



CITY OF ESCONDIDO  
FIFTH AMENDMENT TO CONSULTING AGREEMENT

This Fifth Amendment to Consulting Agreement ("Fifth Amendment") is made and entered into as of this \_\_\_\_ day of \_\_\_\_\_, 2021 ("Effective Date"),

Between: CITY OF ESCONDIDO  
a California municipal corporation  
201 N. Broadway  
Escondido, CA 92025  
Attn: Angela Morrow  
760-839-6290, ext. 7030  
("CITY")

And: Black & Veatch Corporation  
a Delaware corporation  
300 Rancheros Drive, Suite 250  
San Marcos, CA 92069  
Attn: Kevin Davis  
760-621-8419  
("CONSULTANT").

(The CITY and CONSULTANT each may be referred to herein as a "Party" and collectively as the "Parties.")

WHEREAS, the Parties entered into that certain Consulting Agreement dated August 22, 2012, which was subsequently amended by a First Amendment dated June 11, 2015, which was subsequently amended by a Second Amendment dated July 9, 2018, which was subsequently amended by a Third Amendment dated January 14, 2020, which was subsequently amended by a Fourth Amendment dated December 9, 2020 (collectively, the "Agreement"), wherein CITY retained CONSULTANT to provide services to prepare design drawing and specifications including environmental documentation for the Lake Wohlford Dam Replacement Project, as more specifically described in the Agreement; and

WHEREAS, the Parties desire to amend the Agreement to include additional services as described in "Attachment A" to this Fifth Amendment, which is attached hereto and incorporated herein by this reference.

NOW, THEREFORE, in consideration of the mutual covenants, promises, terms, and conditions set forth herein, and the mutual benefits derived therefrom, the Parties hereby agree as follows:

1. The CONSULTANT shall furnish all of the Services described in "Attachment A" to this Fifth Amendment.
2. The CITY will compensate CONSULTANT in an additional amount not to exceed the sum of **\$2,947,382**, pursuant to the conditions contained in "Attachment A" to this Fifth Amendment.
3. All other terms of the Agreement not referenced in this Fifth Amendment shall remain unchanged and in full force and effect. In the event of a conflict between a provision of the Agreement and this Fifth Amendment, this Fifth Amendment shall prevail.
4. This Fifth Amendment and the Agreement, together with any attachments or other documents described or incorporated therein, if any, constitute the entire agreement and understanding of the Parties, and there are no other terms or conditions, written or oral, controlling this matter.
5. This Fifth Amendment may be executed on separate counterparts that, upon completion, may be assembled into and shall be construed as one document. Delivery of an executed signature page of this Fifth Amendment by electronic means, including an attachment to an email, shall be effective as delivery of an executed original.
6. Unless a different date is provided in this Fifth Amendment, the effective date of this Fifth Amendment shall be the latest date of execution set forth by the names of the signatories below.

IN WITNESS WHEREOF, this Fifth Amendment is executed by the Parties or their duly authorized representatives as of the Effective Date:

CITY OF ESCONDIDO

Date: \_\_\_\_\_

\_\_\_\_\_  
Paul McNamara, Mayor

Black & Veatch Corporation

Date: \_\_\_\_\_

\_\_\_\_\_  
Signature

\_\_\_\_\_  
Kevin Davis, Vice President

APPROVED AS TO FORM:  
OFFICE OF THE CITY ATTORNEY  
MICHAEL R. MCGUINNESS, CITY ATTORNEY

BY: \_\_\_\_\_

THE CITY OF ESCONDIDO DOES NOT DISCRIMINATE AGAINST QUALIFIED PERSONS WITH DISABILITIES.

## ATTACHMENT "A" Scope of Work

### A. General

Black & Veatch Corporation, a Delaware corporation ("Consultant"), will provide the City of Escondido, a California municipal corporation ("City"), with engineering and environmental services for the Lake Wohlford Dam Replacement Project.

### B. Location

Consultant to provide services at various locations including Lake Wohlford located at 25453 Lake Wohlford Road, Escondido, CA 92025.

### C. Services

Consultant shall provide the services as described in Exhibit 1 to this Scope of Work, which is attached hereto and incorporated herein by this reference.

### D. Scheduling

Services shall be provided on a continual basis for the term of this Fifth Amendment. Inquiries relating to this Fifth Amendment may be directed to Angela Morrow at 760-839-6290, ext. 7030 or [amorrow@escondido.org](mailto:amorrow@escondido.org).

### E. Contract Price and Payment Terms

The contract price of this Fifth Amendment shall not exceed **\$2,947,382**. Consultant shall submit monthly invoices to the City, and the City shall pay Consultant for invoiced services within 30 days of receipt of an invoice. Consultant shall not bill the City for any transportation costs associated with travel to and from the project site.

### F. Term

The term of this Fifth Amendment shall be from the Effective Date of this Fifth Amendment through **December 31, 2027**.

Consultant acknowledges that the City's funding of this Agreement, including this Fifth Amendment, shall be on a fiscal year basis and is subject to annual appropriations. Consultant further acknowledges that the City, as a municipal corporation, is precluded by the State Constitution and other laws from entering into obligations that financially bind future governing bodies, and that, therefore, nothing in this contract shall constitute an obligation of future legislative bodies of the City or State to appropriate funds for purposes of this Agreement, including this Fifth Amendment.

Accordingly, the parties agree that the terms within this this Agreement, including this Fifth Amendment, are contingent upon appropriation of funds. This Fifth Amendment may be terminated at the end of the fiscal year for which sufficient funding is not appropriated and authorized. The City shall not be obligated to pay Consultant for any amounts not duly appropriated and authorized by City Council.



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## BACKGROUND

The City of Escondido (City) is seeking to construct the Lake Wohlford Dam Replacement. As required by 23 California Code of Regulations (CCR) §335.20 a new DRAFT inundation map must be submitted to Division of Safety of Dams (DSOD) prior to the construction application approval. The work to be completed as part of Inundation Study will assist the City in the inundation map development for the replacement dam. The approved inundation maps would be used to support the development of the replacement dam emergency action plan. In addition to the Inundation Study, this scope of work includes additional Environmental Services work to support permitting and WIFIA process, Engineering Services During Construction (ESDC), as described herein, for the Oakvale Road Realignment Project and the Lake Wohlford Dam Replacement Project consistent with responsibilities as Engineer of Record (EOR). Black & Veatch will execute all phases of this new work as defined below:

Specific tasks associated with this project are summarized below into the following tasks:

- Task 1000 – Project Management
- Task 3000 - Environmental
- Task 5000 – Inundation Study
- Task 8100 – Oakvale Road Realignment ESDC
- Task 9100 – Lake Wohlford Dam Replacement ESDC

A detailed scope of work is presented in the following pages. A detailed fee breakdown is provided following the detailed scope of work description.

## SCOPE OF WORK

### TASK 1000 – PROJECT MANAGEMENT

The following services will be provided under this task.

#### ***Task 1100 – Project Administration.***

Perform project management tasks as required to facilitate completion of all tasks defined within this Scope of Work. The project management tasks to be performed include providing monthly invoices with status report defining progress to date of all tasks, and cost expenditures. It's anticipated that the Oakvale Road Realignment Construction will take 12 months and the Lake Wohlford Dam Replacement Construction will take 36 months with a 4 month overlap for a total duration of 44 months.

#### ***Deliverables for Task 1100:***

1. Monthly invoice and progress report in pdf format submitted via email.



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## **TASK 3000 – ENVIRONMENTAL**

The following additional services will be provided under this task.

### ***Task 3100 – Bio Assessment and Permitting***

#### ***Tasks 3110 – Corps Data Request***

The Corps has provided an additional information request to complete permit processing. AECOM will verify and gather all information requested by the Corps. In areas where items requested have previously been provided or already have been authored, a simple response to comment is proposed. In addition, mitigation plan revisions can be accommodated within the current budgets under existing tasks. Items requiring additional technical analysis by AECOM to fulfill the Corps requests are as follows:

#### ***404b(1) Alternatives Analysis***

- AECOM will digitally provide a 404b(1) alternatives analysis.
- AECOM will utilize the existing alternatives analysis and calculate the varying impacts to the waters of the US. This exercise will include extending the existing formal jurisdictional delineation mapping via aerial, as needed.
- AECOM assumes B&V will provide engineering support for the alternatives analysis, and conduct the indirect impact analysis, as necessary.

#### ***Jurisdictional Data Requests***

- AECOM will provide a Flow Regime Assessment
- AECOM will utilize the New Mexico Protocol or the Streamflow Duration Assessment Method for the Arid West. This requires an additional field assessment by our wetland delineator and preparation of a supplemental technical memorandum.
- AECOM will provide a Typical Year Assessment.

#### ***Assumptions for Task 3110:***

1. Flow regime assessment will require 1 field day.

#### ***Deliverables for Task 3110:***

1. Draft and Final 404b(1) Alternatives Analysis - One (1) electronic copy in MS Word and electronic copy (pdf).



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***Task 3200 – Ad-hoc Agency Coordination***

This task includes as-needed support services during permit processing. These tasks are unknown at this time, but could include further technical analyses, support with species consultations, additional NEPA support beyond the WIFIA application, attendance at meetings, etc.

***Task 3300 – WIFIA Support***

The City is pursuing federal funds for the construction of the dam through the Water Infrastructure Finance and Innovation Act (WIFIA). The following tasks support the City's efforts to secure the funding.

***Task 3310 - WIFIA Questionnaire***

This task includes completing the WIFIA environmental questionnaire. AECOM will complete the WIFIA questionnaire Section 6 through the end of the questionnaire, pages A-5 through A-20. The tasks are further defined below.

- AECOM will describe the environmental permits and/or approvals and complete the status box for each.
- AECOM will complete the checklist for each environmental issue areas (issue areas 'A' through 'M', 13 total issue areas) indicating impacts, as well as measures to reduce impacts.
- For each of the 13 issue areas, AECOM will include a reference to the narrative description of the impacts (including construction and operation impacts) associated with any items with checked boxes in the 'less than significant impact' or 'potentially significant impact' columns and will identify and describe by reference any mitigation measures, BMPs and/or SOPs.

***Iterative Drafts –***

- AECOM will respond to comments on the draft WIFIA application in coordination with the City.
- As noted in the task assumptions, WIFIA has indicated this is an iterative process, AECOM assumes up to 100 hours of work total for revisions to the Draft and Final Submittal across various technical fields. These hours may be spent to conduct technical analysis (e.g. provide supplemental noise or air information), or to respond to other comments on the WIFIA application.

***Assumptions for Task 3310:***

1. Two rounds of review and edits after submittal of the Draft.
2. All versions will be submitted electronically



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***Task 3330 - Cultural Supplemental Survey***

Due to no proposed dam construction in the vicinity of the Escondido Fish and Game Association shooting range, the previous project cultural surveys did not cover the area. There is the potential for restoration activities to happen adjacent to the shooting range. And as identified by the WIFIA NEPA process the scope of service is included as follows.

Conduct a supplemental cultural resources survey of an approximately 17-acre area adjacent to the Escondido Fish & Game Association shooting range. This area was excluded from the previous cultural resources inventory for safety reasons due to active shooting (Affinis 2013). AECOM will coordinate with the shooting range to safely access the supplemental survey area. Because the previous survey was conducted in 2013. AECOM will request an updated record search at the South Coastal Information Center of the California Historical Information System. The records search will focus on areas within 0.25 mile of the Supplemental survey area. Additionally, AECOM will request a search of the Sacred Lands File maintained by the California Native American Heritage Commission to identify any additional sites of concern to Native American tribes.

The field survey will be conducted by a team of two archaeologists and one tribal representative walking in parallel transects spaced no more than 10 meters apart. Archaeological sites will be defined as three or more artifacts with a 25 x 25 m area; artifacts spaces more widely apart will be recorded as isolated finds. Features such as bedrock milling, historic foundations will be recorded as archeological sites. It is assumed that no structures or buildings will be present within the supplemental survey area. All cultural resources will be recorded in standard Department of Parks and Recreation format (DPR Form 523). The results of the survey will be documented in a brief letter report that includes the survey methodology, findings, and preliminary assessments of any identified cultural resources. If potentially significant cultural resources are identified, recommendations for further treatment will be provided as appropriate. Although not anticipated, any treatment would be a subsequent work effort.

***Section 106 Consultation Support.***

Provide support for consultation with the California Office of Historic Preservation under Section 106 of the National Historic Preservation Act, including drafting letters and compiling elements of the consultation package.

***Assumptions for Task 3330:***

1. No separate comprehensive Section 106 Cultural Resources Report or edit to original survey report.

***Deliverables for Task 3330:***

1. Draft and Final Supplemental Survey Letter - One (1) electronic copy in MS Word and electronic copy (pdf).



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## TASK 5000 – LAKE WOHLFORD INUNDATION STUDY

### **Task 5100 – Project Meetings**

**Tasks 5110 – Meetings.** The scope will include two virtual meetings with the City Project Manager and other City staff throughout this work phase. Progress meetings will be used to keep the City informed of project status including status of specific project tasks, budget, and any scope changes.

Black & Veatch's Project Manager, Project Engineer, and Mapping Lead will attend the virtual Progress Meetings. Meeting assumptions are as follow:

- ▼ Monthly Progress Meetings – 2 meetings, 1-hour duration

#### **Assumptions for Task 5110:**

1. A summary of action items noted in the meeting will be distributed to all attendees via email.

**Task 5120 – DSOD Coordination and Meetings.** The scope will include one virtual meeting with DSOD and the City Project Manager. Black & Veatch will prepare the agenda, PowerPoint, and meeting minutes for the meeting.

All meetings will be attended by Black & Veatch's Project Manager, Project Engineer, and Mapping Lead. Meeting assumptions are as follow:

- ▼ DSOD Meetings – 1 meeting, 1-hour duration

In addition, this task includes effort for review and response to one round of DSOD comments on the inundation mapping.

#### **Deliverables for Task 5120:**

1. Meeting Agenda and Presentation Materials – One (1) electronic copy in MS Word or PowerPoint and electronic copy (pdf).
2. Meeting Minutes – One (1) electronic copy submitted electronically within 10 days of a meeting.





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***Task 5200 – Model Setup and Development***

Black & Veatch will develop the model for the dam breach. Model development includes determining the model scenarios, selecting the appropriate terrain, and model setup. Task 5200 is comprised of the following specific tasks.

***Task 5210 – Sunny-Day Model Scenario and Piping Failure Mode.*** Black & Veatch will review the modeling requirements of 23 CCR §335.6 and confirm required model scenarios that include failing the dam and any appurtenant structures. A sunny-day reservoir loading condition is required for the modeled breach of the dam and critical appurtenant structures. Based on initial review of the proposed new dam facilities there appear to be no critical appurtenant structures to fail, therefore, for the current scope, only the RCC portion of the dam will be failed for the sunny-day scenario. The reservoir level for the sunny-day failure scenario will be at spillway crest and the failure mode will be a piping failure.

Sediment impounded in the reservoir will be modeled as water.

***Assumptions for Task 5210:***

1. Only the sunny-day failure condition will be modeled as per regulations.
2. A storm induced loading condition is not included in this scope and is not required by 23 CCR §335.6. Additional scope and fee would be required for the analysis of a storm induced loading condition.
3. Sediment impounded in the reservoir will be modeled as water. If a sediment release modelling approach is requested, it will require additional scope and fee.

***Task 5220 – Terrain.*** The elevation data to be used will be USGS one-meter DEM data. This horizontal resolution will be appropriate for the downstream development and terrain that would potentially be impacted by the failure scenario. The one-meter DEM horizontal resolution meets 23 CCR §335.20 requirement for the data to be ten meters or finer.

***Task 5230 – Model Setup.*** The model setup will include the following considerations:

1. Breach parameter selection will come from Table 9-3 of Federal Emergency Management Agency (FEMA) P-946, incorporated here by reference. This is an acceptable breach parameter selection method per 23 CCR §335.6. Inundation mapping will be from the location of Wohlford Dam downstream to the Pacific Ocean at San Elijo Lagoon, requiring modelling approximately 24 miles of stream reach.
2. Determine channel and floodplain roughness characteristics, construct polygon areas of different roughness type areas. If a digitized land use map is available in GIS format, we will assign roughness characteristics to the previously drawn land use polygons. If a land use map is not available or does not cover the entire modelling area, or is lacking some required polygon roughness areas, such as the river channel, we will add up to a



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maximum of 6 polygon roughness types. If more than 6 additional roughness polygons are required, it will require additional fee to develop.

3. Obtain bridge information for determining possible depth of overtopping only. Bridges are assumed to fail and wash away, or are considered a negligible obstruction of flow, and will not be coded in the model. There are approximately 24 street crossings upstream of Harmony Grove Rd crossing, where the concrete channel terminates. Obtain bridge decking elevation data, transform to model's vertical datum, calculate maximum overtopping depth. There are approximately 15 street crossings downstream of Harmony Grove Rd crossing, where concrete channel terminates. Obtain bridge decking elevation data, transform to model's vertical datum, calculate maximum overtopping depth.
4. Develop stage/storage curve for the new dam, this curve will include the volume of the original "old" dam (before any sedimentation occurred), additional volume from the modifications of the "old" dam, and the volume between the proposed dam and the old dam.
5. Develop the 2D modelling parameters such as grid definition, break lines, boundary conditions, channel terrain burning, and enhanced grid locations for insertion into the 2D model.
6. Complete model setup quality control.

***Assumptions for Task 5230:***

1. The remaining existing "old" inundated embankment (engineered fill) will remain during the breach scenario and not be considered as available breaching volume of water. Guidance was provided on this subject by DSOD as follows: "You do not need to treat the remaining existing dam (engineered fill) as flowable, only the accumulated sediment." Any changes to the old dam embankment (engineered fill) such as removal of the top, cutting a notch in the old dam, and topping protection will be accounted for in the development of the new curve. The old dam's stage/storage curve will be used, approximately 7,000-7,500 ac-ft, along with adding the additional volume from the modifications to the old dam and the volume between the new and old dam. By including the old dam's original stage/storage curve any accumulated sediment will be treated as flowable volume, aligning with the DSOD requirement. Furthermore, the volume of water that breaches in the new dam breach analysis will not include the volume taken up by the remaining modified old embankment (remaining engineered fill) as permitted by DSOD's statement above.
2. During dam breach flood wave routing bridges are assumed to fail and not be an obstruction to flow, therefore bridge structures will not be coded into the model. We will estimate bridge decking elevation from supplied as-built drawings, bridge owner data information, terrain information, or Google Earth, whichever is most accessible and appropriate. If requested bridge information is not available, surrounding terrain information of the roadway will be used for setting a bridge deck elevation. With bridge



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decking elevation we will approximate a maximum depth of overtopping to be provided in a table.

### ***Task 5300 – Modeling***

***Task 5310 – Modeling.*** The inundation zone being modeled downstream of Lake Wohlford consist of a mixture of land contour features such as mild canyon, trapezoidal channel, flat terrain, and steep terrain. We will decide during model setup, and initial model runs if an area should be modeled in an unsteady 1D model format or an unsteady 2D model format. It is not known beforehand exactly what sections will be a 1D or 2D type format. The scope includes budget to address this possible multiformat 1D, 2D modelling format. Therefore, a HEC-RAS model consisting possibly of a mixture of 1D, 2D unsteady state modules will be constructed to simulate the dam breach and flood wave routing. Complete quality control for 1D and 2D HEC-RAS models. The model runs will include data acquisition of the following:

1. Inundation boundary (maximum inundation limits, no time occurrence associated with inundation boundary).
2. Flood wave arrival time (elapsed time from the start of the breach to when the frontal or flood wave arrives at certain locations throughout the inundation zone).
3. Maximum depth (no time occurrence associated with maximum depth).
4. Maximum velocity (no time occurrence associated with maximum velocity).

### ***Assumptions for Task 5310:***

1. Bridge structures are not being modeled, they are assumed to wash away or not be a significant obstruction of the flow.
2. An all-inclusive unsteady state HEC-RAS model that may contain 1D and 2D modules will be developed with the appropriate modelling application being determined during model setup.

### ***Deliverables for Task 5310:***

1. Electronic geospatial files developed using the two-dimensional hydraulic model for the inundation boundary, flood wave arrival time, maximum depth, and maximum velocity, together with the projection information in 23 CCR §335.12(g) will be submitted. Raster files will be submitted in Tagged Image File (TIF) format, which include maximum depth, and maximum velocity. Vector layers will be submitted in shapefile or geodatabase format, which include inundation boundary, maximum velocity contours, maximum depth contours, terrain contours, arrival time location marker, mile marker, and critical facility location marker.

### ***Task 5400 – Mapping***

***Task 5410 – Confirm Map Scale, Layout, and Data.*** This task will be completed to confirm the map scale, layout and how data is displayed on the maps. B&V will perform a preliminary



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breach analysis of the new dam, to make an Index Map with grids to confirm scale and number of maps required based on map scaling guidelines. A preliminary representation of how the data (inundation boundary, flood wave arrival time, maximum depth and maximum velocity) will be displayed on the maps will be included. The draft Index Map and individual example sheets will be submitted to the City and DSOD for review and confirmation prior to completing Task 5420 – Mapping.

***Deliverables for Task 5410:***

1. Draft One (1) digital copy of the preliminary overall Index Map and two example map sheets in color portable document format (.pdf).

***Task 5420 – Mapping.*** An inundation map shall be prepared for the sunny-day breach failure as described in 23 CCR §335.6. Inundation maps will contain the following model outputs as rasters, contours, points, or cross-sections at appropriate time and space intervals displayed over current aerial imagery:

1. Inundation boundary,
2. Flood wave arrival time,
3. Maximum depth, and
4. Maximum velocity.

The inundation boundary shall be displayed as a one-foot maximum depth, except where the flood wave would be confined to a channel or canyon, and where the flood wave no longer poses a threat to life or critical facilities. This statement is taken from 23 CCR §335.10 and is understood to provide guidance for how mapping the inundation boundary to at least one-foot in depth and for the downstream mapping limits the depth will be no greater than one foot in depth except where flood wave would be confined to a channel or canyon, and where the flood wave no longer poses a threat to life or critical facilities. It is anticipated the mapping will be taken the full length to the Pacific Ocean and the side flooding inundation extents will be carried out to something less than 0.25 ft. If a tributary has some backwater from the flooding, the mapping will follow up the tributary to at least 1 foot in depth within the tributary.

General information. Each inundation map sheet shall contain the following information:

1. The name of the dam, the department's dam number, the national dam ID number, and the county in which the dam is located.
2. The meteorological loading condition is a sunny-day event and will be appropriately labeled.
3. Sediment. If the failure scenario depicts the effects of sediment release, note "Includes reservoir sediment release".
4. Label identifying the dam.
5. Symbols and a corresponding legend that identifies all critical facilities in the inundation area and within the mapped extent.



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6. Labels identifying the downstream channels and flood control features within the inundation area, such as dams, levees, canals, rivers, streams, bypasses, weirs, pumps, and control structures.
7. Boundary delineations identifying the city, county, or other governmental agency jurisdictional boundaries affected by the inundation area.
8. An arrow indicating north.
9. An appropriate scale bar and the stated map scale.
10. Vertical elevation datum specified as NAVD88.
11. If applicable, an index showing the relationship of the map sheet to the other map sheets.
12. The preparation date of the map.
13. The simulation date of the model.
14. The signature, seal, and license number of the California-licensed professional civil engineer responsible for preparing the map.
15. A statement that includes:
  - a. The information shown is approximate and should be used as a guideline for emergency preparation and response.
  - b. Security-sensitive infrastructure may not be shown on this map.
16. For flood waves that are confined within a channel but not shown within the inundation boundary as allowed by 23 CCR §335.10(c), a statement indicating high flows may continue beyond the inundation boundary.
17. Labels identifying low-lying areas where the flood recession is expected to be slow and affect lives or critical facilities.

All inundation maps shall be prepared at a scale and quality that enables a person familiar with the area to clearly comprehend an aerial view of the extent of flooding. A map scale such as that described in Section 11.3.3 of FEMA P-946, Federal Guidelines for Inundation Mapping of Flood Risks Associated with Dam Incidents and Failures, may be applied.

Digital Image and Data submittals shall be placed in units following the Reporting Standards.

Mapping quality control is included.

The DRAFT maps will be provided in digital pdf format for City review prior submittal to DSOD. Comments received from the City will be incorporated into the maps and a final set of digital pdf format maps approved by the City will be submitted to DSOD as a draft for DSOD review. Comments from DSOD will be incorporated and the maps will be finalized and submitted to the City and DSOD in digital pdf format as well as a final hard copy set of maps.



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***Assumptions for Task 5420:***

1. Depth of flooding will not be calculated and tabulated for known building/house structures.
2. A budgeted 30 maps are assumed to cover the inundation boundary from Lake Wohlford to the Pacific Ocean. A closer approximation of the number of maps can be determined from the results of Task 5410.
3. Only one failure mode will be mapped.

***Deliverables for Task 5420:***

1. Draft and Final inundation map - One (1) digital copy of a color Index Map and inundation map, made up of individual map sheets in portable document format (.pdf).
2. One (1) hard copy set of the final maps for the City.
3. One (1) hard copy set of the final maps for DSOD.

***Task 5500 – Technical Memorandum***

***Task 5510 – Technical Memorandum.*** A technical memorandum (TM) shall be prepared to document the inundation modeling map development. The TM shall include the following:

1. Name and location of the dam and critical appurtenant structures.
2. Description of the dam, including the materials and methods of construction and a description of each critical appurtenant structure. Identify elevations of the crest, upstream, and downstream toes. Provide a description of the outlet(s), including capacity. Provide justification for appurtenances that are not considered critical appurtenant structures by the dam owner.
3. Reservoir storage capacity curve that shows the relationship between reservoir elevation and volume from the base of the reservoir to the dam crest. Elevation shall be specified as feet above North American Vertical Datum of 1988 (NAVD88).
4. Brief summary of the following:
  - a) Modeled failure scenario(s) for the dam system. For each failure scenario, include the breach hydrograph immediately downstream of the dam or critical appurtenant structure in tabular and graphical formats.
  - b) Modeling software description information.
  - c) Modeling assumptions of the meteorological loading condition, type of reservoir routing, downstream roughness or other friction coefficients, and initial conditions of downstream watercourses.
  - d) Breach parameters for each failure scenario submitted in tabular format. Provide an explanation for breach parameter selection.
  - e) Type of terrain data used, including any modifications made to the terrain.
  - f) Any sensitivity analyses of the model, including the model's response to changes made to the roughness or other friction coefficients.





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- g) Modifications made to stabilize the model or accelerate its computational runtime, if applicable, and the effects such modifications have on the modeled inundation results.
5. The signature, seal, and license number of the California-licensed professional civil engineer responsible for preparing the TM.

The DRAFT TM will be provided for City review prior submittal to DSOD. Comments received from the City will be incorporated into the TM and a final TM approved by the City will be submitted to DSOD as a draft for DSOD review. Comments from DSOD will be incorporated and the TM will be finalized and submitted to the City and DSOD.

***Deliverables for Task 5510:***

1. City Deliverable –
  - i. Draft and Final technical memorandum - One (1) electronic copy in MS Word and portable document format (.pdf).
  - ii. One (1) hard copy of the final TM.
2. DSOD Deliverable –
  - i. Draft and Final technical memorandum – One (1) hard copy and portable document format (.pdf).
  - ii. One (1) hard copy of the final TM.

***Assumptions for Task 5510:***

1. Electronic copies of all deliverables, including maps, model exports and technical memorandums shall be provided using formats in their original software version (e.g., Word, Excel, PowerPoint, HEC-RAS) in addition to a PDF version.

**TASK 8100 – OAKVALE ROAD RE-ALIGNMENT ENGINEERING SERVICES DURING CONSTRUCTION**

The following services will be provided under this task. It is anticipated that this work will last 12 months.

***Task 8110 – Project Meetings.***

The following meetings will be provided under this task.

***Task 8111 - Pre-Construction Meeting.*** Black & Veatch's Project Manager, Engineering Manager, and O'Day Consultants' Project Manager will attend the pre-construction meeting. The meeting is assumed to last 4 hours.



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***Task 8112 - Monthly Construction Meetings.*** Black & Veatch's Project Manager will attend 12 construction progress meetings. The meetings are assumed to last 2 hours.

***Task 8113 - Bi-Monthly Internal Construction Progress Meetings.*** The Black & Veatch Project Manager, Engineering Manager, and up to one additional team members will attend the 6 internal construction progress meetings. The meetings are assumed to last 1 hour.

***Assumptions for Task 8110:***

1. Construction Management team will schedule, conduct, and document pre-construction and bi-weekly meetings.

***Task 8120 - Field Support Services.***

The following field support services will be provided under this task.

***Rock Bolt Field Support Services***

1. Bolt Inspection. This task includes bolt inspection before installed bolts are inaccessible. This task includes 12 cut slope benches with 12 trips to the site by a Black & Veatch geotechnical engineer.
2. Review and Approval of Quality Assurance and Field Test Program for Rock Bolts and Wire Mesh. This task includes review and approval of Quality Assurance and Field Test program for the Rock Bolts and Wire Mesh.
3. Selection of Rock Bolts for Pull Tests. This task includes selection of rock bolts for pull tests and review of the results.
4. Report Review. This task includes the review of bolt inspection reports and pull test reports.

***Rock Excavation Mapping.*** As part of the Oakvale Road re-alignment, grading of the rock slope adjacent to the dam's left abutment will be performed by the contractor. As-built geologic mapping will be performed during excavation and grading for the Oakvale Road Realignment and foundation excavation for Wohlford Dam Replacement. Mapping will be documented at a scale of about 1 inch = 20 feet and finer where warranted, as suggested by DSOD. In general, the detail of mapping will be conducted along the area of the left abutment, within 100 feet of both sides from the new dam axis

Geologic mapping is anticipated to be required for up to 5 temporary construction benches (assumed vertically spaced of about 10 to 20 feet), the slope crest, the toe-of-slope, and other areas accessible by foot in the general area of the proposed left abutment. Mapping will be performed using the grading plan as the basemap. As-built geologic mapping data will include the following where observable:





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- Orientation and location of major geologic structure;
- Distribution of major geologic units, rock types, structural blocks, and/or weathering zones;
- Zones of seepage; and
- Orientation and condition of persistent discontinuities.

It is assumed ten (10) field visits will be required during grading to obtain the necessary geologic data. The mapping will be performed by a Kleinfelder geologist or geologic engineer under the direction of a California Certified Engineering Geologist (CEG).

***Task 8130 –Review of Shop Drawing Submittals.***

A Black & Veatch engineer of the responsible engineering discipline (Engineer) will review shop drawings and submittal documents as required by the Contract Documents. Through the City/CM, the Engineer will receive submittals and will provide a single response to the CM for distribution to the Contractor and City. The Engineer will provide the final review disposition for shop drawing submittals.

The level of effort for this task assumes reviewing 16 construction submittal packages, including resubmittals. The total number of submittals is estimated for budgeting purposes and only the hours completed per submittal will be billed. Additionally, it is assumed that submittal routing and document management will be managed by the CM, and that any comments from the City or other parties will be provided to the Engineer for review prior to issuance of a final review disposition.

***Task 8140 –Review of Request for Information.***

Black & Veatch will provide written clarifications and interpretation of design criteria, or design intent, in response to each Contractor request for information (RFI). Black & Veatch's written RFI response will be provided to the City within three working days of the day the CM notifies Black & Veatch of the RFI. RFI responses will be coordinated with the City staff as required. It's anticipated that up to 4 hours per review may be required. A budget for review and response to 16 RFIs related to construction activities has been established for the project. The total number of RFIs is estimated for budgeting purposes and only the hours completed per RFI will be billed.

***Task 8150 – Field Change Orders.***

Black & Veatch will review change order requests as requested by the City's CM and will provide an opinion on the appropriateness of the change order request, in accordance with the Contract Documents. Engineer will provide written summary of opinion of change order request, including a parallel cost estimate if requested, and submit to the City's CM. The level of



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effort for this task assumes responses to 4 change orders will be requested, with 10 to 12 hours per change order.

***Task 8160 – Preparation of Record Drawings.***

It is assumed that the CM will coordinate with the Contractor so that the Contractor maintains an up-to-date set of “redlines” record drawings at the site at all times during construction. Black & Veatch will prepare record drawings following receipt of the Contractor’s final “redlines” that reflect changes in the contract documents from RFIs and/or change orders. It is assumed that up to 7 contract drawings will be revised and that redlines provided by the Contractor will be reviewed and approved by the City prior to completion of the record drawings. Black & Veatch will provide the City with an electronic copy (AutoCAD) of the final record drawings and one full size set on bond paper.

***Task 8170 – Geologic Mapping Report Preparation and GDR Addendum.***

The geotechnical data from the geologic mapping will be summarized and included in a letter addendum to the Geotechnical Data Report (GDR) prepared by Kleinfelder in 2013. The data included in the addendum will consist of the geologic mapping and relevant geologic features.

The GDR Addendum will be submitted as a draft for review by the City and DSOD. Following receipt of review comments from the City and DSOD, Kleinfelder will revise the addendum and prepare a final version.

***Deliverables for Task 8170:***

- i. Draft and Final report addendum - One (1) electronic copy in MS Word and portable document format (.pdf).
- ii. Five (5) hard copy of the final report.

**TASK 9100 – LAKE WOHLFORD DAM REPLACEMENT ENGINEERING SERVICES DURING CONSTRUCTION**

The following services will be provided under this task. It is anticipated that this work will last 36 months.

***Task 9110 – Project Meetings.***

The following meetings will be provided under this task.



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***Task 9111 - Pre-Construction Meeting.*** The Project Manager, Engineering Manager, up to two additional team members and Kleinfelder will attend the pre-construction meeting. The meeting is assumed to last 4 hours.

***Task 9112 - Bi-Weekly Construction Meetings.*** The Project Manager and up to one additional team members will attend the 72 construction progress meetings. The meetings are assumed to last 2 hours.

***Task 9113 - Monthly Internal Construction Progress Meetings.*** The Black & Veatch Project Manager, Engineering Manager, Field Engineer and up to 3 additional team members will attend the 36 internal construction progress meetings. The meetings are assumed to last 1 hour.

***Assumptions for Task 9110:***

1. Construction Management team will schedule, conduct, and document pre-construction and bi-weekly meetings.

***Task 9120 – Field Support Services.***

The following field support services will be provided under this task.

***Field Engineer***

1. Black & Veatch field engineer will be onsite from the start of Site Development to Regulatory Acceptance. Field engineer will provide input and guidance to Contractor to maintain conformance to project contract documents.
2. One field office will be provided to the Black & Veatch Field Engineer within the CM or City trailer.

***Foundation Excavation***

1. Black & Veatch geotechnical engineer will be onsite throughout all foundation excavation activities. Foundation excavation is assumed to last 3-months.
2. The lines shown on the drawings for the foundation excavation of the RCC dam and its ancillary structures are approximate. The location of the acceptable foundation material may be above or below the excavation lines shown on the drawings. B&V geotechnical engineer will provide input as to determine foundation excavation limits based on actual field conditions and remove any unsuitable material.
3. Report Review. This task includes the review of the geologic mapping completed by Kleinfelder.



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### ***Rock Bolt Field Support Services***

1. Bolt Inspection. This task includes bolt inspection before installed bolts are inaccessible. This task includes 2 cut slope benches with 2 trips to the site by a B&V geotechnical engineer.
2. Review and Approval of Quality Assurance and Field Test Program for Rock Bolts and Wire Mesh. This task includes review and approval of Quality Assurance and Field Test program for the Rock Bolts and Wire Mesh.
3. Selection of Rock Bolts for Pull Tests. This task includes selection of rock bolts for pull tests and review of the results.
4. Report Review. This task includes the review of bolt inspection reports and pull test reports.

### ***Structural Observation***

1. Kleinfelder will provide structural observation during construction. This task includes 5 site visits.

### ***Foundation Excavation Mapping***

The foundation excavation will be performed by the contractor. As-built geologic mapping will be performed periodically as the slope is constructed. Mapping will be performed at a scale of about 1 inch = 20 feet and finer where warranted, as suggested by DSOD. In general, the detail of mapping will be greater along the area (i.e., plus and minus about 100 feet from the new dam axis) of the left abutment.

Mapping is anticipated to be required for the full foundation excavation.

Mapping will be performed using the grading plan as the basemap. As-built geologic mapping data will include the following where observable:

- Orientation and location of major geologic structure;
- Distribution of major geologic units, rock types, structural blocks, and/or weathering zones;
- Zones of seepage; and
- Orientation and condition of persistent discontinuities.

Ten (10) field visits are anticipated to obtain data during grading. The mapping will be performed by a geologist or geologic engineer under the direction of a California CEG. The



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geotechnical data from the foundation mapping will be summarized and included in the GDR Addendum described in Task 8170.

### ***Rock Core Boring***

Upon excavation of Oakvale Road and depending upon the existing geology exposed, up to one rock core boring may be drilled to a depth of approximately 100 feet below the crest of the dam elevation in the general area of the proposed left abutment. This task will only be completed with written City authorization. The services for the rock core boring will include the following:

- Triple tube wireline rock core drilling methods will be used to obtain continuous core samples of rock in general accordance with ASTM D2113, Standard Practice for Rock Core Drilling and Sampling of Rock for Site Investigation
- Logging and sampling will be conducted under the supervision of our CEG.
- Collected samples will be cleaned, photographed, logged in the core tray, and then placed in wood core boxes, each holding approximately 15 feet of core.
- Upon completion of drilling, rock core borings, downhole geophysical surveys will be conducted using an acoustic televiewer (ATV).
- In-situ hydraulic conductivity (packer) testing will be performed using wireline, pneumatic, dual-packer system to isolate selected sections of formation for testing. Testing will be performed in accordance with the methods and procedures described in the Engineering Geology Field Manual (USBR, 1998).
- Downhole suspension seismic velocity surveys will also be performed using an OYO suspension P-S logging system to measure the compressive ( $V_p$ ) and shear wave ( $V_s$ ) velocity of geomaterials adjacent to the probe in the vertical direction.
- After completion of the borehole, it will be backfilled using bentonite-cement slurry.
- Since the boring exceeds 20 feet deep, a boring permit from County of San Diego Department of Environmental Health (DEH) will be obtained prior to drilling.
- Information obtained from this new rock coring will be updated within the GDR Addendum in parallel with Task 8170, above.

### ***Task 9130 –Review of Shop Drawing Submittals.***

A Black & Veatch Engineer of the responsible engineering discipline (Engineer) will review shop drawings, submittal documents, and equipment operation and maintenance manuals as required by the Contract Documents. Through the City/CM, the Engineer will receive



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submittals and will provide a single response to the CM for distribution to the Contractor and City. The Engineer will provide the final review disposition for shop drawing submittals.

Manufacturer's O&M manuals will be reviewed for inclusion of information in conformance with the Contract Documents and shop drawing approvals.

The level of effort for this task assumes reviewing 172 construction submittal packages, including resubmittals. The total number of submittals is estimated for budgeting purposes and only the hours completed per submittal will be billed. Additionally, it is assumed that submittal routing and document management will be managed by the CM, and that any comments from the City or other parties will be provided to the Engineer for review prior to issuance of a final review disposition.

***Task 9140 – Review of Request for Information.***

Black & Veatch will provide written clarifications and interpretation of design criteria, or design intent, in response to each Contractor request for information (RFI). Black & Veatch's written RFI response will be provided to the City within three working days of the day the CM notifies Black & Veatch of the RFI. RFI responses will be coordinated with the City staff as required. It's anticipated that up to 4 hours per review may be required. A budget for review and response to 150 RFIs related to construction activities has been established for the project. The total number of RFIs is estimated for budgeting purposes and only the hours completed per RFI will be billed.

***Task 9150 – Field Change Orders.***

Black & Veatch will review change order requests as requested by the City's CM and will provide an opinion on the appropriateness of the change order request, in accordance with the Contract Documents. Engineer will provide written summary of opinion of change order request, including a parallel cost estimate if requested, and submit to City/CM. The level of effort for this task assumes responses to 20 change orders will be requested, with 20 hours per change order.

***Task 9160 – Preparation of Record Drawings.***

It is assumed that the CM will coordinate with the Contractor so that the Contractor maintains an up-to-date set of "redlines" record drawings at the site at all times during construction. Black & Veatch will prepare record drawings following receipt of the Contractor's final "redlines" that reflect changes in the contract documents from RFIs and/or change orders. It is assumed that up to 80 contract drawings will be revised and that redlines provided by the Contractor will be reviewed and approved by the City prior to completion of the record





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drawings. Black & Veatch will provide the City with an electronic copy (AutoCAD) of the final record drawings and one full size set on bond paper.

***Task 9170 – Construction Monitoring***

***Task 9171 - Environmental & Biological Monitoring***

AECOM will provide a qualified Biological Monitor(s) to support the project. Biological monitoring is intended to fulfill requirements included as mitigation measures in the EIR. The Biological Monitor will perform tasks such as pre-construction nesting bird surveys, inspection of Environmentally Sensitive Area (ESA) fencing, inspection of workspace delineations, oversee adherence to air quality and noise mitigation measures, and ensure compliance of the project as proposed in the Final EIR. Biological monitoring will be provided daily during initial ground disturbance and vegetation removal and weekly thereafter. Biological monitoring is assumed for up to 200 hours during initial vegetation removal and ground disturbance (estimated at 1 month or 20 10-hr person days). Following initial vegetation removal and ground disturbance, up to 40 additional monitoring visits are anticipated over the project duration for an estimated 400 additional person hours. Additional monitoring visits may be required for nesting bird oversight, general biological guidance, and/pr construction work areas change. A total of 600 hours of biological monitoring are assumed under this task. Biological monitoring reports will be prepared daily for each day on site and submitted weekly to Black & Veatch. Brief annual monitoring reports will be prepared for submittal to the resource agencies and are anticipated to focus on aquatic resources only.

If project construction requires the initiation of vegetation removal or earthwork during the bird breeding season (February 15 through September 15), AECOM will provide a qualified wildlife biologist to conduct pre-construction nesting bird surveys to identify bird breeding activity within the project vicinity (500-foot survey area). AECOM assumes that up to six (6) single person survey days may be required to survey for nesting birds within approximately 30 acres of proposed habitat within the Limits of Disturbance (LOD) and surrounding areas. Following survey efforts, AECOM will submit memorandum (memo) reports including identification of nesting birds, sensitivity status, location information, nest status (if possible), and recommendations for nest avoidance if necessary. Up to 50 hours are assumed for pre-construction nesting bird surveys and associated reporting. An additional 10 hours are included for the preparation of necessary nest avoidance measures and/or noise attenuation recommendations. Additional surveys required beyond this initial survey effort would be completed concurrently with monitoring efforts described below.

A Biological Monitor and Project Manager will be available for attendance to one pre-construction field visit (estimated at up to 8 hours).



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This task assumes project management for both biological and cultural monitoring support averaging up to 6 hours per month for the 42-month duration of the project. Tasks associated with project management include (but are not limited to) attendance periodically at construction meetings, report review and preparation of weekly deliverables, and project scheduling and coordination. Up to 252 hours of project management support are assumed under this task.

***Assumptions for Task 9171:***

1. Focused or protocol level surveys for listed species are not included in this scope of work.
2. SWPPP monitoring and reporting is assumed to be provided by CM or Contractor and is not included in this task.
3. Assumed costs are based on a 10-hour workday for up to 5-days per week.
4. Assumes all workspace delineation and ESA fencing will be installed and maintained by the contractor.
5. Assumes that no modifications or additional access routes outside of the LOD will be required.
6. Noise Complaint Investigation and Noise Complaint Reporting as described in measure NOI-1.1 and NOI-1.2 are not included in this scope of work.
7. No annual reporting or final summary compliance reporting are included in this scope.
8. Implementation of the mitigation, restoration, and long-term habitat plans is not included in this scope. However, AECOM can provide these services under contract modification, if requested by BV/the City.
9. Agency permits are currently being processed. Additional requirements of permits not anticipated and beyond that described above may require a contract modification.

***Task 9172 - Cultural Resources Monitoring***

Prior to construction, AECOM Cultural Resources Specialists will develop a pre-excavation plan with a tribe that is traditionally and culturally affiliated with the project area (TCA) as recommended in measure CR-1.1 of the Final EIR. The agreement will provide clear expectations regarding the management of tribal and cultural resources and formalize protections of these resources. Prior to issuance of the grading permit, AECOM will prepare notice to the City in the form of a letter report that the project has retained qualified Native American monitoring from the TCA. This task assumes up to 48 hours for the preparation of the pre-excavation plan and notifications. Non-technical support services (word processing, GIS, etc.) are included in this task. This task includes preparation of up to three figures by a GIS Analyst for inclusion in the plan.

AECOM will provide a qualified Cultural Resources Monitor (Archaeologist) and Native American Monitor to support the project. Monitoring is intended to fulfill requirements, which





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will be included in the pre-excavation plan during initial ground disturbing activities as required by the Final EIR. The Cultural Resources and Native American Monitors will be on site daily during grubbing, site grading, and excavation. Cultural and Native American monitoring is assumed for up to 630 hours each during initial vegetation removal and ground disturbance (estimated at 3 months or 63 person days). Cultural resources monitoring reports will be prepared daily for each day on site and submitted weekly to BV.

A qualified Cultural Resources Specialist and tribal representative will be available for attendance to one pre-construction fielding visit (estimated at up to 8 hours).

This task assumes up to 4 hours per week for the assumed three-month duration of initial ground disturbance for project coordination and scheduling by Senior Archeologist. Tasks associated with project coordination include tribal coordination, report review, and preparation of weekly deliverables, and project scheduling and coordination. An additional 40 hours are included to support notifications of resource finds and reporting for potential unanticipated discoveries during construction. Up to 92 hours of coordination for a Senior Archeologist are assumed under this task.

***Assumptions for Task 9172:***

1. Final deliverables or any additional notifications associated with the pre-excavation plan are not known at this time. If additional summary compliance reporting, annual reporting or notification is required following finalization of the pre-excavation plan, those tasks may be added as an additional scope of work (and associated fee) or can be completed with ad-hoc funds if available.
2. Assumed costs are based on a 10-hour workday for up to 5-days per week over the initial ground disturbance and vegetation removal phase of the project, estimated for up to 63 days (approximately 3 months).

***Task 9200 – Additional Services***

This work item includes the authorization for additional services up to \$125,000. No work shall be performed against this additional service without the written authorization from the City.

**OVERALL PROJECT ASSUMPTIONS**

- The City's CM will provide Black & Veatch with all submittal and RFI responses in electronic or hard copy format.
- The City's CM will maintain the official project submittal and RFI logs.

Black & Veatch will only review submittals and RFIs requiring engineer of record input.



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**EXPECTED SUBMITTALS**

***Oakvale Road Realignment Project***

Item	Spec Section
<b>Division 2 - Site Work</b>	
Roadway Fill	2220
Rock Excavation	2316
Permanent Excavation Support	2320
Concrete Culvert Pipe	2619
<b>Division 3 - Concrete</b>	
Miscellaneous Cast-in-Place Concrete	3302

***Lake Wohlford Dam Replacement Project***

Item	Spec Section
<b>Division 1 - General</b>	
Testing and Tie-ins for Pipelines	1504
Equipment Schedule	1620
Pipeline Schedule	1630
Commissioning	1650
<b>Division 2 - Site Work</b>	
Exploratory Drilling and Excavations	2010
Control and Diversion of Water	2075
Dewatering	2080
Earthwork	2200
Trenching and Backfilling	2202
Foundation Excavation and Preparation	2210
Foundation Drilling and Grouting	2266
Drain Drilling	2268
Permanent Excavation Support	2320
Blasting	2400
Concrete Culvert Pipe	2619
<b>Division 3 - Concrete</b>	



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Item	Spec Section
Concrete Formwork	3100
Reinforcement Steel	3200
Concrete Joints and Joint Accessories	3250
Cast-in-Place Concrete	3300
Grout	3600
Bedding Mix	3610
Roller-Compacted Concrete	3800
Production Uniformity Testing	3820
<b>Division 5 - Metals</b>	
Structural Steel	5120
Miscellaneous Metals	5500
Handrailing, Guardrailing, and Ladders	5520
Fiberglass Grating	5530
Anchorage In Concrete	5550
<b>Division 8 - Doors and Windows</b>	
Stainless Steel Doors and Frames	8110
Finish Hardware	8700
<b>Division 9 - Finishes</b>	
Protective Coatings	9940
<b>Division 10 - Specialties</b>	
Louvers	10200
<b>Division 13 - Equipment</b>	
Pedestrian Access Bridge	13050
Impressed Current Cathodic Protection	13111
Thermistors	13150
Piezometers	13160
Accelerometers	13170
Inclinometers	13200
Dam Monitoring Automatic Data Acquisition System	13300
Instrumentation and Control System	13500
Instrument Device Schedule	13500A
Programmable Logic Controllers	13530
Input/Output Listing	13530A
Software Control Block Descriptions	13550
Panel Mounted Instruments	13561
Pressure and Level Instruments	13563



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Item	Spec Section
Temperature Instruments	13565
Panels, Consoles, and Appurtenances	13570
Network Systems	13590
Metallic and Fiber Optic Communication Cable and Connectors	13591
<b>Division 14 - Conveying Systems</b>	
Electrical Wire Rope Hoists	14622
<b>Division 15 - Mechanical</b>	
Valve Installation	15010
Miscellaneous Piping and Accessories Installation	15020
Basic Mechanical Building Systems Materials and Methods	15050
Miscellaneous Piping and Pipe Accessories	15060
Steel Pipe	15062
Miscellaneous Plastic Pipe and Accessories	15067
Copper Tubing and Accessories	15070
Miscellaneous Ball Valves	15091
Metal Seated Butterfly Valves	15101
Resilient Wedge Gate Valves	15104
Combination Air Valves	15108
Fixed-Cone Valve	15110
Gate Installation	15111
Cast-Iron Slide Gates	15112
Pipe Supports	15140
Valve and Gate Actuators	15180
Heating, Ventilating and Air Conditioning	15500
Testing, Adjusting, and Balancing	15990
<b>Division 16 - Electrical</b>	
Electrical	16050
Electrical Equipment Installation	16100
Lighting Protection for Structures	16670

Owner: City of Escondido

Project: Lake Wohlford Dam Replacement Inundation Map and ESDC

PHASE/Task (Billing Rate, \$\$, Hr.)		Sr. Project Director	Sr. Project Manager	Admin	Engineering Manager	Civil Engineer	Catholic Protection	Resident Project Representative	Structural Sr. Engineer	Structural Engineer	Senior Architect	Architect	Bldg Mech Sr. Engineer	Electrical Sr. Engineer	Electrical Engineer	Electrical Sr. Technician	I&C Sr. Engineer	I&C Engineer	Water Res Director/QC	Water Res Sr. Engineer	Modeler	BIM Sr Technician	Sr. Estimator	Finance	Project Controls	HC Civil Director/QC
		\$325.00	\$285.00	\$100.00	\$185.00	\$135.00	\$200.00	\$255.00	\$205.00	\$150.00	\$190.00	\$110.00	\$205.00	\$200.00	\$130.00	\$150.00	\$200.00	\$135.00	\$215.00	\$210.00	\$140.00	\$149.00	\$195.00	\$110.00	\$140.00	\$295.00
<b>WORK BREAKDOWN STRUCTURE</b>	<b>PHASE</b>																									
<b>PROJECT MANAGEMENT</b>	<b>1000</b>																									
Project Administration	1100	54	185	116	70	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	172	140	-
<b>ENVIRONMENTAL</b>	<b>3000</b>																									
Bio Assessment and Permitting	3100	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Corps Data Request	3110	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ad-Hoc Agency Coordination	3200	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
WIFIA Support	3300	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
WIFIA Questionnaire	3310	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Cultural Supplemental Survey	3330	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<b>LAKE WOHLFORD INUNDATION STUDY</b>	<b>5000</b>																									
Project Meetings	5100	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Meetings	5110	-	4	-	4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	12	4	-	-	-	-	-
DSOD Coordination and Meetings	5120	-	4	-	4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	20	4	-	-	-	-	-
Model Setup and Development	5200	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Determine Model Scenarios and Failure Modes	5210	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	10	-	-	-	-	-	-
Terrain	5220	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	24	-	-	-	-	-
Model Setup	5230	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	30	140	-	-	-	-	-
Modeling	5300	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Modeling	5310	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	20	100	-	-	-	-	-
Mapping	5400	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Confirm Map Scale, Layout and Data	5410	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2	12	-	-	-	-	-
Mapping	5420	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	30	115	-	-	-	-	-
Technical Memorandum	5500	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Technical Memorandum	5510	-	2	-	4	2	-	-	-	-	-	-	-	-	-	-	-	-	12	80	24	-	-	-	-	-
<b>OAKVALE ROAD RE-ALIGNMENT ESDC</b>	<b>8100</b>																									
Project Meetings	8110	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Pre-Construction Meeting	8111	-	4	-	4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Monthly Construction Meetings	8112	-	24	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Bi-Monthly Internal Construction Progress Meetings	8113	-	6	-	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Field Support Services	8120	-	16	24	28	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Review of Shop Drawing Submittals	8130	-	4	-	8	16	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Review of Request for Information	8140	-	12	-	32	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Field Change Orders	8150	-	8	-	16	8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	16	-	-	-
Preparation of Record Drawings	8160	-	4	-	8	12	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	12	-	-	-	-
Geologic Mapping Report Prep and GDR Addendum	8170	-	4	-	4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<b>LAKE WOHLFORD DAM REPALCEMENT ESDC</b>	<b>9100</b>																									
Project Meetings	9110	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Pre-Construction Meeting	9111	4	4	-	4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4
Bi-Weekly Construction Meetings	9112	-	220	-	-	-	-	-	-	-	-	-	8	-	-	-	12	-	-	-	-	-	-	-	-	90
Monthly Internal Construction Progress Meetings	9113	-	52	-	32	-	-	-	4	-	-	4	4	14	-	-	12	-	-	-	-	-	-	-	-	36
Field Support Services	9120	-	-	-	2	-	-	4,240	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	6
Review of Shop Drawing Submittals	9130	-	40	-	78	180	12	-	50	60	8	32	34	8	36	-	78	80	-	-	-	-	-	-	-	20
Review of Request for Information	9140	-	40	-	80	-	-	-	40	-	12	-	16	32	-	-	40	-	-	-	-	20	-	-	-	40
Field Change Orders	9150	16	40	-	40	40	-	-	40	-	-	-	-	16	-	-	16	-	-	-	-	40	50	-	-	40
Preparation of Record Drawings	9160	-	8	-	24	40	-	-	-	-	-	-	-	10	-	10	-	-	-	-	-	120	-	-	-	8
Construction Monitoring	9170	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Environmental & Biological Monitoring	9171	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Cultural Resources Monitoring	9172	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Additional Services	9200	8	60	-	58	-	-	100	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	20
<b>Total, Hours</b>		<b>82</b>	<b>741</b>	<b>140</b>	<b>506</b>	<b>298</b>	<b>12</b>	<b>4,340</b>	<b>94</b>	<b>60</b>	<b>20</b>	<b>36</b>	<b>54</b>	<b>88</b>	<b>36</b>	<b>10</b>	<b>158</b>	<b>80</b>	<b>12</b>	<b>204</b>	<b>423</b>	<b>192</b>	<b>66</b>	<b>172</b>	<b>140</b>	<b>264</b>
<b>Total, Billings</b>		<b>\$ 26,650</b>	<b>\$ 211,185</b>	<b>\$ 14,000</b>	<b>\$ 93,610</b>	<b>\$ 40,230</b>	<b>\$ 2,400</b>	<b>\$ 1,106,700</b>	<b>\$ 19,270</b>	<b>\$ 9,000</b>	<b>\$ 3,800</b>	<b>\$ 3,960</b>	<b>\$ 11,070</b>	<b>\$ 17,600</b>	<b>\$ 4,680</b>	<b>\$ 1,500</b>	<b>\$ 31,600</b>	<b>\$ 10,800</b>	<b>\$ 2,580</b>	<b>\$ 42,840</b>	<b>\$ 59,220</b>	<b>\$ 28,608</b>	<b>\$ 12,870</b>	<b>\$ 18,920</b>	<b>\$ 19,600</b>	<b>\$ 77,880</b>



Owner: City of Escondido

Project: Lake Wohlford Dam Replacement Inundation Map and ESDI

PHASE/Task (Billing Rate, \$\$,Hr.)	PHASE	HC Civil	Geotech	Geotech	Geotech	Sr.	SUBTOTAL, hours	SUBTOTAL, Billings \$	Travel/Per Diem Expenses	Major Repro- duction Expenses	SUBTOTAL, EXPENSES	SUBCONTRACTS			SUBTOTAL, SUBCONTRACTS w/o MULTIPLIER	SUBTOTAL, SUBCONTRACTS (INCLUDES 3% MARKUP)	TOTAL Billings
		Engineer	Director/QC	Sr. Engineer	Engineer	Geologist						Kleinfelder	AECOM	O'Day			
		\$225.00	\$320.00	\$250.00	\$200.00	\$205.00											
<b>WORK BREAKDOWN STRUCTURE</b>	<b>PHASE</b>																
<b>PROJECT MANAGEMENT</b>	<b>1000</b>																
Project Administration	1100	-	-	-	-	-	737	\$ 133,345	\$ -	\$ -	\$ -			\$ -	\$ -	\$ 133,345	
<b>ENVIRONMENTAL</b>	<b>3000</b>																
Bio Assessment and Permitting	3100	-	-	-	-	-	-	\$ -	\$ -	\$ -	\$ -			\$ -	\$ -	\$ -	
Corps Data Request	3110	-	-	-	-	-	-	\$ -	\$ -	\$ -	\$ -	\$ 19,320		\$ 19,320	\$ 19,900	\$ 19,900	
Ad-Hoc Agency Coordination	3200	-	-	-	-	-	-	\$ -	\$ -	\$ -	\$ -	\$ 29,400		\$ 29,400	\$ 30,282	\$ 30,282	
WIFIA Support	3300	-	-	-	-	-	-	\$ -	\$ -	\$ -	\$ -			\$ -	\$ -	\$ -	
WIFIA Questionnaire	3310	-	-	-	-	-	-	\$ -	\$ -	\$ -	\$ -	\$ 18,720		\$ 18,720	\$ 19,282	\$ 19,282	
Cultural Supplemental Survey	3330	-	-	-	-	-	-	\$ -	\$ -	\$ -	\$ -	\$ 17,360		\$ 17,360	\$ 17,881	\$ 17,881	
<b>LAKE WOHLFORD INUNDATION STUDY</b>	<b>5000</b>																
Project Meetings	5100	-	-	-	-	-	-	\$ -	\$ -	\$ -	\$ -			\$ -	\$ -	\$ -	
Meetings	5110	-	-	-	-	-	24	\$ 4,960	\$ -	\$ -	\$ -			\$ -	\$ -	\$ 4,960	
DSOD Coordination and Meetings	5120	-	-	-	-	-	32	\$ 6,640	\$ -	\$ -	\$ -			\$ -	\$ -	\$ 6,640	
Model Setup and Development	5200	-	-	-	-	-	-	\$ -	\$ -	\$ -	\$ -			\$ -	\$ -	\$ -	
Determine Model Scenarios and Failure Modes	5210	-	-	-	-	-	10	\$ 2,100	\$ -	\$ -	\$ -			\$ -	\$ -	\$ 2,100	
Terrain	5220	-	-	-	-	-	24	\$ 3,360	\$ -	\$ -	\$ -			\$ -	\$ -	\$ 3,360	
Model Setup	5230	-	-	-	-	-	170	\$ 25,900	\$ -	\$ -	\$ -			\$ -	\$ -	\$ 25,900	
Modeling	5300	-	-	-	-	-	-	\$ -	\$ -	\$ -	\$ -			\$ -	\$ -	\$ -	
Modeling	5310	-	-	-	-	-	120	\$ 18,200	\$ -	\$ -	\$ -			\$ -	\$ -	\$ 18,200	
Mapping	5400	-	-	-	-	-	-	\$ -	\$ -	\$ -	\$ -			\$ -	\$ -	\$ -	
Confirm Map Scale, Layout and Data	5410	-	-	-	-	-	14	\$ 2,100	\$ -	\$ -	\$ -			\$ -	\$ -	\$ 2,100	
Mapping	5420	-	-	-	-	-	145	\$ 22,400	\$ -	\$ -	\$ -			\$ -	\$ -	\$ 22,400	
Technical Memorandum	5500	-	-	-	-	-	-	\$ -	\$ -	\$ -	\$ -			\$ -	\$ -	\$ -	
Technical Memorandum	5510	-	-	-	-	-	124	\$ 24,320	\$ -	\$ -	\$ -			\$ -	\$ -	\$ 24,320	
<b>OAKVALE ROAD RE-ALIGNMENT ESDC</b>	<b>8100</b>																
Project Meetings	8110	-	-	-	-	-	-	\$ -	\$ -	\$ -	\$ -	\$ 1,600		\$ 1,600	\$ 1,648	\$ 1,648	
Pre-Construction Meeting	8111	-	-	-	-	-	8	\$ 1,880	\$ -	\$ -	\$ -			\$ -	\$ -	\$ 1,880	
Monthly Construction Meetings	8112	-	-	-	-	-	24	\$ 6,840	\$ 1,000	\$ -	\$ 1,000			\$ -	\$ -	\$ 7,840	
Bi-Monthly Internal Construction Progress Meetings	8113	-	-	-	-	6	18	\$ 4,050	\$ -	\$ -	\$ -			\$ -	\$ -	\$ 4,050	
Field Support Services	8120	-	-	-	-	256	324	\$ 64,620	\$ 15,000	\$ -	\$ 15,000	\$ 22,680		\$ 22,680	\$ 23,360	\$ 102,980	
Review of Shop Drawing Submittals	8130	-	-	-	-	60	88	\$ 17,080	\$ -	\$ -	\$ -			\$ -	\$ -	\$ 17,080	
Review of Request for Information	8140	-	-	-	-	20	64	\$ 13,440	\$ -	\$ -	\$ -	\$ 6,200		\$ 6,200	\$ 6,386	\$ 19,826	
Field Change Orders	8150	-	-	-	-	2	50	\$ 9,850	\$ -	\$ -	\$ -			\$ -	\$ -	\$ 9,850	
Preparation of Record Drawings	8160	-	-	-	-	8	44	\$ 7,668	\$ -	\$ 1,000	\$ 1,000	\$ 3,650		\$ 3,650	\$ 3,760	\$ 12,428	
Geologic Mapping Report Prep and GDR Addendum	8170	-	-	-	-	24	32	\$ 6,800	\$ -	\$ -	\$ -	\$ 11,600		\$ 11,600	\$ 11,948	\$ 18,748	
<b>LAKE WOHLFORD DAM REPLACEMENT ESDC</b>	<b>9100</b>																
Project Meetings	9110	-	-	-	-	-	-	\$ -	\$ -	\$ -	\$ -	\$ 3,025		\$ 3,025	\$ 3,116	\$ 3,116	
Pre-Construction Meeting	9111	-	-	-	-	4	20	\$ 5,180	\$ 2,000	\$ -	\$ 2,000			\$ -	\$ -	\$ 7,180	
Bi-Weekly Construction Meetings	9112	-	-	-	-	24	354	\$ 98,170	\$ 1,000	\$ -	\$ 1,000			\$ -	\$ -	\$ 99,170	
Monthly Internal Construction Progress Meetings	9113	-	-	-	-	30	188	\$ 44,790	\$ -	\$ -	\$ -			\$ -	\$ -	\$ 44,790	
Field Support Services	9120	-	-	-	-	536	4,784	\$ 1,193,220	\$ 35,000	\$ -	\$ 35,000	\$ 87,635		\$ 87,635	\$ 90,264	\$ 1,318,484	
Review of Shop Drawing Submittals	9130	60	60	42	60	46	984	\$ 187,000	\$ -	\$ -	\$ -	\$ 21,400		\$ 21,400	\$ 22,042	\$ 209,042	
Review of Request for Information	9140	88	-	20	80	72	580	\$ 124,700	\$ -	\$ -	\$ -	\$ 9,460		\$ 9,460	\$ 9,744	\$ 134,444	
Field Change Orders	9150	32	-	-	32	40	402	\$ 85,110	\$ -	\$ -	\$ -	\$ 13,980		\$ 13,980	\$ 14,399	\$ 99,509	
Preparation of Record Drawings	9160	8	-	-	8	8	244	\$ 40,900	\$ -	\$ 2,000	\$ 2,000	\$ 1,470		\$ 1,470	\$ 1,514	\$ 44,414	
Construction Monitoring	9170	-	-	-	-	-	-	\$ -	\$ -	\$ -	\$ -			\$ -	\$ -	\$ -	
Environmental & Biological Monitoring	9171	-	-	-	-	-	-	\$ -	\$ -	\$ -	\$ -	\$ 160,620		\$ 160,620	\$ 165,439	\$ 165,439	
Cultural Resources Monitoring	9172	-	-	-	-	-	-	\$ -	\$ -	\$ -	\$ -	\$ 164,850		\$ 164,850	\$ 169,796	\$ 169,796	
Additional Services	9200	40	-	20	40	80	426	\$ 100,230	\$ 24,770	\$ -	\$ 24,770			\$ -	\$ -	\$ 125,000	
<b>Total, Hours</b>		<b>228</b>	<b>60</b>	<b>82</b>	<b>220</b>	<b>1,216</b>	<b>10,034</b>										
<b>Total, Billings</b>		<b>\$ 51,300</b>	<b>\$ 19,200</b>	<b>\$ 20,500</b>	<b>\$ 44,000</b>	<b>\$ 249,280</b>		<b>\$ 2,254,853</b>	<b>\$ 78,770</b>	<b>\$ 3,000</b>	<b>\$ 81,770</b>	<b>\$ 176,388</b>	<b>\$ 422,578</b>	<b>\$ 11,794</b>	<b>\$ 610,759</b>	<b>\$ 2,947,382</b>	