184429

AMENDMENT NO. 3

CONTRACT NO. 37587

FOR

Bull Run Dam No. 2 Tower Improvements

Pursuant to Ordinance No. _____

This Contract was made and entered by and between Black & Veatch Corporation, hereinafter called Contractor, and the City of Portland, a municipal corporation of the State of Oregon, by and through its duly authorized representatives, hereinafter called City.

The contract is hereby amended as follows:

1. During the course of work for this project it has been determined that there is no longer a need for several work elements that are under the following Tasks:

    A. Task 2 – Permitting Assistance, Clackamas County Conditional Use Permit;

    B. Task 6 – Assist with Construction Management/General Contractor (CM/GC) Framework and Coordinate with CM/GC, Contractor sponsorship of a Partnering Program; and

    C. Task 7 – Final Design, work related to the drawings of the North tower; design for replacement of existing stop gate due; and drawings of the South tower with a work deck.

    These work elements shall be deleted from the scope of work. Their combined contract budget of $59,060 shall be re-assigned to additional tasks stated below. A detailed description of the deleted subtasks is included in the attached Exhibit A of this amendment.

2. Additional work is required for this project and shall be added to the Contractor's scope of work and performed as indicated below:

    A. Task 3 – Detailed Hydraulic Analysis which includes gate rating curve; North Tower Computational Fluid Dynamics Model – Modify and Test New Gate Configuration; and North Tower Additional Trash Rack Tests. The combined contract budget for these work elements is $30,000 which has been detailed further in the attached Exhibit A of this amendment.

    B. Task 4 – Preliminary Design which includes engineering and calculation of Center of Gravity for two added alternatives; preliminary structural analysis; CAD 3D modeling in detail of two additional alternatives; and stakeholder meeting. The combined contract budget for these work elements is $19,920 which has been detailed further in the attached Exhibit A of this amendment.

    C. Task 5 – 30% Design which includes development of response spectra for Operating Basis Earthquake; evaluation of structure underpinning; additional meeting to discuss tower options; Interim technical memorandum; and evaluation of methodology for ground motion. The combined contract budget for these work elements is $28,000 which has been detailed further in the attached Exhibit A of this amendment.

D. Task 7 – Final Design which includes revision of 30% North tower layout for reduced tower height; revision of South tower design to add gates or butterfly valves plus their actuators and mountings; revision of 30% South tower layout for reduced tower height; analyze modeling results for validity at revised North and South tower heights; and an optional task to run additional models with tower platform at elevation. The combined contract budget for these work elements is $64,000 which has been detailed further in the attached Exhibit A of this amendment. The optional model runs work task shall only be completed by the Contractor after receiving written authorization by the City's Project Manager. The budget for this optional work task is $20,000.

3. Additional compensation is necessary and shall not exceed $102,860. The new not to exceed amount of this contract is $3,560,860. The revised budget detail, attached to this amendment as Exhibit B, replaces all previous budget details for this contract.

4. The following subconsultants shall be added to the Contract:

Subconsultant	**Role on Project**
Alcantar & Associates	Site/Civil CADD Services
Cascade Corrosion Control Consulting Services	Corrosion Engineering
Cornforth Consultants	Geotechnical Engineering Seismic Analysis and Design
David Evans and Associates	Permitting Manager Mitigation Plans Construction Impact Assessment Clackamas County Land Use Permits Forest Service Special Use Permit
Epsilon Engineering, Inc.	Electrical and I&C
Northwest Hydraulic Consultants (NHC)	CFD Modeling Physical Modeling
R2 Resource Consultants	Permitting Fishery Consultations Temperature and Fish Habitat 404 and DSL Permits Fisheries Science and Assessments Construction Impacts Assessment
Convergent Pacific	Structural Engineering Civil Engineering
Mayer/Reed	Site Restoration Plans
Baarspul Consulting, Inc.	Value Engineering Team Member Operations and Construction Impacts
Environmental Science & Assessment	Terrestrial Biological Assessments Wetland Assessments Permitting Assistance

All other terms and conditions shall remain unchanged and in full force and effect.
CONTRACTOR SIGNATURE:

This contract amendment may be signed in two (2) or more counterparts, each of which shall be deemed an original, and which, when taken together, shall constitute one and the same contract amendment.

The parties agree the City and Contractor may conduct this transaction by electronic means, including the use of electronic signatures.

Black & Veatch Corporation

By: Dan W Meyer Date: 1/21/2011

Name: Dan W Meyer

Title: Vice President

Address:

Telephone:

Contract No. 37587 Amendment/Change Order No. 3

Contract Title: Bull Run Dam No. 2 Tower Improvements

CITY OF PORTLAND SIGNATURES:

By: _____ Date: _____
Chief Procurement Officer

By: _____ Date: _____
Elected Official

Approved:

By: _____ Date: _____
Office of City Auditor

Approved as to Form:

By: APPROVED AS TO FORM _____ Date: 1/28/11
Office of City Attorney
CITY ATTORNEY

184429

PORTLAND WATER BUREAU
FROM FOREST TO FAUCET

Randy Leonard, Commissioner
David G. Shaff, Administrator

1120 SW 5th Avenue, Room 600
Portland, Oregon 97204-1926
Information: 503-823-7404
www.portlandonline.com/water

Exhibit A, Contract 37587, Amendment 3

Date: November 11, 2010

To: Alan Peck, PE
Black & Veatch

From: Kevin Larson, PE
Project Manager

RE: Dam 2 Towers
Project Budget – Summary of Scope Changes and Budget Impacts

This memorandum is to inform you of our approach and inter pretation of the changes and budget impacts pertaining to the scope of work of Phase 2 – Dam 2 Tower Improvements.

Item 1 – Budget Description 0200 - Clackamas County Conditional Use Permit not needed for the project: *Clackamas County has informed PWB that the CUP will not be needed.* **B&V estimated cost reduction – ($6,220) - Approved**

Item 3 – Budget Description 0300 - Hydraulic Modeling - *Additional work was identified by nhc that may be desirable in optimizing tower operations, and preventing is sues with the temperature mixing.*

a) **Gate rating curve:** *Perform a gate rating curve with the phy sical model will allow a better head-start on the operational settings for PWB operators.* **The estimated cost is $7,500. – Approved.**

b) **North Tower CFD Model - Modify and Test New Gate Configuration**: *Conduct CFD modeling of the revised gate configuration to mitigate velocity jet discovered in the modeling effort. The work includes re-meshing the CF D model include the new gate configuration, running the model, the model at high flow, reviewing and processing da ta, and a summary memo,* **for an estimated cost of $7,500 - Approved**

c) **North Tower Additional Trash Rack Tests**: *The trash racks were originally modeled in the physical model with original gate size and configuration. This task is to conduct CFD modeling of the trash racks that w ere changed to fit the revised gate configuration, to verify that the high-velocity jet issue is resolved and the trash racks meet the design criteria of 1.7 to 1.8 fps at 1700 cfs total flow. The work includes: Create a mesh that includes the trash racks and incorporate it into the CFD model (trash racks required on all of six (6) of the gates); Run the model at a maximum discharge 1,700 cfs; if needed, re-mesh the trash racks to re-distribute flow to achieve the 1.8 fps maximum.* **The requested budget for this work is $15,000 – Approved.**

Item 4 – Budget Description 0400 - Additional alternatives development and review meeting needed to establish North Tower Geometery. *Detailed CAD modeling, calculation of center of mass, foundation loading, and found ation settlement impact was performed for the three alternatives . It is understood that the original scope of w ork only called for one alternative analysis for this task. Three were needed to assist the te am in considering the correct choice. T he following extra expenditures are a pproved*

a)	*Engineering and calcula tion of C.G. for two added alternativ es:*	*$5,440*
b)	*Preliminary structural analysis:*	*$7,240*
c)	*CAD 3D modeling in detail of two additional alternatives:*	*$3,040*
d)	*Stakeholder meeting of Dece mber 17th*	*$4,200*
Total budget impact		**$19,920 – Approved**

Item 5 - Budget Description 0500 - Geotechnical Support: *Cornforth has incurred additional costs due to increased level of effort required to evaluate additional tower alternatives (related to Item 2 above), FERC design criteria coordination, and other issues*

a) ***Develop response spectra for the Operating Basis Earthquake (OBE), in accordance with my letter of July 27, 2010. $5, 000 - Approved***

b) ***Detailed evaluation of: (a) differential settlement and potential need for structure underpinning; and (b) construction costs for underpinning versus risk of unacceptable long-term settlement without underpinning (approx. $8,000 of ad ditional effort). This additional effort was critical for the design team to evaluate the potential risks with no structure underpinning, and resulted in savings of approximately $400,000 in exp loration costs and $1 million in estimated construction costs. - Approved***

c) ***Attendance at meetings and teleconferences with City and B&V discussing tower options, including assistance with PowerPoint preparation and presentation (approx. $6,000 of ad ditional effort) - Approved***

d) ***Preparation of an interim technical memorandum, which was incorporated into Black & Veatch report - this was needed for the 30% design, although it could not yet be finalized because of delay in FERC response $3,000 ad ditional effort - Approved***

e) ***Evaluation of probabilistic versus deterministic methodology for developing ground motion based on FERC's current and proposed procedures - $6,000 - Approved***

Based upon our review of these requested items, we feel a portion of these items fall under the contract as described in the agreed upon scope of work. Please feel free to coordinate a meeting with the PWB, Cornforth, and B&V to discuss further.

Item 6 – Budget Description 0700 - Partnering Facilitator contracted directly by PWB: *PWB has hired an independen t facilitator per the scope of work.* **B&V estimated cost reduction – ($12, 840) - Approved**

Item 7 – Budget Description 0700 - Structural and Mechanical Design: *Based acceptance of the VE proposals, the following impacts to the design effort are anticipated:*

a) *By not raising the towers for a potential future da m raise, the following will change in our design approach:*

North Tower

- *The tower shell and bridge crane wil l not have to be designed and detailed between elevation 867 and just below the underside of the roof. However, we will still need to design remove the existing roof as the existing 6 inch roof is not likely sufficient for the new boom crane loading. We will also raise the tower so we have sufficient room to build beams into the new concrete roof for the boom crane and existing stop gate hoist.*
- *Out team has had to modify the 30% drawings to reflect the no raise condition. This took some effort and review of alternatives to come up with a new approach.*

South Tower

- *Our approach for the South Tower design will remain about the same as we still need to replace the existing shell above elevation 867 to support the new boom crane loading and the new building on top of the structure. The new structure will be 15 shorter than that shown in the 30% design, but the level of effort will be very much similar as the shell is basically the same.*
- *There will be no monorail which is another reason the tower got shorter. This will eliminate the design and detailing of the supports for the Tower.*
- *There will be no replacement of the existing sluice gate (stop gate).*
- *Out team has had to modify the 30% drawings to reflect the no raise condition. This took some effort and review of alternatives to come up with a new approach, to include the elimination of the monorail.*

Summary of structural and mechanical deductions and additions:

South Tower

Mechanical

- *The addition of the 3 new small gates or butterfly valves at the South Tower was addressed previously as an engineering cost increase of* ***$25,000*** *to design and specify the additional gates or valves, plus their actuators and mountings.* ***Approved.***

Tower Layout

- *Additional work was required to revise 30 percent tower layout for the reduced tower height, at a cost of* ***$10,000****.* ***Approved.***

Structural

- *Eliminated 2 drawings. This work would have shown the new deck at 875 that would lie within the footprint of the existing structure and the monorail support. This will reduce the engineering cost an estimated* ***$12,000****.* ***Approved.***

North Tower

Tower Layout

- *Additional time spent revising the 30 percent tower layout for the reduced tower height. Estimated cost* ***$22,000****.* ***Approved.***
- *Eliminate 3 drawings related to tower raise between elevation 867 and the underside of the roof. This work would have been for the new deck at 875 that would lie within the footprint of the existing structure, the bridge crane support and Tower shell. This will reduce the engineering cost an estimated* ***$18,000****.* ***Approved.***

Structural Modeling Approach:

Additional engineering time spent determining the best approach for how to design the towers based on work completed to date, and additional time to be spent analyzing the modeling results at 875 to be sure they are still applicable at 867 (applies to both north and South Tower). - ***$7,500****.* ***Approved.***

Structural Modeling – optional item

Our approach at this time is to use the seismic model runs based on the wetwell with working platform at elevation 875 and then to use that information to design the wetwell with a working deck elevation at 867. After we analyze the results of the model runs, we will be able to confirm that we don't need to run the models at 867. However, if it becomes necessary, we would need 60 hours of engineering time for each tower to run the models (total of 120 hours). Recommending this be an optional item listed that will use once if needed and approved by the PWB. This effort, if needed would cost ***$20,000. Approved.***

The total of identified and recommended changes are:

Budget Description 0200 - Permits

1. **Conditional Use Permit not needed** — **Approved ($6,220)**

Total Change ($6,220)

Budget Description 0300 - Detailed Hydraulic Analysis

2. **Hydraulic Modeling –**
   a. **Gate rating curve** — **Approved $7,500**
   b. **North Tower additional CFD – gates** — **Approved $7,500**
   c. **Trash racks CFD modeling** — **Approved $15,000**

Total Change $ 30,000

Budget Description 0400 - Preliminary Design

3. **Additional Alternatives Development** — **Approved $19,920**

Total Change $ 19,920

Budget Description 0500 - 30% Design

4. ***Geotechnical Support –***
   a. OBE seismic spectra for design — ***$5,000***
   Approved
   b. Detailed evaluation of settlement for three alternatives — ***$8,000***
   Approved
   c. Additional meetings and presentations on alternatives — ***$6,000***
   Approved
   d. Interim technical memorandum for 30% design (FERC delay)
   Approved — ***$3,000***
   e. Evaluation of seismic methodology for FERC's — ***$6,000***
   Approved

Total Change $ 28,000

Budget Description 0700 - Final Design

5. **Partnering facilitator hired directly by PWB** — **Approved ($12,840)**
6. **Structural and Mechanical Design**
   - **a. South Tower**
     - i. Mechanical, add 3 valves / gates — **Approved $25,000**
     - ii. Revise 30% design for no tower raise — **Approved $9,500**
     - iii. Do not replace existing stop gate — **Approved ($10,000)**
     - **iv.** Reduce number of structural sheets by 2 — **Approved ($12,000)**
   - **b. North Tower**
     - i. Revise the 30 % design for no tower raise — **Approved $22,000**
     - ii. Reduce number of structural sheets by 3 — **Approved ($18,000)**
   - **c.** Structural Modeling- determine approach for no raise — **Approved $7,500**
   - **d.** Additional Structural Modeling if needed — **Approved $20,000**

Total Change $ 31,160

Revised net of the additions to scope is $ 161,920

The total of subtractions to the scope is ($59,060)

The net total of additions and subtractions to the scope is $102,860

Kevin Larson, PE
Project Manager

EXHIBIT B to Amendment 3

CITY OF PORTLAND - BUREAU OF WATER WORKS

Design of Dam 2 Towers Improvements - Budget as Modified by Amendment 3

WORK TASKS	B&V Principal & QA	B&V Project Manager	B&V Senior Engineer QC Reviewer	B&V Project Engineer	B&V Civil Engineer	B&V Structural Mechanical Engineer	B&V Staff Engineer & CADD Manager	B&V Cost Estimator Electrical & I&C	B&V Clerical	Alcantar Associates Civil Eng. & CADD ESB	B&V Hours incl. Alcantar	Total BV Labor Cost	Allowable Expenses	Alcantar ESB	Epsilon Engineering ESB	nhc	Comforth	DEA	R2	BCG	Other Sub	Subconsit Markup	Total Costs
Hourly Rates: Rates are based on the average of the category; actual billing will be based on salary times a 3.1 multiplier. Rates	$235	$183	$180	$160	$145	$160	$100	$130	$75	$85				$	$	$	$	$	$	$	$	7%	
1. KICKOFF MEETING																							
Attend Kickoff Meeting and Prepare Minutes	8	8		16	4		4		8		48	$7,484	$739	$0								$0	$8,223
Hours	8	8	0	16	4	0	4	0	8	0	48												
Cost	$1,880	$1,464	$0	$2,560	$580	$0	$400	$0	$600	0		$7,484	$739	$0	$0	$0	$0	$0	$0	$0	$0	$0	$8,223
2. PERMITTING ASSISTANCE																							
Permitting Strategy Memorandum	2	8		20					4		34	$5,434	$100	$0				$3,000	$0		$8,550	$809	$17,893
Permitting Strategy Meetings / coordination		8		12	8						28	$4,544	$80	$0					$0		$9,380	$657	$14,661
Introduce Permitting Agencies to Project		8		40							48	$7,864	$140	$0					$0		$9,450	$962	$18,116
Assist with Completing and Submitting Permit Applications		8		80						40	128	$14,264	$1,542	$3,400				$6,880	$0		$31,090	$2,658	$59,834
Regular Permitting Meetings		26		104							130	$21,398	$4,078	$0	$0			$0	$0	$0	$10,080	$706	$36,262
Hours	2	58	0	256	8	0	0	0	4	40	368												
Cost	$470	$10,614	$0	$40,960	$1,160	$0	$0	$0	$300	$3,400		$53,504	$5,940	$3,400	$0	$0	$0	$9,880	$0	$0	$68,550	$5,490	$146,764
3. DETAILED HYDRAULIC ANALYSIS																							
Physical Modeling - Design & Construction		2	2	4	4					80	92	$1,946	$280	$6,800		$101,400						$7,098	$117,524
Physical Model Testing											0	$0	$0	$0		$74,100						($1,523)	$72,577
Physical Model Reporting	2	2	2	2	4						12	$2,096	$40	$0		$24,300				$400		$1,729	$28,565
CFD Model North Tower - Develop and Runs			2	2							4	$680	$10	$0		$74,864						$5,240	$80,794
CFD Model South Tower - Develop and Runs			2	2							4	$680	$10	$0		$53,487						$3,744	$57,921
CFD Model Reporting	2	2	2	2	4						12	$2,096	$40	$0		$16,689						$1,168	$19,993
Witness Testing		8	8	8	2						26	$4,474	$80	$0								$0	$4,554
Hydraulic Analysis Review Meeting		2		4	4						10	$1,586	$1,970	$0		$3,000						$210	$6,766
Hours	4	16	18	24	18	0	0	0	0	80	160												
Cost	$940	$2,928	$3,240	$3,840	$2,610	$0	$0	$0	$0	$6,800		$13,558	$2,430	$6,800	$0	$347,840	$0	$0	$0	$400	$0	$17,667	$388,695
4. PRELIMINARY DESIGN																							
Interviews with operations and maintenance personnel		8		24	24				4		60	$9,084	$180	$0	$1,320							$92	$10,676
Meeting with Corps and PWB operators		8		16	8				4		36	$5,484	$110	$0								$0	$5,594
Site Visit	8	8		8	8	8					40	$7,064	$620	$0	$3,500		$1,200	$0	$0	$1,900		$462	$14,746
Basis of Design Memorandum	8	80	24	260	260	260	40		40	100	1072	$148,740	$5,220	$8,500	$2,800		$30,700	$0		$600		$2,387	$198,947
Review Available Survey Data		4		16			24			60	104	$5,692	$310	$5,100								$0	$11,102
Basis of Design Review Meetings (4)		40		40	40	40			12	16	188	$26,820	$560	$351	$3,000		$1,200			$1,900		$427	$34,258
Hours	16	148	24	364	340	308	64	0	60	176	1500												
Cost	$3,760	$27,084	$4,320	$58,240	$49,300	$49,280	$6,400	$0	$4,500	$14,960		$202,884	$7,000	$13,951	$10,620	$0	$33,100	$0	$0	$4,400	$0	$3,368	$275,323
5. 30% DESIGN																							
Geotechnical and Structural Analysis Review & Meeting	4	16	8	24	16	120			16		204	$31,868	$610	$0			$40,500			$800		$2,891	$76,669
30% Design (drawings & updated cost est)	16	40	40	80	120	200	80	60	100	400	1136	$103,780	$3,410	$34,000	$14,800		$7,800	$0		$800		$1,638	$166,228
30% Design Review Meeting		8		16							24	$4,024	$1,865	$0	$1,200		$1,200			$1,900		$301	$10,490
Hours	20	64	48	120	136	320	80	60	116	400	1364												
Cost	$4,700	$11,712	$8,640	$19,200	$19,720	$51,200	$8,000	$7,800	$8,700	$34,000		$139,672	$5,885	$34,000	$16,000	$0	$49,500	$0	$0	$3,500	$0	$4,830	$253,387
6. ASSIST WITH CM/GC FRAMEWORK AND COORDINATE WITH CONTRACTOR																							
Assist with RFP for CM/GC	4	4						16			24	$3,752	$70	$0						$7,500		$525	$11,847
Assist with Negotiations	6	18						120			144	$20,304	$430	$0						$2,700		$189	$23,623
Construction Documents	6	18					8	36	40	120	228	$13,184	$2,850	$10,200								$0	$26,234
Partnering Workshops	4	24		24					6		58	$9,622	$170	$0						$4,300		$301	$14,393
CM/GC Facilitator											0	$0	$0	$0								$0	$0
Hours	20	64	0	24	0	0	8	172	46	120	454												
Cost	$4,700	$11,712	$0	$3,840	$0	$0	$800	$22,360	$3,450	$10,200		$46,862	$3,520	$10,200	$0	$0	$0	$0	$0	$14,500	$0	$1,015	$76,097
7. FINAL DESIGN																							
30% Value Engineering (VE) Workshop and response	12	24	60	60					40		196	$30,612	$5,819	$0	$2,000		$2,000	$0		$1,200	$78,797	$5,880	$126,308
60% Design (drawings, specifications & updated cost est)	12	60	40	400	250	660	220	200	80	630	2552	$280,850	$9,660	$53,550	$24,000		$24,700	$0		$1,200	$59,000	$7,623	$460,583
60% Design Review Meeting	8	8		24	8						48	$8,344	$140	$0	$1,500						$1,570	$215	$11,769
90% Design (drawings, specifications & updated cost est)	8	60	40	400	250	680	320	340	80	560	2738	$311,310	$12,030	$47,600	$30,000		$4,000	$0		$1,200	$69,000	$7,294	$482,434
90% Design Review Meeting	8	8		24	8						48	$8,344	$140	$0	$1,500						$1,500	$210	$11,694
Final Drawings and Specifications	8	16		40	40	40	60	40	24	80	348	$36,408	$1,540	$6,800	$1,200						$13,200	$1,008	$60,156
Hours	56	176	140	948	556	1380	600	580	224	1270	5930												
Cost	$13,160	$32,208	$25,200	$151,680	$80,620	$220,800	$60,000	$75,400	$16,800	$107,950	$0	$675,868	$29,329	$107,950	$60,200	$0	$30,700	$0	$0	$3,600	$223,067	$22,230	$1,152,944

EXHIBIT B to Amendment 3

CITY OF PORTLAND - BUREAU OF WATER WORKS
Design of Dam 2 Towers Improvements - Budget as Modified by Amendment 3

WORK TASKS Hourly Rates: Rates are based on the average of the category; actual billing will be based on salary times a 3.1 multiplier.	B&V Principal & QA	B&V Project Manager	B&V Senior Engineer QC Reviewer	B&V Project Engineer	B&V Civil Engineer	B&V Structural Mechanical Engineer	B&V Staff Engineer & CADD Manager	B&V Cost Estimator Electrical & I&C	B&V Clerical	Alcantar Associates Civil Eng. & CADD ESB	B&V Hours incl. Alcantar	Total BV Labor Cost	Allowable Expenses	Alcantar ESB	Epsilon Engineering ESB	nhc	Cornforth	DEA	R2	BCG	Other Sub	Subconsit Markup	Total Costs
Rates	$235	$183	$180	$160	$145	$160	$100	$130	$75	$85				$	$	$	$	$	$	$	$	7%	
8. SERVICES DURING CONSTRUCTION																							
Submittals and shop drawings		32		160	80	140	156		80		648	$87,056	$1,930	$0	$9,500		$2,200			$3,200	$5,000	$1,393	$110,279
Review and Respond to 400 RFI's	8	80		80	80	120	360		52		780	$100,020	$2,340	$0	$6,600		$4,500	$0		$2,000	$5,000	$1,267	$121,727
Prepare 20 RFP's for work beyond the GMP	8	40		20	40	20	60	20	20	160	388	$31,500	$1,160	$13,600	$2,200							$154	$48,614
Prepare 10 design changes	10	40		20	40	20	60		20	120	330	$29,370	$990	$10,200	$2,640		$2,500			$600		$402	$46,702
Attend 40 meetings during construction		60			160		60				280	$40,180	$840	$0	$3,840					$5,500		$654	$51,014
As-Built Drawings				80			80		40	400	600	$23,800	$2,200	$34,000								$0	$60,000
Develop Operational Guidelines	8	80	20	40	80	20	80	20		80	428	$51,920	$14,655	$6,800	$5,000					$800		$406	$79,581
Startup and Commissioning		20	20	40	80		40	100			300	$42,260	$900	$0	$7,500							$525	$51,185
Hours	34	352	40	440	560	320	896	140	212	760	3754												
Cost	$7,990	$64,416	$7,200	$70,400	$81,200	$51,200	$89,600	$18,200	$15,900	$64,600	$0	$406,106	$25,015	$64,600	$37,280	$0	$9,200	$0	$0	$12,100	$10,000	$4,801	**$569,102**
9. PROJECT MANAGEMENT REQUIREMENTS																							
Project Management and Communication Plan	4	24		40							68	$11,732	$200	$0								$0	$11,932
PWB Progress Meetings	24	192		192							408	$71,496	$1,220	$0								$0	$72,716
Progress Reports, Invoices, Schedule	4	192		48					200		444	$58,756	$1,330	$0								$0	$60,086
PWB Coordination Meetings		120									120	$21,960	$360	$0								$0	$22,320
QA/QC Plan and Memoranda	8	16		40							64	$11,208	$190	$0								$0	$11,398
Team Coordination	24	200		80					200		504	$70,040	$2,183	$0								$0	$72,223
CM/GC Coordination	16	120		40							176	$32,120	$530	$0								$0	$32,650
Hours	80	864	0	440	0	0	0	0	400	0	1784												
Cost	$18,800	$158,112	$0	$70,400	$0	$0	$0	$0	$30,000	$0		$277,312	$6,013	$0	$0	$0	$0	$0	$0	$0	$0	$0	**$283,325**
Total Hours	240	1,750	270	2,632	1,622	2,328	1,652	952	1,070	2,846	**15,362**												
Total Costs												$1,823,250	$85,871	$240,901	$124,100	$347,840	$122,500	$9,880	$0	$38,500	$301,617	$59,401	
											12,516	hours BV only										**REVISED BUDGET, Amendments 1, 2, and 3**	**$3,153,860**
																						BUDGET, Conceptual Phase	**$407,000**
																						BUDGET, Total all phases	**$3,560,860**

SUMMARY OF SUBCONSULTANTS

Alcantar	$240,901	ESB	
Epsilon Engineering	$124,100	ESB	
Northwest Hydraulic Consultants	$347,840		
Cornforth Consultants	$122,500		
David Evans & Associates	$9,880		
R2 Resource Consultants	$0		
Ben C. Gerwick	$38,500		
Cascade Corrosion Engineering	$35,000	ESB	
Baarspul Consulting, Inc	$7,500	ESB	
Environmental Science and Assessment	$68,550	ESB	
Convergent Pacific	$75,000	ESB	
Mayer/Reed	$20,000	WBE	
Other Sub-Consultants	$95,567		
TOTAL M/W/ESB	$571,051		
TOTAL SUBS	$1,185,338		

Original	$407,000	
Amendments 1 and 3	$3,153,860	
Total	$3,560,860	
Phase 1 ESB	$23,900	estimated Phase 1
Total M/W/ESB	$594,951	estimated
Total M/W/ESB %	**16.71%**	