agreement available for inspection upon request by the State.
3. Grantee agrees to use any Grant Funds advanced by the State under the terms of this Agreement solely for the Project herein described, for the express phase the advance payment was authorized to cover, and consistent with the completed work the advance payment was intended to pay for.
4. If Grant Funds are advanced they will be used to pay a contractor for completed work or for other obligations incurred for which payment is due, or reserved in Grantee's trust account for such work as deemed appropriate in the Phase they were issued. Any overpayment of Grant Funds in excess of final project costs shall be returned to the State within sixty (60) days of completion of the Project or the end of the Project performance period as shown on the signature page, whichever is earlier.
5. Grantee shall use any income earned by the Grantee from use of the Project to further Project purposes, or shall return it to the State.
6. Grantee shall submit all documentation for project completion and final reimbursement within ninety (90) days of Project completion or as soon thereafter as is reasonably practical with the exercise of diligent efforts..



7. This Agreement may be amended by mutual agreement in writing between Grantee and State. Any request by the Grantee for amendments must be in writing stating the amendment request and reason for the request. The Grantee shall make requests in a timely manner and in no event less than sixty (60) days before the effective date of the amendment.

#### **F. Project Termination**

1. At its discretion, the State may terminate this Agreement for good cause, which shall be limited to the failure of the Grantee to obtain approval for surrender by FERC, or the misappropriation or grossly negligent misuse of advanced funds. If the State terminates the Agreement prior to the completion of decommissioning, the Grantee shall take all reasonable measures to prevent further costs to the State under the Agreement and the State shall be responsible for any reasonable and non-cancelable obligations incurred by the Grantee in the performance of this Agreement prior to the date of the notice to terminate, but only up to the undisbursed balance of funding authorized in this Agreement.

#### **G. Hold Harmless**

1. Grantee shall waive all claims and recourses against the State, including the right to contribution for loss or damage to persons or property arising from, growing out of or in any way connected with or incident to this Agreement except claims arising from the gross negligence of State, its officers, agents, and employees.
2. Grantee and the State acknowledge the indemnification provisions of the KHSa.
3. Grantee agrees that in the event State is named as codefendant, the Grantee shall notify State of such fact and shall represent State in the legal action unless State undertakes to represent itself as codefendant in such legal action, in which event Grantee shall bear the State's litigation costs, expenses and attorney's fees (which shall be Eligible Costs), but the State will retain sole discretion over use and employment of its legal counsel.
4. Grantee and State agree that in the event of a final judgment entered against the State and Grantee because of the gross negligence of the State and Grantee, their officers, agents or employees, an apportionment of liability to pay such judgment shall be made by a California court of competent jurisdiction. Neither party shall request a jury apportionment.

#### **H. Financial Records**

1. Grantee shall maintain satisfactory financial accounts, documents and records for the Project and to make them available to the State for independent audit at reasonable times and no less than quarterly during each fiscal year. Grantee shall also retain such financial accounts, documents and records for three (3) years after final payment and one (1) year following an audit. Finally, Grantee will contract for an annual audit consistent with State law of its trust accounts and Project budget.
2. Grantee and State agree that during regular office hours each of the parties hereto and their duly authorized representatives shall have the right to inspect and make copies of any books, records or reports of the other party pertaining to this Agreement or matters related thereto. Grantee shall maintain and make available for inspection by the State accurate records of all of its costs, disbursements and receipts with respect to its activities under this Agreement.
3. Grantee shall use any generally accepted accounting system.



4. Nothing in this Agreement shall be construed as requiring the Grantee to violate any non-disclosure agreement, confidentiality agreement or similar agreement entered into with any party to the KHSA.

I. Nondiscrimination

1. The Grantee shall not discriminate against any person on the basis of sex, race, color, national origin, age, religion, ancestry or physical handicap in the use of any property or facility acquired or developed pursuant to this Agreement.
2. The Grantee shall not discriminate against any person on the basis of residence except to the extent that reasonable difference in admission or other fees may be maintained on the basis of residence and pursuant to law.

J. Severability

If any provision of this Agreement or the application thereof is held invalid, that invalidity shall not affect other provisions or applications of this Agreement which can be given effect without the invalid provision or application, and to this end the provisions of this Agreement are severable.

K. Waiver

No term or provision hereof will be considered waived by either party, and no breach excused by either party, unless such waiver or consent is in writing and signed on behalf of the party against whom the waiver is asserted. No consent by either party to, or waiver of, a breach by either party, whether expressed or implied, will constitute consent to, waiver of or excuse of any other, different or subsequent breach by either party.

L. Assignment


This Agreement is not assignable by the Grantee either in whole or in part without advance written approval by the state.

N. KHSA


It is the intent of this Agreement to facilitate the Recipient's activities to implement the requirements of the KHSA and the requirements of this Agreement shall, in all events, be subject to the terms of the KHSA.

O. Coordination With Other Funding Sources.


The State acknowledges that, pursuant to the KHSA, the project will have several sources of funds and agrees to reasonably cooperate and coordinate with the other funding sources as requested by Grantee. In the event of conflicting positions or interpretations of any matter among funding sources the State agrees to meet and confer with the other funding sources and to make good faith efforts to promptly resolve any such disputes or conflicts. The pendency of any such dispute or conflict, along with any delay in funding, review, consent or approval by any of the other funding sources shall constitute a matter beyond the Grantee's control.

  
Thomas Gibson,  
Deputy Secretary for Legal Affairs,  
General Counsel

Date: 10/12/16

  
Bryan Cash  
Deputy Secretary for  
Bonds and Grants

Date: 10/12/16

  
Michael Carrier,  
President  
Klamath River Renewal Corporation

Date: 10-11-16

**State of California  
Natural Resources Agency – GRANT AGREEMENT**

**GRANTEE NAME:** Klamath Dam

**PROJECT TITLE:** RESTORING THE Klamath RIVER: Klamath RIVER DAM REMOVAL PROJECT

**AUTHORITY:** Proposition 1: Public Resources Code sections 79732 and 79736

**DIVISION:** Office of the General Counsel

**AGREEMENT NUMBER:** P11601-0

**TERM OF LAND TENURE:** In perpetuity from the date of project completion as evidenced by Project Certification Form

**PROJECT PERFORMANCE PERIOD IS:** 7/1/2016 to 07/1/2020




Under the terms and conditions of this agreement, the applicant agrees to complete the project as described in the project scope described in Exhibit A, and any subsequent amendments, and the State of California, acting through the Natural Resources Agency pursuant to Proposition 1, agrees to fund the project up to the total state grant amount indicated.

**PROJECT DESCRIPTION:**

See project description on page 1 and Exhibit A of the Agreement

Total State Grant not to exceed **\$250,000,000** (or project costs, whichever is less)  
(250 million dollars)

The Special and General Provisions attached are made a part of and incorporated into the Agreement.

<b>KLAMATH RIVER RENEWAL CORPORATION (KRCC)</b>	<b>STATE OF CALIFORNIA NATURAL RESOURCES AGENCY</b>	<b>STATE OF CALIFORNIA NATURAL RESOURCES AGENCY</b>
By 		By 
Michael Carrier	Tom Gibson	Bryan Cash
Title President	Title General Counsel	Title Deputy Assistant Secretary
Date 10.11.16	Date 10/12/16	Date 10/12/16

**CERTIFICATION OF FUNDING**

AMOUNT OF ESTIMATE FUNDING	AGREEMENT NUMBER	FUND
\$250,000,000	P11601-0	6083 -Water Quality, Supply, and Infrastructure Improvement Fund of 2014
ADJ. INCREASING ENCUMBRANCE	APPROPRIATION	
\$	0540-6083-003-2016-00101-10	
ADJ. DECREASING ENCUMBRANCE	FUNCTION	
\$	Local Assistance/Dam Removal	
UNENCUMBERED BALANCE	LINE ITEM ALLOTMENT	CHAPTER
		STATUTE
		FISCAL YEAR



\$		0540-6083-003-2016-00101-10		23/16	2016	16/17
T.B.A. NO.	B.R. NO.	INDEX	OBJ. EXPEND	PCA	PROJECT NUMBER	
		0540	751	32101 32102	P11601	

I hereby certify upon my personal knowledge that budgeted funds are available for this encumbrance

  
SIGNATURE OF ACCOUNTING OFFICER

10/25/16  
DATE

**Klamath River Renewal Corporation**  
**Estimated Budget for Phase 1 (Sept 2016 - December 2017)**  
**California Proposition 1 Bond Funds - 9/20/16**

Cash Carried Forward \$ Q4/2016 \$ 21,345,700 Q2/2017 \$ 14,369,200 Q3/2017 \$ 10,120,300 Q4/2017 \$ 6,991,900 Q1/2018 \$ 3,863,500

**Revenue - State Funding**

California Proposition 1 Monies

\$ 25,000,000

Tasks to be Supported									
2A	3A	4	5	6	7	8	9	10	
<=====ALL=====>									
<=====ALL=====>									
✓	✓	✓				✓			
<=====ALL=====>									
					✓				✓
<=====ALL=====>									

Core Management Staff - Salaries & Benefits  
Professional Services  
Legal (Construction, Regulatory & General)  
Technical  
Misc. Staff Assistance  
Recruit & Negotiate Construction Management Firm  
Fiscal Manager & Agent (Audit Trail)

Special Studies  
Support FERC Applications & Environmental  
Support 401 Applications & Environmental  
Prepare the Definite Plan

Other Expenses  
Travel  
Liability, Comprehensive, & Insurance  
Counsel)

**Total Direct Expenses**  
**Indirect Expenses ( not including studies)** 15%  
(occupancy, contract management, misc..)

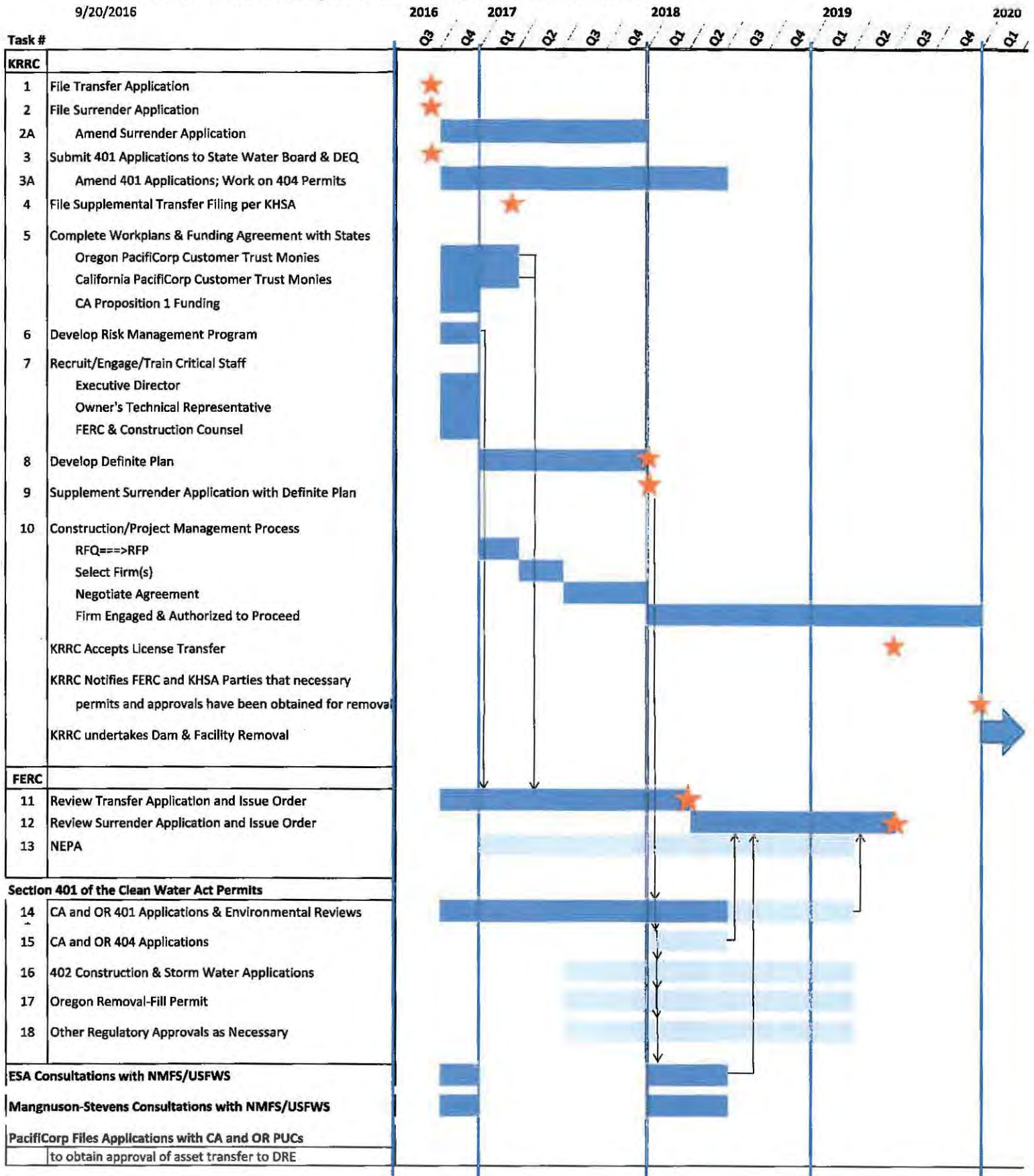
**Quarterly Costs**  
Contingency 20%

**Estimated Total Costs**

- Task Key
- 2A Amend Surrender Application
  - 3A Amend 401 Applications; Begin of 404 Permit
  - 4 File Supplement Transfer Information
  - 5 Complete workplans & Funding Agreements with the States
  - 6 Develop Risk Management Plan
  - 7 Recruit & Engage Critical Staff
  - 8 Develop the Definite Plan
  - 9 Supplement the Surrender Application at FERC
  - 10 Undertake the Construction/Project Management Process

# Klamath River Renewal Corporation -- Task Plan Q3 2016-Q4 2017

9/20/2016





# **THE WATER QUALITY, SUPPLY, AND INFRASTRUCTURE IMPROVEMENT ACT OF 2014**

## **PROPOSITION 1 GRANT GUIDELINES**

### **Eligible Applicants**

Eligible grantees are any identified dam removal entities in the eligible settlement agreements itself, and could include public agencies, nonprofit organizations, public utilities, federally recognized Indian tribes, state Indian tribes listed on the Native American Heritage Commission's California Tribal Consultation List, and mutual water companies, or federal parties to the Klamath Hydroelectric Settlement Agreement (KHSA) Settlement or contractors. (Cal. Water Code § 79735.)

### **Statutory Requirements**

Funding awarded for the purposes of implementing an intrastate settlement agreement (KHSA) related to water which was signed prior to December 31, 2013, and which meets all of the following criteria:

- (1) The project is of statewide significance.
  - (2) The project restores natural aquatic or riparian functions, or wetlands habitat for birds and aquatic species.
  - (3) The project protects or promotes the restoration of endangered or threatened species.
  - (4) The project enhances the reliability of water supplies on a regional or interregional basis.
  - (5) The project provides significant regional or statewide economic benefits.
- (Cal. Water Code § 79735).

### **Grant Administration**

- State sends Grant Agreement and materials for grant administration to grantee.
- Grantee signs and returns all required copies back to the State for signature. (A fully executed copy will be returned to the Grantee.)
- Grantee commences preliminary work (planning/design/CEQA, etc.) on the project and submits requests for reimbursements, as applicable. This work may include applying to the Federal Energy Regulatory Commission for an order on decommissioning, title transfer and acquisition work, and other work necessary to per authorized to remove dams, and which will fully indemnify the State and ensure risks cost overruns are prudently and reasonably allocated.
- Grantee may be asked to submit preliminary plans to the State for review and comments.
- Grantee submits final definite plan for dam removal for review by the State prior to commencing with construction, and will certify all required permits and authorizations are secured.



- Grantee posts signs at a visible spot on the site acknowledging source of funds.
- Grantee commences deconstruction work on the project and may submit payment requests for reimbursement of project expenditures.
- State may schedule periodic on-site visits and request periodic progress reports from the grantee.
- Grantee completes project and submits project completion packet (to be provided under separate cover) which shall include final accounting, certification dam removal is complete, and any additional information sought by State.
- State makes final project inspection and approves final payment.

### **Eligible Costs**

Direct and Indirect project-related costs incurred during the project performance period specified in the grant agreement will be eligible for funding. All eligible project costs must be supported by appropriate documentation. **Costs incurred outside of the project performance period, and overhead and indirect rates/costs are not eligible for reimbursement.**

Any project financed with funds made available by the *Water Quality, Supply, and Infrastructure Improvement Act of 2014* (Proposition 1) must comply with all provisions of the California Labor Code. Be sure to include prevailing wages in the cost estimates, as/if applicable. Refer to the Department of Industrial Relations' Division of Labor Statistics and Research Web site at <http://www.dir.ca.gov/DLSR/PWD/index.htm> for general prevailing wage determinations. For questions regarding prevailing wage, contact Department of Industrial Relations.

Personnel or employee services - Costs for services of the grantee's employees directly engaged in project execution must be computed according to the grantee's prevailing wage or salary scales, and may include fringe benefit costs such as vacations, sick leave, Social Security contributions, etc., that are customarily charged to the recipient's various projects. Costs charged to the project must be computed on actual time spent on the project and evidenced by time and attendance records describing the work performed on the project as well as payroll records. Overtime costs are allowed under the recipient's established policy provided the regular work time was devoted to the same project.

### **Payment of Grant Funds**

Funds cannot be disbursed until there is a fully-executed Grant Agreement between the State and the Grantee.

- At the discretion of the state, advance payments will be authorized consistent with Terms in the Grant Agreement.

### **Site Visits**



The State may make periodic visits to the project site, including a final inspection. The State will determine if the work is consistent with the approved project scope and ensure compliance with signage requirements.

### **Loss of Funding *(not a complete list)***

The following are examples of actions that may result in a grantee's loss of funding:

- Grantee fails to execute a grant agreement.
- Grantee dissolves or withdraws itself.
- FERC fails to issue order authorizing decommissioning, and no federal rule preempts FERC's jurisdiction.
- Grantee changes project scope without prior approval from the State.
- Grantee fails to demonstrate reasonable progress.

### **All projects**

- The grantee shall not use or allow the use of any portion of the real property for mitigation (i.e., to compensate for adverse changes to the environment elsewhere) without the written permission of the State.
- The grantee shall not use or allow the use of any portion of the real property as security for any debt.
- Grantee may be excused from its obligations for operation and maintenance of the project site only upon the written approval of the State for good cause. "Good cause" includes, but is not limited to, natural disasters that destroy the project improvements and render the project obsolete or impracticable to rebuild.

### **Sign Guidelines**

- 1) Deconstruction - A sign acknowledging the funding source is required during deconstruction.

### **Travel and Per Diem and other MISC.**

- Grantee shall use those per diem and mileage rates for reimbursement purposes approved or set by the Internal Revenue Service.
- At no time shall Grantee use bond funds for lobbying purposes;
- At no time shall Grantee use bond funds for campaign or other political purposes.

**Exhibit D-9**

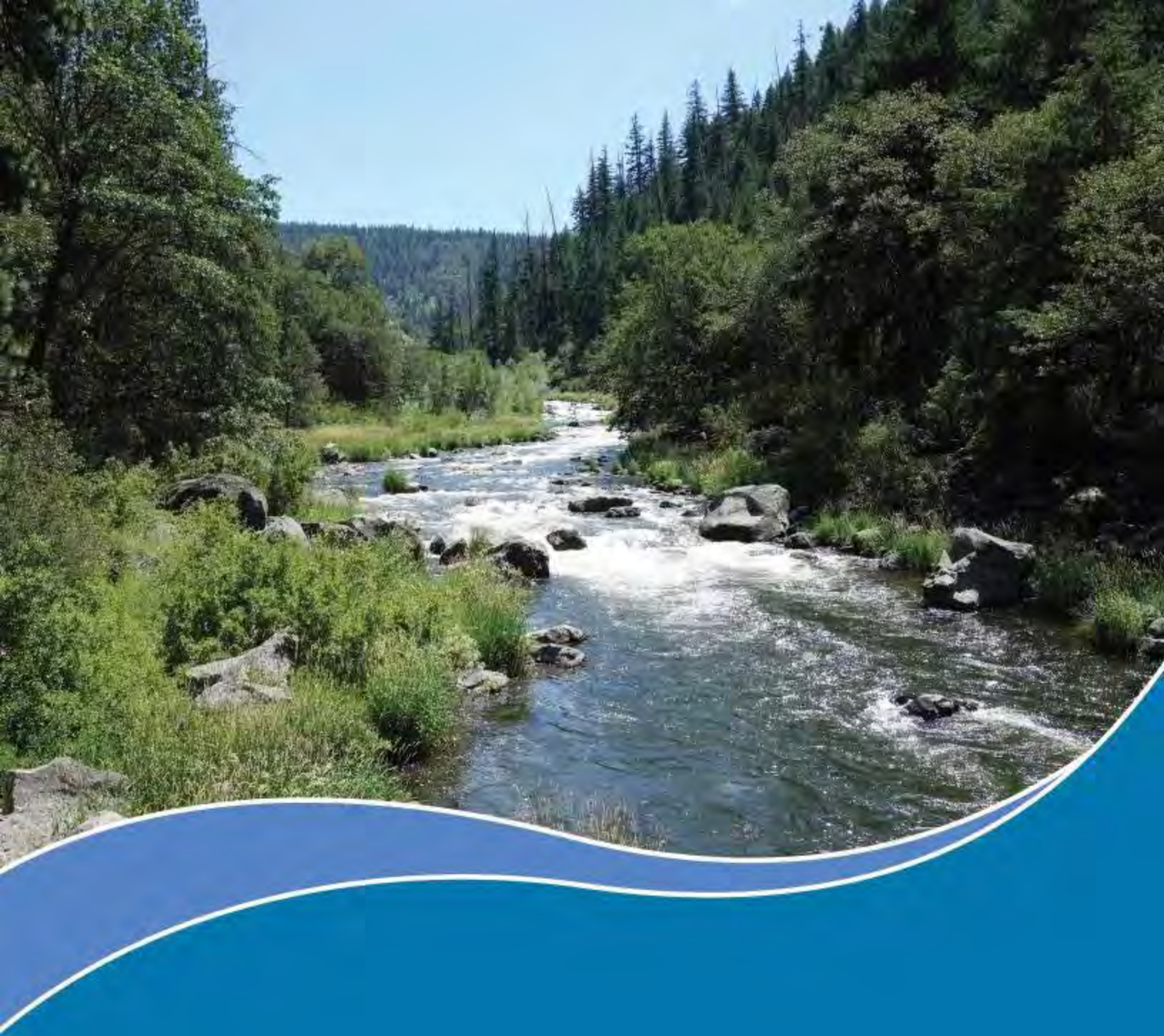
**Risk Register**

**August 2020**

## Amended Risk Management Plan

July 2019





# Definite Plan for the Lower Klamath Project

## Appendix A – Amended Risk Management Plan

July 2019





## Prepared for:

Klamath River Renewal Corporation

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## Acronyms and Abbreviations

BOC	Board of Consultants
CCIP	Contractor-Controlled Insurance Program
CEQA	California Environmental Quality Act
CPL	Contractor's Pollution Liability
FERC	Federal Energy Regulatory Commission
GMP	Guaranteed Maximum Price
ID	Identification
KRRC	Klamath River Renewal Corporation
KHSA	Klamath Hydroelectric Settlement Agreement
LTC	Liability Transfer Corporation
NEPA	National Environmental Policy Act
OCIP	Owner-Controlled Insurance Program
PDB	Progressive Design-Builder
PFMA	Potential Failure Modes Analysis
PLL	Pollution Legal Liability
RES	Resource Environmental Solutions, LLC
USFWS	United States Fish and Wildlife Service



# Chapter 1: Plan Objectives and Background

# 1. PLAN OBJECTIVES AND BACKGROUND

## 1.1 Plan Objectives

The Klamath River Renewal Corporation's (KRRC) objective is to manage risks to assure performance as required by any license surrender order and other permits, and to further manage risks of property damages as required by the Klamath Hydroelectric Settlement Agreement (KHSA). This amended plan was developed in conjunction with the amended Estimate of Project Costs report (KRRC 2019), where cost impacts associated with all risks were categorized and quantified.

The implementation of any project comes with uncertainty and risk that can affect schedule, budget, and project performance. This is even more applicable to large, multi-disciplinary and high-profile projects. Successful implementation includes planning to identify and manage those uncertainties and risks. Section 7.2 of the KHSA, as amended, sets forth the essential elements of a risk management plan to be included in and implemented as part of the Definite Plan. These elements include the following:

- Insurance, performance bond, or similar measures as required by Appendix L to the KHSA;
- Accounting procedures that will result in the earliest practicable disclosure of any actual or foreseeable cost overrun;
- Appropriate mechanisms to modify or suspend performance of any task subject to such cost overrun; and
- Measures to reduce risks of cost overruns, delays, or other impediments to dam removal.

This plan addresses these requirements as follows:

- Section 2 summarizes KRRC's selected progressive design-build project delivery method and the process utilized to select the preferred Progressive Design-Builder (PDB), and finalize the Project Agreement
- Section 3 identifies the insurance, bonds and other surety arrangements to be secured by the KRRC in compliance with Appendix L to the KHSA
- Section 4 includes a design and construction risk register and measures to reduce risks of cost overruns, delays, or other impediments to dam removal

The objective of this Risk Management Plan is to provide the tools and processes to identify and quantify the design and construction risks that are particular to the Lower Klamath Project (Project), assign those risks to the appropriate party, develop design and construction risk management strategies to reduce or eliminate the risk, and to manage and re-evaluate the risks as the KRRC progresses through the project lifecycle.

## 1.2 Changes Since Previous Plan

Modifications to this Risk Management Plan fall into several categories and are summarized below:

1. Phase of Project: Several risks were associated with a phase of the project that is now complete (e.g. procurement), and those risk have therefore been retired. If any of these risks impacted cost or schedule, that is now incorporated into the latest estimate of project costs and implementation schedule.
2. Latest Project Understanding: Over the past year, risk management strategies have been implemented, project details have been refined, and informal agency consultations have allowed a more comprehensive understanding for some of the included risks, and the register and associated data now incorporates this latest understanding.
3. Input from Insurance and Liability Transfer Entities: The KRRC has contracted with companies in the past year to obtain refined input into the question of project insurance and liability transfer. This input is summarized in the sections herein, and in many cases has informed the risk register and associated data.
4. Input from Progressive Design-Build: The KRRC has contracted with a progressive design-build contractor to complete the final design and construction for the project. Input from the design-builder in many cases has informed the risk register and associated data.

## 1.3 Project Background & Overview

The proposed Project is described in Sections 4 through 7 of the Definite Plan, and generally includes the decommissioning and full removal of four dam developments (Iron Gate, Copco No. 1 and No. 2, and J.C. Boyle) on the Klamath River approximately 200 miles from the Pacific Ocean in the states of Oregon and California by the KRRC. Figure 1.3-1 provides an overview of the Klamath River watershed and the locations of the four dams. The Project objectives are to restore free-flowing river conditions and volitional fish passage by the complete removal of dams, power generation facilities, water intake structures, canals, pipelines, and ancillary buildings. The Definite Plan also describes a partial removal alternative which is presented for purposes of environmental review. Under the partial removal alternative, the objectives of a free-flowing river conditions and volitional fish passage would be achieved, but portions of each dam would remain in place, along with ancillary buildings and structures such as powerhouses, foundations, and pipes.

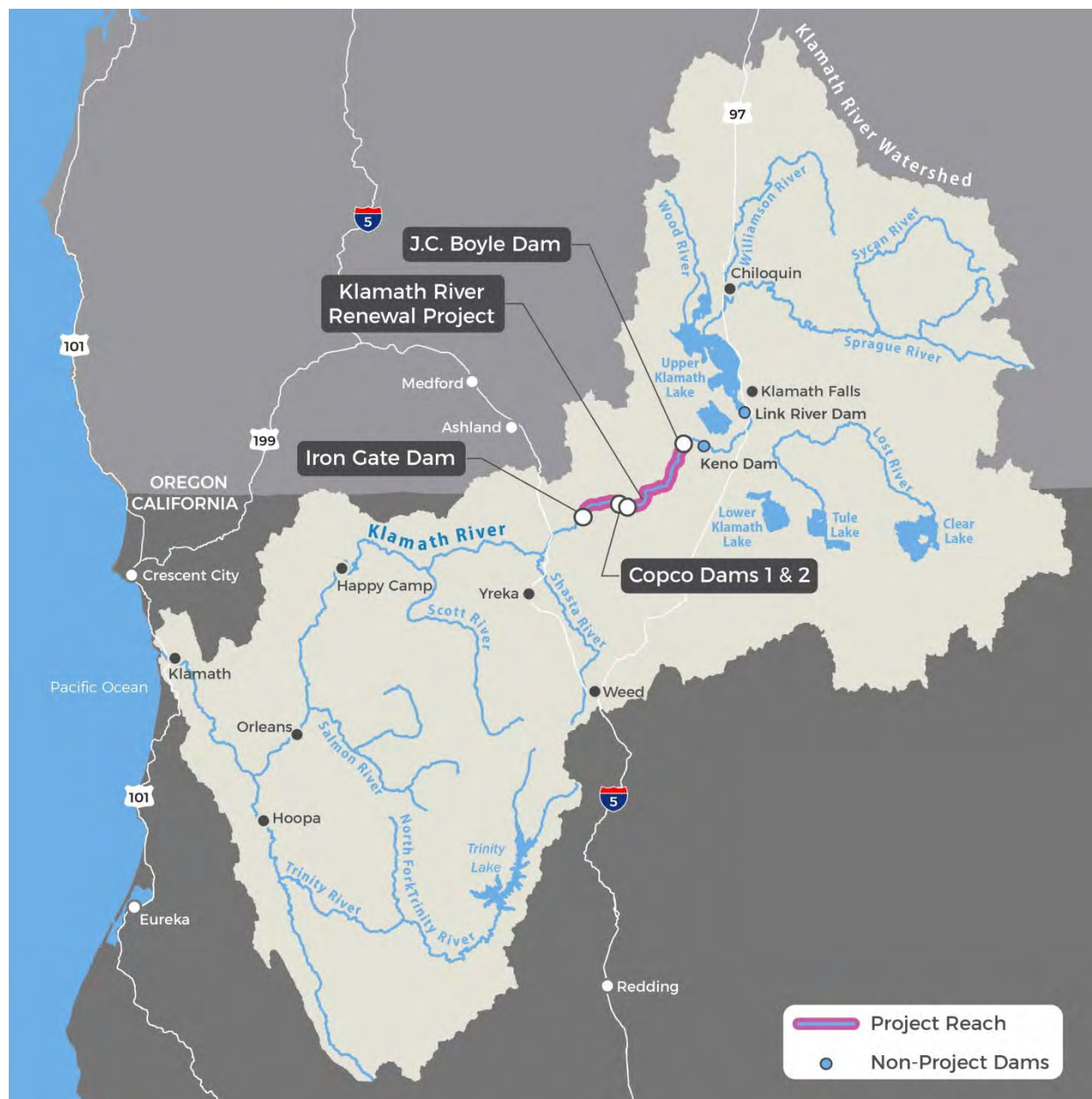


Figure 1.3-1 Klamath River Watershed and Facilities Locations

Prior to removal of the dams and hydropower facilities, the KRRC will drawdown the water surface elevation in each reservoir as low as possible to facilitate accumulated sediment evacuation and to create a dry work area for facility removal activities. To meet drawdown timing and duration, specific infrastructure modifications are required at Iron Gate and Copco No. 1 dams in advance of drawdown. In general, drawdown will begin on January 1 of the drawdown year, and will extend through March 15 of the same year.

After drawdown is accomplished, dam and hydropower facility removal will begin, and the KRRC will stabilize remaining reservoir sediments to the extent feasible. Full reservoir area restoration will begin after drawdown, and extend throughout the year, and possibly into the subsequent year. Vegetation establishment could extend several years.

Other key project components include measures to address aquatic and terrestrial resources, road and bridge improvements, relocation of the City of Yreka's pipeline across Iron Gate Reservoir and associated diversion facility improvements, flood improvements downstream, as well as demolition of various recreation facilities adjacent to the reservoirs.

## 1.4 Project Funding and Plan B

The financial capacity of KRRC is an integrated package consisting of: (1) \$450 million in committed funding; (2) use of PDB contract to assure a single point of accountability; (3) engagement of best-in-industry project team; (3) requirement of a Guaranteed Maximum Price (GMP) before KRRC's acceptance of license transfer; (4) insurance, bond, and indemnity program that provides many hundreds of millions of dollars of risk protection; and (5) a project cost estimate at the industry standard P(80) level. As discussed below, the cash reserve will likely increase as the project proceeds, as current risks based on uncertainties are retired. Further, the States and PacifiCorp must agree to the sufficiency of the financial capacity before license transfer.

The KRRC has the financial capacity to move forward with Project implementation, and to do so from a position of strength. However, like any licensee that is responsible to meet its license obligations, unforeseen and remote circumstances theoretically could arise that would require the KRRC, if the Commission approves license transfer, to raise additional funds. Facing these circumstances, how would the KRRC respond?

The KRRC would evaluate value engineering opportunities.<sup>1</sup> This is a best practice in any complex construction project. Prior to construction, the Kiewit team will identify such opportunities to reduce costs and risks that could arise after construction begins, consistent with the project purpose and any permit terms for protection of environmental quality and public interest. The KRRC will examine these opportunities on an iterative basis as construction proceeds. The Renewal Corporation has received authorization for such adjustments in Oregon's water quality certification and will seek such authorization in other permits.<sup>2</sup>

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<sup>1</sup> KHSA section 7.2.1.A(5).

<sup>2</sup> Oregon Department of Environmental Quality ("ODEQ"), "Clean Water Act Section 401 Certification for the License Surrender and Removal of the Lower Klamath Project" (September 7, 2018), Condition 7 at 6 (authorizing a "Remaining Facilities and Operations Plan"). See also California State Water Resources Control Board ("SWRCB"), "Draft Water Quality Certification" (September 23, 2018), Condition 6 at 28 ("Remaining Facilities"). Of course, the Renewal Corporation will expect to receive the Commission's approval of any such adjustment as specified in a license surrender order.



Additionally, under KHSA sections 7.2.1.A(5) and 8.7, parties will meet-and-confer to address and resolve any such circumstances that could arise after license transfer or surrender (in this case, after construction begins). Further, while its financial capacity of \$450 million is created and limited by the state cost cap, the KRRC has a duty to seek, and the other parties have a duty to support, third-party funding as appropriate to supplement that capacity.<sup>3</sup> Specifically, the parties are contractually committed to “identify potential partnerships to supplement funds generated pursuant to this Settlement.”<sup>4</sup>

In sum, the KRRC reasonably expects to secure additional funds if necessary, taking into consideration the strength of the project team, and the active support of the States and other parties for completion of Project implementation as an essential step in restoration of basin ecosystem. Finally, the KRRC may continue accruing interest on the customer funds in excess of the \$28 million assumed in the cost cap.<sup>5</sup>

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<sup>3</sup> KHSA section 7.3.8.B; see June 24, 2017 AIR Response, item 10; December 4, 2017 AIR Response, item 3; June 28, 2018 AIR Response, Item 3(c).

<sup>4</sup> KHSA section 7.3.8.B.

<sup>5</sup> KHSA section 7.3.8.A.



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## Chapter 2: Project Delivery Method

## 2. PROJECT DELIVERY METHOD

### 2.1 Overview of Progressive Design-Build Delivery Method

KRRC executed a PDB contract (the Project Agreement) in April 2019 with Kiewit Infrastructure West Co. (Kiewit). Kiewit is currently developing their detailed design packages. The KRRC and Kiewit intend to negotiate and agree to a GMP by February 2020 and subsequently execute the Project Implementation Contract Amendment to begin physical work, following FERC approval. By the time the GMP is negotiated, the circumstances that most often lead to cost overruns for which the owner remains responsible - unknown site conditions – while not eliminated, will have been significantly narrowed even beyond where it is today. As a result, final pricing will be determined prior to KRRC's acceptance of the project license.

The Project Agreement stipulates that the Kiewit team will complete both design and deconstruction on an integrated basis and will assure that, absent contractually defined uncontrollable circumstances, the work will be performed with minimal cost overruns. Thus, any project costs incurred within the defined work scope that are in excess of the GMP will be the responsibility of Kiewit, not KRRC. In addition, daily liquidated damages will be payable to KRRC for unexcused delays, and KRRC will not be responsible for any cost overruns except those caused by predetermined risks that are outside of Kiewit's ability to reasonably manage and control. A qualified construction-management entity will oversee the performance of the dam decommissioning and removal work under the Project Agreement.

This integrated project-delivery approach will be particularly useful for the Project because it will mitigate several elements of project-completion risk, in addition to mitigating the general price risk inherent in all construction projects. Integrated project delivery involves a mostly self-selected team (in this case led by Kiewit) of highly qualified firms whose business interests are aligned, thus decreasing the risk of disputes among team members. By addressing multiple aspects of the work in a single contract, integrated project delivery also has the key advantage of creating one point of accountability for the Project, allowing KRRC to bring a claim against a single entity for any flawed work. Additional benefits of integrated project delivery include accelerated project delivery and improved project quality.

### 2.2 Risk Transfer to Design-Builder

In general, the selected delivery method makes Kiewit responsible for correcting any errors in design and/or construction. Specific risks transferred to Kiewit under the project agreement include the risk of errors or omissions in their work products; unexcused delays; unexpected work that Kiewit needs to perform to carry out the basic work scope; unavailability of materials; non-compliance with the decommissioning plan; adherence to applicable law and governmental approvals; intellectual property infringement; and the risk of exacerbating any existing known hazardous substances or other pollution conditions. KRRC will retain the risk of any delays caused by (i) uncontrollable circumstances (such as changes in law, force majeure, the discovery of cultural relics, and dam conditions unknown at the time the contract is entered into); (ii) any work scope changes directed by KRRC; and (iii) the inaccuracy of any reliance document information

provided by KRRC or its subcontractors to Kiewit that formed the basis of the decommissioning plan and that could not reasonably be verified by Kiewit.

The risk register included in Attachment A provides additional clarity as to who owns what risk. Depending on the risk, the associated liability may be covered by Kiewit, insurance (see Section 3.2), the Specialty Corporate Indemnitor (see Section 3.4), the Local Impact Mitigation Fund (see Section 3.5) or may be retained by KRRC (see Section 2.8).

## 2.3 Contractor Selection Process

Kiewit was selected as the PDB using two-stage qualifications-based-selection (QBS) process. The first stage involved a request for qualifications (RFQ), and the second stage involved a request for proposals (RFP). QBS standards during the RFQ included:

- Past performance of similar projects in scope, magnitude (complexity and size, such as but not limited to performance of work at multiple locations at the same time), and type (waterway work; environmentally regulated, etc.)
- Sufficient financial strength, including basic financial metrics such as corporate net worth and profitability
- Experience with federally regulated permitting processes
- Longevity in industry

KRRC then invited three pre-qualified firms to make project submittals on a competitive proposal basis in response to an RFP issued by KRRC. KRRC set forth the requirements for making project proposals in the RFP and based them on the terms of the Definite Plan. KRRC selected the proposer submitting the best value proposal (best overall price and technical merit) to perform the work. The states of California and Oregon (States) and PacifiCorp were given the opportunity to review and comment on the selection process and resulting project agreement to assure that their interests were protected and that the project work would be properly carried out.

## 2.4 Performance Security and Indemnities

Sections 3.3 and 3.4 address bonds and the special corporate indemnitor in further detail. Kiewit will furnish a conventional performance bond from a financially sound surety company, further assuring KRRC that Kiewit will perform the project agreement as required. In addition, Kiewit is providing a parent company guaranty securing performance of the project agreement. KRRC retains the right to call upon any such guaranty or to draw on any such letter of credit if Kiewit fails to perform and use the proceeds to pay any non-performance damages it is owed under the project agreement. Kiewit will also indemnify KRRC for any loss or expense incurred by third parties resulting from an unexcused breach of the contract or any

negligence or willful misconduct by Kiewit. Each party, as is conventional in contracts of this nature, will waive the right to make a claim for punitive or consequential damages.

Kiewit has a stellar track record with large-scale and technically challenging civil projects, including most recently, the emergency reconstruction of the Oroville Dam spillway, which involved removal and repair of both the main flood control and emergency spillways in less than 18 months as well as extensive debris and sediment removal, development of access roads, and other work. Kiewit has also undertaken projects such as the Folsom Dam Spillway Construction (Phases II & IV), East Toba and Montrose Hydroelectric Design-Build and the Kwalsa and Upper Stave Hydroelectric Design-Build. Kiewit brings relevant experience working with the states of California and Oregon, PacifiCorp as well as other business relationships that will greatly enhance the KRRC project team.

## 2.5 Construction Management

AECOM will provide oversight of Kiewit, including detailed design review and full construction-management services throughout the duration of the project agreement. The owner's representative will participate in Kiewit's design development meetings and will review all final design documents developed by Kiewit. KRRC anticipates detailed reviews at the 30%, 60%, 90% and 100% completion levels, as well as review of final Construction Documents (plans, specifications, design report and cost estimate). The construction manager will be involved in recurring activities such as progress meetings, pay estimates, weekly progress reporting, and schedule updates. These recurring activities are the basic machinery for transferring information, making decisions, and identifying potential risks during construction. The construction manager will meet weekly with Kiewit to review the status of completed work onsite. Kiewit will prepare and KRRC will review and approve a written safety plan that Kiewit is required to follow, thus providing a uniform approach toward project safety.

## 2.6 Post-Construction

While certain project construction risks will remain the responsibility of Kiewit through the Project Agreement warranty and establishment requirements, many of the longer-term post-construction risks will be managed by the Specialty Corporate Indemnitor, per the agreement discussed in Section 3.4. In general, the Specialty Corporate Indemnitor will indemnify the KRRC, States, and PacifiCorp against all harm associated with post-construction impacts to natural resources, in addition to assuring compliance with all post-construction permit requirements related to natural resources. KRRC will continue to consult post-construction as provided in the KHSa.

## 2.7 Independent Board of Consultants

In accordance with the FERC letter dated May 22, 2018 regarding approval of the Board of Consultants (BOC), the BOC will review project documents as well as dam removal schedules, plans and specifications, staging sequence, and supporting engineering studies as directed. KRRC will consider any recommendations with respect to the various design submittals.

## 2.8 Retained Risk and Project Contingency

If accurate information is supplied to the project contractor, no scope changes are requested by KRRC after contract execution, and no uncontrollable circumstances occur, the Kiewit will be obligated to complete the Project for the GMP (which is based on competitively bid elements of the construction work) established at the GMP Amendment signing. On the other hand, if any of the risks retained by KRRC occur, KRRC as the project owner will bear the costs. Accordingly, the project budget will include an appropriate contingency reserve for any such risks, and KRRC will use insurance and other mechanisms such as contingency and reserve funds to manage these risks. In addition, the KRRC will set up a Local Impact Mitigation Fund to manage and bear the costs of certain retained risks as defined in Section 3.5.

Section 2.6 of the amended Appendix P (Estimate of Project Costs; July 2019) of the Definite Plan (KRRC 2019) discusses the calculated Project contingency, based on updated construction costs and Project risks. Contingency was analyzed using a Monte Carlo analysis on any retained risks that were not covered by insurance and were not transferred to Kiewit, Specialty Corporate Indemnitor, or managed through the Local Impact Mitigation Fund. The current Project implementation estimate can accommodate a P80 Contingency, in addition to an approximately \$18 million reserve below the current funding limits.

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## Chapter 3: Insurance, Bonds and Other Surety Arrangements

## 3. INSURANCE, BONDS AND OTHER SURETY ARRANGEMENTS

### 3.1 Overview

The KRRC will insure against all insurable risks, at a level of coverage sufficient to cover the risks. This section of the Risk Management Plan identifies the insurance, bonds and other surety arrangements that KRRC will maintain in fulfillment of its obligations under Appendix L of the KHSA and prudent business practices. KRRC developed this plan with specialized guidance and advice from Aon and Resource Environmental Solutions, LLC. (RES).

Aon is a global professional services firm and its Commercial Risk Solutions' division provides risk advisory, risk transfer and structured solutions to reduce the client's total cost of risk<sup>6</sup>. Working with Aon as its insurance and risk advisor, KRRC has established and will maintain a robust insurance program to minimize first-party and third-party risks associated with the Project. The insurance program is designed to protect all the key stakeholders and KRRC.

RES is the nation's only fully scaled operating company providing comprehensive ecological restoration and water resource solutions, as well as risk management and corporate indemnification solutions<sup>7</sup>. Working with RES as its corporate indemnitor advisor, KRRC has developed a liability transfer program that will allow them to fulfill their unique obligations under Appendix L of the KHSA.

### 3.2 Insurance

#### 3.2.1 Overview

The KRRC received a Risk and Insurance Due Diligence Report from Aon in June 2019, which is attached to this plan as Attachment B. The insurance recommendations included herein come from this Aon report.

KRRC will maintain two insurance programs, each of which will be designed to address different insurance needs and requirements throughout the evolution of the Project. Prior to the commencement of dam removal activities, the insurance currently maintained by KRRC is best viewed as a corporate insurance program that covers KRRC's general business risks (discussed below as the Corporate Insurance Program).

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<sup>6</sup> Additional information regarding this firm may be found at <https://www.aon.com>

<sup>7</sup> Additional information regarding this firm may be found at <https://www.res.us>

The insurance that will be maintained for final design and construction (Kiewit tasks) will fully comply with the KHSa and Appendix L to the KHSa but will be procured by KRRC and/or Kiewit, as summarized below.

### 3.2.2 Timing

KRRC's corporate insurance program is in place and is described below.

Kiewit insurances are also summarized below. The actual insurance policies will be put in place in coordination with the beginning of the design or construction activities to which they relate, including certain preliminary site work. For example, insurance for design work was in place at the time the Project Agreement became effective. Insurance for the actual construction may not be in place until construction is ready to commence.

### 3.2.3 Corporate Insurance Program

KRRC's corporate program includes the following coverages summarized in Table 3.2-1:

Table 3.2-1 KRRC Current Corporate Insurance Summary

Type of Coverage	Effective Date	Limits	Carrier
General Liability	6/30/19 – 6/30/20	\$1M occ/\$1M prod comp ops/\$2M general policy agg	RSUI Indemnity
Auto Liability – Hired & Non-Owned	6/30/19 – 6/30/20	\$1M CSL	CNA
Workers Compensation and Employer's Liability	6/30/19 – 6/30/20	Statutory and \$1M	CNA
Property	6/30/19 – 6/30/20	Various but includes limits for off-site coverage	CNA
D&O/E&O	6/30/19 – 6/30/20	\$5M	PGU
D&O/E&O	6/30/19 – 6/30/20	\$5M	Validus Specialty

### 3.2.4 Project Insurance Program

In structuring the Project insurance program for KRRC, Aon focused on two key factors: (1) protection of the Project and the Stakeholders and (2) delivering the best value. With those guiding principles in place, Aon recommended several modifications to previously proposed insurance programs. The first change is to have Kiewit procure the general liability and workers compensation under a contractor-controlled insurance program ("CCIP"). The reasons for switching from an owner-controlled insurance program ("OCIP") to a CCIP include the following:



1. the fact that KRRC is a special purpose entity with no long-term operational history whereas Kiewit is a 135-year-old construction and engineering company with a proven track record of success;
2. Kiewit's purchasing power in the insurance market is greater than that of KRRC, which means it can obtain more competitive pricing and terms and conditions; and
3. KRRC will eventually sunset after license surrender is effective, whereas Kiewit's operations will continue. This will allow Kiewit to manage any long-tail claims associated with the Project.

The second modification to the previously proposed insurance program is that Kiewit is being permitted to use its corporate professional liability policy. Aon has reviewed the policy and it complies with all the requirements that were set forth in the current Aon specifications. This saves the Project over \$2M in costs given that a project specific policy does not need to be purchased.

The last modification was to have the contractor's pollution liability ("CPL") and pollution legal liability ("PLL") with linked limits and written with the same insurer. The reason that this is important is that claims often trigger coverage under both policies, and having one carrier, whose limits are linked, avoids coverage disputes. Aon has also recommended, based upon its actuarial analysis and industry expertise, to purchase a limit of \$50M vs. two \$100M policies to avoid paying for coverage that will likely not be triggered.

Table 3.2-2 summarizes the proposed KRRC Project insurance program:

Table 3.2-2 KRRC Recommended Project Insurance Program

Type of Coverage	Effective Date	Limits	Carrier
Builder's Risk	Upon start of construction activities	Probable Maximum Loss	Kiewit
CCIP for general liability, workers compensation/employer's liability and excess liability	Upon start of construction activities	\$200M for the GL and Excess  Statutory for WC and \$1M for employer's liability	Kiewit
Auto Liability	Upon start of construction activities	\$5M CSL	Kiewit's corporate policy
CPL/PLL	Upon start of construction activities	\$50M linked limits	KRRC
Professional Liability	Upon start of construction design	\$25M	Kiewit's corporate policy
Aircraft and Watercraft Liability	If aircraft and watercraft are used	\$5M for watercraft, aircraft and drones over 10 kg  \$10M for helicopters	Kiewit's corporate policy

### 3.2.5 Independent Board of Consultants

The BOC have reviewed the KRRC suggested Project Insurance Program list of insurance policies and insured limits. The BOC includes a member or members with expertise in insurance coverage and bonding for large and complex civil construction projects.

### 3.2.6 Ongoing Evaluation

KRRC and Aon will review all policies of insurance on a not-less-than-annual basis to make sure that they are sufficient and cost effective relative to other insurance products and risk management tools as may subsequently become available. If certain risks evolve, the insurance will be modified, as appropriate.

## 3.3 Bonds

### 3.3.1 Requirements and Timing

Appendix L to the Amended KHSR addresses bonding requirements. Bond requirements include bid bonds, performance bonds (in an amount equivalent to original contract value) and payment bonds (in an amount equivalent to original contract value). These bonds will be secured in connection with awarding the Project Agreement to undertake decommissioning activities. Kiewit will maintain these bonds in addition to a parent company guaranty. In the Project Agreement, the KRRC requires that all bonds be obtained from financially sound surety companies. Bonds do not cover uncontrollable circumstances.

### 3.3.2 Performance Bond

The performance bond securing the contractor's performance under the Project Agreement will be in the full amount of the dam removal contract. The contractor's surety company issuing the bond will determine the form of bond; however, AIA Form 312 is the predominant form in use at this time. To the extent alternate forms are used, they are expected to be substantively similar.

### 3.3.3 Independent Board of Consultants

The BOC have reviewed the bonding requirements in the Project Agreement. Because the performance bond backstops the dam removal contractor's performance, it cannot be issued until the dam removal construction contract is in place and will be issued at that time.

### 3.3.4 Ongoing Evaluation

As with insurance, KRRC and Aon will periodically review the amount and form of bonds (and/or parent company guaranty or standby letter of credit) to make sure that they are sufficient and cost effective relative to other products and risk management tools as may subsequently become available.

## 3.4 Specialty Corporate Indemnitor

### 3.4.1 Overview

Appendix L to the KHSa requires KRRC to identify and contract with a specialty corporate indemnitor (a Liability Transfer Corporation, or LTC) to protect the States, as well as PacifiCorp from potential liabilities that are not covered contractually by insurance or other risk mitigation strategies (e.g. PDB Agreement, Local Impact Mitigation Fund, etc.). KRRC will fulfill this requirement in consultation with the States and PacifiCorp and in connection with the design and implementation of the insurance and bonding program discussed above. KRRC will use this risk management tool to address certain risks not covered by the proposed insurance program. Parameters established by the KHSa to assess the sufficiency of a corporate indemnitor include:

- Appropriate capitalization (as agreed to by the States and PacifiCorp)
- Performance in projects of similar scope, magnitude, complexity and type
- Experience with federally regulated permitting processes
- Longevity in the industry

The specialty corporate indemnitor will be structured contractually, through third-party indemnities or potentially with additional special insurance products. As described in more detail below, the specialty corporate indemnitor will perform certain portions of the Project and will assume responsibility for various project risks, both during project execution and post-project (including the fulfillment of any long-term mitigation obligations established by the Definite Plan or regulatory approvals).

The KRRC received a liability transfer plan from RES and will implement the proposed structure for addressing risks that occur after the dams are removed and are not otherwise covered by insurance or other contractual indemnification. These risks include (1) certain natural resources risks, (2) certain risks associated with cultural resources and (3) risks related to property damages arising without fault of Kiewit.

For the first two categories of risk listed above (natural resources and cultural resources), the current intent of the parties is that RES will serve as the LTC and will indemnify the KRRC, PacifiCorp and the States against harm associated with those risks for a fee, through an indemnification agreement. This agreement would also require RES, as LTC, to complete all activities (monitoring, maintenance, reporting, and responding to unforeseen conditions) associated with natural resource-related permitting, California

Environmental Quality Act (CEQA) and National Environmental Protection Act (NEPA) requirements, as well as cultural resource inadvertent discoveries.

“Natural resource-related permitting” includes all requirements included in natural resource-focused permits, including, but not limited to, the United States Army Corps of Engineers Clean Water Act Section 404 permit, the Endangered Species Act Section 7 Consultation (Biological Opinion), the Wild and Scenic Rivers Act, Section 7 (Consistency Determination), the Oregon Clean Water Act Section 401 (Water Quality Determination), the Oregon Endangered Species Act Incidental Take Permit, the Oregon Department of Fish and Wildlife Fish Passage Approval, the California Clean Water Act Section 401 (Water Quality Certification), the California Department of Fish and Wildlife Section 1602, and the California Endangered Species Act Take Permit. In addition, all natural resource-related requirements in any federal, state or local permit or Memorandum of Understanding, will be the responsibility of RES, who will indemnify the KRRC, PacifiCorp and the States against any damages associated with related compliance.

For the third category of risk above (property damages arising without fault of Kiewit), a RES entity or, potentially, the KRRC will implement a Local Impact Mitigation Fund to proactively address mitigation and associated risks. The Local Impact Mitigation Fund is discussed in more detail below in Section 3.5.

### 3.4.2 Timing

KRRC expects to fulfill this requirement concurrently with the execution of the GMP Amendment for dam removal construction.

### 3.4.3 Independent Board of Consultants

The BOC have reviewed the KRRC identified risks that will be transferred to a specialty corporate indemnitor. KRRC’s final decision on how best to use this risk management tool is, however, subject to the approval of the States and PacifiCorp, in consultation with the Federal Parties, whose approval may not be unreasonably withheld.

## 3.5 Local Impact Mitigation Fund

### 3.5.1 Overview

The Local Impact Mitigation Fund would be a pool of capital independently administered by a third party following a methodology for compensating parties impacted by the removal of the dams, and covering funds for defense of claims, as necessary. Based on discussions with persons who have successfully administered such funds, RES believes a fund would be a cost-effective way to address potential litigation, and for this Project, could address all the property impacts, while containing a reserve for litigation.

RES identified five key areas of property damage where insurance or indemnification (through the specialty corporate indemnitor) was not available, and where a Local Impact Mitigation Fund would be a cost-effective

solution to manage associated risks: (1) the potential for increased flooding, (2) impacts associated with the release of sediment, (3) the potential for instability around reservoir rims, (4) impacts to groundwater wells and (5) the potential for diminution in land value and similar claims.

### 3.5.2 Timing

KRRC expects to develop the fund and begin management of the fund within the next 6 to 12 months, to allow sufficient time to complete associated outreach, negotiation, detailed design (where applicable) and execution of agreements prior to the start of construction.

### 3.5.3 Independent Board of Consultants

The BOC have reviewed the KRRC identified risks that will be addressed through the Local Impact Mitigation Fund and have provided their initial comments. KRRC's final decision on how best to use this risk management tool is, however, subject to the approval of the States and PacifiCorp, in consultation with the Federal Parties, whose approval may not be unreasonably withheld.

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## Chapter 4: Risk Register

## 4. RISK REGISTER

### 4.1 Overview

This section identifies planning, design and construction risks (in the form of a risk register) and estimates their likelihood and consequences of occurrence, ranking those risks to determine which pose the greatest risk to the Project, and developing risk management strategies for the highest-ranking risks. Input from Aon (on insurance) and RES (for Liability Transfer) have been considered in development of certain information contained within the risk register (e.g. probability, impact), and were used to populate the risk “owner” and “contingency carrier” columns, where appropriate.

The risk register will be a living document prepared with the participation of the full project team (KRRC, consultants, stakeholders, etc.) eventually including Kiewit. This plan is based on the Project as it has been described and developed in the Federal Energy Regulatory Commission (FERC) Definite Plan for Decommissioning (KRRC 2018) (Definite Plan).

The plan will be updated periodically by the full project team to add newly identified risks and adjust risks that have been previously identified either upward or downward.

The risk register identifies planning, design and construction risks as they are recognized throughout the duration of the Project, and the KRRC is prepared to address all identified risks in the risk register in the course of implementing a license surrender order. As described in more detail below, the KRRC has identified an owner for each risk and is accounting for costs associated with each risk through one of the surety arrangements summarized in Section 3, or through project contingency reserves, which have been calculated using a Monte Carlo analysis and are documented in the amended Estimate of Project Costs report (KRRC 2019).

KRRC has assigned each identified risk its own unique Risk identification (ID) number and categorized into one of eleven risk categories, which are described in further detail in Section 4.3. Risk ID numbers are not necessarily sequential, since they were derived from an initial broader list that may not have all moved forward. The register also includes specific information and data associated with each risk as follows:

- A description of the risk
- The root cause(s) of the risk
- The phase of the project when the risk would be actualized
- The likelihood (probability) that the risk will occur
- A rating of the impact or consequence if the risk event occurred

- A risk score (rating) by combining the likelihood and related consequence
- The selected risk management strategy
- A summary of risk management measures
- The assigned owner of the risk
- The primary and secondary carriers of risk costs
- The risk status

As the risk register is further developed and implemented, responsible parties from the KRRC and Kiewit will be assigned to further define and implement risk management measures identified for each risk. As risks are avoided or mitigated, or as new relevant information is obtained, risk category, score and rating will be updated to reflect the latest information.

Since the risk register will evolve and KRRC will update it throughout the life of the Project, ongoing assessment and reporting will be necessary. Reporting and other continuing risk management activities are discussed in Section 4.8.

## 4.2 Related Risk Guidelines

FERC has developed interim guidelines for risk-informed decision making (FERC 2016) and the United States Department of Homeland Security has published a resource for estimating economic consequences for dam failure scenarios (DHS 2011). While both references are specific to dam facilities currently in operation (which will remain PacifiCorp's risk through completion of the Operations and Maintenance Agreement), the considerations are relevant when considering risks associated with dam removal. Both references, in addition to several dam failure case studies, were reviewed while identifying and estimating consequences associated with dam safety risks during the removal process. Dam safety risks specific to dam removal will be further developed through FERC's Potential Failure Modes Analysis (PFMA) process, and the risk register will be updated at that time, as appropriate.

A PFMA is a dam and project safety evaluation tool developed by FERC to be used in the Part 12, Subpart D, program of dam and safety evaluations for FERC regulated projects. For dams that will be undergoing major modifications, remedial work or are scheduled to have substantial changes which can include removal, FERC's Engineering Guidelines indicate that Supplemental PFMA's shall be conducted to evaluate the recommended dam removal plan prior to de-construction. The PFMA process typically includes the following Steps, which will be completed for this Project prior to GMP finalization:

1. Collection of Background Data (complete)
2. Selection of the PFMA Core Team



3. Site Visit and Review
4. Comprehensive Data Review
5. PFMA Session
6. Evaluation of Surveillance and Monitoring
7. Documentation

## 4.3 Risk Category

KRRC has categorized each risk into one of the following general categories:

1. Environmental & Permitting – These are design and construction risks primarily related to environmental, compliance and permitting aspects of the Project. Environmental aspects and associated risks could involve existing or future biological, cultural or other environmental conditions/species, potential construction related effects such as air quality or noise, or potential downstream environmental effects. Permitting includes process-related considerations, requirements associated with compliance and acquisition of all necessary regulatory permits.
2. Right-of-Way or Easements – Risks that primarily relate to acquiring access to other properties or construction within existing easements on the project site.
3. Procurement – Risks that relate to the negotiation of the GMP.
4. Design – These are risks primarily related to development of the project design and subsequent performance of associated Project features. Risks could involve performance failures as a result of incorrect assumptions or calculations, incomplete or inaccurate drawings and specifications, etc.
5. Field Conditions – Risks that primarily relate to field conditions that may occur or be discovered during construction.
6. Construction - Risks primarily related to actual construction of the Project including labor, equipment, material, existing conditions, subsurface conditions, site safety, etc. Construction related risks could involve Kiewit's quality of work or production, as well as health and safety.
7. Reservoir Drawdown – Risks primarily related to the drawdown operation prior to dam removal.
8. Contractor Performance – Risks associated with the performance or quality during construction.
9. Dams, Powerhouses, Reservoirs – Risks primarily associated with the site improvement or the facilities and their removal.

10. Yreka Water Supply Pipeline – Risks primarily associated with the construction of the relocated pipeline.
11. External Events – These are risks primarily related to events or conditions outside of the control of the Project, such as unforeseen site conditions, forces of nature (e.g. floods and wildfires), etc.

## 4.4 Phases

Each identified risk will exist during particular phases of the Project. The Project phases include the following:

1. Design: Design is the period during which the detailed and final design of the Project is performed by Kiewit. Activities during this phase include field investigations for final design, final design, permitting activities, and regulatory review and approval of the final design documents.
2. Construction: The period during which construction activities to implement the final design take place. Activities during the Construction Phase include mobilization, preparation of the site, pre-reservoir drawdown construction activities, other early construction activities, dam and appurtenances demolition activities, followed by site restoration.
3. Post-Construction: The period following dam removal and site restoration.

The risk register identifies the phase when each risk would be actualized. Risks associated with regulatory compliance will be mitigated throughout the required regulatory monitoring period.

## 4.5 Risk Score and Rating

The risk score and rating are a function of the probability of the risk occurring and the consequence if the risk were to occur. Probability of occurrence is broken into five different categories to provide sufficient ranges of likelihood, as listed below:

- Probability Score of 5: Risk has a 60% or greater probability of occurrence, meaning it is very likely to occur
- Probability Score of 4: Risk has a 40 to 59% probability of occurrence, meaning it is likely to occur
- Probability Score of 3: Risk has a 20 to 39% probability of occurrence, meaning it is less likely to occur
- Probability Score of 2: Risk has a 10 to 19% probability of occurrence, meaning it is unlikely to occur

- Probability Score of 1: Risk has a less than 10% probability of occurrence, meaning it is very unlikely to occur

Consequence of the risk occurring is also broken into five different categories to provide sufficient ranges for the consequences of impact. Since impacts for various risks can apply to one or more aspects, it can be difficult to quantify all risks using the same metric (e.g. cost increase in dollars, etc.). For that reason, engineering and management judgment is involved when assigning consequence of impact scores. A high level of coordination and collaboration among key project decision makers is necessary for assigning consequence of impact scores. Table 4.5-1 provides some general guidance on consequence of impact scores under relevant aspects.

The risk score is calculated by multiplying the probability of risk by the consequence of impact, and then categorizing or rating the risk as low, moderate, or high as shown on the risk score matrix in Table 4.5-2. As shown in the risk score matrix, any risk that has a consequence of impact score of 5 is categorized as a very high risk.

Table 4.5-1 Consequence of Impact Definition for Various Aspects

PRIMARY ASPECT	CONSEQUENCE OF IMPACT				
	Very Low (1)	Low (2)	Moderate (3)	High (4)	Very High (5)
Schedule	No or little impact to schedule	Schedule delay of less than 3 months	Schedule delay of 3 to <6 months	Schedule delay of 6 to 12 months	Schedule delay of more than 12 months
Cost	<\$1M	\$1M-\$5M	\$5M-\$10M	\$10M-\$30M	≥\$30M
Safety	No or little impact to public safety	Number of individuals exposed to minor safety risk less than 5	Number of individuals exposed to minor safety risk greater than 5	Number of individuals exposed to serious safety risk less than 5	Number of individuals exposed to serious safety risk more than 5, or any life-threatening risk (1 or more)
Environmental Impact	No significant impact to any environmental resource	Short-term impact that is insignificant	Short-term impact that is significant. Long-term impact that is insignificant.	Long-term significant impact to non-listed species	Long-term significant impact to fisheries or listed species

Table 4.5-2 Risk Score and Ranking Matrix (green=low, yellow=medium, red=high)

Probability of Occurrence	5 (60-100%)	5	10	15	20	25
	4 (40-59%)	4	8	12	16	20
	3 (20-39%)	3	6	9	12	15
	2 (10-19%)	2	4	6	8	10
	1 (1-9%)	1	2	3	4	5
		1	2	3	4	5
		Consequence of Impact				

## 4.6 Risk Management Strategy

During development and implementation of the Project, KRRC will assign the risk strategy to identified risks using the following codes:

1. Manage: Risk management seeks to reduce the likelihood of the risk occurring and/or the consequence of the risk, should it occur.
2. Avoid: Avoidance of the risk eliminates the likelihood of the risk occurring and/or the consequence of the risk, should it occur.
3. Transfer: Transference of the risk makes the risk either partially or completely another party's responsibility.
4. Accept: Acceptance of the risk recognizes that the risk cannot be fully managed, avoided, or transferred.
5. Shared: Shared risk means that the liability associated with the risk can be partially transferred (as described above), but certain aspects of the risk remain with the KRRC and will need to be managed, avoided or accepted.

KRRC will secure insurance, bonds, and indemnities before accepting license transfer and becoming owner, to manage all relevant risks in the risk register.

## 4.7 Risk Status

As the Project develops and is implemented, the status of identified risks will be assigned using the following codes:

1. Open: risks that continue to pose a threat for the Project. These are risks that may or may not have occurred that will not expire until some future date
2. Managed: risks which have had risk management measures implemented such that the likelihood of occurrence or consequences of occurrence has been reduced to a level that the Project can accept in the event the risk occurs
3. Expired: risks that may, or may not, have occurred but no longer pose a threat to the Project. When a risk expires, the probability becomes zero thereby making the risk score zero

## 4.8 Continuing Risk Management

As mentioned above, KRRC will update the risk register throughout the life of the Project, with ongoing assessment and reporting. The project team will manage and track the risk register through all phases of the Project.

Now that Kiewit has begun their work on Preliminary Services (investigation and design), they are developing their own risk register, which will focus solely on the design and construction phases of the Project. The KRRC will work proactively with Kiewit to identify and manage all risks associated with design, permitting and construction, while continuing to manage any risks outside of Kiewit's scope of work.

KRRC will secure insurance, bond, and indemnity before accepting license transfer and becoming owner, to manage all relevant risks in the risk register.

### 4.8.1 Risk Workshops

After the initial identification of risks, KRRC will conduct a series of risk workshops at strategic points throughout the Project duration. The goal of these risk workshops will be to further update and refine risks, conduct evaluations and explore mitigation opportunities, while engaging new partners in the Project and the risk management process. Likely times for subsequent risk workshops include:

- After completion of Kiewit's Preliminary Services risk workshop
- After key permits are issued (e.g. FERC Surrender order)
- Prior to first commencement of significant construction activities
- Midpoint of construction, or prior to significant phase(s) of construction

## 4.8.2 Monitoring and Control

During each risk management meeting, the attendees will review status, risk score and risk management opportunities for all active risks. Output of the risk management meeting will be an updated risk register for distribution.

Project monthly progress reports will include a list of open risks, the status of associated risk management actions, and any changes to action completion dates. A narrative will explain any significant exceptions to risk management action completion dates. KRRC will report any new risks.

KRRC will not delete expired risks (i.e. those that have occurred but no longer pose a threat to the Project) – these will remain on the risk register as closed items, or they will be transferred to a register of expired risks for documentation purposes.

### Design Phase

At a minimum, KRRC will complete quarterly updates throughout the detailed design phase.

### Construction Phase

KRRC and Kiewit will hold routine risk management meetings at least once every two months. The owners assigned to risks in the current project phase will attend these meetings.

## 4.8.3 Closing Risk Registers and Lessons Learned

Closing risk registers involves documenting all managed risks and final impacts on the overall Project. Impacts include, but are not limited to, impacts on project costs and schedule. KRRC will similarly document monitored but unmitigated risks. This information will be available for use on future projects and can be used to adjust severity and probability indices, better define risk tolerance levels and improve risk management efforts.

KRRC will prepare a Lessons Learned Report when the risk register is closed. The primary focus will be to identify activities which were highly effective, effective, partially effective, or not effective, and to recommend ways to improve overall effectiveness for risk management activities.

## 4.9 Risk Register

The current risk register is included as Attachment A. Each risk is categorized by project phase, and the root cause of each such risk is identified. The risk register identifies probability, impact and weight, and provides an overall ranking for each risk, as well as a strategy for managing each risk, and risk management measures, where appropriate. Finally, the risk register identifies the risk owner and the status of each risk. As noted above, the risk register will evolve and be updated throughout the life of the Project, involving ongoing assessment and reporting.



## Chapter 5: References

## 5. REFERENCES

Federal Energy Regulatory Commission 2016. Interim Guidance, Risk-Informed Decision Making (RIDM), Risk Guidelines for Dam Safety, Version 4.1. March 2016.

KRRC 2018. Definite Plan for the Lower Klamath Project, Klamath River Renewal Corporation. June 2018.

KRRC 2019. Amended Appendix P, Estimate of Project Costs, to the Definite Plan for the Lower Klamath Project, Klamath River Renewal Corporation, July 2019.

United States Department of Homeland Security 2011. Dams Sector: Estimating Economic Consequences for Dam Failure Scenarios. September 2011.

United States Fish and Wildlife Service 2016. "Penobscot River Restoration Project Celebrates Final Milestone, Reconnects River to the Sea" (June 14, 2016), available at <https://www.fws.gov/news/ShowNews.cfm?ID=4F928157-CED5-9E63-1D41C23A5AC7707F>.



## Attachment A   Risk Register



		5	Very High				
		5	Very Likely (60-100%)	4	High		Avoid
Any time	4	Likely (40-59%)	3	Moderate		Transfer	
Design	3	Less Likely (20-39%)	2	Low		Manage	
Construction	2	Unlikely (10-19%)	1	Very Low		Accept	
Post- Construction	1	Very Unlikely (1-9%)	0	No impact		Share	

Owner			
Owner / Force Majeure			
PDB			
Owner / PDB			
Owner / PDB / Force Majeure			
Owner's Egr			
Owner's Egr / PDB	Post-GMP Contingency	Post-GMP Contingency	
Owner / Owner's Egr / PDB	Pre-GMP Contingency	Pre-GMP Contingency	
LTC	LTC	LTC	
PDB / LTC	Local Impact Mitigation Fund	Local Impact Mitigation Fund	
Owner / PDB / LTC	PDB	PDB	Open
Owner / LTC	Insurance	Insurance	Managed
PacifiCorp	-	-	Expired

Risk Identification					Risk Assessment (for Risk Management)				Risk Mitigation			Risk Costs Coverage		
Risk ID	Risk Category	Risk Description	Root Cause(s)	Phase When Actualized	Probability (P)	Impact (I)	Risk Weight (P x I)	Overall Rating	KRRC Management Strategy	Risk Management Measure	Risk Owner	Primary Contingency Carrier	Secondary Contingency Carrier	Risk Status
Environmental & Permitting														
4	Environmental & Permitting	<b>Unanticipated FERC/DSOD Requirements</b> Unanticipated Project requirements from agencies, FERC, or DSOD (including through BOC or PFMA processes) may cause delays to the project and increase costs.	Agency, FERC, DSOD, BOC, or PFMA reviews result in unanticipated requirements	Design	2 Unlikely (10-19%)	2 Low	4	Low	Manage	Close coordination where possible with referenced agencies; Prepare technical assessments that can hold up to scrutiny. Proactive agency coordination and field studies are underway.	Owner	Pre-GMP Contingency	-	Open
8	Environmental & Permitting	<b>Unanticipated Other Permit Requirements</b> Unanticipated permit requirements that increase contract price if not known at time of preparation of the Guaranteed Maximum Price (GMP).	Permitting agencies require offsite mitigation or any other requirements beyond anticipated requirements	Design	4 Likely (40-59%)	3 Moderate	12	Med	Manage	Early consultation with agencies; Sound approach to restoration. Proactive agency coordination and field studies are underway.	Owner / LTC	Pre-GMP Contingency	LTC	Open
15	Environmental & Permitting	<b>KRRC-Managed Permitting Delays</b> There may be delays to acquire permits (e.g. Corps 404, ESA Sec 7, CDFW MOU, Siskiyou County MOU)	Agency unable to process permit to allow for required construction start date	Design	3 Less Likely (20-39%)	2 Low	6	Med	Manage	Ongoing early consultation with agencies and early permit application submittal. Proactive agency coordination and field studies are underway.	Owner	Pre-GMP Contingency	-	Open
76	Environmental & Permitting	<b>FERC Process Delays</b> FERC process (including NEPA) may take longer than anticipated, resulting in Project delay.	FERC schedule delays	Design	4 Likely (40-59%)	3 Moderate	12	Med	Accept	Proactive response to FERC requests and strict adherence to FERC standard protocol and processes.	Owner	Pre-GMP Contingency	-	Open

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93	Environmental & Permitting	<b>Listed Species - Western Pond Turtle</b> Western Pond Turtle becomes Federally listed during permitting process. This may result in additional cost.	Project effect on listed species	Any time	4 Likely (40-59%)	3 Moderate	12	Med	Manage	Proactive coordination with appropriate regulatory agencies on likely requirements and associated field work; Address contingency in consultations. Proactive agency coordination and field studies are underway.	Owner / LTC	Pre-GMP Contingency	LTC	Open
112	Environmental & Permitting	<b>Permit Reopener</b> Changes during construction that require an amendment to a permit.	Unforeseen or changed site condition requires altering planned construction and project impacts which require a change to a permit. Design change by PDB to save costs or time.	Construction	2 Unlikely (10-19%)	3 Moderate	6	Med	Transfer	Flexible project descriptions that allow for design options; Comprehensive field investigation and documentation.	PDB / LTC	LTC	LTC	Open
27	Environmental & Permitting	<b>Construction Permits</b> PDB may be unable to obtain construction permits (e.g. County encroachment permits) in time for construction. This may lead to schedule delays.	Poor planning, insufficient communication, difficulty negotiating requirements	Design	3 Less Likely (20-39%)	2 Low	6	Med	Share	Owner coordination with Contractor for proactive communication with Counties; Contingency planning for delayed start during first year of construction.	PDB	PDB	-	Open
37	Environmental & Permitting	<b>Special-Status Species Presence</b> Special-status species (incl. bald and golden eagles) presence delays construction	Unanticipated species found onsite cause stop work	Construction	4 Likely (40-59%)	2 Low	8	Med	Transfer	Additional surveys to identify nest locations in the years leading up to construction; Implementation of the avoidance and minimization measures identified in the Definite Plan; Effective transfer of risk through Contract terms to Design-Builder. Pre-construction surveys; Design planning; Require work areas to be cleared prior to nesting season; Proactive surveys for nesting activity during nesting season; Proactive nesting mitigation measures during nesting season.	LTC	LTC	Insurance	Open
40	Environmental & Permitting	<b>Permit Requirements Not Satisfied</b> Mitigation measures or permit requirements may not be satisfied. This may lead to delays and additional costs.	Responsible party (PDB or LTC) does not meet expectations of permitting agencies in meeting permit requirements	Post-Construction	4 Likely (40-59%)	1 Very Low	4	Med	Transfer	Coordination between Designer, Contractor, and permitting agencies; Satisfy permit requirements.	LTC	LTC	-	Open
42	Environmental & Permitting	<b>Cultural Resource Damage</b> Known cultural resource may be damaged during construction. This may lead to a cost impact.	Mitigation measures fail to protect resource	Construction	2 Unlikely (10-19%)	1 Very Low	2	Low	Transfer	Identification of existing cultural resources to the extent feasible; Ongoing coordination with tribes and local historical societies to assess potential damage and identify measures.	PDB / LTC	Insurance	LTC	Open
68	Environmental & Permitting	<b>Downstream Biological Resource Damage</b> Greater than anticipated effect on downstream biological resources may lead to additional costs.	Effect of suspended sediment causes greater than anticipated impact to given species	Construction	2 Unlikely (10-19%)	2 Low	4	Low	Transfer	Develop appropriate aquatic resource measures through coordination with the regulatory agencies; Implement risk management measures to address effect on downstream resources.	PDB / LTC	LTC	Insurance	Open
70	Environmental & Permitting	<b>Protected Species Loss</b> Coho or Bald and Golden Eagle net loss within 5 years of construction completion may lead to additional cost in fines.	Mitigation and rehabilitation measures provide insufficient protection	Post-Construction	2 Unlikely (10-19%)	2 Low	4	Low	Transfer	Proactively monitor species before and during construction; Implement additional risk management measures.	LTC	LTC	Insurance	Open

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71	Environmental & Permitting	<b>Bat Loss</b> Bat roosts do not meet success criteria requiring additional mitigation, which may lead to additional cost in fines.	Predictive model of bat roost effectiveness is incorrect	Post-Construction	2 Unlikely (10-19%)	1 Very Low	2	Low	Transfer	Agency input into performance requirements in DB contract and design; Proactive QA/QC during construction. Cost estimates should assume prudent amount of replanting or other habitat maintenance.	PDB / LTC	LTC	Insurance	Open
72	Environmental & Permitting	<b>Habitat Restoration</b> Unanticipated maintenance or repair required during regulatory monitoring and reporting period (e.g. plant establishment, tributary passage blockage, etc.). Habitat restoration may lead to additional cost.	Constructed project component does not meet agency expectations	Post-Construction	2 Unlikely (10-19%)	2 Low	4	Low	Transfer	Agency input into performance requirements in DB contract and design; Proactive QA/QC during construction. Cost estimates should assume prudent amount of replanting or other habitat maintenance.	PDB / LTC	LTC	Insurance	Open
86	Environmental & Permitting	<b>Restoration Materials Unavailable</b> Local restoration materials (seed, plants) may not be available. This may lead to schedule delays and increased costs.	Insufficient quantities available for collection or insufficient quantities produced by propagation	Construction	2 Unlikely (10-19%)	2 Low	4	Low	Share	Early collection of seed and nursery propagation of plants for restoration prior to award of DB contract.	PDB	PDB	-	Open
88	Environmental & Permitting	<b>Flood Mitigation Delays</b> Flood mitigation improvements delay reservoir drawdown.	Implementation of downstream flood improvements take longer than anticipated and are not completed prior to reservoir drawdown	Construction	2 Unlikely (10-19%)	2 Low	4	Low	Manage	Complete early outreach to residents and owners in affected areas; Evaluate decision to proceed with drawdown even if there are holdouts that do not allow flood improvements.	Owner	Local Impact Mitigation Fund	Insurance	Open
96	Environmental & Permitting	<b>Proliferation of Weeds</b> Weeds outcompete native plants and site restoration goals are not met. This may lead to a cost impact for the project. More monitoring at the end of tail end.	Proliferation of weeds	Post-Construction	2 Unlikely (10-19%)	2 Low	4	Low	Transfer	Contract warranty period; Post-construction maintenance requirements in contract.	PDB / LTC	LTC	PDB	Open
Right-Of-Way or Easements														
28	ROW	<b>Easement Restrictions</b> ROW/construction easements may be denied for modification of access roads or other improvements	Insufficient communication and compromise with property owner	Any time	4 Likely (40-59%)	1 Very Low	4	Med	Manage	Proactive communication with access road owners; Contingency planning for use of access roads without modification.	Owner	Post-GMP Contingency	-	Open
83	ROW	<b>Adjacent Properties Impacted</b> Unforeseen impact to adjacent properties during construction.	Unanticipated impacts during roads work or downstream mitigations	Construction	3 Less Likely (20-39%)	2 Low	6	Med	Share	Contractor required to develop final design that considers adjacent properties; Early identification of property impacts.	Owner / PDB	Local Impact Mitigation Fund	Insurance	Open
106	ROW	<b>Property Restrictions</b> The title search may uncover easements or other property instruments that affect the implementation of the work.	Difficulty in completing the title report in a timely manner and/or research reveals challenge to design or construction	Design	1 Very Unlikely (1-9%)	1 Very Low	1	Low	Manage	Work proactively to manage this task so that it does not become critical path.	Owner	Pre-GMP Contingency	-	Open

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Procurement														
18	Procurement	<b>Guaranteed Maximum Price Agreement</b> Failure to agree to GMP during detailed design. This may lead to a schedule delay.	Disconnect between DB and Owner	Design	3 Less Likely (20-39%)	2 Low	6	Med	Manage	Robust Engineer's estimate to include Monte Carlo analyses; Independent review of Engineer's estimate, Include adequate contingency for project risk; Utilize project delivery method that provides Contractor's progress cost estimates to control budget (PDB ).  Close coordination and transparency on costs and associated assumptions during progress cost estimated prepared by DB; Provide contract exit strategy that Owner can terminate for convenience and implement alternate delivery approaches.	Owner	Pre-GMP Contingency	-	Open
Design														
13	Design	<b>Increased development</b> Increased development within the floodplain beyond mitigations already included requires additional flood mitigation beyond what is planned	City/county allows construction permits to be issued to developers	Design	1 Very Unlikely (1-9%)	1 Very Low	1	Low	Accept	Coordination with appropriate agencies; Consider an early CLOMR application to Counties.	Owner / Force Majeure	Post-GMP Contingency	Local Impact Mitigation Fund	Open
17	Design	<b>Disputes</b> DB Designer and Contractor disputes may lead to schedule delays and cost increases	Breakdown in PDB team relationship	Design	2 Unlikely (10-19%)	2 Low	4	Low	Transfer	Consider contractual measures to maximize design/contractor collaboration such as require Designer to be a partner rather than a subcontractor and provisions that oblige Contractor to continue work even when dispute arises.	PDB	PDB	-	Open
25	Design	<b>Errors and Omissions</b> Design errors or omissions lead to Project delays or cost overruns	Designer error	Construction	3 Less Likely (20-39%)	2 Low	6	Med	Transfer	Comprehensive design review; proactive QA/QC.	PDB	Insurance	PDB	Open
Field Conditions														
19	Field Conditions	<b>Field Conditions</b> General changed field condition (geotechnical, existing utilities, hazardous materials, and biological resources) leads to redesign, project delays and/or cost overruns.	Field condition differs from documented findings	Construction	3 Less Likely (20-39%)	1 Very Low	3	Low	Manage	Comprehensive field investigation and documentation.	Owner / PDB / LTC	Post-GMP Contingency	Insurance	Open
29	Field Conditions	<b>Quantity Overruns</b> Quantity overruns on earthwork, concrete demolition, etc.	Existing as-built data, exploratory data not adequate or accurate	Construction	1 Very Unlikely (1-9%)	2 Low	2	Low	Manage	Obtain new topographic and bathymetric data for use by Designer and Contractor; Rigorous QA by Owner on design calculations and assumptions related to earthwork volumes.	Owner	Post-GMP Contingency	-	Open
36	Field Conditions	<b>Sediment Access</b> Reservoir sediment may be more difficult to access than anticipated, causing construction delays (restoration)	Lack of material properties understanding	Construction	2 Unlikely (10-19%)	2 Low	4	Low	Transfer	Comprehensive investigation and testing during planning and detailed design phase (with PDB).	PDB / LTC	LTC	Insurance	Open
41	Field Conditions	<b>Non-burial Related Discoveries</b> Unanticipated non-burial related cultural resources (foundations, barns, etc.) discovered during reservoir drawdown or construction (beyond current allowance). Costs exceed allowances	Non-burial cultural resource not disclosed or already known about	Construction	2 Unlikely (10-19%)	1 Very Low	2	Low	Transfer	Identification of existing cultural resources to the extent feasible; Ongoing coordination with Native American groups and local historical societies; Development of treatment measures that would implemented following drawdown or during construction.	Owner / LTC	LTC	Post-GMP Contingency	Open

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43	Field Conditions	<b>Burial Related Discoveries</b> Unanticipated burial related conditions may exist. Including sites, human remains, or funerary items discovered within reservoir areas during reservoir drawdown - requiring cessation of construction activities for a long duration. Discovery impacts ability to perform construction - primarily Yreka waterline, Fall Cr Hatchery, Iron Gate Hatchery, and bridges	Burial site not disclosed or already known about	Construction	4 Likely (40-59%)	3 Moderate	12	Med	Transfer	Identification of existing cultural resources to the extent feasible; Ongoing coordination with Native American groups and local historical societies; Development of an Inadvertent Discovery Plan, Monitoring Plan, and NAGPRA Plan of Action, and rapid response plan to address the possibility of burial sites becoming exposed during drawdown.	Owner / LTC	LTC	Post-GMP Contingency	Open
91	Field Conditions	<b>Fish Barriers</b> Unknown fish passage barriers are found during drawdown. Their discovery will lead to additional cost.	Unknown pre-existing barriers exposed during drawdown	Construction	3 Less Likely (20-39%)	1 Very Low	3	Low	Transfer	Review of historic documents for evidence of barriers; Require Contractor to develop contingency plan to evaluate for barriers following reservoir drawdown and actions to remove barriers during dam removal.	LTC	LTC	Insurance	Open
Construction														
33	Construction	<b>Cofferdam Failure</b> Failure of temporary cofferdams result in demolition delays	Unconservative design of cofferdams; unanticipated foundation conditions	Construction	2 Unlikely (10-19%)	2 Low	4	Low	Transfer	Comprehensive field investigation, review of original construction, and design review	Owner / PDB	Insurance	PDB	Open
35	Construction	<b>Hazardous Material - Unforeseen Condition</b> Discovery or release of unknown hazardous material (other than from construction activities) to river during construction (unforeseen condition) may lead to cost impacts.	Project results in unanticipated release of hazardous material into river	Construction	1 Very Unlikely (1-9%)	1 Very Low	1	Low	Transfer	Completion of the Phase 1 hazardous material assessments and follow-up evaluations, appropriate health and safety qualifications, experience and other requirements during the procurement process, implementation of BMPs to avoid or contain the release of hazardous material, as well as active overview and enforcement of the Contractor's Hazardous Material Management Plan.	PDB	Insurance	PDB	Open
51	Construction	<b>Diversion Blockage</b> Rapid-drawdown causes slope instability leading to rock slope failure, blocking the diversion intake. This failure will lead to schedule delays and significant cost impacts.	Design analyses unable to cover all geologic conditions and slope geometries; insufficient data	Construction	2 Unlikely (10-19%)	2 Low	4	Low	Share	Comprehensive field investigation and design review; Develop slope monitoring plan for implementation during drawdown; Stockpile riprap for repairs of slope if local failures occur.	Owner / PDB	Post-GMP Contingency	Insurance	Open
82	Construction	<b>Hazardous Material - Construction Activities</b> Discovery or release of hydraulic oil or other hazardous material from construction equipment or remediations may be released into the river during construction. This may lead to additional costs.	Contractor mechanical equipment failure results in unanticipated release of hazardous material into river	Construction	1 Very Unlikely (1-9%)	1 Very Low	1	Low	Transfer	Contractor required to develop a Spill Prevention, Control, Countermeasure (SPCC) Plan and active overview and enforcement of the SPCC Plan.	PDB	Insurance	PDB	Open
Reservoir Drawdown														
34	Drawdown	<b>Dam Failure</b> Dam or similar structure fails during drawdown, leading to additional costs.	Failure mode not investigated or analyzed properly	Construction	1 Very Unlikely (1-9%)	1 Very Low	1	Low	Transfer	Rigorous detailed design analysis surrounding dam safety during drawdown; Completion of the FERC Potential Failure Modes Analysis process; Close coordination with the FERC regional office and state dam safety authorities; Implement FERC Emergency Action Plan, as appropriate.	PDB	Insurance	PDB	Open

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45	Drawdown	<b>Regulatory Shutdown - Water Quality</b> Reservoir drawdown impacts water quality more severely than anticipated causing project regulatory shutdown, delaying the project.	Permit conditions and/or inadequate modeling of water quality; duration of drawdown extends past March due to extreme weather	Construction	1 Very Unlikely (1-9%)	1 Very Low	1	Low	Transfer	Perform comprehensive water quality studies prior to construction; Implement risk management measures needed to comply with water quality requirements.	LTC	LTC	-	Open
46	Drawdown	<b>Unanticipated Erosion</b> Reservoir drawdown and subsequent operations results in a greater than anticipated level of erosion at bridges or along channel creating passage barrier. This is likely to lead to additional cost.	Local hydrodynamics result in greater than modeled erosion or scour	Construction	3 Less Likely (20-39%)	1 Very Low	3	Low	Manage	Comprehensive design review; Design additional scour protection for bridges if determined to be needed; Develop monitoring and mitigation plan for during and post reservoir drawdown.	Owner / PDB	Local Impact Mitigation Fund	Insurance	Open
47	Drawdown	<b>Unanticipated Effects on Diversion Intakes</b> Reservoir dewatering and subsequent operations have greater than anticipated effects on diversion intakes for irrigation/livestock. This may lead to additional cost.	Greater than predicted suspended sediment and bedload movement	Construction	3 Less Likely (20-39%)	1 Very Low	3	Low	Share	Comprehensive field investigation and design review; Develop plan for monitoring/mitigating intakes during reservoir drawdown.	Owner / PDB	Post-GMP Contingency	Insurance	Open
48	Drawdown	<b>Unanticipated Effects on Groundwater Wells</b> Reservoir dewatering and subsequent operation has greater than anticipated effects on groundwater wells. This may lead to additional cost.	Difficult to investigate and analyze groundwater relationships	Construction	3 Less Likely (20-39%)	1 Very Low	3	Low	Accept	Comprehensive field investigation and design review; Implement Groundwater Well Management Plan for evaluating changes in groundwater post-reservoir drawdown and proactively mitigate impacted wells.	Owner	Local Impact Mitigation Fund	Insurance	Open
49	Drawdown	<b>Unanticipated Effects on Channel Flooding</b> Reservoir dewatering and subsequent operations have greater than anticipated effect on downstream channel aggradation/flooding. This may lead to additional cost.	Evacuated coarse sediment is greater than anticipated leading to increased channel aggradation and associated flooding	Construction	2 Unlikely (10-19%)	1 Very Low	2	Low	Accept	Rigorous assessment on transport and flooding during detailed design; Monitoring post-drawdown; Raise awareness that active channel management program needed; Implement measures to manage channel aggradation and flood risk.	Owner	Local Impact Mitigation Fund	Local Impact Mitigation Fund	Open
50	Drawdown	<b>Downstream Public Safety</b> Public safety risk in downstream channel during the reservoir drawdown.	Outreach and public safety measures insufficient to keep out public creating potential risk to public safety during drawdown (increased flows)	Construction	2 Unlikely (10-19%)	1 Very Low	2	Low	Share	Comprehensive education and outreach plan; Detailed review and QA of safety program; Development of a Reservoir Dewatering Awareness Plan that will include procedures for notifying public of the schedule and anticipated flows for reservoir drawdown.	Owner / PDB	Post-GMP Contingency	Insurance	Open
89	Drawdown	<b>Ice Impediment</b> Reservoir ice impedes sediment flushing during reservoir drawdown leading to cost increases.	Ice on one or more reservoirs during drawdown might impede sediment erosion	Construction	2 Unlikely (10-19%)	1 Very Low	2	Low	Transfer	Incorporate management measures into design where possible.	PDB	PDB	-	Open



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Contractor Performance														
26	Contractor Performance	<b>Construction Errors</b> Construction errors (quality control) may lead to additional costs.	EOR fails to properly inspect or direct work in the field; QC failures	Construction	4 Likely (40-59%)	1 Very Low	4	Med	Transfer	Clear contract requirements; Owner review and enforcement of Contractor QA/QC Plan and rigorous Owner audit and spot testing to confirm results.	PDB	Insurance	PDB	Open
84	Contractor Performance	<b>Labor Strike</b> Construction shutdown due to labor strike may impact schedule and cost	Labor conditions results in a strike by construction workers	Construction	2 Unlikely (10-19%)	1 Very Low	2	Low	Share	Include Contract requirements for living conditions in camps and worker safety.	Owner / PDB	Post-GMP Contingency	Insurance	Open
Dams, Powerhouses, Reservoirs														
32	Dams	<b>Slope Failure</b> Copco lake reservoir rim or local slope failure along access roads may lead to additional cost and schedule delay.	Slope instability, inadequate access road condition assessment prior to construction. Design analyses unable to be made for all geologic conditions and slope geometries; insufficient data	Construction	3 Less Likely (20-39%)	4 High	12	Med	Share	Comprehensive field investigation and design review; Develop plan to address slope failures along Copco Road if they were to occur during reservoir drawdown.	Owner / PDB	Post-GMP Contingency	Insurance	Open
52	Dams	<b>Large Gate Procurement</b> Copco No. 1 and/or Iron Gate Dam large gate procurements delay gate installation resulting in delay of reservoir drawdown	Manufacturer requires additional information; (note: E&O covered elsewhere)	Design	4 Likely (40-59%)	2 Low	8	Med	Transfer	Early detailed design; Early involvement of the Contractor to initiate gate procurement activities including input from the gate fabricator; Contractual milestones with liquidated damages; Early Contractor input including planning underwater work to modify/demo the existing Iron Gate Dam gate structure.	PDB	Insurance	PDB	Open
53	Dams	<b>Tunnel Modifications</b> Copco. No.1 and Iron Gate Dam tunnel modifications are more difficult to construct causing schedule and cost overruns	Changed site condition or design omission	Construction	3 Less Likely (20-39%)	3 Moderate	9	Med	Transfer	Comprehensive field investigation and design review; Early Contractor input as well as transparent Contractor progress cost estimates based on proven means and methods.	PDB	Insurance	PDB	Open
54	Dams	<b>Dam Diversion Malfunction</b> Copco No. 1 or Iron Gate Dam diversion gate malfunctions during drawdown resulting in delay of reservoir drawdown	Faulty equipment or equipment failure (note E&O covered elsewhere)	Construction	1 Very Unlikely (1-9%)	1 Very Low	1	Low	Transfer	Proactive QA/QC during design; Include backup systems for operating the gates in the design and construction including special inspections and testing of the gates prior to drawdown.	PDB	Insurance	PDB	Open
55	Dams	<b>Diversion Tunnel Intake Blocked</b> Copco No. 1 and/or Iron Gate Dam diversion tunnel intake blocked by debris during drawdown reducing flow capacity. This may lead to schedule delays and increased costs.	Debris within reservoir blocks intake	Construction	3 Less Likely (20-39%)	1 Very Low	3	Low	Share	Maximizing the size of the intakes to match the size of the gates; Design debris grating for intake with ability to clear debris from grating.	Owner / PDB	Post-GMP Contingency	Insurance	Open
65	Dams	<b>Dam Failure</b> Iron Gate Dam or J.C. Boyle Dam overtopped during excavation by storm water flows in excess of 100-year event resulting in dam failure. This would lead to additional cost.	Climate change; increased variability in precipitation patterns	Construction	1 Very Unlikely (1-9%)	1 Very Low	1	Low	Accept	Require that the dam height during excavation not be less than needed to safely pass a 100-year event through the diversion tunnel; Completion of the FERC Potential Failure Modes Analysis process; Implement EAP, if necessary; Close coordination with the FERC regional office and state dam safety authorities.	Owner / Force Majeure	Post-GMP Contingency	Insurance	Open



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66	Dams	<b>Hatchery Delay</b> Iron Gate and/or Fall Creek Hatchery is not brought online in time to begin drawdown. This may lead to schedule delay.	PacifiCorp does not move forward with planning, designing, costing, and seeking approval for hatchery designs. Inadequate planning, equipment, staff, technical issues, or unfavorable weather	Construction	3 Less Likely (20-39%)	3 Moderate	9	Med	Manage	Rigorous design of replacement supply; Pilot treatment technology; Proactive QA/QC during construction.	Owner / PDB	Post-GMP Contingency	PDB	Open
Yreka Water Supply Pipeline														
74	Yreka	<b>Design Changes by City of Yreka</b> Design review by City of Yreka may result in changes to design. Coordination or other design delays related to City of Yreka water system design.	Lack of coordination or agreement on design process or details	Design	3 Less Likely (20-39%)	1 Very Low	3	Low	Manage	Proactive coordination with City engineers on process and design requirements; Strict adherence to schedule milestones and KRRC QA process; Keep Designer under KRRC/AECOM control so payments can be withheld due to schedule delays	Owner	Pre-GMP Contingency	-	Open
100	Yreka	<b>Yreka Water Supply Construction Delays</b> Yreka Water System Pipeline Crossing is not constructed in time for dam removal start. If this happens it pushes the dam removal to next calendar year. Differing Site Condition claim during Yreka Water Supply Pipeline Crossing Construction. On-site investigation shows much more complex.	Unforeseen seasonal flow condition in-river, and other unforeseen adverse conditions (e.g., geology) impacting construction schedule.	Construction	3 Less Likely (20-39%)	2 Low	6	Med	Manage	Consider obtaining permits early; consider approved in-river work window for fish protection and other potential risks to construction schedule in planning for contingencies - in order to complete construction in-time for the dam removal start.	Owner / PDB / Force Majeure	Pre-GMP Contingency	PDB	Open
External Events														
9	External Events	<b>Uncontrolled Circumstances</b> Uncontrollable circumstances (e.g. force majeure, war, terrorism)	Uncontrolled circumstances	Construction	1 Very Unlikely (1-9%)	1 Very Low	1	Low	Accept	Prepare Emergency Response Plan (PERP) and require Contractor to prepare their own PERP	Owner / PDB / Force Majeure	Post-GMP Contingency	PDB	Open
20	External Events	<b>Wet Weather</b> Wetter-than-expected weather or flows higher than expected during instream construction window increases costs and causes delays.	Climate change; Hydrology	Construction	1 Very Unlikely (1-9%)	1 Very Low	1	Low	Accept	Rigorous flow analyses during planning/design; Consider defining anticipated rain days in contract as a number greater than average; Define flow return period; Contract requirement for contractor plan for wetter-than-expected weather.	Owner	Post-GMP Contingency	-	Open
22	External Events	<b>On-site Fire</b> Fire in watershed causes on-site fire damage	Lightning; Accidental; Arson	Construction	3 Less Likely (20-39%)	1 Very Low	3	Low	Share	Fire Management Plan has been developed and Contractor will be required to prepare their own Fire Management Plan.	Owner / PDB	Insurance	-	Open
24	External Events	<b>Earthquake - During Construction</b> Earthquake damages temporary construction leading to additional cost and schedule delays.	Earthquake occurs near project	Construction	1 Very Unlikely (1-9%)	2 Low	2	Low	Transfer	Consider specifying a contract defined design earthquake for temporary construction.	Owner / PDB	Insurance	-	Open
31	External Events	<b>Onsite Public Safety</b> Public safety at construction site. Injuries or damage may lead to additional cost and schedule delays.	Public safety measures insufficient to keep out public	Construction	1 Very Unlikely (1-9%)	1 Very Low	1	Low	Transfer	Development of appropriate health and safety qualifications, experience and other requirements during the procurement process, as well as active overview and enforcement of the Contractor's health and safety and site security plans. No public access to work areas.	PDB	Insurance	PDB	Open

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73	External Events	<b>Earthquake - Post Construction</b> Large seismic event up to design Maximum Credible Earthquake (MCE) occurs after project completion that results in blockage of Klamath River, leading to additional costs.	Large seismic event causes catastrophic landslide or slope failure	Post-Construction	2 Unlikely (10-19%)	3 Moderate	6	Med	Transfer	Develop clear design requirements for PDB contract; Work with dam safety authorities to set reasonable design criteria and associated durations.	LTC	LTC	Insurance	Open
79	External Events	<b>Domestic Terrorism</b> Domestic terrorism or actions to disrupt or stop project during construction may lead to schedule delays.	Extreme opposition to project	Construction	2 Unlikely (10-19%)	1 Very Low	2	Low	Accept	Develop site security plan that includes project response to different scenarios for disruption of project by domestic terrorists	Owner	Post-GMP Contingency	-	Open
104	External Events	<b>Wildfire</b> Wildfire ignited by construction activities spreads and affects other properties.	Hot work, or other activities during the dry months generate sparks or heat that ignite dry grass and brush around the project that then spreads to neighboring populated areas.	Construction	1 Very Unlikely (1-9%)	5 Very High	5	High	Transfer	Fire Management Plan has been developed and Contractor will be required to prepare their own Fire Management Plan.	PDB	Insurance	PDB	Open
111	External Events	<b>Extreme Weather</b> Hotter- or colder-than-expected weather causes work stoppage and schedule delays	Climate change	Construction	1 Very Unlikely (1-9%)	1 Very Low	1	Low	Accept	Weather analysis during construction planning needs to foresee heat/cold delays; consider including greater than average number of excessive heat/cold days; for hot weather, consider ways to increase night work without affecting noise levels	Owner / Force Majeure	Post-GMP Contingency	-	Open
114	External Events	<b>Confiscation by Governmental Body</b> Government confiscates resources or stops work	External events (disaster, etc.)	Construction	1 Very Unlikely (1-9%)	2 Low	2	Low	Accept	N/A	Owner / Force Majeure	Post-GMP Contingency	-	Open
115	External Events	<b>Circumstances Affecting Suppliers</b> External events (disaster, etc.) affect the ability of PDB to acquire supplies and materials	External events (disaster, etc.)	Construction	1 Very Unlikely (1-9%)	2 Low	2	Low	Accept	Early coordination with suppliers to avoid supply limitations	Owner / Force Majeure	Post-GMP Contingency	Insurance	Open

## Attachment B     Aon Risk & Insurance Due Diligence Report





# Risk and Insurance Due Diligence Report

Klamath River Renewal Project

Prepared for the Klamath River Renewal Corporation

Date: July 2019







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## Reliance Statement

This report is prepared for the Klamath River Renewal Corporation (KRRRC or Client) in respect to the procurement of the Klamath River Renewal Project (Project). It may be relied on by the following parties (Parties):

- Klamath River Renewal Corporation
- The State of California
- The State of Oregon

We confirm that the Parties may rely upon this report in connection with and for the purpose of:

- The provision or underwriting (as the case may be) of financial accommodation, equity, debt or hybrid investment, leasing finance or residual value guarantees to facilitate the Project
- Pre or post financial close debt financing or sale, transfer or assignment of the above financial accommodation, equity or debt investment, hybrids issues, including the issue of a disclosure document to finance the Project, leasing finance, residual value guarantees or underwriting positions which occurs within 12 months of financial close (together, the Financing)
- FERC license transfer to Klamath River Renewal Corporation

We confirm that the Parties are permitted to extract parts of the report to be inserted into any information memorandum and/or disclosure document (IM) used in connection with any Financing of the Project or any part of it, provided that:

- A full copy of the report is made available to each recipient of the IM
- Each extract is a complete and accurate transcription of the relevant part of the report
- It is clearly stated in the IM that the extract is an extract from the report
- It is clearly stated in the IM that the recipients may not rely upon the extract but only rely on the full Report and then subject to any limitations or disclaimers in the report

We also confirm that we are prepared to answer queries with respect to this report raised by any of the Parties or potential Financiers or underwriters in any syndication or sell down process, which may arise in the six-month period following financial close of the Project. We further confirm that we are prepared to answer queries with respect to this report raised by FERC, the State of California, or the State of Oregon which may arise in the six-month period following FERC license transfer.

For the purposes of this reliance statement, Financiers means each person who provides or participates in financing including:

- a) Each arranger, underwriter, note holder or participant in the facilities related to the Financing and any agent or trustee (including any security trustee or security agent) acting for any of them
- b) Each working capital facility provider
- c) Each interest rate, foreign exchange or other hedge counterparty
- d) Each person who provides Financing as a lessor under a financing or operating lease or as a residual value guarantor on or post financial close including each arranger, underwriter, dealer, participant or note holder in the Leasing Arrangements related to the financing or any agent or trustee acting for any of them
- e) Any credit support provider to a borrower under a financing

in each case as at financial close; and

- Each and any person who becomes a substitute, transferee or assignee of any of the persons referred to in (a), (b) and (e) within 12 months of financial close.

This report is based upon the information that the Client and its representatives have provided. The Client is responsible for the accuracy and completeness of the information, and we accept no responsibility arising from the Client's failure to provide complete and accurate information.



## Executive Summary

This report has been produced by Aon at the request of the Klamath River Renewal Corporation for the benefit of the KRRC and related parties (collectively referred to as the “Stakeholders”), involved in the Project. KRRC engaged Aon for certain Insurance Advisory services (“Insurance Services”). This report is provided for the benefit of all Stakeholders and may be relied upon by the Stakeholders.

This report summarizes the Insurance Services and provides certain recommendations based upon those Insurance Services including but not limited to:

- Risk Assessment including analytics and risk modelling:
  - The analytic and risk modelling reveals that the total exposure (general liability, errors and omissions, haul away auto, and workers compensation) at a 99.5% confidence level is \$120.61M.
  - As seen in Appendix C, dam failure presents the greatest risk. At a 99.5% confidence level, the total estimated cost associated with a dam failure is \$119.97M.
  - Wildfire does not present a significant risk and at a 99.99% confidence level the exposure is estimated to be \$6.26.
  - The insurance program proposed by Aon will provide sufficient limits of insurance to cover these risks.
- Risk Assessment including Project Risk Register:
  - Working in conjunction with Aecom and the Stakeholders, Aon has attempted to identify all of the potential causes of loss.
  - Based upon the Project Agreement, Aon identified which party “owns” the risk and the risk mitigation tools available.
  - For those risks where insurance is “potentially available”, the determination for whether insurance is available is based upon the facts associated with the loss (assumes that the loss is not otherwise excluded) and the damages being claimed.
  - Of the 39 risks for which insurance is not available:
    - 4 are ProjectCo (Kiewit risks) and 6 are shared ProjectCo/KRRC
    - 4 are associated with funding and should be known prior to license surrender
    - 12 will be known prior to license surrender
    - 4 will be transferred to the LTC
    - The remaining 9 are either low probability or included in the KRRC contingency.
- Risk Assessment including Project Insurance Program:
  - The Definite Plan made several insurance recommendations, including but not limited to:
    - A general liability only owner controlled insurance program (OCIP)
    - KRRC, Project Co/Kiewit, and all contractors procuring their own workers compensation insurance program
    - Builder’s Risk /Inland Marine limit based upon 100% of the replacement value of any salvaged material or property and procured by KRRC
    - Professional Liability to be purchased by Project Co/Kiewit with limits as high as 20% - 40% of the construction value.
  - Aon recommends certain changes to the Project Insurance Program:
    - A contractor controlled insurance program (CCIP) which includes both the general liability, umbrella liability and workers compensation insurances. This will avoid gaps in coverage, allow for greater participation by minority owned business and most importantly, lower the cost of insurance based upon Kiewit’s purchasing power in the marketplace.



- Builder's Risk/Inland Marine limit based upon the probable maximum loss ("PML") vs. replacement value and to be procured by ProjectCo/Kiewit. By utilizing the PML, the limit will account for the increased value in the roads, bridges and other project improvements
  - Contractor's Pollution Liability and Pollution Legal Liability with linked limits of \$50M and procured by KRRC. This will allow for a more seamless transfer of coverage to the LTC.
  - Professional Liability limits of \$25M and allow for Kiewit to use its corporate program to satisfy this requirement. This will provide the same protections as a project specific placement while eliminating the costs associated with a project specific placement.
  - Watercraft and Aircraft Liability with \$5M limits for each of the exposure, except helicopters which should be \$10M: watercraft, aircraft, helicopters, and drones to the extent there is exposure. However, if the drones are under 10 kg, use of the general liability is permissible.
- The total premium cost associated with the Aon recommended program is estimated to be \$8.2M.

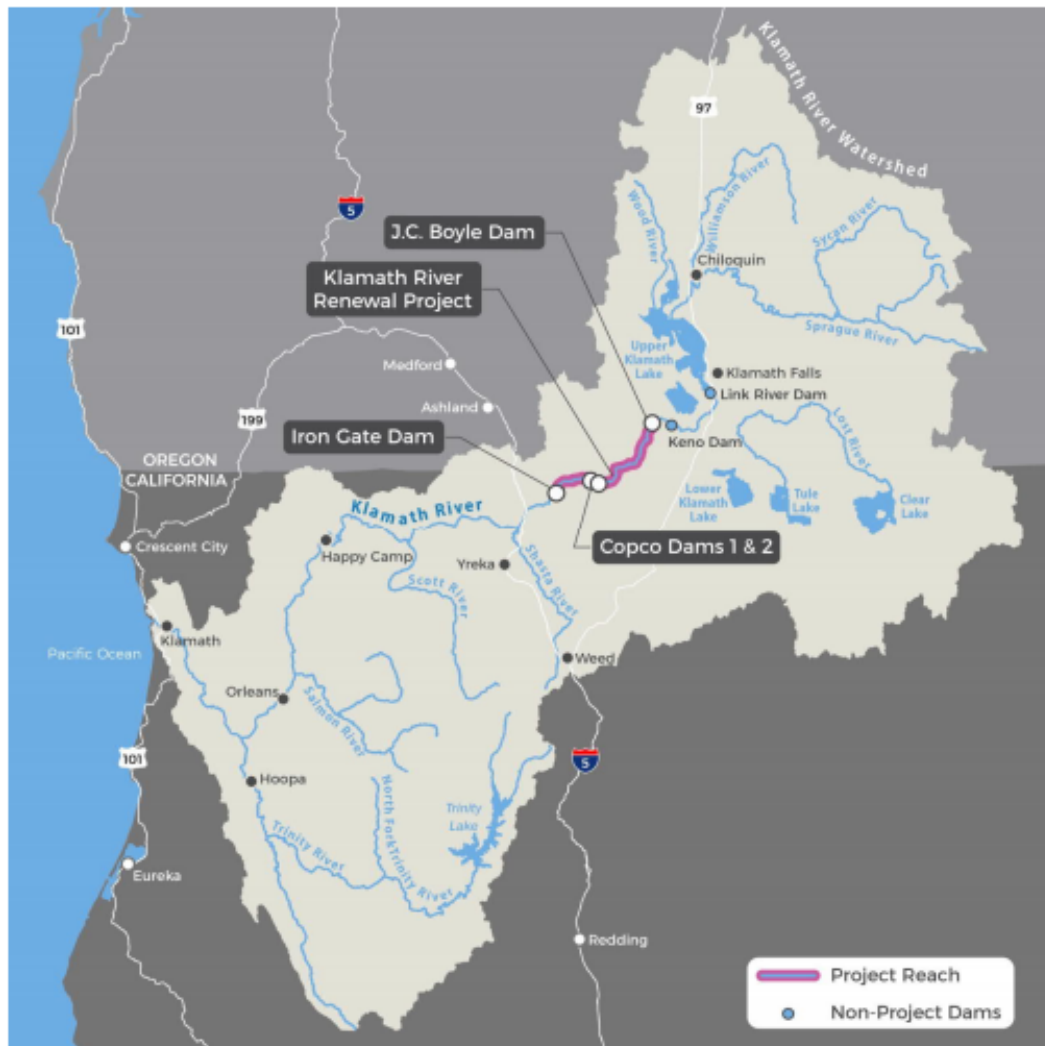
It must be clearly understood that, at this time, no project insurances have been bound and no insurance premium costs have been incurred. KRRC does maintain its corporate insurance program, which was renewed on June 30, 2019. The project insurances will be placed prior to Project Implementation Work.



## Project Overview

The Klamath River Renewal Project (the “Project”) comprises the removal of four dams on the Klamath River – J.C. Boyle, Copco 1, Copco 2, and Iron Gate, along with appurtenant structures. The Project is intended to restore the natural, free-flowing condition and restore volitional fish passage through river miles 193.1 to 234.1. In addition to the deconstruction activities, the Project Company will be responsible for remediating and restoring the reservoir sites, minimizing adverse impacts downstream, ensuring project completion with available funds, and avoiding damages and liabilities to PacifiCorp, the States, and third parties. The estimated cost of the progressive design-build contract is estimated to be \$237.6M million. The estimated cost of project oversight, liability transfer, environmental compliance, technical support, construction management, mitigation measures and monitoring and reporting is estimated to be \$133.3M with a contingency of \$62.8M.

### Project Map





## Method of Approach

The review and commentary on insurance and risk management issues are based on the review of project documentation. This documentation includes the Definite Plan and other data as provided by the Klamath River Renewal Corporation and its advisors.

Specifically, Aon has reviewed the following documents:

- Klamath Hydroelectric Settlement Agreement dated February 18, 2010, Amended April 6, 2016 and November 30, 2016
- Definite Plan dated June 2018 and July 2, 2019
- Request for Proposal dated December 21, 2018
- Project Agreement dated April 24, 2019
- Operations & Maintenance Agreement dated September 20, 2017
- FERC Board of Consultants Letter Report No. 1 and KRRC Response Letter dated December 12, 2018

Risks that have been identified through the review of the above documentation and through consultation with Stakeholders, have been discussed and matched with solutions utilizing the following approach:

Aon has utilized its Project Enterprise Risk Assessment (PERA) approach in its analysis of the risks on the Project. PERA is a proprietary enterprise risk management solution which is tailored to complex construction projects. The PERA methodology involves the following:

- Risk Identification
- Map to potential risk solutions, including transfer by insurance, transfer by contract, transfer by alternative method, and risk controls
- Certain proposed solutions, if possible, could be vetted through meetings with various Stakeholders in order to test the integrity of the solution

This method will also attempt to address risks outside of the usual hazard quadrant and will provide the Stakeholders with a project wide "risk matrix" that includes identified risks and potential solutions. Some solutions may not involve transferring risk to insurance carriers, and Aon will discuss with Stakeholders techniques for implementing these solutions.

Aon's risk matrices were then compared to the Aecom risk register to ensure that all risks were identified and properly classified. The combined risk matrix/risk register were then used to conduct the risk analytic and modelling and quantify the potential risk. This allowed Aon to determine the appropriate levels of insurance and avoid over insuring the project, which would not have delivered good value for money. Aecom utilized the combined risk matrix/risk register to produce a roll-up contingency estimate.



## Project Risk Commentary

Below Aon has provided a summary of critical risk clauses within the Definite Plan and the Project Agreement.

### Key Project Risks

The following discussion of project risks explores the risks that were highlighted by Stakeholders during the February 19, 2019 risk workshop held at the Aon San Francisco office. The risks raised by Stakeholders were then quantified and analyzed by Aon Global Risk Consulting (AGRC) to provide estimates of the risk of potential losses by line of coverage and by risk. Below is a summary of potential losses by line of coverage:

		GL	E&O	Haul Away— AL	Workers Comp	Total Before Insurance	E&O— Hatchery
	Average Loss	\$6.19	\$0.53	\$1.15	\$3.72	\$11.58	\$2.02
	CAT Loss	\$62.12	\$10.62	\$3.78	\$12.37	\$70.50	\$56.79
Confidence Level	Years/Event						
10%		\$0.26	\$0.00	\$0.39	\$1.95	\$3.62	\$0.00
20%		\$0.39	\$0.00	\$0.54	\$2.26	\$4.21	\$0.00
30%		\$0.53	\$0.00	\$0.67	\$2.53	\$4.74	\$0.00
40%		\$0.70	\$0.00	\$0.80	\$2.78	\$5.31	\$0.00
50%	2	\$0.93	\$0.00	\$0.94	\$3.05	\$6.04	\$0.00
60%	2.5	\$1.34	\$0.00	\$1.11	\$3.36	\$7.09	\$0.00
70%	3.3	\$2.26	\$0.00	\$1.31	\$3.77	\$9.19	\$0.00
80%	5	\$6.64	\$0.00	\$1.59	\$4.40	\$13.45	\$0.00
90%	10	\$16.93	\$0.00	\$2.09	\$5.90	\$24.48	\$0.00
95%	20	\$29.01	\$0.00	\$2.62	\$8.04	\$36.19	\$0.00
99%	100	\$67.92	\$18.04	\$4.28	\$14.48	\$78.72	\$51.67
99.38%	161	\$109.38	\$25.71	\$4.89	\$17.05	\$120.61	\$92.20
99.5%	200	\$125.98	\$28.87	\$5.27	\$18.19	\$135.36	\$113.71
99.90%	1,000	\$254.81	\$69.71	\$8.97	\$28.27	\$264.49	\$320.70
99.95%	2,000	\$303.28	\$106.86	\$11.75	\$33.35	\$308.11	\$414.71
99.99%	10,000	\$394.77	\$195.56	\$21.18	\$46.28	\$404.89	\$705.41

### Wildfire

Wildfire is the is one exposure that has risen to the top of the list for casualty insurers. Though the amount of work associated with disconnecting the electrical transmission lines from the hydroelectric dams is small in comparison to the overall project it is and will most certainly become a major concern from an underwriting



perspective. Unfortunately, starting with the San Diego brush fires to the recent fires in Southern California and most certainly Northern California, wildfire has now reached catastrophic stature in the industry and will become a driving force in the ability to place general liability coverage. Based on an analysis by KRRC's attorney's, of the three potential theories of liability for wildfire damage – negligence, trespass by fire, and inverse condemnation – inverse condemnation would not apply to KRRC as it is not an investor-owned regulated utility. Additionally, PacifiCorp maintains all operational risk until the dams are decommissioned. Consequently, KRRC or the Project Company would only be liable for damages due to negligence and trespass by fire and general liability policies should cover most potential claims for property damage and bodily injury. However, as KRRC's attorneys note, punitive damages cannot be covered by insurance under California law. According to the analysis done by Aon, the potential liability exposure from wildfire is relatively low with losses estimated to be \$6.26M at a 99.99% confidence level. This is primarily due to the rural nature of the project area and PacifiCorp's historic wildfire losses.

#### *Downstream Sediment Deposits*

The potential for a negative impact on downstream water quality is of significant concern, especially if there are issues related to contamination of the sediments. There could also be a negative impact at the point at the Klamath empties into the ocean. Much of this risk should be covered by the pollution legal liability coverage.

#### *Dam Failure*

The product of the annual probability of dam failure from a particular failure mode and the magnitude of the resulting consequences. Statistically, over 50% of dam failures in the U.S. can be linked to geologic and geotechnical problems. Professional liability underwriters view any dam work substantially more challenging because of the potential for catastrophic loss. According to the analysis by Aon, the potential liability exposure from dam failure is somewhat significant, with projected losses estimated to be \$119.97M at a 99.5% confidence level. However, PacifiCorp is responsible for all operational risks until decommissioning. Consequently, KRRC's exposure is limited to post-decommissioning through dewatering, a period which is estimated to be no more than four months.

#### *Failure of the Substation*

Damage to the substation during the period between license surrender by PacifiCorp and decommissioning could add significant costs to the project as substations not easily replaced. Also, should there be substation failure, there could be negative impacts to the environment. The potential losses from substation failure can arise from any time after the project starts to the last date of power generation. Aon estimates that losses at a 99.5% confidence level would be \$20.79M. However, KRRC and/or ProjectCo/Kiewit would only be responsible for losses arising out of damage caused by the deconstruction of the dam, not the operational exposure.

#### *Hatchery Failure or Fish Kill*

If the water intake is compromised, there is the risk of losing endangered species. Additionally, there is a risk of loss through KRRC or contractor negligence that causes the hatchery work to fail. Aon estimates that losses at a 99.5% confidence level would be \$113.71M. However, KRRC does not have responsibility for the operation of the hatcheries; this is the responsibility of the Department of Fish and Wildlife. As such, any losses associated with the operational exposure would not fall to KRRC.

#### *Discovery of Tribal Cultural Resources*

There is a good chance that during the decommissioning and facilities removal, a contractor will discover tribal cultural resources. If that occurs, work will have to immediately stop until an investigation can be



conducted. This investigation could prolong the construction period and depending on where in the facilities removal cycle process the discovery occurs, there may be a need for work not originally within the scope of work to ensure embankments are stable. This would be considered an uncontrollable circumstance.

#### *Yreka Water Supply Pipeline Move*

There is risk that KRRC or contractor negligence may cause the Yreka water supply pipeline to fail or fail to operate properly. Key inputs to understanding the liability implications of this risk would be the duration of the failure and the water usage by the citizens of Yreka. Aon estimates the losses at a 99.5% confidence level would be \$49.49M.

#### *Uncontrollable Circumstances*

As defined in the Project Agreement, the Uncontrollable Circumstances are intended to ensure that project risks are transferred to the party best capable of managing, mitigating or transferring each risk. The Uncontrollable Circumstances are comprehensive and have the KRRC retaining risks that are typically retained by Owners on large, complex infrastructure projects. These risks are typically either in the relative control of the KRRC, such as errors, omissions, or insufficiencies in information provided on behalf of the KRRC; are uninsurable, such as labor disputes or strikes affecting specific trades at a regional or national level; or would be considered acts of God, such as earthquakes, fires, tornadoes, or floods. Having the KRRC carry responsibility for these foreseen events allows the Project Company to reduce some of the contingencies that they would otherwise be carrying in their bids. There are some risks that the Project Agreement is silent on that are often described in other project agreements for complex construction projects that may lead to delays and/or disputes in the project. Except for these silent risks, the Project Agreement generally transfers risk to the party best able to mitigate such risk.

## Definite Plan and Project Agreement Insurance Requirements

### Corporate Program

KRRC procured a corporate insurance program which is intended to address KRRC's general risks as a business entity and include the following coverages:

- \$1,000,000 Commercial General Liability policy which is supplemented by a \$5,000,000 Umbrella policy
- \$10,000,000 Directors and Officers policy that protects the KRRC's board members
- Worker's Compensation and Employer's Liability policy with a \$1,000,000 limit for the KRRC employee(s)
- Commercial Automobile policy with \$1,000,000 in limits
- Commercial Property policy that covers the KRRC's scheduled property

KRRC's corporate insurance program was to name PacifiCorp, the State of Oregon, the State of California, and their respective officers, agents, employees, and members as additional insureds in accordance with the requirements of the Amended KHSA.



Project Insurance Program

Policy Type	Definite Plan – Appendix A	Project Agreement – Appendix 9	Aon Commentary
<p><b>CIP for General Liability</b></p> <p>Limits: \$2M occurrence \$4M general aggregate</p>	<p>Policy to cover KRRC, the dam removal contractor and all eligible subcontractors for their work at the Project.</p> <p>The goal was to provide a comprehensive, seamless, and efficient insurance program which: (1) precludes insurers from denying coverage based upon other available coverage; (2) removal of cross-litigation costs caused by multi-party losses on a construction project; (3) allows the project sponsor/owner to control and design the coverage it intends to procure and the costs of coverage.</p>	<p>Policy to cover liabilities that arise out of the performance of the Project Implementation Work</p> <p>Limits of \$2M per occurrence, \$4M products completed operations, and \$4M aggregate limit</p> <p>A products completed operation period of 10 years following Project Final Completion or the Termination Date, whichever occurs first.</p>	<p>Neither the Definite Plan nor the Project Agreement address allowable deductibles and/or self-insured retentions.</p> <p>Appendix 9 provides that Project Co/Kiewit will pay for deductibles/SIRs</p> <p>Our recommendation that the GL should be a CCIP and not an OCIP have been incorporated into Appendix 9. The reasoning for the change is explained later in this document.</p> <p>Our recommendation was that the products completed operations cover be maintained through the statute of repose or the period within which to file a lawsuit.</p>
<p><b>Umbrella/Excess Liability as part of the CCIP</b></p> <p>Limits: \$200M</p>	<p>This policy is to follow form to the CGL and will cover all enrolled parties, which is an added value for smaller contractors who cannot afford these limits.</p>	<p>Policy to cover KRRC, the Project Company and all enrolled contractors of every tier.</p> <p>The limits are more specifically delineated as follows:</p> <p>\$200M Combined Single Limit</p> <p>\$200M General Aggregate for Enrolled Parties</p> <p>\$200M Products Completed Operations</p>	<p>As set forth in the GL comments and later in Aon's Risk and Insurance Commentary, we believe there are greater advantages to having Project Company procure this coverage as a CCIP.</p>





Policy Type	Definite Plan – Appendix A	Project Agreement – Appendix 9	Aon Commentary
		10 year products completed operations	
<b>Worker's Compensation/Employer's Liability</b>  Limits:  Statutory Requirement (WC)  \$1,000,000 (EL)	Requires all contractors and subcontractors to procure this coverage separate and apart from the CIP. The reasoning for not covering under an CIP is because the coverage is statutory.	The limits are more specifically delineated as follows:  Worker's Compensation as required by law.  Employer's Liability: \$1M each accident \$1M each disease (each employee) \$1M for disease (policy limit)  Requires USL&H when required by law	Neither the Definite Plan nor the Project Agreement address allowable deductibles and/or self-insured retentions.  There are no statutory prohibitions to including the worker's compensation and employer's liability in the CCIP.  As set forth in the GL comments and later in Aon's Risk and Insurance Commentary, we believe there are greater advantages to having Project Company procure this coverage as a CCIP
<b>Commercial Auto Liability</b>  Limits: \$1M CSL	Required of all contractors and subcontractors for all owned, leased, and non-owned vehicles used in connection with the work.  Outside of the CIP	Required Limit of \$5M CSL which could be met by a combination of primary and excess coverage to be procured by all contractors and subcontractors.  Requires a Motor Carrier Act Endorsement	Given the exposure, Aon would recommend at least \$5M if not \$10M in coverage for the Project Company and then allow Project Company to determine the appropriate limits for its subcontractors but not less than \$2M.  Auto to include MCS 90 and CA 9948.
<b>Builder's Risk/Inland Marine or Commercial Property</b>  100% of the replacement value of any salvaged material or property	Applies a slightly unconventional analysis to the limit.  Will be purchased by KRRC as a project specific property cover.	Insures against all risk of physical loss and/or damage including flood and earthquake, subject to normal policy limitations covering full insurable value of any salvage material or	Neither the Definite Plan nor the Project Agreement address allowable deductibles and/or self-insured retentions or if the Project Company and/or the enrolled contractors will be responsible for the



Policy Type	Definite Plan – Appendix A	Project Agreement – Appendix 9	Aon Commentary
		<p>property at the Project Site.</p> <p>Also covers physical damage or loss of equipment and materials purchased in connection with the Early Works Package Amendment.</p> <p>Will cover contractors of any tier as additional insureds as their interests may appear.</p>	<p>deductible and/or self-insured retention.</p> <p>As explained in greater detail in Aon's Risk and Insurance Commentary, we believe there are greater advantages to having the Project Company procure the builder's risk coverage.</p>
<p><b>Contractor's Pollution Liability ("CPL") and Fixed Site Pollution Liability</b></p> <p>Limits: \$50M linked limits</p>	<p>CPL to be purchased by KRRC and will cover all contractors and subcontractors at the project site.</p>	<p>Occurrence form</p> <p>Limits: \$100M each pollution condition and \$100M project aggregate</p> <p>Covers pollution caused by or exacerbate by Project Implementation Work and including</p> <p>coverage for clean-up, removal, transportation and disposal and for any sudden and accidental pollution.</p> <p>The policy will not exclude coverage for claims relating to injuries arising from the presence of lead or asbestos.</p> <p>The policy shall include products completed operations through the statute of repose.</p>	<p>Neither the Definite Plan nor the Project Agreement address allowable deductibles and/or self-insured retentions or if the Project Company and/or the enrolled contractors will be responsible for the deductible and/or self-insured retention.</p>





Policy Type	Definite Plan – Appendix A	Project Agreement – Appendix 9	Aon Commentary
<b>Professional Liability/Errors and Omissions</b>  Limits: Up to \$25M	To be purchased by Project Company  Coverage limits may be as high as 20% - 40% of the construction value.	The limits are more specifically delineated as follows: \$25M/claim \$25M aggregate  To cover liabilities due to error, omission, negligence, mistakes, or failure to take appropriate action in the performance of business or professional duties.  Coverage to be maintained through the statute of repose following Milestone Final Completion for the Final  Habitat Restoration Work.  Retroactive date before commencement of any design.  Shall not contain exclusions for joint ventures, partnerships or both.	Discussions have been had with Kiewit about their corporate program, and they have demonstrated that they have the same types and kinds of coverages as a CPPI. As such, it is permissible for Kiewit to use their corporate program.  Aon agrees that the Project Company and all design professionals must carry professional liability coverage.  Limits of 20% - 40% of the construction values could raise red flags for the insurers and raise the overall cost of coverage.
<b>Watercraft and Aircraft Liability</b>  Limits:  Watercraft - \$5M per occurrence  Aircraft - \$5M per occurrence  Helicopters - \$5M per occurrence  Drones - \$5M per occurrence	The Definite Plan does not contain these insurances	If Project Company or any Subcontractors intend to use any watercraft, aircraft, helicopters, or drones as part of the Project Implementation Work, they must procure and maintain the requisite insurance.	If no other aircraft are being used, drones can often be scheduled on the general liability policy if they are below a certain size.



### *KRRC CIP Obligations*

Each of these policies shall name PacifiCorp, the State of Oregon, the State of California, and their respective officers, agents, employees, and members as additional insureds.

Appendix 9 of the Project Agreement identifies the following excluded parties from the GL and Umbrella CIP coverage:

- (a) Hazardous material remediation, removal, and/or transport companies and their consultants;
- (b) Architects, surveyors, engineers, and soil testing engineers, and their consultants;
- (c) Vendors, suppliers, off-site fabricators, material dealers, truckers, haulers, drivers, and others who merely transport, pick up, deliver, or carry materials, personnel, parts or equipment, or any other items or persons to or from the Project Site;
- (d) Contractors or subcontractors performing day-to-day maintenance and operation work for plant operations;
- (e) Any subcontractor of any tier that does not perform any actual labor on the Project Site; and
- (f) Any other party or entity not specifically identified herein, that is excluded by the KRRC in its sole discretion, even if such party or entity is otherwise eligible.

Enrolled contractor's off-site operations are only covered if the CIP administrator provides a written acknowledgment of such coverage.

### *Project Company OCIP Obligations and Obligations for the Other KRRC-Provided Coverages*

The Project Company shall enroll in the OCIP prior to the commencement of any Project Implementation Work at the Project Site. The Project Company shall ensure that its eligible Subcontractors enroll in the OCIP prior to their commencement of any Project Implementation Work. The Project Company shall, within 10 days of the KRRC's request, submit payroll records, policy rating pages, certified copies of insurance coverages, declaration pages of coverages, certificates of insurance, safety records and history, OSHA citations, construction cost estimates for the Project, and other data the KRRC, the OCIP Administrator, or the OCIP Insurers may request. The KRRC shall be responsible for all premiums associated with the OCIP Coverages as well as deductibles or self-insured retentions associated with the policies.

### *Project Company Obligations Under Project Company Provided Insurance*

#### *1. Maintenance of Insurance*

Project Company must keep in force, or cause to be obtained and kept in force, the policies set forth in Appendix 9. Each policy shall be obtained prior and be in force prior to the performance of any work or commencement of any activity intended to be insured by each policy.

#### *2. Insurer Eligibility*

Each policy of insurance required to be obtained by the Project Company shall be issued by a company or companies with a rating of not less than "A-VIII" in the last available Best's Rating Guide unless otherwise



approved by the KRRC and be authorized to conduct and transact insurance business in Oregon and California.

### *3. Verification of Coverage*

The Project Company shall deliver to the KRRC Contract Representative a copy of certificates of insurance and policy endorsements (i.e, additional insured CG 2010 and 2037, waiver of subrogation, notice of cancellation, primary and non-contributory coverage) provided by its insurance broker or agent for all insurance required within 10 days after receipt of notice of award of the Project Agreement. All such certificates and policy endorsements must be issued and approved by the KRRC prior to the issuance of a Notice to Proceed.

### *4. Primary Coverage*

Each policy of insurance required to be obtained by the Project Company shall, with the exception of the professional liability, worker's compensation and employers liability, be non-contributing with and shall apply only as primary insurance and not excess to any other insurance, self-insurance, or other risk financing program available to the KRRC.

### *5. Corporate vs. Project Specific Policies*

The Project Company may provide professional liability/errors and omissions liability insurance, commercial auto liability insurance, worker's compensation insurance, employer's liability insurance and insurance and watercraft and aircraft liability insurance through the general corporate policies of the Project Company or its Affiliates.

### *6. Waivers of Subrogation*

The workers compensation and commercial automobile liability must each provide for a waiver of subrogation in favor of the KRRC and all other Indemnitees. The waiver of subrogation endorsement must be attached to the certificate of insurance in order to effectuate waiver of subrogation required. The Project Company shall require similar waivers by its Subcontractors.

### *7. Coverage Trigger*

If any liability insurance purchased by the Project Company has been issued on a "claims made" basis, the Project Company shall agree to either provide certificates of insurance evidencing required coverages through the statute of repose after Milestone Final Completion for the Final Habitat Restoration Work with a retroactive date no later than the beginning of the Project Company's or Subcontractor's work under the Project Agreement. Or the Project Company shall purchase an extended (minimum three years) reporting period (ERP) endorsement for the policy or policies in force during the Term and evidence the purchase of the ERP endorsement by means of a certificate of insurance or a copy of the endorsement itself.

### *8. Notice of Cancellation*

Each policy of insurance required to be obtained by the Project Company shall contain an undertaking by the insurers or the insurer's designated representative to notify the KRRC in writing not less than 30 days before any material change, cancellation or termination (except 10 days for non-payment of premium).

## **Definite Plan and Project Agreement Bond Requirements**



Bond requirements include bid bonds, performance bonds, payment bonds and maintenance bonds which will be maintained by KRRC's vendors and contractors. KRRC will require that all bonds be obtained from financially sound surety companies. The performance bond will be in the full amount of the dam contract. AIA Form 312 is the predominant form in use at this time.

## Specialty Corporate Indemnitor

Appendix L to the KHSR requires KRRC to identify and contract with a specialty corporate indemnitor (a Liability Transfer Corporation, or LTC) to protect the States of Oregon, California and PacificCorp from potential liability that may be uninsurable or underinsured. The LTC can be structured contractually, through third-party indemnities or with potentially with additional special insurance products. The LTC may perform portions of the Project and will assume responsibility for various project risks, both during project execution and post-project.

## Aon's Risk and Insurance Commentary

### Builder's Risk

The unique deconstruction nature of the project leads to a challenge in identifying to adequate coverage requirements for the builder's risk policy. Builder's risk insurance is typically purchased to protect an asset that is increasing in value as the project continues whereas the Klamath River Renewal Project will be primarily focused on the removal of assets. For example, if a covered peril were to occur that causes substantial damage to the existing assets, such as a fire, the builder's risk would not necessarily step in to cover the costs of removal of the damaged assets as dam removal is a key aspect of the Project scope.

The current requirements in the Project Agreement require that the builder's risk policy cover the full value of any salvage material or property at the Project Site. Considerations for the recommended limits for the builder's risk policy should include the values of the road improvements, the Yreka water supply work, recreational facilities, and the revegetation work.

Additionally, the current requirements in the Project Agreement have the KRRC procuring the builder's risk policy. In assessing the efficiency of the KRRC taking this approach to the builder's risk policy, there may be some concern that insurance markets may not necessarily be interested in participating on the project. Our recommendation is to require the Project Company to purchase the builder's risk coverage. By doing so, KRRC and the other stakeholders should be able to take advantage of the Project Company's bargaining leverage with its insurers. This should provide more efficiency in terms of pricing for the project as well as fulsome coverage if the project can be scheduled on the Project Company's master builder's risk policy.

If KRRC does procure the builder's risk policy, KRRC should consider how the deductibles should be paid. There should be some, if not all, of the deductible responsibility assigned to the Project Company or contractor who caused the damage.

### General Liability and Worker's Compensation/Employer's Liability Program Structure

While there are many exposures associated with this project, such as lowering the water level in the river so the chosen Project Company will work in dry conditions versus wet, there is one exposure that has risen to the top of the list and that is the wildfire exposure. Though the amount of work associated with disconnecting the electrical transmission lines from the hydroelectric dams is small in comparison to the overall project it is and will most certainly become a major concern from an underwriting perspective. Unfortunately, starting with the San Diego brush fires to the recent fires in Southern California and most certainly Northern



California, wildfire has now reached catastrophic stature in the industry and will become a driving force in the ability to place coverage for contractors and projects alike where there is exposure to wildfire.

From a casualty or third-party liability, inclusive of worker's compensation/employer's liability, perspective there are three ways to approach this project risk. The project can be insured utilizing: 1) an Owner Controlled Insurance Program or OCIP, 2) a Contractor Controlled Insurance Program or CCIP or 3) the use of the Project Company's Practice Program. Each of these approaches are valid ways in which to insure the risks associated with the Project and all three have proven to work over time. Neither one of these ways is necessarily the right or wrong way to approach insuring the Project. Each method has advantages and disadvantages from a KRRC perspective, which will be explored in detail below.

### Controlled Insurance Programs Generally:

To understand why controlled insurance programs ("CIPs") are often chosen to insure a project, one must look to how insurance law has developed over the years.

The commercial general liability insuring agreement reads as follows:

We will pay those sums that the insured becomes legally obligated to pay as damages because of "bodily injury" or "property damage" to which this insurance applies. We will have the right and duty to defend the insured against any "suit" seeking those damages. However, we will have no duty to defend the insured against any "suit" seeking damages for "bodily injury" or "property damage" to which this insurance does not apply.

\* \* \*

This insurance applies to "bodily injury" and "property damage" only if:

- (1) The "bodily injury" or "property damage" is caused by an "occurrence" that takes place in the "coverage territory";
- (2) The "bodily injury" or "property damage" occurs during the policy period;

As such, for there to be coverage under the policy, the insured must prove:

1. That there was an "occurrence";
2. That there was "bodily injury" or "property damage" caused by the "occurrence";
3. That the "bodily injury" or "property damage" resulted in "damages";
4. That the insured is legal obligated to pay those damages;
5. That the "occurrence" took place in the "coverage territory"; and
6. That the "bodily injury" or property damage" occurred during the policy period.

The 'legally obligated' wording raises two legal issues: (1) joint and several liability and (2) anti-indemnity. California is a modified joint and several state which means that a defendant can be held 100% responsible for economic damages and severally liable for noneconomic damages. Oregon, with the exception of environmental torts, follows the rule of several liability only unless part of the judgment is uncollectible and then it may be reallocated. As for anti-indemnity, California Civil Code §2782 states that neither public nor private owner can force subcontractor to indemnify or insure another party for that other party's "active negligence or willful misconduct," for defects in the project's design provided to the subcontractor, or for claims arising out of the scope of the subcontractor's work. Oregon Revised Statute §30.140 prohibits intermediate indemnity, which is when the subcontractor assumes responsibility for the other's negligence in whole or in part.



Given these differences in law and the potential for KRRC to be sued in California or Oregon, this creates uncertainties as to whether KRRC is protected under the contractors' and subcontractors' insurance policies. A controlled insurance policy eliminates these uncertainties, to a certain extent, by having all parties insured under a single policy. The CIP will respond to claims against all enrolled contractors thereby eliminating the need for apportionment of fault and indemnification.

The "occurrence" requirement raises issues with respect to trigger of coverage and how the primary policies in effect will be exhausted. California is a continuous trigger state for environmental claims and there is a split in authority for construction defect, but the rulings are trending toward a continuous trigger. Oregon is an "injury-in-fact" state which means that coverage exists under every policy that is in effect during the time periods in which damage to property actually occurs. Since both "triggers" can implicate multiple policies, one must now look to how California and Oregon apply the "exhaustion of coverage" principle. In California, certain courts have adopted a horizontal exhaustion position, but the Supreme Court has yet to rule on the issue. Oregon has yet to rule on the issue. Horizontal exhaustion is the principle that all primary policies that could respond to a loss must be exhausted before each joint tortfeasor's excess policies can be tapped for defense and indemnity.

Trigger and exhaustion are moot when a CIP is placed because all enrolled contractors are insured under a single policy and the policy is for the term of the project.

### Owner Controlled Insurance Program

#### Advantages

- 1) Control of coverage for both general liability and worker's compensation, although worker's compensation is not currently contemplated under the current OCIP.
- 2) Assurance all contractors working on the project will be insured and insured with the same coverage as all other contractors, consistency of coverage.
- 3) Project risks are addressed all in a single policy without the concern for a market renewal.
- 4) Complies with current Federal Regulators understanding of how the project will be insured.

#### Disadvantages

- 1) Financial obligations for the risk and losses under the program, (i.e. deductible payments) both during and after the completion of the project.
- 2) Project insurance costs (i.e. economies of scale)
- 3) Underwriter focused attention to the risks associated with this single project.

Though an Owner Controlled Insurance Program has certain advantages around control of coverage and limits, it does bring with it the financial obligation that potentially could happen post dissolution of KRRC. This financial obligation is a variable that could pose problems based on the structure of the OCIP. The greater concern is the issue of wildfire coverage and the ability to obtain a program with this coverage. Currently unknown to Aon is whether PacifiCorp's current liability program contains wildfire or excludes it. PacifiCorp may also maintain a separate wildfire only liability program and being an insured party in this program may cause problems in the placement of a dedicated project liability program, as carriers may go over line and not be able to support an OCIP. If we are ultimately required to place a GL only OCIP for this project, we would endeavor to place such coverage including wildfire and would attempt to eliminate any deductible obligations for KRRC post dissolution.

### Contractor Controlled Insurance Program

#### Advantages

- 1) Relieves KRRC of the financial obligations for the risks and losses associated with the project.
- 2) Control of coverage can still be established via contract with the Project Company, (i.e. types of policies and coverage terms – certain coverages have to be included in the CCIP)





- 3) Project Insurance Costs – Project Company will likely have more influence in the marketplace due to the scale of its insurance program vs. that of a single KRRC placement.
- 4) Project risks are addressed all in a single policy without the concern for a market renewal.

#### Disadvantages

- 1) Underwriter focused attention to the risks associated with this single project. However, if the Project Company has a rolling CIP, it will not be as highly scrutinized.

A CCIP has advantages that may serve this project better than an OCIP. Foremost, it takes away the financial obligations with the potential to be slightly more expansive in coverage. Similar to the OCIP approach, the CCIP would address the project risk without the need for a market renewal eliminating the worry of a renewal and underwriters changing view to possibly insuring the project. While the CCIP approach will bring attention to the project and the associated risks, the Project Company will likely seek coverage from its current corporate insurer and have greater bargaining power. If the Project Company has a rolling CIP program, the project will likely get rolled into the program with little scrutiny.

#### Project Company's Practice Program

##### Advantages

- 1) Relieves KRRC of the financial obligations for the risks and losses associated with the project.
- 2) Control of coverage can still be established via contract with the Project Company, (i.e. types of policies and coverage terms – certain coverages have to be included in their practice program)
- 3) Project Insurance Costs – Project Company probably has greater bargaining power in the marketplace due to its economy of scale vs. a single KRRC placement.

##### Disadvantages

- 1) Project Company's insurance is subject to renewal every year which may have impact on pricing and coverage.
- 2) Reliance on Project Company's ability to manage subcontractors insurance and potential lack of consistent coverage.
- 3) Insurer unlikely to add KRRC as an insured on the policy, thus requiring an Owner's Interest policy.

The Project Company's Practice Program approach has the advantage that this project would just be one of many that the contractor has and would not necessarily receive the same direct underwriting scrutiny that would be done on a project specific basis, either OCIP or CCIP. One potential source of uncertainty in this approach is that the Project Company and its subcontractors will have to deal with their respective insurance renewals and possible changing market conditions during the Project Implementation Work. However, if they are contractual obligated to provide the required limits and coverages then KRRC has that to rely on but with the caveat that the terms required may not be able to be met in year 3 of the program as an example. The other concern is how the legal issues are addressed if there are multiple parties at fault with multiple policies

#### Owners Interest Liability Program

If a Project Company directed program is selected an option to consider would be to purchase a dedicated "Owners Interest" only liability program that would protect KRRC in the event KRRC is held legally liable for a loss that arises out of its sole negligence or willful misconduct. Though most liability will be driven through the Project Company's operations, such a policy would provide coverage for the unknown or unintended loss. Limits for an Owners Interest program should be evaluated based on how much direct involvement KRRC staff will have in overseeing the project.

#### Recommendation

As mentioned previously all three approaches to insuring the project will work. It is just deciding which one will work best for KRRC and the successful restoration of the Klamath River. With the river restoration being



KRRC's sole purpose and KRRC not existing beyond its charter, Aon believes that a contractor-directed approach to insuring the project, in lieu of an OCIP, is the better way to proceed. For the reasons previously stated and the fact that the Project Company has direct responsibility for project completion and safety, it seems best to place the insurance program in the hands of the Project Company.

The question is whether to approach this from a CCIP or the Project Company's and its subcontractor's practice program approach. Aon's recommendation is that the liability program should be structured as a CCIP (GL/WC and Excess) for the reasons outlined above. In addition to the advantages sighted above, it would be in all parties' best interest to include KRRC, PacifiCorp, and the State and Federal Parties as Named Insureds, not additional insureds on the CCIP GL and Excess policies. This will address any concerns over all interested parties having coverage under the project insurance program and should satisfy Federal Regulators. This approach will also eliminate any reason to purchase an Owners' Interest Liability Program.

If for KRRC chooses to pursue an OCIP, we recommend that it be able to collect any deductibles/SIRs from the Project Company or contractor, who causes the loss.

## Auto Liability

Our only recommendation is that KRRC consider requiring higher limits (\$10M) of Project Company and allow Project Company to determine the appropriate limit for its subcontractors, but not less than \$2M.

## Contractors Pollution Liability and Fixed Site Pollution Liability

While similar questions, as those posed in the casualty analysis, can be asked for the pollution cover, the difference is that Project Company will not take ownership of the site. As such, the responsibility for procuring fixed site pollution liability ("PLL") cover falls to KRRC. Therefore, we agree that KRRC should procure both the Contractor's Pollution Liability ("CPL") and the PLL cover and would seek to place at least the primary layer of both policies, and preferably the entire tower, with the same insurer. Environmental claims during the course of construction often fall to both the CPL and PLL (site pollution) and can result in additional complications when two or more insurers are involved. Additionally, it may ultimately be more advantageous for the two policies to have linked limits, as currently the policies have two separate \$100 million towers specified. As Aon continues to analyze the risks and exposures of the Project, the two separate towers may be over-insuring of the Project, when perhaps a single \$50 million may be adequate.

If Project Company is willing to do so, KRRC should work with Project Company to use Project Company's leverage in the insurance marketplace to negotiate coverage, terms and pricing.

We do recommend that KRRC be permitted to collect any deductible/SIRs from the Project Company or contractor who causes the loss.

## Professional Liability Structure

Given the size of the project and the inherent, potential risk of a catastrophic loss resulting from the negligent rendering of professional services, the structure of the professional liability coverage will be critical to the success of the project. Aon has reviewed Kiewit's corporate program and it contains the same types and kinds of coverages that would be in a project specific Contractors Protective Professional Indemnity (CPPI). As such, use of Kiewit's corporate program is permissible.

## Bonds Requirements





KRRC is requiring Project Company to fulfil the bonding requirements imposed upon it under the KHSA. These include performance, payment Bonds, and maintenance bonds. These are the types and kinds of bonds that would be required in a traditional construction project but, as has been highlighted earlier, this is not a traditional construction project. Any corresponding bonds that could be required in association with the upcoming work should also be passed on to the Project Company (Site Improvement, Road Use, License & Permit Bonds).

Aon has investigated the use of reclamation bonds and believes these bonds could be problematic. Unlike a construction project that may be completed within months or years, reclamation projects can go on for a very long time and the bond amounts can be substantial. A reclamation bond provides a financial guarantee that the disturbed land or water will be brought back to its approximate original state or an acceptable condition as agreed to by the Principal and the applicable State or Federal agency. A reclamation bond may be required by any operation that alters the land to a degree that the land may not recover on its own post operation. For this reason, it is not unusual for State Agencies or the Bureau of Land Management to require a bond or bonds for a substantial project.

The perpetuity exposure related to a reclamation bonds could be problematic. A contractor will not want to tie up their limited surety capacity on a potential large, long-term financial guarantee. As a Liability Transfer Company, ("LTC") any potential KRRC related indemnitor will not be a desirable credit for a surety company. The very nature of a LTC suggests that the surety liability will outlive the LTC. In addition, a LTC has a discreet pool of funds that will shrink over time. One can suspect that for a credit such as this one, a surety would want collateral, up to 100%, to support such a potential bond(s).

In addition, environmental exposures that may present themselves during the work should be reviewed closely. There are contractors that specialize in environmental remediation (Hydro and Soil) and they should be employed when possible and necessary. The surety market is very soft and there is sufficient capacity for environmental contract risks currently. However, if the market should harden, this capacity could become scarce. Environmental requirements that translate into long-term financial guarantees could be a challenge. Not unlike reclamation bonds, these are obligations that a contractor would be reluctant to engage in and the financial wherewithal of Transfer Liability Company ("TLC") would require a surety to require collateral, up to 100% of the bond penalty, to support such a risk.

When afforded the opportunity to transfer surety liability and risk to a third party, KRRC should take immediate advantage of the same. However, there are potential perpetual risks such as environmental and reclamation hazards, that a third party will be reluctant to accept. Our recommendation would be as follows:

1. Proactively look to secure bond waivers with the appropriate Obligors
2. Be prepared to put up collateral in support of these obligations
3. Investigate the funding of escrow with the Obligors over time to meet the Financial Assurance Requirements

Of course, should a surety challenge arise, Aon will make every effort to place a bond or bonds under the best terms and conditions possible.

## Liability Transfer Corporation

Appendix L of the Klamath Hydroelectric Settlement Agreement requires that the KRRC contract with a specialty corporate indemnitor (LTC) that would protect the States and PacifiCorp against harm to persons, property, or the environment associated with Facilities Removal. This requirement requires KRRC to contract with an LTC that will protect the States and PacifiCorp from claims that include events that are not traditionally covered by insurance, including events such as third-party diminution in value land or property claims. Aon has worked with KRRC to identify potential companies to serve the role of LTC for the Project. A Request for Information (RFI) was issued to five LTC companies:

- ELT
- EIP



- The TBLS Group
- North Branch Global
- Commercial Liability Partners

Responses to the RFI are due back to the KRRC on March 4, 2019 with interviews scheduled for March 7, 2019. It is KRRC's intention that the ultimate LTC will be amenable to assuming environmental and other liabilities that are not covered by the proposed insurance programs.

As the project moves along KRRC will have better clarity as to what those items are for environmental, but in general risks that the CPL/PLL would not pick up that are classified as "environmental" via risk identification:

- 1) Replanting/restoration of vegetation
- 2) Dredging of any sediment that is required solely to facilitate navigation or bank improvements. The coverage would generally respond if sediment was required to be removed due to a contamination issue.
- 3) The costs to abate/remove asbestos or lead based paint
- 4) Fish kills/natural resources damage assessments due to non-pollution related events (i.e., lack of water at the fish hatchery)
- 5) Criminal fines and penalties. Civil fines and penalties only where allowable by law and only where said fines and penalties result from a pollution incident (i.e. not just a paperwork violation)
- 6) Liquidated damages/delay costs for construction, even if due to a pollution event (this may be able to be negotiated for limited situations, but let's go with the more conservative approach first)
- 7) Pollution claims not related to either the construction or on/at/under/migrating from a covered location. For example, KRRC is required to establish some alternative recreation areas to replace those that will no longer be usable after reservoir draw-down. Unless the locations are part of the CPL scope of work or listed on the site pollution policy, there will be no coverage for any pollution events that occur on, at, under these properties.
- 8) Pollution events caused by a contractor that has no written contract with the GC and/or KRRC
- 9) Willful, intentional, criminal events
- 10) The policy will have a 10-year policy term for site pollution and a maximum of a 15-year term (5 years of construction, 10 years completed operations) for CPL. The CPL could be an occurrence policy, but the site pollution is only claims-made. If we presume the worst and both policies are claims-made, there would be no coverage after policy expiration unless the policies were renewed (pending market availability).
- 11) Pollution conditions resulting from known underground storage tanks, unless the tanks are disclosed and scheduled on the site pollution policy
- 12) Contractual liability, unless we schedule the desired contracts for coverage

## Risk Register

As discussed in the key project risks section of this report, there was a meeting in February 2019 with the States, PacifiCorp, KRRC and its consultants in which the group identified a variety of project risks. Aecom and Aon created a project risk register which incorporated the discussions from that meeting as well as the risks set forth in the Project Agreement. The Risk Register is attached as Appendix D to this report.

The risk register is divided into 3 specific sections: risks that are insurable, risks that are potentially insurable, and risks that are uninsurable. It is important to understand that coverage is extremely fact dependent and coverage cannot be guaranteed if the facts reveal that the cause is excluded or that there is some other type of limitation. In breaking the risks into insurable, potentially insurable and uninsurable, Aon has assumed that the insured has complied with all provisions of the policy and that the claim is not otherwise excluded.



For the potentially insurable risks, the facts and alleged damages become even more important in determining coverage. Builder's Risk and Property insurance is what is commonly referred to as a "first-party" coverage, which that the damage must be incurred by the named (or other) insureds. Additionally, for the delay in startup or contractor's continuing expense coverage to be triggered, there must be a loss caused by a peril not otherwise excluded. For the general liability insurance (3<sup>rd</sup> party coverage), as discussed in controlled insurance program section, there are 5 key factors that go into determining whether there is coverage for the loss. However, there are two key obligations under a general liability policy: defense and indemnification. The duty to defend is broader than the duty to indemnify (pay the damages). As such, often times a carrier will have a defense obligation but as the facts develop, may not have an indemnification obligation. The environmental (1<sup>st</sup> and 3<sup>rd</sup> party) and professional coverages (1<sup>st</sup> and 3<sup>rd</sup> party) have the same two duties and are also very fact dependent.

## Conclusion

Aon has outlined certain recommendations with respect to the insurance program in Appendix A. We are recommending the following:

1. That Kiewit procure a Contractor Controlled Insurance Program for the general liability and Workers Compensation coverage. We believe that Kiewit's purchasing power will provide greater market efficiencies that KRRC would not have. We further believe that Kiewit is in a better position to manage the long-tail claims associated with these coverages versus KRRC because KRRC will sunset as a certain point in time. We further believe that a CCIP will allow for greater minority owned businesses, avoid gaps in coverage, obviate the trigger and exhaustion issues that often arise with respect to long-tail claims and provide the other efficiencies discussed in the CIP section of this report.
2. We recommend that Kiewit procure the Builder's Risk coverage because of its purchasing power and market relationships.
3. We recommend that Kiewit be permitted to use its Professional Liability insurance program as it complies with all of the required specifications.
4. We recommend that KRRC purchase the Contractor's Pollution Liability and Site Pollution Liability policies to assist in post-project completion transfer to the LTC.



## Appendix A – Aon Proposed Insurance Plan

Insurance		Limit of Liability		Retention/Deductible		Comments
Policy Type	Recommended Procuring Entity	Baseline Minimum Requirements	Aon's Recommended Approach	Project Agreement Requirements	Aon's Recommended Approach	Relevant Notes
Builder's Risk	Kiewit	Limit to be determined	Builders risk limit to be subject to a Probable Maximum Loss analysis	No Requirements related to Retentions	The AOP deductible should be no higher than \$1M  Earthquake will have a percentage deductible  Flood will have a percentage deductible	There will be multiple sublimits associated with the Project and those sublimits are being evaluated
CCIP for General Liability, Excess Liability & Workers Compensation	Kiewit	General Liability: \$2,000,000 per occurrence, \$4,000,000 products completed ops, \$4,000,000 aggregate  Excess: \$200,000,000  WC/EL: Statutory/\$1,000,000	General Liability: \$2,000,000 per occurrence, \$4,000,000 products completed ops, \$4,000,000 aggregate  Excess: \$200,000,000  WC/EL: Statutory/\$1,000,000	No Requirements related to Retentions	A deductible or SIR not greater than \$1M	The specific forms and endorsements to be required will be added once KRRC decides on program structure
Commercial Automobile Liability	Kiewit	\$5,000,000 CSL	Project Company should provide limits of \$10M and be permitted to set limits for its subcontractors but the limit should not be less than \$2M	No Requirements related to Retentions	N/A	In addition to MCS 90 and CA 9948, Aon will outline the specific forms and endorsements in the next draft of this report
Contractor's Pollution Liability/Pollution Legal Liability	KRRC	\$100,000,000 per claim and in the aggregate	Aon recommends linking the CPL and PLL limits with limits of \$50M	No Requirements related to Retentions	Not greater than \$1M	The specific forms and endorsements to be required will be added once there is a better understanding as to limits and a combined CPL/PLL policy
Professional Liability	Kiewit	\$25,000,000 per claim and in the aggregate	\$25,000,000	No Requirements related to Retentions	Not greater than \$1M	Kiewit's corporate program is sufficient
Watercraft and Aircraft Liability	Kiewit	\$5,000,000 per occurrence and in the aggregate for watercraft, aircraft and drones \$10,000,000 per occurrence and in the aggregate for helicopters	Still exploring exposure	No Requirements related to Retentions	TBD	TBD



## Appendix B – Insurance Budget

### Construction Period Insurances

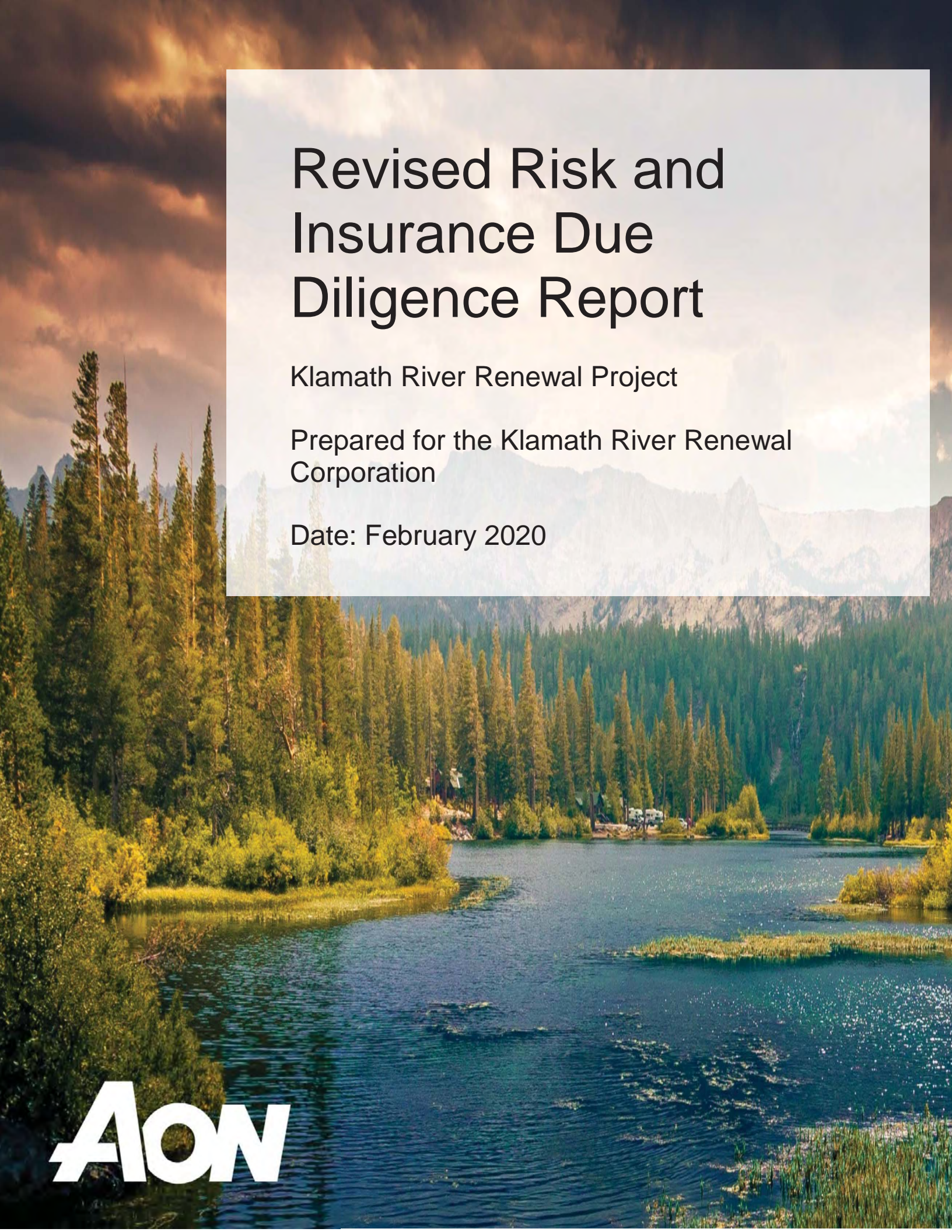
Line of Coverage	Coverage Description	Limits	Retentions	Estimated Premium	Premium Responsibility	Deductible Responsibility	Cost Period
Builder's Risk	Covers damage to property in the Construction Period	Subject to a Probable Maximum Loss	Not greater than \$1M	\$488,750	Kiewit	TBD	Term
CCIP (GL, Excess & WC)	Covers 3rd party bodily injury and property damage, and injured employees in the course of their employment	GL: \$2,000,000 per occurrence, \$4,000,000 products completed ops and \$4,000,000 general aggregate  WC/EL: Statutory/\$1,000,000  Excess: \$200,000,000	Not greater than \$1M	\$6,500,000	Kiewit	TBD	Term
Commercial Automobile Liability	Covers liability from use of autos	\$10,000,000 combined single limit	Not greater than \$1M	\$0 (Corporate program)	KRRC & Kiewit (corporate programs)	TBD	Annual
Contractor's Pollution Liability / Pollution Legal Liability	Covers liability arising from hazardous materials	\$50,000,000 linked limits	Not greater than \$1M	\$1,200,000	KRRC	TBD	Term
Professional Liability	Covers liability arising out of design errors	\$25,000,000 per claim and project aggregate	Not greater than \$1M	\$0 (use of corporate policy)	Kiewit	TBD	Term
Watercraft and Aircraft Liability	Covers liability from use of watercraft or aircraft	Depending on exposure	Not greater than \$1M	TBD	Kiewit	TBD	Term
<b>Total Estimated Annual Premium during Construction Period (2019 Dollars)</b>				<b>\$8,188,750</b>			



## Revised Risk and Insurance Due Diligence Report

February 2020





# Revised Risk and Insurance Due Diligence Report

Klamath River Renewal Project

Prepared for the Klamath River Renewal  
Corporation

Date: February 2020







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## Reliance Statement

This report is prepared for the Klamath River Renewal Corporation (KRRC or Client) in respect to the procurement of the Klamath River Renewal Project (Project). It may be relied on by the following parties (Parties):

- Klamath River Renewal Corporation
- The State of California
- The State of Oregon

We confirm that the Parties may rely upon this report in connection with and for the purpose of:

- The provision or underwriting (as the case may be) of financial accommodation, equity, debt or hybrid investment, leasing finance or residual value guarantees to facilitate the Project
- Pre or post financial close debt financing or sale, transfer or assignment of the above financial accommodation, equity or debt investment, hybrids issues, including the issue of a disclosure document to finance the Project, leasing finance, residual value guarantees or underwriting positions which occurs within 12 months of financial close (together, the Financing)
- FERC license transfer to Klamath River Renewal Corporation

We confirm that the Parties are permitted to extract parts of the report to be inserted into any information memorandum and/or disclosure document (IM) used in connection with any Financing of the Project or any part of it, provided that:

- A full copy of the report is made available to each recipient of the IM
- Each extract is a complete and accurate transcription of the relevant part of the report
- It is clearly stated in the IM that the extract is an extract from the report
- It is clearly stated in the IM that the recipients may not rely upon the extract but only rely on the full Report and then subject to any limitations or disclaimers in the report

We also confirm that we are prepared to answer queries with respect to this report raised by any of the Parties or potential Financiers or underwriters in any syndication or sell down process, which may arise in the six-month period following financial close of the Project. We further confirm that we are prepared to answer queries with respect to this report raised by FERC, the State of California, or the State of Oregon which may arise in the six-month period following FERC license transfer.

For the purposes of this reliance statement, Financiers means each person who provides or participates in financing including:

- a) Each arranger, underwriter, note holder or participant in the facilities related to the Financing and any agent or trustee (including any security trustee or security agent) acting for any of them
- b) Each working capital facility provider
- c) Each interest rate, foreign exchange or other hedge counterparty
- d) Each person who provides Financing as a lessor under a financing or operating lease or as a residual value guarantor on or post financial close including each arranger, underwriter, dealer, participant or note holder in the Leasing Arrangements related to the financing or any agent or trustee acting for any of them
- e) Any credit support provider to a borrower under a financing

in each case as at financial close; and

- Each and any person who becomes a substitute, transferee or assignee of any of the persons referred to in (a), (b) and (e) within 12 months of financial close.

This report is based upon the information that the Client and its representatives have provided. The Client is responsible for the accuracy and completeness of the information, and we accept no responsibility arising from the Client's failure to provide complete and accurate information.



## Executive Summary

This report has been produced by Aon at the request of the Klamath River Renewal Corporation for the benefit of the KRRC and related parties (collectively referred to as the “Stakeholders”), involved in the Project. KRRC engaged Aon for certain Insurance Advisory services (“Insurance Services”). This report is provided for the benefit of all Stakeholders and may be relied upon by the Stakeholders.

This report summarizes the Insurance Services and provides certain recommendations based upon those Insurance Services including but not limited to:

- Risk Assessment including analytics and risk modelling which is set forth in Appendix C of Aon’s July 2019 Risk & Insurance Due Diligence Report:
  - The analytic and risk modelling reveals that the total exposure (general liability, errors and omissions, haul away auto, and workers compensation) at a 99.5% confidence level is \$120.61M.
  - As seen in Appendix C, dam failure presents the greatest risk. At a 99.5% confidence level, the total estimated cost associated with a dam failure is \$119.97M.
  - Wildfire does not present a significant risk and at a 99.99% confidence level the exposure is estimated to be no greater than \$6.26M.
  - The revised insurance program outlined by Aon will provide greatest value for money; sufficient limits; and, based upon advice of the Hawkins, Delafield and Wood firm, the coverage and indemnity necessary to cover these risks.
- Risk Assessment including Project Risk Register:
  - Working in conjunction with AECOM and the Stakeholders, Aon has attempted to identify all of the potential causes of loss.
  - Based upon the original Project Agreement<sup>1</sup>, Aon identified which party “owns” the risk and the risk mitigation tools available.
  - For those risks where insurance is “potentially available”, the determination for whether insurance is available is based upon the facts associated with the loss (assumes that the loss is not otherwise excluded) and the damages being claimed.
- Risk Assessment including Project Insurance Program:
  - The Definite Plan made several insurance recommendations, including but not limited to:
    - A general liability only owner-controlled insurance program (OCIP)
    - KRRC, Kiewit, and all contractors procuring their own workers compensation insurance program
    - Builder’s Risk /Inland Marine limit based upon 100% of the replacement value of any salvaged material or property and procured by KRRC
    - Professional Liability to be purchased by Kiewit with limits as high as 20%- 40% of the construction value.

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<sup>1</sup> It is Aon’s understanding that the scope of work under the original Project Agreement has been split between Kiewit Infrastructure West (Kiewit) for civil work and HGS, LLC (HGS) for restoration work.



- Given the current insurance marketplace, Aon concludes that certain changes to the original Project Insurance Program should be allowed to create the greatest value for money and provide the sufficient protections to the Project and the Stakeholders:

#### **Kiewit Insurances**

- Allow Kiewit to use its corporate insurance program for the general liability and umbrella liability coverage with dedicated project limits of \$200M which will renew annually;
- Allow Kiewit to use its corporate insurance for the auto and workers compensation coverage;
- Builder's Risk/Inland Marine limit based upon the probable maximum loss ("PML") vs. replacement value and to be procured by Project Co/Kiewit. By utilizing the PML, the limit will account for the increased value in the roads, bridges and other project improvements;
- Allow Kiewit to use its corporate insurance program for the professional liability with dedicated project limits of \$25M which will renew annually. This will provide the same protections as a project specific placement while eliminating the costs associated with a project specific placement.
- Watercraft and Aircraft Liability with \$5M limits for each of the exposure, except helicopters which should be \$10M: watercraft, aircraft, helicopters, and drones to the extent there is exposure. The watercraft liability and aircraft liability should be scheduled on the excess policy. However, if the drones are under 10 kg, use of the general liability is permissible.

#### **HGS Insurance**

- Allow HGS to use its corporate insurance program for the general liability and umbrella liability coverage with dedicated project limits of \$75M which will renew annually.
- Allow HGS to use its corporate insurance for the auto and workers compensation coverage
- Professional Liability Limits of \$15M and allow HGS to use its corporate program to satisfy this requirement if it can provide dedicated project specific limits.
- Watercraft and Aircraft Liability with \$5M limits for each of the exposure, except helicopters which should be \$10M: watercraft, aircraft, helicopters, and drones to the extent there is exposure. The watercraft liability and aircraft liability should be scheduled on the excess policy. However, if the drones are under 10 kg, use of the general liability is permissible.

#### **KRRC Insurance**

- General Liability Owner's Interest Policy with limits of \$50M.
- Contractor's Pollution Liability and Pollution Legal Liability with linked limits of \$50M and procured by KRRC.

It must be clearly understood that, at this time, no project insurances have been bound and no insurance premium costs have been incurred. KRRC does maintain its corporate insurance program, which was renewed on June 30, 2019. The project insurances will be placed prior to Project Implementation Work.

## Project Overview

The Klamath River Renewal Project (the “Project”) comprises the removal of four dams on the Klamath River – J.C. Boyle, Copco 1, Copco 2, and Iron Gate, along with appurtenant structures. The Project is intended to restore the natural, free-flowing condition and restore volitional fish passage through river miles 193.1 to 234.1. In addition to the deconstruction activities, the Project Company will be responsible for remediating and restoring the reservoir sites, minimizing adverse impacts downstream, ensuring project completion with available funds, and avoiding damages and liabilities to PacifiCorp, the States, and third parties. The estimated cost of the progressive design-build contract is estimated to be \$237.6M million. The estimated cost of project oversight, liability transfer, environmental compliance, technical support, construction management, mitigation measures and monitoring and reporting is estimated to be \$133.3M with a contingency of \$62.8M.

### Project Map





## Method of Approach

The review and commentary on insurance and risk management issues are based on the review of project documentation. This documentation includes the Definite Plan and other data as provided by the Klamath River Renewal Corporation and its advisors.

Specifically, Aon has reviewed the following documents:

- Klamath Hydroelectric Settlement Agreement dated February 18, 2010, Amended April 6, 2016 and November 30, 2016 ("KHSA")
- Definite Plan dated June 2018 and July 2, 2019
- Request for Proposal dated December 21, 2018
- Project Agreement dated April 24, 2019
- Operations & Maintenance Agreement dated September 20, 2017
- FERC Board of Consultants Letter Report No. 1 and KRRC Response Letter dated December 12, 2018

Risks that have been identified through the review of the above documentation and through consultation with Stakeholders, have been discussed and matched with solutions utilizing the following approach:

Aon has utilized its Project Enterprise Risk Assessment (PERA) approach in its analysis of the risks on the Project. PERA is a proprietary enterprise risk management solution which is tailored to complex construction projects. The PERA methodology involves the following:

- Risk Identification
- Map to potential risk solutions, including transfer by insurance, transfer by contract, transfer by alternative method, and risk controls
- Certain proposed solutions, if possible, could be vetted through meetings with various Stakeholders in order to test the integrity of the solution

This method will also attempt to address risks outside of the usual hazard quadrant and will provide the Stakeholders with a project wide "risk matrix" that includes identified risks and potential solutions. Some solutions may not involve transferring risk to insurance carriers, and Aon will discuss with Stakeholders techniques for implementing these solutions.

Aon's risk matrices were then compared to the Aecom risk register to ensure that all risks were identified and properly classified. The combined risk matrix/risk register were then used to conduct the risk analytic and modelling and quantify the potential risk. This allowed Aon to determine the appropriate levels of insurance and avoid over insuring the project, which would not have delivered good value for money. Aecom utilized the combined risk matrix/risk register to produce a roll-up contingency estimate.



## Project Risk Commentary

Below Aon has provided a summary of critical risk clauses within the Definite Plan and the Project Agreement.

### Key Project Risks

The following discussion of project risks explores the risks that were highlighted by Stakeholders during the February 19, 2019 risk workshop held at the Aon San Francisco office. The risks raised by Stakeholders were then quantified and analyzed by Aon Global Risk Consulting (AGRC) to provide estimates of the risk of potential losses by line of coverage and by risk. Below is a summary of potential losses by line of coverage:

		GL	E&O	Haul Away– AL	Workers Comp	Total Before Insurance
	Average Loss	\$6.19	\$0.53	\$1.15	\$3.72	\$11.58
	CAT Loss	\$62.12	\$10.62	\$3.78	\$12.37	\$70.50
Confidence Level	Years/Event					
10%		\$0.26	\$0.00	\$0.39	\$1.95	\$3.62
20%		\$0.39	\$0.00	\$0.54	\$2.26	\$4.21
30%		\$0.53	\$0.00	\$0.67	\$2.53	\$4.74
40%		\$0.70	\$0.00	\$0.80	\$2.78	\$5.31
50%	2	\$0.93	\$0.00	\$0.94	\$3.05	\$6.04
60%	2.5	\$1.34	\$0.00	\$1.11	\$3.36	\$7.09
70%	3.3	\$2.26	\$0.00	\$1.31	\$3.77	\$9.19
80%	5	\$6.64	\$0.00	\$1.59	\$4.40	\$13.45
90%	10	\$16.93	\$0.00	\$2.09	\$5.90	\$24.48
95%	20	\$29.01	\$0.00	\$2.62	\$8.04	\$36.19
99%	100	\$67.92	\$18.04	\$4.28	\$14.48	\$78.72
99.38%	161	\$109.38	\$25.71	\$4.89	\$17.05	\$120.61
99.5%	200	\$125.98	\$28.87	\$5.27	\$18.19	\$135.36
99.90%	1,000	\$254.81	\$69.71	\$8.97	\$28.27	\$264.49
99.95%	2,000	\$303.28	\$106.86	\$11.75	\$33.35	\$308.11
99.99%	10,000	\$394.77	\$195.56	\$21.18	\$46.28	\$404.89

For the Aon Risk Modeling Report, see Appendix C of the Risk and Insurance Due Diligence Report.





### *Wildfire*

Wildfire is the is one exposure that has risen to the top of the list for casualty insurers. Though the amount of work associated with disconnecting the electrical transmission lines from the hydroelectric dams is small in comparison to the overall project it is and will most certainly become a major concern from an underwriting perspective. Unfortunately, starting with the San Diego brush fires to the recent fires in Southern California and most certainly Northern California, wildfire has now reached catastrophic stature in the industry and will become a driving force in the ability to place general liability coverage. Based on an analysis by KRRC's attorneys, of the three potential theories of liability for wildfire damage – negligence, trespass by fire, and inverse condemnation – inverse condemnation would not apply to KRRC as it is not an investor-owned regulated utility. Additionally, PacifiCorp maintains all operational risk until the dams are disconnected from the power grid (decommissioned). Consequently, KRRC or the Project Company would only be liable for damages due to negligence and trespass by fire and general liability policies should cover most potential claims for property damage and bodily injury. However, as KRRC's attorneys note, punitive damages cannot be covered by insurance under California law. According to the analysis done by Aon, the potential liability exposure from wildfire is relatively low with losses estimated to be \$6.26M at a 99.99% confidence level. This is primarily due to the rural nature of the project area and PacifiCorp's historic wildfire losses.

### *Downstream Sediment Deposits*

The potential for a negative impact on downstream water quality is of significant concern, especially if there are issues related to contamination of the sediments. There could also be a negative impact at the point at the Klamath empties into the ocean. Much of this risk should be covered by the pollution legal liability coverage.

### *Dam Failure*

The product of the annual probability of dam failure from a particular failure mode and the magnitude of the resulting consequences. Statistically, over 50% of dam failures in the U.S. can be linked to geologic and geotechnical problems. Professional liability underwriters view any dam work substantially more challenging because of the potential for catastrophic loss. According to the analysis by Aon, the potential liability exposure from dam failure is somewhat significant, with projected losses estimated to be \$119.97M at a 99.5% confidence level. However, PacifiCorp is responsible for all operational risks until decommissioning. Consequently, KRRC's exposure is limited to post-decommissioning through dewatering, a period which is estimated to be less than a year.

### *Failure of the Substation*

Damage to the substation during the period between license surrender by PacifiCorp and decommissioning could add significant costs to the project as substations not easily replaced. Also, should there be substation failure, there could be negative impacts to the environment. The potential losses from substation failure can arise from any time after the project starts to the last date of power generation. Aon estimates that losses at a 99.5% confidence level would be \$20.79M. However, KRRC and/or ProjectCo/Kiewit would only be responsible for losses arising out of damage caused by the deconstruction of the dam, not the operational exposure.

### *Hatchery Failure or Fish Kill*

If the water intake is compromised, there is the risk of losing endangered species. Additionally, there is a risk of loss through KRRC or contractor negligence that causes the hatchery work to fail. Aon estimates that losses at a 99.5% confidence level would be \$113.71M. However, per the KHSA, California Department of Fish and Wildlife ("DFW") will have continued responsibility for operation of the hatcheries. As such, any losses associated with operational exposure would not fall to KRRC.





### *Discovery of Tribal Cultural Resources*

There is a good chance that during the decommissioning and facilities removal, a contractor will discover tribal cultural resources. If that occurs, work may have to stop while until an investigation can be Conducted which could prolong the construction period; depending on where in the facilities removal cycle process the discovery occurs, there may be a need for work not originally within the scope of work to ensure embankments are stable. This would be considered an uncontrollable circumstance.

### *Yreka Water Supply Pipeline Move*

There is risk that KRRC or contractor negligence may cause the Yreka water supply pipeline to fail or fail to operate properly. Key inputs to understanding the liability implications of this risk would be the duration of the failure and the water usage by the citizens of Yreka. Aon estimates the losses at a 99.5% confidence level would be \$49.49M.

### *Uncontrollable Circumstances*

As defined in the Project Agreement, the Uncontrollable Circumstances are intended to ensure that project risks are transferred to the party best capable of managing, mitigating or transferring each risk. The Uncontrollable Circumstances are comprehensive and have the KRRC retaining risks that are typically retained by Owners on large, complex infrastructure projects. These risks are typically either in the relative control of the KRRC, such as errors, omissions, or insufficiencies in information provided on behalf of the KRRC; are uninsurable, such as labor disputes or strikes affecting specific trades at a regional or national level; or would be considered acts of God, such as earthquakes, fires, tornadoes, or floods. Having the KRRC carry responsibility for these foreseen events allows the Project Company to reduce some of the contingencies that they would otherwise be carrying in their bids.

## Definite Plan and KHSA Appendix L Insurance Requirements

### Corporate Program

The KHSA does not have any requirements for a corporate program.

The Definite Plan has the following requirements:

KRRC was to procure a corporate insurance program which is intended to address KRRC's general risks as a business entity and include the following coverages:

- \$1,000,000 Commercial General Liability policy which is supplemented by a \$5,000,000 Umbrella policy
- \$10,000,000 Directors and Officers policy that protects the KRRC's board members
- Worker's Compensation and Employer's Liability policy with a \$1,000,000 limit for the KRRC employee(s)



Commercial Automobile policy with \$1,000,000 in limits

- Commercial Property policy that covers the KRRC's scheduled property

KRRC's corporate insurance program was to name PacifiCorp, the State of Oregon, the State of California, and their respective officers, agents, employees, and members as additional insureds in accordance with the requirements of the Amended KHSA.

### Project Insurance Program

The KHSA provides that DRE agrees to follow, or to contract with a contractor(s) that will follow, the consolidated insurance program approach so the DRE, or the contractor(s) that it contracts with, will purchase the General Liability insurance and Worker's Compensation insurance for all the contractors involved in Facilities Removal. The Definite Plan provides that the Project Insurance Program will be an "owner-controlled insurance program" or OCIP for purposes of securing certain project coverages. Under an OCIP, the owner establishes a Commercial General Liability and Umbrella insurance program in which contractors and subcontractors enroll for coverage, rather than requiring each contractor or subcontractor to procure insurance independently.

Policy Type	Definite Plan – Appendix A	KHSA	Aon Commentary
<b>General Liability</b>	<p>Limits of \$2M occ. / \$4M prod. comp ops /\$4m general aggregate</p> <p>Policy to cover KRRC, the dam removal contractor and all eligible subcontractors for their work at the Project.</p> <p>The goal was to provide a comprehensive, seamless, and efficient insurance program which: (1) precludes insurers from denying coverage based upon other available coverage; (2) removal of cross-litigation costs caused by multi-party losses on a construction project; (3) allows the project sponsor/owner to control and design the coverage it intends to procure and the costs of coverage.</p>	<p>No limits specified.</p> <p>Policy to cover third-party property damage and third-party bodily injury that occurs from activity performed at the dam deconstruction site.</p>	<p>Neither the Definite Plan nor the KHSA address allowable deductibles and/or self-insured retentions.</p> <p>KRRC should not have to pay for any SIRs or deductibles associated with this coverage</p> <p>The rationale for switching from a CCIP to allowing for the use of the corporate programs of Kiewit and HGS is explained later in this document.</p> <p>Our recommendation is that the products completed operations cover be maintained through the statute of repose or the period within which to file a lawsuit.</p>



Policy Type	Definite Plan – Appendix A	KHSA	Aon Commentary
<b>Umbrella/Excess Liability as part of the CCIP</b>	<p>Limits of \$200M</p> <p>This policy is to follow form to the CGL and will cover all enrolled parties, which is an added value for smaller contractors who cannot afford these limits.</p>	To provide excess coverage for general liability and auto liability	<p>As set forth in the revised GL comments and later in Aon's Risk and Insurance Commentary, the use of corporate programs delivers the greatest value for money while providing sufficient coverage for KRRC and the Stakeholders.</p> <p>The general liability, auto liability and employer's liability policies are to be listed on the schedule of underlying coverage. It is recommended that the aircraft liability and the marine liability be listed on the schedule of underlying coverage too.</p>
<b>Worker's Compensation/Employer's Liability</b>	<p>Limits:</p> <p><b>Workers Comp</b> – applicable statutory requirements</p> <p><b>Employer's Liability</b> - \$1M</p> <p>Requires all contractors and subcontractors to procure this coverage separate and apart from the CIP. The reasoning for not covering under an CIP is because the coverage is statutory.</p>	<p>Includes requirement for USL&amp;H</p> <p>To provide coverage for injuries that occur on the dam deconstruction site to individual workers.</p>	<p>Neither the Definite Plan nor the KHSA address allowable deductibles and/or self-insured retentions.</p> <p>There are no statutory prohibitions to including the worker's compensation and employer's liability in the CCIP.</p> <p>As set forth in the revised GL comments and later in Aon's Risk and Insurance Commentary, the use of corporate programs delivers the greatest value for money while providing sufficient coverage for KRRC and the Stakeholders.</p>
<b>Commercial Auto Liability</b>	<p>\$1M CSL per accident for bodily injury and property damage.</p> <p>Required of all contractors and subcontractors for all owned, leased, and non-owned vehicles used in connection with the work.</p>	To provide coverage for third-party property damage and third-party bodily injury for the auto fleet used related to the construction activities.	<p>Given the exposure, Aon would recommend at least \$5M in coverage for Kiewit and HSG, LLC and then allow Kiewit and HSG, LLC to determine the appropriate limits for its subcontractors but not less than \$2M.</p> <p>Auto to include MCS 90 and CA 9948.</p>



Policy Type	Definite Plan – Appendix A	KHSA	Aon Commentary
<b>Builder's Risk/Inland Marine or Commercial Property</b>	<p>Applies a slightly unconventional analysis to the limit. 100% of the replacement value of any salvaged material or property</p> <p>Will be purchased by KRRC as a project specific property cover.</p>	To provide property coverage for damage to any equipment or components of the dam that will be restored or salvaged;	<p>This coverage should only be required from Kiewit and not from RES for reasons explained later in this report.</p> <p>Neither the Definite Plan nor the Project Agreement address allowable deductibles and/or self-insured retentions.</p> <p>As explained in greater detail in Aon's Risk and Insurance Commentary, we believe there are greater advantages to having Kiewit procure the builder's risk coverage.</p>
<b>Contractor's Pollution Liability ("CPL") and Fixed Site Pollution Liability</b>	<p>CPL Limit - \$100M PLL Limit - \$100M</p> <p>KRRC to procure both policies. The CPL will cover all contractors and subcontractors at the project site. The PLL go into effect when KRRC acquires title to the dam facilities and should be written with the same insurers as the CPL to address any pre-existing environmental damages.</p>	CPL will provide third-party coverage for clean-up and remediation costs, bodily injury, property damage (including natural resources damages, loss of use and diminution in value) and legal defense expenses, as a result of pollution conditions arising from operations performed by or on behalf of the contractor.	<p>Neither the Definite Plan nor the Project Agreement address allowable deductibles and/or self-insured retentions.</p> <p>Aon further recommends that the CPL/PLL be a combined policy with limits of \$50M. Based upon our actuarial analysis, \$50M in limit should be sufficient to cover the potential pollution risk. However, Aon is pricing an additional \$50M in coverage so KRRC can consider the cost/benefit tradeoff of additional insurance.</p>



Policy Type	Definite Plan – Appendix A	KHSA	Aon Commentary
<b>Professional Liability/Errors and Omissions</b>	<p>Limits up to \$25M</p> <p>This coverage will be required under the terms of KRRC's design contract procurement, whether on a stand- alone basis or as part of a design-build procurement. It will go into effect when KRRC retains the design professional.</p> <p>Coverage limits may be as high as 20% - 40% of the construction value.</p>	To provide coverage to protect an insured if their client is financially harmed from the rendering of their professional services or advice (including lack thereof) and for which the insured is held legally liable	<p>Discussions have been had with Kiewit about their corporate program, and they have demonstrated that they have the same types and kinds of coverages as a CPPI. As such, it is permissible for Kiewit to use their corporate program if they can provide dedicated, project-specific limits which they have agreed to do.</p> <p>HGS can either use their corporate program with dedicated, project-specific limits, or they will be purchasing a project specific policy.</p> <p>Aon agrees that the Project Company and all design professionals should carry professional liability coverage.</p> <p>Limits of 20% - 40% of the construction values could raise red flags for the insurers and raise the overall cost of coverage.</p>
<b>Watercraft and Aircraft Liability</b>	The Definite Plan does not require these insurances	The KHSA does not require these insurances	If no other aircraft are being used, drones can often be scheduled on the general liability policy if they are below 10 kg. It is recommended that the watercraft and aircraft liability policies be scheduled on the umbrella/excess policy(ies).

#### *Other Obligations under Definite Plant and KHSA*

Each of these polices shall name PacifiCorp, the State of Oregon, the State of California, and their respective officers, agents, employees, and members as additional insureds. KRRC will provide certificates of insurance evidencing that policies of insurance providing such provisions, coverages, and limits as set forth above to PacifiCorp and the States before any contract for dam removal is effective and before dam removal work begins and/or Facilities Removal Work begins. The Definite Plan adds the following requirement:



**ADDITIONAL INSURED: PacifiCorp, the State of Oregon, the State of California, and their respective officers, employees and agents are Additional Insureds for the CONTRACTOR's activities to be performed under this Contract. Coverage is primary and non-contributory with any other insurance and self-insurance.**

### Specialty Corporate Indemnitor

Appendix L to the KHSA requires KRRC to identify and contract with a specialty corporate indemnitor (a Liability Transfer Corporation, or LTC) to protect the States of Oregon, California and PacifiCorp from potential liability that may be uninsurable or underinsured. The LTC can be structured contractually, through third-party indemnities or with potentially with additional special insurance products. The LTC may perform portions of the Project and will assume responsibility for various project risks, both during project execution and post-project.



## Aon's Risk and Insurance Commentary

### Builder's Risk

The unique deconstruction nature of the project leads to a challenge in identifying adequate coverage requirements for the builder's risk policy. Builder's risk insurance is typically purchased to protect an asset that is increasing in value as the project continues whereas the Klamath River Renewal Project will be primarily focused on the removal of assets. For example, if a covered peril were to occur that causes substantial damage to the existing assets, such as a fire, the builder's risk would not necessarily step in to cover the costs of removal of the damaged assets as dam removal is a key aspect of the Project scope.

The current requirements in the Project Agreement require that the builder's risk policy cover the full value of any salvage material or property at the Project Site. Considerations for the recommended limits for the builder's risk policy should include the values of the road improvements, the Yreka water supply work, recreational facilities, and the revegetation work.

Additionally, the current requirements in the Project Agreement have KRRC procuring the builder's risk policy. In assessing the efficiency of KRRC taking this approach to the builder's risk policy, there may be some concern that insurance markets may not necessarily be interested in participating on the project. Our recommendation is to require Kiewit to purchase the builder's risk coverage. By doing so, KRRC and the other stakeholders should be able to take advantage of Kiewit's bargaining leverage with its insurers. This should provide more efficiency in terms of pricing for the project as well as fulsome coverage if the project can be scheduled on the Kiewit's master builder's risk policy.

If KRRC does procure the builder's risk policy, KRRC should consider how the deductibles should be paid. There should be some, if not all, of the deductible responsibility assigned to the Kiewit or contractor who caused the damage.

### General Liability and Worker's Compensation/Employer's Liability Program Structure

While there are many exposures associated with this project, such as lowering the water level in the river so Kiewit will work in dry conditions versus wet, there is one exposure that has risen to the top of the list and that is the wildfire exposure. Though the amount of work associated with disconnecting the electrical transmission lines from the hydroelectric dams is small in comparison to the overall project it is and will most certainly become a major concern from an underwriting perspective. Unfortunately, starting with the San Diego brush fires to the recent fires in Southern California and most certainly Northern California, wildfire has now reached catastrophic stature in the industry and will become a driving force in the ability to place coverage for contractors and projects alike where there is exposure to wildfire. However, as evidenced in the PacifiCorp's analysis of CALFIRE data sources vs. Tier Designation, the wildfire exposure is minimal.



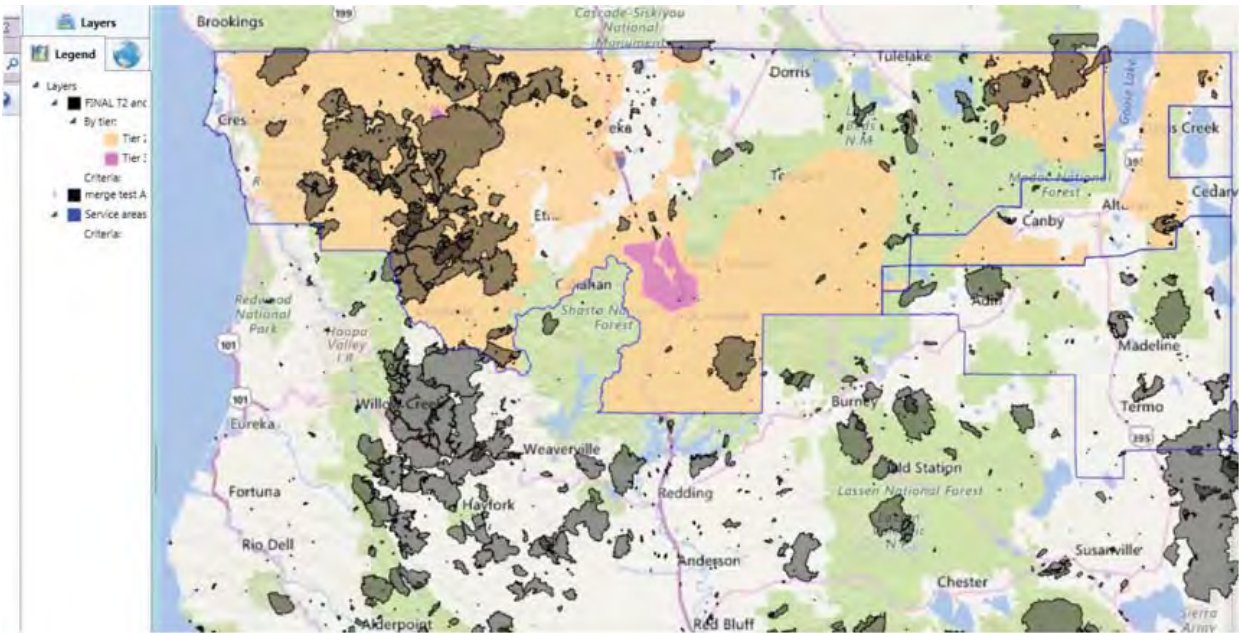


Figure 8 Comparison of Historic Fires (Fire Perimeters) versus Tier Designation

From a casualty or third-party liability, inclusive of worker's compensation/employer's liability, perspective there are three ways to approach this project risk. The project can be insured utilizing: 1) an Owner Controlled Insurance Program or OCIP, 2) a Contractor Controlled Insurance Program or CCIP or 3) the use of the Kiewit and HGS' corporate policies. Each of these approaches are valid ways in which to insure the risks associated with the Project and all three have proven to work over time. Neither one of these ways is necessarily the right or wrong way to approach insuring the Project. Each method has advantages and disadvantages from a KRRC perspective, which will be explored in detail below.

#### Controlled Insurance Programs Generally:

To understand why controlled insurance programs ("CIPs") are often chosen to insure a project, one must look to how insurance law has developed over the years.

The commercial general liability insuring agreement reads as follows:

We will pay those sums that the insured becomes legally obligated to pay as damages because of "bodily injury" or "property damage" to which this insurance applies. We will have the right and duty to defend the insured against any "suit" seeking those damages. However, we will have no duty to defend the insured against any "suit" seeking damages for "bodily injury" or "property damage" to which this insurance does not apply.

\* \* \*

This insurance applies to "bodily injury" and "property damage" only if:

- (1) The "bodily injury" or "property damage" is caused by an "occurrence" that takes place in the "coverage territory";
- (2) The "bodily injury" or "property damage" occurs during the policy





period;

As such, for there to be coverage under the policy, the insured must prove:

1. That there was an “occurrence”;
2. That there was “bodily injury” or “property damage” caused by the “occurrence”;
3. That the “bodily injury” or “property damage” resulted in “damages”;
4. That the insured is legal obligated to pay those damages;
5. That the “occurrence” took place in the “coverage territory”; and
6. That the “bodily injury” or property damage” occurred during the policy period.

The ‘legally obligated’ wording raises two legal issues: (1) joint and several liability and (2) anti-indemnity. California is a modified joint and several state which means that a defendant can be held 100% responsible for economic damages and severally liable for noneconomic damages. Oregon, with the exception of environmental torts, follows the rule of several liability only unless part of the judgment is uncollectible and then it may be reallocated. As for anti-indemnity, California Civil Code §2782 states that neither public nor private owner can force subcontractor to indemnify or insure another party for that other party’s “active negligence or willful misconduct,” for defects in the project’s design provided to the subcontractor, or for claims arising out of the scope of the subcontractor’s work. Oregon Revised Statute §30.140 prohibits intermediate indemnity, which is when the subcontractor assumes responsibility for the other’s negligence in whole or in part.

Given these differences in law and the potential for KRRC to be sued in California or Oregon, this creates uncertainties as to whether KRRC is protected under the contractors’ and subcontractors’ insurance policies. A controlled insurance policy eliminates these uncertainties, to a certain extent, by having all parties insured under a single policy. The CIP will respond to claims against all enrolled contractors thereby eliminating the need for apportionment of fault and indemnification.

The “occurrence” requirement raises issues with respect to trigger of coverage and how the primary policies in effect will be exhausted. California is a continuous trigger state for environmental claims and there is a split in authority for construction defect, but the rulings are trending toward a continuous trigger. Oregon is an “injury-in-fact” state which means that coverage exists under every policy that is in effect during the time periods in which damage to property actually occurs. Since both “triggers” can implicate multiple policies, one must now look to how California and Oregon apply the “exhaustion of coverage” principle. In California, certain courts have adopted a horizontal exhaustion position, but the Supreme Court has yet to rule on the issue. Oregon has yet to rule on the issue. Horizontal exhaustion is the principle that all primary policies that could respond to a loss must be exhausted before each joint tortfeasor’s excess policies can be tapped for defense and indemnity.

Trigger and exhaustion are moot when a CIP is placed because all enrolled contractors are insured under a single policy and the policy is for the term of the project.

### [Owner Controlled Insurance Program](#)

#### Advantages

- 1) Control of coverage for both general liability and worker’s compensation, although worker’s compensation is not currently contemplated under the current OCIP.
- 2) Assurance all contractors working on the project will be insured and insured with the same coverage as all other contractors, consistency of coverage.
- 3) Project risks are addressed all in a single policy without the concern for a market renewal.
- 4) Complies with current Federal Regulators understanding of how the project will be insured.



### Disadvantages

- 1) Financial obligations for the risk and losses under the program, (i.e. deductible payments) both during and after the completion of the project.
- 2) Project insurance costs (i.e. economies of scale)
- 3) Underwriter focused attention to the risks associated with this single project.

Though an Owner Controlled Insurance Program has certain advantages around control of coverage and limits, it does bring with it the financial obligation that potentially could happen post dissolution of KRRC. This financial obligation is a variable that could pose problems based on the structure of the OCIP. The greater concern is the issue of wildfire coverage and the ability to obtain a program with this coverage. Currently unknown to Aon is whether PacifiCorp's current liability program contains wildfire or excludes it. PacifiCorp may also maintain a separate wildfire only liability program and being an insured party in this program may cause problems in the placement of a dedicated project liability program, as carriers may go over line and not be able to support an OCIP. If we are ultimately required to place a GL only OCIP for this project, we would endeavor to place such coverage including wildfire and would attempt to eliminate any deductible obligations for KRRC post dissolution.

### Contractor Controlled Insurance Program

#### Advantages

- 1) Relieves KRRC of the financial obligations for the risks and losses associated with the project.
- 2) Control of coverage can still be established via contract with the Project Company, (i.e. types of policies and coverage terms – certain coverages have to be included in the CCIP)
- 3) Project Insurance Costs – Project Company will likely have more influence in the marketplace due to the scale of its insurance program vs. that of a single KRRC placement.
- 4) Project risks are addressed all in a single policy without the concern for a market renewal.

#### Disadvantages

- 1) Underwriter focused attention to the risks associated with this single project. However, if the Project Company has a rolling CIP, it will not be as highly scrutinized.

A CCIP has advantages that may serve this project better than an OCIP. Foremost, it takes away the financial obligations with the potential to be slightly more expansive in coverage. Similar to the OCIP approach, the CCIP would address the project risk without the need for a market renewal eliminating the worry of a renewal and underwriters changing view to possibly insuring the project. While the CCIP approach will bring attention to the project and the associated risks, the Project Company will likely seek coverage from its current corporate insurer and have greater bargaining power. If the Project Company has a rolling CIP program, the project will likely get rolled into the program with little scrutiny.

### Project Company's Practice Program

#### Advantages

- 1) Relieves KRRC of the financial obligations for the risks and losses associated with the project.
- 2) Control of coverage can still be established via contract with the Project Company, (i.e. types of policies and coverage terms – certain coverages have to be included in their practice program)
- 3) Project Insurance Costs – Project Company probably has greater bargaining power in the marketplace due to its economy of scale vs. a single KRRC placement.
- 4) Dedicated project-specific limits which are annually renewing
- 5) Avoids CIP costs

#### Disadvantages

- 1) Project Company's insurance is subject to renewal every year which may have impact on pricing and coverage.



- 2) Reliance on Project Company's ability to manage subcontractors insurance and potential lack of consistent coverage.
- 3) Insurer unlikely to add KRRC as an insured on the policy, thus requiring an Owner's Interest policy.

The Project Company's Practice Program approach has the advantage that this project would just be one of many that the contractor has and would not necessarily receive the same direct underwriting scrutiny that would be done on a project specific basis, either OCIP or CCIP. One potential source of uncertainty in this approach is that the Project Company and its subcontractors will have to deal with their respective insurance renewals and possible changing market conditions during the Project Implementation Work. However, if they are contractual obligated to provide the required limits and coverages then KRRC has that to rely on but with the caveat that the terms required may not be able to be met in year 3 of the program as an example. The other concern is how the legal issues are addressed if there are multiple parties at fault with multiple policies

### Owners Interest Liability Program

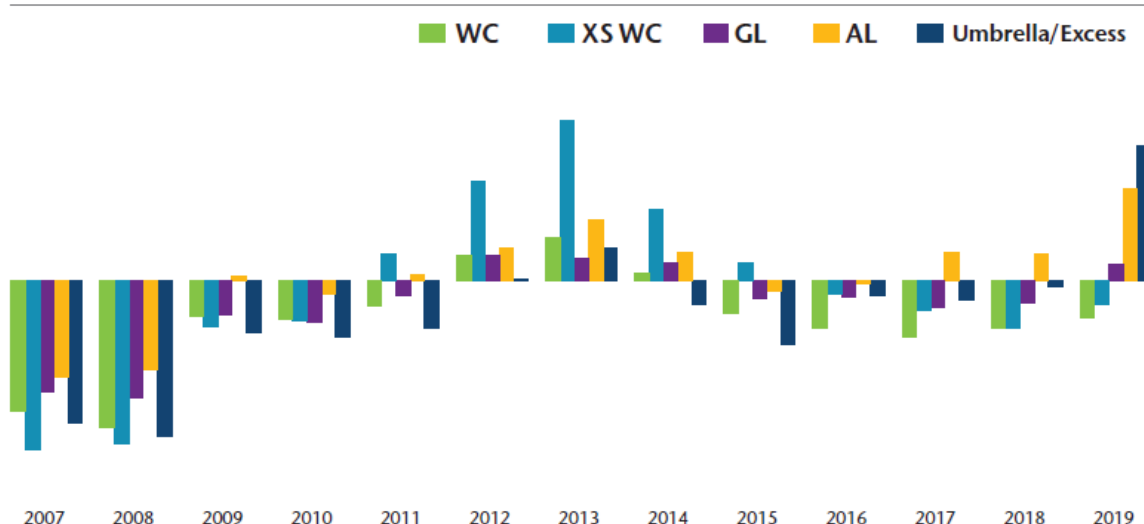
If a Project Company directed program is selected an option to consider would be to purchase a dedicated "Owners Interest" only liability program that would protect KRRC in the event KRRC is held legally liable for a loss that arises out of its sole negligence or willful misconduct. Though most liability will be driven through the Project Company's operations, such a policy would provide coverage for the unknown or unintended loss. Limits for an Owners Interest program should be evaluated based on how much direct involvement KRRC staff will have in overseeing the project.

### Recommendation

As mentioned previously all three approaches to insuring the project will work. It is just deciding which one will work best for KRRC and the successful restoration of the Klamath River and which delivers the greatest value for money. Since the original recommendation, insurance rates have increased significantly:

Exhibit 1

Average Rate Change 2007-2019



Additionally, carriers have significantly reduced the limits that they are willing to offer and narrowed the terms and conditions of their policies.



As such, it is important to assess which insurance approach delivers the greatest value for money while affording the best coverage; that is by allowing Kiewit and HGS to use their corporate insurance programs and requiring project specific limits that are annually renewing; and by having KRRC purchase an owner's interest policy and naming the key Stakeholders as additional insureds.

## Auto Liability

We recommend that KRRC consider requiring higher limits (\$10M) of Kiewit and HGS and allow Kiewit and HGS to determine the appropriate limit for its subcontractors, but not less than \$2M. We further suggest that Kiewit and HGS schedule the auto liability on their umbrella/excess policies, if possible.

## Contractors Pollution Liability and Fixed Site Pollution Liability

While similar questions, as those posed in the casualty analysis, can be asked for the pollution cover, the difference is that neither Kiewit nor HGS will not take ownership of the site. As such, the responsibility for procuring fixed site pollution liability ("PLL") cover falls to KRRC. Therefore, we agree that KRRC should procure both the Contractor's Pollution Liability ("CPL") and the PLL cover and would seek to place at least the primary layer of both policies, and preferably the entire tower, with the same insurer. Environmental claims during the course of construction often fall to both the CPL and PLL (site pollution) and can result in additional complications when two or more insurers are involved. Additionally, it may ultimately be more advantageous for the two policies to have linked limits, as currently the policies have two separate \$100 million towers specified. As Aon continues to analyze the risks and exposures of the Project, the two separate towers may be over-insuring of the Project, when perhaps a single \$50 million may be adequate. However, we will offer pricing for up to \$100M.

If Kiewit is willing to do so, KRRC should work with Kiewit to use Kiewit's leverage in the insurance marketplace to negotiate coverage, terms and pricing.

We do recommend that KRRC be permitted to collect any deductible/SIRs from the Project Company or contractor who causes the loss.

## Professional Liability Structure

Given the size of the project and the inherent, potential risk of a catastrophic loss resulting from the negligent rendering of professional services, the structure of the professional liability coverage will be critical to the success of the project. Aon has reviewed Kiewit's corporate program and it contains the same types and kinds of coverages that would be in a project specific Contractors Protective Professional Indemnity (CPPI). As such, use of Kiewit's corporate program is permissible as long as there are dedicated, project specific limits.

It would be permissible for HGS to use its corporate program if it can provide dedicated, project specific limits and meets all of the contractual requirements. If it cannot do so, it should be required to buy a project specific policy.



## Risk Register

As discussed in the key project risks section of this report, there was a meeting in February 2019 with the States, PacifiCorp, KRRC and its consultants in which the group identified a variety of project risks. Aecom and Aon created a project risk register which incorporated the discussions from that meeting as well as the risks set forth in the Project Agreement. The Risk Register is attached as Appendix D to the July 2019 report. The Risk Register has since been updated and certain risks have been “retired” because the risk has been eliminated or transferred to Kiewit or HGS.

The original risk register is divided into 3 specific sections: risks that are insurable, risks that are potentially insurable, and risks that are uninsurable. It is important to understand that coverage is extremely fact dependent and coverage cannot be guaranteed if the facts reveal that the cause is excluded or that there is some other type of limitation. In breaking the risks into insurable, potentially insurable and uninsurable, Aon has assumed that the insured has complied with all provisions of the policy and that the claim is not otherwise excluded.

For the potentially insurable risks, the facts and alleged damages become even more important in determining coverage. Builder’s Risk and Property insurance is what is commonly referred to as a “first-party” coverage, which that the damage must be incurred by the named (or other) insureds. Additionally, for the delay in startup or contractor’s continuing expense coverage to be triggered, there must be a loss caused by a peril not otherwise excluded. For the general liability insurance (3<sup>rd</sup> party coverage), as discussed in controlled insurance program section, there are 5 key factors that go into determining whether there is coverage for the loss. However, there are two key obligations under a general liability policy: defense and indemnification. The duty to defend is broader than the duty to indemnify (pay the damages). As such, often times a carrier will have a defense obligation but as the facts develop, may not have an indemnification obligation. The environmental (1<sup>st</sup> and 3<sup>rd</sup> party) and professional coverages (1<sup>st</sup> and 3<sup>rd</sup> party) have the same two duties and are also very fact dependent.

## Conclusion

Aon has outlined certain recommendations with respect to the insurance program in Appendix A based upon the following factors: (1) a program that delivers the best value for money; (2) the legal advice of Hawkins, Delafield and Wood firm; and (3) the representations of Kiewit and HGS. Those recommendations are as follows.

1. Kiewit and HGS will be permitted to use their corporate general liability, auto liability and workers compensation insurance programs. With respect the general liability coverage, both Kiewit and HGS will be required to provide project specific limits that renew on an annual basis.
2. KRRC will purchase an owner’s interest general liability program that covers its independent liability and any vicarious liability assigned to it.
3. Kiewit will procure the Builder’s Risk coverage because of its purchasing power and market relationships.
4. Kiewit and HGS will be permitted to use their corporate professional liability insurance programs as it complies with all of the required specifications.
5. KRRC will purchase the Contractor’s Pollution Liability and Site Pollution Liability policies.



## Appendix A – Aon Proposed Insurance Plan

Insurance		Limit of Liability		Retention/Deductible		Comments
Policy Type	Recommended Procuring Entity	Aon's Recommendations		Project Agreement Requirements	Aon's Recommended Approach	Relevant Notes
Builder's Risk	Kiewit only for the work it will be performing	Builders risk limit to be subject to a Probable Maximum Loss analysis		No Requirements related to Retentions	The AOP deductible should be no higher than \$1M  Earthquake will have a percentage deductible  Flood will have a percentage deductible	There will be multiple sublimits associated with the Project and those sublimits are being evaluated
General Liability	Kiewit, HGS and KRRC and all subcontractors	<b>Kiewit and HGS (separate policies):</b> \$2M occurrence / \$4M products completed operations / \$4M general aggregate  <b>KRRC:</b> \$1M occurrence / \$2M products completed operations / \$4M general aggregate  <b>Subcontractors:</b> As required by Kiewit and HGS		No Requirements related to Retentions	A deductible or SIR not greater than \$1M for Kiewit and HGS, individually  Subcontractors as determined by Kiewit and HGS	Kiewit and HGS will be permitted to use their corporate programs if they can provide dedicated, project specific limits.
Workers Compensation/ Employers Liability	Kiewit, HGS and KRRC and all subcontractors	WC – Statutory Employers Liability- \$1M/\$1M/\$1M		No Requirements related to Retentions	N/A	All parties will use their corporate policies
Excess Liability	Kiewit, HGS and KRRC and all subcontractors	<b>Kiewit</b> to provide \$200M in project specific limits  <b>HGS</b> to provide \$75M in project specific limits  <b>KRRC</b> to procure an owner's interest policy with limits of \$50,000,000 (but will price \$100M)		N/A	Underlying coverage	This should be a follow form policy and should have the following coverages scheduled on the policy: general liability, auto liability and employers liability. It is also recommended that the aircraft liability and watercraft liability be scheduled on this policy.
Commercial Automobile Liability	Kiewit, HGS and KRRC and all subcontractors	\$5,000,000 CSL except subcontractors who shall carry \$2,000,000 CSL		No Requirements related to Retentions	N/A	All parties will use their corporate policies. In addition to MCS 90 and CA 9948
Contractor's Pollution Liability/Pollution Legal Liability	KRRC	\$50M		No Requirements related to Retentions	Not greater than \$1M	This will be a combined CPL/PLL policy and an option for \$100M in coverage will be explored.





Professional Liability	Kiewit HSG	<b>Kiewit:</b> \$25,000,000 per claim and in the aggregate <b>HSG:</b> \$15,000,000 per claim and in the aggregate	No Requirements related to Retentions	Not greater than \$1M	Kiewit's corporate program is sufficient as long as they provide dedicated, project specific limits.  HSG's corporate program is sufficient as long as they provide dedicated project specific limits. If they cannot do so, then they will need to procure a project specific policy.
Watercraft and Aircraft Liability	Kiewit	\$5,000,000 per occurrence and in the aggregate for watercraft, aircraft and drones \$10,000,000 per occurrence and in the aggregate for helicopters	No Requirements related to Retentions   Still exploring exposure	TBD	TBD



## Appendix B – KRRC's Insurance Budget

Line of Coverage	Coverage Description	Limits	Retentions	Estimated Premium	Cost Period
Builder's Risk	Covers damage to property in the Construction Period	Subject to a Probable Maximum Loss	Not greater than \$1M	Included in Kiewit's GMP	Term
KRRC's Owner's Interest Policy	Covers 3rd party bodily injury and property damage, and injured employees in the course of their employment	\$50M <sup>2</sup>	Not greater than \$1M	\$2,600,000	Term
Commercial Automobile Liability	Covers liability from use of autos	\$5,000,000 combined single limit	Not greater than \$1M	\$0 (Corporate program)	Annual
Contractor's Pollution Liability/Pollution Legal Liability	Covers liability arising from hazardous materials	\$50,000,000 linked limits <sup>3</sup>	Not greater than \$1M	\$1,200,000	Term
Professional Liability	Covers liability arising out of design errors	Kiewit: \$25,000,000 per claim and project aggregate HGS: \$15,000,000 per claim and project aggregate	Not greater than \$1M	Included in Kiewit's GMP \$700,000 for HGS	Term
Watercraft and Aircraft Liability	Covers liability from use of watercraft or aircraft	Depending on exposure	Not greater than \$1M	Included in Kiewit and HGS' GMP	Term
<b>Total Estimated Annual Premium during Construction Period (2020 Dollars)</b>				<b>\$4,500,000</b>	

<sup>2</sup> Aon will price an additional \$50M in limit for KRRC's consideration.

<sup>3</sup> Aon will price an additional \$50M in limit for KRRC's consideration.



Risk Register

August 2020

**Risk Register (KRRC-Owned Risks)**

August 2020

Key:

 New Risks Identified Since April 2020

 Changed probabilities/impacts since April 2020

Risk ID	Risk Category	Risk Description	Root Cause(s)	Probability (P)	Impact (I)	Overall Rating	Probability	Cost Impact		Schedule Impact		Risk Application Phase	KRRC Management Strategy	Risk Management Measure	Risk Owner	Primary Contingency Carrier	Secondary Contingency Carrier	Risk Status
								Min (\$M)	Max (\$M)	Min (Days)	Max (Days)							
Environmental & Permitting																		
4	Environmental & Permitting	Unanticipated Dam Safety Requirements Significant unanticipated Project requirements from dam safety agencies, FERC, or DSOD (including through BOC or PFMA processes) may cause delays to the project and increase costs.	Agency, FERC, DSOD, BOC, or PFMA reviews result in unanticipated requirements	Unlikely (10-19%)	2 Low	Low	10%	\$ 1,000,000	\$ 3,000,000	0	90	Permitting	Manage	Consultations with FERC and the BOC (through the PFMA process and otherwise) and CA DSOD regarding dam safety concerns. Proactive agency coordination and field studies are underway.	Owner	Post GMP Contingency		Open
8	Environmental & Permitting	Unanticipated Other Permit Requirements Unanticipated permit requirements (outside of dam safety agencies) that increase contract price if not known at time of preparation of the Guaranteed Maximum Price (GMP).	Permitting agencies require offsite mitigation or any other requirements beyond anticipated requirements	Likely (40-59%)	3 Moderate	Med	50%	\$ 50,000	\$ 8,000,000	0	0	Permitting	Manage	Ongoing early consultation with agencies and early permit application submittal. Proactive agency coordination and field studies are underway. Proactive response to FERC requests and strict adherence to FERC standard protocol and processes.	Owner / LTC  Owner: Prior to permit finalization: Changes from expected permit conditions are Owner risks. A table of expected permit terms is attached to the contract and informs the GMP. The LTC has an obligation to negotiate an amendment in good faith. Any new permit previously not considered would be an Owner risk. LTC: After permit finalization: if there is a change is to an existing environmental permit, the LTC takes that risk.	Post GMP Contingency	LTC	Open
15	Environmental & Permitting	KRRC-Managed Permitting Delays Permit acquisition may take longer than anticipated, resulting in Project delay. Includes list of permits described in KRRC/Kiewit/RES contracts, including FERC transfer/surrender (including NEPA), USACE 404, ESA Section 7, CDFW/ODFW MOUs, County MOUs, etc.	Agency unable to process permit to allow for required construction start date	Very Unlikely (0-9%)	3 Moderate	Med	5%	\$ 500,000	\$ 10,000,000	0	210	Permitting	Manage	Early coordination with PacifiCorp and applicable regulatory agencies.	Owner	Post GMP Contingency		Open
75	Environmental & Permitting	Dredging Permit Unable to get a permit to dredge upstream of dams prior to drawdown	Upstream dredging becomes infeasible due to access or permitting constraints	Unlikely (10-19%)	2 Low	Med	10%	\$ 500,000	\$ 2,500,000	0	90	Permitting	Manage	Early coordination with PacifiCorp and applicable regulatory agencies.	Owner	Post GMP Contingency		Open
93	Environmental & Permitting	Listed Species - Western Pond Turtle Western Pond Turtle becomes Federally listed during permitting process. This may result in additional cost.	Project effect on listed species	Very Unlikely (0-9%)	3 Moderate	Low	3%	\$ 1,000,000	\$ 3,000,000	0	0	Permitting	Manage	Coordination with applicable regulatory agencies.	Owner / LTC  Owner: Prior to permit finalization: Changes from expected permit conditions are Owner risks. A table of expected permit terms is attached to the contract and informs the GMP and the LTC has an obligation to negotiate an amendment in good faith. Any new permit previously not considered would be an Owner risk. LTC: After permit finalization: if there is a change is to an existing environmental permit, the LTC takes that risk.	Post GMP Contingency	LTC	Open

Risk ID	Risk Category	Risk Description	Root Cause(s)	Probability (P)	Impact (I)	Overall Rating	Probability	Cost Impact		Schedule Impact		Risk Application Phase	KRRC Management Strategy	Risk Management Measure	Risk Owner	Primary Contingency Carrier	Secondary Contingency Carrier	Risk Status
								Min (\$M)	Max (\$M)	Min (Days)	Max (Days)							
88	Environmental & Permitting	Flood Mitigation Delay Flood mitigation improvements delay reservoir drawdown.	Implementation of downstream flood improvements take longer than anticipated and are not completed prior to reservoir drawdown	Very Unlikely (0-9%)	2 Low	Low	5%	\$ 10,000	\$ 250,000	0	30	Permitting	Manage	Complete early outreach to residents and owners in affected areas. Based on current evaluation, proceeding with draw down would not result in a risk of loss of life, but KRRC will evaluate decision to proceed with drawdown even if some owners do not allow/desire flood improvements. The risk here relates to additional potential legal claims associated with the LIMF not responding to landowner issues.	Owner	Local Impact Mitigation Fund	Post GMP Contingency	Open
87	Environmental & Permitting	JC Boyle LOW Expansion: Expanding of the permit boundaries to facilitate construction and provide access to make the work site safe (i.e. rock scaling, slope stabilization, etc.) is not accepted.	Expanded Limit of Work required to complete the work, which needs to get incorporated into CEQA and permit processes, as needed	Very Unlikely (0-9%)	2 Low	Low	1%	\$ 100,000	\$ 1,000,000	0	60	Permitting	Manage	KP to prepare 60% Design to allow permitting and approvals to proceed, and to coordinate through compliance lead and KRRC legal to make sure expansion is covered.	Owner	Post GMP Contingency		Open
103	Environmental & Permitting	Copco No. 2 LOW Expansion: Copco 2 - New permit area required for overflow spillway. This will include helicopter access to place galvanized steel bulkhead. Risk of not getting revised work boundary	Expanded Limit of Work required to complete the work, which needs to get incorporated into CEQA and permit processes, as needed	Very Unlikely (0-9%)	1 Very Low	Low	5%	\$ 50,000	\$ 125,000	0	60	Permitting	Manage	KP to prepare 60% Design to allow permitting and approvals to proceed, and to coordinate through compliance lead and KRRC legal to make sure expansion is covered.	Owner	Post-GMP Contingency		
Right-Of-Way or Easements																		
28	ROW	Easement Restrictions ROW/construction easements may be denied for modification of access roads or other improvements	Insufficient communication and compromise with property owner	Very Unlikely (0-9%)	1 Very Low	Low	5%	\$ 100,000	\$ 300,000	0	90	Permitting	Manage	Proactive communication with access road owners; Contingency planning for use of access roads without modification.	Owner	Post-GMP Contingency	-	Open
83	ROW	Adjacent Properties Impacted Unforeseen impact to adjacent properties during construction.	Unanticipated impacts during roads work or downstream mitigations	Less Likely (20-39%)	2 Low	Med	25%	\$ 1,000,000	\$ 3,000,000	0	0	Permitting	Share	Contractor required to develop final design that considers adjacent properties; Early identification of property impacts.  Owner: Responsible to the extent there are unanticipated, unavoidable impacts. PDB: To the extent their negligent performance causes damage to downstream properties.	Owner / PDB	Local Impact Mitigation Fund	Insurance	Open
Post-GMP																		
13	Post-GMP	Increased development Increased development within the floodplain beyond mitigation already included requires additional flood mitigation beyond what is planned.	City/county allows construction permits to be issued to developers	Very Unlikely (0-9%)	1 Very Low	Low	1%	\$ 100,000	\$ 500,000	0	0	Permitting	Accept	Coordination with appropriate agencies; Consider an early CLOMR application to Counties.	Owner	Local Impact Mitigation Fund	Post GMP Contingency	Open
100	Post-GMP	Irongate Flow Continuation FERC Req: The additional redundancy for a 3rd IFR release facility is still required. Currently not being designed by KP/Kiewit. Risk of being required in the future.	Flow continuation requirement results in constraint on design that increases cost or lengthens schedule	Very Unlikely (0-9%)	1 Very Low	Low	1%	\$ 250,000	\$ 1,000,000	0	30	Permitting	Manage	Pursue clarity on this requirement ASAP through discussions with PacifiCorp and FERC.	Owner	Post GMP Contingency		Open
Field Conditions																		
19	Field Conditions	Field Conditions General changed field condition (geotechnical, existing utilities, hazardous materials, and biological resources) leads to redesign, project delays and/or cost overruns.	Field condition differs from documented findings	Very Likely (60-100%)	1 Very Low	Med	70%	\$ 250,000	\$ 5,000,000	0	90	Drawdown Year	Manage	Comprehensive field investigation and documentation.	Owner / LTC  Owner: To the extent that items are not included in Existing Conditions Report (ECR); PDB: To the extent that they did not properly assess conditions. LTC: To the extent that they did not properly assess conditions; LTC also takes liability for changing circumstances after dam removal leading to greater than anticipated work/changed permit conditions.	Post-GMP Contingency and LTC	Insurance	Open

Risk ID	Risk Category	Risk Description	Root Cause(s)	Probability (P)	Impact (I)	Overall Rating	Probability	Cost Impact		Schedule Impact		Risk Application Phase	KRRC Management Strategy	Risk Management Measure	Risk Owner	Primary Contingency Carrier	Secondary Contingency Carrier	Risk Status
								Min (\$M)	Max (\$M)	Min (Days)	Max (Days)							
41	Field Conditions	Non-burial Related Cultural Resource Discoveries Unanticipated non-burial related cultural resources (foundations, barns, etc.) discovered during reservoir drawdown or construction (beyond current allowance). Costs exceed allowances.	Non-burial cultural resource not disclosed or already known about	Unlikely (10-19%)	2 Low	Low	15%	\$ 100,000	\$ 500,000	0	90	Drawdown Year	Transfer	Identification of existing cultural resources to the extent feasible; Ongoing coordination with Native American groups and local historical societies; Development of an Inadvertent Discovery Plan, Monitoring Plan, and NAGPRA Plan of Action, and rapid response plan to address the possibility of burial sites becoming exposed during drawdown.	Owner / LTC  Owner: Responsible for monitoring, delay, or transportation costs related to unknown site conditions; PDB: Responsible for not disrupting known site condition.  LTC: In respect of unknown site conditions that are discovered, subject to regulatory and permit language being finalized, LTC will be responsible for modifying design without compensation. Responsible for not disrupting known site conditions.	LTC	Post-GMP Contingency	Open
43	Field Conditions	Burial Related Cultural Resource Discoveries Unanticipated burial related conditions may exist. Including sites, human remains, or funerary items discovered within reservoir areas during reservoir drawdown - requiring cessation of construction activities for a long duration. Discovery impacts ability to perform construction - primarily Yreka waterline, Fall Gr Hatchery, Iron Gate Hatchery, and bridges	Burial site not disclosed or already known about	Likely (40-59%)	3 Moderate	Med	50%	\$ 200,000	\$ 750,000	0	90	Drawdown Year	Transfer	Identification of existing cultural resources to the extent feasible; Ongoing coordination with Native American groups and local historical societies; Development of an Inadvertent Discovery Plan, Monitoring Plan, and NAGPRA Plan of Action, and rapid response plan to address the possibility of burial sites becoming exposed during drawdown.	Owner / LTC  Owner: Responsible for monitoring, delay, or transportation costs related to unknown site conditions; PDB: Responsible for not disrupting known site conditions.  LTC: In respect of unknown site conditions that are discovered, subject to regulatory and permit language being finalized, LTC will be responsible for modifying design without compensation. Responsible for not disrupting known site conditions.	LTC	Post-GMP Contingency	Open
16b	Field Conditions	Cultural Resource Damage Damage to UNKNOWN sites. Would trigger an un-controlled circumstance. Delay to construction.	Burial site not disclosed or already known about	Very Likely (60-100%)	2 Low	Med	65%	\$ 50,000	\$ 1,000,000	0	90	Drawdown Year	Manage	Identification of existing cultural resources to the extent feasible; Ongoing coordination with Native American groups and local historical societies; Development of an Inadvertent Discovery Plan, Monitoring Plan, and NAGPRA Plan of Action, and rapid response plan to address the possibility of burial sites becoming exposed during drawdown.	Owner	Post GMP Contingency		Open
Construction																		
33	Construction	Cofferdam Failure Failure of temporary cofferdams result in demolition delays	Unconservative design of cofferdams; unanticipated foundation conditions	Unlikely (10-19%)	2 Low	Low	10%	\$ 100,000	\$ 500,000	0	90	Post-Drawdown Year	Transfer	Comprehensive field investigation, review of original construction, and design review.	Owner / PDB  Owner: Responsible for unknown site conditions. PDB: Has design liability for known site conditions.	Insurance	Post-GMP Contingency	Open
35	Construction	Hazardous Material - Unforeseen Condition Discovery or release of unknown hazardous material (other than from construction activities) to river during construction (unforeseen condition) may lead to cost impacts.	Project results in unanticipated release of hazardous material into river	Very Unlikely (0-9%)	1 Very Low	Low	5%	\$ 100,000	\$ 500,000	0	60	Post-Drawdown Year	Transfer	Completion of the Phase 1 hazardous material assessments and follow-up evaluations, appropriate health and safety qualifications, experience and other requirements during the procurement process, implementation of BMPs to avoid or contain the release of hazardous material, as well as active overview and enforcement of the Contractor's Hazardous Material Management Plan.	Owner	Insurance	Post-GMP Contingency	Open
51	Construction	Diversion Blockage Rapid-drawdown causes slope instability leading to rock slope failure, blocking the diversion intake. This failure will lead to schedule delays and significant cost impacts.	Design analyses unable to cover all geologic conditions and slope geometries; insufficient data	Unlikely (10-19%)	2 Low	Low	15%	\$ 1,000,000	\$ 2,000,000	0	90	Drawdown Year	Share	Comprehensive field investigation and design review; Develop slope monitoring plan for implementation during drawdown; Stockpile riprap for repairs of slope if local failures occur.	Owner / PDB  Owner: Responsible for unknown site conditions. PDB: Has design liability for known site conditions.	Post-GMP Contingency	Insurance	Open

Risk ID	Risk Category	Risk Description	Root Cause(s)	Probability (P)	Impact (I)	Overall Rating	Probability	Cost Impact		Schedule Impact		Risk Application Phase	KRRC Management Strategy	Risk Management Measure	Risk Owner	Primary Contingency Carrier	Secondary Contingency Carrier	Risk Status
								Min (\$M)	Max (\$M)	Min (Days)	Max (Days)							
192	Construction	Dredging upstream results in unforeseen conditions that increase cost and delay schedule	If exploratory dredging is completed upstream of Copco No. 1 and significant debris is identified, it may result in increased costs to remove prior to drawdown	Less Likely (20-39%)	4 High	Med	30%	\$ 100,000	\$ 6,000,000	0	90	Pre-Drawdown Year	Manage	PDB to attempt to complete 2020 dredging.	Owner	Post GMP Contingency		Open
85	Construction	JC Boyle Power Canal Scaling: Power Canal Concrete Removal (Full), requires extensive scaling, slope stabilization, worker safety mitigation.	Unanticipated safety related slope scaling/stabilization is necessary to maintain worker safety	Unlikely (10-19%)	2 Low	Low	10%	\$ 1,000,000	\$ 2,500,000	0	30	Pre-Drawdown Year	Manage	Kiewit to compare cost of alternatives (Partial versus Full Removal). KRRC decision.	Owner	Post GMP Contingency		Open
180	Construction	Process Water Treatment: Water treatment needed for process water.	If regulatory process results in a requirement to treat process and dewatering water, it could increase cost	Less Likely (20-39%)	2 Low	Med	20%	\$ 500,000	\$ 2,250,000	5	7	Pre-Drawdown Year	Manage	Proactive discussion/negotiation with applicable regulatory agencies.	Owner	Post GMP Contingency		Open
196	Construction	Unanticipated Debris Loads: More garbage than expected after drawdown.	Significant amount of unanticipated trash and debris remains post-drawdown and requires removal	Likely (40-59%)	1 Very Low	Med	50%	\$ 25,000	\$ 500,000	7	14	Drawdown Year	Manage	Consider allowance for debris removal.	Owner	Post GMP Contingency		Open
Reservoir Drawdown																		
46	Drawdown	Unanticipated Erosion Reservoir drawdown and subsequent operations results in a greater than anticipated level of erosion at bridges or along channel creating passage barrier. This is likely to lead to additional cost beyond what is already included in the Local Impact Mitigation Fund.	Local hydrodynamics result in greater than modeled erosion or scour	Unlikely (10-19%)	1 Very Low	Low	10%	\$ 10,000	\$ 200,000	0	15	Drawdown Year	Manage	Comprehensive design review; Design additional scour protection for bridges if determined to be needed; Develop monitoring and mitigation plan for during and post reservoir drawdown.	Owner / PDB  Owner: Responsible for unknown site conditions.  PDB: Has design liability for known site conditions.	Local Impact Mitigation Fund	Post-GMP Contingency Insurance	Open
47	Drawdown	Unanticipated Effects on Diversion Intakes Reservoir dewatering and subsequent operations have greater than anticipated effects on diversion intakes for irrigation/livestock. This may lead to additional cost beyond what is already included in the Local Impact Mitigation Fund.	Greater than predicted suspended sediment and bedload movement	Unlikely (10-19%)	1 Very Low	Low	10%	\$ 25,000	\$ 200,000	0	30	Drawdown Year	Share	Comprehensive field investigation and design review; Develop plan for monitoring/mitigating intakes during reservoir drawdown.	Owner / PDB  Owner: Responsible for unknown site conditions.  PDB: Has design liability for complying with plans and approach.	Local Impact Mitigation Fund	Post-GMP Contingency Insurance	Open
48	Drawdown	Unanticipated Effects on Groundwater Wells Reservoir dewatering and subsequent operation has greater than anticipated effects on groundwater wells. This may lead to additional cost.	Difficult to investigate and analyze groundwater relationships	Less Likely (20-39%)	1 Very Low	Low	25%	\$ 100,000	\$ 250,000	0	5	Drawdown Year	Accept	Comprehensive field investigation and design review; Implement Groundwater Well Management Plan for evaluating changes in groundwater post-reservoir drawdown and proactively mitigate impacted wells.	Owner (LIMF) / PDB  Owner: While owner has certain responsibilities, this is handled separately in the funding set aside for the LIMF and does not add to post-GMP contingency.  PDB: Has design liability for complying with plans and approach.	Local Impact Mitigation Fund	Insurance	Open
49	Drawdown	Unanticipated Effects on Channel Flooding Reservoir dewatering and subsequent operations have greater than anticipated effect on downstream channel aggradation/flooding. This may lead to additional cost.	Evacuated coarse sediment is greater than anticipated leading to increased channel aggradation and associated flooding	Unlikely (10-19%)	1 Very Low	Low	15%	\$ 25,000	\$ 500,000	0	7	Drawdown Year	Accept	Rigorous assessment on transport and flooding during detailed design; Monitoring post-drawdown; Raise awareness that active channel management program needed; Implement measures to manage channel aggradation and flood risk.	Owner (LIMF) / PDB  Owner: While owner has certain responsibilities, this is handled separately in the funding set aside for the LIMF and does not add to post-GMP contingency.  PDB: Has design liability for complying with plans and approach.	Local Impact Mitigation Fund	Post-GMP Contingency	Open
50	Drawdown	Downstream Public Safety Public safety risk in downstream channel during the reservoir drawdown.	Outreach and public safety measures insufficient to keep out public creating potential risk to public safety during drawdown (increased flows)	Unlikely (10-19%)	1 Very Low	Low	10%	\$ 100,000	\$ 250,000	0	5	Drawdown Year	Share	Comprehensive education and outreach plan; Detailed review and QA of safety program; Development of a Reservoir Dewatering Awareness Plan that will include procedures for notifying public of the schedule and anticipated flows for reservoir drawdown.	Owner / PDB  Owner: To the extent this risk is unavoidable.  PDB: To the extent that safety issues are due to contractor fault.	Post-GMP Contingency	Insurance	Open

Risk ID	Risk Category	Risk Description	Root Cause(s)	Probability (P)	Impact (I)	Overall Rating	Probability	Cost Impact		Schedule Impact		Risk Application Phase	KRRC Management Strategy	Risk Management Measure	Risk Owner	Primary Contingency Carrier	Secondary Contingency Carrier	Risk Status
								Min (\$M)	Max (\$M)	Min (Days)	Max (Days)							
Dams, Powerhouses, Reservoirs																		
32	Dams	Slope Failure Copo lake reservoir rim or local slope failure along access roads may lead to additional cost and schedule delay.	Slope instability, inadequate access road condition assessment prior to construction. Design analyses unable to be made for all geologic conditions and slope geometries; insufficient data	Unlikely (10-19%)	4 High	Med	10%	\$ 1,000,000	\$ 5,000,000	0	14	Drawdown Year	Share	Comprehensive field investigation and design review; Develop plan to address slope failures along Copco Road if they were to occur during reservoir drawdown.	Owner (LIMF) / PDB  Owner: While Owner has certain responsibilities, this is handled separately in the funding set aside for the LIMF and does not add to post-GMP contingency.  PDB: Has design liability for complying with plans and approach.	LIMF	Post-GMP Contingency	Open
55	Dams	Diversion Tunnel Intake Blocked Copo No. 1 and/or Iron Gate Dam diversion tunnel intake blocked by debris during drawdown reducing flow capacity. This may lead to schedule delays and increased costs.	Debris within reservoir blocks intake	Less Likely (20-39%)	1 Very Low	Low	25%	\$ 125,000	\$ 550,000	7	14	Drawdown Year	Share	Maximizing the size of the intakes to match the size of the gates; Design debris grating for intake with ability to clear debris from grating.	Owner / PDB  Owner: To the extent this risk is unforeseen.  PDB: Aware that there will be some debris and contractor responsible for designing appropriate solution.	Post-GMP Contingency		Open
65	Dams	Dam Failure Iron Gate Dam or J.C. Boyle Dam overtopped during excavation by storm water flows in excess of 100-year event resulting in dam failure. This would lead to additional cost.	Climate change; increased variability in precipitation patterns	Very Unlikely (0-9%)	1 Very Low	Low	0.05%	\$ 2,500,000	\$ 100,000,000	0	90	Drawdown Year	Accept	Require that the dam height during excavation not be less than needed to safely pass a 100-year event through the diversion tunnel; Completion of the FERC Potential Failure Modes Analysis process; Implement EAP, if necessary, Close coordination with the FERC regional office and state dam safety authorities.	Owner	Insurance	Post-GMP Contingency	Open
66	Dams	Hatchery Delay Iron Gate and/or Fall Creek Hatchery is not brought online in time to begin drawdown. This may lead to schedule delay.	PacifiCorp does not move forward with planning, designing, costing, and seeking approval for hatchery designs. Inadequate planning, equipment, staff, technical issues, or unfavorable weather	Very Unlikely (0-9%)	3 Moderate	Low	1%	\$ -	\$ -	30	90	Pre-Drawdown Year	Manage	Rigorous design of replacement supply; Pilot treatment technology; Proactive QA/QC during construction.	Owner / PDB  Owner: Within the contract, the owner has responsibility if IFC docs are not ready in time for Kiewit to begin construction; however, the risk would be passed on to CDFW/PacifiCorp who are ultimately responsible for design and funding related to the hatchery.  PDB: Responsible to the extent that they have the agreed upon time to do the work and do not meet their schedule.	Post-GMP Contingency		Open
Yreka Water Supply Pipeline																		
74	Yreka	Design Changes by City of Yreka Design review by City of Yreka may result in changes to design. Coordination or other design delays related to City of Yreka water system design.	Lack of coordination or agreement on design process or details	Less Likely (20-39%)	1 Very Low	Low	20%	\$ 100,000	\$ 2,500,000	10	20	3rd Party - Yreka	Manage	Proactive coordination with City engineers on process and design requirements; Strict adherence to schedule milestones and KRRC QA process; Keep Designer under KRRC/AECOM control so payments can be withheld due to schedule delays.	Owner	Post GMP Contingency	-	Open
100	Yreka	Yreka Water Supply Construction Delays Yreka Water System Pipeline Crossing is not constructed in time for dam removal start. If this happens it pushes the dam removal to next calendar year. Differing Site Condition claim during Yreka Water Supply Pipeline Crossing Construction. On-site investigation shows much more complex.	Unforeseen seasonal flow condition in-river, and other unforeseen adverse conditions (e.g., geology) impacting construction schedule.	Very Unlikely (0-9%)	2 Low	Med	5%	\$ 250,000	\$ 1,000,000	30	90	Pre-Drawdown Year	Manage	Consider obtaining permits early; consider approved in-river work window for fish protection and other potential risks to construction schedule in planning for contingencies - in order to complete construction in-time for the dam removal start.	Owner / PDB  Owner: To the extent IFC docs and permits aren't obtained in time for PDB to begin work.  PDB: To the extent that they begin work on schedule but don't complete it on time.	Post GMP Contingency		Open
External Events																		

Risk ID	Risk Category	Risk Description	Root Cause(s)	Probability (P)	Impact (I)	Overall Rating	Probability	Cost Impact		Schedule Impact		Risk Application Phase	KRRC Management Strategy	Risk Management Measure	Risk Owner	Primary Contingency Carrier	Secondary Contingency Carrier	Risk Status
								Min (\$M)	Max (\$M)	Min (Days)	Max (Days)							
220		Riot or Civil Disturbance	Explosion, terrorism, sabotage or similar occurrence, acts of a declared public enemy, extortion, war, blockade or insurrection, riot or civil disturbance	Very Unlikely (0-9%)	1 Very Low	Low	0.10%	\$ 100,000	\$ 1,000,000	5	75	Pre-Drawdown Year	Accept	Prepare Emergency Response Plan (PERP) and require Contractor to prepare their own PERP.	Owner	Post-GMP Contingency		Open
219		Other (less-likely) naturally occurring events cause delay or increase costs.	Other less-likely naturally occurring events such as tornado, hurricane, and other acts of God (more likely events such as fire, earthquake and other extreme weather are considered separately)	Very Unlikely (0-9%)	1 Very Low	Low	0.01%	\$ 5,000,000	\$ 2,000,000	30	90	Pre-Drawdown Year	Accept	Prepare Emergency Response Plan (PERP) and require Contractor to prepare their own PERP.	Owner	Post-GMP Contingency		Open
218		Epidemic	An epidemic causes cost increases or project delays	Unlikely (10-19%)	1 Very Low	Low	10%	\$ 500,000	\$ 5,000,000	30	120	Pre-Drawdown Year	Accept	Prepare Emergency Response Plan (PERP) and require Contractor to prepare their own PERP. Further establish work remote capabilities and connections with stakeholders to ensure this project remains a priority.	Owner	Post-GMP Contingency		Open
20	External Events	Extreme or Wet Weather Hotter- or colder-than-expected weather causes work stoppage and schedule delays. Wetter-than-expected weather or flows higher than expected during instream construction window increases costs and causes delays.	Climate change; Hydrology	Very Unlikely (0-9%)	1 Very Low	Low	5%	\$ 100,000	\$ 2,000,000	5	30	Pre-Drawdown Year	Accept	Weather analysis during construction planning needs to foresee heat/cold delays; consider including greater than average number of excessive heat/cold days; for hot weather, consider ways to increase night work without affecting noise levels. Rigorous flow analyses during planning/design; Consider defining anticipated rain days in contract as a number greater than average; Define flow return period; Contract requirement for contractor plan for wetter-than-expected weather.	Owner / LTC  Owner: To the extent this risk is unforeseen (as defined in the Project Company agreement).  LTC: Within the RES agreement, LTC would be responsible for this risk.	Post-GMP Contingency	-	Open
22	External Events	On-site Fire Fire in watershed (not caused by PDB) causes on-site fire damage and restricted access prior to RES taking over as LTC	Lightning; Accidental; Arson	Unlikely (10-19%)	1 Very Low	Low	10%	\$ 1,000,000	\$ 10,000,000	5	30	Pre-Drawdown Year	Share	Fire Management Plan has been developed and Contractor will be required to prepare their own Fire Management Plan.	Owner	Insurance	Post-GMP Contingency	Open
24	External Events	Earthquake - During Construction Earthquake damages temporary construction leading to additional cost and schedule delays.	Earthquake occurs near project	Very Unlikely (0-9%)	2 Low	Low	1%	\$ 300,000	\$ 500,000	30	60	Pre-Drawdown Year	Accept	Consider specifying a contract defined design earthquake for temporary construction.	Owner / PDB / LTC  Owner: Responsible for force majeure.  PDB: Builder's Risk may apply in some instances (depending on exclusions ultimately negotiated).  LTC: Does not have relief for this type of force majeure once the work	Insurance	Post-GMP Contingency	Open
79	External Events	Domestic Terrorism Domestic terrorism or actions to disrupt or stop project during construction may lead to schedule delays.	Extreme opposition to project	Less Likely (20-39%)	1 Very Low	Low	1%	\$ 100,000	\$ 200,000	5	10	Pre-Drawdown Year	Accept	Develop site security plan that includes project response to different scenarios for disruption of project by domestic terrorists.	Owner	Post-GMP Contingency	-	Open
114	External Events	Confiscation by Governmental Body Government confiscates resources or stops work of PDB (LTC does not have relief for this type of force majeure once the work begins).	External events (disaster, etc.)	Very Unlikely (0-9%)	2 Low	Low	1%	\$ 100,000	\$ 1,000,000	15	60	Pre-Drawdown Year	Accept	N/A	Owner	Post-GMP Contingency	-	Open
72	External Events	PacifiCorp - Access challenges/Coordination of Work Delays.	PacifiCorp access constraints result in schedule delays	Less Likely (20-39%)	2 Low	Med	30%	\$ 500,000	\$ 3,000,000	0	180	Permitting	Manage	Develop plan during prelim services for needed PacifiCorp involvement during construction. Address in a revised O&M Agreement.	Owner	Post GMP Contingency		Open
Other																		

Risk ID	Risk Category	Risk Description	Root Cause(s)	Probability (P)	Impact (I)	Overall Rating	Probability	Cost Impact		Schedule Impact		Risk Application Phase	KRRC Management Strategy	Risk Management Measure	Risk Owner	Primary Contingency Carrier	Secondary Contingency Carrier	Risk Status
								Min (\$M)	Max (\$M)	Min (Days)	Max (Days)							
211	Contract Issues	Contract disputes as a result of splitting Kiewit/RES contracts.	Disagreement over who is responsible for work or issues pertaining to work	Less Likely (20-39%)	2 Low	Med	25%	\$ 100,000	\$ 200,000	0	10	Drawdown Year	Manage	Work closely on related work protocol, ongoing partnership meetings and conversations to determine where there may be overlap.	Owner	Post GMP Contingency		Open
212	Insurance	Events on site cause KRRC to pay for deductibles on pollution policies.	Pollution event requires triggers insurance	Likely (40-59%)	1 Very Low	Med	50%	\$ 250,000	\$ 2,500,000	0	0	Drawdown Year	Accept	Carefully implement BMPs and review all documentation and develop plans to mitigate exposure to this risk.	Owner	Post GMP Contingency		Open
213	Field Conditions	Reliance documents are inaccurate.	Once on site, PDB discovers reliance documents were inaccurate	Very Unlikely (0-9%)	Very Low	Low	1%	\$ 500,000	\$ 3,000,000	0	0	Drawdown Year	Manage	Limit number of reliance documents since not finalized until project implementation date.	Owner	Post GMP Contingency		Open
214	Insurance	Estimated cost of premiums for insurance are too low.	Estimate for premiums is too low since estimate was made over a year in advance of securing insurance	Likely (40-59%)	2 Low	Med	40%	\$ 100,000	\$ 1,000,000	0	0	Drawdown Year	Accept	Seek pricing updates regularly; regularly review insurance approach in light of changing insurance industry.	Owner	Post GMP Contingency		Open
215	Contract Issues	Contract ends up being difficult to interpret or operationalize.	Once project implementation begins, it is determined that there are either errors in the contract that need to be renegotiated or terms that are vague and difficult to operationalize.	Very Unlikely (0-9%)	1 Very Low	Low	1%	\$ 50,000	\$ 2,500,000	0	0	Drawdown Year	Manage	Work closely with the project team, peer review of contracts, clarity on related work protocol, etc.	Owner	Post GMP Contingency		Open
216		Change Order not made due to Project Company Fault.	KRRC creates a change order adding costs to the project (this only applies to changes that are not required from permit terms and conditions as changes due to permit conditions are covered under permitting risks)	Very Unlikely (0-9%)	1 Very Low	Low	0.01%	\$ 500,000	\$ 2,500,000	0	30	Drawdown Year	Manage	Work closely with the project team to ensure understanding of project is aligned; KRRC to manage stakeholder expectations so as to not require any change order.	Owner	Post GMP Contingency		Open
217		Litigation	Any third party litigation filed against the KRRC, any Contractor Indemnitee, or any Governmental Body in connection with a Governmental Approval that results in a court order, settlement, or similar outcome restraining the performance of, or altering, the Habitat Project Work, to the extent not due to or arising out of Contractor Fault	Unlikely (10-19%)	2 Low	Med	10%	\$ 500,000	\$ 3,000,000	0	360	Permitting	Manage	KRRC to work closely with entities that may be inclined to litigate; establish MOUs where possible.	Owner	Post GMP Contingency		Open
218	NEW	Change in law	Added back to cover a risk such as change in tax law that would impact Kiewit's costs.	Less Likely (20-39%)	3 Low	Low	30%	\$ -	\$ 500,000	0	0	Pre-Drawdown Year	This risk is essentially out of KRRC's control	KRRC work closely with Kiewit to track any potential changes in law and determine how best to mitigate	Owner	Post GMP Contingency		Open



Newly-Retired KRRC-Owned Risks Since April 2020  
August 2020

Risk ID	Risk Category	Risk Description	Root Cause(s)	Probability (P)	Impact (I)	Probability	KRRC Management Strategy	Risk Management Measure	Risk Owner	Primary Contingency Carrier	Secondary Contingency Carrier	Reason retired
210	Construction	Jenny Creek Stability Analysis: not accepted by Siskiyou County.	Siskiyou Co. reviewers do not agree with assessment, requiring additional work and cost	Less Likely (20-39%)	Very Low	Med	Manage	KP developed report provides options of creek stabilization based on differing flow analysis. Original Jenny Creek Bridge design based off old hydraulic data, risk of requiring new stabilization with updated analysis.	Owner	Post GMP Contingency		Per Kiewit (8/18/20) , We've discussed the 2 different flow models with Siskiyou county (1-what they had when the designed the bridge, and 2-what KP derived independently) Neither flow calculation is wrong, and wouldn't change post drawdown, just each has different assumptions. But if using the KP calculation, the Jenny creek bridge would need to be modified. If using the original flow study performed for the Siskiyou county design, the bridge is fine as is now, and will be fine as is after drawdown. We wrote into the MOU that Siskiyou county was satisfied with their original flow study and removed all jenny creek scope from our plan set.
184	Construction	PacifiCorp Early Exit: PacifiCorp walks away from site early, cannot manage water thru powerhouses during pre-drawdown year, dams just spilling and unable to appropriately control during dam modification work.	PacifiCorp negotiates an early exist from the site, thereby requiring KRRC to operate facilities during drawdown	Very Unlikely (0-9%)	Low	Low	Manage	Update O&M agreement with needed new items.	Owner	Post GMP Contingency		8/18/20, KRRC built in 12 months of dam operations into new project budget
115	External Events	Circumstances Affecting Suppliers and Sub-Contractors. External events (disaster, etc.) affect the ability of PDB to acquire supplies and materials (LTC does not have relief for this type of force majeure once the work begins).	External events (disaster, etc.)	Very Unlikely (0-9%)	Low	Very Low	Accept	Early coordination with suppliers to avoid supply limitations.	Owner	Post-GMP Contingency	Insurance	8/18/20, Kiewit agreed to take on this risk.
221		Labor Strike.	Labor disputes, strikes, slowdowns, stoppages, boycotts or disruption affecting a specific trade on a national or regional level, to the extent not caused by Project Company Fault (note that RES does not have this carve out)	Very Unlikely (0-9%)	Very Low	Very Low	Accept/Manage	To the extent strike can be worked out on local level, work with Kiewit to incentivize laborers to work.	Owner	Post-GMP Contingency	Insurance	8/18/20, Kiewit agreed to take on this risk.
86	Construction	JC Boyle Scour Hole: Scour Hole filling from the top as proposed by Kiewit is not accepted, will require more extensive laying back of the slopes to facilitate safe access from the bottom, as proposed in the Definite Plan.	BLM does not agree to current design approach to filling the scour hole.	Unlikely (10-19%)	Low	Med	Manage	KP to prepare 60% Design to allow permitting and approvals to proceed. KRRC BLM lead to coordinate with BLM on acceptance of proposed approach.	Owner	Post GMP Contingency		8/31/20, BLM signed off on current design

**Exhibit D-10**

**Memorandum of Agreement**

**November 17, 2020**

## MEMORANDUM OF AGREEMENT

This Memorandum of Agreement ("Implementing Agreement") is entered into between PacifiCorp, a wholly-owned subsidiary of Berkshire Hathaway Energy, the Karuk Tribe, Yurok Tribe, State of Oregon, State of California, and Klamath River Renewal Corporation ("KRRRC"), which are collectively referred to as the "Implementing Agreement Parties."

- A. The Implementing Agreement Parties recognize and acknowledge the importance of the Klamath River to the livelihood and culture of Klamath Basin Tribes whom have depended on these resources since time immemorial. Furthermore, the Implementing Agreement Parties are Signatories to the Amended Klamath Hydroelectric Settlement Agreement ("AKHSA" or "KHSA") and are committed to removal of the JC Boyle, Copco 1, Copco 2, and Iron Gate dams in order to achieve a free-flowing Klamath River with volitional fish passage ("the Project").
- B. On September 23, 2016, PacifiCorp and KRRRC filed a joint application with the Federal Energy Regulatory Commission ("FERC") to amend the Klamath Hydroelectric Project No. 2082 license by placing the J.C. Boyle Dam, Copco I, Copco II, and Iron Gate dams into a separate license (the "Lower Klamath Project") and to transfer that license to KRRRC.
- C. On March 15, 2018, FERC approved the request to separate License No. 2082 and created the Lower Klamath Project License No. 14803 and, on June 21, 2018, stayed the order amending the license pending further action on the license transfer application.
- D. On July 16, 2020, FERC issued an order approving the partial transfer of the Lower Klamath Project license from PacifiCorp individually to PacifiCorp and KRRRC jointly ("July 16 Order"). In so approving, FERC lifted the stay of the order amending the license but made its effectiveness coincident with the effectiveness of the July 16 Order.
- E. On July 23, 2020, PacifiCorp sent to the KHSA Signatories a letter that "provides formal Notice of the occurrence of an event specified in amended KHSA section 8.11.1 and triggers the cure mechanisms in section 8.11.3" ("Section 8.11 Notice").
- F. After several meetings among different groups of the Implementing Agreement Parties, the Implementing Agreement Parties, with support from Berkshire Hathaway Energy, have agreed to this Implementing Agreement as a means of resolving the issues identified in PacifiCorp's Section 8.11 Notice at this time and allowing for the continued implementation of the KHSA as amended.

- G. The Implementing Agreement Parties, with support from Berkshire Hathaway Energy, agree to this Implementing Agreement as a demonstration of their continuing support and commitment to dam removal.
- H. The Implementing Agreement Parties understand and agree that Oregon and California (collectively referred to as "the States") are acting as defined in the AKHSA by and through state departments and agencies with independent regulatory responsibilities and funding subject to the control of their respective legislatures. In this agreement the state of California is acting through the California Natural Resources Agency. Any commitment to State funds in this Implementing Agreement is contingent upon and subject to receipt of legislative appropriations or other expenditure authority specific to and sufficient to allow States, in the exercise of their reasonable administrative discretion, to carry out their obligations herein.

The Implementing Agreement Parties agree to the following terms as a means of carrying out their respective rights and duties under the AKHSA and achieving dam removal.

1. Amended License Surrender Application. KRRC and PacifiCorp will file an amended license surrender application ("ALSA") with FERC within seven days of execution of this Implementing Agreement. The ALSA will clearly explain and demonstrate the proposed pathway for the States to become co-licensees with KRRC, and the process and timeline for filing a new license transfer application as described in Section 3 herein, including treatment of the July 16 Order and confirmation that KRRC will continue to be the Dam Removal Entity.
2. Permits and Authorizations. KRRC will submit other work products to the applicable agencies that KRRC deems necessary to obtain permits and authorizations (including but not limited to biological assessments submitted to the National Marine Fisheries Service and U.S. Fish and Wildlife Service) to implement license surrender and Facilities Removal.<sup>1</sup> These submissions will occur on a timeline determined by KRRC. PacifiCorp will provide technical support and advice in the development of these submittals and will join in such submittals if necessary.

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<sup>1</sup> Capitalized terms not otherwise defined in this agreement will have the same meaning as that in the Amended KHSA.

3. License Transfer Application.

- a. Upon execution of this Implementing Agreement, KRRC, PacifiCorp, and the States will prepare a new license transfer application requesting a transfer of the FERC license, which will propose to remove PacifiCorp from the license for the Lower Klamath Project and add the States and KRRC as co-licensees for the purposes of surrender of the Lower Klamath FERC license ("New Transfer Application"). The New Transfer Application will include a description that it is "building on" the original license transfer application approved in the July 16 Order.
- b. The States, PacifiCorp, and KRRC will file the New Transfer Application by January 16, 2021, and will notify FERC that PacifiCorp and KRRC are not accepting co-licensee status under the July 16 Order, and instead are seeking the license transfer outcome described in the New Transfer Application.
- c. The Implementing Agreement Parties will jointly support the ALSA and the New Transfer Application filings. Within 30 days of issuance of a final license surrender order by FERC, the States and KRRC will accept the license transfer order making the KRRC and States co-licensees for the Lower Klamath Project unless the States and PacifiCorp, in consultation with Karuk and Yurok Tribes, mutually agree to reject the license surrender order on the basis that the terms of the order, including terms of any federal agency consultation concerning the order, are significantly outside the norm for FERC orders involving major project construction or deconstruction in a manner that creates significant financial risk to the States or PacifiCorp.

4. Due Diligence.

Due diligence conducted by KRRC and the States related to the conveyance of Parcel B Lands has identified certain pre-existing environmental conditions ("Pre-Existing Environmental Site Conditions"). Prior to acceptance of license transfer by KRRC and the States, PacifiCorp shall:

- i. resolve at PacifiCorp's sole cost and expense all Pre-Existing Environmental Site Conditions that can be resolved prior to acceptance of a license transfer, to the reasonable satisfaction of the States, and
- ii. for Pre-Existing Environmental Site Conditions that cannot be cost effectively resolved prior to acceptance of a license transfer order, enter into an agreement with KRRC and the States to resolve at PacifiCorp's sole cost and

expense such unresolved Pre-Existing Environmental Site Conditions prior to transfer of lands by KRRC to the States.

5. Section 8.11 Notice. PacifiCorp shall issue a letter to all KHSA Signatories to rescind the Section 8.11 notice immediately upon release of the press release announcing the execution of this MOA.
6. PUC Processes. Concurrent with submission of the New Transfer Application to FERC, PacifiCorp shall seek approvals with the state utility regulators ("PUC") to transfer PacifiCorp's property interests consistent with the New Transfer Application. PacifiCorp shall request expedited action to satisfy the requirement that PUC approvals are obtained prior to or contemporaneously with acceptance of license transfer by KRRC and the States.
7. Additional Contingency Funding. To address the unlikely event that costs for Facilities Removal exceed the AKHSA State Cost Cap, PacifiCorp and the States agree to create an additional contingency fund. This additional contingency is intended to express PacifiCorp's and the State's full commitment to dam removal. The additional contingency funding will be in the amount of \$45 million to ensure Facilities Removal will occur and be completed. The Implementing Agreement Parties believe that funding for Facilities Removal beyond the AKHSA State Cost Cap is unlikely to be needed, but have agreed that this additional contingency fund provides a clear and definitive commitment of resources that will ensure Facilities Removal is completed. PacifiCorp and the States will each contribute \$15 million for this additional contingency fund and share any cost overruns that may occur over this amount equally.
8. Third-Party Litigation. KRRC will serve as the Dam Removal Entity, which includes providing the identified insurance, bonding, contracting, and indemnity provisions to the States and PacifiCorp. KRRC and the States, as co-licensees, will carry out the final license surrender order to effectuate Facilities Removal. Once ownership of the Facilities is transferred for purposes of Facilities Removal, the States will defend PacifiCorp to the fullest extent of the law possible, including seeking to dismiss or remove PacifiCorp from any litigation asserting damages arising from harm caused by Facilities Removal (as distinguished from third-party litigation that is the responsibility of PacifiCorp because it is related to actions taken by PacifiCorp in operating and maintaining the facilities prior to the States becoming co-licensees).

9. Limitations of Implementing Agreement Parties.

- a. The Implementing Agreement Parties understand and agree that the States' actions described in this Implementing Agreement are contingent upon and subject to receipt of legislative appropriations or other expenditure authority specific to and sufficient to allow the States, in the exercise of their reasonable administrative discretion, to carry out their obligations described herein. State law, future legislative actions, and budget limitations may constrain the States in carrying out these actions and nothing in this Implementing Agreement is intended or shall be construed to require the obligation, appropriation, or expenditure of any funds by the States except as otherwise permitted by applicable law.
- b. The Implementing Agreement Parties understand and agree that the States are, *inter alia*, regulatory bodies, and nothing in this Implementing Agreement is intended nor should be construed as affecting or limiting the States from complying with their obligations under applicable laws or otherwise carrying out such regulatory obligations or processes.
- c. The Implementing Agreement Parties acknowledge that the States' inability to achieve their obligations herein will impact the other Implementing Agreement Parties' obligations.

10. Status of KHSA. In the event that amendments to the AKHSA are proposed by any Implementing Agreement Party, all of the Implementing Agreement Parties will work collaboratively and in good faith to achieve agreement concerning such amendments by January 16, 2021.

11. Support. The Implementing Agreement Parties agree to support all filings and submittals to regulatory agencies. This support includes cooperating to meet submittal/filing timelines and to refrain from opposing any filing, or submitting any opposition through comments, litigation, or otherwise. This support includes not challenging approvals that KRRC has already obtained. This support also includes covenants not to sue by and among all Implementing Agreement Parties pursuant to the KHSA.

12. Good Faith. The Implementing Agreement Parties agree to support in good faith the implementation of this agreement to effectuate Facilities Removal.

13. Filing of the Implementing Agreement. This Implementing Agreement as signed by the Implementing Agreement Parties is a public document and may be filed in any applicable regulatory proceeding.
14. Milestones. The Implementing Agreement Parties propose the attached timeline for drawdown and Facilities Removal subject to regulatory approvals.
15. Entire Agreement. This Implementing Agreement is intended to implement certain rights and responsibilities under the AKHSA of the Implementing Agreement Parties. Together with the AKHSA, this Implementing Agreement is the entire agreement between the Implementing Agreement Parties.
16. Counterparts. This Implementing Agreement may be executed in counterparts, with separate signature pages, to be effective as of the last signature date.

**[REMAINDER OF PAGE INTENTIONALLY LEFT BLANK]**



IN WITNESS WHEREOF, each of the Implementing Agreement Parties has executed this Memorandum of Agreement.



Gavin C. Newsom  
Governor  
State of California

Date: 11-16-2020

\_\_\_\_\_  
Kate Brown  
Governor  
State of Oregon

Date: \_\_\_\_\_

\_\_\_\_\_  
Joseph L. James  
Yurok Tribal Chairman

Date: \_\_\_\_\_

\_\_\_\_\_  
Russell A. Attebery  
Karuk Tribal Chairman

Date: \_\_\_\_\_

IN WITNESS WHEREOF, each of the Implementing Agreement Parties has executed this Memorandum of Agreement.

\_\_\_\_\_  
State of California  
Date:\_\_\_\_\_



\_\_\_\_\_  
State of Oregon  
Date:\_\_\_\_\_

\_\_\_\_\_  
Joseph L. James  
Yurok Tribal Chairman  
Date:\_\_\_\_\_

\_\_\_\_\_  
Russell A. Attebery  
Karuk Tribal Chairman  
Date:\_\_\_\_\_

\_\_\_\_\_  
Jim Root  
President, Klamath River Renewal Corporation  
Date:\_\_\_\_\_

\_\_\_\_\_  
William J. Fehrman  
CEO and Chairman, PacifiCorp  
President & CEO, Berkshire Hathaway Energy  
Date:\_\_\_\_\_

IN WITNESS WHEREOF, each of the Implementing Agreement Parties has executed this Memorandum of Agreement.

\_\_\_\_\_  
Gavin C. Newsom  
Governor  
State of California

Date: \_\_\_\_\_

\_\_\_\_\_  
Kate Brown  
Governor  
State of Oregon

Date: \_\_\_\_\_

  
\_\_\_\_\_  
Joseph L. James  
Yurok Tribal Chairman

Date: 11-13-2020

\_\_\_\_\_  
Russell A. Attebery  
Karuk Tribal Chairman

Date: \_\_\_\_\_

IN WITNESS WHEREOF, each of the Implementing Agreement Parties has executed this Memorandum of Agreement.

\_\_\_\_\_  
Gavin C. Newsom  
Governor  
State of California

Date: \_\_\_\_\_

\_\_\_\_\_  
Kate Brown  
Governor  
State of Oregon

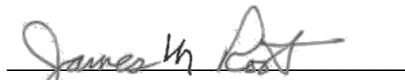
Date: \_\_\_\_\_

\_\_\_\_\_  
Joseph L. James  
Yurok Tribal Chairman

Date: \_\_\_\_\_

  
\_\_\_\_\_  
Russell A. Attebery  
Karuk Tribal Chairman

Date: 11-12-2020



Jim Root  
President, Klamath River Renewal Corporation


Date: 11/13/2020

\_\_\_\_\_  
William J. Fehrman  
CEO and Chairman, PacifiCorp  
President & CEO, Berkshire Hathaway Energy

Date: \_\_\_\_\_

\_\_\_\_\_  
Jim Root  
President, Klamath River Renewal Corporation

Date: \_\_\_\_\_

  
\_\_\_\_\_  
William J. Fehrman  
CEO and Chairman, PacifiCorp  
President & CEO, Berkshire Hathaway Energy

Date: 11/13/20

# Attachment A

	2020	2021				2022				2023			
Memorandum of Agreement on Co-Licensee Pathway													
Submit Amended License Surrender Application													
Submit Amended License Transfer Application													
Draft Management Plans													
State PUC Property Disposition Review													
License Surrender Process													
FERC Dam Safety Review													
Parties Accept License and License Transfers													
Notice to Proceed & Predrawdown Construction													
Drawdown/Dam Removal Begins													