



Topic: **Reservoir Committee Agenda Item 4-3.6** **2020 February 21**

Subject: **Contract Amendment for Professional Services (CH2M Hill Engineers, Inc.)**

Requested Action:

Consider approval of a recommendation to the Sites Project Authority to approve an amendment to CH2M Hill Engineers, Inc.'s (CH2M) (Operations Simulation Modeling) contract and task order scope of services, budget and period of performance (Attachment A).

Detailed Description/Background:

CH2M's contract and task order were approved on December 19, 2019 through June 30, 2020 which was the anticipated end date for Phase 2 (2019). The Reservoir Committee approved Amendment 1B Work Plan on January 17, 2020 (refer to the below Prior Action) that included deliverables with target budgets for CH2M. The CH2M scope of work and budget has increased since the approval of the approved "Amendment 1B" Work Plan to include the following that is covered in Attachment A:

Increased level of effort to:

- a. Model changes in ranges of Reclamation participation.
- b. Changes in participant demand patterns.
- c. Increased level of effort for to support updated environmental and permitting analyses.
- d. Develop operational criteria and support the development of an updated operations plan.

The proposed budget for increased scope of work is estimated at \$99,893. Combined with the Amendment 1B Work Plan the total amended budget is \$993,000 for the period of January 1, 2020 through August 31, 2020.

The proposed amendment would also extend the task order period of performance from June 30, 2020 through August 31, 2020.

Prior Action:

January 17, 2020: Approved Amendment 1B Work Plan for the period of January 1, 2020 through August 31, 2020 as part of a no cost time extension to the then current Participation Agreement. The Amendment included summary-level

Status:	Final	Preparer:	Trapasso	Phase:	2	Version:	A
Purpose:	Staff Report	QA/QC:	Watson	Date:	2020 February 21		
Caveat:	Approval Action	Authority Agent:	Trapasso	Ref/File #:	12.221-210.018		
Notes:				Page:	1	of	2

descriptions of the deliverables with estimated Reservoir Committee budgets. Each deliverable budget was further defined in the document by the level of effort required to complete each deliverable by consultant for use in developing amended consultant task orders intended to be submitted for approval to the Reservoir Committee and Authority Board in February 2020.

December 19, 2019: Approved a recommendation to the Sites Project Authority to approve an amendment to CH2M Hill Engineers, Inc.'s (CH2M) (Operations Simulation Modeling) contract period of performance by extending their task order from December 31, 2019 through June 30, 2020 with no change in their cost

March 22, 2019: Approved a recommendation to the Sites Project Authority to approve both the consulting agreement with CH2M Hill Engineers, Inc. (CH2M) for Service Area D – Operations Simulation Modeling and the Phase 2 (2019) task order and budget for services April 1, 2019 through December 31, 2019.

November 16, 2018: Approved a recommendation to the Sites Project Authority to accept the evaluation panel's selection of CH2M for Service Area D – Operations Simulation Modeling.

August 16, 2018: Approved a recommendation to the Sites Project Authority to release of the Project Development Support Services RFQ-18-04.

Fiscal Impact/Funding Source:

No change to approved Amendment 1B Work Plan total budget.

Staff Contact:

Joe Trapasso

Attachments:

Attachment A: Task Order Amendment.



Sites Reservoir Project

Sites Project Authority Operations Simulation Modeling Task Order Amendment

Consultant: CH2M Hill Engineers, Inc.

Task Order No. 1.3

Task Order No. 1.3 supports the scope of services, budget, and schedule outlined in the Sites Project Authority's (Authority's) approved Amendment 1B to the Work Plan.

Task Order No. 1.3 amends the Consultant's Task Order scope of work, budget, and schedule as presented below. Reconciliation of the scope of work, budget, and schedule for the previous task order amendment (Task Order 1.2) will be conducted through another process. Thus, Task Order 1.3 is intended to be a "standalone" document for scope, budget, and schedule through the subject January 1, 2020 through August 31, 2020 performance period.

Scope of Services

This task order amendment scope of services, which includes tasks, deliverables and assumptions needed to support the Authority from January 1, 2020 through August 31, 2020 is provided in Attachment 1.

Budget

The budget for the scope of work in Attachment 1 is \$993,000. Budget details are provided in Attachment 2. Budgets for each individual task within the scope of services may be further refined in the early stages of the task order amendment as the priorities for each task are further defined by the Authority. All changes must be approved by the Authority in writing prior to proceeding with any changes.

The total budget for the task order is increased to \$1,979,209. The accounting for the task order budget change is provided in the below table.

Budget Component	Amount (\$)
Prior Approved Task Order Budget	\$1,231,548
Task Order Actual Spend through December 31, 2019	\$986,209
Task Order Budget January 1, 2020 through August 31, 2020 (Attachment 2)	\$993,000
Task Order Total Budget	\$1,979,209
Amendment Budget Change (total budget – prior approved)	\$747,661

Schedule

The period of performance for this task is extended from June 30, 2020 through August 31, 2020. A detailed schedule will be developed at a later time and will be included as Attachment 3 once finalized.

This Task Order, incorporating the above Attachments and Additional Contract Documents, is hereby executed by duly authorized representatives of the parties.

CONSULTANT

SITES PROJECT AUTHORITY

By: _____

By: _____

Printed Name: _____

Printed Name: _____

Date: _____

Date: _____

CH2M Engineers

Phase 2 Amendment 1B Scope of Services – Operations Simulation Modeling

2/17/20

This scope of services involves operations analyses needed to support the Sites Project Authority (Authority) through August 31, 2020. In general, this scope includes activities in support of the scope outlined in the Authority's Amendment 1B Work Plan.

Task D1 - Permitting and Resource Agency Technical Support

This task involves providing technical support for agency coordination and preparation of information needed for the Biological Assessment and permit applications. Additional technical analysis will be required after Amendment 1B to support the preparation of information for the Biological Assessment and permit applications.

CH2M may assist with the following tasks:

- Conduct analyses of Sites Reservoir proposed alternative to support preparation of the biological assessment. The ROC on LTO Current Conditions study from USBR will be used for without project at current conditions.
- Evaluate the environmental benefits of up to two revised operations scenarios. The team will conduct iterative modeling using the CalSim model, Daily model, along with Sacramento River HEC-5Q temperature modeling, SALMOD scenarios to verify temperature model scenarios, and DSM2 model scenarios.
- Conduct daily sensitivity analysis modeling (up to 10 scenarios) to support discussions with permitting/resource agencies and NGOs
- Evaluate potential physical effects (water stage, flow rate, discharge amount) of Sites Reservoir diversions on Sacramento River ecologically-important riverine habitats and features for two scenarios, including riparian, seasonal wetlands, and floodplain habitats, as well as side-channel and back-channel areas.
- Attend meetings with Authority and permitting/resource agency staff

Assumptions:

- Analysis will utilize analysis tools developed previously.

Task Budget: \$100,000

Deliverables:

- Daily modeling analysis results
- CalSim model and analytical results in format consistent with permit application deliverables
- Results of side-channel habitat analysis and mapping

Task D2 - Environmental Documentation Support

Provide technical support to the Authority and its Participants with preparation of information needs for environmental planning and analysis documentation. Additional technical analysis will be required after Amendment 1B to support the preparation of environmental documents

CH2M will perform the following tasks:

- Conduct modeling analyses of Sites Reservoir for up to two proposed alternatives. Modeling work will be based on the modeling conducted in support of Task D1 using the ROC on LTO Current Conditions study. Computer code changes will be required to incorporate revised Sites Reservoir proposed alternative operations. The key models that will likely need to be updated as part of the analytical framework include:
 - CalSim II
 - USRDOM
 - Sacramento River HEC5Q model
 - American River HEC5Q Model
 - USBR Monthly Temperature Model
 - USBR early life stage mortality models
 - SALMOD,
 - OBAN
 - IOS,
 - DPM,
 - DSM2 HYDRO, DSM2 QUAL, DSM2 PTM,
 - Power models including LTGen, SWP Power and NODOS Power model (deferred to subsequent authorization)
 - Economics Models including LCPSIM/CWEST, SWAP, LCRBQM and OMWEM. (deferred to subsequent authorization)

- Attend meetings with Authority and resource agency staff

Assumptions:

- Use of modeling analytical framework developed previously.

Task Budget: \$356,853.00

Deliverables:

- CalSim model and analytical framework results in format consistent with Draft EIR/S deliverables
- Updated analytical framework models and tools
- Technical memorandum with summary of modeling methodology, assumptions, and results.

Task D3 - Operations Technical Support

This task involves work associated with providing the Authority and its Participants with technical support for a range of technical analyses.

Task D3.1— Reservoir Water Quality Model (deferred to subsequent authorization)

The US Army Corps of Engineers CE-QUAL-W2 computer model will be applied to the proposed Sites Reservoir to simulate temperature and dissolved oxygen in reservoir releases for a range of operational scenarios. Water quality analysis will likely be required after Amendment 1B to support the preparation of permit applications and environmental documents.

- Alternative operational scenarios will be investigated to determine the effects of outflow water quality and temperature. A maximum of 6 scenarios will be investigated and will likely involve variations in the inflow and outflow time series, annual patterns, and outflow location and depths in the reservoir.

Assumptions:

- Inflow water quality in the Sacramento River is available (from the RWQCP or other readily available sources).
- Temperature and dissolved oxygen are the primary variables of concern.
- Limited direct runoff from the local watershed will not be included as an input in the initial modeling effort.

Task Budget: \$30,000 Deferred

Deliverables:

- CE-QUAL-W2 modeling files
- Technical memorandum documenting model development and results

Task D3.2— Operations Rebalancing

Conduct operations evaluation to assess member demand patterns and how that influences operations, facilities capacities, system integration, and application of a storage vs delivery approach to participation.

CH2M will perform the following tasks:

- Refine CalSim model to allow for preliminary tracking and accounting of Sites Delta exports to south-of-Delta project participants.
- Update demand patterns for use of Sites water by project participants
- Evaluate Sites Project operations to provide water deliveries to meet south-of-delta project participant water supply needs. Conduct up to four model simulations of Delta Exporter

participant's delivery operations with the project under existing and California Water Fix proposed Delta conveyance.

- Conduct up to four CalSim model simulations to evaluate diversions, reservoir storage, and deliveries to evaluate alternative operational and regulatory regimes and sizing of facilities under updated demand conditions.
- Attend meetings with Authority members

Assumptions:

- Authority members will provide demand pattern information for use of Sites water.

Task Budget: \$100,000

Deliverables:

- Presentations to Operations Work Group
- Technical memorandum documenting model development and results

Task D3.3— Operations Technical Support

Provide technical analyses to support on-going operations evaluations regarding reservoir diversions, storage, deliveries and system integration.

CH2M may provide assistance with the following tasks:

- Provide technical support to Value Planning effort
- Provide updated storage to release ratio table
- Assist with development of an updated operations plan
- Assist with analysis of Sites operations in conjunction with CVP and SWP to refine criteria for annual exchanges with Shasta Lake in lieu of releases for CVP contractors and other CVP regulatory requirements.
- Use CalSim II model and other analytical tools developed for the Sites Reservoir Project to evaluate alternative operational and regulatory regimes.
- Conduct analyses to support development of the principles of agreement with Reclamation and DWR and associated agreement documents
- Support financial evaluations
- Evaluate integration with Sites Reservoir operations and other projects
- Assist with the refinement of the operations plans

Assumptions:

- Authority to provide direction on specific analyses to be conducted and deliverables.

Task Budget: \$200,000

Deliverables:

- Presentations to Operations Work Group

- Technical memorandum documenting results as needed

Task D4 — Project Management

This task involves work associated with project management and quality control in support of operations analyses conducted for the Sites Project.

Task D4.1— Project Management

This task includes monitoring project controls task budgets, reviewing labor and expense effort, and coordinating staffing requirements. This task may consist of, but not be limited to, the following activities:

- Generate and review invoice, including preparation of progress report
- Manage subconsultants (contracting, invoice review, etc.)
- Manage staff workload (including weekly tracking of burn rate)
- On-board new staff (approval by client, etc.)

Task Budget: \$31,147

Deliverables:

- Monthly invoice to client
- Subconsultant contracts/amendments
- Scope of work for next task order

Task D5—Expenses

This task includes subconsultant costs and all expenses related to travel, meals, etc.

B5.1 – Subconsultants

Subconsultants will include the following:

QEDA Consulting – OBAN model development and salmon life cycle modeling

Cramer Fish Sciences – IOS model development and salmon life cycle modeling

Natural Resources Scientists Inc. – Assistance with formulation of biological criteria and project operations

Task Budget: \$112,000

B5.2 – Travel and Parking

Expenses will cover the following to support the operations tasks.

- 10 round trips from Sacramento to Maxwell

- 10 round trips from Redding to Maxwell
- 10 round trips from Redding to Sacramento
- Reprographics, express deliveries, parking, and miscellaneous

Task Budget: \$5,000

Task D6 - Value Planning Refinements

This task involves technical support for Value Planning effort associated with conveyance facilities.

Task 1 – Meeting Attendance.

- Attend weekly value planning coordination meetings with Sites Authority Consultants
- Attend value planning group meetings, one per month for February, March and April
- Attend one reservoir committee meeting and one board meeting at request of value planning group chairs Rob Kunde or William Vanderwaal

Task 2 – Develop Conveyance Alternatives

Through the Value Planning effort, the project has been reduced from 1.8 MAF to a range of 1.3 to 1.0 MAF. As a result of the December 16, 2019 Value Planning workshop, more refinement of conveyance alternatives is required. This includes alternatives 6A and 6B, plus Dunnigan release from the south end of the TC canal to the Colusa Basin Drain and to the Sacramento River. This assumes a 750 cfs conveyance capacity to CBD or Sacramento River. This is at a pre-feasibility level of design. There are four alternatives to be refined.

- Obtain LiDAR topographical data for the project area south of Sites Reservoir and the Delevan Diversion from Jacobs files and DWR. This information will be used in this task and provided to the overall Sites Team.
- Develop pipeline/canal alignments as generally discussed on the January 14 , 2020 field trip. Develop associated graphics and cost estimates for the four alternatives in conjunction with the methods developed by AECOM and agreed to by the value planning group. This would include a day in the field to identify any major utility crossing.
- The results of this task will be documented in a technical memorandum that will be an appendix in the Value Planning Report.

Task 3 – Provide Refinement of Power/Transmission Costs

- Work with our subconsultant Vanderweil Engineers to refine the construction cost estimates for power/transmission costs since the Project has been downsized. This involves the tie in to WAPA and PGE main transmission lines.

Task Budget: \$88,000

Deliverables:

Engineering Facilities TM

Draft
CH2M Sites Operations Support
Phase 2 Amendment 1B Fee Summary
 Subject to Jacobs Internal Review
 Draft (Updated) 2/10/20

Task Description	Budget
Task D1 Permitting and Resource Agency Technical Support	\$ 100,000.00
Task D2 Environmental Document Support	\$ 356,853.00
Task D3.1 Water Quality Model (Deferred)	\$ -
Task D3.2 Operations Rebalancing	\$ 100,000.00
Task D3.3 Technical Support	\$ 200,000.00
Task D3 Total Operations Technical Support	\$ 300,000.00
Task D4 Total Project Management	\$ 31,147.00
Task D6 Value Planning	\$ 76,000.00
 Other Direct Costs	
Travel	\$ 3,000.00
Incidentals	\$ 2,000.00
Subconsultants	\$ 124,000.00
Subtotal Other Direct costs	\$ 129,000.00
<hr/> Total Fee	<hr/> \$ 993,000.00

Notes:

- 1) Defer Task D2 econ and power analysis
- 2) Defer task D3.1 water quality model \$30,000