

SITES PROJECT AUTHORITY
P.O. Box 517
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MAXWELL, CALIFORNIA 95955
www.SitesProject.org

JERRY BROWN, EXECUTIVE DIRECTOR
925.260.7417

YOLANDA TIRADO, CLERK
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Board of Directors

FRITZ DURST, RECLAMATION DISTRICT 108, CHAIR
JEFF SUTTON, TEHAMA-COLUSA CANAL AUTHORITY, VICE-CHAIR
GARY EVANS, COLUSA COUNTY SUPERVISOR
LEIGH MCDANIEL, GLENN COUNTY SUPERVISOR
LOGAN DENNIS, GLENN-COLUSA IRRIGATION DISTRICT
BRUCE HOUDESHEDT, PLACER COUNTY WATER AGENCY/CITY OF ROSEVILLE
DOUG PARKER, WESTSIDE WATER DISTRICT
JOE MARSH, COLUSA COUNTY WATER DISTRICT
JEFF HARRIS, CITY OF SACRAMENTO/SACRAMENTO COUNTY WATER AGENCY
DON BADER, BUREAU OF RECLAMATION (COST-SHARE PARTNER, NON-VOTING)
ROB COOKE, CA DEPARTMENT OF WATER RESOURCES (EX-OFFICIO, NON-VOTING)

Associate Members (NON-VOTING)

GREG JOHNSON, WESTERN CANAL WATER DISTRICT
JAMIE TRAYNHAM, TC 4 DISTRICTS

Notice: Pursuant to Executive Orders N-25-20 & N-33-20, issued by Governor Newsom on March 12, 2020, and guidance by the California Department of Public Health dated March 11, 2020, this meeting will be conducted by teleconference. The public may attend the meeting and offer public comments by phone, using the call-in number provided below, or in person, at the address above. Members of the Committee will participate by teleconference from other locations.

April 22, 2020 1:30 p.m.

Sites Project Authority

Agenda

Teleconference: **1-408-418-9388**

Code: **964 864 767**

[WebEx Link](#)

Welcome to a meeting of the Sites Joint Powers Authority. If you are scheduled to address the Board, please state your full name for the record. Regularly numbered items may be considered at any time during the meeting. All items are listed in accordance with the Ralph M. Brown Act. We invite all members of the public to attend.

CALL TO ORDER:

- Pledge of Allegiance.
- Introductions.
- Approve the April 22, 2020 Sites Project Authority Agenda.
- Announcement of Closed Session.
- Period of Public Comment.

1. Consent Agenda:

Approximate start time 1:35 pm

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The following items have been reviewed by the Executive Director. To his knowledge, there is no opposition to the action. The items can be acted on in one consolidated motion as recommended or may be removed from the Consent Calendar and separately considered at the request of any person.

- 1.1 Consider approval of the March 25, 2020 Sites Project Authority Meeting Minutes.
- 1.2 Consider acceptance of the Sites Project Authority Treasurer's Report. **(Attachment 1-2 A)**
- 1.3 Consider approval of the monthly Payment of Claims. **(Attachment 1-3A,B,C)**
- 1.4 Consider approval of a consulting agreement with CH2M Hill Engineers, Inc. (CH2M) for Service Area HC – Engineering Conveyance and approve an initial task order and budget in the not to exceed amount of \$597,023.00 for services through August 31, 2020. **(Attachment 1-4 A)**
- 1.5 Consider approval of a consulting agreement with AECOM for Service Area HR – Engineering Reservoir and approve an initial task order and budget for services in the not to exceed amount of \$599,381.00 for services through August 31, 2020. **(Attachment 1-5 A)**

2. Action Items:

Approximate start time 1:45 pm

- 2.1 Consider acceptance of the following items that reflect the direction to be taken in advancing the Project through the next stage of development:
 - a. Consider approval of the final report titled "Sites Project Value Planning Alternatives Appraisal Report, dated April 13, 2020" and the recommendations presented within and a recommendation to the Sites Project Authority to approve the final report titled "Sites Project Value Planning Alternatives Appraisal Report, April 13, 2020" and the recommendations presented within. **(Attachment 2-1.a A)**
 - b. Consider approval of the work plan with a period of performance of September 1, 2020 to December 31, 2021 for the following uses: Planning cash call timing for participating agencies, Producing a draft Exhibit A, "Amendment 2 Work Plan", to the Second Amendment to 2019 Reservoir Project Agreement and Developing consultant task orders for the next stage of project development. **(Attachment 2-1.b A)**
 - c. Consider approval of the draft Second Amendment to the 2019 Reservoir Project Agreement. **(Attachment 2-1.c A)**
 - d. Consider direction for staff to revise and recirculate a Draft Environmental Impact Report (EIR) to analyze the environmental effects of the options identified in the Final Sites Project Value Planning Alternatives Appraisal Report dated April 13, 2020 (Report), including VP7. **(Attachment 2-1.d A)**
- 2.2 Consider approval of the Sites Project message platform which has been incorporated into informational materials describing the results of the value planning effort and the proposed work plan and will be used for communicating the Project to all audiences. **(Attachments 2-2 A, B, C & D)**

- 2.3 Consider acceptance of the following actions by the Authority Board relative to the approved Organization Assessment (OA) Report as follows:
- Consider acceptance of the plan and schedule for addressing the report findings and recommendations. **(Attachment 2-3 A)**
 - Consider concurrence with the scope, schedule and budget for strategic planning facilitation services. **(Attachment 2-3 B)**
 - Consider approval to release a Request for Proposals for strategic planning facilitation services.

3. Discussion and Information Items: Approximate start time 3:00 pm

- 3.1 Review and comment on the letter received from participating member Wheeler Ridge-Maricopa Water Storage District (Wheeler Ridge) requesting a broad water right place of use commitment from the Project. **(Attachment 3-1 A & B)**
- 3.2 Review and comment on status of the Service Area G – Real Estate contract.

4. Reports: Approximate start time 3:30 pm

4.1 Member's Reports:

4.1.1 Chairpersons' Report:

This time is set aside to allow the Chair/Co-Chair an opportunity to disclose/discuss items related to the Sites Project.

4.1.2 Committee Chairpersons' Report:

This time is set aside to allow the Committee Chairpersons' an opportunity to disclose/discuss items related to the Sites Project.

4.1.3 Authority Board Participant Reports:

This time is set aside to allow Directors or their Alternates an opportunity to disclose/discuss items related to the Sites Project.

4.2 Executive Director's Report:

- Sites Project's monthly status report. **(Attachment 4-2 A)**
- Sites Project's monthly Proposition 1, WSIP activities and WIIN Act Funding. **(Attachment 4-2 B)**
- Reservoir Committee update.

RECESS:

5. Closed Session: Approximate start time 4:00 pm

5.1 Independent Contractor/Public Employee/Discipline/Dismissal/Release (Govt. Code §§ 54954.5(e) and 54857(b)(1)).

6. **Report from Closed Session:** Approximate start time 4:15 pm

7. **Future Meetings and Schedules:** Approximate start time 4:20 pm

7.1 Suggested Future Agenda Items.

7.2 Upcoming meetings:

RESERVOIR COMMITTEE

THURSDAY, MAY 21, 2020 1:00 PM
CALL NUMBER AND LOCATION TBD

AUTHORITY BOARD

WEDNESDAY, MAY 27, 2020 1:30 PM
CALL NUMBER AND LOCATION TBD

ADJOURN

PERIOD OF PUBLIC COMMENT: Any person may speak about any subject of concern, provided it is within the jurisdiction of the Directors and is not already on today's agenda. The total amount of time allotted for receiving such public communication shall be limited to a total of 15 minutes per issue and each individual or group will be limited to no more than 5 minutes each within the 15 minutes allocated per issue. **Note:** *No action shall be taken on comments made under this comment period.*

ADA COMPLIANCE: Upon request, agendas will be made available in alternative formats to accommodate persons with disabilities. In addition, any person with a disability who requires a modification or accommodation to participate or attend this meeting may request necessary accommodation. Please make your request to the Board Clerk, specifying your disability, the format in which you would like to receive this Agenda and any other accommodation required no later than 24 hours prior to the start of the meeting.

All supporting documentation is available for public inspection and review in the Sites Project Authority office located at 122 Old Highway 99 West Maxwell, CA 95955 during regular business hours 8:30 a.m. to 5:00 p.m., Monday through Friday.

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GREG JOHNSON, WESTERN CANAL WATER DISTRICT
JAMIE TRAYNHAM, TC 4 DISTRICTS

March 25, 2020 1:30 p.m.

Sites Project Authority

Minutes

The Sites Project Authority Board of Directors met in Regular Session on March 25, 2020 at the hour of 1:30 p.m. **Directors Present:** Fritz Durst, Chair, Jeff Sutton, Vice-Chair, Gary Evans, Logan Dennis, Doug Parker, Bruce Houdesheldt, Jeff Harris, Don Baber and Rob Cooke. **Alternate Directors Present:** Michael Azevedo, Ted Trimble, Natalie Wolder. (Other Alternate Directors that may be listed as present below, did not participate in the decision-making process). **Associate Members Present:** Jamie Traynham, Ted Trimble.

Staff present:

Jim Watson, General Manager
Scott Kuney, General Counsel
Jamie Traynham, Treasurer
Joe Trapasso, Ali Forsythe, Sites Project Authority
Yolanda Tirado, Board Clerk

Others present:

JP Robinette, Marcia Kivett, Brown and Caldwell
Ed Horton, PCWA
Robert Boling, Erin Heydinger, Lee Frederiksen, HDR.
Thad Bettner, GCID
Jerry Brown, Waterology Consulting
Laura Warner Herson, Phenix
Gary Darling, Darling H2O
Connor McDonald
Sara Katz, Katz and Associates

Mr. Watson provided a brief update on the process to be used for this meeting (Remotely held).

Pledge of Allegiance.

INTRODUCTION:

Chairman Durst asked those present to introduce themselves.

AGENDA APPROVAL:

Action: It was moved by Director Harris, seconded by Director Sutton to approve the March 25, 2020 Sites Project Authority Agenda, as submitted. Motion carried: All those Directors present voted yes.

MINUTES APPROVAL:

Action: It was moved by Director Dennis, seconded by Director Sutton to approve the Minutes of the February 26, 2020 Sites Project Authority Minutes, as submitted. Motion carried: All those Directors present voted yes, with the exception of Director Houdesheldt who abstained.

ANNOUNCEMENT OF CLOSED SESSION:

Mr. Kuney announced the Authority Board would be considering Closed Session as follows:

Public Employee Appointment (Gov. Code, § 54957)
Title: Executive Director

PERIOD OF PUBLIC COMMENT:

Chairman Durst called for a period of public comment. Hearing none, he closed the period of public comment.

Chairman Durst stated he was having issues with his connection and asked Vice-chair Sutton to continue with the meeting until he could resolve those issues.

Vice-chair Sutton continues Agenda Item numbers 1 through 1.1 for the presence of Chair Durst as follows:

1. CHAIRPERSONS' REPORT:

This time is set aside to allow the Chair &/or Vice Chair an opportunity to disclose/discuss items related to the Sites Project; including any meetings with external stakeholders to advance the Sites Project.

- 1.1 Conduct Authority Board Election for the position of Secretary for calendar year 2020.

2. BOARD MEMBER REPORTS: (No action will be taken)

This time is set aside to give the Directors an opportunity to disclose/ discuss items related to the Sites Project; including any meetings with external stakeholders to advance the Sites Project.

None.

3. CONSENT AGENDA:

None.

4. MANAGER'S REPORT:

4.1 Discussion and possible direction to staff regarding the Sites Project's monthly status report. **(Attachment 4-1A)**

Mr. Watson provided a brief overview of project activities performed in the months of March and April 2020 as follows:

- Continue to advance Value Planning and Affordability Analyses.
- Continue to support Reclamation on completion of their Feasibility Report, including the coordination of biological and cultural monitoring along with land access for the NODOS Feasibility Geotechnical Investigations.
- Continue to conduct landowner coordination activities.
- Continue efforts to develop the Work Plan through December 2021.
- Delaying approval of engineering task order materials including scope, budget and schedule for service areas HC (Conveyance) and HR (Reservoir).

4.2 Discussion and possible direction to staff regarding Proposition 1, WSIP activities and WIIN Act Funding.

Mr. Watson provided a review of Proposition 1, WSIP activities and WIIN Act Funding as follows:

Proposition 1:

- Submitting next Invoice to CWC by end of week in the amount of \$1.9m.
- Submitting next Quarterly Report in April.
- California Water Commission did not hold their meeting March 18, 2020 and will not reconvene again until May 20, 2020.

USDA: Nothing to report.

Federal Appropriations:

Responded to questions from Senator Feinstein in advance of the Appropriations Hearing with the questions focused on the schedule and cost to complete Feasibility Study and EIS.

Ms. Kennedy provided a brief update on the progress/schedule of their Feasibility Report. Brief discussion followed with no action taken.

Chairman Durst is now present.

1. **CHAIRPERSONS' REPORT:**

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This time is set aside to allow the Chair &/or Vice Chair an opportunity to disclose/discuss items related to the Sites Project; including any meetings with external stakeholders to advance the Sites Project.

Chairman Durst and Mr. Darling provided an update regarding the following:

- Facilitator for the strategic planning.
- Executive Director selection.

Brief discussion followed with no action taken.

- 1.1 Conduct Authority Board Election for the position of Secretary for calendar year 2020.

Chairman Durst stated Ms. Tirado was appointed to the position of Secretary at the previous Authority Board meeting in error and a Secretary position for calendar year 2020 still needs to be appointed. He further stated the matter before the Board is the election of the Secretary position for calendar year 2020. Director Harris nominated Director Dennis as the Secretary of The Sites Project Authority for calendar year 2020.

Chairman Durst called for further nominations. Hearing none, he closed the nominations for the Secretary position.

Action: It was moved by Director Houdesheldt, seconded by Director Sutton to appoint Director Dennis as the Secretary of the Sites Project Authority for calendar year 2020. Motion carried: All those Directors present voted yes.

5. 2019 FINANCE & BUDGET AD HOC COMMITTEE:

- 5.1 Accept the Treasurer's Report. **(Attachment 5-1A)**

Action: It was moved by Director Evans, seconded by Director Dennis to accept the Treasurer's Report, as submitted. Motion carried: All those Directors present voted yes.

- 5.2 Consider approval of the monthly Payment of Claims. **(Attachment 5-2A & B)**

Action: It was moved by Director Harris, seconded by Director Houdesheldt to approve the monthly Payment of Claims, as submitted. Motion carried: All those Directors present voted yes.

6. Phase 2 (2019) RESERVOIR COMMITTEE:

- 6.1 Report on the March 19, 2020 Phase 2 (2019) Reservoir Committee meeting. **(Attachment 6-1A & B)**

Mr. Bettner and Mr. Watson provided a review of actions approved and matters discussed at the March 19, 2020 Phase 2 (2019) Reservoir Committee meeting.

Chairman Durst stated the Joint Reservoir Committee and Authority Board Workshop to be held on March 30, 2020 is very important and encouraged

all participants and their alternates and their Home Board members to attend.

- 6.2 Discussion and possible direction to staff regarding value planning efforts and the next steps to develop an updated project description.

Mr. Watson provided an update on the value planning efforts stating it is near completion. He also spoke to the updated project description, EIR recirculation and the EIS. Brief discussion followed with no action taken.

- 6.3 Discussion and possible direction to staff regarding the development of the updated work plan for the period of performance starting September 1, 2020 and ending December 31, 2021 in accordance with a proposed Amendment 2 to the current Participation Agreement.

Mr. Watson provided a brief update on the value planning process and an updated work plan through December 31, 2021. He stated the work plan would need to be approved in April, with a summary of the work plan to be included in the Home Board packet. He stated after April the work plan would continue to be advanced.

Mr. Robinette provided an overview of the proposed process for developing a Work Plan and an overall schedule of work to be completed for September 2020 through December 2021 and spoke to the following:

- Process and schedule to execute Amendment 2 Agreement.
- Goals and objectives through end of 2021.
- Status of Work Plan schedule.
- Status of Work Plan budget.
- Preliminary scope by subject and deferred work.
- Revenue and Assumptions.
- Preliminary Cash Call invoice schedule.
- Preliminary Cash Flow for Reservoir Committee and Authority Board.
- Preliminary Key Consultant Cost Allocation by Subject (Reservoir Committee Funded).
- Environmental Planning Lead and Support (Draft and Final EIR/EIS, Prop 1 Feasibility Report and Public benefit agreements-Prop 1).
- Permitting Lead and Support.
- GO/No-Go decision points.
- Contributed credit (not included in budget/work plan).

Ms. Traynham stated at the Reservoir Committee meeting held on March 19, 2020 a roll call was taken of all the participants regarding deferring the contributed credit and reimbursement of same. She stated following the roll call it was unanimously decided not to provide any reimbursement at this time.

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Brief discussion followed with no action taken.

- 6.4 Discussion and possible direction to staff regarding the proposed amendment to the current participation agreement and supporting documents.

Mr. Watson and staff/consultants provided an update of supporting documents to be included in the home board package in April as follows:

- Amended Phase 2 Participation Agreement with updated work plan.
- Value Planning Report.
- Draft Storage Policy.
- 2019 Annual Report.
- A four-page prospectus and a template PowerPoint for presentation to respective home boards.

Brief discussion followed with no action taken.

7. **2019 POLICY & GOVERNANCE AD HOC COMMITTEE:**

None.

8. **2019 LEGISLATIVE & OUTREACH AD HOC COMMITTEE:**

Discussion and possible direction to staff regarding federal and state governmental affairs/legislative, stakeholder engagement and communications activity.

Director Sutton provided a brief update regarding federal and state governmental affairs/legislative, stakeholder engagement and communications activities as follows:

Legislative Day scheduled for late March has been cancelled/postponed indefinitely.

- DC trip has been rescheduled.
- Support of Senator Feinstein Bill re: WIIN Act.
- Exploring multiple opportunities for project dollars.
- Stimulus funding.
- Value planning efforts and recirculation of the EIR.

9. **2019 LAND MANAGEMENT AD HOC COMMITTEE:**

Discussion and possible direction to staff regarding real estate, land management, site facility activities and early geotechnical explorations.

None.

RECESS:

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Chairman Durst declared a recess at 3:07 p.m. and convened into Closed Session at 3:12 p.m. to consider the following matter:

10. Closed Session:

- 10.1 Public Employee Appointment (Gov. Code, § 54957)
Title: Executive Director

Chairman Durst adjourned Closed Session at 3:47 p.m. and reconvened into Regular Session.

11. Report from Closed Session:

Mr. Kuney stated as to Closed Session regarding the Public Employee Appointment (Gov. Code Section 54957) Title: Executive Director, he announced at the conclusion of the Authority Closed Session, the Authority Board voted unanimously to approve the selection of an Executive Director for the Sites Project Authority; Mr. Jerry Brown, Principal and CEO of Waterology Consulting. Further, the Authority Board approved the form and execution of an agreement between the Sites Project Authority and Mr. Brown (Waterology consulting) to serve as the Executive Director of the Sites Project.

Chairman Durst adjourned the meeting at 3:54 p.m. to reconvene on April 22, 2020 at the hour of 1:30 p.m.

Fritz Durst, Chairman

Yolanda Tirado, Board Clerk



Topic: **Authority Board Agenda Item 1-2**

2020 April 22

Subject: **Treasurer's Report**

Requested Action:

Consider acceptance of the Sites Project Authority Treasurer's Report as presented in Attachment 1-2A.

Detailed Description/Background:

Attachment 1-2A incorporates financial information through March 31, 2020.

Prior Action:

None.

Fiscal Impact/Funding Source:

None.

Staff Contact:

Joe Trapasso

Attachments:

Attachment A: April 2020 Treasurer's Report.

Status: Final
Purpose: Staff Report
Caveat: Informational
Notes:

Preparer: Trapasso
QA/QC:
Authority Agent: Trapasso

Phase: 2 Version: A
Date: 2020 April 22
Ref/File #: 10.700
Page: 1 of 1

SITES JOINT POWERS AUTHORITY

TREASURER'S REPORT

March 31, 2020

Savings Account-River City Bank

Beginning Balance	03/01/2020	\$ 3,015,612.46	
Interest Earned		\$ 3,970.85	
River City Bank ICS Savings Account Balance	03/31/2020		\$ 3,019,583.31

General Operating Checking Account-River City Bank

Beginning Balance	03/01/2020	\$ 1,325,257.51	
RECEIVED:			
Interest Earned		\$ 1,733.96	
TOTAL RECEIVED		\$ 1,733.96	
DISBURSED:			
Bank Fees		\$ (162.62)	
Administrative Support		\$ (4,983.30)	
Computer Service		\$ (932.08)	
General Manager		\$ (39,865.70)	
Office Expenses		\$ (1,896.86)	
Professional Fees-Legislative/Regulatory		\$ (8,000.00)	
Professional Fees-Communication		\$ (19,652.49)	
Professional Fees-Organizational Assessment		\$ (7,673.14)	
Professional Fees-Fed Gov't Affairs Support		\$ (15,000.00)	
Professional Fees-Legal Services		\$ (8,143.27)	
TOTAL DISBURSED		\$ (106,309.46)	
RCB General Checking Account Balance	03/31/2020		\$ 1,220,682.01

State (WSIP) Fund Checking Account-River City Bank

Beginning Balance	03/01/2020	\$ 5,703,753.80	
DISBURSED:			
Bus/Comm Manager		\$ (21,589.46)	
Program Op Manager		\$ (29,107.10)	
Tribal Council		\$ (3,885.55)	
Professional Fees-Engineering		\$ (38,838.46)	
Professional Fees-Special Legal		\$ (18,450.90)	
Professional Fees-Project Controls		\$ (106,709.01)	
Professional Fees-Operations/SIM Modeling		\$ (60,522.55)	
Professional Fees-EPP Manager		\$ (30,660.62)	
Professional Fees-Geotech Eng		\$ (8,744.05)	
Professional Fees-Project Integration		\$ (172,196.08)	
Professional Fees-Permitting/Agreements		\$ (41,235.90)	
Professional Fees-Reservoir Operations		\$ (1,101.00)	
Professional Fees-Municipal Advisor		\$ (1,925.00)	
Professional Fees-Env/Biological Serv & Permit		\$ -	
TOTAL DISBURSED		\$ (534,965.68)	
RCB State Fund Checking Account Balance	03/31/2020		\$ 5,168,788.12

TOTAL CASH ON HAND	March 31, 2020	\$ 9,409,053.44
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Sites Project Joint Powers Authority
Transactions by Account
As of March 31, 2020

Type	Date	Num	Name	Memo	Debit	Credit	Balance
River City ICS Savings							3,015,612.46
General Journal	03/31/2020	3-1C		rec int fme	3,970.85		3,019,583.31
Total River City ICS Savings					3,970.85	0.00	3,019,583.31
River City Operating Account							1,325,257.51
Bill Pmt -Check	03/12/2020	2114	Adepi Solutions Inc			932.08	1,324,325.43
Bill Pmt -Check	03/12/2020	2115	Darling H2O Consulting, Inc.			7,673.14	1,316,652.29
Bill Pmt -Check	03/12/2020	2116	Dunn Consulting			8,000.00	1,308,652.29
Bill Pmt -Check	03/12/2020	2117	J.C. Watson, Inc			39,865.70	1,268,786.59
Bill Pmt -Check	03/12/2020	2118	Katz and Associates, Inc			19,652.49	1,249,134.10
Bill Pmt -Check	03/12/2020	2119	M.R. Cleaning Services			200.00	1,248,934.10
Bill Pmt -Check	03/12/2020	2120	Maximun Pest Control			65.00	1,248,869.10
Bill Pmt -Check	03/12/2020	2121	Mt Shasta Spring Water			47.65	1,248,821.45
Bill Pmt -Check	03/12/2020	2122	Recology Butte Colusa Counties			35.95	1,248,785.50
Bill Pmt -Check	03/12/2020	2123	Rush Personnel Services, Inc			4,983.30	1,243,802.20
Bill Pmt -Check	03/12/2020	2124	The Ferguson Group			15,000.00	1,228,802.20
Bill Pmt -Check	03/12/2020	2125	US Bank			1,548.26	1,227,253.94
Bill Pmt -Check	03/12/2020	2126	Young Wooldridge LLP			8,143.27	1,219,110.67
General Journal	03/31/2020	3-2C		rec int fme	1,733.96		1,220,844.63
General Journal	03/31/2020	3-3C		Bank service fee		162.62	1,220,682.01
Total River City Operating Account					1,733.96	106,309.46	1,220,682.01
River City State Fund Checking							5,703,753.80
Bill Pmt -Check	03/12/2020	1013	AECOM Technical Services, Inc.			38,838.46	5,664,915.34
Bill Pmt -Check	03/12/2020	1014	Brown and Caldwell			106,709.01	5,558,206.33
Bill Pmt -Check	03/12/2020	1015	CH2M Hill Engineers, Inc			60,522.55	5,497,683.78
Bill Pmt -Check	03/12/2020	1016	Colusa Indian Community Council			3,885.55	5,493,798.23
Bill Pmt -Check	03/12/2020	1017	Forsythe Group LLC			30,660.62	5,463,137.61
Bill Pmt -Check	03/12/2020	1018	Fugro USA Land, Inc			8,744.05	5,454,393.56
Bill Pmt -Check	03/12/2020	1019	HDR Engineering Inc			172,196.08	5,282,197.48
Bill Pmt -Check	03/12/2020	1020	ICF Jones & Stokes Inc			41,235.90	5,240,961.58
Bill Pmt -Check	03/12/2020	1021	MBK Engineers Inc			1,101.00	5,239,860.58
Bill Pmt -Check	03/12/2020	1022	Montague DeRose and Associat...			1,925.00	5,237,935.58
Bill Pmt -Check	03/12/2020	1023	Perkins Coie LLP			18,450.90	5,219,484.68
Bill Pmt -Check	03/12/2020	1024	Spesert Consulting			21,589.46	5,197,895.22
Bill Pmt -Check	03/12/2020	1025	Trapusso Consulting Services			29,107.10	5,168,788.12
Total River City State Fund Checking					0.00	534,965.68	5,168,788.12
US Bank Checking							0.00
Total US Bank Checking							0.00
TOTAL					5,704.81	641,275.14	9,409,053.44

Sites Project Joint Powers Authority
Balance Sheet
As of March 31, 2020

	Mar 31, 20
ASSETS	
Current Assets	
Checking/Savings	
River City ICS Savings	3,019,583.31
River City Operating Account	1,220,682.01
River City State Fund Checking	5,168,788.12
Total Checking/Savings	9,409,053.44
Accounts Receivable	
Accounts Rec Members	
Membership - Authority	123,000.00
Membership - Reservoir	11,329.72
Total Accounts Rec Members	134,329.72
Grants Receivable	
California Water Commission	1,957,712.12
Total Grants Receivable	1,957,712.12
Total Accounts Receivable	2,092,041.84
Total Current Assets	11,501,095.28
TOTAL ASSETS	11,501,095.28
LIABILITIES & EQUITY	
Liabilities	
Current Liabilities	
Accounts Payable	
Accounts Payable	880,541.39
Total Accounts Payable	880,541.39
Total Current Liabilities	880,541.39
Long Term Liabilities	
Participant Reimbursement Polic	6,064,652.67
Total Long Term Liabilities	6,064,652.67
Total Liabilities	6,945,194.06
Equity	
Net Assets	1,929,216.58
Retained Earnings	2,194,599.73
Net Income	432,084.91
Total Equity	4,555,901.22
TOTAL LIABILITIES & EQUITY	11,501,095.28

Sites Project Joint Powers Authority
A/R Aging Summary
As of March 31, 2020

	Current	1 - 30	31 - 60	61 - 90	> 90	TOTAL
Antelope Valley - East Kern Water Agency	0.00	0.00	0.00	0.00	16,317.92	16,317.92
CA Department of Water Resources	0.00	1,957,712.12	0.00	0.00	0.00	1,957,712.12
City of American Canyon	0.00	0.00	0.00	0.00	-4,988.20	-4,988.20
County of Glenn	0.00	0.00	55,000.00	0.00	0.00	55,000.00
Westside Water District	0.00	0.00	55,000.00	0.00	0.00	55,000.00
Yolo County Flood Control	0.00	0.00	0.00	0.00	13,000.00	13,000.00
TOTAL	0.00	1,957,712.12	110,000.00	0.00	24,329.72	2,092,041.84

Sites Project Joint Powers Authority
A/R Aging Summary - UPDATED
As of April 13, 2020

	Current	1 - 30	31 - 60	61 - 90	> 90	TOTAL
Antelope Valley - East Kern Water Agency	0.00	0.00	0.00	0.00	16,317.92	16,317.92
CA Department of Water Resources	0.00	1,957,712.12	0.00	0.00	0.00	1,957,712.12
City of American Canyon	0.00	0.00	0.00	0.00	-4,988.20	-4,988.20
County of Glenn	0.00	0.00	55,000.00	0.00	0.00	55,000.00
Yolo County Flood Control	0.00	0.00	0.00	0.00	13,000.00	13,000.00
TOTAL	<u>0.00</u>	<u>1,957,712.12</u>	<u>55,000.00</u>	<u>0.00</u>	<u>24,329.72</u>	<u>2,037,041.84</u>

Sites Project Joint Powers Authority
A/P Aging Summary
As of March 31, 2020

	Current	1 - 30	31 - 60	61 - 90	> 90	TOTAL
Adept Solutions Inc	672.20	239.55	0.00	0.00	0.00	911.75
AECOM Technical Services, Inc.	27,322.61	0.00	0.00	0.00	0.00	27,322.61
Brown and Caldwell	117,724.88	118,988.73	0.00	0.00	0.00	236,713.61
CH2M Hill Engineers, Inc	0.00	99,525.41	0.00	0.00	0.00	99,525.41
Darling H2O Consulting, Inc.	11,727.84	0.00	0.00	0.00	0.00	11,727.84
Dunn Consulting	8,000.00	0.00	0.00	0.00	0.00	8,000.00
Forsythe Group LLC	30,349.03	0.00	0.00	0.00	0.00	30,349.03
Fugro USA Land, Inc	11,187.16	0.00	0.00	0.00	0.00	11,187.16
HDR Engineering Inc	196,668.86	0.00	0.00	0.00	0.00	196,668.86
ICF Jones & Stokes Inc	69,605.46	0.00	14,967.02	0.00	0.00	84,572.48
J.C. Watson, Inc	40,026.70	0.00	0.00	0.00	0.00	40,026.70
Katz and Associates, Inc	0.00	12,716.11	0.00	0.00	0.00	12,716.11
KCoe Isom, LLP	3,195.00	1,695.00	0.00	0.00	0.00	4,890.00
M.R. Cleaning Services	100.00	0.00	0.00	0.00	0.00	100.00
Maximun Pest Control	65.00	0.00	0.00	0.00	0.00	65.00
MBK Engineers Inc	11,200.00	0.00	0.00	0.00	0.00	11,200.00
Montague DeRose and Associates, LLC	0.00	5,350.00	0.00	0.00	0.00	5,350.00
Mt Shasta Spring Water	42.00	0.00	9.65	0.00	0.00	51.65
Perkins Coie LLP	0.00	11,952.00	0.00	0.00	0.00	11,952.00
Recology Butte Colusa Counties	35.95	0.00	0.00	0.00	0.00	35.95
Rush Personnel Services, Inc	6,813.45	0.00	0.00	0.00	0.00	6,813.45
Spesert Consulting	21,490.64	0.00	0.00	0.00	0.00	21,490.64
The Ferguson Group	0.00	15,000.00	0.00	0.00	0.00	15,000.00
Trapasso Consulting Services	28,449.40	0.00	0.00	0.00	0.00	28,449.40
US Bank	493.24	0.00	0.00	0.00	0.00	493.24
Young Wooldridge LLP	14,928.50	0.00	0.00	0.00	0.00	14,928.50
TOTAL	600,097.92	265,466.80	14,976.67	0.00	0.00	880,541.39

Sites Project Joint Powers Authority
Profit & Loss
March 2020

	Mar 20	Jan - Mar 20
Ordinary Income/Expense		
Income		
Membership Admin/Authority	0.00	505,000.00
Prop 1 Funding	1,957,712.12	1,957,712.12
Total Income	1,957,712.12	2,462,712.12
Gross Profit	1,957,712.12	2,462,712.12
Expense		
Accounting Expense	3,195.00	9,504.00
Admin Support Gen Manager	6,813.45	15,677.55
Bank Service Fees	162.62	516.43
General Manager Services	40,026.70	119,733.40
Total General Manager	40,026.70	119,733.40
Insurance - Property	0.00	250.00
Insurance Liability	0.00	1,604.25
Office Expenses		
Cleaning	100.00	500.00
Misc Office & Operating Exp	493.24	2,338.21
Pest Control & Maintenance	65.00	195.00
Trash Service	35.95	107.85
Water Expense	42.00	148.90
Total Office Expenses	736.19	3,289.96
Professional Fees		
Bus/Comm Manager	21,490.64	66,058.09
Communication	12,716.11	49,345.66
Cost Development Model	0.00	710.60
Cultural Study	0.00	3,885.55
Engineering & Technical Service	27,322.61	90,542.25
Env/Biological Services	25,725.74	40,692.76
EPP Manager	30,349.03	92,059.09
Federal Government Affairs Supp	15,000.00	45,000.00
General Legal Counsel	14,928.50	31,214.76
Geotechnical Engineering	11,187.16	24,410.17
Legislative/Reg/Strategic	8,000.00	24,000.00
Municipal Advisor	5,350.00	17,800.00
Operations/Simulation Modeling	99,525.41	218,787.72
Organizational Assessment	11,727.84	28,394.03
Permitting & Agreements	43,879.72	106,879.57
Program Ops Manager	28,449.40	86,510.24
Project Controls	236,713.61	418,354.75
Project Integration	196,668.86	506,861.02
Real Estate	0.00	761.67
Reservoir Operations	11,200.00	12,301.00
Special Legal	11,952.00	30,402.90
Total Professional Fees	812,186.63	1,894,971.83
Website, Data, Computer Support	911.75	3,414.42
Total Expense	864,032.34	2,048,961.84
Net Ordinary Income	1,093,679.78	413,750.28
Other Income/Expense		
Other Income		
Interest Income		
Interest Income-River City	5,704.81	18,334.63
Total Interest Income	5,704.81	18,334.63
Total Other Income	5,704.81	18,334.63

FOR MANAGEMENT PURPOSES ONLY

Sites Project Joint Powers Authority
Profit & Loss
March 2020

	Mar 20	Jan - Mar 20
Net Other Income	5,704.81	18,334.63
Net Income	<u>1,099,384.59</u>	<u>432,084.91</u>

Sites Project Joint Powers Authority
Transaction Detail By Account
March 2020

Type	Date	Num	Name	Memo	Class	Debit	Credit	Balance
Prop 1 Funding								
Invoice	03/30/2020	04	CA Department of Water R...	Invoice submitted with detail f...	Reservoir		1,957,712.12	1,957,712.12
Total Prop 1 Funding						0.00	1,957,712.12	1,957,712.12
Accounting Expense								
Bill	03/31/2020	KC080505	KCoe Isom, LLP	3/20	Authority	639.00		-639.00
Bill	03/31/2020	KC080505	KCoe Isom, LLP	3/20	Reservoir	2,556.00		-3,195.00
Total Accounting Expense						3,195.00	0.00	-3,195.00
Admin Support Gen Manager								
Bill	03/10/2020	135773	Rush Personnel Services, ...	2/20	Authority	255.78		-255.78
Bill	03/10/2020	135773	Rush Personnel Services, ...	2/20	Reservoir	1,023.12		-1,278.90
Bill	03/10/2020	135774	Rush Personnel Services, ...	3/20	Authority	211.68		-1,490.58
Bill	03/10/2020	135774	Rush Personnel Services, ...	3/20	Reservoir	846.72		-2,337.30
Bill	03/24/2020	136062	Rush Personnel Services, ...	3/20	Authority	273.42		-2,610.72
Bill	03/24/2020	136062	Rush Personnel Services, ...	3/20	Reservoir	1,093.68		-3,704.40
Bill	03/24/2020	136063	Rush Personnel Services, ...	3/20	Authority	273.42		-3,977.82
Bill	03/24/2020	136063	Rush Personnel Services, ...	3/20	Reservoir	1,093.68		-5,071.50
Bill	03/31/2020	136310	Rush Personnel Services, ...	3/20	Authority	70.56		-5,142.06
Bill	03/31/2020	136310	Rush Personnel Services, ...	3/20	Reservoir	282.24		-5,424.30
Bill	03/31/2020	136311	Rush Personnel Services, ...	3/20	Authority	277.83		-5,702.13
Bill	03/31/2020	136311	Rush Personnel Services, ...	3/20	Reservoir	1,111.32		-6,813.45
Total Admin Support Gen Manager						6,813.45	0.00	-6,813.45
Bank Service Fees								
General J...	03/31/2020	3-3C		Bank service fee	Authority	102.45		-102.45
General J...	03/31/2020	3-3C		Bank service fee	Reservoir	60.17		-162.62
Total Bank Service Fees						162.62	0.00	-162.62
General Manager Services								
Bill	03/31/2020	SPA-056	J.C. Watson, Inc	3/20	Authority	6,818.95		-6,818.95
Bill	03/31/2020	SPA-056	J.C. Watson, Inc	3/20	Reservoir	33,207.75		-40,026.70
Total Services						40,026.70	0.00	-40,026.70
Total General Manager						40,026.70	0.00	-40,026.70
Office Expenses								
Cleaning								
Bill	03/31/2020	24	M.R. Cleaning Services	3/20	Authority	100.00		-100.00
Total Cleaning						100.00	0.00	-100.00
Misc Office & Operating Exp								
Bill	03/31/2020	Online 4/2	US Bank	3/20	Authority	10.00		-10.00
Bill	03/31/2020	Online 4/2	US Bank	3/20	Reservoir	483.24		-493.24
Total Misc Office & Operating Exp						493.24	0.00	-493.24
Pest Control & Maintenance								
Bill	03/18/2020	50632	Maximun Pest Control	3/20	Authority	65.00		-65.00
Total Pest Control & Maintenance						65.00	0.00	-65.00
Trash Service								
Bill	03/31/2020	37097961	Recology Butte Colusa Co...	3/20	Authority	35.95		-35.95
Total Trash Service						35.95	0.00	-35.95
Water Expense								
Bill	03/12/2020	477741	Mt Shasta Spring Water	3/20	Authority	42.00		-42.00
Total Water Expense						42.00	0.00	-42.00
Total Office Expenses						736.19	0.00	-736.19
Professional Fees								
Bus/Comm Manager								
Bill	03/31/2020	04-20	Spesert Consulting	3/20	Reservoir	21,490.64		-21,490.64
Total Bus/Comm Manager						21,490.64	0.00	-21,490.64
Communication								
Bill	03/13/2020	41367	Katz and Associates, Inc	2/20 (C)	Authority	7,629.66		-7,629.66
Bill	03/13/2020	41367	Katz and Associates, Inc	2/20 (C)	Reservoir	5,086.45		-12,716.11
Total Communication						12,716.11	0.00	-12,716.11
Engineering & Technical Service								
Bill	03/31/2020	2000342942	AECOM Technical Service...	3/20	Reservoir	27,322.61		-27,322.61
Total Engineering & Technical Service						27,322.61	0.00	-27,322.61
Env/Biological Services								
Bill	03/31/2020	0145837	ICF Jones & Stokes Inc	2/20 (Environ.) (E)	Reservoir	25,725.74		-25,725.74
Total Env/Biological Services						25,725.74	0.00	-25,725.74
EPP Manager								
Bill	03/31/2020	SPA-202003	Forsythe Group LLC	3/20	Reservoir	30,349.03		-30,349.03

Sites Project Joint Powers Authority Transaction Detail By Account

March 2020

Type	Date	Num	Name	Memo	Class	Debit	Credit	Balance
Total EPP Manager						30,349.03	0.00	-30,349.03
Federal Government Affairs Supp								
Bill	03/01/2020	0320165	The Ferguson Group	3/20	Authority	7,500.00		-7,500.00
Bill	03/01/2020	0320165	The Ferguson Group	3/20	Reservoir	7,500.00		-15,000.00
Total Federal Government Affairs Supp						15,000.00	0.00	-15,000.00
General Legal Counsel								
Bill	03/31/2020	64465	Young Wooldridge LLP	3/20	Authority	6,955.63		-6,955.63
Bill	03/31/2020	64465	Young Wooldridge LLP	3/20	Reservoir	7,972.87		-14,928.50
Total General Legal Counsel						14,928.50	0.00	-14,928.50
Geotechnical Engineering								
Bill	03/31/2020	04.7219003...	Fugro USA Land, Inc	3/20 (I)	Reservoir	11,187.16		-11,187.16
Total Geotechnical Engineering						11,187.16	0.00	-11,187.16
Legislative/Reg/Strategic								
Bill	03/31/2020	Letter	Dunn Consulting	3/20	Authority	4,000.00		-4,000.00
Bill	03/31/2020	Letter	Dunn Consulting	3/20	Reservoir	4,000.00		-8,000.00
Total Legislative/Reg/Strategic						8,000.00	0.00	-8,000.00
Municipal Advisor								
Bill	03/20/2020	4829SITES	Montague DeRose and As...	2/20	Reservoir	5,350.00		-5,350.00
Total Municipal Advisor						5,350.00	0.00	-5,350.00
Operations/Simulation Modeling								
Bill	03/10/2020	D3205400-011	CH2M Hill Engineers, Inc	2/20 (D)	Reservoir	99,525.41		-99,525.41
Total Operations/Simulation Modeling						99,525.41	0.00	-99,525.41
Organizational Assessment								
Bill	03/31/2020	119	Darling H2O Consulting, Inc.	3/20	Authority	11,727.84		-11,727.84
Total Organizational Assessment						11,727.84	0.00	-11,727.84
Permitting & Agreements								
Bill	03/31/2020	0145839	ICF Jones & Stokes Inc	2/20 (Permitting) (F)	Reservoir	43,879.72		-43,879.72
Total Permitting & Agreements						43,879.72	0.00	-43,879.72
Program Ops Manager								
Bill	03/31/2020	SPA 17-30	Trapasso Consulting Servi...	3/20	Reservoir	28,449.40		-28,449.40
Total Program Ops Manager						28,449.40	0.00	-28,449.40
Project Controls								
Bill	03/13/2020	17366514	Brown and Caldwell	2/20 (B)	Reservoir	118,988.73		-118,988.73
Bill	03/31/2020	17368272	Brown and Caldwell	3/20 (B)	Reservoir	117,724.88		-236,713.61
Total Project Controls						236,713.61	0.00	-236,713.61
Project Integration								
Bill	03/31/2020	1200258167	HDR Engineering Inc	3/20 (A)	Reservoir	196,668.86		-196,668.86
Total Project Integration						196,668.86	0.00	-196,668.86
Reservoir Operations								
Bill	03/31/2020	20-02-4941.0	MBK Engineers Inc		Reservoir	11,200.00		-11,200.00
Total Reservoir Operations						11,200.00	0.00	-11,200.00
Special Legal								
Bill	03/20/2020	6159922	Perkins Coie LLP	2/20	Reservoir	11,952.00		-11,952.00
Total Special Legal						11,952.00	0.00	-11,952.00
Total Professional Fees						812,186.63	0.00	-812,186.63
Website, Data, Computer Support								
Bill	03/19/2020	138990	Adept Solutions Inc	2/20	Authority	47.91		-47.91
Bill	03/19/2020	138990	Adept Solutions Inc	2/20	Reservoir	191.64		-239.55
Bill	03/31/2020	MSP-138947	Adept Solutions Inc	4/20	Authority	134.44		-373.99
Bill	03/31/2020	MSP-138947	Adept Solutions Inc	4/20	Reservoir	537.76		-911.75
Total Website, Data, Computer Support						911.75	0.00	-911.75
Interest Income								
Interest Income-River City								
General J...	03/31/2020	3-1C		rec int fme	Reservoir		3,970.85	3,970.85
General J...	03/31/2020	3-2C		rec int fme	Authority		1,092.39	5,063.24
General J...	03/31/2020	3-2C		rec int fme	Reservoir		641.57	5,704.81
Total Interest Income-River City						0.00	5,704.81	5,704.81
Total Interest Income						0.00	5,704.81	5,704.81
TOTAL						864,032.34	1,963,416.93	1,099,384.59

Sites Project Joint Powers Authority
Balance Sheet by Class
As of March 31, 2020

	Authority	Reservoir	TOTAL
ASSETS			
Current Assets			
Checking/Savings			
River City ICS Savings	0.00	3,019,583.31	3,019,583.31
River City Operating Account	772,343.00	448,339.01	1,220,682.01
River City State Fund Checking	0.00	5,168,788.12	5,168,788.12
Total Checking/Savings	772,343.00	8,636,710.44	9,409,053.44
Accounts Receivable			
Accounts Rec Members			
Membership - Authority	123,000.00	0.00	123,000.00
Membership - Reservoir	0.00	11,329.72	11,329.72
Total Accounts Rec Members	123,000.00	11,329.72	134,329.72
Grants Receivable			
California Water Commission	0.00	1,957,712.12	1,957,712.12
Total Grants Receivable	0.00	1,957,712.12	1,957,712.12
Total Accounts Receivable	123,000.00	1,969,041.84	2,092,041.84
Total Current Assets	895,343.00	10,605,752.28	11,501,095.28
TOTAL ASSETS	895,343.00	10,605,752.28	11,501,095.28
LIABILITIES & EQUITY			
Liabilities			
Current Liabilities			
Accounts Payable			
Accounts Payable	47,417.72	833,123.67	880,541.39
Total Accounts Payable	47,417.72	833,123.67	880,541.39
Total Current Liabilities	47,417.72	833,123.67	880,541.39
Long Term Liabilities			
Participant Reimbursement Polic	0.00	6,064,652.67	6,064,652.67
Total Long Term Liabilities	0.00	6,064,652.67	6,064,652.67
Total Liabilities	47,417.72	6,897,776.34	6,945,194.06
Equity			
Net Assets	114,674.93	1,814,541.65	1,929,216.58
Retained Earnings	356,196.54	1,838,403.19	2,194,599.73
Net Income	377,053.81	55,031.10	432,084.91
Total Equity	847,925.28	3,707,975.94	4,555,901.22
TOTAL LIABILITIES & EQUITY	895,343.00	10,605,752.28	11,501,095.28

Sites Project Joint Powers Authority
Profit & Loss by Class
March 2020

	Authority	Reservoir	TOTAL
Ordinary Income/Expense			
Income			
Prop 1 Funding	0.00	1,957,712.12	1,957,712.12
Total Income	0.00	1,957,712.12	1,957,712.12
Gross Profit	0.00	1,957,712.12	1,957,712.12
Expense			
Accounting Expense	639.00	2,556.00	3,195.00
Admin Support Gen Manager	1,362.69	5,450.76	6,813.45
Bank Service Fees	102.45	60.17	162.62
General Manager Services	6,818.95	33,207.75	40,026.70
Total General Manager	6,818.95	33,207.75	40,026.70
Office Expenses			
Cleaning	100.00	0.00	100.00
Misc Office & Operating Exp	10.00	483.24	493.24
Pest Control & Maintenance	65.00	0.00	65.00
Trash Service	35.95	0.00	35.95
Water Expense	42.00	0.00	42.00
Total Office Expenses	252.95	483.24	736.19
Professional Fees			
Bus/Comm Manager	0.00	21,490.64	21,490.64
Communication	7,629.66	5,086.45	12,716.11
Engineering & Technical Service	0.00	27,322.61	27,322.61
Env/Biological Services	0.00	25,725.74	25,725.74
EPP Manager	0.00	30,349.03	30,349.03
Federal Government Affairs Supp	7,500.00	7,500.00	15,000.00
General Legal Counsel	6,955.63	7,972.87	14,928.50
Geotechnical Engineering	0.00	11,187.16	11,187.16
Legislative/Reg/Strategic	4,000.00	4,000.00	8,000.00
Municipal Advisor	0.00	5,350.00	5,350.00
Operations/Simulation Modeling	0.00	99,525.41	99,525.41
Organizational Assessment	11,727.84	0.00	11,727.84
Permitting & Agreements	0.00	43,879.72	43,879.72
Program Ops Manager	0.00	28,449.40	28,449.40
Project Controls	0.00	236,713.61	236,713.61
Project Integration	0.00	196,668.86	196,668.86
Reservoir Operations	0.00	11,200.00	11,200.00
Special Legal	0.00	11,952.00	11,952.00
Total Professional Fees	37,813.13	774,373.50	812,186.63
Website, Data, Computer Support	182.35	729.40	911.75
Total Expense	47,171.52	816,860.82	864,032.34
Net Ordinary Income	-47,171.52	1,140,851.30	1,093,679.78
Other Income/Expense			
Other Income			
Interest Income			
Interest Income-River City	1,092.39	4,612.42	5,704.81
Total Interest Income	1,092.39	4,612.42	5,704.81
Total Other Income	1,092.39	4,612.42	5,704.81
Net Other Income	1,092.39	4,612.42	5,704.81
Net Income	-46,079.13	1,145,463.72	1,099,384.59

FOR MANAGEMENT PURPOSES ONLY

Sites Project Joint Powers Authority
Profit & Loss by Class - YTD
January through March 2020

	Authority	Reservoir	TOTAL
Ordinary Income/Expense			
Income			
Membership Admin/Authority	505,000.00	0.00	505,000.00
Prop 1 Funding	0.00	1,957,712.12	1,957,712.12
Total Income	505,000.00	1,957,712.12	2,462,712.12
Gross Profit	505,000.00	1,957,712.12	2,462,712.12
Expense			
Accounting Expense	1,900.80	7,603.20	9,504.00
Admin Support Gen Manager	3,135.51	12,542.04	15,677.55
Bank Service Fees	173.54	342.89	516.43
General Manager Services	18,559.36	101,174.04	119,733.40
Total General Manager	18,559.36	101,174.04	119,733.40
Insurance - Property	200.00	50.00	250.00
Insurance Liability	0.00	1,604.25	1,604.25
Office Expenses			
Cleaning	500.00	0.00	500.00
Misc Office & Operating Exp	437.93	1,900.28	2,338.21
Pest Control & Maintenance	195.00	0.00	195.00
Trash Service	107.85	0.00	107.85
Water Expense	148.90	0.00	148.90
Total Office Expenses	1,389.68	1,900.28	3,289.96
Professional Fees			
Bus/Comm Manager	0.00	66,058.09	66,058.09
Communication	23,665.42	25,680.24	49,345.66
Cost Development Model	0.00	710.60	710.60
Cultural Study	0.00	3,885.55	3,885.55
Engineering & Technical Service	0.00	90,542.25	90,542.25
Env/Biological Services	0.00	40,692.76	40,692.76
EPP Manager	0.00	92,059.09	92,059.09
Federal Government Affairs Supp	22,500.00	22,500.00	45,000.00
General Legal Counsel	17,673.39	13,541.37	31,214.76
Geotechnical Engineering	0.00	24,410.17	24,410.17
Legislative/Reg/Strategic	12,000.00	12,000.00	24,000.00
Municipal Advisor	0.00	17,800.00	17,800.00
Operations/Simulation Modeling	0.00	218,787.72	218,787.72
Organizational Assessment	28,394.03	0.00	28,394.03
Permitting & Agreements	0.00	106,879.57	106,879.57
Program Ops Manager	0.00	86,510.24	86,510.24
Project Controls	0.00	418,354.75	418,354.75
Project Integration	0.00	506,861.02	506,861.02
Real Estate	0.00	761.67	761.67
Reservoir Operations	0.00	12,301.00	12,301.00
Special Legal	0.00	30,402.90	30,402.90
Total Professional Fees	104,232.84	1,790,738.99	1,894,971.83
Website, Data, Computer Support	682.89	2,731.53	3,414.42
Total Expense	130,274.62	1,918,687.22	2,048,961.84
Net Ordinary Income	374,725.38	39,024.90	413,750.28
Other Income/Expense			
Other Income			
Interest Income			
Interest Income-River City	2,328.43	16,006.20	18,334.63
Total Interest Income	2,328.43	16,006.20	18,334.63
Total Other Income	2,328.43	16,006.20	18,334.63

FOR MANAGEMENT PURPOSES ONLY

Sites Project Joint Powers Authority
Profit & Loss by Class - YTD
January through March 2020

	Authority	Reservoir	TOTAL
Net Other Income	2,328.43	16,006.20	18,334.63
Net Income	377,053.81	55,031.10	432,084.91



Topic: **Authority Board Agenda Item 1-3**

2020 April 22

Subject: **Payment of Claims**

Requested Action:

Consider approval of the Payment of Claims as presented in Attachment 1-3A with supporting details provided in Attachment 1-3B.

Detailed Description/Background:

Attachment A presents the warrants to be drawn against the invoices received by the Sites Project Authority through April 6, 2020.

Attachment B summarizes details of the invoices received through April 6, 2020 and how the incurred costs are allocated between the Authority and Reservoir Committee.

Prior Action:

None.

Fiscal Impact/Funding Source:

Total Payment of Claims is \$880,541.39 with \$47,417.72 of costs being assigned to the Authority and \$833,123.67 assigned to the Reservoir Committee.

For the Reservoir Committee assigned amount, \$764,781.20 will be paid through the WSIP account and \$115,809.79 through the JPA/Sites account as shown in Attachment B.

Staff Contact:

Joe Trapasso

Attachments:

Attachment A: April 2020 Report on warrants to be drawn for Payment of Claims

Attachment B: April 2020 Monthly Consultant and Vendor Invoice table

Attachment C: April 2020 Key Consultant Budget Status Report

Status: Final
Purpose: Staff Report
Caveat: Action
Notes:

Preparer: Trapasso
QA/QC:
Authority Agent: Trapasso

Phase: 2 Version: A
Date: 2020 April 22
Ref/File #: 10.700
Page: 1 of 1

**WARRANTS DRAWN AGAINST
Sites Project Authority- General Fund
April 22, 2020**

2020 April 22 Authority Board
Agenda Item 1-3 Attachment A

Warrant Number	Check Date	Vendor	Invoice Description	Amount Paid
2127	04/14/2020	Adept Solutions	IT & Related Services	911.75
2128	04/14/2020	Darling H2O Consulting, Inc.	Organizational Assessment	11,727.84
2129	04/14/2020	Dunn Consulting	Legislative/Regulatory/Strategic Support	8,000.00
2130	04/14/2020	JC Watson Inc.	GM Services	40,026.70
2131	04/14/2020	Katz and Associates Inc.	Communications	12,716.11
2132	04/14/2020	K-Coe-Isom, LLP	Accounting	4,890.00
2133	04/14/2020	MR Cleaning Services	Office Cleaning	100.00
2134	04/14/2020	Maximum Pest Control	Pest Control	65.00
2135	04/14/2020	Mt Shasta Spring Water	Office Water	51.65
2136	04/14/2020	Recology Butte Colusa Counties	Office Trash Pickup	35.95
2137	04/14/2020	Rush Personnel Services Inc.	Administrative Services	6,813.45
2138	04/14/2020	The Ferguson Group	Fed Govt Affairs Support	15,000.00
2139	04/14/2020	U.S. Bank	Misc. Expenses	493.24
2140	04/14/2020	Young Wooldridge LLP	Legal Counsel	14,928.50

THE FOREGOING CLAIM, NUMBERED 2127-2140 ARE APPLIED TO THE
GENERAL FUND OF SITES PROJECT AUTHORITY AND ARE WARRANTS AUTHORIZED THERETO.

Total Amount 115,760.19

County of Colusa

Westside Water District

Colusa County Water District

Placer County Water Agency/City of Roseville

County of Glenn

Sacramento County Water Agency/City of Sacramento

Glenn-Colusa Irrigation District

Reclamation District No. 108

Tehama Colusa Canal Authority

WARRANTS DRAWN AGAINST
Sites Project Authority-WSIP Fund
April 22, 2020

Warrant Number	Check Date	Vendor	Invoice Description	Amount Paid
1026	04/14/2020	AECOM Inc.	Engineering	27,322.61
1027	04/14/2020	Brown and Caldwell	Project Controls	236,713.61
1028	04/14/2020	CH2M	Operations/SIM Modeling	99,525.41
1029	04/14/2020	Forsythe Group LLC	EPP Manager	30,349.03
1030	04/14/2020	Fugro USA Land, Inc.	Geotechnical Engineering Services	11,187.16
1031	04/14/2020	HDR Engineering Inc.	Project Integration	196,668.86
1032	04/14/2020	ICF Jones & Stokes Inc.	Env/Biological Services & Permitting	84,572.48
1033	04/14/2020	MBK Engineers Inc.	Reservoir Operations	11,200.00
1034	04/14/2020	Montague DeRose and Associates, Inc.	Municipal Advisor	5,350.00
1035	04/14/2020	Perkins Coie LLP	Special Legal	11,952.00
1036	04/14/2020	Spesert Consulting	Bus/Comm Manager	21,490.64
1037	04/14/2020	Trapasso Consulting Services	Program Operations Manager	28,449.40

THE FOREGOING CLAIM, NUMBERED 1026-1037 ARE APPLIED TO THE
WSIP FUND OF SITES PROJECT AUTHORITY AND ARE WARRANTS AUTHORIZED THERETO.

Total Amount **764,781.20**

County of Colusa

Westside Water District

Colusa County Water District

Placer County Water Agency/City of Roseville

County of Glenn

Sacramento County Water Agency/City of Sacramento

Glenn-Colusa Irrigation District

Reclamation District No. 108

Tehama Colusa Canal Authority



April 14, 2020

Topic: Program Operations - Finance

Subject: Consultant/Vendor Invoices Received for April 2020 Board Authority and Reservoir Committee

Purpose: Summarize the review of invoices for preparation of monthly Accountant and Treasurer's reports.
The following consultant and vendor invoices were received and reviewed for inclusion in Payment of Claims for the Authority Board and Reservoir Committee consideration at their April monthly meetings.

Consultant/Vendor	Invoice #		Total	\$ Authority Board	\$ Reservoir Committee	Review by
	Date	Period				
Board Approval Items						
Adept Solutions	MSP-138947		\$672.20	\$134.44	\$537.76	KMS
IT Related Services/Computer Equipment	4/1/20	04/20				
Adept Solutions	138990		\$239.55	\$47.91	\$191.64	KMS
IT Related Services/Computer Equipment	3/19/20	2/20				
AECOM Technical Services, Inc.	2000342942		\$27,322.61	\$0.00	\$27,322.61	LEF
Engineering/Tech	4/6/20	3/20				
Bender Rosenthal, Inc. (G)	No Invoice					KMS
Real Estate						
Brown and Caldwell (B)	17366514		\$118,988.73	\$0.00	\$118,988.73	JAT
Project Controls	3/13/20	2/20				
Brown and Caldwell (B)	17368272		\$117,724.88	\$0.00	\$117,724.88	JAT
Project Controls	4/3/20	3/20				
CH2M Hill Engineers (Operations) (D)	D3205400-011		\$99,525.41	\$0.00	\$99,525.41	AEF
Operations / Simulation Modeling	3/10/20	2/20				
Colusa Indian Community Council	No Invoice					SPE
Tribal Council						
Darling H2O Consulting, Inc.	119		\$11,727.84	\$11,727.84	\$0.00	FD
Organizational Assessment	4/1/20	3/20				
Dunn Consulting	Letter		\$8,000.00	\$4,000.00	\$4,000.00	KMS
Legislative/Regulatory/Strategic Support	4/3/20	3/20				
Forsythe Group, LLC	SPA-202003		\$30,349.03	\$0.00	\$30,349.03	JCW
EPP Manager	4/1/20	3/20				
Fugro (I)	04.72190035-12		\$11,187.16	\$0.00	\$11,187.16	LEF
Geotechnical Engineering Services	3/31/20	3/20				
Gerald (Jerry) Johns	No Invoice					AEF
Project Operations						
HDR (A)	1200258167		\$196,668.86	\$0.00	\$196,668.86	All Agents
Project Integration	4/3/20	3/20				
ICF Jones & Stokes, Inc. (Environ.) (E)	0145837		\$25,725.74	\$0.00	\$25,725.74	AEF
Env/Biological Services	4/1/20	2/20				



Topic: Program Operations - Finance

Subject: Consultant/Vendor Invoices Received for April 2020 Board Authority and Reservoir Committee

Purpose: Summarize the review of invoices for preparation of monthly Accountant and Treasurer's reports.
The following consultant and vendor invoices were received and reviewed for inclusion in Payment of Claims for the Authority Board and Reservoir Committee consideration at their April monthly meetings.

Consultant/Vendor	Invoice #		Total	\$ Authority Board	\$ Reservoir Committee	Review by
	Date	Period				
ICF Jones & Stokes, Inc. (Environ.) (E) <i>Env/Biological Services</i>	0144839 2/14/20	1/20	\$14,967.02	\$0.00	\$14,967.02	AEF
ICF Jones & Stokes, Inc. (Permitting) (F) <i>Permitting and Agreements</i>	0145839 4/1/20	2/20	\$43,879.72	\$0.00	\$43,879.72	AEF
J.C. Watson, Inc. <i>General Manager Services</i>	SPA-056 4/2/20	3/20	\$40,026.70	\$6,818.95	\$33,207.75	JRT/GA
Katz & Associates (C) <i>Communications</i>	413647 3/13/20	2/20	\$12,716.11	\$7,629.66	\$5,086.45	KMS
K-Coe Isom, LLP <i>Accounting</i>	KC075772 2/29/20	2/20	\$1,695.00	\$339.00	\$1,356.00	JAT
K-Coe Isom, LLP <i>Accounting</i>	KC080505 3/31/20	3/20	\$3,195.00	\$639.00	\$2,556.00	JAT
Larsen Wurzel & Associates, Inc. <i>Cost Development</i>	No Invoice					JAT
M.R. Cleaning Service <i>Office Cleaning</i>	24 3/31/20	3/20	\$100.00	\$100.00	\$0.00	KMS
Maximum Pest Control <i>Pest Spraying</i>	50632 3/18/20	3/20	\$65.00	\$65.00	\$0.00	KMS
MBK Engineers <i>Reservoir Operations</i>	20-02-4941.0 3/13/20	2/20	\$11,200.00	\$0.00	\$11,200.00	AEF
Montague DeRose & Associates, LLC <i>Municipal Advisor</i>	4829SITES 3/20/20	2/20	\$5,350.00	\$0.00	\$5,350.00	JCW
MT Shasta Water <i>Office Water</i>	477741 3/12/20	3/20	\$42.00	\$42.00	\$0.00	KMS
MT Shasta Water <i>Office Water</i>	459697 1/7/20	1/20	\$9.65	\$9.65	\$0.00	KMS
Perkins Coie, LLP <i>Special Legal</i>	6159922 3/20/20	2/20	\$11,952.00	\$0.00	\$11,952.00	AEF
Recology Butte Colusa Counties <i>Office Trash Pickup</i>	37097961 3/31/20	3/20	\$35.95	\$35.95	\$0.00	KMS



Topic: Program Operations - Finance

Subject: Consultant/Vendor Invoices Received for April 2020 Board Authority and Reservoir Committee

Purpose: Summarize the review of invoices for preparation of monthly Accountant and Treasurer's reports.
The following consultant and vendor invoices were received and reviewed for inclusion in Payment of Claims for the Authority Board and Reservoir Committee consideration at their April monthly meetings.

Consultant/Vendor	Invoice #		Total	\$ Authority Board	\$ Reservoir Committee	Review by
	Date	Period				
Rush Personnel <i>Yolanda Tirado Services</i>	IVC000000135773 3/10/20	2/20	\$1,278.90	\$255.78	\$1,023.12	KMS
Rush Personnel <i>Yolanda Tirado Services</i>	IVC000000135774 3/10/20	3/20	\$1,058.40	\$211.68	\$846.72	KMS
Rush Personnel <i>Yolanda Tirado Services</i>	IVC000000136062 3/24/20	3/20	\$1,367.10	\$273.42	\$1,093.68	KMS
Rush Personnel <i>Yolanda Tirado Services</i>	IVC000000136063 3/24/20	3/20	\$1,367.10	\$273.42	\$1,093.68	KMS
Rush Personnel <i>Yolanda Tirado Services</i>	IVC000000136310 4/7/20	3/20	\$352.80	\$70.56	\$282.24	KMS
Rush Personnel <i>Yolanda Tirado Services</i>	IVC000000136311 4/7/20	4/20	\$1,389.15	\$277.83	\$1,111.32	KMS
Spesert Consulting <i>Bus/Communications Manager</i>	04-20 4/2/20	3/20	\$21,490.64	\$0.00	\$21,490.64	JCW
Stradling, Yocca, Carlson & Rauth <i>Bond Counsel</i>	No Invoice					JCW
The Ferguson Group <i>Federal Government Affairs Support</i>	0320165 3/1/20	3/20	\$15,000.00	\$7,500.00	\$7,500.00	KMS
Trapasso Consulting Services <i>Program Operations Manager</i>	SPA 17-30 4/5/20	3/20	\$28,449.40	\$0.00	\$28,449.40	JCW
U.S. Bank - Credit Card <i>Misc. Expenses</i>	Online 4/2 4/2/20	3/20	\$493.24	\$10.00	\$483.24	KMS
Wiseman Consulting Group <i>ROW/Land Management</i>	No Invoice					KMS
Young Wooldridge, Law Offices, LLP <i>Legal Counsel</i>	64465 3/31/20	3/20	\$14,928.50	\$6,955.63	\$7,972.87	JCW

Topic: **Program Operations - Finance****Subject: Consultant/Vendor Invoices Received for April 2020 Board Authority and Reservoir Committee**

Purpose: Summarize the review of invoices for preparation of monthly Accountant and Treasurer's reports.
The following consultant and vendor invoices were received and reviewed for inclusion in Payment of Claims for the Authority Board and Reservoir Committee consideration at their April monthly meetings.

Consultant/Vendor	Invoice #		Total	\$ Authority Board	\$ Reservoir Committee	Review by
	Date	Period				
Monthly Summary	Cash Accounts		880,541.39	47,417.72	833,123.67	
	WSIP		764,781.20	0.00	764,781.20	
	JPA/Sites		115,760.19	47,417.72	68,342.47	

Notes: *



APRIL KEY CONSULTANT BUDGET REPORT
FOR AUTHORITY BOARD AND RESERVOIR COMMITTEE,
FINANCE AND ECONOMICS AD HOC COMMITTEE

2020 April 22 Authority Board,
Agenda Item 1-3 Attachment C 4/10/2020

Area / Consultant	Task ID	Task Name	\$ Contract Ceiling	\$Task Budget Authorized (2020)	\$ Spent to date (2020)	\$ Budget Remaining (2020)	Spent %	Task % Complete	8 Month Plan (2020)
a) HDR									
		Costs and Task % as of 03/20 Services	1,499,864	1,499,864	506,861	993,003	34%		
2	A01	Communications Int.		-	-	-	-		
2	A02	Ops Modeling Int.		181,007	2,147	178,860	1%		
2	A03	Env. Planning Int.		149,357	72,728	76,629	49%		
2	A04	Permitting Int.		243,884	106,386	137,498	44%		
2	A05	Real Estate Int.		139,718	2,800	136,918	2%		
2	A06	Engineering Int.		299,476	116,284	183,192	39%		
2	A07	Geotech Int.		-	-	-	-		
2	A08	Controls Int.		224,387	86,910	137,477	39%		
2	A09	General Int.		98,267	90,618	7,649	92%		
2	A10	Authority's Engineer		-	-	-	-		
2	A11	Health, Safety & Loss Prevention		-	-	-	-		
2	A12	Quality Management		-	-	-	-		
2	A13	Risk Management		49,890	7,249	42,641	15%		
2	A14	IT		15,831	2,826	13,005	18%		
2	A15	GIS		-	264	(264)	-		
2	A16	Document Management		3,734	2,394	1,340	64%		
2	A17	Staff Support		14,004	287	13,717	2%		
2	A18	Satellite Project Office		-	-	-	-		
2	A19	Land Conservation Approach		-	-	-	-		
2	A98	HDR Project Management		40,309	12,418	27,891	31%		
2	A99	Expenses		40,000	3,552	36,448	9%		
b) BC									
		Costs and Task % as of 03/20 Services	899,156	899,156	343,423	555,733	38%		
2	B01	Project Controls		113,645	43,073	70,572	38%		
2	B02	Contract Administration and Compliance		492,414	191,200	301,214	39%		
2	B03	Work Planning and Scheduling		100,341	43,994	56,347	44%		
2	B04	Project Administrative Support		117,516	46,559	70,957	40%		
2	B05	PMP Sections		-	-	-	-		
2	B98	Project Management		73,240	17,907	55,333	24%		
2	B99	Expenses		2,000	690	1,310	34%		



APRIL KEY CONSULTANT BUDGET REPORT
FOR AUTHORITY BOARD AND RESERVOIR COMMITTEE,
FINANCE AND ECONOMICS AD HOC COMMITTEE

4/10/2020

Area / Consultant	Task ID	Task Name	\$ Contract Ceiling	\$Task Budget Authorized (2020)	\$ Spent to date (2020)	\$ Budget Remaining (2020)	Spent %	Task % Complete	8 Month Plan (2020)
c) K&A									
		Costs and Task % as of 02/20 Services	199,930	199,930	32,369	167,561	16%		
2	C01	Local/Landowner Outreach		14,083	56	14,027	0%		
2	C02	Statewide Outreach		22,000	310	21,690	1%		
2	C03	NGO Outreach		12,166	1,085	11,081	9%		
2	C04	Strategic Communications		19,666	3,324	16,342	17%		
2	C05	Message Development/Training		11,831	1,410	10,421	12%		
2	C06	Informational Materials Distribution		38,500	6,715	31,785	17%		
2	C07	Website Modifications and Management		18,600	1,881	16,719	10%		
2	C08	Video & Photography		-	-	-	-		
2	C09	Authority/Reservoir Committee Public Affairs Support		14,500	1,240	13,260	9%		
2	C10	Media Relations		13,084	3,869	9,215	30%		
2	C11	Social Media		5,000	791	4,209	16%		
2	C98	Project Management		30,500	9,230	21,270	30%		
2	C99	Expenses		-	2,457	(2,457)	-		
d) CH2-d									
		Costs and Task % as of 02/20 Services	993,000	993,000	160,048	832,952	16%		
2	D01	Permitting and Resource Agency Technical Support		100,000	56,840	43,160	57%		
2	D02	Environmental Document Support		356,853	1,037	355,816	0%		
2	D03	Total Operations Technical Support		300,000	54,923	245,077	18%		
2	D04	Value Planning		88,000	29,863	58,137	34%		
2	D98	Project Management		31,147	17,180	13,967	55%		
2	D99	Subs and ODCS		117,000	205	116,795	0%		
e) ICF-e									
		Costs and Task % as of 02/20 Services	428,000	428,000	40,693	387,307	10%		
2	E01	Draft EIS/EIR Review and Strategic Consultation		-	-	-	-		
2	E02	Prepare Admin Final Responses to Comments		-	-	-	-		
2	E03	Prepare Administrative Final EIR/EIS		15,000	14,967	33	100%		
2	E04	Begin Preparation of Administrative Record for Fin		-	-	-	-		
2	E05	Engagement		-	-	-	-		
2	E06	Geotechnical Environmental Document		-	-	-	-		
2	E07	Develop Environmental Document Work Plan		110,000	8,630	101,370	8%		
2	E08	Support Development of EIR/EIS Project Description		180,000	1,516	178,484	1%		
2	E09	Prepare Annotated Outline		88,000	-	88,000	-		



APRIL KEY CONSULTANT BUDGET REPORT
FOR AUTHORITY BOARD AND RESERVOIR COMMITTEE,
FINANCE AND ECONOMICS AD HOC COMMITTEE

4/10/2020

Area / Consultant		Task ID	Task Name	\$ Contract Ceiling	\$Task Budget Authorized (2020)	\$ Spent to date (2020)	\$ Budget Remaining (2020)	Spent %	Task % Complete	8 Month Plan (2020)
	2	E98	Project Management		31,500	15,580	15,920	49%		
	2	E99	Expenses		3,500	-	3,500	-		
f) ICF-f			Costs and Task % as of 02/20 Services	708,300	708,300	85,116	623,185	12%		
	2	F01	Finalize Joint Biological Assessment		-	-	-	-		
	2	F02	Finalize Geotechnical Permits and Fieldwork		297,120	26,660	270,460	9%		
	2	F03	Prepare Section 106 Documents		-	-	-	-		
	2	F04	Begin Preparation of Permits and Agreements		26,000	25,976	24	100%		
	2	F05	Prepare for 2020 Field Work Studies		-	-	-	-		
	2	F06	Strategize on Mitigation and Adaptive Management P		-	-	-	-		
	2	F07	Early Coordination and Development of Key Permits		333,740	11,908	321,832	4%		
	2	F98	Project Management		35,000	15,977	19,023	46%		
	2	F99	Expenses		16,440	4,595	11,845	28%		
g) BRI			Costs and Task % as of 01/20 Services	762	762	762	0	100%		
	2	G01	Develop Draft Right-of-Way Manual Sections		-	-	-	-		
	2	G02	Right-of-Way Planning Efforts		-	-	-	-		
	2	G03	Right-of-Entry / Early-Access Program		517	517	0	100%		
	2	G04	Property Management Program		-	-	-	-		
	2	G05	Public Outreach and Community Engagement		-	-	-	-		
	2	G98	Project Management / QC		245	245	0	100%		
	2	G99	Expenses		-	-	-	-		
i) FUG			Costs and Task % as of 03/20 Services	85,995	85,995	24,410	61,585	28%		
	2	I01	Data Review and Develop 2019 Feasibility Study Work Plan		-	-	-	-		
	2	I02	- Obsolete -		-	-	-	-		
	2	I03	2019 Site Investigation		-	-	-	-		
	2	I04	Future Site Investigation Work Plan for Design		-	-	-	-		
	2	I05	Assessment of Proposed Field Data Collection Points		50,786	7,039	43,747	14%		
	2	I98	Project Management		35,209	17,371	17,838	49%		



Topic: **Authority Board Agenda Item 1-4**

2020 April 22

Subject: **Contract and Task Order for Service Area HC - Engineering Conveyance (CH2M Hill Engineers, Inc.)**

Requested Action:

Consider approval of a consulting agreement with CH2M Hill Engineers, Inc. (CH2M) for Service Area HC – Engineering Conveyance and approve an initial task order and budget in the not to exceed amount of \$597,023.00 for services through August 31, 2020.

Detailed Description/Background:

Staff has worked with CH2M Hill Engineers, Inc. to negotiate a Consulting Services Agreement for Service Area HC – Engineering Conveyance and developed an initial task order utilizing funds from the approved Phase 2 Amendment 1B Budget to support the Engineering task thru August 31, 2020. The standard form of the Authority consulting agreement is being used for this work with a few minor exceptions requested by the consultant which Authority legal counsel reviewed and approved.

Prior Action:

August 22, 2019: Approved the General Manager to enter into negotiations with CH2M Hill Engineers, Inc.

June 20, 2019: Approved the release of the Engineering Services RFQ-19-03.

Fiscal Impact/Funding Source:

Sufficient funding for this task order has been assigned from the Phase 2 Amendment 1B Work Plan approved by the Authority Board of Directors and the Reservoir Committee.

Staff Contact:

Joe Trapasso

Attachments:

Attachment A: Task Order #1 and billing rates

Status:	Final	Preparer:	Trapasso	Phase:	2	Version:	A
Purpose:	Staff Report	QA/QC:	Brown	Date:	2020 April 22		
Caveat:	Approval Action	Authority Agent:	Trapasso	Ref/File #:	12.221-210.018		
Notes:				Page:	1	of	1



Sites Reservoir Project

Sites Project Authority Engineering – Conveyance Task Order

Consultant: CH2M Hill, Inc.

Task Order No. 1.0

Task Order No. 1.0 provides work activities for CONSULTANT on their Consulting Agreement with the Authority for Engineering - Conveyance services for the period of performance from April 23, 2020 through August 31, 2020.

Scope of Services

This task order scope of services which includes tasks, deliverables and assumptions for these tasks is provided in Attachment 1.

Budget

The total not to exceed budget amount for this task order is \$597,023.00. Budgets for each individual task within the scope of services may be further refined in the early stages of the task order as the priorities for each task are further defined by the Authority Staff. The budget is provided in Attachment 2.

Schedule

The period of performance for this task order is April 23, 2020 through August 31, 2020.

Labor Rate Table

The CONSULTANT labor rate table for this task order is included in Attachment 4.

Funding Agreement

The Sites Project is funded by several funding sources. The CONSULTANT agrees they will comply with fund reporting requirements and with supporting Program reporting requirements. As not all funding agreements have been executed; reporting requirements continue to develop. In general, record-keeping and invoicing shall comply with Generally Accepted Accounting Principles and as implemented in established Program procedures and documentation.

Random internal audits of all Service Areas will be conducted by Project Controls during the project period of performance. These audits will be conducted to review internal controls for the fair presentation of record keeping and invoicing.

The Project will be subject to state and/or federal audits besides the standing annual project audits which will be conducted by an external CPA. It is the intention of Project Controls to develop reports which will satisfy these audits, however, the CONSULTANT will be required to provide support.

Commercial Terms

Annual salary increases shall not be related to any specific Consumer Price Index, applied summarily to all staff. Allowable increases shall be based, at this time, on individual merit increases plus GSA FAR approved overhead (where available) and 10% profit. Each firm will be allowed to submit their revised, updated rate sheet on an annual basis. The new rates should be submitted 30 days prior to the effective date of increase.

The only exception to this annual increase restriction is a merit increase related to the acquisition of Professional Engineer licensure or acquisition of other professional, technical licensure related to the work they are providing under this task order. The Program will honor salary increases related to acknowledgement of competency in the form of professional, technical licensure based on their effective date.

The Authority will reimburse non-labor/other direct cost only at the CONSULTANT's actual cost

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: _____

Attachment 1

Scope of Services for Task Order HC01 – Initial Services for Conveyance Engineering

This scope of services involves initial Conveyance Engineering efforts needed to support the Sites Project Authority (Authority) through the completion of work from April 23, 2020 through August 31, 2020. In general, this scope includes activities in support of the scope outlined in the Authority's Request for Qualifications (RFQ) No. 19-03 and the Statement of Qualifications (SOQ) prepared by CH2M HILL.

BACKGROUND

Engineering efforts will be undertaken to support the environmental impact assessment of the Preferred Project identified through the value planning process (VP7).

Work will include completing feasibility level designs of project features, developing feasibility level drawings of project features for use in estimating quantities and assessing impacts, assessing haul routes, identifying construction activities and schedules and identifying key operation and maintenance activities. The effort will also include completing real estate efforts (by others) with respect to obtaining access and assessing potential alignments and associated impacts. The work will be completed at a level of detail to support the environmental impact evaluations, and to support the future development of a Class IV cost estimate.

Work will be performed by the HC (CH2M HILL) and HR (AECOM) service providers through separate contracts with the Authority. The division of the feasibility level designs of facilities will reflect the intent of Table 6.3: Facilities By Engineering Service Area (HC vs HR) and Planned Engineering Role from the Sites Project Authority Request for Qualifications, Engineering Services RFQ No. 19-03, July 5, 2019. It should be noted that a number of the facilities in Table 6:3 are no longer relevant.

Task HC01—Project Coordination

This task involves coordination and meetings between CH2M HILL, the Authority and its Consultants.

Task HC01.1—Study Team Meetings

CH2M Hill will coordinate a project kick off meeting with the Authority and the HC and HR service providers. At the meeting, the scope of work, functional organization, roles and responsibilities, Quality Control and Assurance Plan (QCAP), and deliverables schedule will be discussed.

CH2M Hill will coordinate and attend bi-weekly study team meetings with the Authority to discuss project progress and issues that may affect project feasibility design or schedule. Appropriate consultant team members will attend as needed. CH2M Hill will document project meetings and distribute meeting notes to appropriate project team members. Resolution will be reached on the technical aspects of the project.

It is expected that coordination with the Authority, other consultant teams, agencies and stakeholders will occur throughout the duration of the project.

Assumptions:

- Project Kickoff meeting would be full day meeting in Sacramento attended by 2 consultant staff.
- The study team meetings will be attended via conference call by one consultant staff member..
- CH2M Hill has budgeted 26 hours for this task.

Deliverables:

Meeting agenda's and action items as applicable

Task HC01.2—Agency Meetings

CH2M Hill will prepare for and attend a total of 3 meetings. Attendance may be for a work group, the Reservoir Committee or an Authority Board meetings as requested.

Assumptions:

- Work Group, Reservoir Committee or Authority Board meetings will be attended in person by one individual in either Maxwell or Sacramento
- CH2M Hill has budgeted 18 hours for this task.

Deliverables:

- none

Task HC02—Engineering Support for Project Description of Preferred Project from Value Planning.

Task HC02.1 Coordinate with Integration and HR teams to identify CADD and GIS standards

CH2M HILL will coordinate with the integration and HR teams to identify CADD and GIS standards. Consideration will be given to effectively use the CADD and GIS products developed for the previous EIR/S and feasibility design efforts. The process for efficiently converting the CADD drawings to GIS will be established.

CH2M Hill will obtain all the previous applicable facility drawings and Figures related to Conveyance Facilities from AECOM and organize into our Project Wise system.

Assumptions:

- There would be a meeting with the GIS lead , the CADD lead and Design Lead from CH2M HILL with HR consultant and Integration consultant.
- CH2M Hill has budgeted 24 hours for this Task.

Task HC02.2 Coordinate with the Environmental Team (ICF)

Consultant will coordinate with the environmental team to confirm the Preferred Project as identified through the value planning process for the EIR/S and related engineering support. .

Assumption: CH2M Hill has budgeted 8 hours for this Task.

Task HC02.3 Coordinate with Operations Team (Jacobs/CH2M Hill)

Operations modeling will be ongoing. CH2M Hill will coordinate with the Operations Team to finalize the storage and conveyance capacities for use in feasibility design. The operations team will provide the capacities that will be serve as the basis of design for storage and conveyance facilities. Currently CH2M Hill is assuming 1,000 cfs for outlet conveyance design.

Assumption: CH2M Hill has budgeted 16 hours for this task.

Task HC02.4 Assist Authority in Obtaining Information from Reclamation

The HR service provider will develop a list of information and materials needed from Reclamation to support the Authority's project description and feasibility report so that the Authority can coordinate with Reclamation to determine approach to leverage material developed for Reclamation's Feasibility Study.

Assumptions:

- CH2M Hill will coordinate with HR service provider for any Conveyance Facility needs
- CH2M Hill has budgeted 10 hours for this Task.

Task HC02.5 Prepare Project Base Map for Feasibility Design

CH2M Hill will take the lead on developing the digital aerial and topographic base map using best available information. The HR service provider will coordinate with and support CH2M Hill to prepare project base. The HR service provider will provide the CH2M Hill with topography used for their previous activities.

Assumption: CH2M Hill has budgeted 160 hours for this task.

Task HC02.6 Prepare Basis of Feasibility Design

Develop a Basis of Feasibility Design technical memorandum that describes the key project features, the accepted project design criteria and considerations by major engineering discipline, that will be carried through the feasibility design. Development of the basis of feasibility design will give appropriate consideration to the criteria employed for the Reclamation Feasibility Study .

Assumption: CH2M Hill has budgeted 352 hours for this task. Our subconsultants Vanderweil and Geosyntek will be contributing to this task.

Deliverables: A draft and final Basis of Feasibility Design Technical Memorandum

Task HC02.7 Conduct Field Visit of Key Project Facilities.

Conduct field visits of key project facilities in coordination with Authority to gain site access. The purpose of the site visits will be to observe site characteristics and constraints that may influence the feasibility level design. Since project facilities are scattered over a wide geographic area, this is assumed to take one full day for 9 key team members.

Assumption: CH2M Hill has budgeted 72 hours for this task.

Task HC02.8 Coordinate With Real Estate Team

Coordinate proposed conveyance alignments, facility site areas, and facility site access with the Authority and the real estate team, so that the real estate team can identify needs and associated project costs.

Assumption: CH2M Hill has budgeted 16 hours for this task.

Task HC02.9 Complete feasibility level design, technical studies and TMs of key features

Complete the feasibility level designs, CADD drawings and supporting technical studies to support a Class IV construction cost estimate. The study methodology, findings and recommendations will be documented in technical memorandums or in sections of a basis of design report. Evaluations for the respective key project features may include:

- Geology and Seismicity – The HR service provider will coordinate the Project Geology and Seismicity TM with input and review from CH2M HILL.
- Geotechnical
- Hydraulic design
- Site Civil
- Structural
- Mechanical
- Electrical
- Power Transmission
- Substations

Assumptions:

- Groundwater/dewatering impacts, Instrumentation & Control, Hydraulic modeling, HVAC, and converting drawings to GIS for the Environmental Team will be part of the Amendment 2 Work Plan (beginning September 1st, 2020).
- A Class IV Construction Cost Estimate will only be done for the conveyance facilities that have changed significantly as a result of the Value Planning effort. CH2M Hill has budgeted 160 hours for cost estimating.
- CH2M Hill has budgeted 882 hours for this task including the cost estimating listed above. Our subconsultants Vanderweil and Geosyntek will be contributing to this task.

Deliverables: TM's and calculations to support the environmental effort as limited by the assumptions above.

Task HC02.10 Complete feasibility level design CADD Drawings of key features

Complete the feasibility level design CADD drawings of key features to support a Class IV construction cost estimate.

Assumptions:

- The majority of the drawings will be taken from the HR Service Provider's previous work. CH2M Hill anticipates approximately 20 new drawings.
- CH2M Hill has budgeted 384 hours for this task. Our subconsultants Vanderweil and Geosyntek will be contributing to this task.

Deliverables: Drawings to support the environmental effort as limited by the assumptions above.

Task HC98—Project Management

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

Task HC98.1— Project Management

This task includes managing and monitoring the design contract scope, schedule and budget for the project activities. It also includes monitoring project controls task budgets, reviewing labor and expense effort, and coordinating staffing requirements. CH2M Hill will follow the Authorities required controls and will provide monthly progress reports that document project activities and update the project schedule and budget status. CH2M Hill will develop a Project Management Plan that includes organization, scope of services, schedule, budget, communications, document control, cost controls, invoicing and reporting procedures.

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.)

Assumption CH2M Hill has budgeted 124 hours for this task.

Deliverables:

- Monthly invoice to client
- Subconsultant contracts/amendments
- Scope of work for next task order
- Draft and Final Project Management Plan

Task HC98.2— Quality Control

Our team will provide internal quality control reviews for each deliverable provided to the Authority. This task includes time for our reviewers to adequately review and document comments on HC project deliverables.

Develop a draft and final Quality Control and Assurance Plan, which will provide the policies and specific actions that will be taken to ensure that deliverables and supporting documents are complete, conform to standards and are of high quality.

Assumption: CH2M Hill has budgeted 104 hours for this task.

Deliverables:

- Draft and final Quality Control and Assurance Plan

Task HC99—Expenses

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

HC99.1 – Subconsultants

Subconsultants will include the following:

Geosyntec – Engineering and geotechnical services related to Funks Reservoir Improvements and the Terminal Regulating Reservoir. Budget for labor and expenses is \$75,000.

Vanderweil Engineering – Engineering and cost estimating services related to power transmission, substations, and interaction with PGE and WAPA. Budget including labor and expenses is \$75,000.

HC99.2 – Travel, Parking, and Meals

Expenses will cover the following to support the engineering tasks.

- 3 round trips from Sacramento to Maxwell
- 5 round trips from Redding to Maxwell
- 10 round trips from Redding to Sacramento
- 10 parking fees for meetings in Sacramento
- 5 lodging nights in Sacramento
- 10 travel meals
- Reprographics, express deliveries, and miscellaneous

Attachment 2 Fee Table

Task ID	Task Name	Fee
HC01	Project Coordination	\$15,378.36
HC02	Engineering Support for Project Description of Preferred Project from Value Planning	\$370,475.17
HC98	Project Management	\$55,469.21
HC99	Expenses & Subconsultants	\$155,700.00
Total Fee		\$597,022.74

Attachment 4 - HC Service Provider Staff Rates

Counter	Service area	Firm (Identify Sub)	Employee (Last, First)	Role	2020 Billing Rate
1)	HC	Jacobs	Alliger, Lisa	Site Development Lead	\$ 272.56
2)	HC	Jacobs	Caulfield, John	Tunnel Lead	\$ 426.40
3)	HC	Jacobs	Cavalleri, Nick	Cost Estimator	\$ 153.27
4)	HC	Jacobs	Cave, Dave	Lead Technician	\$ 173.48
5)	HC	Jacobs	Cusworth, Craig	Electrical	\$ 204.35
6)	HC	Jacobs	Douglas, Ed	GIS Lead	\$ 143.01
7)	HC	Jacobs	Fehringer, Ron	Sr. QC Reviewer	\$ 247.30
8)	HC	Jacobs	Liebersbach, Dennis	Mapping	\$ 99.21
9)	HC	Jacobs	Fox, Bill	Surveying and Mapping Lead	\$ 310.31
10)	HC	Jacobs	Harris, Dean	Reservoir Design	\$ 244.46
11)	HC	Jacobs	Hein, Kim	QC Manager	\$ 202.14
12)	HC	Jacobs	Hendrickson, Lisa	Project Controls	\$ 169.15
13)	HC	Jacobs	Heuhmer, Tyler	GIS	\$ 255.69
14)	HC	Jacobs	Highstreet, Allan	Contract Administration and Compliance	\$ 379.01
15)	HC	Jacobs	Black, Lyna	Environmental Lead	\$ 198.55
16)	HC	Jacobs	Horrick, Nancy	Word Processing	\$ 82.77
17)	HC	Jacobs	Johnson, Michael	SCADA / Communications Lead	\$ 210.56
18)	HC	Jacobs	Kellogg, Ashley	Site Civil/Roads/Traffic	\$ 159.17
19)	HC	Jacobs	Kellogg, Jeremy	Structural	\$ 218.05
20)	HC	Jacobs	Lawson, Peter	Engineering - Groundwater Modeling	\$ 257.05
21)	HC	Jacobs	Martinez, Kevin	Mechanical/HVAC	\$ 130.51
22)	HC	Jacobs	Maschke, Nancy	Pipeline Design	\$ 149.93
23)	HC	Jacobs	McCullough, Nason	Reservoir Design	\$ 255.26
24)	HC	Jacobs	Memeo, Brad	Engineering - General Assistance	\$ 211.92
25)	HC	Jacobs	Mercado, Cynde	Civil Engineer	\$ 104.37
26)	HC	Jacobs	Parker, Steve	Control Systems	\$ 174.48
27)	HC	Jacobs	Randall, Mark	Lead Structural	\$ 237.46
28)	HC	Jacobs	Randall, Mike	Engineering - General Assistance	\$ 220.74
29)	HC	Jacobs	Reiser, Sonja	Reservoir Design - Sr. QC	\$ 200.41
30)	HC	Jacobs	Riess, Mike	Pump/Generating Plant Lead	\$ 204.81
31)	HC	Jacobs	Rude, Pete	Project Manager	\$ 350.94
32)	HC	Jacobs	Sandifer, Austen	Technical Editor	\$ 112.48
33)	HC	Jacobs	Smith, Jeff	Conveyance Lead	\$ 343.08
34)	HC	Jacobs	Smith, Joel	Conveyance Technician	\$ 145.14
35)	HC	Jacobs	Twede, Mark	Geotechnical Lead	\$ 194.43
36)	HC	Jacobs	Montgomery, Carol	Graphics	\$ 86.51



Topic: **Authority Board Agenda Item 1-5**

2020 April 22

Subject: **Contract and Task Order for Service Area HR – Engineering Reservoir (AECOM)**

Requested Action:

Consider approval of a consulting agreement with AECOM for Service Area HR – Engineering Reservoir and approve an initial task order and budget for services in the not to exceed amount of \$599,381.00 for services through August 31, 2020.

Detailed Description/Background:

Staff has worked with AECOM to negotiate a Consulting Services Agreement for Service Area HR – Engineering (Sites Reservoir) and developed an initial task order utilizing funds from the approved Phase 2 Amendment 1B Budget to support the Engineering tasks thru August 31, 2020. The standard form of the Authority's consultant agreement is being used with a few minor exceptions requested by the consultant which Authority legal counsel reviewed and approved.

Prior Action:

August 22, 2019: Approved the General Manager to enter into negotiations with AECOM.

June 20, 2019: Approved the release of the Engineering Services RFQ-19-03.

Fiscal Impact/Funding Source:

Sufficient funding for this task order has been assigned from the Phase 2 Amendment 1B Work Plan approved by the Authority Board of Directors and the Reservoir Committee.

Staff Contact:

Joe Trapasso

Attachments:

Attachment B: Task Order #1 and billing rates

Status:	Final	Preparer:	Trapasso	Phase:	2	Version:	A
Purpose:	Staff Report	QA/QC:	Watson	Date:	2020 April 22		
Caveat:	Informational	Authority Agent:	Trapasso	Ref/File #:	12.221-210.018		
Notes:				Page:	1	of	1



Sites Reservoir Project

Sites Project Authority Engineering – Reservoir Task Order

Consultant: AECOM

Task Order No. 1.0

Task Order No. 1.0 provides work activities for CONSULTANT on their Consulting Agreement with the Authority for Engineering - Reservoir services for the period of performance from April 23, 2020 through August 31, 2020.

Scope of Services

This task order scope of services which includes tasks, deliverables and assumptions for these tasks is provided in Attachment 1.

Budget

The total not to exceed budget amount for this task order is \$599,381.00. Budgets for each individual task within the scope of services may be further refined in the early stages of the task order as the priorities for each task are further defined by the Authority Staff. The budget is provided in Attachment 2.

Schedule

The period of performance for this task order is April 23, 2020 through August 31, 2020.

Labor Rate Table

The CONSULTANT labor rate table for this task order is included in Attachment 4.

Funding Agreement

The Sites Project is funded by several funding sources. The CONSULTANT agrees they will comply with fund reporting requirements and with supporting Program reporting requirements. As not all funding agreements have been executed; reporting requirements continue to develop. In general, record-keeping and invoicing shall comply with Generally Accepted Accounting Principles and as implemented in established Program procedures and documentation.

Random internal audits of all Service Areas will be conducted by Project Controls during the project period of performance. These audits will be conducted to review internal controls for the fair presentation of record keeping and invoicing.

The Project will be subject to state and/or federal audits besides the standing annual project audits which will be conducted by an external CPA. It is the intention of Project Controls to develop reports which will satisfy these audits, however, the CONSULTANT will be required to provide support.

Commercial Terms

Annual salary increases shall not be related to any specific Consumer Price Index, applied summarily to all staff. Allowable increases shall be based, at this time, on individual merit increases plus GSA FAR approved overhead (where available) and 10% profit. Each firm will be allowed to submit their revised, updated rate sheet on an annual basis. The new rates should be submitted 30 days prior to the effective date of increase.

The only exception to this annual increase restriction is a merit increase related to the acquisition of Professional Engineer licensure or acquisition of other professional, technical licensure related to the work they are providing under this task order. The Program will honor salary increases related to acknowledgement of competency in the form of professional, technical licensure based on their effective date.

The Authority will reimburse non-labor/other direct cost only at the CONSULTANT's actual cost

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: _____

Attachment 1

Scope of Services for Task Order HR01 – Initial Services for Dams and Reservoir Engineering

This scope of services involves initial Conveyance Engineering efforts needed to support the Sites Project Authority (Authority) through the completion of work from March 30, 2020 through August 31, 2020. In general, this scope includes activities in support of the scope outlined in the Authority's Request for Qualifications (RFQ) No. 19-03 and the Statement of Qualifications (SOQ) prepared by CH2M HILL.

BACKGROUND

Engineering efforts will be undertaken to support the environmental impact assessment of the Preferred Project identified through the value planning process.

Work will include completing feasibility level designs of project features, developing feasibility level drawings of project features for use in estimating quantities and assessing impacts, assessing haul routes, identifying construction activities and schedules and identifying key operation and maintenance activities. The effort will also include completing real estate efforts (by others) with respect to obtaining access and assessing potential alignments and associated impacts. The work will be completed at a level of detail to support the environmental impact evaluations, and to support the future development of a Class IV cost estimate.

Work will be performed by the HC (CH2M HILL) and HR (AECOM) service providers through separate contracts with the Authority. The division of the feasibility level designs of facilities will reflect the intent of Table 6.3: Facilities By Engineering Service Area (HC vs HR) and Planned Engineering Role from the Sites Project Authority Request for Qualifications, Engineering Services RFQ No. 19-03, July 5, 2019. It should be noted that a number of the facilities in Table 6:3 are no longer relevant.

SCOPE OF WORK FOR HR SERVICE PROVIDER:

Task HR01 — Project Coordination

Task HR01.1 - Study Team and Agency Meetings

Consultant will coordinate with the Project Integrator for a project kick off meeting with the Authority and the HC and HR service providers. At the meeting, the scope of work, functional organization, QCAP, deliverables schedule will be discussed.

Consultant will coordinate and attend bi-weekly study team meetings with the Authority to discuss project progress and issues that may affect project feasibility design or schedule. Appropriate consultant team members will attend as needed. Consultant will document project meetings and distribute meeting notes to appropriate project team members. Resolution will be reached on the technical aspects of the project.

Consultant will coordinate with the Authority, other consultant teams, agencies and stakeholders throughout the duration of the project.

Task HR01.2 - Work Group, Reservoir Committee, and Authority Board Meetings

Consultant will prepare for and attend monthly work group, Reservoir Committee and Authority Board meetings.

Task HR02 — Engineering Support for Project Description of Preferred Project from Value Planning

Task HR02.1 - Coordinate with integration team to identify CADD and GIS standards.

Consultant will coordinate with the integration team to identify CADD and GIS standards. Consideration will be given to effectively use the CADD and GIS products developed for the previous EIR/S and feasibility design efforts. The process for efficiently converting the CADD drawings to GIS will be established.

Task HR02.2 - Coordinate with the environmental team to confirm the alternatives for the EIR/S and related engineering support.

Consultant will coordinate with the environmental team to confirm the alternatives for the EIR/S and related engineering support. At this time it is understood that the alternatives will consist of the following: 1. The Preferred Project Identified through the value planning process; 2. Alternative A as presented in the Draft Environmental Impact Report/Environmental Impact Statement (Authority, 2017) and the Reclamation feasibility study; and 3. A Modified Alternative 1 or 2 reflecting different operation.

Task HR02.3 - Coordinate with operations team to finalize the storage and conveyance capacities for use in feasibility design.

Operations modeling will be ongoing. Consultant will coordinate with operations team to finalize the storage and conveyance capacities for use in feasibility design. The operations team will provide the capacities that will be serve as the basis of design for storage and conveyance facilities.

Task HR02.4 - Assist Authority in Obtaining Information from Reclamation

The HR service provider will develop a list of information and materials needed from Reclamation to support the Authority's project description and feasibility report so that the Authority can coordinate with Reclamation to determine approach to leverage material developed for Reclamation's feasibility study.

Task HR02.5 - Prepare Project Base Map for Feasibility Design

The HC service provider will take the lead on developing the digital aerial and topographic base map using best available information. The HR service provider will coordinate with and support HC Contract to prepare project base. The HR service provider will provide the HC Contractor with topography used for their previous activities.

Task HR02.6 - Prepare basis of feasibility design

Consultant will develop a Basis of Feasibility Design technical memorandum. The Basis of Design technical memorandum will describe the accepted project design criteria and considerations that will be carried through the feasibility design of key project features. Development of the basis of feasibility design will give appropriate consideration to the criteria employed for the Reclamation feasibility study.

Task HR02.7 - Conduct field visit of key project facilities.

Consultant will conduct field visit of key project facilities. The purpose of the visit will be to observe site characteristics and constraints that may influence the feasibility level design.

Task HR02.8 - Coordinate with real estate team to identify needs and costs

Consultant will coordinate proposed alignments and site access with the Authority and the real estate team.

Task HR02.9 - Complete feasibility level design, documentation and project description

Consultant will complete the feasibility level designs and supporting documentation. These would include the following evaluations for the respective key project features for the HR service provider:

- i. Geology and Seismicity – The HR service provider will coordinate the Project Geology and Seismicity TM with input and review from the HC Contractor; addresses design ground motion parameters and potential for fault offset based on available information
- ii. Design Basis TM for Main and Saddle Dams – addresses dam foundation objectives, excavations, embankment materials, stability, groundwater/dewatering excavations, and recommends geotechnical investigations
- iii. Design Basis TM for I/O tower and tunnels – addresses geotechnical, hydraulic and structural disciplines for the tunnel excavation, lining, initial support, and recommends geotechnical investigations
- iv. Funks and Stone Corral Creeks TM – describes the effects of emergency reservoir releases and the long-term releases at Funks and Stone Corral Creeks
- v. Diversion TM – describes the diversion plan during construction
- vi. Roads and Bridge TM – discusses basis for selection of layout of roads and the bridge
- vii. Mechanical and Electrical TM for I/O tower

Task HR02.10 – Develop CADD drawing package

Develop CADD drawings of reservoir, main and saddle dams, I/O tower, I/O tunnels, roads, and bridge features with sufficient details to support Class 4 cost estimates.

Task HR98 — Project Management and Coordination

Task HR98.1 - Project Controls

Consultant will manage the design contract scope, schedule and budget for all project activities. Contract management will follow the Authority's required controls, and will provide monthly progress reports that document project activities and update the project schedule and budget status.

Task HR98.2 - PMP and QMP

Consultant will develop a draft and final Project Guide that includes organization, scope of services, schedule, budget, communications, document control, cost controls, invoicing and reporting.

Consultant will prepare a draft and final Quality Control and Assurance Plan, which will provide the policies and specific actions that will be taken to confirm that deliverables and supporting documents are complete, and conform to Sites Project standards.

Attachment 2 Fee Table

Task ID	Task Name	Fee
HR01	<i>Project Coordination</i>	\$7,339.00
HR02	<i>Engineering Support for Project Description of Preferred Project</i>	\$567,000.00
HR02.1	<i>CADD and GIS Standards</i>	\$7,505.00
HR02.2	<i>Confirm EIR/EIS Alternatives & Engineering Support</i>	\$991.00
HR02.3	<i>Finalize Storage and Conveyance Capacities</i>	\$991.00
HR02.4	<i>Obtain Information from Reclamation</i>	\$4,165.00
HR02.5	<i>Prepare Project Basemap</i>	\$8,123.00
HR02.6	<i>Prepare Basis of Feasibility Design</i>	\$8,843.00
HR02.7	<i>Conduct Field Visits</i>	\$1,191.00
HR02.8	<i>Real Estate Coordination</i>	\$3,965.00
HR02.9	<i>Complete Feasibility Level Design</i>	\$212,427.00
HR02.10	<i>Develop CADD Drawing Package</i>	\$318,799.00
HR98	<i>Project Management & Coordination</i>	\$25,040.00
Total Fee		\$599,379.00

Attachment 4

HR Service Provider Staff Rates		
Forrest, Mike	Contract Manager	\$ 272.56
Herrin, Jeff	TO Manager	\$ 247.83
Owens, Molly	Senior Project Controls	\$ 193.02
Henderson, Nate	Project Controls	\$ 120.75
Smith, Mike	Principal Civil	\$ 263.11
Malyala, Nagesh	Senior Civil	\$ 188.00
Nanduri, Rekha	Mid Civil	\$ 143.61
Remar, Alex	GIS Lead	\$ 132.36
L'Ecluse, Rion	CAD Lead	\$ 108.93
Aurangabadkar, Shree	Scheduler	\$ 93.95
Barnes, Joe	Principal Civil	\$ 209.13
Kazmi, Syed	Principal Bridge	\$ 339.61
Michael, Howard	Principal Roads	\$ 322.42
Doctolero, Vanessa	Mid Civil	\$ 169.35
Aviles, Sergio	Senior CAD	\$ 204.44
Staley, Dave	Senior Electrical	\$ 257.93
Young, Tom	Senior Mechanical	\$ 195.19
Meymand, Philip	Principle Geotechnical Engineer	\$ 231.82
Quintrall, Tony	Senior Civil	\$ 167.31
Zarchi, Idit	Senior Civil	\$ 140.43

Requested Action:

Consider acceptance of the following:

1. The final report titled "Sites Project Value Planning Alternatives Appraisal Report, dated April 13, 2020" and the recommendations presented within, and
2. A recommendation to the Sites Project Authority to approve the final report titled "Sites Project Value Planning Alternatives Appraisal Report, April 13, 2020" and the recommendations presented within.

Detailed Description/Background:

The subject report presents the value planning process and the Ad Hoc Value Planning Workgroup's recommended Project. The recommended Project includes substantial changes over Alternative D in the 2017 Draft EIR/EIS in that it:

- Rightsized the Project for the level of participation which reduces construction and repayment costs for local agencies;
- Significantly modifies operational parameters and substantially lessens environmental impacts; and
- Continues to meet the project objectives.

With approval of this final report, the Authority will proceed to the next stage of project development and use the recommendations as the basis of planning work through Phase 2.

Prior Action:

None.

Fiscal Impact/Funding Source:

Direction was given on value planning as a concept in September and the first meetings were held in October of 2019. There was no budget for the value planning in 2019 and the work was executed through scope changes until approval of a new work plan in January 2020. The approved budget was \$720k through August 2020 for value planning and was funded at no additional cost to members through 2019 carryover funds and prop 1 reimbursements. Task order amendments including value planning were approved in February of 2020.

Staff Contact:

Status:	Draft	Preparer:	Frederiksen	Phase:	2	Version:	A
Purpose:	Staff Report	QA/QC:	Watson	Date:	2020 April 22		
Caveat:	Informational	Authority Agent:	Watson	Ref/File #:	12.221-2		
Notes:				Page:	1	of	2

Lee Frederiksen

Attachments:

Sites Project Value Planning Alternatives Appraisal Report, April 13, 2020.



Sites Project Value Planning Alternatives Appraisal Report

April 2020

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Appendices

Appendix A – Value Planning Alternatives and Costs

- A-1: Value Planning TM
- A-2: Road and Bridge Analysis
- A-3: Conveyance Systems
- A-4: Cost Estimate
- Attachment A-4-1: Value Planning Alternatives

Appendix B – Operations

- B-1: Release Capacity and Reservoir Size
- Attachment B-1-1: Sites Operations Scenario B
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Appendix C – Environmental Permitting and Planning

- C-1: Permitting and Environmental Planning Impacts Assessment
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Appendix D – Repayment

- D-1: Financial Analysis in Support of March 2020 Value Planning
- D-2: Annual Cash Flow Tool (available digitally)

Executive Summary

Ongoing planning efforts to develop the Sites Reservoir Project (Project) continue to inform expectations on diversion permits and water rights, as well as shape investor participation. In October 2019, representatives from the Authority Board and Reservoir Committee began undertaking a “value planning” process: an effort to identify and evaluate additional alternatives that could make the Project more affordable for the Project’s participants. This decision was based on ongoing discussions with permitting agencies, expected project cost and cost per acre foot, and existing participation levels. An Ad Hoc Value Planning Workgroup was formed in late 2019 and continued to meet through early 2020. The Workgroup directed the efforts of Authority staff and the consultant team to formulate and evaluate Project alternatives that would be more affordable, and to identify a recommended Project.

For the purpose of this value planning effort, project objectives were limited to the interests of the Authority’s participants and the anticipated benefits to be funded through the Water Storage Investment Program (WSIP) by the State of California. The primary and secondary Project objectives are provided in Table E-1.

TABLE E-1. PROJECT OBJECTIVES.

Primary Objectives	Secondary Objectives
Improve Water Supply and Water Supply Reliability	Provide Opportunities for Recreation
Provide Incremental Level 4 Water Supply for Refuges	Provide Opportunities for Flood Damage Reduction
Improve the Survival of Anadromous Fish	
Enhance the Delta Ecosystem	

Overview of Project Components

The Project includes many facilities. Most of the Project costs are associated with four primary functions: diversions for filling, conveyance for releases, storage, and roads and bridges.

- Diversion Facilities for Filling – Diversion facilities include pipelines, canals, and pumping plants required to fill Sites Reservoir. To reduce costs, the value planning alternatives focused on using existing facilities for filling Sites Reservoir rather than constructing new facilities.
- Conveyance for Releases – The value planning alternatives focused on using the existing Tehama-Colusa Canal (T-C Canal) to deliver water to the southern terminus of the canal. Releases could then be conveyed from the southern end of the T-C Canal to either the Colusa Basin Drain (CBD) or the Sacramento River.
- Storage – Smaller reservoir sizes, focusing on reservoir sizes of 1.5, 1.3, and 1.0 million acre-feet (MAF) were evaluated to reduce the number and size of the dams and saddle dams along with related gates, towers, tunnels, and pumping facilities needed to fill Sites Reservoir.
- Roads and Bridges – The value planning effort considered a number of road and bridge combinations, ultimately focusing on lower costs options for a new bridge to maintain emergency and public access from Maxwell to Lodoga along with roads (paved and unpaved) to maintain access for residents and provide for construction traffic.

Value Planning Alternatives

Value planning alternatives that combine different types and sizes of diversion, release, reservoir, and road and bridge facilities were developed. Initial alternatives were developed following the October 2, 2019 kickoff meeting. These initial alternatives were then refined in the following months and additional alternatives were also added. Over this time period, analyses were completed to assess the operational, environmental, and permitting considerations for different alternatives. Staff also performed a repayment analyses for the alternatives. These analyses are summarized below.

Operational Assessment

The value planning alternatives evaluated the ability of several reservoir sizes and conveyance capacities to meet current participant subscriptions of approximately 230,000 acre-feet (AF), comprised of 192,892 AF of public water agency participation and approximately 40,000 AF of participation by the State of California through the Water Storage Investment Program (WSIP). A sensitivity analysis for a range of reservoir sizes and release capacities for Sites Reservoir was conducted to evaluate the quantity of water that could be released under different conveyance capacities assuming diversion criteria based on current discussions with regulatory agencies. Table 5-2 shows the estimated average annual releases under different combinations of potential Sites storage and release capacities.

TABLE E-2. SITES RESERVOIR RELEASES UNDER VARYING STORAGE AND RELEASE CAPACITIES

Storage Capacity (MAF)	Long-term Average		
	1,500 cfs Release Capacity (TAF)	1,000 cfs Release Capacity (TAF)	750 cfs Release Capacity (TAF)
1.5	253	243	236
1.3	243	234	230
1.0	207	195	191

Based on the preliminary analysis performed, the value planning alternatives with reservoir sizes of 1.3 to 1.5 MAF including assumed diversion criteria would be able to provide enough water to meet current participant demands. In addition, the use of the T-C Canal and the CBD as the conveyance systems appears possible based on preliminary analysis. Additional hydraulic analyses will be needed to confirm downstream conveyance conditions in the CBD, and the available capacity of the T-C Canal downstream of Funks Reservoir should be confirmed. Discussions with Reclamation on non-investment exchanges with Shasta Lake are ongoing. Annual Shasta Lake exchanges including assumed diversion criteria are estimated to be about 60 TAF. While field verification and additional analysis are required, the value planning alternatives with reservoir sizes of 1.3 to 1.5 MAF appear feasible from an operations standpoint.

Environmental and Permitting

The analysis of the value planning alternatives determined that obtaining permits from regulatory resource agencies for some of the alternatives would be relatively easier because of the (1) reduced inundation areas (within reservoir footprint), (2) lack of a pipeline easement to the Sacramento River, (3) removal of the northern regulating reservoir facilities, and (4) shorter conveyance off the T-C Canal (to CBD).

Repayment Analyses

A repayment analysis was conducted to estimate the annual repayment costs per AF of release from Sites Reservoir for both with and without a Water Infrastructure Finance and Innovation Act (WIFIA) loan. The analysis was based upon the estimated construction, operation and maintenance costs, and the estimated releases. Key assumptions included using 2019 as the base year, the U.S. Department of Agriculture loan for the Maxwell Intertie at 3.85%, a revenue bond interest rate of 5%, and a 30-year repayment. Including the USDA loan reduces the overall project cost by approximately \$20 per acre-foot. The range in repayment costs are summarized in Table E-3.

TABLE E-3. ANNUAL REPAYMENT COSTS PER ACRE-FOOT OF RELEASE

	VP1			VP2			VP3		VP4		VP5	VP6	VP7
Reservoir Size (MAF)	1.0	1.3	1.5	1.0	1.3	1.5	1.3	1.5	1.3	1.5	1.3	1.3	1.5
Release Capacity (cfs)	750			750			1,500		1,000		1,000	1,000	1,000
Project Cost (2019 \$, billions)	3.2	3.4	3.6	2.7	2.9	3.1	3.4	3.6	2.9	3.1	2.9	3.0	3.0
Annualized acre-feet/year Release (TAF)	191	230	236	191	230	236	243	253	234	243	234	234	243
PWA Annual Costs During Repayment Without WIFIA ^a Loan (2020 \$, \$/acre-feet)	862	776	805	730	667	693	738	754	660	678	644	674	661
PWA Annual Costs During Repayment With WIFIA Loan (2020 \$, \$/acre-feet)	799	724	755	665	614	641	689	708	608	628	592	621	611

^a Water Infrastructure Finance and Innovation Act

Recommended Project

The recommended Project was developed by the Ad Hoc Value Planning Workgroup through a sequential process that included initial and refined alternatives. Important considerations included total project cost, impacts on landowners, impacts on traffic and public safety, ability to meet participant demands, ability to provide public benefits to the State, relative magnitude of environmental impacts, and the estimated cost per acre-foot of water delivered. The recommended Project and two options for consideration are shown in Table E-4.

TABLE E-4. VALUE PLANNING GROUP RECOMMENDED PROJECTS

	VP5	VP6	VP7
	Option 1	Option 2	Recommended
Reservoir Size	1.3 MAF	1.3 MAF	1.5 MAF
Dunnigan Release Capacity (cfs)	1,000	1,000	1,000
Estimated Cost (2019 dollars)	\$2,855,000,000	\$2,988,000,000	\$3,037,000,000
Estimated Cost per Acre-Foot with WIFIA ^a (2020)	\$592	\$621	\$611
Estimated Deliveries (Long-Term Average in TAF)	234	234	243

^a Water Infrastructure Finance and Innovation Act

The recommended project (Alternative VP7) includes a 1.5 MAF reservoir to provide additional storage for dry and critical years. All options include a bridge to minimize travel times and provide emergency access for communities on the west side of the reservoir. The bridge for all options was sized based on the maximum water surface elevation for a 1.5 MAF facility to avoid future traffic impacts that could arise if climate change or other factors necessitated expanding a smaller reservoir. All alternatives also include a new unpaved road to maintain access for residents along the southern portion of the reservoir.

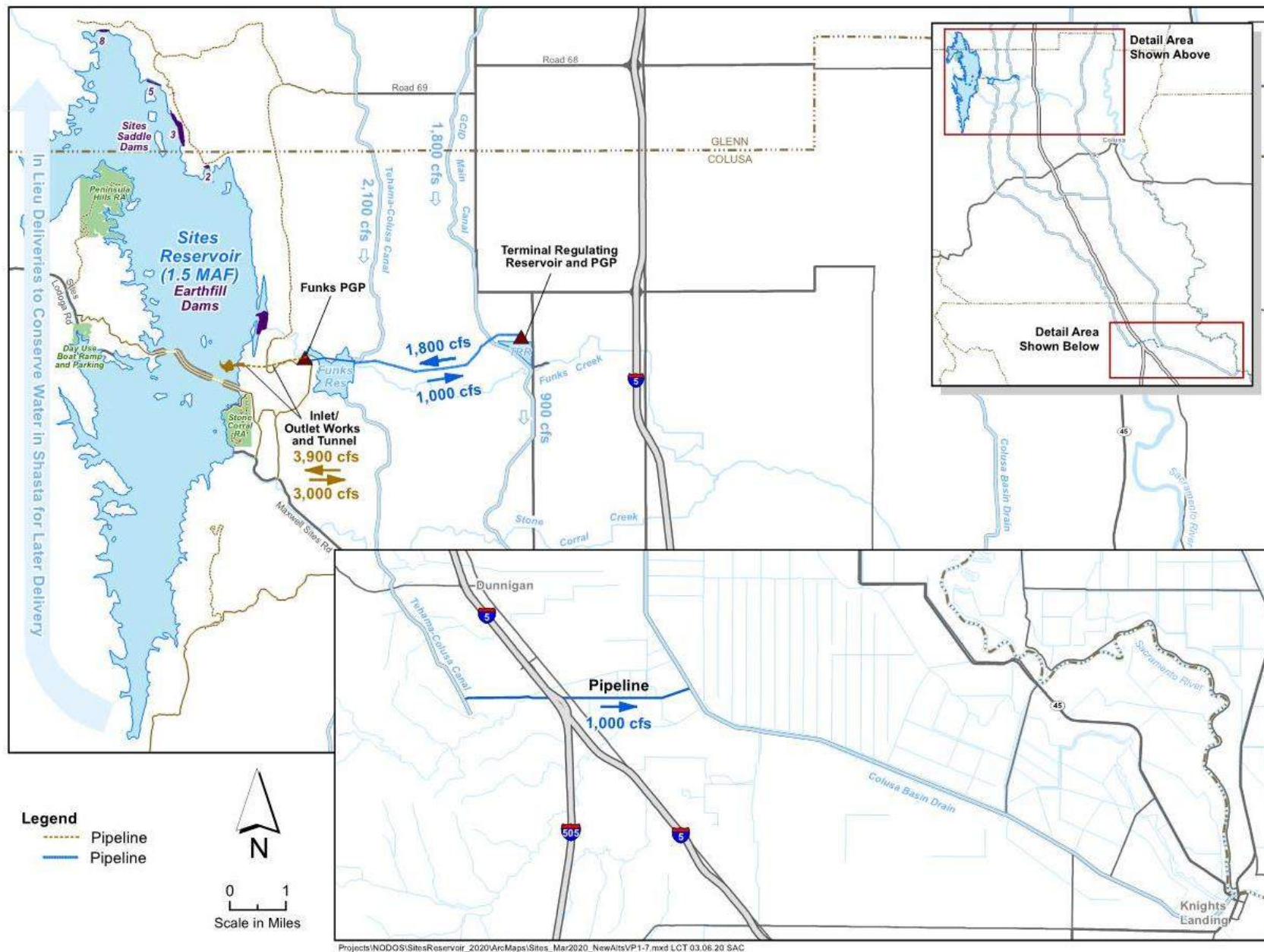
All options for consideration, including the recommended alternative, would release water through the T-C Canal. A 1,000 cfs release near the end of the canal would deliver water to either the CBD (Alternatives VP5 and VP7) or to the Sacramento River (Alternative VP6).

The Value Planning Workgroup recommends the Project proceed as Alternative VP7. Although Alternative VP5 had the lowest overall cost and lower cost per acre-foot, the Value Planning Workgroup recommends VP7 based on higher deliveries at a comparable cost and improved operational flexibility with a 1.5 MAF reservoir. The proposed facility locations associated with VP7 are shown in Figure E-1.

The Value Planning Workgroup also recommends the subsequent analyses of the Project include a 1.3 MAF reservoir (per VP5) and a Dunnigan to Sacramento River 1000 cfs release pipeline (per VP6) in order to provide flexibility to respond to any future condition changes that might result in such facilities becoming preferable.

The Recommended Project results in the following significant changes to the Draft Environmental Impact Report/Environmental Impact Statement (EIR/EIS) Alternative D 1.8 MAF Project:

- Reduced project size and footprint
- Reduced Sacramento River diversions
- Elimination of Delevan Sacramento River diversion and release facility
- Elimination of Delevan Pipeline and associated impacts to landowners and wildlife refuges along that alignment
- Reduced costs and improved affordability to the Project's funding participants



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1. Introduction

1.1 Background

Ongoing planning efforts to develop the Sites Reservoir Project (Project) continue to inform expectations on diversion permits and water rights, as well as shape investor participation. In October 2019, representatives from the Authority Board and Reservoir Committee began undertaking a “value planning” process: an effort to identify and evaluate additional alternatives that could make the Project more affordable for the Project’s participants. This decision was based on ongoing discussions with permitting agencies, expected project cost and cost per acre foot, and existing participation levels. An Ad Hoc Value Planning Workgroup was formed in late 2019 and continued to meet through early 2020. The Workgroup directed the efforts of Authority staff and the consultant team to formulate and evaluate Project alternatives that would be more affordable, and to identify a recommended Project.

1.2 Purpose

The purpose of this report is to present the methodology and findings of the value planning process and to summarize the overall Project status from a permitting, operations, and repayment perspective. The intent is that the Participants will find this information useful in assessing their level of ongoing Project participation.

2. Project Objectives and Participants

2.1 Objectives

A wide variety of Project objectives have been proposed in previous planning efforts by the Authority, the California Department of Water Resources (DWR), the Bureau of Reclamation (Reclamation), and others. For the purpose of this value planning effort, project objectives were limited to the interests of the Authority’s participants and the anticipated benefits to be funded through the Water Storage Investment Program (WSIP) by the State of California.

Prior to the initiation of the value planning effort, the estimated Project cost for participants for a presumed 1.8 million acre-feet (MAF) reservoir exceeded the average annual cost per acre-foot subscription that was acceptable (i.e. affordable for the agricultural participants) for their continued participation. The primary purpose of value planning was to provide enough water for current Project subscription while reducing the overall cost and the cost per acre-foot to an affordable level, which varies by participants. It was also essential that the alternatives selected meet the overall Project objectives:

- **Improve Water Supply and Water Supply Reliability.** The assumed total Project demand is approximately 230 thousand acre-feet per year (TAFY) in releases from Sites Reservoir, including a water agency demand of approximately 193 TAFY (see Table 5.1 for additional details).
- **Provide Incremental Level 4 Water Supply for Refuges.** Through the WSIP, the State committed to invest in Incremental Level 4 water supply for refuges at an undetermined level. The estimated level of commitment is an average delivery of 26 TAFY. Level 4 refuge demand is located primarily south of the Sacramento-San Joaquin Delta (Delta).
- **Improve the Survival of Anadromous Fish.** Participants are supportive of actions that benefit salmon, steelhead, and other anadromous fish species of concern in the Sacramento River watershed. The ability of Sites Reservoir to benefit salmon largely depends on the ability to use Sites Reservoir for in-lieu deliveries to Central Valley Project (CVP) contractors or to meet other CVP requirements. This enables the conservation of the coldwater pool in Shasta and Folsom Lakes. The species benefit from improved coldwater pool management, lower river water temperatures and supplemental flows to prevent the dewatering of redds. Negotiations are ongoing with Reclamation to establish a mutually agreeable operation.
- **Enhance the Delta Ecosystem.** Water released from Sites Reservoir would be conveyed to the Yolo Bypass toe drain to convey biomass to the Delta to help supply food for Delta smelt.

Alternatives include opportunities to achieve the following secondary objectives:

- **Provide Opportunities for Recreation.** This benefit is being funded through WSIP. The WSIP funding will support the construction of new recreation facilities, including Stone Corral Recreation Area on the east side of the reservoir, a boat ramp on the west side of the reservoir, and the Peninsula Hills Recreation Area on the west side of the reservoir.
- **Provide Flood Damage Reduction.** This benefit is being funded through WSIP. The WSIP application focused on flood-damage reduction resulting from the construction of Sites Dam on Stone Corral Creek. Once completed, Sites Dam will reduce the likelihood of flooding in the Stone Corral Creek watershed, and Golden Gate Dam will improve flood damage reduction for extreme events on Funks Creek.

Previously published benefits included hydropower production. The Value Planning Workgroup decided not to require facilities for pumpback generation in the value planning alternatives. Most costs associated with pumpback hydropower are attributable to Fletcher Reservoir. If pumpback generation is not required, then there is no requirement for a forebay/afterbay arrangement and Fletcher Reservoir can be eliminated, resulting in significant cost savings.

Although hydropower is not a Project objective, the cost estimates for the value planning alternatives include turbines in the pumping plants for generation on release. These turbines are not a major cost driver for the Project and are likely to significantly reduce operations, maintenance, and replacement (OM&R) costs by offsetting the costs for power to pump water into Sites. The benefit derived from retaining turbines can be reassessed to optimize the design as the Project progresses and energy markets fluctuate.

2.2 Participants

The Project facilities are to be limited to those that directly benefit the current participants (WSIP and local entity participants). Reclamation and the State of California, through the CVP and the State Water Project (SWP), were assumed to be cooperating partners not investors. The State may contract for WSIP benefits through the California Water Commission, the California Department of Fish and Wildlife, DWR, or the State Water Resources Control Board; nevertheless, the WSIP participation level is currently capped at \$816 million (some of which is allocated to recreation and flood control benefits), and deliveries were constrained to correspond to this level. Beyond the State, current financial participants include the following:

- City of American Canyon
- Antelope Valley-East Kern Water Agency
- Carter Mutual Water Company
- Coachella Valley Water District
- Colusa County
- Colusa County Water Agency
- Cortina Water District
- Davis Water District
- Desert Water Agency
- Dunnigan Water District
- Glenn-Colusa Irrigation District (GCID)
- LaGrande Water District
- Metropolitan Water District of Southern California
- Reclamation District 108
- San Bernardino Valley Municipal Water District
- San Geronio Pass Water Agency
- Santa Clara Valley Water District
- Santa Clarita Valley Water District
- Westside Water District
- Wheeler Ridge-Maricopa Water Storage District
- Zone 7 Water Agency

3. Overview of Project Components

The Project includes many facilities. Most of the Project costs are associated with four essential Project functions: diversions, conveyance for releases, storage, and roads and bridges. The following sections provide an overview of the overall Project components, with focus on those that were closely evaluated during the value planning process.

3.1 Diversions

At the October 2, 2019 meeting of the Ad Hoc Value Planning Workgroup, it was decided to focus alternatives on the use of existing diversions (Red Bluff and Hamilton City pumping plants) rather than constructing a new pumping plant on the Sacramento River.

Diversion facilities include pipelines, canals, and pumping plants required to fill Sites Reservoir. Alternative D (1.8 MAF reservoir) relied on three diversions, including the existing Tehama-Colusa (T-C) Canal diversion at Red Bluff, the existing GCID Main Canal diversion at Hamilton City, and a new diversion on the Sacramento River for the Delevan pipeline. The lowest cost options use the existing pumping plants and canals. Together, the T-C and GCID Main Canals can deliver approximately 3,900 cubic feet per second (cfs). Eliminating the new Delevan pumping plant provides substantial cost savings (approximately \$260 million). Although this reduces the ability to fill Sites Reservoir, the workshop participants believed that two diversions would provide adequate conveyance capacity consistent with the likely permissible diversion capacity.

3.1.1 Diversion Criteria

Sites Reservoir would be filled through the diversion of excess Sacramento River flows that originate primarily from unregulated tributaries to the Sacramento River downstream from Keswick Dam. Diversions would be allowed when operational criteria are met, which would be set by permitting requirements. Based on current permitting discussions, the diversion criteria included in Table 3-1 were assumed for the value planning analysis. These criteria are often referred to as “Scenario B.”

TABLE 3-1. ASSUMED DIVERSION AND OPERATIONS CRITERIA (SCENARIO B)

Location	Criteria
Wilkins Slough Bypass Flow	8,000 cfs April/May 5,000 cfs all other times
Fremont Weir Notch	Prioritize the Fremont Weir Notch, Yolo Bypass preferred alternative, flow over weir within 5%
Flows into the Sutter Bypass System	No restriction due to flow over Moulton, Colusa, and Tisdale Weirs
Freeport Bypass Flow	Modeled WaterFix Criteria (applied on a daily basis) Post-Pulse Protection (applied on a moving 7-day average) Post-Pulse (3 levels) = January–March Level 2 starts January 1 Level 1 is initiated by the pulse trigger
Net Delta Outflow Index (NDOI) Prior to Project Diversions	44,500 cfs between March 1 and May 31

For more information on the assumed diversion and operations criteria, refer to Appendix B.

3.1.2 Pumping Facilities

Once water is diverted from the Sacramento River, it must be pumped into Sites Reservoir. This requires pumping plants with regulating reservoirs at the existing T-C and GCID Main Canals.

Pumping from T-C Canal to Sites Reservoir

The Tehama-Colusa Canal Authority (TCCA) diversion facility is located on the Sacramento River near Red Bluff. The Red Bluff Pumping Plant has an existing pumping capacity of 2,000 cfs, which is used to meet current agricultural water demand. The Project would include installation of one additional pump (250 cfs) and

one backup pump to the existing pump grouping, which would increase the overall pumping capacity to 2,250 cfs to fully use the 2,100 cfs capacity for diversion through the T-C Canal to Sites Reservoir.

For value planning, two regulating reservoir options were considered for the T-C Canal: the existing Funks Reservoir and a new Tehama-Colusa Regulating Reservoir (TCRR). The primary advantages of a new northern regulating reservoir (TCRR) are that it would eliminate almost all impacts on T-C Canal operations, and it would allow for early filling of Sites Reservoir. Two locations were considered, with one near Road 68 and a second to the northwest near Hunters Creek. Preliminary cost estimates indicate that both locations would have comparable cost for implementation. The Hunters Creek location reduces the length of pipeline needed to lift water into Sites Reservoir by approximately 2 miles, but it is less accessible for construction and maintenance and has greater environmental impacts because of streambed impacts. Using the existing Funks Reservoir minimizes the length of pipeline and does not require constructing a new regulating reservoir into Sites Reservoir and, therefore, has the lowest cost.

Pumping from GCID Main Canal to Sites Reservoir

Under proposed Project operations, the GCID Main Canal would convey water pumped from the existing Hamilton City pumping facility to Sites Reservoir. The Hamilton City pumping facility has a 3,000 cfs diversion capacity at the Sacramento River intake, and the capacity of the GCID Main Canal is 1,800 cfs. Table 3-2 shows the flows that are assumed to occupy capacity in the canal during existing winter operations. A dedicated annual 2-week maintenance shutdown period is assumed in the last week of January through the first week of February.

TABLE 3-2. OCCUPIED CAPACITY IN THE GCID MAIN CANAL DURING EXISTING WINTER OPERATIONS

Month	October	November	December	January	February	March
Occupied Capacity (cfs)	513	534	389	235	56	48

Conveying water from the GCID Main Canal requires the construction of the Terminal Regulating Reservoir (TRR) to regulate levels in the canal with the operation of the new pumping plant to convey water to Sites Reservoir. Therefore, construction of the TRR was included in each alternative.

Forebay/Afterbay and Sites Pumping/Generating Plants

Alternative D of the Draft EIR/EIS (1.8 MAF reservoir) included a forebay/afterbay (Fletcher Reservoir) where all diversions collected were then lifted into Sites Reservoir using the Sites Pumping/Generating Plant. This arrangement maximized the potential for pumpback generation (cycling between the upper and lower reservoir to provide dispatchable power). The Value Planning Workshop participants decided to eliminate pumpback generation from the Project at this time. This enables the elimination of Fletcher Reservoir (approximately \$190 million). It also allows consideration of eliminating the Sites Pumping/Generating Plant (the most expensive single Project facility, at \$800 million), provided some additional investment is made to the other pumping plants to compensate for increased head to pump directly into Sites Reservoir.

3.2 Conveyance for Releases

Shasta Exchange for Project Demands: It is possible to release water from Sites Reservoir to meet CVP Sacramento Valley agricultural water service and Settlement contractor CVP demands. Meeting CVP needs from Sites Reservoir in the T-C Canal and GCID Canal service areas south of Funks Reservoir allows water to be conserved in Shasta Lake for subsequent delivery to meet Project demands. This could include refuge water supply or South of Delta participant needs. The amount of additional conveyance (for example, Delevan conveyance or Dunnigan conveyance) that must be constructed to release water directly from Sites Reservoir to the Sacramento River depends on the amount and timing of water that could be cooperatively exchanged through Shasta for Project demands.

Delevan Pipeline or Canal: Alternative D (1.8 MAF Reservoir) included two pipelines with a combined capacity of 1,500 cfs back to the Sacramento River for releasing water directly to the Sacramento River. The value planning effort considered a reduced capacity of 750 cfs using a canal in place of a pipeline where

possible to reduce costs. Constructing a canal is less costly but increases environmental impacts by introducing potential flooding issues and creating a barrier to terrestrial species migration.

Dunnigan Release: A new option introduced by the Value Planning Workgroup is the use of the existing T-C Canal to deliver water to the southern terminus of the canal. Water could be conveyed from the southern end of the T-C Canal to either the Colusa Basin Drain (CBD) or the Sacramento River. Three conveyance approaches were considered:

- Conveyance through existing drainage channels to the CBD
- Conveyance through a new canal to the CBD
- Conveyance through a pipeline to the CBD or river

Gravity releases through existing drainage channels to the CBD are possible but would result in significant water loss attributable to seepage and evaporation and, therefore, were eliminated. The environmental team has recommended pipeline release versus a canal as the preferred option to minimize environmental impacts. Conveyance through a pipeline to the CBD or river can be done by gravity without a pump station. The ability of the T-C Canal to operate using a gravity pipeline to the CBD or river was evaluated, with results summarized in Section 5.

3.2.1 Release Criteria

Sites Reservoir would be operated in cooperation with CVP and SWP operations to coordinate releases from Shasta Lake, Lake Oroville, and Folsom Lake. Sites releases could allow reduced releases from other reservoirs while maintaining minimum instream flow objectives, Sacramento River temperature requirements, and Delta salinity control requirements assigned to CVP and SWP. Through reduction in releases from CVP and SWP reservoirs, storage could be conserved in Shasta Lake, Lake Oroville, and Folsom Lake to increase operational flexibility.

Releases from Sites Reservoir to the Sacramento River would be operated to achieve multiple benefits associated with the Project's primary objectives in specific water year types and months of the year. Most releases are likely to occur in dry and critical water years when members request releases from storage, and when state water (WSIP) is likely to be released for environmental benefits. Priority operations would include the following:

- Provide water to Project participants north and south of the Delta.
- Provide water to the Cache Slough area via the Yolo Bypass.
- Provide water for Incremental Level 4 refuge deliveries.
- Support Reclamation goals through exchange. Goals could include improved Shasta Lake temperature management and Sacramento River fall flow stabilization to improve spawning and rearing success of anadromous fish.

Sites releases to Sacramento Valley members include deliveries to TCCA members, GCID, Reclamation District 108 (RD 108), Colusa County, and other members. Most of these deliveries are conveyed through the T-C Canal.

TCCA historical monthly diversion data for 1999 through 2013 were reviewed to assess seasonal diversion patterns and variations in water use for a range of hydrologic conditions and CVP allocations. The historical data were used to verify that the total irrigation demands and diversion patterns generally represented actual water operations. TCCA's CVP Agricultural Water Service Contracts are subject to shortage allocations based on CVP storage and annual hydrologic conditions. Sites deliveries to TCCA participants will be used to supplement existing CVP contract supplies.

GCID and RD 108 are CVP Sacramento River Settlement Contractors and are subject to a 25 percent contract reduction in severe drought years under specific shortage criteria in their contracts. Sites water will be used to supplement existing CVP settlement contract supplies.

It is assumed that South of Delta SWP Contractors will take delivery of Sites water to supplement SWP Table A allocations in dry and critical water years. Sites Reservoir releases to SWP contractors are assumed to be initiated when the SWP allocation is less than 85 percent of Table A values. If the SWP allocation is less than

65 percent of Table A values, releases to SWP members are assumed to become more aggressive to supplement decreased supplies.

3.3 Dams and Reservoir

Alternative D of the EIR/EIS proposed a 1.8 MAF reservoir for Sites. The capacity of the reservoir depends on the size of the dams. The height of Golden Gate and Sites Dams is reduced for a 1.5, 1.3, or 1.0 MAF reservoir, and some of the saddle dams are eliminated with the smaller reservoir.

Reducing the capacity of the reservoir would also reduce the height and number of gates required for the inlet/outlet tower. Dam safety regulations also require the ability to rapidly reduce the amount of water stored behind a dam in the event of imminent failure. The reservoir inlet/outlet tunnels are designed to meet this rapid drawdown requirement, instead of normal service levels. Smaller reservoirs require smaller-diameter tunnels, further reducing the cost.

Finally, reducing the reservoir size also reduces the head on the pumping facilities needed to fill Sites Reservoir. The value planning effort focused on 1.5, 1.3, and 1.0 MAF facilities to reduce construction costs.

Three alternative construction methods for dams were considered. The original DWR concept was for a zoned rockfill dam. Reduced cost is likely with an earthfill dam or a hardfill dam; however, the variance in cost based on the dam construction method is much less than the potential savings associated with reducing the size of the reservoir.

3.4 Roads and Bridge

Alternative D (1.8 MAF reservoir) included a new bridge approximately 1.5 miles in length to maintain emergency and public access from Maxwell to Lodoga. Other alternatives considered included a pair of shorter-span bridges along with the use of constructed fill (causeways) between the sections and a combination of a shorter bridge with a tunnel for the smaller reservoir.

A new road around the southern end of Sites Reservoir that would connect over to Lodoga was considered as an alternative to building a bridge.

All alternatives include a road to the southern end of Sites Reservoir to provide access for residents who would otherwise be stranded by the new reservoir.

The road and bridge options are described more fully in Appendix A.

4. Value Planning Alternatives

4.1 Alternative Development

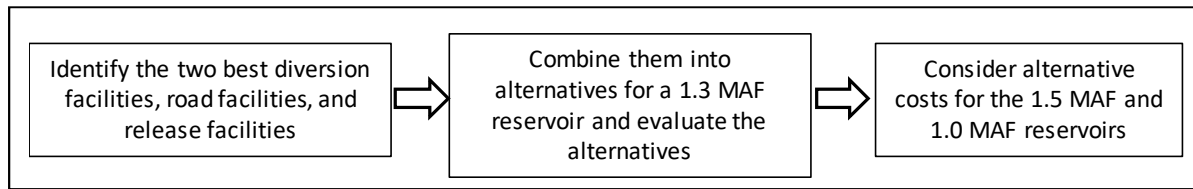
Project alternatives were developed that combine different types and sizes of diversion, release, reservoir, and road and bridge facilities described in Section 3. Initial alternatives were developed following the October 2, 2019 kickoff meeting and then refined in the following months to develop a recommended alternative. Initial alternatives are described in Appendix A. The refined alternatives are described in this section, with the preferred alternative discussed in Section 8. Figures for the refined alternatives are provided in Appendix A.

4.2 Initial Alternatives

Representatives from the Reservoir Committee and Authority Board met on October 2, 2019, to discuss approaches that could potentially lower the Project cost. Several facility modifications were identified, and appraisal-level costs are provided in this analysis to allow a comparison of alternatives. The Value Planning Analysis Technical Memorandum is in Appendix A of this report; however, additional alternatives were identified in subsequent meetings on November 15 and December 16, 2019, and during the value planning alternatives field trip on January 14, 2020. The costs for the refined alternatives are provided in Appendix A.

4.3 Evaluation of Alternatives Selected for Further Study

The following approach was used to develop and evaluate the initial alternatives (VP1 through VP4).



4.3.1 Evaluation of Facilities

Diversion Facilities: Diversion facilities considered are described in Section 3.1 and are evaluated in Table 4-1.

TABLE 4-1. INITIAL SCREENING OF DIVERSION FACILITIES (750 cfs)

Option	Initial Cost	Advantages	Disadvantages	Rank
Delevan Pipeline and Pumping Plant	\$859M	Direct release to river	Requires new intake Impact on landowners Giant garter snake habitat High cost	Low
TCRR, Pipeline, and Pumping Plant	\$634M	Existing Red Bluff pumping Independent regulation for TCCA Early fill (2-3 years earlier)	Impacts additional real estate Cost of new regulating reservoir Pipeline distance	Medium
TRR, Pipeline, and Pumping Plant	\$474M	Existing Hamilton City pumping	—	Best
Funks, Channel, and Pumping Plant	\$256M	Closest to Sites Reservoir No additional regulating reservoir required	Must avoid T-C Canal impacts	Best

Roads and Bridges: Options for roads and bridges at Sites Reservoir are discussed in Section 3.4 and are evaluated in Table 4-2.

TABLE 4-2. ROADS AND BRIDGES

Option	Initial Cost	Advantages	Disadvantages	Rank
South Road to Residents	\$41M	Provide access to stranded property	—	Required
North Construction Bypass – construction traffic only (paved)	\$30M	Avoid traffic through Maxwell	—	Required
Bridge	Varies	Shortest travel time Lower maintenance cost Less environmental impact	—	Best
South Road	\$224M	Avoids bridge	Higher maintenance More acres affected	Medium

Release Facilities: Options for conveyance for releases from Sites Reservoir are discussed in Section 3.2 and are evaluated in Table 4-3.

TABLE 4-3. INITIAL SCREENING OF RELEASE FACILITIES (750 CFS)

Option	Initial Cost	Advantages	Disadvantages	Rank
Delevan Pipeline	\$389M	Direct release to river	Impact on landowners Giant garter snake habitat High cost	Low
Delevan Canal	\$360M	Direct release to river	Impact on landowners Giant garter snake habitat Complicates local drainage Additional pump station at CBD High cost	Low
Dunnigan to CBD ^a	\$54M	Less acreage affected May avoid a 408 permit	Potential losses in CBD	Best
Dunnigan to River	\$173M	Avoid loss in CBD	Impact additional acreage	Medium

^a CBD – Colusa Basin Drain

An evaluation of conveyance facility sizing was performed, with results provided in Section 5.

4.3.2 Refined Alternatives

Four alternatives were developed for the 1.3 MAF reservoir with combinations of the highest ranked facilities to bookend the value planning options for the March 2, 2020 review meeting. An additional three alternatives were developed during the review meeting:

- Alternative VP 5 – This alternative includes a 1.3 MAF reservoir and uses the Funks Reservoir and the TRR to fill Sites Reservoir with releases (1,000 cfs) from the southern end of the T-C Canal through a pipeline that would go to the CBD.
- Alternative VP 6 – This alternative includes a 1.3 MAF reservoir and uses the Funks Reservoir and the TRR to fill Sites Reservoir with releases (1,000 cfs) from the southern end of the T-C Canal through a pipeline that would extend to the Sacramento River.
- Alternative VP 7 – This alternative This alternative includes a 1.5 MAF reservoir and uses the Funks Reservoir and the TRR to fill Sites Reservoir with releases (1,000 cfs) from the southern end of the T-C Canal through a pipeline that would go to the CBD.

The refined alternatives are shown in Table 4-4.

TABLE 4-4. RECOMMENDED ALTERNATIVE AND ALTERNATES

Major Facilities	VP5	VP6	VP7
	Alternate 1	Alternate 1A	Recommended
Reservoir Size	1.3 MAF	1.3 MAF	1.5 MAF
Bridge Size (avoids future traffic Interruption)	1.5 MAF	1.5 MAF	1.5 MAF
South Road to Local Residents	Included	Included	Included
Misc. Local and Project Roads	Included	Included	Included
Diversion Locations	Funks and TRR	Funks and TRR	Funks and TRR
Dunnigan Release	1,000 cfs to CBD	1,000 cfs to River	1,000 cfs to CBD
Direct Cost	\$1,787,000,000	\$1,870,000,000	\$1,902,000,000
Non-Contract Costs	\$485,000,000	\$508,000,000	\$516,000,000
Contingency	\$557,000,000	\$583,000,000	\$592,000,000
Total Estimated Cost (2019 dollars)	\$2,855,000,000	\$2,988,000,000	\$3,037,000,000

Cost estimating details are provided in Appendix A-4.

The availability of site data and design information to support preparing cost estimates varies between the facilities that constitute the Sites Reservoir project. Some facilities (like the main dams) are advanced enough to support a lower-bound Class 3 estimate as defined by the Association for Advancement of Cost Engineering, International. Other facilities, like the Dunnigan conveyance from the T-C Canal to the CBD have no supporting geotechnical evaluation and only a preliminary screening of potential utility conflicts. These estimates are at a Class 5 level.

A contingency of 10% was first applied for design, followed by a 15% contingency for construction. The compounded contingency is approximately 30% of the direct cost for construction. Non-contract costs were estimated at 17% of the total estimated cost.

5. Operational Assessment of Sites Release Capacity for Value Planning

5.1 Participant Subscriptions

The value planning alternatives evaluated the ability of several reservoir sizes and conveyance capacities to meet participant subscriptions. Table 5-1 shows the current member participation for the Sites Reservoir Project by region and delivery type. WSIP deliveries for Refuge Incremental Level 4 and Yolo Bypass are estimated to be about 40 TAFY.

TABLE 5-1. CURRENT SITES RESERVOIR PARTICIPATION

Member	Reservoir Participation (AFY)
Public Water Agencies	
North of Delta	52,142
South of Delta	140,750
Subtotal Public Water Agencies	192,892
State of California (WSIP)	
Refuge Incremental Level 4 and Yolo Bypass	~40,000
Total Requirement	~230,000

5.2 Evaluation of Reservoir Size and Release Capacity

A sensitivity analysis for a range of reservoir sizes and release capacities for Sites Reservoir was conducted to evaluate the quantity of water that could be released under different conveyance capacities. The analysis included a surrogate approximation of the potential to exchange water between Sites Reservoir and Shasta Lake based on the analysis presented in Section 5.3. This exchange would be implemented through the release of Sites water to meet Sacramento Valley CVP contract demands and Delta regulatory obligations. The exchange assumes a corresponding reduction in Shasta Lake releases that preserves storage in the lake and contributes to water temperature management and Sacramento River flow stability benefits. Based on Scenario B diversion criteria (see Table 3-1), it is assumed that approximately 60 TAF could be exchanged on an average annual basis, with most of these exchanges occurring in dry and critical water year types. This also assumes integration with the SWP to facilitate operations and deliveries to South of Delta members.

Three conveyance capacities for Sites Reservoir releases were evaluated: 750, 1,000, and 1,500 cfs. Each conveyance capacity was assessed using three storage capacities for the reservoir: 1.5, 1.3, and 1.0 MAF, with assumed reservoir dead storage of 120 TAF. All nine combinations of these capacities were run under Scenario B. For each scenario, releases from Sites Reservoir were quantified using monthly releases, as reported by CalSim II modeling. Deliveries include releases for TCCA, GCID, RD 108, Colusa County, Sacramento Valley members, South of Delta members, Refuge Level 4, and Yolo Bypass.

Table 5-2 shows average annual releases under different combinations of potential Sites storage and release capacities. -Releases highlighted in green meet current participant demand, while releases highlighted in orange do not meet current participant demands.

TABLE 5-2. SITES RESERVOIR RELEASES UNDER VARYING STORAGE AND RELEASE CAPACITIES

Storage Capacity (MAF)	Long-term Average		
	1,500 cfs Release Capacity (TAF)	1,000 cfs Release Capacity (TAF)	750 cfs Release Capacity (TAF)
1.5	253	243	236
1.3	243	234	230
1.0	207	195	191
Meets participant demand (193+40=233)			
Does not meet participant demand			

Table 5-3 shows average annual releases for Sacramento Valley Index water year types. Maximum Sites releases generally occur in dry water years, as highlighted yellow, because there is increased water demand and available Delta export capacity. Overall, decreasing Sites' release capacity from 1,000 to 750 cfs reduces average annual releases by 1.6 to 2.7 percent, depending on reservoir size.

Overall, decreasing Sites' release capacity from 1,500 to 1,000 cfs reduces average annual releases by 4.0 to 6.2 percent. Further reducing the release capacity to 750 cfs reduces average annual deliveries by an additional 1.6 to 2.7 percent.

Releases from Sites are greatest during dry years. Consequently, dry years are more critical to the conveyance capacity of Sites releases than any other year type. For example, the average annual delivery of a 1.5 MAF reservoir decreases by 13.5 percent when its release capacity is reduced from 1,500 to 750 cfs.

Based on this sensitivity analysis, the combination of a 1.5 MAF reservoir and a 1,000 cfs release capacity provides about a 243 TAF average annual release for Sites Reservoir, which meets current participation and provides additional operational flexibility.

TABLE 5-3. SITES RESERVOIR RELEASES UNDER VARYING STORAGE AND RELEASE CAPACITIES, BY WATER YEAR TYPE

Year Type	Storage Capacity (MAF)	1,500 cfs Release Capacity (TAF)	1,000 cfs Release Capacity (TAF)	750 cfs Release Capacity (TAF)
Wet	1.5	115	116	112
	1.3	122	115	113
	1.0	118	112	109
Above Normal	1.5	275	286	280
	1.3	287	299	303
	1.0	185	186	194
Below Normal	1.5	285	273	277
	1.3	278	263	266
	1.0	237	217	213
Dry	1.5	422	382	365
	1.3	392	364	345
	1.0	343	309	301
Critically Dry	1.5	243	237	225
	1.3	205	204	204
	1.0	185	184	177

Note: Recommended range to account for uncertainty is simulated values less 30,000 acre-feet.

5.3 Evaluation of Potential for Shasta Lake Exchange

The Ad Hoc Value Planning Workgroup wanted to evaluate the proposed alternatives without Reclamation investing in the Project financially. In this scenario, water stored in Sites Reservoir could be exchanged with Shasta Lake to meet CVP TCCA agricultural water service and Settlement Contractor obligations as well as downstream flow and Delta water quality requirements. Therefore, a portion of the water demand within the CVP service area along the T-C Canal and GCID Main Canal south of Sites Reservoir could be met from releases from Sites Reservoir in the spring and allow an equal amount of water to be retained in Shasta Lake (via exchange) to improve summer cold water pool management.

The exchange could occur when Sacramento River flows at Keswick and temperatures at Clear Creek are within a specific range and not compromised by reduced Shasta Lake releases into the Sacramento River. This exchange would likely occur in April through May (and possibly June) in dry and critically dry years.

Shasta Lake releases of exchange water are proposed to be scheduled to benefit downstream temperatures in the Sacramento River, which would likely occur in September, October, or November. Withdrawals from Shasta would be coordinated with Reclamation. Based on conversations with Reclamation, this analysis assumes that no carryover storage of exchange water would be allowed between years.

The exchange operation would likely be subject to the following constraints provided by Reclamation to protect the interests of the CVP and to comply with State and federal laws and regulations:

- All water stored in Shasta would be subject to spill at any date and would be the first water in Shasta to spill.
- All operations associated with this exchange would be subject to river temperature constraints. This ensures there is no impact by reducing releases to store, and ensures a benefit when water is released later in the year.
- All operations are subject to approval by the State Water Resources Control Board and must comply with any applicable State or federal laws, regulations, or guidelines.

A post-processing analysis was performed for the 82-year simulation period of CalSim II to evaluate Shasta exchanges under a series of criteria that were assumed for the Sacramento River at Clear Creek, Keswick flow, Shasta storage, and water year types.

Figure 5-1 shows the exceedance probability of the annual volume of exchangeable water (TAF) for the nine scenarios evaluated. Overall, the annual exchange with Shasta ranges from 0 to 300 TAF for the scenarios with no Delevan Pipeline.

Annual Volume of Exchangeable Water

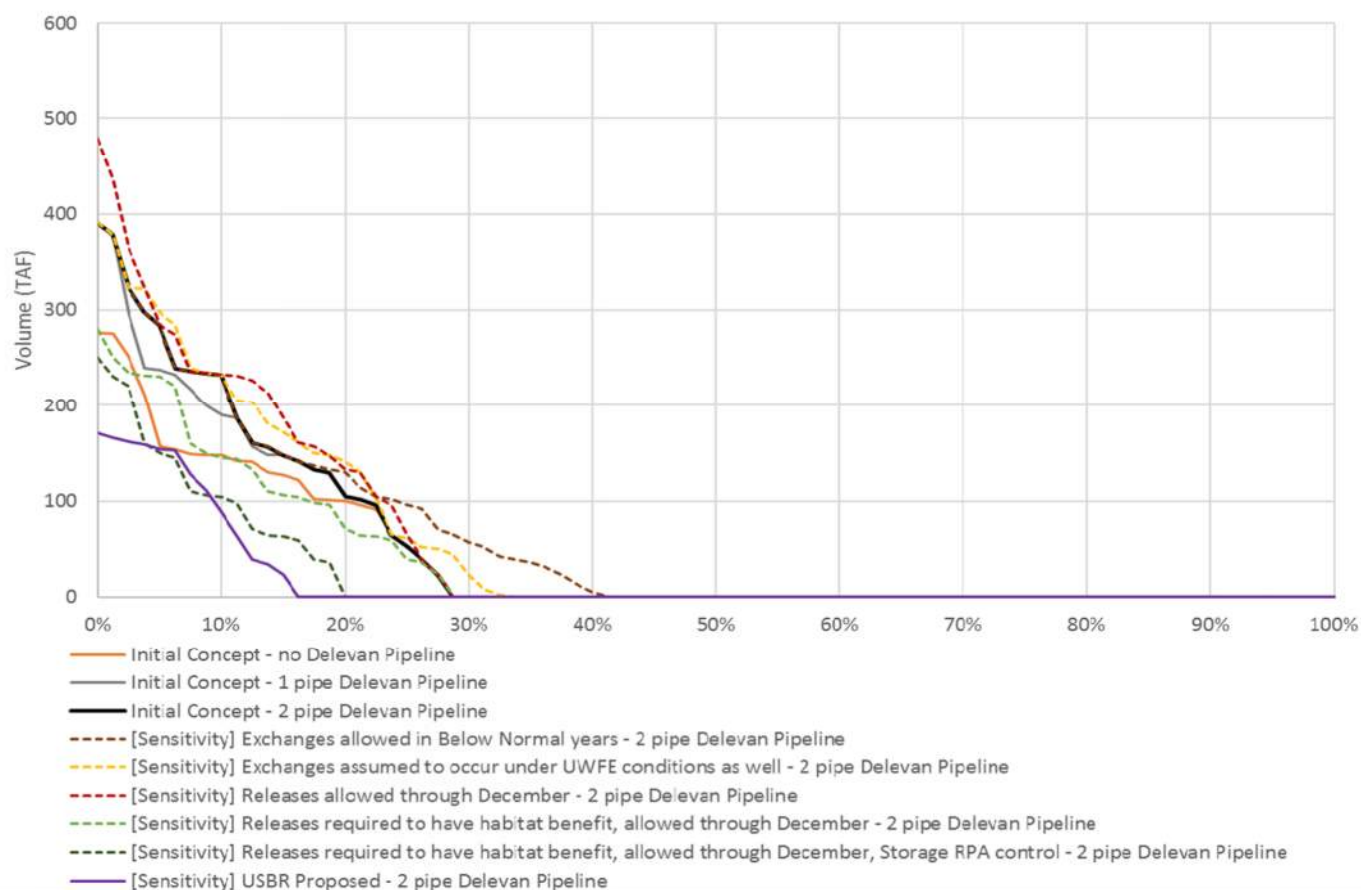


FIGURE 5-1. ANNUAL VOLUME OF EXCHANGEABLE WATER WITH SHASTA LAKE

5.4 Evaluation of T-C Canal Available Capacity

A screening analysis of historical daily diversion data was completed to estimate available capacity in the lower T-C Canal below Funks Reservoir for conveyance of releases from Sites Reservoir. Based on an approximation of the proportion of total T-C Canal diversions that were conveyed in the canal below Funks Reservoir, it appears the lower T-C Canal may have up to 1,000 cfs of available capacity for Project releases on an average monthly basis, during the peak summer diversion season when TCCA contractors receive a 100 percent contract allocation.

A check was then conducted to verify that the T-C Canal had enough available capacity to convey Sites releases to TCCA members, plus additional Sites releases to the Sacramento River. An analysis was conducted of Sites Reservoir monthly releases through the T-C Canal to the TCCA members using a 1,000 cfs conveyance capacity and three different storage capacities (1.0, 1.3, and 1.5 MAF). For this particular analysis, the releases assume no exchange with Shasta Lake. The results of this analysis indicate that simulated monthly Sites deliveries to T-C Canal members along the canal never exceed more than 500 cfs, while total deliveries through the T-C Canal, including South of Delta releases, rarely exceed 1,100 cfs. Based on this preliminary analysis, the lower T-C Canal appears to have sufficient capacity to convey CVP TCCA contractor deliveries, Sites releases to TCCA members, plus additional Sites releases to the Sacramento River, during the peak summer diversion season.

5.5 Evaluation of Colusa Basin Drain Available Capacity

The rate of flow from the Colusa Basin Drain into the Sacramento River through the Knight's Landing Outfall Gates (KLOG) depends on the differential stage in the Sacramento River and in the CBD at KLOG. The stage

in the CBD at KLOG is dependent upon the operation of both KLOG and the Wallace Weir. The flow in the CBD has historically been difficult to measure due to backwater effects.

RD 108 completed an appraisal level assessment of historical flows through KLOG to estimate a range of flows that generally result in flooding of adjacent agricultural fields. Flooding was estimated to occur with flows ranging from 1,370 cfs to 2,220 cfs indicating that flows of 1,000 cfs from Sites are possible, though further analysis should be conducted.

Using the CBD for conveyance of Sites Reservoir water will include coordination with the local landowners regarding the project operation and timing of the additional flows. In order to understand how water released from Sites Reservoir could be moved through the CBD and into the Sacramento River at Knights Landing, the hydraulics between the CBD, KLOG, and Wallace Weir need to be investigated.

5.6 Operations Conclusions

Based on the preliminary analysis performed, the value planning alternatives with reservoir sizes of 1.3 to 1.5 MAF, including Scenario B Diversion Criteria, would be able to provide enough water to meet current participant demands. In addition, the use of the T-C Canal and the CBD as the conveyance systems appears possible based on preliminary analysis. Additional hydraulic analyses will be needed to confirm downstream conveyance conditions in the CBD, and the capacity of the T-C Canal downstream of Funks Reservoir should be confirmed. Discussions with Reclamation on non-investment exchanges with Shasta Lake are ongoing. Annual average Shasta Lake exchanges included with Scenario B analyses are estimated at about 60 TAF. While field verification and additional analysis are required, the value planning alternatives with reservoir sizes of 1.3 to 1.5 MAF appear feasible from an operations standpoint.

6. Environmental and Permitting Assessment of Alternatives

Appendix C summarizes considerations for the value planning effort from the environmental planning and permitting perspective and includes the following:

- Key differences between the value planning alternatives when compared with Alternative D, as described in the Draft EIR/EIS
- Species within the alternative's footprint that could potentially be affected through construction and operation of the Project
- Key permits and approvals required to construct and operate the Project, including any additional regulatory requirements beyond those identified in the Draft EIR/EIS
- Environmental planning considerations related to California Environmental Quality Act/National Environmental Policy Act (CEQA/NEPA) analysis
- Qualitative change in mitigation cost as compared with Alternative D
- A relative weighting associated with environmentally related criteria (and associated metrics) compared with Alternative D.

6.1 Environmental Permitting Assessment

The analysis of the value planning alternatives determined that the alternatives considered (Alternatives 1 through VP7) would result in little, if any, substantial change in timing or cost of key permits because of the same relative magnitude of impacts associated with the Project footprint and operations when compared with Alternative D. However, using the scoring methodology provided in Table 4 of Appendix C, obtaining permits from regulatory resource agencies for Alternatives 5a, 6a, VP1, VP2, VP5, and VP7 would be relatively easier because of the (1) reduced inundation areas (within reservoir footprint), (2) lack of a pipeline easement to the Sacramento River, (3) removal of the northern regulating reservoir facilities, and (4) shorter conveyance off the T-C Canal (to CBD).

6.2 Environmental Planning Assessment

The Draft EIR/EIS identified potentially significant environmental effects on aquatic, botanical, and terrestrial biological resources. However, with the exception of golden eagles, mitigation was identified to reduce effects to less than significant levels. Similarly, effects on wetlands and other jurisdictional waters were considered less than significant after implementation of proposed mitigation. However, the Draft EIR/EIS determined that Alternative D (as well as the other build alternatives) would result in potentially significant and unavoidable direct and indirect effects to (1) terrestrial biological resources (golden eagle), (2) paleontological resources, (3) cultural resources (historical and tribal resources, human remains), (4) land use (community of Sites and existing land uses), (5) air quality, (6) climate change and greenhouse gas emissions, and (7) growth-inducing impacts.

Appendix C provides CEQA/NEPA considerations for each alternative vetted during the value planning process. As with permitting, considerations were developed in a screening-level comparison to Alternative D. Table 6-1 briefly discusses the CEQA/NEPA considerations associated with each of the refined value planning alternatives identified on March 2, 2020. It should be noted that each of the value planning alternatives addressed below rely substantially on the use of existing conveyance facilities and minimize the need for new construction and associated ground disturbance, thereby reducing overall environmental effects.

TABLE 6-1. VALUE PLANNING CEQA/NEPA CONSIDERATIONS

Alternative	CEQA/NEPA Key Considerations
VP5 Alternate 1	Reduction in reservoir size may reduce effects on cultural, biological, and land use (agriculture) resources, but not to less-than-significant levels. Elimination of the Delevan pipeline or canal would potentially reduce land use (agricultural) effects, but effects would likely still be considered significant and unavoidable for the overall Project. Earthfill dam rather than rockfill dam would need to be analyzed for potential changes in environmental effects. Release from the southern terminus of the T-C Canal to the CBD would require additional study.
VP6 Alternate 1A	Similar to Alternative VP5, reduction in reservoir size may reduce effects on cultural, biological, and land use (agriculture) resources, but not to less-than-significant levels. Elimination of Delevan pipeline or canal would potentially reduce agricultural effects, but effects would likely still be considered significant and unavoidable for the overall Project. Release from the southern terminus of the T-C Canal would require additional study; the proposed Dunnigan pipeline to Sacramento River may affect federal project levees (though likely less than Alternative D). Earthfill dam rather than rockfill dam would need to be analyzed for potential changes in environmental effects.
VP7 Recommended	Similar to VP5 and VP6, reduction in reservoir size may reduce effects on cultural, biological, and land use (agriculture) resources, but not to less-than-significant levels. Elimination of Delevan pipeline or canal would potentially reduce agricultural effects, but effects would likely still be considered significant and unavoidable for the overall Project. Earthfill dam rather than rockfill dam would need to be analyzed for potential changes in environmental effects. Release from the southern terminus of the T-C Canal to the CBD would require additional study.

7. Costs and Repayment

7.1 Cost Estimates

Construction cost estimates were derived from detailed appraisal-level estimates for a 1.3 MAF reservoir (Alternative A in the EIR/EIS and feasibility report) and for a 1.8 MAF reservoir (Alternative D in the EIR/EIS and feasibility report). These estimates reflect the current Project concepts and conceptual level of Project design, with appropriate allowances for contingencies, non-contracts costs, and forward escalation. Other project-related costs are also provided, including environmental mitigation and temporary and permanent easement acquisition. Estimated prices were developed in October 2015 dollars in support of the Authority's

WSIP application and have been escalated in this estimate. Additional details on the estimate are provided in Appendix A.

7.2 Repayment Analyses

7.2.1 Methodology

A repayment analysis based on the estimated construction, operations, and maintenance costs, and the estimated releases, was conducted to estimate the annual repayment costs per AF of releases from Sites Reservoir. The analysis was conducted both with and without a Water Infrastructure Finance and Innovation Act (WIFIA) loan. The methodology was very similar to prior value planning analysis conducted in late 2019 and as described in the full financial model technical memorandum in Appendix D. One item of significant note is that the reporting base year has changed versus that analysis, resulting in an increase of cost per acre-feet due to inflation. Participants' annual costs are provided in 2020 dollars. When comparing with the prior metric of using 2018 dollars, a \$600/AF cost at a 2% inflation rate will add approximately \$25 by reporting in 2020 dollars.

7.3 Key Assumptions

The analysis was conducted using the full amount of the U.S. Department of Agriculture (USDA) loan available to construct the Maxwell Intertie. This loan of \$439 million is at a lower interest rate (3.85 percent) than the revenue bond assumed interest rate (5.00 percent). This analysis assumes that Project changes would not affect the terms of the USDA loan. The use of the USDA loan results in an overall reduction in the cost by approximately \$20 per acre-foot. A full table of assumptions is provided in Appendix D.

7.4 Repayment Results

The ability to reduce project costs to approximately \$3 billion while still constructing a 1.5 MAF reservoir and thereby maintaining higher releases (ranging from 230 to 243 TAF of average annual releases) results in a reduction in the dollar per acre-feet repayment down to the \$600 range in 2020 dollars. This range of payments – which is lower than the VP1 through VP4 alternatives - can be seen in the VP5, VP6, and VP7 scenarios (Table 7-1). A cash flow tool, including operations and maintenance costs and annualized debt service, is included as Attachment D-2.

TABLE 7-1. ANNUAL REPAYMENT COSTS PER ACRE-FOOT OF RELEASE

	VP1			VP2			VP3		VP4		VP5	VP6	VP7
Reservoir Size (MAF)	1.0	1.3	1.5	1.0	1.3	1.5	1.3	1.5	1.3	1.5	1.3	1.3	1.5
Release Capacity (cfs)	750			750			1,500		1,000		1,000	1,000	1,000
Project Cost (2019 \$, billions)	3.2	3.4	3.6	2.7	2.9	3.1	3.4	3.6	2.9	3.1	2.9	3.0	3.0
Annualized acre-feet/year Release (TAF)	191	230	236	191	230	236	243	253	234	243	234	234	243
PWA Annual Costs During Repayment Without WIFIA ^a Loan (2020 \$, \$/acre-feet)	862	776	805	730	667	693	738	754	660	678	644	674	661
PWA Annual Costs During Repayment With WIFIA Loan (2020 \$, \$/acre-feet)	799	724	755	665	614	641	689	708	608	628	592	621	611

^a Water Infrastructure Finance and Innovation Act

8. Recommended Project

The recommended Project was developed by the Ad Hoc Value Planning Workgroup through a sequential process that included initial and refined alternatives. Important considerations included total project cost, impacts on landowners, impacts on traffic and public safety, ability to meet participant demands, ability to provide public benefits to the State, relative magnitude of environmental impacts, and the estimated cost per acre-foot of water delivered. The recommended Project and two options for consideration are shown in Table 8-1.

TABLE 8-1. VALUE PLANNING GROUP RECOMMENDED PROJECTS

	VP5	VP6	VP7
	Option 1	Option 2	Recommended
Reservoir Size	1.3 MAF	1.3 MAF	1.5 MAF
Dunnigan Release Capacity (cfs)	1,000 cfs to CBD	1,000 cfs to River	1,000 cfs to CBD
Estimated Cost (2019 dollars)	\$2,855,000,000	\$2,988,000,000	\$3,037,000,000
Estimated Cost per Acre-Foot with WIFIA ^a (2020)	\$592	\$621	\$611
Estimated Deliveries (Long-Term Average in TAF)	234	234	243

^a Water Infrastructure Finance and Innovation Act

The recommended project (Alternative VP7) includes a 1.5 MAF reservoir to provide additional storage for dry and critical years. All options include a bridge to minimize travel times and provide emergency access for communities on the west side of the reservoir. The bridge for all options was sized based on the maximum water surface elevation for a 1.5 MAF facility to avoid future traffic impacts that could arise if climate change or other factors necessitated expanding a smaller reservoir. All alternatives also include a new unpaved road to maintain access for residents along the southern portion of the reservoir.

All options, including the recommended alternative, would release water through the T-C Canal. A 1,000 cfs release near the end of the canal would deliver water to either the CBD (Alternatives VP5 and VP7) or to the Sacramento River (Alternative VP6).

The Value Planning Workgroup recommends the Project proceed as Alternative VP7. Although Alternative VP5 had the lowest overall cost and lower cost per acre-foot, the Value Planning Workgroup recommends VP7 based on higher deliveries at a comparable cost and improved operational flexibility with a 1.5 MAF reservoir. The proposed facility locations associated with VP7 are shown in Figure 8-1.

The Value Planning Workgroup also recommends the subsequent analyses of the Project include a 1.3 MAF reservoir (per VP5) and a Dunnigan to Sacramento River 1000 cfs release pipeline (per VP6) in order to provide flexibility to respond to any future condition changes that might result in such facilities becoming preferable.

The Recommended Project results in the following significant changes to the original Alternative D 1.8 MAF Project:

- Reduced project size and footprint
- Reduced Sacramento River diversions
- Elimination of Delevan Sacramento River diversion and release facility
- Elimination of Delevan Pipeline and associated impacts to landowners and wildlife refuges along that alignment
- Reduced costs and improved affordability to the Project's funding participants.

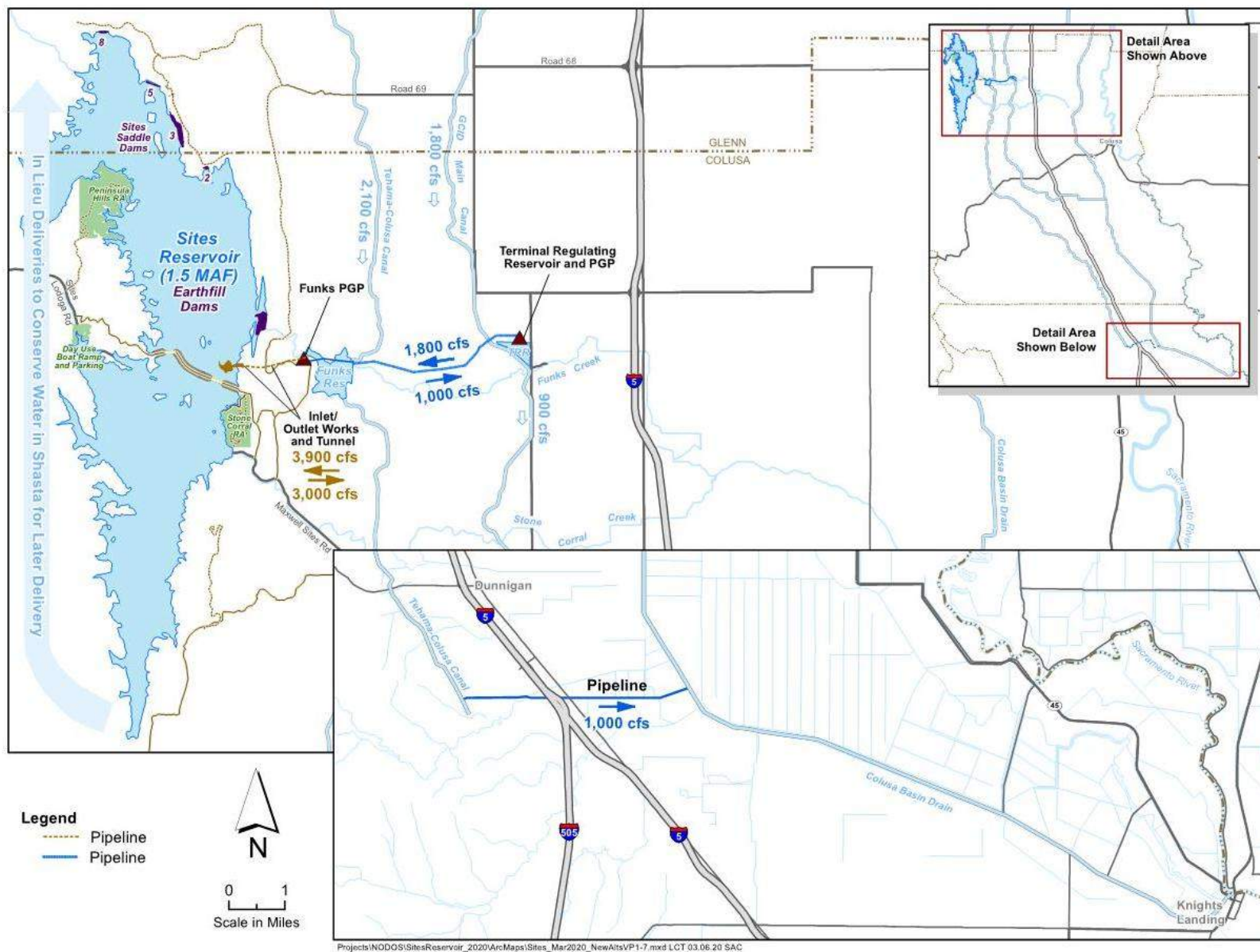


FIGURE 8-1. RECOMMENDED VALUE PLANNING ALTERNATIVE (VP7)

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Appendix A – Value Planning Alternatives and Costs

Value Planning Analysis Technical Memorandum



To: Mike Azevedo, Lewis Bair, Thad Bettner, Gary Evans, Rob Kunde, Shelly Murphy, Randall Neudeck, Dan Ruiz, Jeff Sutton, Jamie Traynham, Bill Vanderwaal

CC: Rob Tull

Date: November 13, 2019

From: Joe Barnes, Jeff Herrin, Pete Rude (Jacobs), Jeff Smith (Jacobs)

1.0 Value Planning Effort

Representatives from the Reservoir Committee and Authority Board met on October 2, 2019 to discuss approaches that could potentially lower the cost of the project. Several facility modifications were identified, and appraisal level costs are provided in this analysis to allow a comparison of alternatives.

At this level of evaluation, the analysis is useful for identifying alternatives that merit further evaluation. The analysis is not sufficiently refined to distinguish between two alternatives of similar cost (e.g., + 10 to 15%).

Construction cost estimates for many of the facilities were derived from appraisal-level estimates for a 1.3 million acre feet (MAF) reservoir (Alternative A in the Environmental Impact Report/Environmental Impact Statement [EIR/S] and feasibility report) and for a 1.8 MAF reservoir (Alternative D in the EIR/S and feasibility report). Several new facilities were estimated, where possible using the unit rates from similar facilities in the existing estimates. Estimated prices were developed in October 2015 dollars and have been escalated in this estimate.

The actual project construction cost ultimately would depend on the final design details of the preferred project alternative and the labor and material costs, market conditions, and other variable factors existing at the time of bid. Accordingly, the final project cost is expected to vary from the preliminary estimates presented in this section.

2.0 General Limitations

AECOM represents that our services were conducted in a manner consistent with the standard of care ordinarily applied as the state of practice in the profession within the limits prescribed by our client. No other warranties, either expressed or implied, are included or intended in this brief appraisal-level cost estimate.

We have used background information, conceptual designs, and data by others to prepare this appraisal-level cost estimate. We have relied on this information, as furnished, and is neither responsible for nor has confirmed the accuracy of this information.

The appraisal-level cost estimate presented herein is for the current study only and should not be extended or used for any other purposes.

3.0 Value Planning Facility Options and Alternatives

The meeting on October 2, 2019 identified both modifications to previously evaluated facilities and alternative facilities to reduce cost. A comprehensive table showing approximately 59 facility options that were considered in this analysis, along with their respective costs, is provided in Attachment 2.

There are numerous ways of combining the individual facility options into alternatives. To speed the analysis, we have looked at nine complete alternatives. There are many other ways of combining the facilities that can be further evaluated at the direction of the Value Planning working group.

The initial alternatives are shown in Table 1.

Table 1. Initial Alternatives for consideration.

Features	Initial Alternatives								
	1	2	3	4a	4b	5a	5b	6a	6b
1.5 MAF Reservoir	•	•	•	•	•	•	•	•	
1.3 MAF Reservoir									•
Funks/Sites PGP	•	•		•	•	•	•		
TCRR and Upgraded TRR PGP			•					•	•
Delevan Canal/Pipeline Release	•	•	•	•	•				
Dunnigan Canal to CBD Release						•		•	
Dunnigan to River Release							•		•
Multi-Span Bridge	•		•	•	•	•	•	•	•
South Road to Lodoga		•							
South Road to Residents	•		•	•	•	•	•	•	•
Rockfill Embankment Dam	•	•	•			•	•		
Earthfill Dam				•				•	•
Hardfill Dam					•				

MAF = million acre feet

PGP = Pumping/Generating Plant

TCRR = Tehama-Colusa Regulating Reservoir

TRR = Terminal Regulating Reservoir

For purposes of comparison, we have included Alternative D, the alternative presented in the WSIP application in the comparison of alternatives. The new alternatives include the following:

- Alternative 1 – Refer to Figure 1. This alternative reduces the size of the reservoir to 1.5 MAF and uses a multi-span bridge to reduce costs. The other features are generally consistent with Alternative D.
- Alternative 2 – Refer to Figure 2. This alternative is very similar to Alternative 1 but uses the southern road with the more direct route to Lodoga in place of the bridge.
- Alternative 3 – Refer to Figure 3. This alternative eliminates the Sites Pumping/Generating Plant and replaces it with the Tehama-Colusa Regulating Reservoir (TCRR) and Pumping Plant near Road 69 in combination with an upgraded Terminal Regulating Reservoir (TRR) to fill Sites Reservoir. Water would be released to the Sacramento River through a canal/pipeline to the Delevan release structure. The canal portion would begin at the TRR and continue east to the Colusa Basin Drain (CBD). It would be necessary to siphon under the CBD and pump the water to the river. The two-span bridge is used in this alternative.

- Alternatives 4a and 4b – Refer to Figures 4a and 4b. These alternatives include the single Sites Pumping/Generating Plant (PGP) with releases through the Delevan Canal/Pipeline. Alternative 4a uses an earthfill dam and Alternative 4b uses a hardfill dam in place of the zoned rockfill dam.
- Alternatives 5a and 5b – Refer to Figures 5a and 5b. These alternatives replace the Delevan Canal/Pipeline with a southern release near the southern terminous of the Tehama-Colusa (T-C) Canal. Alternative 5a releases water to the CBD. Water released to the CBD would be conveyed through the lower portion of the CBD to the Sacramento River. Alternative 5b conveys water by canal to the CBD, then uses a siphon and pumping plant to convey water on to the river.
- Alternatives 6a and 6b – Refer to Figures 6a and 6b. These alternatives combine the TCRR and upgraded TRR with the southern release structure and an earthfill dam. Alternative 6a appears to have the lowest construction cost.

A summary of alternative costs, including a cost comparison with Alternative D, is included in Table 2.

Table 2. Summary of Estimated Costs

Alternative	Estimated Costs (\$2018) (financing cost not included)	Cost Reduction from Alternative D
Alternative D	\$5,235 million	0%
Alternative 1	\$3,970 million	24%
Alternative 2	\$3,988 million	24%
Alternative 3	\$3,868 million	26%
Alternative 4a	\$3,828 million	27%
Alternative 4b	\$3,861 million	26%
Alternative 5a	\$3,548 million	32%
Alternative 5b	\$3,876 million	26%
Alternative 6a	\$3,417 million	35%
Alternative 6b	\$3,584 million	32%

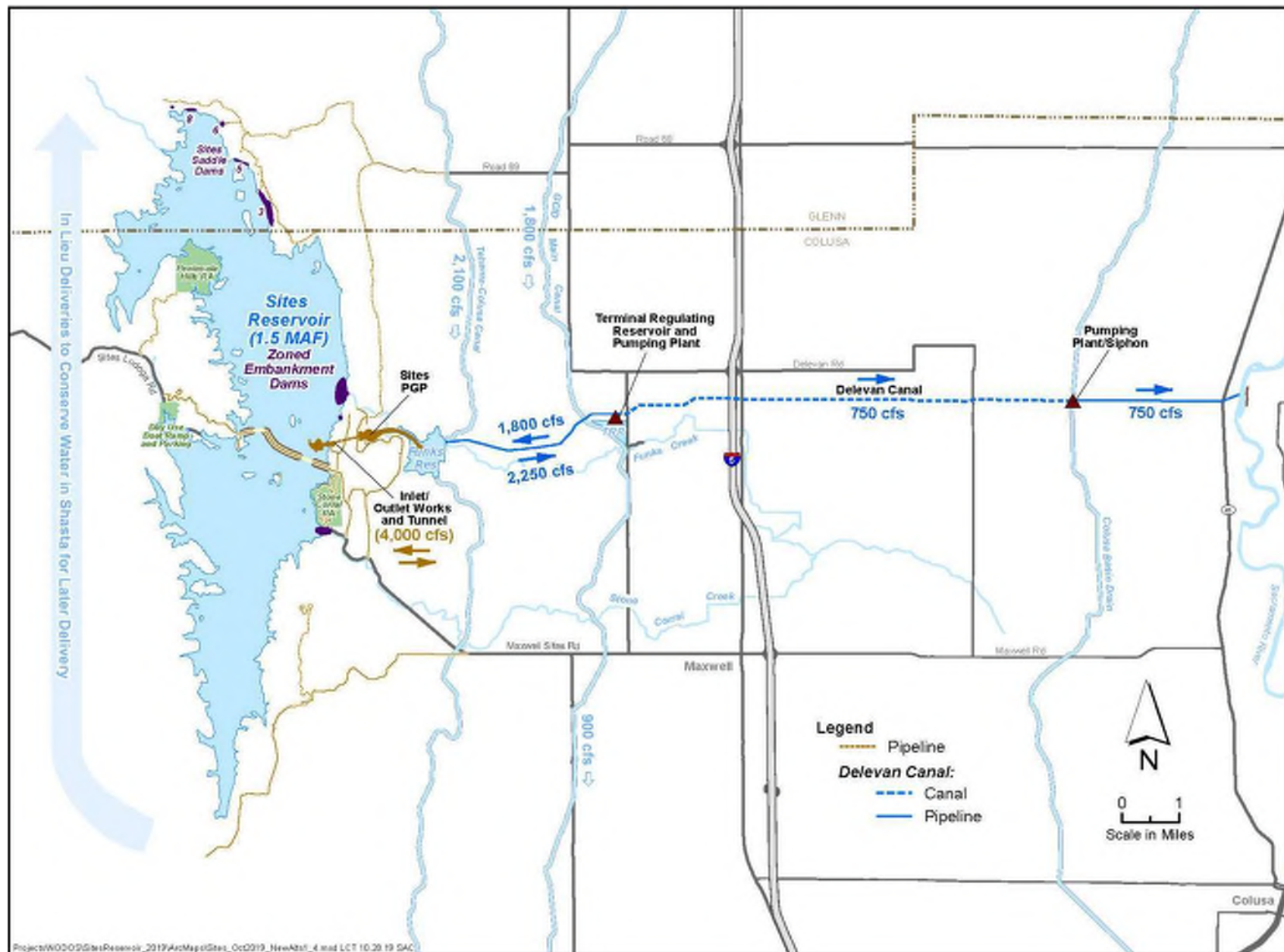


Figure 1. Alternative 1 (Estimated cost - \$3,970 million)

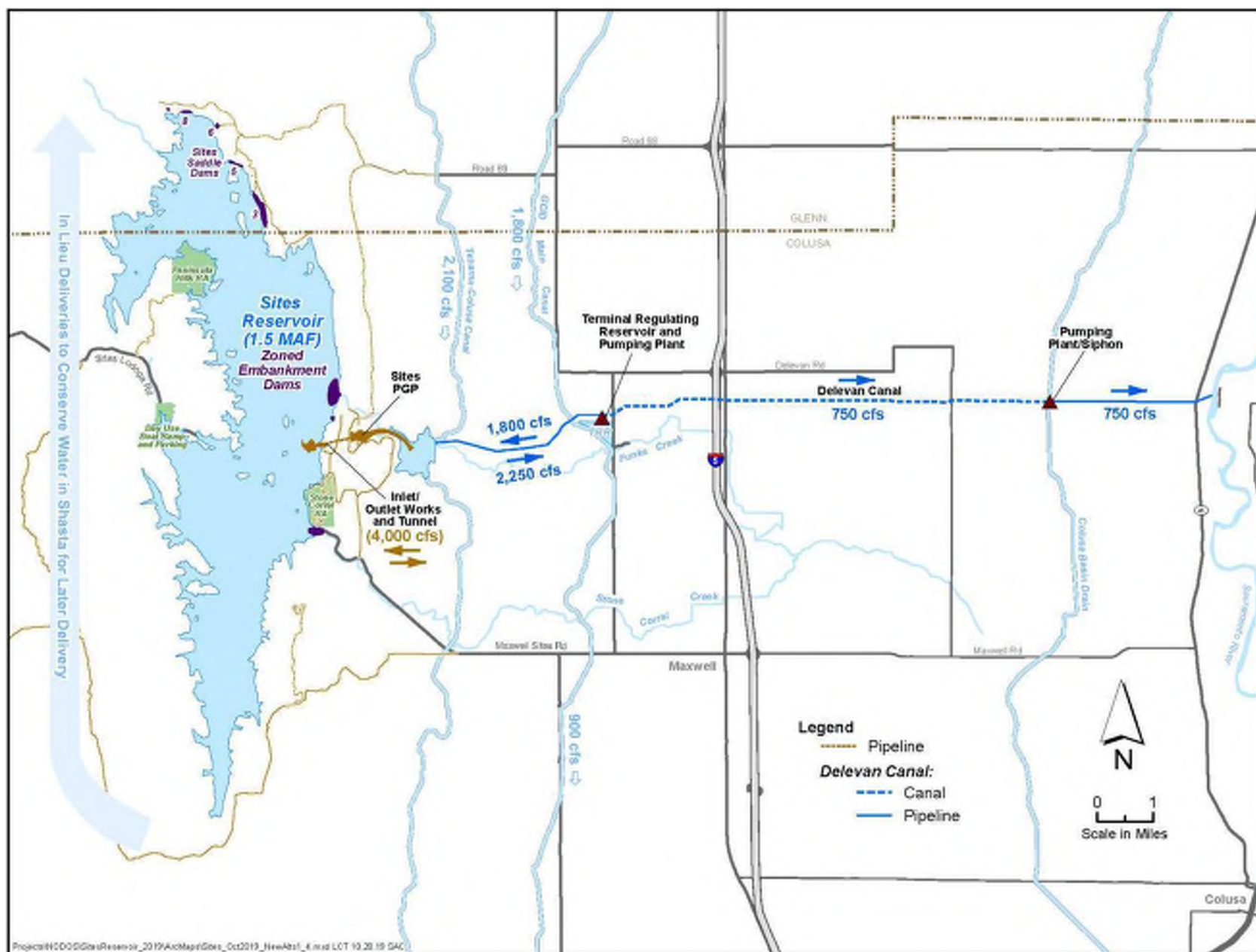


Figure 2. Alternative 2 (Estimated cost - \$3,988 million)

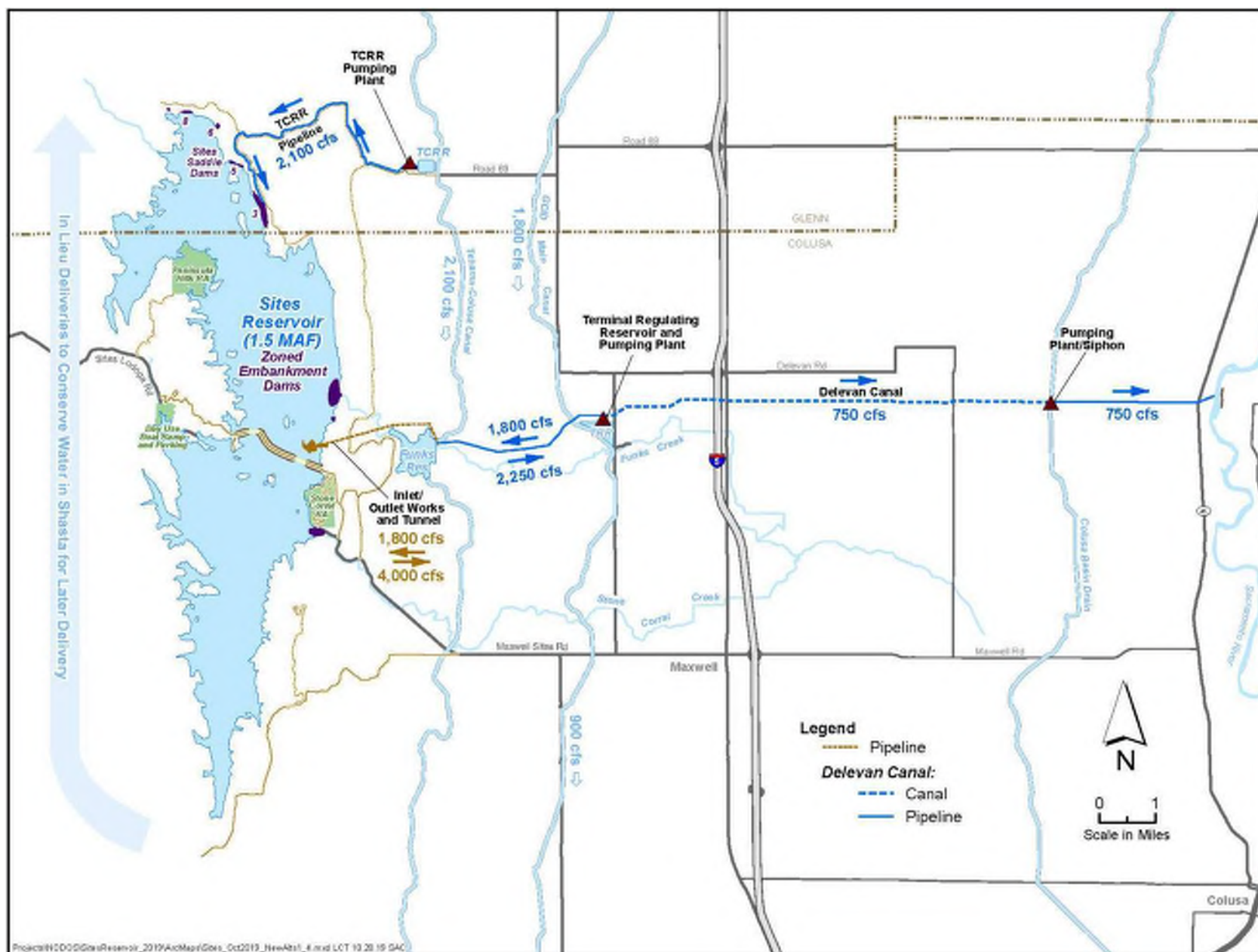


Figure 3. Alternative 3 (Estimated cost - \$3,868 million)

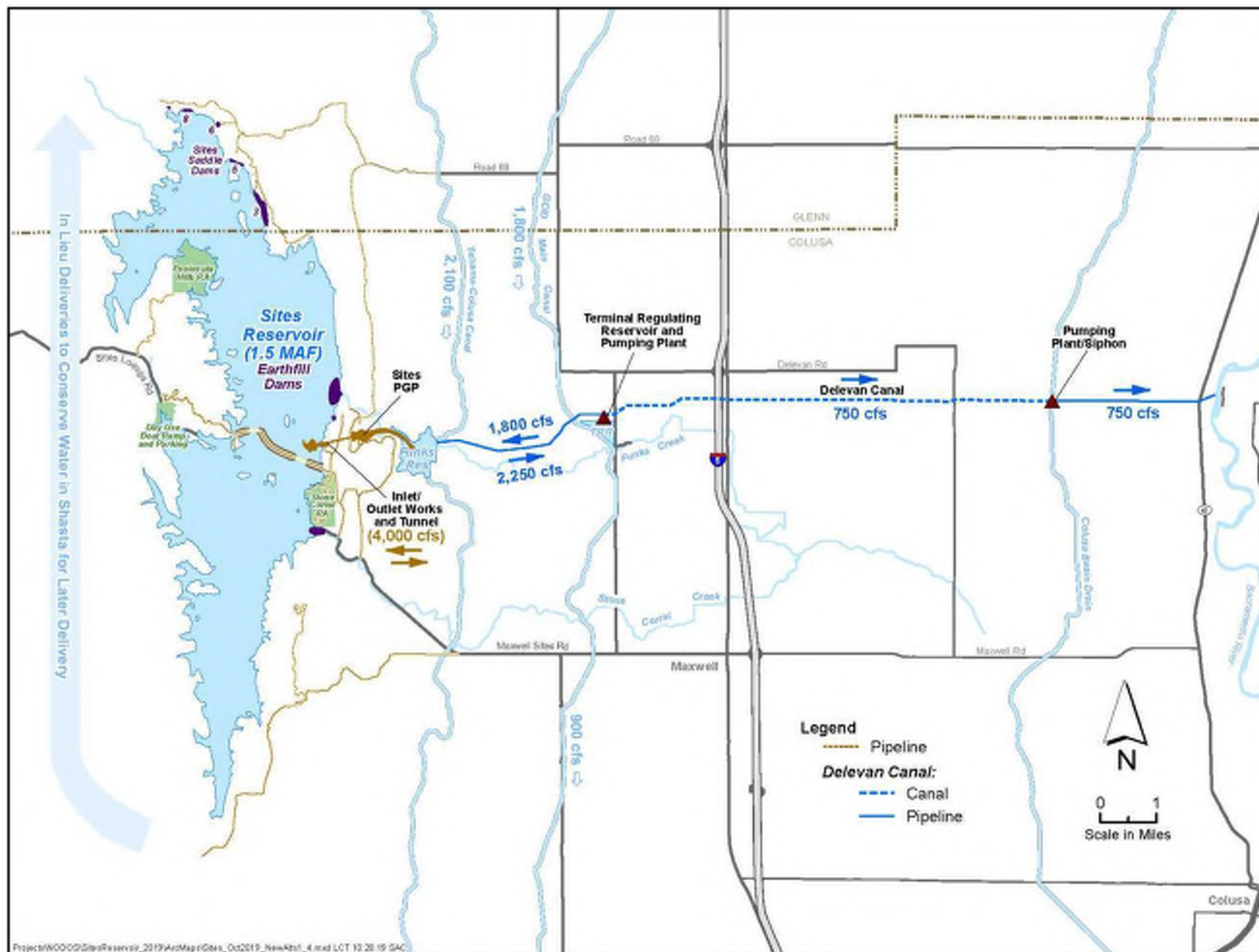


Figure 4a. Alternative 4a (Estimated cost - \$3,828 million)

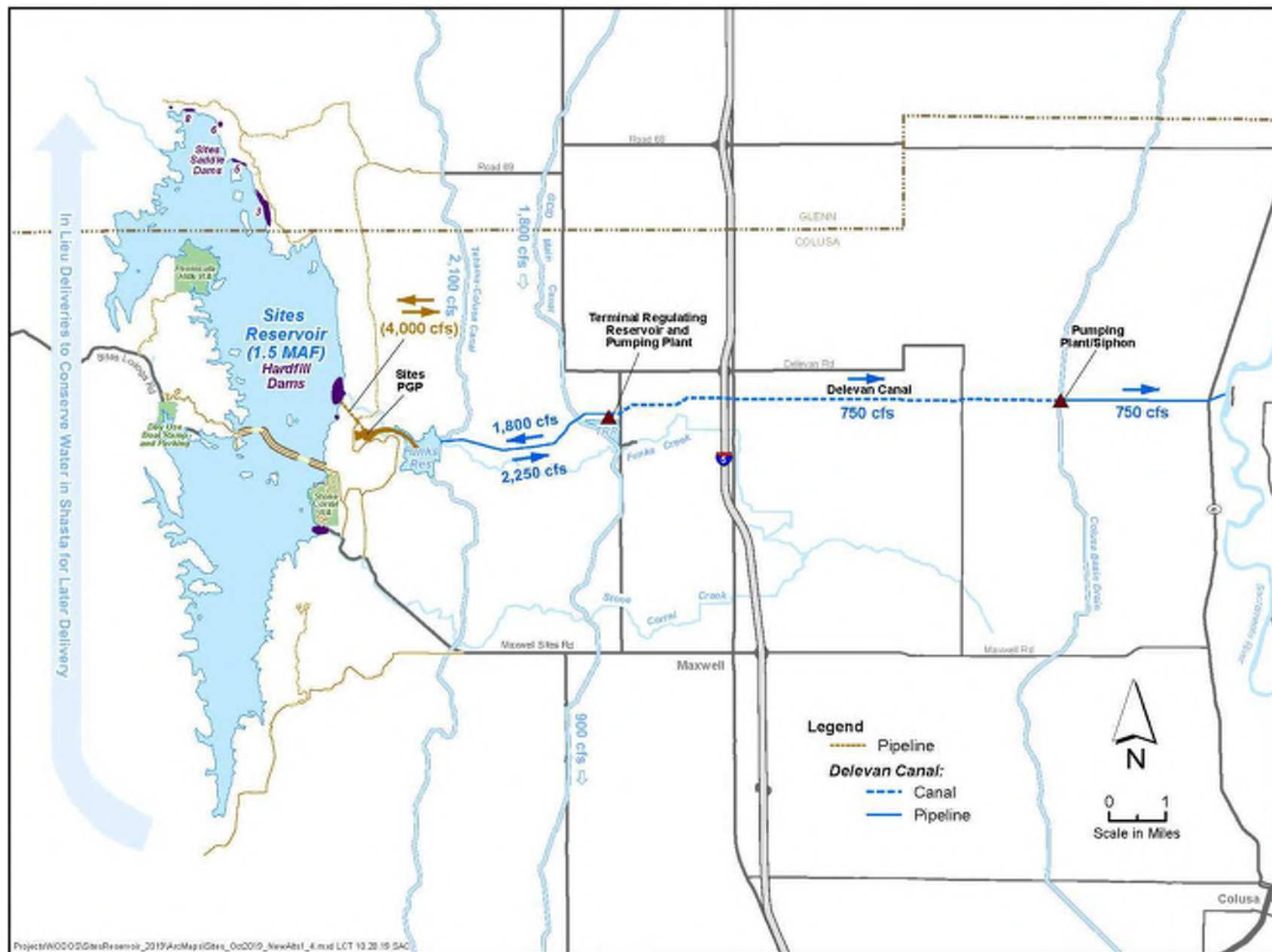


Figure 4b. Alternative 4b (Estimated cost - \$3,861 million)

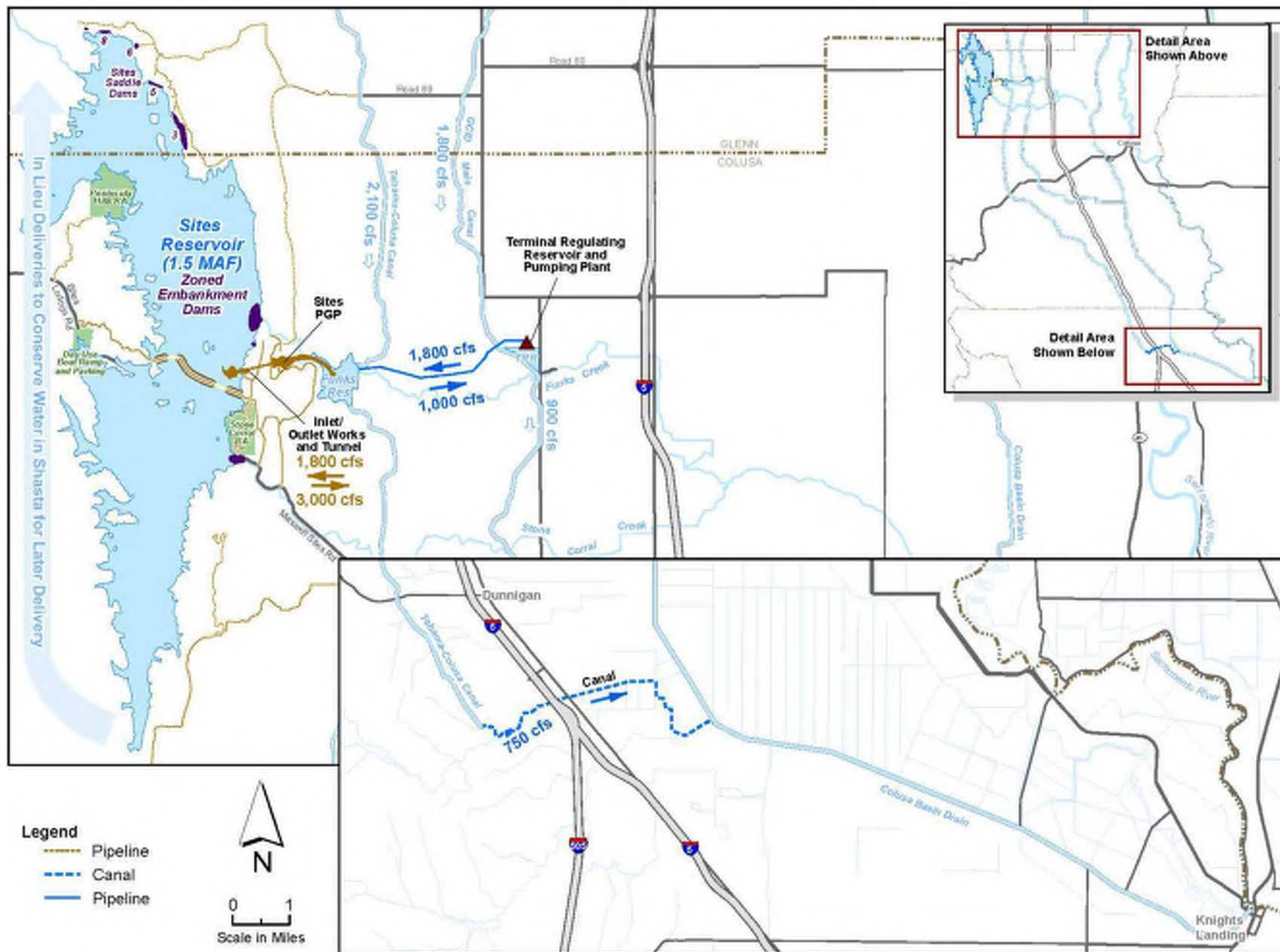


Figure 5a. Alternative 5a (Estimated cost - \$3,548 million)

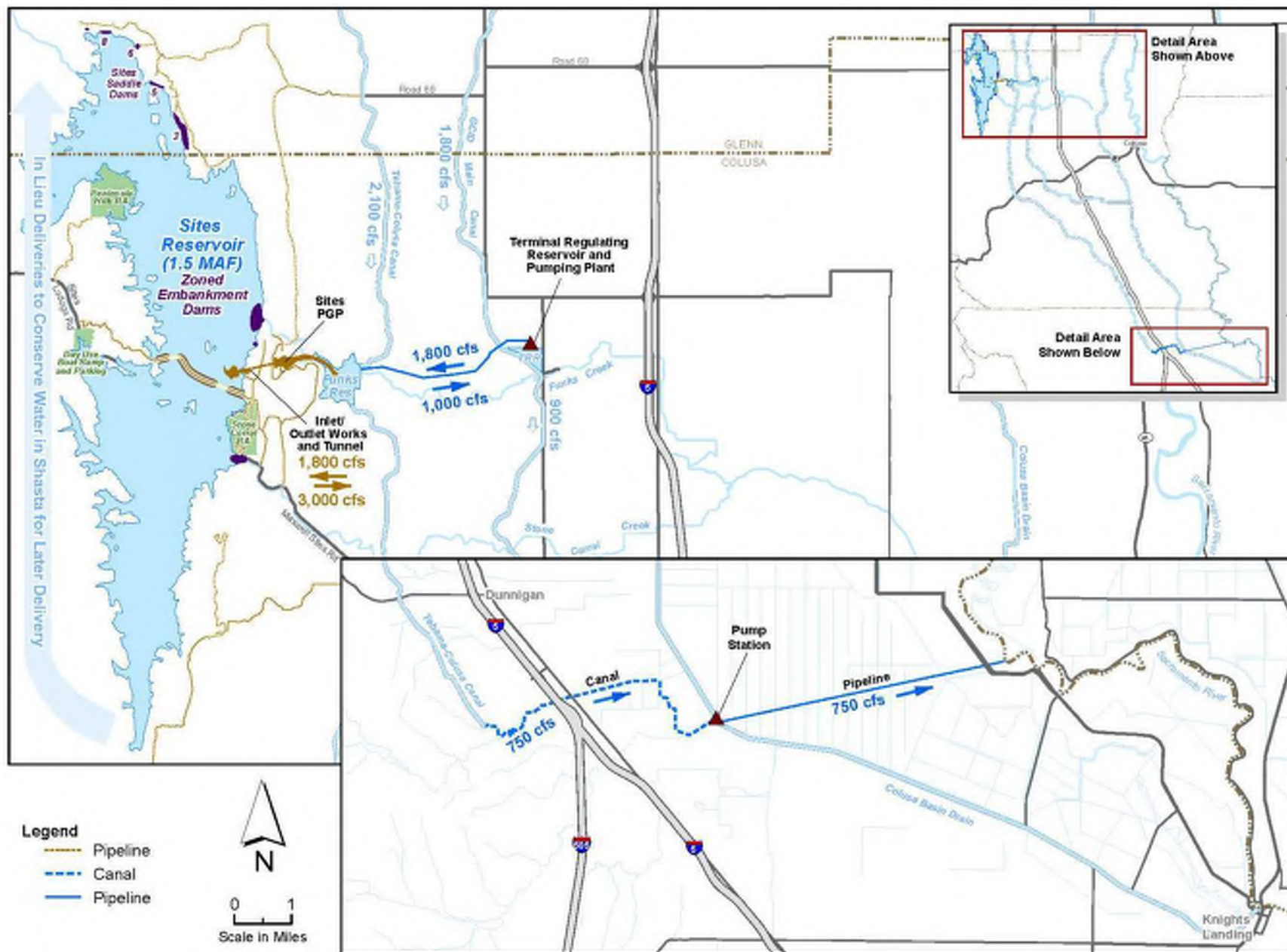


Figure 5b. Alternative 5b (Estimated cost - \$3,876 million)

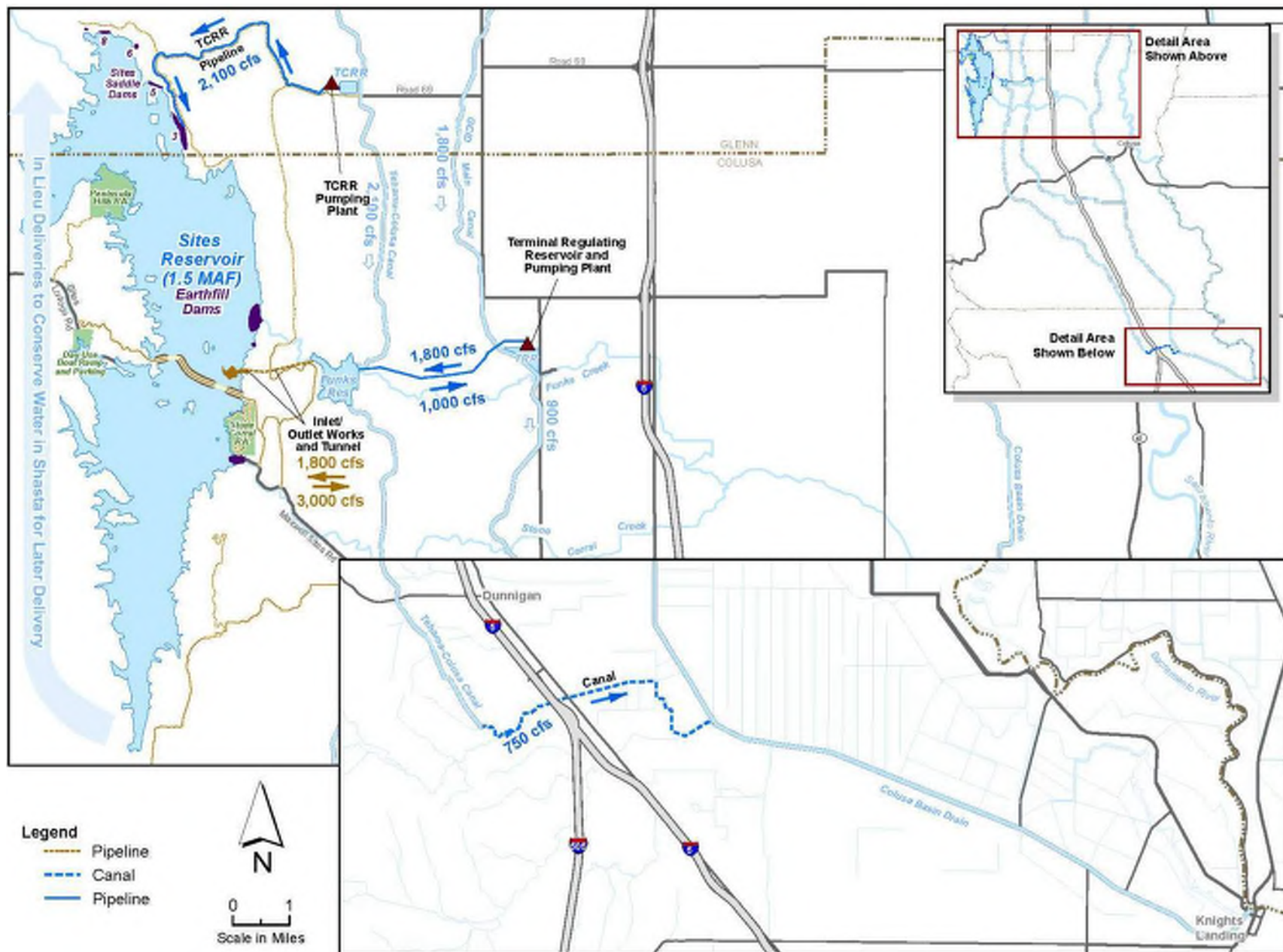


Figure 6a. Alternative 6a (Estimated cost - \$3,417 million)

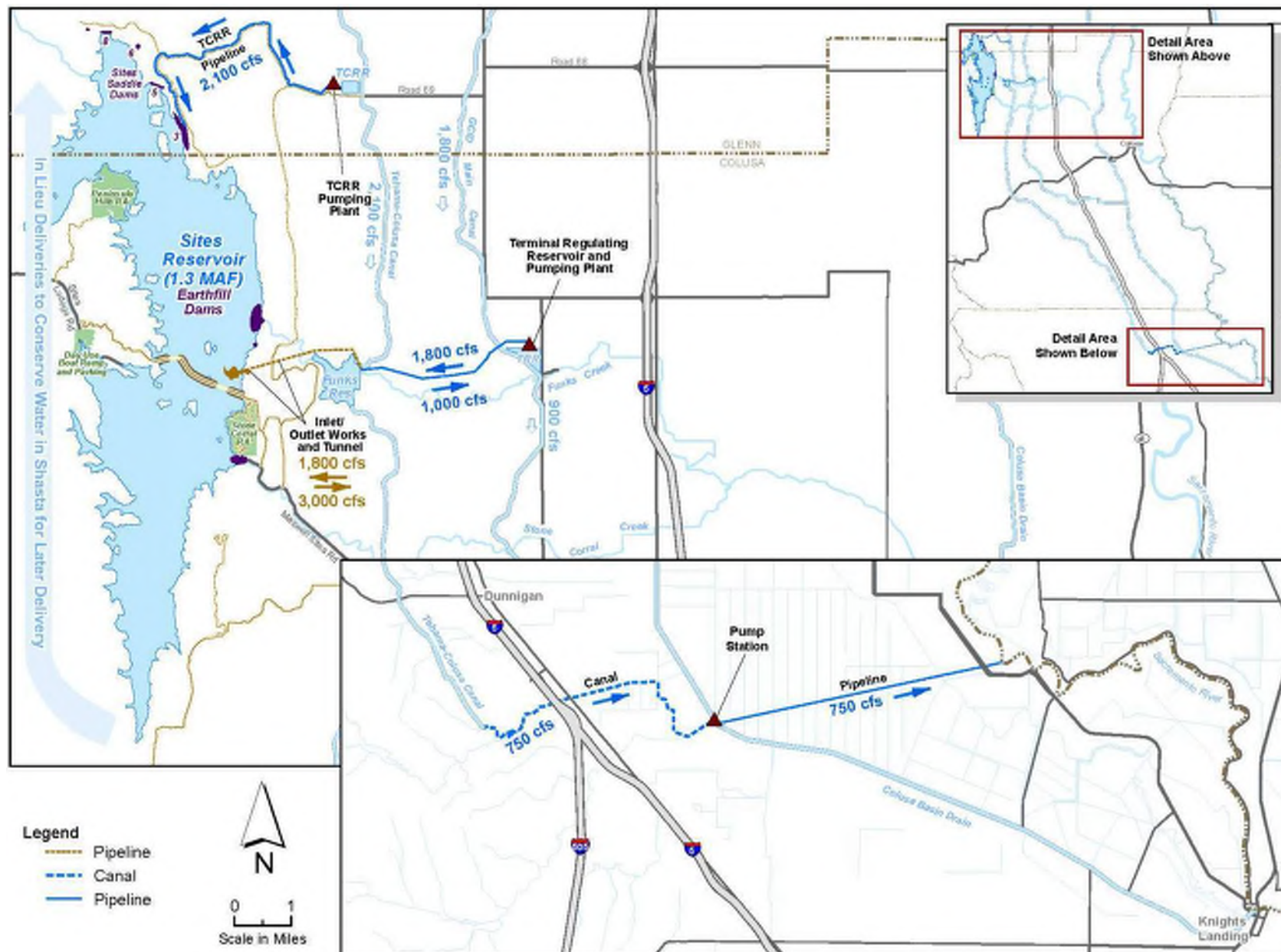


Figure 6b. Alternative 6b (Estimated cost - \$3,584 million)

4.0 Environmental Mitigation

HDR reviewed the existing mitigation cost estimates currently being used and found that when applied to the Value Planning Alternatives, the estimated mitigation costs do not result in any significant changes in estimated mitigation costs (>\$50M). Their October 11, 2019 memorandum concluded that until additional analysis can be performed on a specific project description, the existing \$500M estimate should be retained.

5.0 Emergency Reservoir Drawdown

It is proposed to distribute the emergency reservoir release flow required by the State of California Department of Water Resources, Division of Safety of Dams (DSOD) to different locations around Sites Reservoir. For the alternative project evaluation, it is assumed that these release points would include Hunters Creek, Stone Corral Creek, Funks Creek, the Glenn-Colusa Irrigation District (GCID) and T-C Canals, and an open channel that would connect the TRR with the CBD. For the channel, it is assumed that emergency release water would be conveyed to TRR through the TRR Pipeline.

The emergency release flow required is a function of the size of Sites Reservoir. DSOD requires that 10-percent of the height of the reservoir must be reduced over a period of seven days. Table 3 provides an estimate of the average 7-day emergency release flow required for various reservoir sizes to meet the criteria. Also shown in the table is AECOM's assumed distribution of the required release to the creeks and canals listed above. Additional evaluation of the downstream watersheds and the downstream impacts will be needed to refine the distribution of releases between the candidate release points.

Regarding the canal to the CBD, AECOM assumes that the capacity would be between 750 and 1,000 cubic feet per second (cfs), which would be the equivalent release for one of the two 12-foot-diameter Delevan Pipes. A flow of 1,000 cfs is used in the table. In distributing the remaining flows as shown in the table, the following assumption were made:

1. The flows allocated to Stone Corral Creek and Funks Creek are approximately equivalent to 50-year flows estimated from published regression curves for Coastal Range areas. These flows are estimated at the Sites and Golden Gate Dams.
2. The flows allocated to the GCID and TC Canals represent minimum spare capacity that could be available to convey emergency releases. Capacity could be higher during certain time of the year.
3. After accounting for the releases described above, the balance of the required release was assigned to Hunters Creek at the north end of the valley. This release could be distributed to two or three of the larger saddle dams at the north end of Sites Reservoir, which are adjacent to Hunters Creek, or are on tributaries. At each release point, an outlet works pipeline would be provided at the base of the dam with energy dissipation valve(s) at the downstream end.
4. The release to Hunters Creek is sizeable. One feasible approach to reduce impacts would be to provide a dry dam on the creek with sized outlet works that would use storage routing to reduce the flow released to the creek downstream. There is at least one suitable site for such a dam on the creek where it passes out of the eastern ridge into the valley. This is not included with this cost estimate.

Also shown on the Table 3 is the estimated size of the twin outlet works tunnels required to pass the water being released to Funks Creek, the GCID and T-C canals, and the canal to the CBD. Tunnel size is based on the assumed distribution of the required emergency release to the various discharge points.

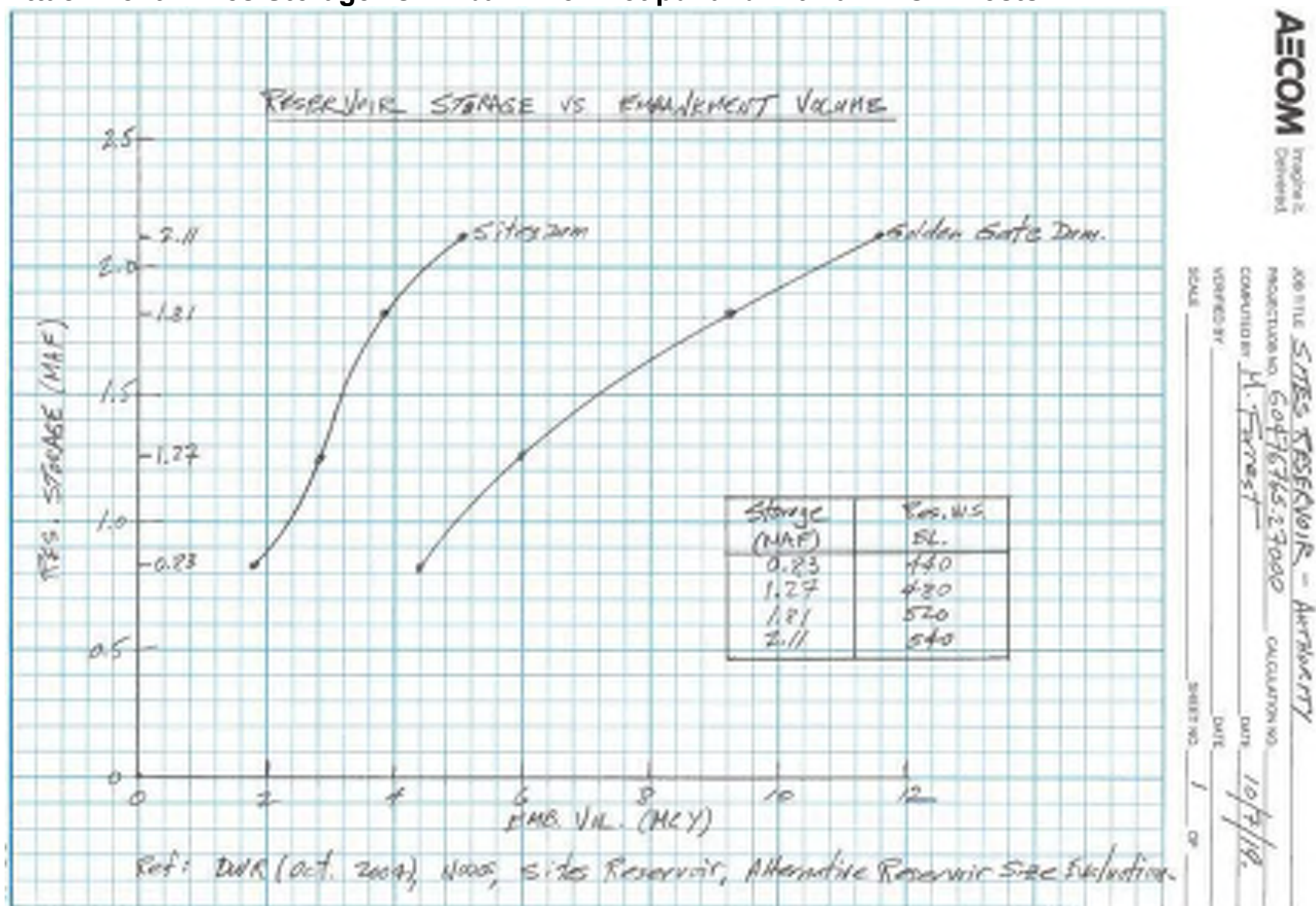
Table 3. Emergency Release – Assumed Distribution of Flows

Reservoir Size	1.8 MAF	1.5 MAF	1.3 MAF	1.0 MAF	0.8 MAF
Emergency Release Required (cfs)	21,700	17,950	15,450	12,000	9,650
Stream Releases (cfs)					
Hunters Creek Release Structure	11,250	7,500	5,000	4,500	3,000
Stone Corral Creek	<u>3,500</u>	<u>3,500</u>	<u>3,500</u>	<u>3,500</u>	<u>3,500</u>
Total =	14,750	11,000	8,500	8,000	6,500
Remaining Release Required =	6,950	6,950	6,950	4,000	3,150
I/O Tower and Tunnel Releases					
Funks Creek	4,500	4,500	4,500	2,550	3,150
GCID Main Canal	700	700	700	700	0
T-C Canal	750	750	750	750	0
Canal Conveyance to Colusa Basin Drain	<u>1,000</u>	<u>1,000</u>	<u>1,000</u>	<u>0</u>	<u>0</u>
Total =	6,950	6,950	6,950	4,000	3,150
I/O Tunnel Required Release (cfs) =	6,950	6,950	6,950	4,000	3,150
Estimated Twin I/O Tunnel Sizes (feet) for 20 feet per second (fps) maximum velocity (ft) =	15	15	15	11	10

6.0 Attachments

	Component Cost	Alternative D	Alternative 1	Alternative 2	Alternative 3	Alternative 4a	Alternative 4b	Alternative 5a	Alternative 5b	Alternative 6a	Alternative 6b
Total (\$2018) w/o financing cost		\$5,234,596,920	\$3,969,916,920	\$3,988,276,920	\$3,868,396,920	\$3,828,436,920	\$3,860,836,920	\$3,547,636,920	\$3,875,956,920	\$3,416,956,920	\$3,584,356,920
% cost reduction		0%	24%	24%	26%	27%	26%	32%	26%	35%	32%
Total (\$2015)		\$4,846,849,000	\$3,675,849,000	\$3,692,849,000	\$3,581,849,000	\$3,544,849,000	\$3,574,849,000	\$3,284,849,000	\$3,588,849,000	\$3,163,849,000	\$3,318,849,000
RESERVOIRS AND DAMS											
Develop Sites Reservoir Area	\$255,000,000	\$255,000,000	\$255,000,000	\$255,000,000	\$255,000,000	\$255,000,000	\$255,000,000	\$255,000,000	\$255,000,000	\$255,000,000	\$255,000,000
Single Span Bridge	\$215,000,000	\$215,000,000									
Short Span Bridges	\$125,000,000		\$125,000,000		\$125,000,000	\$125,000,000	\$125,000,000	\$125,000,000	\$125,000,000	\$125,000,000	\$125,000,000
Lodoga Road (Long Route)	\$114,000,000										
Lodoga Road (Direct Route)	\$180,000,000			\$180,000,000							
South Road Property Access	\$38,000,000		\$38,000,000		\$38,000,000	\$38,000,000	\$38,000,000	\$38,000,000	\$38,000,000	\$38,000,000	\$38,000,000
Construct Main Dams (1.8 MAF) - Zoned Embankment	\$610,000,000	\$610,000,000									
Construct Main Dams (1.5 MAF) - Zoned Embankment	\$511,000,000		\$511,000,000	\$511,000,000	\$511,000,000			\$511,000,000	\$511,000,000		
Construct Main Dams (1.5 MAF) - Earthfill	\$380,000,000					\$380,000,000				\$380,000,000	
Construct Main Dams (1.5 MAF) - Hardfill	\$690,000,000						\$690,000,000				
Construct Main Dams (1.3 MAF) - Zoned Embankment	\$400,000,000										
Construct Main Dams (1.3 MAF) - Earthfill	\$320,000,000										\$320,000,000
Construct Saddle Dams (1.8 MAF)	\$270,000,000	\$270,000,000									
Construct Saddle Dams (1.5 MAF)	\$183,000,000		\$183,000,000	\$183,000,000	\$183,000,000	\$183,000,000	\$183,000,000	\$183,000,000	\$183,000,000	\$183,000,000	
Construct Saddle Dams (1.3 MAF)	\$94,000,000										\$94,000,000
Construct Forebay/Afterbay (Fletcher/Holthouse)	\$190,000,000	\$190,000,000									
Funks Reservoir Structures/Dredging	\$22,000,000		\$22,000,000	\$22,000,000		\$22,000,000	\$22,000,000	\$22,000,000	\$22,000,000		
Construct TRR Reservoir	\$39,000,000	\$39,000,000	\$39,000,000	\$39,000,000	\$39,000,000	\$39,000,000	\$39,000,000	\$39,000,000	\$39,000,000	\$39,000,000	\$39,000,000
North T-C Regulating Reservoir	\$39,000,000				\$39,000,000					\$39,000,000	\$39,000,000
Hunters Creek Release Structures (at 3 Saddle Dams)	\$84,000,000		\$84,000,000	\$84,000,000	\$84,000,000	\$84,000,000	\$84,000,000	\$84,000,000	\$84,000,000	\$84,000,000	\$84,000,000
PUMPING AND GENERATING PLANTS											
Construct I/O Structure and Single 30" Diameter Tunnel	\$210,000,000	\$210,000,000					\$0				
Construct I/O Structure and Twin 15" Diameter Tunnels	\$280,000,000		\$280,000,000	\$280,000,000	\$280,000,000	\$280,000,000	\$0	\$280,000,000	\$280,000,000	\$280,000,000	\$280,000,000
Sites Pumping-Generating Plant (5,900 cfs) - with Delevan	\$800,000,000	\$800,000,000									
Sites Pumping-Generating Plant (4,000 cfs) - w/o Delevan	\$634,000,000		\$634,000,000	\$634,000,000		\$634,000,000	\$634,000,000	\$634,000,000	\$634,000,000		
T-C North Pumping Plant - 2100 cfs	\$185,000,000				\$185,000,000					\$185,000,000	\$185,000,000
TRR Pumping-Generating Plant - 1800 cfs	\$160,000,000	\$160,000,000	\$160,000,000	\$160,000,000		\$160,000,000	\$160,000,000	\$160,000,000	\$160,000,000		
Increased Head TRR Pump/Gen Plant - 1800 cfs	\$185,000,000				\$185,000,000					\$185,000,000	\$185,000,000
CBD Pumping Plant for Delevan Release (750 cfs)	\$34,000,000		\$34,000,000	\$34,000,000		\$34,000,000	\$34,000,000				
Sacramento River Pumping-Generating Plant (2000 cfs)	\$260,000,000	\$260,000,000									
Sacramento River Release Structure - 1500 cfs	\$16,000,000										
Sacramento River Release Structure - 750 cfs	\$8,000,000		\$8,000,000	\$8,000,000	\$8,000,000	\$8,000,000	\$8,000,000				
Sacramento River Fish Screen Structure	\$55,000,000	\$55,000,000									
Red Bluff Pump Addition	\$3,849,000	\$3,849,000	\$3,849,000	\$3,849,000	\$3,849,000	\$3,849,000	\$3,849,000	\$3,849,000	\$3,849,000	\$3,849,000	\$3,849,000
CBD Pumping Plant for T-C Extension (750 cfs)	\$34,000,000								\$34,000,000		\$34,000,000
Canals and Conduits											
Construct Channel to Holthouse	\$49,000,000	\$49,000,000									
Reduced Channel with Hunters Creek Discharge	\$31,000,000		\$31,000,000	\$31,000,000	\$31,000,000	\$31,000,000	\$31,000,000	\$31,000,000	\$31,000,000	\$31,000,000	\$31,000,000
Construct Delevan Pipeline - Two Pipeline	\$660,000,000	\$660,000,000									
Construct Delevan Pipeline - One Pipeline	\$389,400,000										
Delevan Canal to CBD (750 cfs)	\$150,000,000		\$150,000,000	\$150,000,000	\$150,000,000	\$150,000,000	\$150,000,000				
CBD Siphon and Pipeline to River (750 cfs)	\$210,000,000		\$210,000,000	\$210,000,000	\$210,000,000	\$210,000,000	\$210,000,000				
TCRR Pipeline to Sites Reservoir (2100 cfs)	\$410,000,000				\$410,000,000					\$410,000,000	\$410,000,000
Construct TRR Pipeline - Four Pipelines (with Afterbay)	\$350,000,000	\$350,000,000									
Construct TRR Pipeline - Three Pipelines	\$280,000,000		\$280,000,000	\$280,000,000		\$280,000,000	\$280,000,000				
Construct TRR Pipeline - Two Pipelines	\$210,000,000				\$210,000,000			\$210,000,000	\$210,000,000	\$210,000,000	\$210,000,000
T-C Canal Extension to CBD	\$73,000,000							\$73,000,000	\$73,000,000	\$73,000,000	\$73,000,000
Siphon, Turnout, and Pipeline from CBD to River	\$270,000,000								\$270,000,000		\$270,000,000
Release Structure - 750 cfs for South Outfall	\$8,000,000							\$8,000,000	\$8,000,000	\$8,000,000	\$8,000,000
Stony Creek Diversion to TC	\$37,000,000										
Transmission Lines, Switchyards and Substations											
Sites PGP and Colusa Substations, Switchyards, Transmission	\$190,000,000	\$190,000,000									
Sites PGP Substation, Switchyard, Transmission	\$98,000,000		\$98,000,000	\$98,000,000		\$98,000,000	\$98,000,000	\$98,000,000	\$98,000,000		
TRR and T-C from Cogen Substation	\$105,000,000				\$105,000,000					\$105,000,000	\$105,000,000
General Property											
Recreation and O&M Facility	\$30,000,000	\$30,000,000	\$30,000,000	\$30,000,000	\$30,000,000	\$30,000,000	\$30,000,000	\$30,000,000	\$30,000,000	\$30,000,000	\$30,000,000
Mitigation (\$350M construction + \$150M operation)											
Construction Impacts	\$350,000,000	\$350,000,000	\$350,000,000	\$350,000,000	\$350,000,000	\$350,000,000	\$350,000,000	\$350,000,000	\$350,000,000	\$350,000,000	\$350,000,000
Operation Impacts	\$150,000,000	\$150,000,000	\$150,000,000	\$150,000,000	\$150,000,000	\$150,000,000	\$150,000,000	\$150,000,000	\$150,000,000	\$150,000,000	\$150,000,000

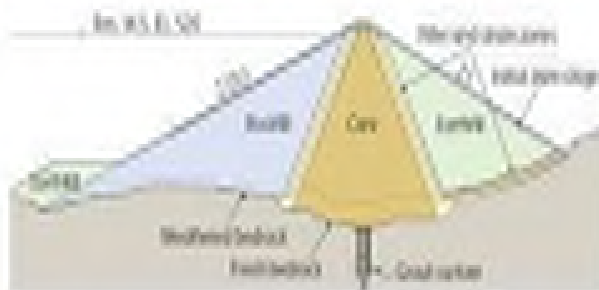
Attachment 2. Res Storage vs Embank Vol Plot.pdf and Alt Dam ROM Costs



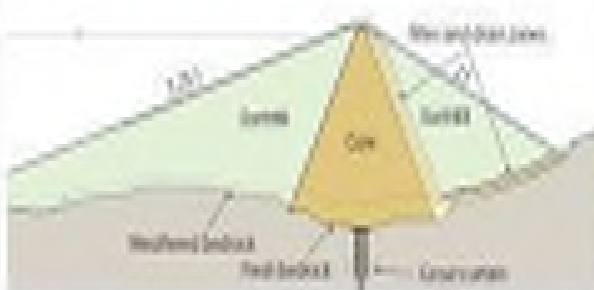
Attachment 3. Alternative-section_dams

Dam Types Drive Affordability

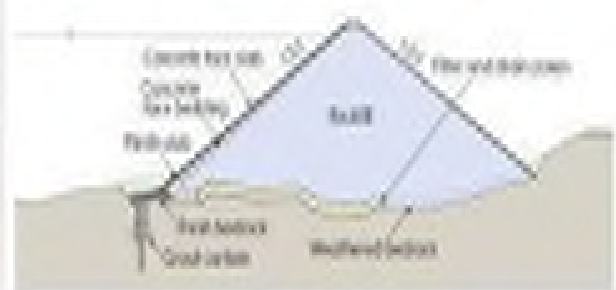
Option #1 Zoned Earth- and Rockfill Dams



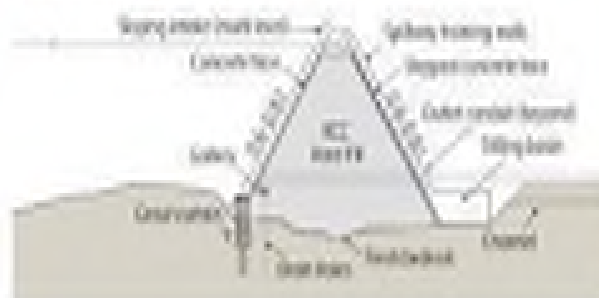
Option #2 Zoned Earthfill Dams



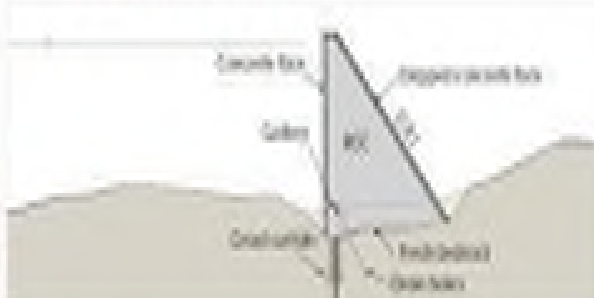
Option #3 Concrete Faced Rockfill Dams



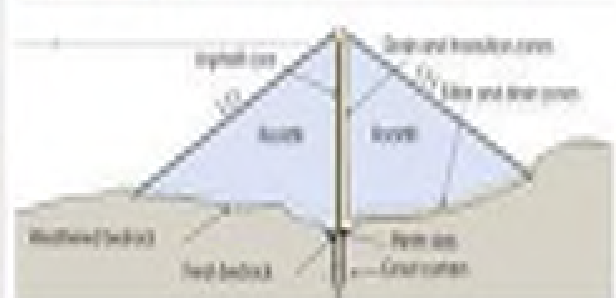
Option #4 RCC Hardfill Dams



Option #5 RCC Dams



Option #6 Asphalt Core Rockfill Dams



Value Planning Analysis Authority Staff Review Comments



Date: October 22, 2019

Subject: Value Planning Analysis Authority Staff Review Comments

1.0 Purpose

On October 18, 2019, representatives from the Reservoir Committee requested staff to identify potential issues with the Sites Reservoir Project Alternatives presented three Technical Memorandums. The memorandums that were reviewed included the following:

1. Value Planning: Mitigation Cost Estimate Update of 2016 Technical Memorandum, October 11, 2019.
2. Value Planning Analysis Technical Memorandum, October 14, 2019.
3. Value Planning Effort Technical Memorandum, October 15, 2019.

2.0 Review Comments

In their review, staff did not identify anything that would be considered a “fatal flaw”. Staff review comments are presented below:

General

1. The value planning effort included development of appraisal level costs. The draft Sites Authority Principles and Requirements for Feasibility Study and the Technical Reference for the Water Storage Investment Program (WSIP) reference their cost estimates to the Association for the Advancement of Cost Engineering (AACE) International classifications. The AACE classifications correspond to the percent that project design has been completed and the associated expected range in accuracy of the cost estimate. It is recommended that the value planning cost estimates and contingencies follow the AACE classifications and guidelines.
2. The I/O structure changes from a single 30 foot diameter tunnel in Alternative D to twin 15 foot diameter tunnels. Because this change increases costs by around \$70 million, it would be beneficial to explain the reasoning.
3. It is recognized that many of the staff comments would be addressed after the value planning effort is complete and the alternatives are being further evaluated to screen them down to identify a preferred plan. Examples are as follows:
 - a. Incorporate an emergency spillway and revise the freeboard and dam crest elevation, if appropriate.
 - b. Finalize the emergency drawdown facilities and associated flowage easements, if appropriate.
 - c. Further evaluate the compatibility of the portion of the Delevan Canal that will be located in the right overbank floodplain of the CBD, as well as potential upstream hydraulic impacts.
4. The CEQA Guidelines, Section 15088.5 (a) addresses the requirements associated with changes in a project and the need for recirculation of an EIR prior to certification. Specifically:

“A lead agency is required to recirculate an EIR when significant new information is added to the EIR after public notice is given of the availability of the draft EIR for public review under Section 15087 but

before certification. As used in this section, the term “information” can include changes in the project or environmental setting as well as additional data or other information. New information added to an EIR is not “significant” unless the EIR is changed in a way that deprives the public of a meaningful opportunity to comment upon a substantial adverse environmental effect of the project or a feasible way to mitigate or avoid such an effect (including a feasible project alternative) that the project's proponents have declined to implement.”

Each alternative should be reviewed for potential changes in the significance of an impact and/or inability to implement mitigation previously identified in the EIR.

5. According to CEQA, an EIR must describe a reasonable range of alternatives to a proposed project that could feasibly attain most of the basic project objectives, and would avoid or substantially lessen any of the proposed project's significant effects. Any new alternative should be reviewed in light of comments received on the Draft EIR/EIS and in consideration of reducing significant adverse effects.

Specific

1. The EIR/EIS found that the Project's conversion of Prime Farmland, Unique Farmland or Farmland of Statewide importance to non-agricultural use would result in significant and unavoidable impacts. In all alternatives, replacement of the Delevan pipeline with open canal may result in additional environmental effects associated with agricultural land conversion as it may render additional land unsuitable for agricultural production; while this may not substantially increase an already significant and unavoidable effect, it would increase costs for mitigation at the 1:1 ratio currently proposed.
2. Alternative 2 proposes the use of a roadway around the southern end of the reservoir rather than a bridge crossing. This may result in additional vehicle miles traveled and associated air quality and greenhouse gas effects as well as affect emergency response times. Other effects that may be in excess of those associated with Alternative D would be ground disturbing effects to cultural and/or biological resources; however, it is likely that the roadway could be designed to avoid significant resources.

Alternatives 5a, 5b, 6a and 6b would be implemented outside of the previously analyzed project footprint and would be most likely to trigger recirculation of the Draft EIR/EIS due to the change in environmental setting and potential for previously undisclosed environmental effects.

Feature	Potential Major Permitting Effect Compared to Alt D
1.5 MAF Reservoir	<ul style="list-style-type: none"> • Reduce effect to grassland threatened and endangered (T&E) species • Reduced effect to streams, wetlands and cultural resources
1.3 MAF Reservoir	<ul style="list-style-type: none"> • Reduce effect to grassland T&E species • Reduced effect to streams, wetlands and cultural resources
Funks/Sites PGP	<ul style="list-style-type: none"> • Reduce impact to grassland T&E species • Reduced effect to streams, wetlands and cultural resources
TCRR and Upgraded TRR PGP	<ul style="list-style-type: none"> • No major change in effects anticipated • Unknown effects to cultural resources
Delevan Canal/Pipeline Release	<ul style="list-style-type: none"> • Reduced effect to river channel • Reduced effect to riparian vegetation • Reduced effect to riverine species (aquatic and terrestrial)
Dunnigan Canal to CBD Release	<ul style="list-style-type: none"> • Reduced effect to riverine species (aquatic and terrestrial) • Increased (new) effect to CA tiger salamander • Reduced effect to Giant Garter Snake • New water quality effect • New in-river flow reduction effect • Unknown effects to cultural resources
Dunnigan to River Release	<ul style="list-style-type: none"> • Reduced effect to riparian vegetation • Reduced effect to riverine species (aquatic and terrestrial) • Increased (new) effect to CA tiger salamander • New in-river flow reduction effect • Unknown effects to cultural resources
Multi-Span Bridge	<ul style="list-style-type: none"> • No major change in effects anticipated
South Road to Lodoga	<ul style="list-style-type: none"> • No major change in effects anticipated • Unknown effects to cultural resources
South Road to Residents	<ul style="list-style-type: none"> • Minor change in impacts/mitigation for grassland T&E species • Unknown effects to cultural resources
Rockfill Embankment Dam	<ul style="list-style-type: none"> • Assuming fill comes from within the current project footprint, no major change in effects anticipated; If fill sites outside of the current project footprint are necessary, additional analysis would be needed
Earthfill Dam	<ul style="list-style-type: none"> • Assuming fill comes from within the current project footprint, no major change in effects anticipated; If fill sites outside of the current project footprint are necessary, additional analysis would be needed
Hardfill Dam	<ul style="list-style-type: none"> • Assuming fill comes from within the current project footprint, no major change in effects anticipated; If fill sites outside of the current project footprint are necessary, additional analysis would be needed

Alternative 1

1. No issues to consider.

Alternative 2

1. The community's "preferred" road connection is the bridge. The South Road will require extensive local community engagement to get "acceptance" of the road.
2. South Road affects landowners who are not currently impacted by the project – will require extensive outreach to "newly" impacted landowners.
3. South Road increases the amount of property that would be needed to acquire...increases land that would need TROE agreements for studies.

Alternative 3

1. TCRR and pumping plant affects landowners who are not currently impacted by the project – will require extensive outreach to "newly" impacted landowners.
2. Any revisions to the GCID TRR (size/footprint) could create landowner issues.
3. Depending on the sizing and location of the Delevan Canal...could be an increase in land needed for acquisition, would move us to permanent take rather than easements over the buried pipeline, could cause the created of bifurcated/remnant parcels, could be a bigger impact to existing farming operations.

Alternative 4a

1. Same issues as Alternative 3 – Delevan Canal.

Alternative 4b

1. Same issues as Alternative 3 – Delevan Canal.

Alternative 5a

1. TC Canal Southern Release affects landowners who are not currently impacted by the project – will require extensive outreach to "newly" impacted landowners – as well as Yolo County.

Alternative 5b

1. TC Canal Southern Release affects landowners who are not currently impacted by the project – will require extensive outreach to "newly" impacted landowners – as well as Yolo County.

Alternative 6a

1. TCRR and pumping plant affects landowners who are not currently impacted by the project – will require extensive outreach to "newly" impacted landowners.

2. TC Canal Southern Release affects landowners who are not currently impacted by the project – will require extensive outreach to “newly” impacted landowners – as well as Yolo County.

Alternative 6b

1. TCRR and pumping plant affects landowners who are not currently impacted by the project – will require extensive outreach to “newly” impacted landowners.
2. TC Canal Southern Release affects landowners who are not currently impacted by the project – will require extensive outreach to “newly” impacted landowners – as well as Yolo County.

Appendix A-2 Road and Bridge Analysis

Technical Memorandum



To: Value Planning Work Group
CC: Lee Frederiksen
Date: February 28, 2020
From: AECOM
Subject: Road and Bridge Analysis

1.0 Introduction

Several alternatives for realigning Sites-Ladoga Road across and around the planned reservoir have been considered. These alternatives were discussed with Colusa and Glenn Counties on January 28, 2020. Important considerations include the following:

- Avoid comingling construction traffic with the general public
- An access road is required for residents at the southern end of Sites Reservoir
- Consider travel time and maintenance costs in the development of alternatives
- Consider public safety in developing the designs, including high winds and potential jumping hazards/nuisance

It is proposed to bring construction traffic in from the north via Road 68 onto a paved construction bypass. The general public would continue to travel on the existing Sites-Ladoga Road until either a new road/bridge across the reservoir or southern bypass road is constructed and opened for use, at which point the existing Sites-Ladoga Road could be closed and construction on Sites Dam could begin.

Four realignment alternatives for the Sites-Ladoga Road are being considered. Three road/bridge realignment alternatives (A, B, and C) and one fully road realignment alternative (D) are depicted in Figure F-1 below. The combination of roadway fill and bridge is being considered for access across the reservoir to reduce the project cost associated with a full-length bridge. Approximate travel times for these alternatives are provided in Table A2-1.

Table A2-1. Approximate Travel Times for Road Options (1.8 MAF Reservoir)

Alternative	SQUAW CREEK TO COLUSA CANAL			
	A - BLUE	B - ORANGE	C - GREEN	D - PINK
Align. Length (mi)	16.5	18.3	21.3	18.9
Assumed Ave Travel Speed (mph)	35	30	30	30
Time of Travel (min)	28	37	43	38
Relative Travel Time (min)	-	(8)	(14)	(10)

Alternative A, the South Road/Bridge alignment, is the most direct route with the shortest travel time.

2.0 South Road/Bridge Alignment (Alternative A – Blue)

Recently, three varying sizes of reservoir have been considered – 1.0 MAF, 1.3 MAF, and 1.8 MAF. As the size of the reservoir increases, the water surface elevation also increases, which elevates the road/bridge crossing. Larger reservoirs require longer bridges with taller piers and taller roadway fill prisms. When considering various size reservoirs and possibly phasing the reservoir to increase water storage over time, Table F-2 shows how road and bridge costs vary for different reservoir sizes. The table includes a least cost 1 MAF, non-phasable alternative with a tunnel; A least cost 1 MAF, non-phasable alternative without a tunnel; A least cost 1.3 MAF, non-phasable alternative; And phaseable options from 1 MAF to 1.8 MAF, plus 1.3 MAF to 1.8 MAF.

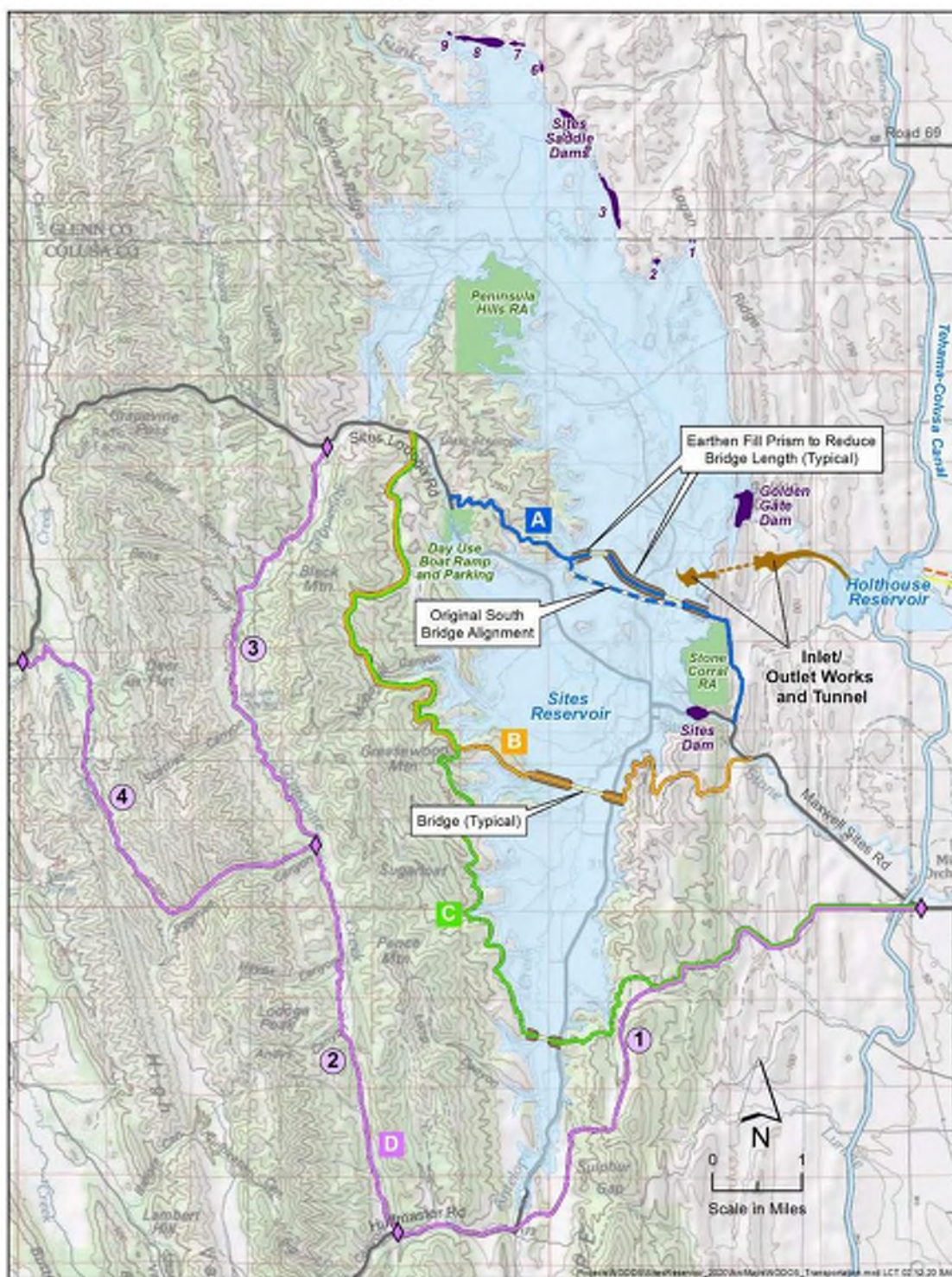


Figure A2-1. Public Transportation Route Alternatives

Table A2-2. Approximate Cost for South Bridge Options (Option A in Figure F-1)

Reservoir Data				Blue Alternative - Planning-Level Construction Cost Estimate (\$M)								
MAF	Storage WSE	Max Flood Δ in WSE + Wave Ht. (ft') =	10	Road	Reservoir Crossing			Tunnel	Phase 1 Total	Phase 2 (to 1.8 MAF)	Total Phase 1 & 2	Total Blue Alternative
		Bridge			Road							
		L (ft)			Cost	Fill						
1	457	467		\$43	748	\$23	\$30	\$95	\$191	Not Phasable	\$191	\$191
1	457	467		\$47	748	\$23	\$30	\$0	\$99	Not Phasable	\$99	\$99
1	457	467		\$47	748	\$23	\$79	\$0	\$149	\$65	\$213	\$213
1.3	481	491		\$47	844	\$26	\$53	\$0	\$126	Not Phasable	\$126	\$126
1.3	481	491		\$47	844	\$26	\$97	\$0	\$170	\$35	\$205	\$205
1.5	498	508		\$46	1106	\$25	\$47	\$0	\$118	Not Phasable	\$118	\$118
1.8	520	530		\$45	1500	\$46	\$105	\$0	\$196	NA	\$196	\$196

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3.0 Southern Road Alignment (Alternative D – Pink)

The alternative to avoid constructing a bridge is the southern road alignment. As noted in Section F.1, an access road to properties at the southern end of Sites Reservoir is required regardless of which alternative is selected. If a bridge were not constructed, it would be necessary to construct a paved road to the southern end of the reservoir that would continue north and west on the west side of the reservoir to maintain access to Lodoga and other communities to the west.

Table A2-3 provides an approximate cost for a paved road for each of the four numbered road segments depicted in Figure F-1.

Table A2-3. Conceptual Cost for Road Segments

Southern Road (Pink Alternative in Figure F-1)		
Road Segment	Segment Length (mi)	Construction Cost Est. (\$M)
1	7.4	\$85.3
2	6.0	\$69.7
3	5.6	\$64.4
4	5.9	\$68.7
Total Cost of Seg. 1, 2, & 4		\$224
Total Cost of Seg. 1, 2, & 3		\$219

4.0 Other Roads

Additional public and project roads are included in all alternatives. These include access to the communication towers on the east side of the reservoir; access to Stone Corral, Peninsula Hills, and boat ramps; roads internal to the recreation areas, and roads to access all project facilities for maintenance. Costs budgeted for public roads include the following:

Construction Bypass Road - \$30M

Stone Corral Eastside Access and Boat Ramp - \$9.7M

Westside Boat Ramp Access and Access to Peninsula Hills Recreation - \$5.2M

Eastside Road to Communication Tower - \$6.3M

Peninsula Hills Park Roads - \$2.7M (excludes parking lots)

Appendix A-3 Conveyance System Technical Memorandum



To: Value Planning Work Group
CC: Lee Frederiksen
Date: April 9, 2020
From: Jacobs
Subject: Conveyance System

1.0 Background

In October 2019, a Value Planning analysis draft technical memorandum was completed with the objective of looking at alternative project components to reduce the cost of the Sites reservoir project. This technical memorandum provided several viable alternatives that reduced the overall project costs from the original \$5.2B to a new range of \$3.4 to \$4.0B. The lowest cost alternative, known as Alternative 6A, includes a 1.5 million acre-foot reservoir, a pump station on the Tehama-Colusa (T-C) Canal to lift water to the reservoir, and use of the Tehama-Colusa Canal to discharge water from the Reservoir to the Sacramento River. Specifically, water would be discharged from the reservoir into the T-C canal, conveyed down the T-C canal near the end in Dunnigan and then new facilities built to convey it from T-C canal to either the Colusa Basin Drain (CBD) or the Sacramento River.

2.0 Purpose

The purpose of this TM is to look at various alternatives to convey water from the end of T-C canal to the CBD or Sacramento River for flows of 750 cfs and 1,000 cfs. Members of the Reservoir Committee visited the area on January 14, 2020 to look at conveyance alternatives to be analyzed.

3.0 Alternatives Development

The alternatives developed by members of the Reservoir Committee are as follows and provided as exhibits at the end of this Technical Memorandum:

3.1 Alternative 6A-1

This alternative is sized for a flow of 750 cfs and includes a turnout on the T-C canal located about 1,500 feet upstream of the end of T-C canal, then a pipeline east until it intercepts Bird Creek and then flow is discharge into Bird Creek where it flows to the Colusa basin Drain. Total length of this alternative is 20,000 feet with 6,600 feet of pipeline and 13,400 feet of open channel (Bird Creek).

3.2 Alternative 6A-2 CBD

This alternative is sized for a flow of 750 cfs and includes a turnout on the T-C canal located about 1,500 feet upstream of the end of T-C canal, then a pipeline east all the way to the Colusa basin Drain, and ends with a flow control/pressure reducing valve to discharge to the CBD. This pipeline follows roughly the same alignment as Alt 6A-1. Total length of this alternative is 20,000 feet.

3.3 Alternative 6A-2 Sac Riv

This alternative is sized for a flow of 750 cfs and includes a turnout on the T-C canal located about 1,500 feet upstream of the end of T-C canal, then a pipeline east all the way to the Sacramento River, and ends with a flow control/pressure reducing valve to discharge to the Sacramento River. This pipeline follows roughly the same alignment as Alt 6A-1, but then continues east across farmland to the Sacramento River. Total length of this alternative is 51,000 feet.

3.4 Alternative 6A-3

This alternative is sized for a flow of 750 cfs and includes a turnout on the end of the T-C canal that discharges to a small, winding ditch (created by discharges from T-C Canal), then intercepts Bird Creek and continues to flow in Bird Creek where it ends by flowing into the Colusa basin Drain. Total length of this alternative is 24,600 feet with 4,000 feet of small ditch and 20,600 feet of open channel (Bird Creek).

3.5 Alternative 6A-4

This alternative is sized for a flow of 750 cfs and includes a turnout on the T-C canal located about 27,000 feet upstream of the end of T-C canal where it crosses Hunter Creek. Flow is discharge to Hunter Creek where it ends by flowing into the Colusa basin Drain. Total length of this alternative is about 32,500 feet of open channel (Hunter Creek).

3.6 Alternative 6A-5 CBD

This alternative is essentially the same layout as Alternative 6A-2 CBD except the flow is increased from 750 cfs to 1,000 cfs.

3.7 Alternative 6A-5 Sac River

This alternative is essentially the same layout as Alternative 6A-2 Sac River except the flow is increased from 750 cfs to 1,000 cfs.

4.0 Initial Screening of Alternatives

Based on a field visit on February 11, 2020, it was determined that discharging flow directly to the existing open channels would result in significant water loss due to seepage and evaporation. This is based on the visual evidence of the existing creek beds showing sandy and gravels that have high infiltration rates. In addition, these creeks have significant debris to impede flow and would require high maintenance to reshape. Lastly, these creeks are wide and the 750 cfs flow would be very shallow, contributing to an increase in evaporation and seepage. As a result, it was determined that all open channels will need to be lined. Given that Hunter Creek is significantly longer than the other open ditch options, it was decided to eliminate Alternative 6A-4 from further consideration.

A second criteria used to evaluate these alternatives includes an assumption that Bird Creek needs to maintain their current shape to accommodate storm runoff flows that created them. Calculations were performed using topographic data to determine the canal cross required for the 750 cfs flow for the different segments. The existing ditch has depth that varies from 7-10 feet. Using a water depth of 5 feet, a 2:1 side slope, frictional coefficient of 0.02, calculations showed the bottom width of a trapezoidal channel to be about 12 feet. The existing channel has a bottom width that ranges from 20-25 feet and a top width of about 50 feet. Lining the existing channel to accommodate stormwater flows (as a criteria), would be very expensive and unnecessary given that the channel needs to accommodate the 750 cfs is less than half of the channel width. If this channel was lined, then significant maintenance would be required to remove all the debris accumulated from stormwater runoff. As a result, it was decided to eliminate using the existing creeks for conveying the water. Therefore, alternatives 6A-1 and 6A-3 were eliminated, leaving only the piping alternatives.

5.0 Evaluation of Alternative 6A-2 and 6A-5 Alternatives

Calculations were performed to determine the pipeline sizes required for the two remaining options. An assumption was made to have both pipelines sized to allow for gravity flow. Following are the assumptions used in these calculations:

- Water Surface elevation in T-C Canal = 175 feet
- Water surface elevation in Colusa Basin Drain = 32 feet
- Water surface elevation at Sacramento river = 40 feet (typically lower, but required to go high in levee per Army Corps Standards)
- Hazen-Williams Friction Factor C-value = 130

The results of these calculations resulted in the following:

5.1 Alternative 6A-2 CBD

The pipeline will carry 750 cfs and be 7.5-foot (90-inch) internal diameter with two tunneled crossings (I-5 and 99W/RR) that require 9-foot (108") casings. The total length of pipeline is 20,000 feet with 300-foot and 250-foot tunneled crossings. A 72-inch flow control/pressure reducing valve will be placed at the discharge to dissipate energy and adjust the flow.

5.2 Alternative 6A-2 Sac Riv

The pipeline will be 9.5-foot (114-inch) internal diameter with three tunneled crossings (I-5 and 99W/RR and CBD) that require 11-foot (132") casings. The total length of pipeline is 51,600 feet with 300-, 250-, and 250-foot tunneled crossings. A 72-inch flow control/pressure reducing valve will be placed at the discharge to dissipate energy and adjust the flow.

5.3 Alternative 6A-5 CBD

The pipeline will carry a flow of 1,000 cfs and be 9-foot (108-inch) internal diameter with three tunneled crossings (I-5 and 99W/RR and CBD) that require 10.5-foot (126") casings. The total length of pipeline is 20,000 feet with 300-foot and 250-foot tunneled crossings. A 78-inch flow control/pressure reducing valve will be placed at the discharge to dissipate energy and adjust the flow.

5.4 Alternative 6A-5 Sac River

The pipeline will carry a flow of 1,000 cfs and be 10.5-foot (126-inch) internal diameter with three tunneled crossings (I-5 and 99W/RR and CBD) that require 12-foot (144") casings. The total length of pipeline is 51,600 feet with 300-, 250-, and 250-foot tunneled crossings. A 78-inch flow control/pressure reducing valve will be placed at the discharge to dissipate energy and adjust the flow.

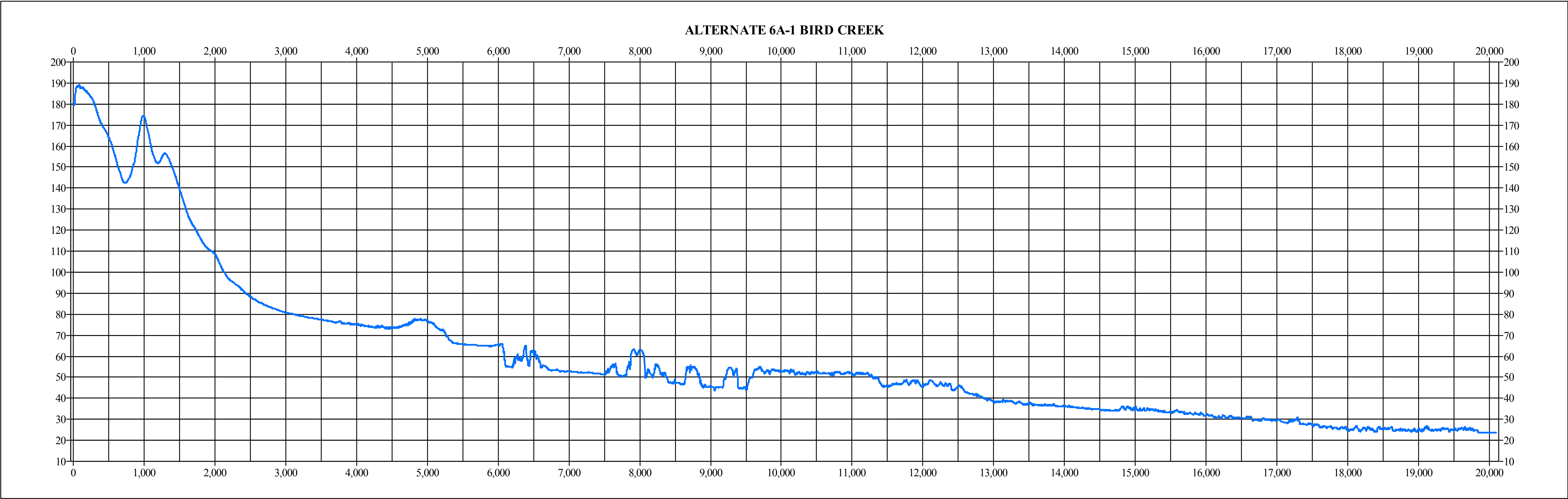
6.0 Cost Analysis

A Class 5 cost estimate was prepared based on limited information, where little more than proposed plant type, its location, and the capacity are known. Strategic planning purposes include but are not limited to, market studies, assessment of viability, evaluation of alternate schemes, project screening, location and evaluation of resource needs and budgeting, and long-range capital planning. Examples of estimating methods used would include cost/capacity curves and factors, scale-up factors, and parametric and modeling techniques. Typically, little time is expended in the development of this estimate. The expected accuracy ranges for this class estimate are -20 to -50 percent on the low side and +30 to +100 percent on the high side. These estimate includes a Contractors overhead and profit, a 10% contingency, and 17% for soft costs (admin, design, construction management). These estimates include costs for real estate acquisition based on a 100-foot wide corridor at \$15,000 per acre.

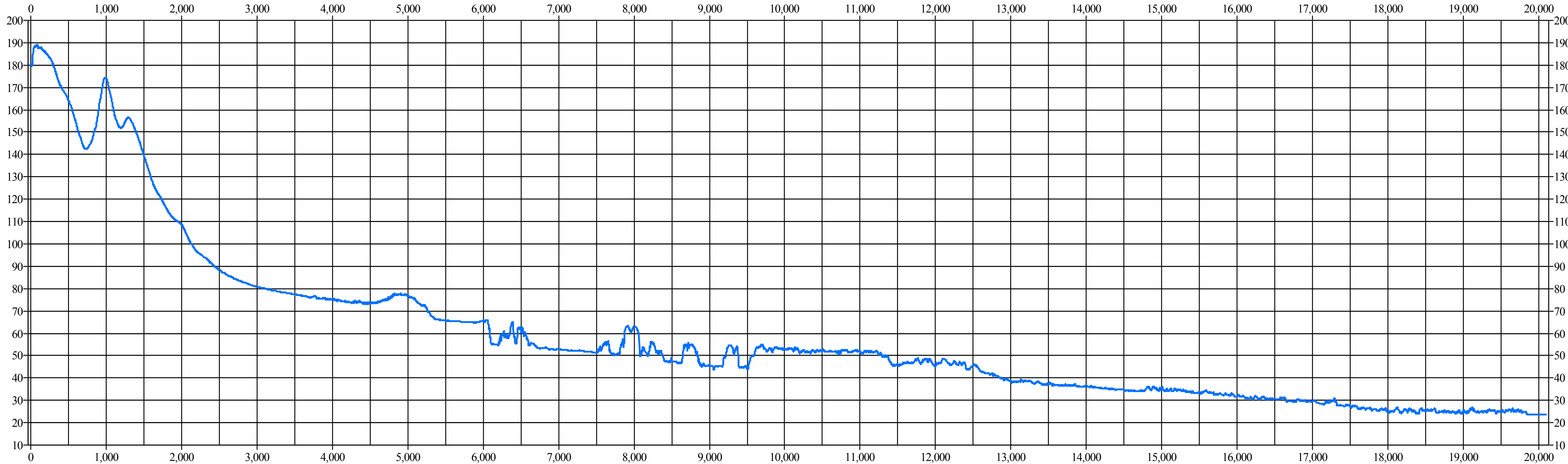
Cost for Alt 6A-2 750 cfs to Colusa Basin Drain	= \$54.8M (\$30/di-lf)
Cost for Alt 6A-2 750 cfs to Sacramento River	= \$175.2M (\$30/di-lf)
Cost for Alt 6A-5 1,000 cfs to Colusa Basin Drain	= \$65.2M (\$30/di-lf)
Cost for Alt 6A-5 1,000 cfs to Sacramento River	= \$192.5M (\$30/di-lf)

The comparison of costs shows extending the pipeline to the Sacramento River will cost an additional \$120M for the 750 cfs flow and \$130M for the 1,000 cfs flow. These differences are primarily due to the added length and the additional tunnel to get under the Colusa Basin Drain, as well as the larger diameter pipes for the 1,000 cfs case.

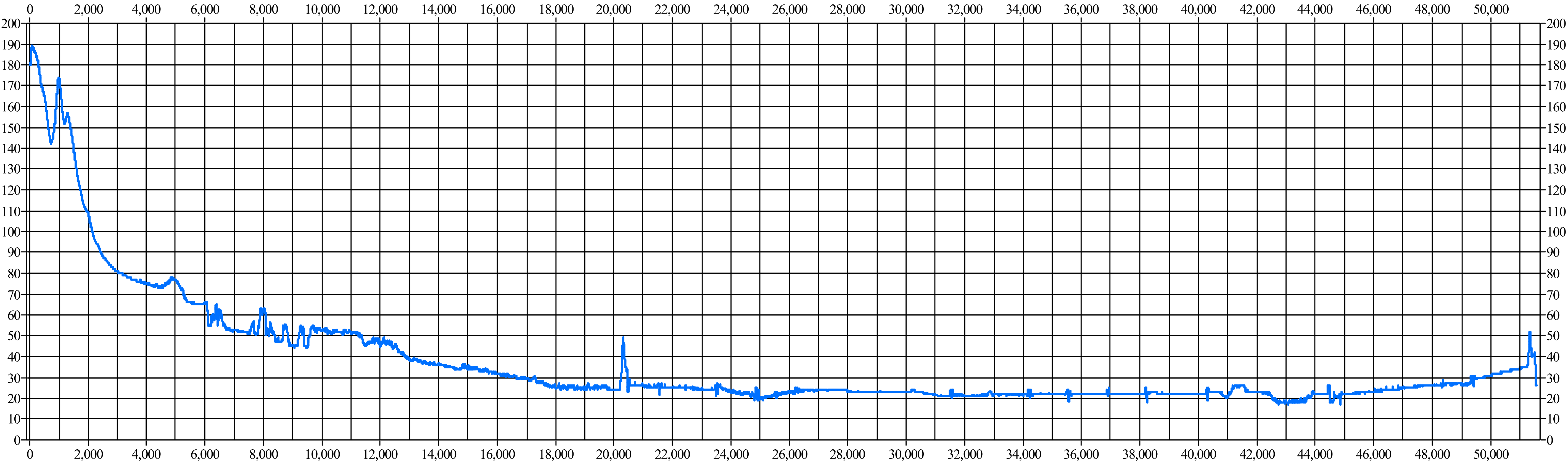
ALTERNATE 6A-1 BIRD CREEK

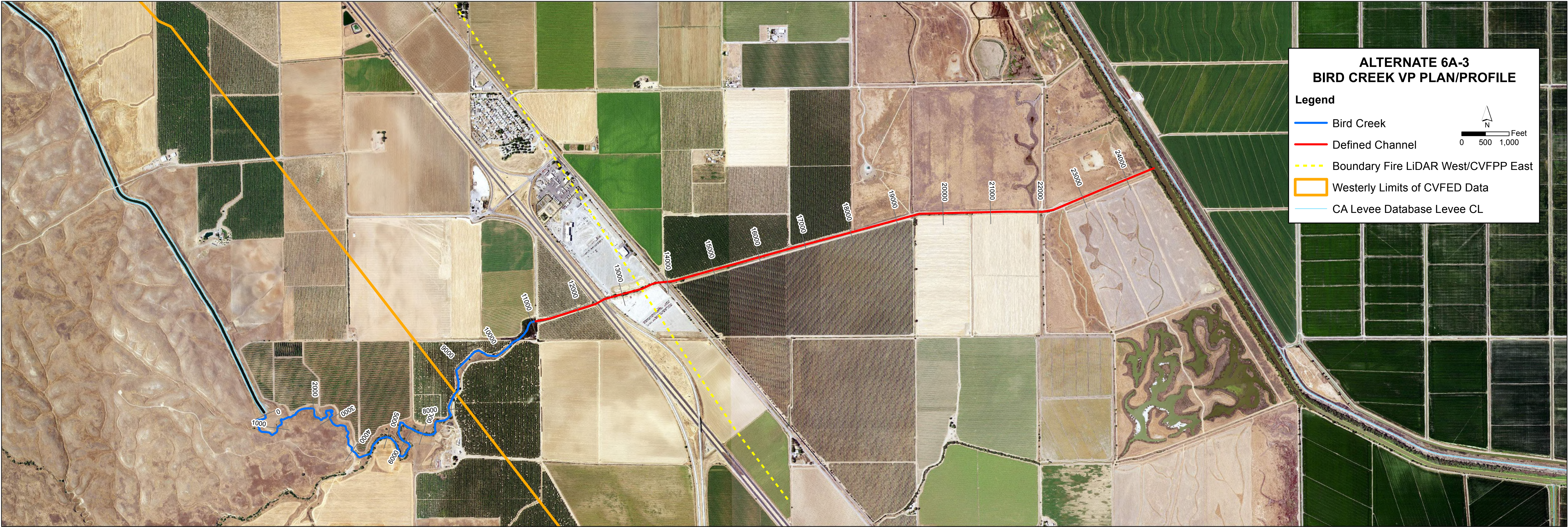
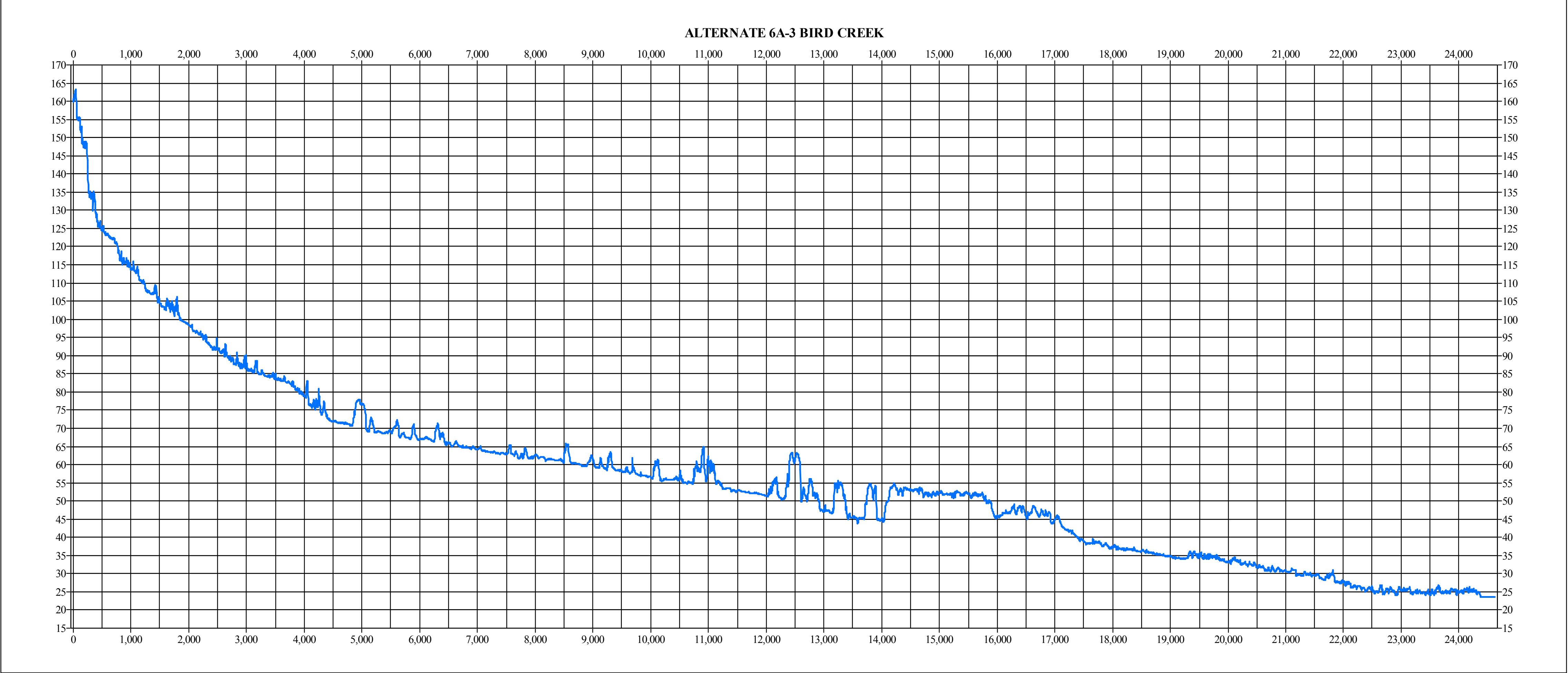


ALTERNATE 6A-2-CBD

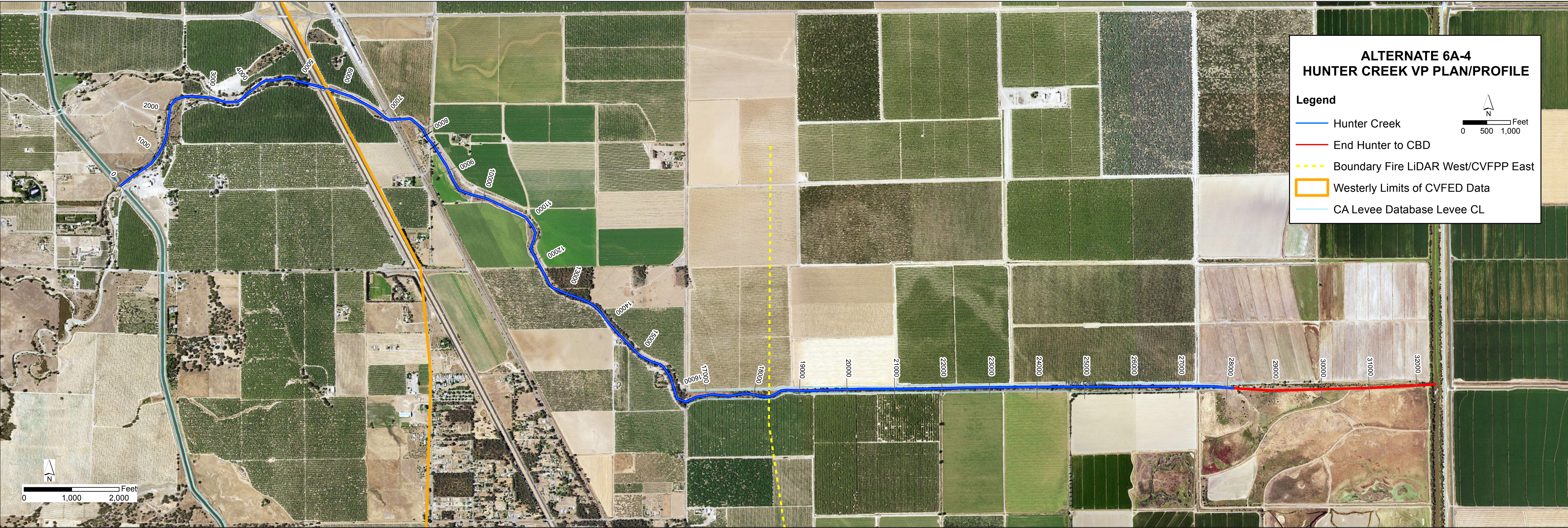
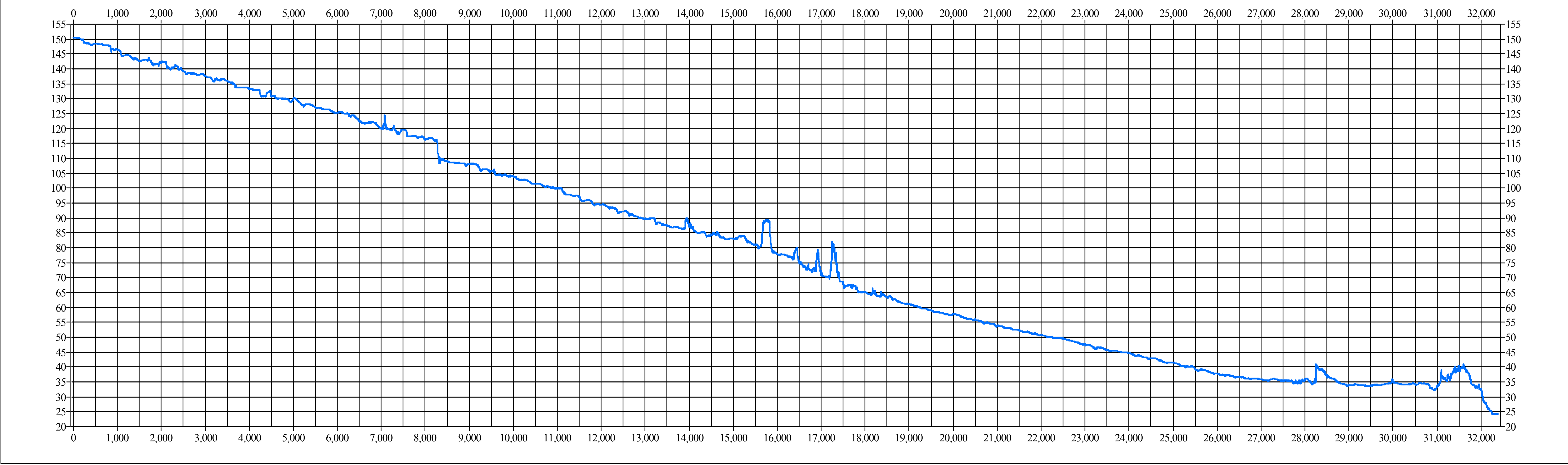


Alternate 6A-2, Tehama Colusa Canal to Sacramento River





ALTERNATE 6A-4 HUNTER CREEK



Appendix A-4 Cost Estimate Technical Memorandum



To: Sites Value Planning Group
CC: Lee Frederiksen
Date: January 28, 2020
From: AECOM
Subject: Cost Estimate

Construction cost estimates were derived from detailed appraisal-level estimates for a 1.3 MAF reservoir (Alternative A in the EIR/S and feasibility report) and for a 1.8 MAF reservoir (Alternative D in the EIR/S and feasibility report). These estimates reflect the current project concepts and conceptual level of project design, with appropriate allowances for contingencies, non-contracts costs, and forward escalation. Other project-related costs are also provided, including environmental mitigation, and temporary and permanent easement acquisition. The Alternative D estimate was used to support the Authority's WSIP application. Estimated prices were developed in October 2015 dollars and have been escalated in this estimate.

The actual project construction cost ultimately would depend on the final design details of the preferred project alternative and the labor and material costs, market conditions, and other variable factors existing at the time of bid. Accordingly, the final project cost would vary from the preliminary estimates presented in this section.

Major assumptions made to prepare the preliminary feasibility cost estimates include:

- Competitive market conditions would prevail at the time of bid tender.
- Work would be packaged for bidding so that the magnitude of the contract would not unduly restrict competition.
- The construction schedule assumes a start of field construction activities in the second quarter of 2022 for all scenarios.
- Environmental mitigation and ecosystem enhancement measures would be consistent with those currently used in practice and would be the same for each alternative.
- Builder's Risk Insurance would be available to the contractor.
- Materials such as sand, gravel, and cement would remain available within the haul distances used to prepare the estimates.

1.0 Level and Classification of Cost Estimates

The availability of site data and design information to support preparing cost estimates varies between the facilities that constitute the Sites Reservoir project. Some facilities (like the main dams) are advanced enough to support a lower-bound Class 3 estimate as defined by the Association for Advancement of Cost Engineering, International. Other facilities, like the Dunnigan conveyance from the T-C Canal to the CBD have no supporting geotechnical evaluation and only a preliminary screening of potential utility conflicts. These estimates are considered to be at a Class 5 level.

The estimate for the 1.8, 1.3, and 0.8 MAF reservoir dams used dimensions, quantities, and cost ratios previously developed by DWR (DWR DOE. 2004. Sites Reservoir Engineering Feasibility Study – Sites

Status: For Use
Filename: Appendix A-4 Cost Estimate Final
Notes:

Phase: 2 Revision:
Date: April 10, 2020
Page: 1 of 9

Reservoir Alternative Reservoir Size Evaluation. October.). The estimate for the 1.0 MAF reservoir was interpolated from the 0.8 MAF and 1.3 MAF facilities.

1.1 Estimate Base and Escalation

The contract, field, and construction cost estimates presented in this section were compiled using individual-estimate worksheets for each NODOS/Sites Reservoir Project feature. All costs are provided in October 2015 dollars. Escalation of construction costs to a notice to proceed date in mid-2022 has been included.

Escalation was evaluated using various sources, including the USACE Civil Works Construction Cost Index and the Consumer Price Index. Results varied from 15.3 percent to 15.8 percent over the escalation period. For the project alternatives, 15 percent over 7 years has been applied for each alternative.

1.2 Allowances and Contingency

Construction contingency is a percentage allowance added to develop the field cost. Contingencies are funds for use after construction starts to compensate the contractor for such issues as unforeseen or changed site conditions, owner-directed orders for change, and differences between estimated and actual quantities. Contingency allowances are generally higher for appraisal-level estimates than for feasibility-level estimates.

For a Class 4 estimate, the overall cost variability can range per AACE from negative 15% to 30% on the low range to positive 20% to 50% on the high range, depending on the level of design information available to support the estimate. This report uses a construction contingency of 15 percent to establish for all features, but also applies a higher contingency to high risk and new facilities developed during the value planning effort where less supporting information is available.

- A 30% contingency was applied for an upper end estimate for the new Funks pumping facilities. Although these were not previously studied, they are in the footprint where geotechnical investigations have been performed in the past.
- A 65% contingency was applied to establish the upper range of costs for the Dunnigan release facilities. There is no information from prior investigations or topography for these facilities. These facilities are at a Class 5 level.
- A 40% contingency was applied to establish the upper range of costs for the TRR. Geotechnical information is limited and there is a potential liquefaction concern.

Table A4-1 presents the allowances and average contingency percentages adopted and applied to the feasibility-level cost estimate for the alternative projects.

Table A4-1. Allowances and Contingencies for Estimating

Allowances and Contingencies	Percentages
Mobilization/Demobilization	5 percent
Design Contingency	10 percent
Construction Contingency	15 to 65 percent
Non-Contract Costs	17 percent

The mobilization/demobilization allowance and design and construction contingencies were applied to the contractor costs to develop the contract cost. The construction contingency was applied to the contract cost to arrive at the field cost.

1.3 Non-Contract Costs

Non-contract costs include Authority staff, engineering and design, surveying, geotechnical investigation, construction management and inspection, project close-out, administration, legal services, permitting, etc. For the estimates presented in this section, the non-contract costs were estimated to be 17 percent of the total field costs (contract cost plus contingency). Actual non-contract costs would vary from facility to facility; however, 17 percent is assumed to represent the average value.

1.4 Environmental Mitigation

Many environmental laws affect the State's major water supply programs, and environmental concerns play a major role in water policy and planning. Mitigation costs for the original alternatives were based on *Sites Reservoir Feasibility Study Technical Memorandum: Mitigation Measure Evaluation and Cost Estimate* (AECOM 2016).

2.0 Estimates

Estimate summaries are provided for Alternatives VP1 through VP 3 in Tables A4-2 through A4-4, respectively.

The Value Planning Work Group subsequently selected three alternatives for further analysis. These are shown in Table A4-5.

Table A4-2. Estimate Summary for Alternative VP 1

Facility	1.0 MAF (\$ Millions)	1.3 MAF (\$ Millions)	1.5 MAF (\$ Millions)
Develop Sites Reservoir, including Land and Project Roads, Clearing and Demolition	\$143,000,000	\$143,000,000	\$143,000,000
Other Roads (Project and Recreation)	\$79,000,000	\$79,000,000	\$79,000,000
South Road to Residents (Unpaved)	\$41,000,000	\$41,000,000	\$41,000,000
Bridge	\$99,000,000 To \$116,000,000	\$126,000,000 To \$147,000,000	\$154,000,000 To \$180,000,000
North Construction Access Road (Paved)	\$30,000,000	\$30,000,000	\$30,000,000
Construct Sites Dam and Golden Gate Dam	\$255,000,000	\$345,000,000	\$410,000,000
Construct Saddle Dams	\$92,000,000	\$101,000,000	\$197,000,000
Construct TRR	\$42,000,000 To \$51,000,000	\$42,000,000 To \$51,000,000	\$42,000,000 To \$51,000,000
Construct TCRR	\$42,000,000 To \$51,000,000	\$42,000,000 To \$51,000,000	\$42,000,000 To \$51,000,000
Funks Reservoir Dredging/Structures	\$24,000,000	\$24,000,000	\$24,000,000
Hunters Creek Release Structures	\$91,000,000	\$91,000,000	\$91,000,000
Construct I/O Structure and Tunnels for Reservoir	\$183,000,000	\$280,000,000	\$302,000,000
Construct TCRR Pumping/Generating Plant	\$200,000,000	\$200,000,000	\$200,000,000
Construct TRR Pumping/Generating Plant	\$200,000,000	\$200,000,000	\$200,000,000
Red Bluff Pump Addition	\$4,000,000	\$4,000,000	\$4,000,000
Construct Funks Release Channel	\$34,000,000	\$34,000,000	\$34,000,000
Construct TCRR Pipeline	\$443,000,000 To \$508,000,000	\$443,000,000 To \$508,000,000	\$443,000,000 To \$508,000,000
Construct TRR Pipeline	\$227,000,000	\$227,000,000	\$227,000,000
Construct Dunnigan Pipeline to River	\$177,000,000 To \$292,000,000	\$177,000,000 To \$292,000,000	\$177,000,000 To \$292,000,000
River Release Structure	\$9,000,000	\$9,000,000	\$9,000,000
Transmission Lines, Substations, Switchyards	\$113,000,000	\$113,000,000	\$113,000,000
General Property, including Recreation Areas and OM&R Facilities	\$32,000,000	\$32,000,000	\$32,000,000
Mitigation	\$540,000,000	\$540,000,000	\$540,000,000
Construction Cost (2019)	\$3,057,000,000 To \$3,262,000,000	\$3,281,000,000 To \$3,490,000,000	\$3,493,000,000 To \$3,707,000,000

Key:

I/O = inlet/outlet

OM&R = operation, maintenance, and replacement

TCRR = Regulating Reservoir for T-C Canal

TRR = Terminal Regulating Reservoir for GCID Main Canal

Table A4-3. Estimate Summary for Alternative VP 2

Facility	1.0 MAF (\$ Millions)	1.3 MAF (\$ Millions)	1.5 MAF (\$ Millions)
Develop Sites Reservoir, including Land and Project Roads, Clearing and Demolition	\$143,000,000	\$143,000,000	\$143,000,000
Other Roads (Project and Recreation)	\$79,000,000	\$79,000,000	\$79,000,000
South Road to Residents (Unpaved)	\$41,000,000	\$41,000,000	\$41,000,000
Bridge	\$99,000,000 To \$116,000,000	\$126,000,000 To \$147,000,000	\$154,000,000 To \$180,000,000
North Construction Access Road (Paved)	\$30,000,000	\$30,000,000	\$30,000,000
Construct Sites Dam and Golden Gate Dam	\$255,000,000	\$345,000,000	\$410,000,000
Construct Saddle Dams	\$92,000,000	\$101,000,000	\$197,000,000
Construct TRR	\$42,000,000 To \$51,000,000	\$42,000,000 To \$51,000,000	\$42,000,000 To \$51,000,000
Funks Reservoir Dredging/Structures	\$24,000,000	\$24,000,000	\$24,000,000
Hunters Creek Release Structures	\$91,000,000	\$91,000,000	\$91,000,000
Construct I/O Structure and Tunnels for Reservoir	\$183,000,000	\$280,000,000	\$302,000,000
Construct TRR Pumping/Generating Plant	\$200,000,000	\$200,000,000	\$200,000,000
Construct Funks Pumping/Generating Plant	\$200,000,000	\$200,000,000	\$200,000,000
Construct Funks Release Channel	\$34,000,000	\$34,000,000	\$34,000,000
Red Bluff Pump Addition	\$4,000,000	\$4,000,000	\$4,000,000
Construct Funks Release Channel	\$31,000,000	\$31,000,000	\$31,000,000
Construct TRR Pipeline	\$227,000,000	\$227,000,000	\$227,000,000
Construct Dunnigan Pipeline to CBD	\$56,000,000 To \$90,000,000	\$56,000,000 To \$90,000,000	\$56,000,000 To \$90,000,000
Transmission Lines, Substations, Switchyards	\$113,000,000	\$113,000,000	\$113,000,000
General Property, including Recreation Areas and OM&R Facilities	\$32,000,000	\$32,000,000	\$32,000,000
Mitigation	\$540,000,000	\$540,000,000	\$540,000,000
Construction Cost (2019)	\$2,613,000,000 To \$2,754,000,000	\$2,837,000,000 To \$2,982,000,000	\$2,996,000,000 To \$3,199,000,000

Key:

I/O = inlet/outlet

OM&R = operation, maintenance, and replacement

TRR = Terminal Regulating Reservoir

Table A4-4. Estimate Summary for Alternative VP 3

Facility	1.3 MAF (\$ Millions)	1.5 MAF (\$ Millions)
Develop Sites Reservoir, including Land and Project Roads, Clearing and Demolition	\$143,000,000	\$143,000,000
Other Roads (Project and Recreation)	\$79,000,000	\$79,000,000
South Road to Residents (Unpaved)	\$41,000,000	\$41,000,000
Bridge	\$126,000,000 To \$147,000,000	\$154,000,000 To \$180,000,000
North Construction Access Road (Paved)	\$30,000,000	\$30,000,000
Construct Sites Dam and Golden Gate Dam	\$345,000,000	\$410,000,000
Construct Saddle Dams	\$101,000,000	\$197,000,000
Construct TRR	\$42,000,000 To \$51,000,000	\$42,000,000 To \$51,000,000
Funks Reservoir Dredging/Structures	\$24,000,000	\$24,000,000
Hunters Creek Release Structures	\$91,000,000	\$91,000,000
Construct I/O Structure and Tunnels for Reservoir	\$280,000,000	\$302,000,000
Construct TRR Pumping/Generating Plant	\$200,000,000	\$200,000,000
Construct Funks Pumping/Generating Plant	\$200,000,000	\$200,000,000
Construct Funks Release Channel	\$34,000,000	\$34,000,000
Red Bluff Pump Addition	\$4,000,000	\$4,000,000
Construct Funks Release Channel	\$31,000,000	\$31,000,000
Construct TRR Pipeline	\$227,000,000	\$227,000,000
Construct Delevan Pipeline	\$713,000,000	\$713,000,000
Transmission Lines, Substations, Switchyards	\$113,000,000	\$113,000,000
General Property, including Recreation Areas and OM&R Facilities	\$32,000,000	\$32,000,000
Mitigation	\$540,000,000	\$540,000,000
Construction Cost (2019)	\$3,373,000,000 To \$3,402,000,000	\$3,585,000,000 To \$3,619,000,000

Key:

I/O = inlet/outlet

OM&R = operation, maintenance, and replacement

TRR = Terminal Regulating Reservoir

The estimated costs for Alternatives VP1 through VP 3 were determined for the 1.0 MAF, 1.3 MAF, and 1.5 MAF reservoir sizes. Estimated costs are presented in Table A4-5.

Table A4-5. Alternative Costs (\$millions)

Reservoir Size	Alternative VP 1 TCRR, TRR, 750 cfs Release to Sacramento River	Alternative VP 2 Funks Reservoir, TRR, 750 cfs Release to CBD	Alternative VP 3 Funks Reservoir, TRR, 1,500 cfs Delevan Release
1.0 MAF	\$3,057 to \$3,262	\$2,613 to \$2,754	NA
1.3 MAF	\$3,281 to \$3,490	\$2,837 to \$2,982	\$3,373 to \$3,402
1.5 MAF	\$3,493 to \$3,707	\$2,996 to \$3,199	\$3,585 to \$3,619

The Value Planning Work Group subsequently selected three alternatives for consideration as the Authority's proposed project description. These are shown in Table A4-6. Alternative VP7 was chosen as the recommended project.

Table A4-6. Estimate Summary for Recommended Alternative and Alternates

Facility	VP-5 (\$ Millions)	VP-6 (\$ Millions)	VP-7 (\$ Millions)
Develop Sites Reservoir, including Land and Project Roads, Clearing and Demolition	\$143,000,000	\$143,000,000	\$143,000,000
Other Roads (Project and Recreation)	\$79,000,000	\$79,000,000	\$79,000,000
South Road to Residents (Unpaved)	\$41,000,000	\$41,000,000	\$41,000,000
Bridge (Corresponds to 1.5 MAF reservoir for all alternatives)	\$180,000,000	\$180,000,000	\$180,000,000
North Construction Access Road (Paved)	\$30,000,000	\$30,000,000	\$30,000,000
Construct Sites Dam and Golden Gate Dam (1.5 MAF)			\$450,000,000
Construct Sites Dam and Golden Gate Dam (1.3 MAF)	\$386,000,000	\$386,000,000	
Construct Saddle Dams (1.5 MAF)			\$198,000,000
Construct Saddle Dams (1.3 MAF)	\$102,000,000	\$102,000,000	
Construct TRR	\$51,000,000	\$51,000,000	\$51,000,000
Funks Reservoir Dredging/Structures	\$24,000,000	\$24,000,000	\$24,000,000
Hunters Creek Release Structures	\$91,000,000	\$91,000,000	\$91,000,000
Construct I/O Structure and Tunnels for Reservoir (1.5 MAF)			\$302,000,000
Construct I/O Structure and Tunnels for Reservoir (1.3 MAF)	\$280,000,000	\$280,000,000	
Construct TRR Pumping/Generating Plant	\$200,000,000	\$200,000,000	\$200,000,000
Construct Funks Pumping/Generating Plant	\$200,000,000	\$200,000,000	\$200,000,000
Construct Funks Release Channel	\$34,000,000	\$34,000,000	\$34,000,000
Red Bluff Pump Addition	\$4,000,000	\$4,000,000	\$4,000,000
Construct TRR Pipeline	\$227,000,000	\$227,000,000	\$227,000,000
Construct Dunnigan Pipeline to CBD (1,000 cfs)	\$66,000,000		\$66,000,000
Construct Dunnigan Pipeline to River (1,000 cfs)		\$194,000,000	
Release Structure	\$8,600,000	\$8,600,000	\$8,600,000
Transmission Lines, Substations, Switchyards	\$136,000,000	\$136,000,000	\$136,000,000
General Property, including Recreation Areas and OM&R Facilities	\$32,000,000	\$32,000,000	\$32,000,000
Mitigation	\$540,000,000	\$540,000,000	\$540,000,000
Construction Cost (2019)	\$2,855,000,000	\$2,988,000,000	\$3,037,000,000

Key:

I/O = inlet/outlet

OM&R = operation, maintenance, and replacement

TRR = Terminal Regulating Reservoir

3.0 Operations, Maintenance, and Replacement Costs

The financial model requires estimated costs for OM&R. Many long-term OM&R costs are proportional to diversions (e.g., energy for pumping and wheeling costs for GCID and Reclamation facilities). Variable and fixed repair and replacement costs were estimated using INEL Guidelines (Estimation of Economic Parameters of U.S. Hydropower Resources for estimating O&M, 2003) and through comparison to costs for the Central Utah and Animas La Plata Projects. Estimated OM&R costs are summarized in Table A4-7. Wheeling costs are conservatively estimated at \$22/AF. Power costs were derived from modeling by PARO (DWR, 2016).

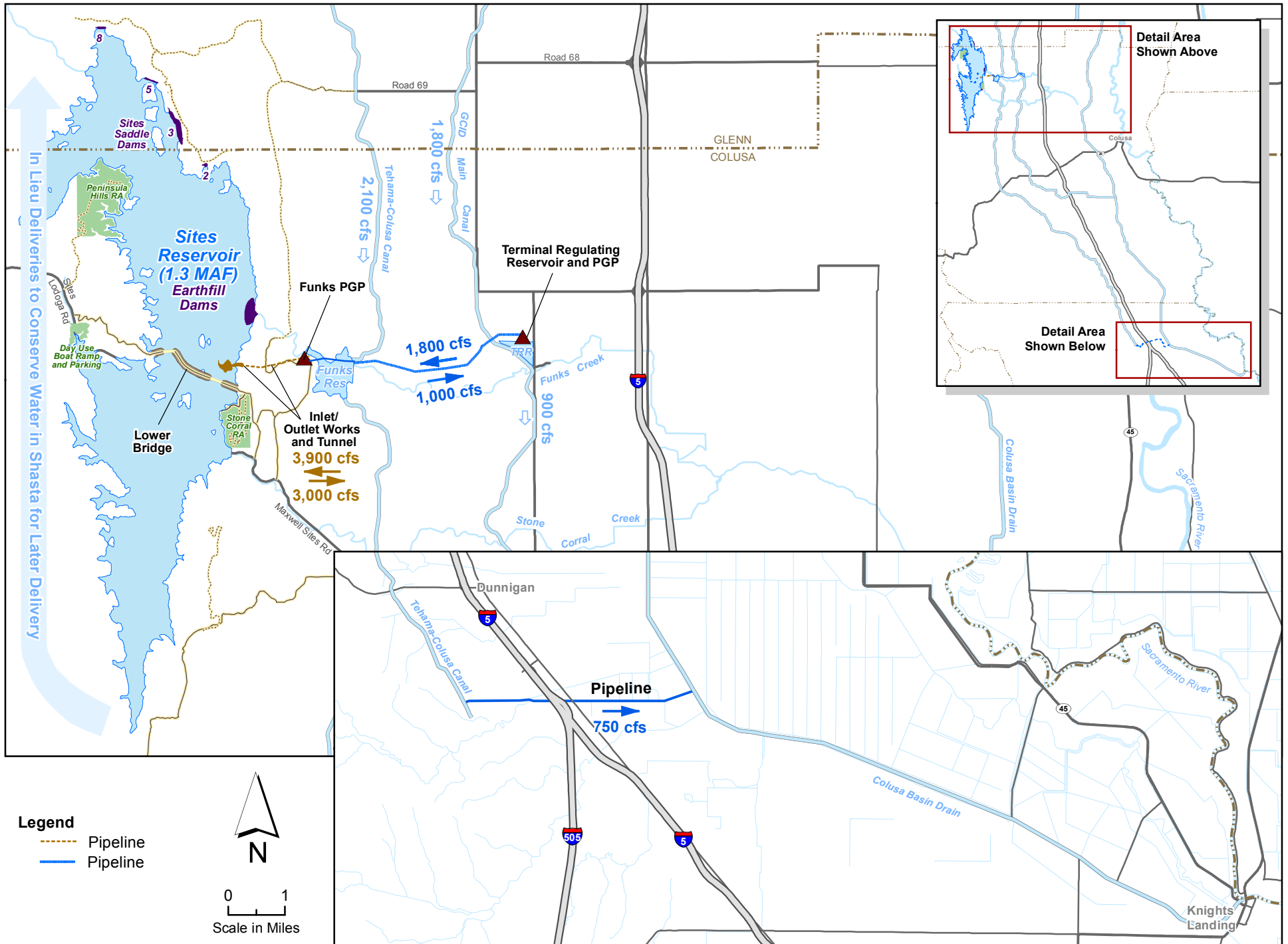
The resulting cost per acre foot was used to adjust the cost estimate to correspond to modeling results.

Table A4-7. OM&R Costs (2016)

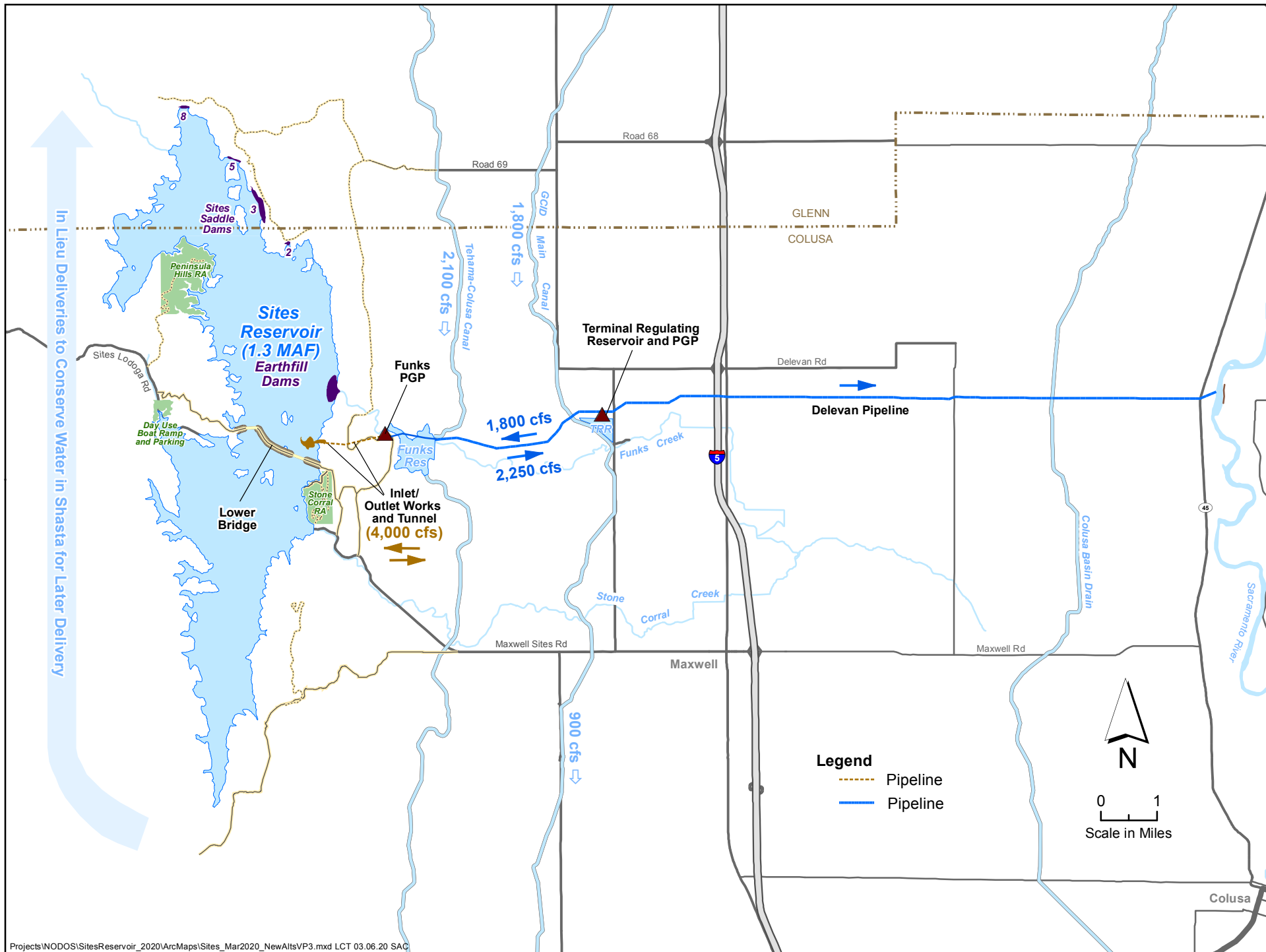
Size	Total Flow	Est. Div	SOD Flow	Pump (\$1000s)	Wheeling (\$1000s)	Variable (\$1000s)	Var/AF	Fixed/ AF	\$/AF	Total without Generation (\$M/yr)	Gen/AF	Potential Savings
1.5	375	394	98	\$8,679	\$10,819	\$19,498	\$50	\$20	\$70	\$26,064	\$11	\$4,052
1.3	359	377	88	\$8,309	\$10,229	\$18,538	\$49	\$21	\$70	\$25,149	\$10	\$3,713
1.0	317	333	60	\$7,337	\$8,643	\$15,980	\$48	\$24	\$72	\$22,713	\$9	\$2,895

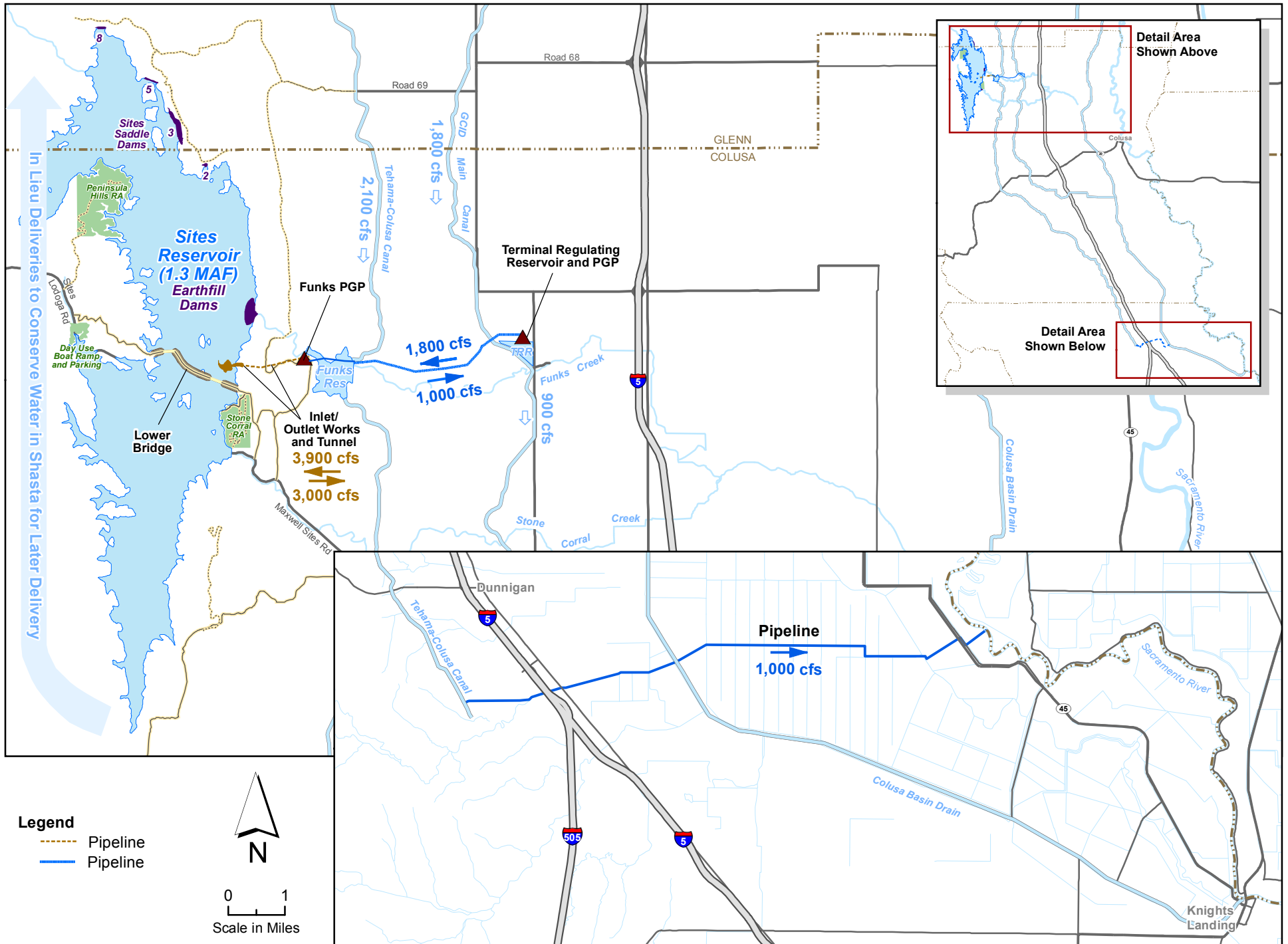
Attachment A-4-1

Value Planning Alternatives

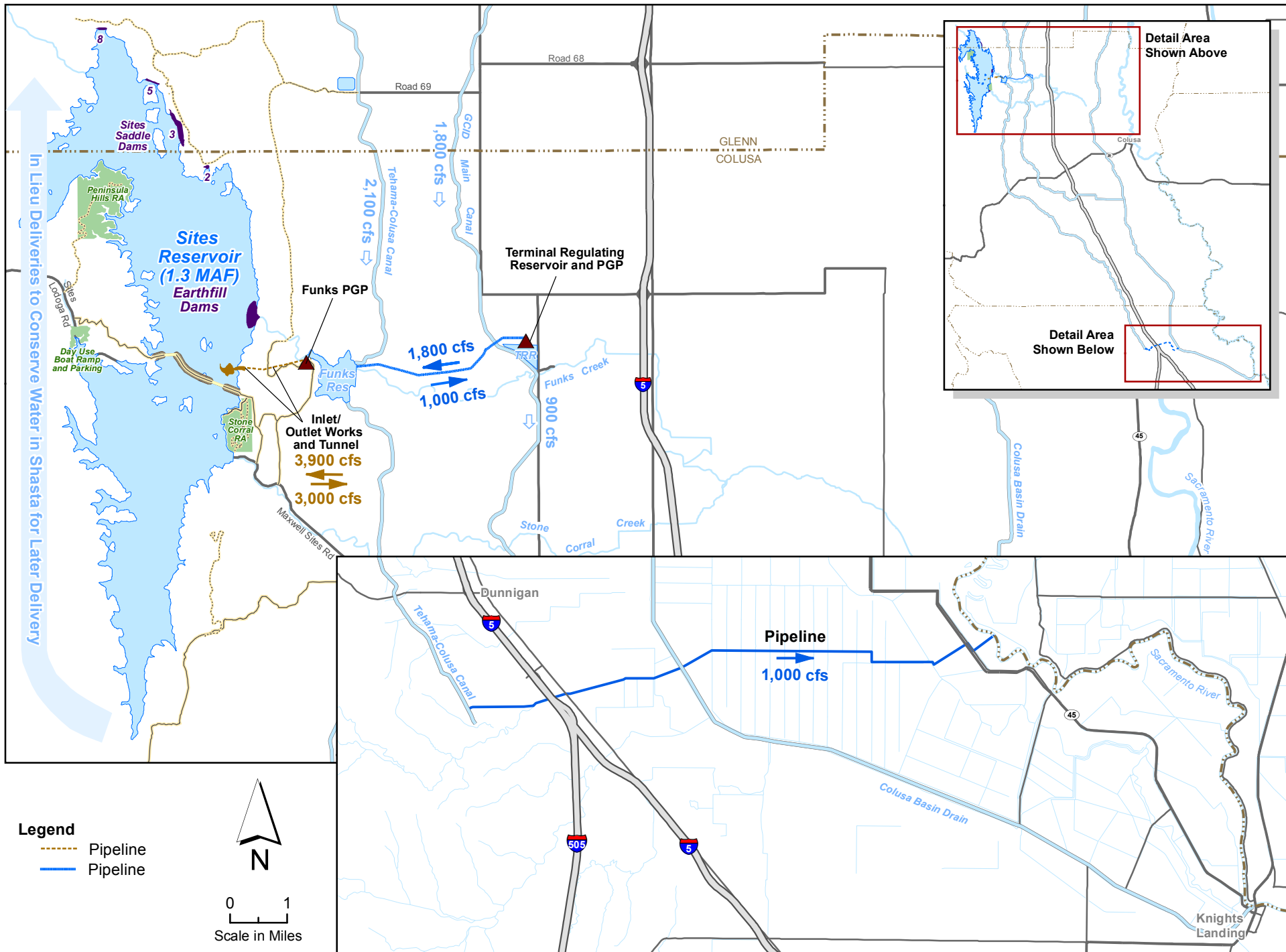


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Appendix B – Operations

Appendix B-1 Release Capacity and Reservoir Size

Technical Memorandum



To: Value Planning Work Group
CC: Lee Frederiksen
Date: March 12, 2020
From: Rob Tull, CH2M
Quality Review by: Erin Heydinger
Authority Agent Review by: Ali Forsythe
Subject: Release Capacity and Reservoir Size

This memorandum includes a sensitivity analysis for a range of reservoir sizes and release capacities for Sites Reservoir. The purpose of this analysis is to evaluate the quantity of water from Sites Reservoir that could be released under different conveyance capacities.

1.0 Assumptions

Three conveyance capacities for Sites Reservoir releases were evaluated: 750 cubic feet per second (cfs), 1,000 cfs, and 1,500 cfs. Each conveyance capacity was assessed using three storage capacities for the reservoir: 1.5 million acre-feet (MAF), 1.3 MAF, and 1.0 MAF. All nine combinations were run under Scenario B, an operations scenario that was developed through previous discussions with the California Department of Fish and Wildlife (CDFW). Assumptions and diversion criteria for Scenario B operations are detailed in Attachment 1.

The following scenarios were evaluated:

1. Scenario B – 750 cfs conveyance capacity & 1.5 MAF storage capacity
2. Scenario B – 750 cfs conveyance capacity & 1.3 MAF storage capacity
3. Scenario B – 750 cfs conveyance capacity & 1.0 MAF storage capacity
4. Scenario B – 1,000 cfs conveyance capacity & 1.5 MAF storage capacity
5. Scenario B – 1,000 cfs conveyance capacity & 1.3 MAF storage capacity
6. Scenario B – 1,000 cfs conveyance capacity & 1.0 MAF storage capacity
7. Scenario B – 1,500 cfs conveyance capacity & 1.5 MAF storage capacity
8. Scenario B – 1,500 cfs conveyance capacity & 1.3 MAF storage capacity
9. Scenario B – 1,500 cfs conveyance capacity & 1.0 MAF storage capacity

For each scenario, releases from Sites Reservoir were quantified using monthly releases, as reported by CalSim II modeling. Deliveries include releases for Phase 2 project participants including members along the Tehema-Colusa Canal (T-C Canal), Glenn-Colusa Irrigation District, Reclamation District 108, Colusa County, other Sacramento Valley participants, South of Delta participants, plus Proposition 1 deliveries for Incremental Level 4 refuge water supply (Refuge Level 4) and Yolo Bypass.

The type of facility selected to convey Sites Reservoir releases is yet to be determined (at the time the analysis was conducted). Releases may be through a canal, creek, or pipe. The results of this sensitivity analysis are unaffected by facility choice and additional analysis to account for seepage losses and downstream hydraulic conditions will be needed in the future.

These sensitivity analyses include a surrogate approximation of the potential to exchange water between Sites Reservoir and Shasta Lake. This exchange would be implemented through the release of Sites water to meet Sacramento Valley Central Valley Project (CVP) contract demands and Delta regulatory obligations. There would be a corresponding reduction in Shasta Lake releases that preserves storage in the lake and contributes to water temperature management and Sacramento River flow stability benefits. Based on previous analyses it is assumed that about 60 thousand acre-feet (TAF) could be exchanged on an average annual basis with the majority of these exchanges occurring in dry and critical water year types. This also assumes integration with the State Water Project (SWP) to facilitate operations and deliveries to South-of-Delta members. Work is on-going to develop the capability to simulate the Reclamation no investment exchange and integration of operations with the SWP.

2.0 Release Results

Table B1-1 shows the reservoir releases for Scenario B under all nine combinations of Sites storage and release capacities. The table includes average annual deliveries for the full 82-year simulation period and each water year type, as classified by DWR's Sacramento Valley Water Year Hydrologic Index.

Overall, decreasing Sites' release capacity from 1,500 cfs to 1,000 cfs reduces average annual releases by 4.0% to 6.2%. Bringing the release capacity down to 750 cfs reduces average annual deliveries by another 1.6% to 2.7%.

Releases from Sites are greatest during Dry years. Consequently, dry years are more critical to the conveyance capacity of Sites releases than any other year type. For example, the average annual delivery of a 1.5 MAF reservoir decreases by 13.5% when its' release capacity is reduced from 1,500 cfs to 750 cfs.

Based on this sensitivity analysis, the combination of a 1.3 MAF reservoir and a 750 cfs release capacity provides about a 230 TAF average annual release for Sites Reservoir.

It is recommended that a lower range estimate also be considered, to account for uncertainty, that is 30 TAF less than the simulated values shown in Table B1-1.

Table B1-1. Sites Reservoir Releases under Varying Storage and Release Capacities

Preliminary - Sensitivity			
Conveyance Release Analysis – Scenario B			
Reservoir Release (TAF)			
Long-term Average			
Storage Capacity (MAF)	Scenario B – 1,500 cfs Release Capacity	Scenario B – 1,000 cfs Release Capacity	Scenario B – 750 cfs Release Capacity
1.5	253	243	236
1.3	243	234	230
1.0	207	195	191
Wet Years			
Storage Capacity (MAF)	Scenario B – 1,500 cfs Release Capacity	Scenario B – 1,000 cfs Release Capacity	Scenario B – 750 cfs Release Capacity
1.5	115	116	112
1.3	122	115	113
1.0	118	112	109
Above Normal Years			
Storage Capacity (MAF)	Scenario B – 1,500 cfs Release Capacity	Scenario B – 1,000 cfs Release Capacity	Scenario B – 750 cfs Release Capacity
1.5	275	286	280
1.3	287	299	303
1.0	185	186	194
Below Normal Years			
Storage Capacity (MAF)	Scenario B – 1,500 cfs Release Capacity	Scenario B – 1,000 cfs Release Capacity	Scenario B – 750 cfs Release Capacity
1.5	285	273	277
1.3	278	263	266
1.0	237	217	213
Dry Years			
Storage Capacity (MAF)	Scenario B – 1,500 cfs Release Capacity	Scenario B – 1,000 cfs Release Capacity	Scenario B – 750 cfs Release Capacity
1.5	422	382	365
1.3	392	364	345
1.0	343	309	301
Critically Dry Years			
Storage Capacity (MAF)	Scenario B – 1,500 cfs Release Capacity	Scenario B – 1,000 cfs Release Capacity	Scenario B – 750 cfs Release Capacity
1.5	243	237	225
1.3	205	204	204
1.0	185	184	177

3.0 T-C Canal Capacity Analysis

It is necessary to determine whether there is enough capacity in the T-C Canal to accommodate Sites releases to the Sacramento River in addition to releases for Tehama-Colusa Canal Authority (TCCA) members. It is assumed there is 750 cfs of available capacity through the canal.

To confirm the available capacity in the T-C Canal, historical daily diversion data were obtained. Figure B1-1 shows historical daily diversions through the T-C Canal for the period from January 2014 to February 2020. CVP TCCA contractors received a 100 percent contract allocation for 2016 through 2019. The total recorded diversions at Red Bluff Pumping Plant were reduced by one-third to approximate the level of flow in the reach of the TCC below Funks Reservoir. As shown, the estimated daily canal flows never exceed 800 cfs. Assuming the T-C Canal has a capacity of 1,900 cfs below Funks Reservoir, there would be at least 1,000 cfs capacity available for Sites releases even under 100 percent allocation years. Figure B1-2 shows the average monthly approximation for historical diversions through the lower T-C Canal. The figure shows that with some smoothing of the daily values that could be accomplished by forecasting, the lower T-C Canal may have up to 1,000 cfs capacity for Project releases on an average monthly basis, during the peak summer diversion season when TCCA contractors receive a 100 percent contract allocation.

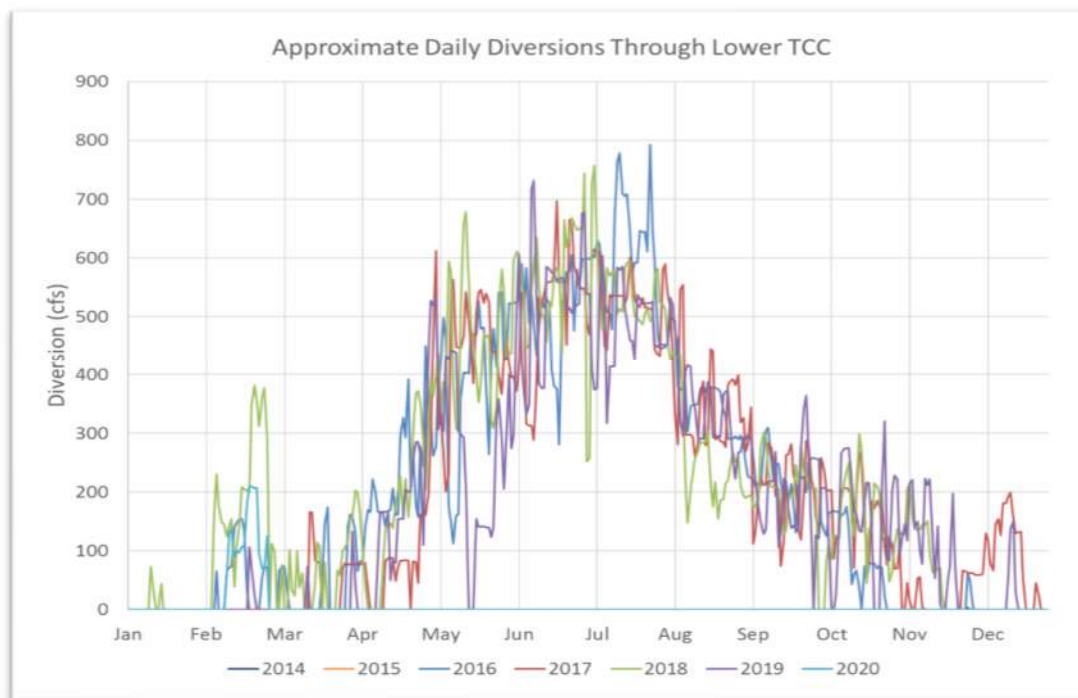


Figure B1-1. Approximated Daily Diversions through the Lower T-C Canal for 2014 to 2020

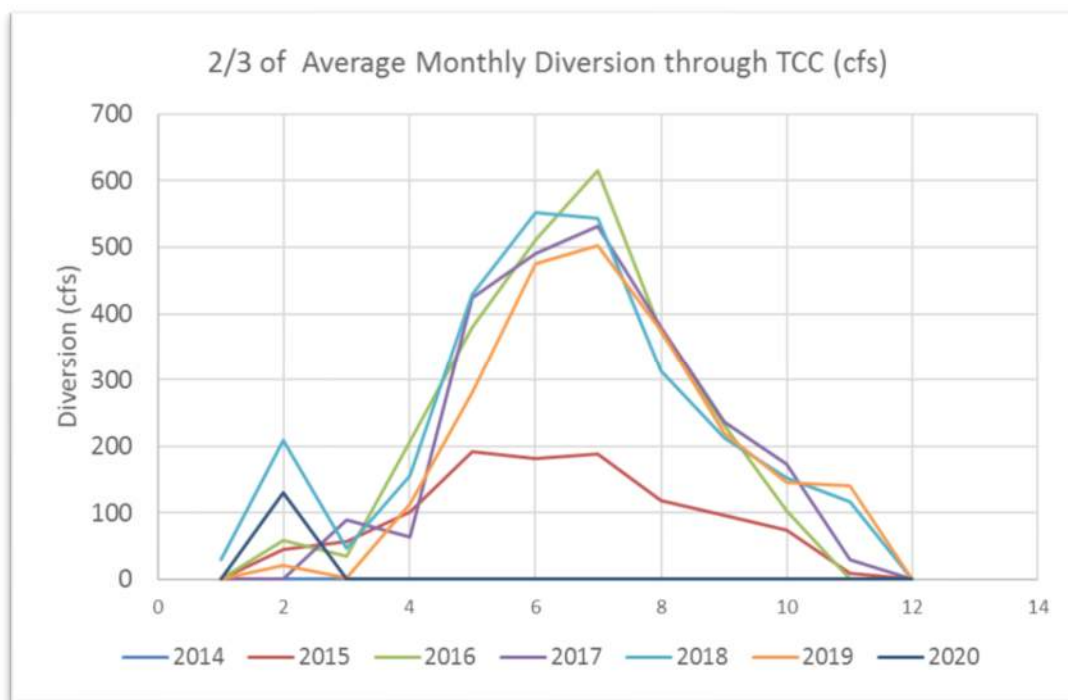


Figure B1-2. Approximated Average Monthly Diversion through the lower T-C Canal for 2014 to 2020

Figure B1-3 shows Sites Reservoir releases through the T-C Canal to the TCCA members under Scenario B using a 1,000 cfs conveyance capacity and three different storage capacities (1.0 MAF, 1.3 MAF, and 1.5 MAF). The releases assume no exchange with Shasta Lake. Figure B1-4 shows total release through the T-C Canal under the assumption that the T-C Canal is the only option for release conveyance. This release includes CVP deliveries to TCCA members and releases from Sites Reservoir under the assumption of no exchange with Shasta Lake. It also includes Sites releases for Colusa County, other Sacramento Valley members, South-of-Delta members, and state deliveries for Level 4 Refuges and Yolo Bypass objectives. As shown, simulated monthly Sites deliveries through T-C Canal to members along the canal never exceed much more than 500 cfs, while total deliveries through T-C Canal including South of Delta releases rarely exceeds 1,100 cfs. Based on this preliminary analysis, the lower T-C Canal appears to have sufficient capacity to convey CVP TCCA contractor deliveries, Sites releases to TCCA members, plus additional Sites releases to the Sacramento River, during the peak summer diversion season.

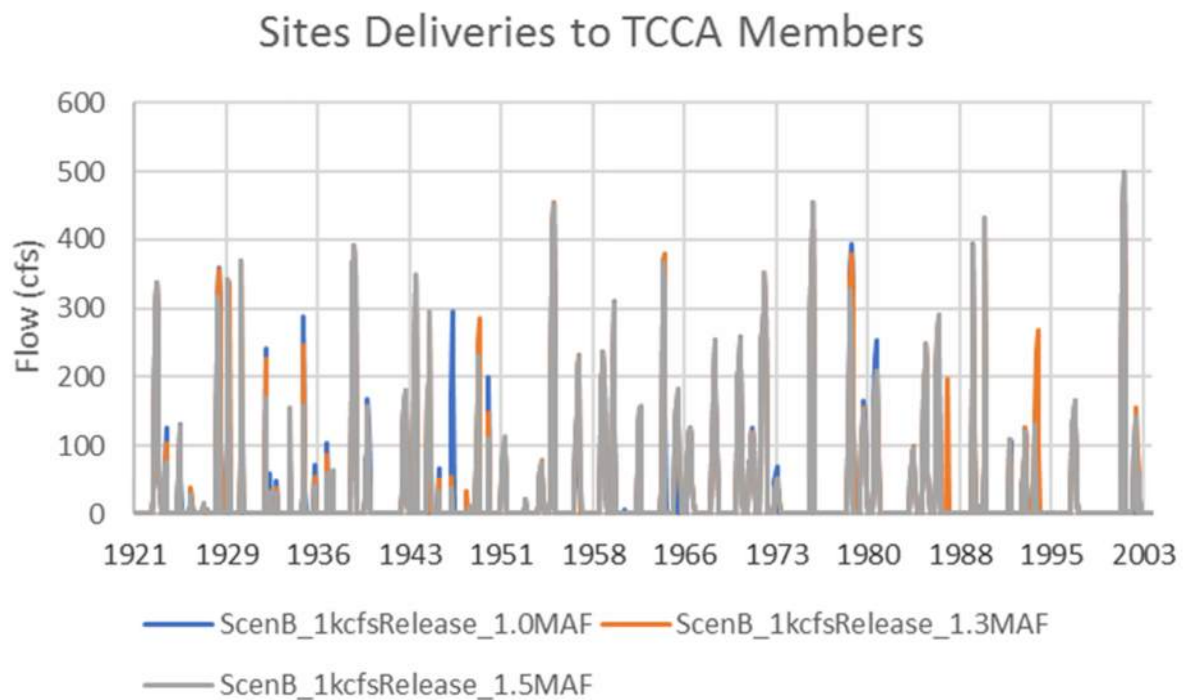


Figure B1-3. Sites Deliveries to TCCA Members under Scenario B

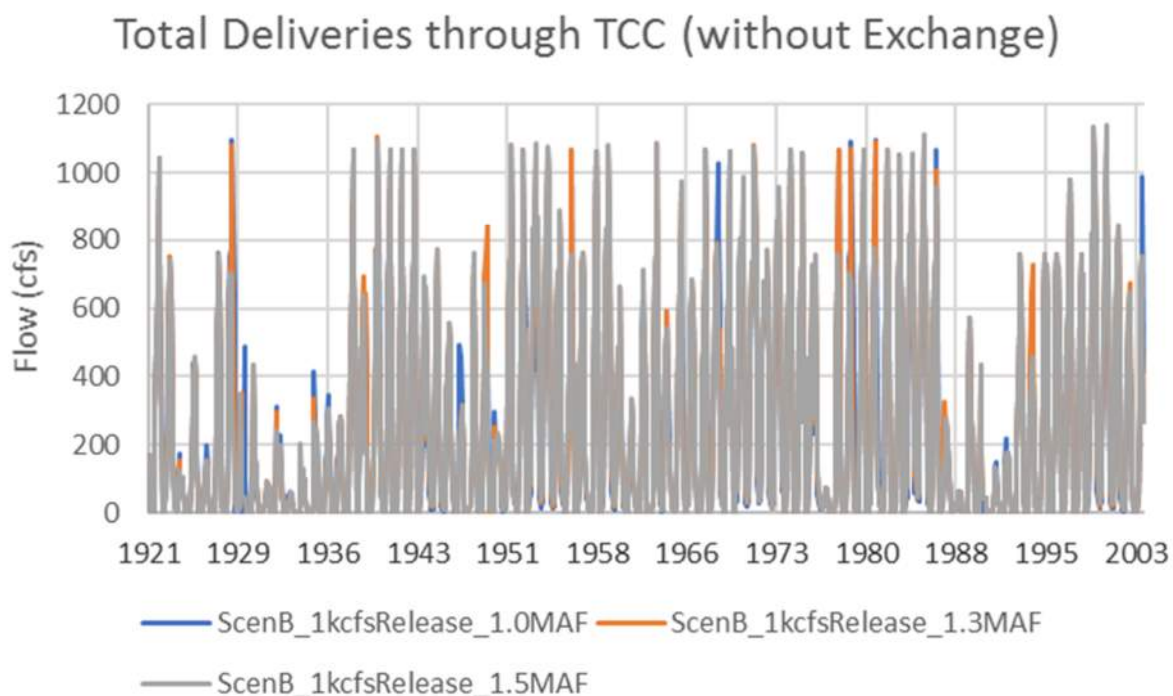


Figure B1-4. Total Deliveries through the T-C Canal under Scenario B

4.0 Limitations

This evaluation was conducted as a sensitivity analysis to support the value planning process and there are a number of limitations that need to be taken into consideration.

- This analysis evaluates conveyance sizing under assumed Scenario B diversion criteria.
- Monthly model time step is appropriate for value planning purposes. More detailed modeling analysis will be needed to confirm these results.
- Estimates of conveyance release capability presented in Table B1-1 are upper range estimates based on model simulated results and do not account for uncertainty.
- It is recommended that a lower range estimate also be considered to account for uncertainty. The lower range estimate values would be 30 TAF below the Table B1-1 values to account for uncertainty associated with 1) interpretation of Scenario B diversion criteria, 2) need to preserve functional spills into the Sutter and Yolo bypasses, 3) river flow routing and real-time operational controls and decisions, 4) need to further refine assumptions and model simulation of CVP no investment exchange and SWP operations integration.

Attachment B-1-1

Sites Operations Scenario B

Attachment 1. Operations Scenario B

This attachment provides modeling assumptions for Sites Project operations Scenario B used to evaluate the release capacity of Sites Reservoir. Scenario B was developed based on previous discussions with CDFW in December of 2019.

Criteria	Scenario B
Reservoir Size	1.0 MAF, 1.3 MAF, or 1.5 MAF
GCC Maintenance Window	2 weeks (Jan/Feb)
Upstream Pulse Flow Protection	Bypass the first pulse flow event in October – May for up to 7 days during pulse of 15,000 to 25,000 cfs as measured at Bend Bridge
Wilkins Slough Bypass Flow	8,000 cfs April/May; 5,000 cfs all other times
Fremont Weir Notch	Prioritize the Fremont Weir Notch, Yolo Bypass preferred alternative, flow over weir within 5%
Flows into the Sutter Bypass System	No restriction due to flow over Moulton, Colusa, and Tisdale Weirs
Freeport Bypass Flow	Modeled WaterFix Criteria (applied on a daily basis) Post-Pulse Protection (applied on a moving 7-day average) Post-Pulse (3 levels) = Jan-Mar Level 2 starts Jan 1 Level 1 is initiated by the pulse trigger
Net Delta Outflow Index (NDOI) Prior to Project Diversions	44,500 cfs between March 1 and May 31

Appendix B-2 Shasta Lake Exchanges with No Reclamation Investment Technical Memorandum



To: Value Planning Work Group
CC: Lee Frederiksen
Date: March 9, 2020
From: CH2M
Subject: Shasta Lake Exchanges with No Reclamation Investment

1.0 Purpose

- Conduct a preliminary evaluation of the potential for exchanging Sites Project water with Shasta Lake without dedicated Bureau of Reclamation (Reclamation) investment in the Sites Project (Project).
- Implement feedback on exchange criteria provided by Reclamation.
- Investigate the potential temperature benefits of the operation.

2.0 Background

With Reclamation participation to the Project, but no investment, water stored in Sites Reservoir could be exchanged with Shasta Lake to meet Central Valley Project (CVP) Tehama Colusa Canal Authority (TCCA) Agricultural water Service and Settlement Contractor obligations and downstream flow and Delta water quality requirements. Therefore, a portion of the water demand within the CVP service area along the Tehama Colusa Canal (TCC) and the Glenn Colusa Canal (GCC) south of Sites Reservoir could be met from releases from Sites Reservoir in the spring and allow an equal amount of water to be retained in Lake Shasta (via exchange) to improve summer cold water pool management.

The exchange could occur when Sacramento River flows at Keswick and temperatures at Clear Creek are within a specific range and not compromised by reduced Lake Shasta releases into the Sacramento River. This exchange could likely occur in April through May (and possibly June) in Dry and Critical years.

Lake Shasta releases of exchange water would be scheduled to benefit downstream temperatures in the Sacramento River, which would likely occur in September, October, or November. Withdrawals from Shasta would be coordinated with Reclamation and no carry over storage of exchange water would be allowed between years.

The exchange operation would likely be subject to the following constraints provided by Reclamation to protect the interests of the CVP and to comply with State and Federal laws and regulations:

- All water stored in Shasta would be subject to spill at any date and would be the first water in Shasta to spill.
- All operations associated with this operation would be subject to river temperature constraints to ensure that there is not an impact by reducing releases to store and to ensure a benefit when released later in the year.

- All operations are subject to approval by the State Water Resources Control Board (SWRCB), and any applicable state or federal laws, regulations, or guidelines.

3.0 Operations Analysis

3.1 Approach

- A post-processing approach was used for this preliminary analysis due to extensive code changes that will be needed to implement this operation in the CalSim II model.
- All calculations were performed using results from the CalSim II DCR 2015 Merged Model No Action Alternative (NAA).
- The post-processing analysis was performed for the years 1922 through 2002, consistent with the time period modeled in CalSim II.
- A series of criteria was established, as defined in the attached table, for each scenario. If all criteria were met, the operation was permitted for that year. Criteria included Sacramento River temperature at Clear Creek, Keswick flow, Shasta storage, and water year types. Additional criteria were provided by Reclamation for analysis.
- In all scenarios, Keswick outflow and Sacramento River at Clear Creek temperature requirements between April and June were protected to maintain NAA conditions.
- Nine scenarios were evaluated to assess the volume and frequency of water that could be exchanged between Sites and Shasta Lake.
 - 1) The “Initial Concept”, based on Thad Bettner’s Aug 8 email, allows for exchanges with Shasta Lake between April and July and releases between August and November 15 during Dry and Critical years. Releases from Shasta storage were based on available Banks Pumping Plant capacity. The exchange operation is only permitted when the Sacramento Valley is in “In-basin Use” (IBU) conditions. Under the “Initial Concept”, three scenarios were evaluated:
 - a. No Delevan Pipeline, assuming that the exchange operation is not facilitated through the Delevan Pipeline.
 - b. One-pipe Delevan Pipeline.
 - c. Two-pipe Delevan Pipeline.
 - 2) Additionally, several sensitivity analyses were performed on the “Initial Concept” with a two-pipe Delevan Pipeline:
 - a. Includes the exchange operation in Below Normal water years.
 - b. Exchanges assumed to occur under UWFE conditions as well.
 - c. Shasta Lake releases allowed through December.
 - 3) Two scenarios were designed to maximize Delta export and habitat benefits from the exchange operation with the release of the stored water:
 - a. Releases are delayed to improve river temperatures and provide fall flow stability habitat benefits in August through December.
 - b. The same criteria as above, with the additional requirement that Shasta Lake storage be above 1,900 TAF in September, consistent with the RPA.
 - 4) Reclamation provided additional criteria for the exchange operation on January 16, 2020:
 - a. The exchange period is limited to April and May. This reflects Reclamation’s comments on what is needed to meet estimated targets for Sacramento River temperatures at Clear Creek, Keswick flows above minimum, and deliveries to the Sacramento River Settlement Contractors.

- b. Withdrawals of Sites water stored in Shasta would most likely occur in September, October, and November.
- c. The exchange is limited to Dry and Critically Dry water years.
- d. Sacramento River Temperature at Clear Creek must be below the following targets for the exchange to occur:

Table B2-1. Temperatures (°F) on the Sacramento River at Clear Creek, from ROC on LTO Proposed Action

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEPT
Wet (32%)	53.3	54.6	51.4	47.5	46.3	47.1	49.2	50.2	51.5	52.0	52.8	52.9
Above Normal (16%)	53.1	53.9	50.8	47.7	46.4	47.4	49.9	50.3	51.0	51.4	52.8	53.7
Below Normal (13%)	54.3	54.7	51.5	48.2	47.4	49.0	51.1	50.6	51.2	52.1	53.0	54.2
Dry (24%)	54.0	54.6	51.1	48.4	48.0	49.0	51.2	51.1	51.5	52.7	53.6	54.4
Critical (15%)	59.5	56.3	51.4	48.6	48.2	49.6	51.6	52.2	53.4	55.0	57.4	60.5

	Within 1 °F of Tier 1 limit (52.5 °F – 53.5 °F)
	53.6 °F – 55.9 °F
	Tier 4 (> 56 °F)

3.2 General Assumptions

- The exchange concept with Shasta Lake is permissible by the Bureau of Reclamation.
- Water year types are based on the Sacramento Valley D-1641 index and are assigned on a January-December calendar-year basis.
- It is assumed that no Sites Project water is carried over in Shasta Lake between calendar years.
- It is assumed that there is sufficient water in Sites Reservoir to facilitate the operation.
- It is assumed that all active storage in Sites Reservoir is available for exchange.
- The exchange operation is based on the replacement of both CVP agricultural deliveries and water released from Shasta to meet Delta requirements.

3.3 Results

Results are summarized in the attached time series, bar chart, and exceedance figures. A summary of the results is provided below.

Table B2-2. Summary of Average Annual Exchange Volumes by Water Year (TAF)

WY T	Initial Concept - no Delevan Pipeline Exchange	Initial Concept - 1 pipe Delevan Pipeline	Initial Concept - 2 pipe Delevan Pipeline	[Sensitivity] Exchanges allowed in Below Normal years - 2 pipe Delevan Pipeline	[Sensitivity] Exchanges assumed to occur under UWFE conditions as well - 2 pipe Delevan Pipeline	[Sensitivity] Releases allowed through December - 2 pipe Delevan Pipeline	[Sensitivity] Releases required to have habitat benefit, allowed through December - 2 pipe Delevan Pipeline	[Sensitivity] Releases required to have habitat benefit, allowed through December, Storage RPA control - 2 pipe Delevan Pipeline	[Sensitivity] USBR Proposed - 2 pipe Delevan Pipeline
W	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
AN	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
BN	n/a	n/a	n/a	43	n/a	n/a	n/a	n/a	n/a
D	119	141	144	144	156	177	100	100	43
C	80	114	130	130	149	133	104	9	56

Depending on the scenario considered, Sites Reservoir storage may not be available for this type of operation due to constraints on diversions-to-fill and other constraints of the scenario. When compared against storage volumes for a simulated 1.3 MAF reservoir using CDFW Scenario B, in 10 of the 21 years that the exchange occurs, there is not sufficient water in Sites Reservoir to facilitate the exchange operation.

3.4 Recommendations

- This preliminary evaluation demonstrates there is enough volume and frequency of water available for exchange to warrant further evaluation of these potential operations in more detail in a systemwide CVP/SWP context.
- Based on comments, use the post-processing spreadsheet to evaluate additional combinations of operational exchange criteria.

Sites Project with no Reclamation Investment

Sites-Shasta Exchange Operation

Alternatives
Initial Concept - no Delevan Pipeline
Initial Concept - 1 pipe Delevan Pipeline
Initial Concept - 2 pipe Delevan Pipeline
[Sensitivity] Exchanges allowed in Below Normal years - 2 pipe Delevan Pipeline
[Sensitivity] Exchanges assumed to occur under UWFE conditions as well - 2 pipe Delevan Pipeline
[Sensitivity] Releases allowed through December - 2 pipe Delevan Pipeline
[Sensitivity] Releases required to have habitat benefit, allowed through December - 2 pipe Delevan Pipeline
[Sensitivity] Releases required to have habitat benefit, allowed through December, Storage RPA control - 2 pipe Delevan Pipeline
[Sensitivity] USBR Proposed- 2 pipe Delevan Pipeline

Export required							
Initial Concept - no Delevan Pipeline		Initial Concept - 1 pipe Delevan Pipeline		Initial Concept - 2 pipe Delevan Pipeline		[Sensitivity] Exchanges allowed in Below Normal years	
Exchange limited to conditions with limited flow/temperature impact potential							
Storage accrued in Shasta by exchange							
Banks export capacity must be available							
Storage released from Shasta for export starting in August							
No Delevan Pipeline		1-pipe Delevan Pipeline		2-pipe Delevan Pipeline		2-pipe Delevan Pipeline	
Storage must be released from Shasta by Nov 15		Storage must be released from Shasta by Nov 15		Storage must be released from Shasta by Nov 15		Storage must be released from Shasta by Nov 15	
Only Dry and Critically Dry years considered		Only Dry and Critically Dry years considered		Only Dry and Critically Dry years considered		Below Normal, Dry, and Critically Dry years considered	
Keswick Flow (cfs)		Keswick Flow (cfs)		Keswick Flow (cfs)		Keswick Flow (cfs)	
April	6,000	April	6,000	April	6,000	April	6,000
May	6,000	May	6,000	May	6,000	May	6,000
Jun	10,000	Jun	10,000	Jun	10,000	Jun	10,000
Jul	12,000	Jul	12,000	Jul	12,000	Jul	12,000
Sac R blw Clear Creek Temp (F)		Sac R blw Clear Creek Temp (F)		Sac R blw Clear Creek Temp (F)		Sac R blw Clear Creek Temp (F)	
April	No Rule	April	No Rule	April	No Rule	April	No Rule
May	56	May	56	May	56	May	56
Jun	56	Jun	56	Jun	56	Jun	56
Jul	53.5	Jul	53.5	Jul	53.5	Jul	53.5
Shasta Storage (TAF)		Shasta Storage (TAF)		Shasta Storage (TAF)		Shasta Storage (TAF)	
April	No Rule	April	No Rule	April	No Rule	April	No Rule
May	No Rule	May	No Rule	May	No Rule	May	No Rule
Jun	No Rule	Jun	No Rule	Jun	No Rule	Jun	No Rule
Jul	No Rule	Jul	No Rule	Jul	No Rule	Jul	No Rule
Sep - low	No Rule	Sep - low	No Rule	Sep - low	No Rule	Sep - low	No Rule
Sep - high	No Rule	Sep - high	No Rule	Sep - high	No Rule	Sep - high	No Rule
Maximum Keswick Flow (cfs)		Maximum Keswick Flow (cfs)		Maximum Keswick Flow (cfs)		Maximum Keswick Flow (cfs)	
Aug	10,000	Aug	10,000	Aug	10,000	Aug	10,000
Sep	12,000	Sep	12,000	Sep	12,000	Sep	12,000
Oct	No Rule	Oct	No Rule	Oct	No Rule	Oct	No Rule
Nov	No Rule	Nov	No Rule	Nov	No Rule	Nov	No Rule
Dec	No Rule	Dec	No Rule	Dec	No Rule	Dec	No Rule
Release Schedule		Release Schedule		Release Schedule		Release Schedule	
Aug	All month	Aug	All month	Aug	All month	Aug	All month
Sep	All month	Sep	All month	Sep	All month	Sep	All month
Oct	All month	Oct	All month	Oct	All month	Oct	All month
Nov	Through Nov 15	Nov	Through Nov 15	Nov	Through Nov 15	Nov	Through Nov 15
Dec	No Release	Dec	No Release	Dec	No Release	Dec	No Release

Year Types
various

WYT Control		WYT Control		WYT Control		WYT Control	
W	0	W	0	W	0	W	0
AN	0	AN	0	AN	0	AN	0
BN	0	BN	0	BN	0	BN	1
D	1	D	1	D	1	D	1
C	1	C	1	C	1	C	1
COA Conditions Permitted		COA Conditions Permitted		COA Conditions Permitted		COA Conditions Permitted	
IBU	Yes	IBU	Yes	IBU	Yes	IBU	Yes
UWFE	No	UWFE	No	UWFE	No	UWFE	No

Export required		Habitat benefit and export required	
[Sensitivity] Exchanges assumed to occur under UWFE conditions as well	[Sensitivity] Releases allowed through December	[Sensitivity] Releases required to have habitat benefit, allowed through December	[Sensitivity] Releases required to have habitat benefit, allowed through December, Storage RPA control
Exchange limited to conditions with limited flow/temperature impact potential			
Storage accrued in Shasta by exchange			
Banks export capacity must be available			
Storage released from Shasta for export starting in August			
2-pipe Delevan Pipeline	2-pipe Delevan Pipeline	2-pipe Delevan Pipeline	2-pipe Delevan Pipeline
Storage must be released from Shasta by Nov 15	Storage must be released from Shasta by Nov 15	Storage is carried into December at risk of spill	Storage is carried into December at risk of spill
Only Dry and Critically Dry years considered	Only Dry and Critically Dry years considered	Only Dry and Critically Dry years considered	Only Dry and Critically Dry years considered

Exchange Operation
Sac Flow check
Prior to Summer
- All scenarios

Keswick Flow (cfs)		Keswick Flow (cfs)		Keswick Flow (cfs)		Keswick Flow (cfs)	
April	6,000	April	6,000	April	6,000	April	6,000
May	6,000	May	6,000	May	6,000	May	6,000
Jun	10,000	Jun	10,000	Jun	10,000	Jun	10,000
Jul	12,000	Jul	12,000	Jul	12,000	Jul	12,000

Exchange Operation
Sac Temperature check
Prior to Summer
- All scenarios

Sac R blw Clear Creek Temp (F)		Sac R blw Clear Creek Temp (F)		Sac R blw Clear Creek Temp (F)		Sac R blw Clear Creek Temp (F)	
April	No Rule	April	No Rule	April	No Rule	April	No Rule
May	56	May	56	May	56	May	56
Jun	56	Jun	56	Jun	56	Jun	56
Jul	53.5	Jul	53.5	Jul	53.5	Jul	53.5

Hold Operation
Storage over Summer
- Habitat scenarios

Shasta Storage (TAF)		Shasta Storage (TAF)		Shasta Storage (TAF)		Shasta Storage (TAF)	
April	No Rule	April	No Rule	April	No Rule	April	No Rule
May	No Rule	May	No Rule	May	No Rule	May	No Rule
Jun	No Rule	Jun	No Rule	Jun	No Rule	Jun	No Rule
Jul	No Rule	Jul	No Rule	Jul	No Rule	Jul	No Rule
Sep - low	No Rule	Sep - low	No Rule	Sep - low	No Rule	Sep - low	1,900
Sep - high	No Rule	Sep - high	No Rule	Sep - high	No Rule	Sep - high	No Rule

Release Operation
- Habitat scenarios
 delayed release
- other scenarios
 release starts in Aug

Maximum Keswick Flow (cfs)		Maximum Keswick Flow (cfs)		Maximum Keswick Flow (cfs)		Maximum Keswick Flow (cfs)	
Aug	10,000	Aug	10,000	Aug	10,000	Aug	10,000
Sep	12,000	Sep	12,000	Sep	12,000	Sep	12,000
Oct	No Rule	Oct	No Rule	Oct	12,000	Oct	12,000
Nov	No Rule	Nov	No Rule	Nov	6,000	Nov	6,000
Dec	No Rule	Dec	No Rule	Dec	5,000	Dec	5,000

Release Operation
various

Release Schedule		Release Schedule		Release Schedule		Release Schedule	
Aug	All month	Aug	All month	Aug	All month	Aug	All month
Sep	All month	Sep	All month	Sep	All month	Sep	All month
Oct	All month	Oct	All month	Oct	All month	Oct	All month

Year Types
various

Nov	Through Nov 15
Dec	No Release
WYT Control	
W	0
AN	0
BN	0
D	1
C	1
COA Conditions Permitted	
IBU	Yes
UWFE	Yes

Nov	All month
Dec	All month
WYT Control	
W	0
AN	0
BN	0
D	1
C	1
COA Conditions Permitted	
IBU	Yes
UWFE	No

Nov	All month
Dec	All month
WYT Control	
W	0
AN	0
BN	0
D	1
C	1
COA Conditions Permitted	
IBU	Yes
UWFE	No

Nov	All month
Dec	All month
WYT Control	
W	0
AN	0
BN	0
D	1
C	1
COA Conditions Permitted	
IBU	Yes
UWFE	No

[Sensitivity] USBR Proposed
Exchange limited to conditions with limited flow/temperature impact potential
Storage accrued in Shasta by exchange
Banks export capacity must be available
Storage released from Shasta for export starting in September
2-pipe Delevan Pipeline
Storage must be released from Shasta by Nov 15
Only Dry and Critically Dry years considered

Exchange Operation
Sac Flow check
Prior to Summer

Keswick Flow (cfs)	
April	6,000
May	6,000

Exchange Operation
Sac Temperature check
Prior to Summer
- All scenarios

Sac R blw Clear Creek Temp (F)		
Month	D	C
April	51.2	51.6
May	51.1	52.2
Jun	51.5	53.4
Jul	52.7	55.0

Hold Operation
Storage over Summer
- Habitat scenarios

Shasta Storage (TAF)	
April	No Rule
May	No Rule
Jun	No Rule
Jul	No Rule
Sep - low	No Rule
Sep - high	No Rule

Release Operation
- Habitat scenarios
 delayed release
- other scenarios
 release starts in Aug

Maximum Keswick Flow (cfs)	
Aug	No Rule
Sep	No Rule
Oct	No Rule
Nov	No Rule
Dec	No Rule

Release Operation
various

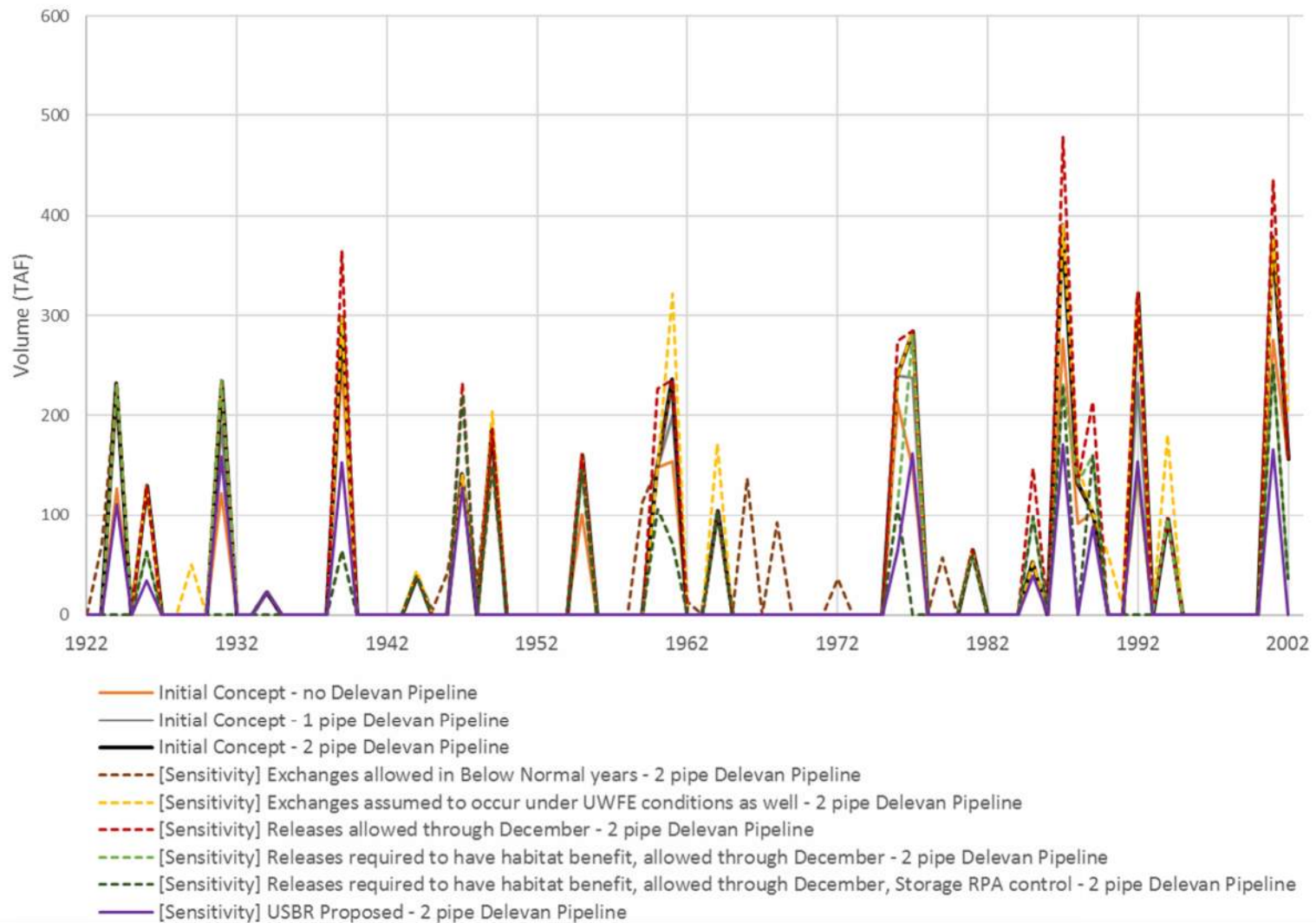
Release Schedule	
Aug	No Release
Sep	All month
Oct	All month
Nov	All Month
Dec	No Release

Year Types
various

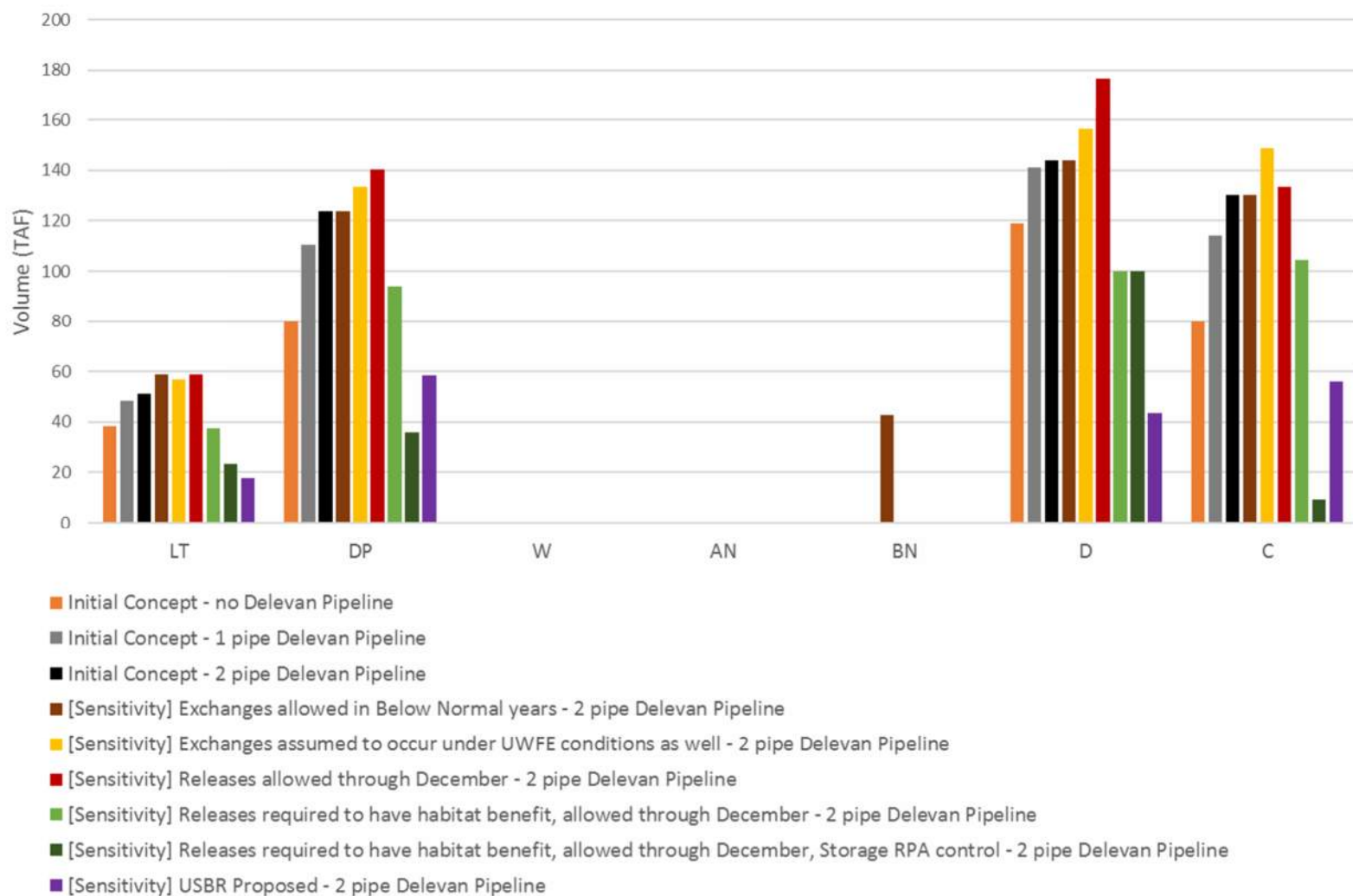
WYT Control	
W	0
AN	0
BN	0
D	1
C	1

COA Conditions Permitted	
IBU	Yes
UWFE	No

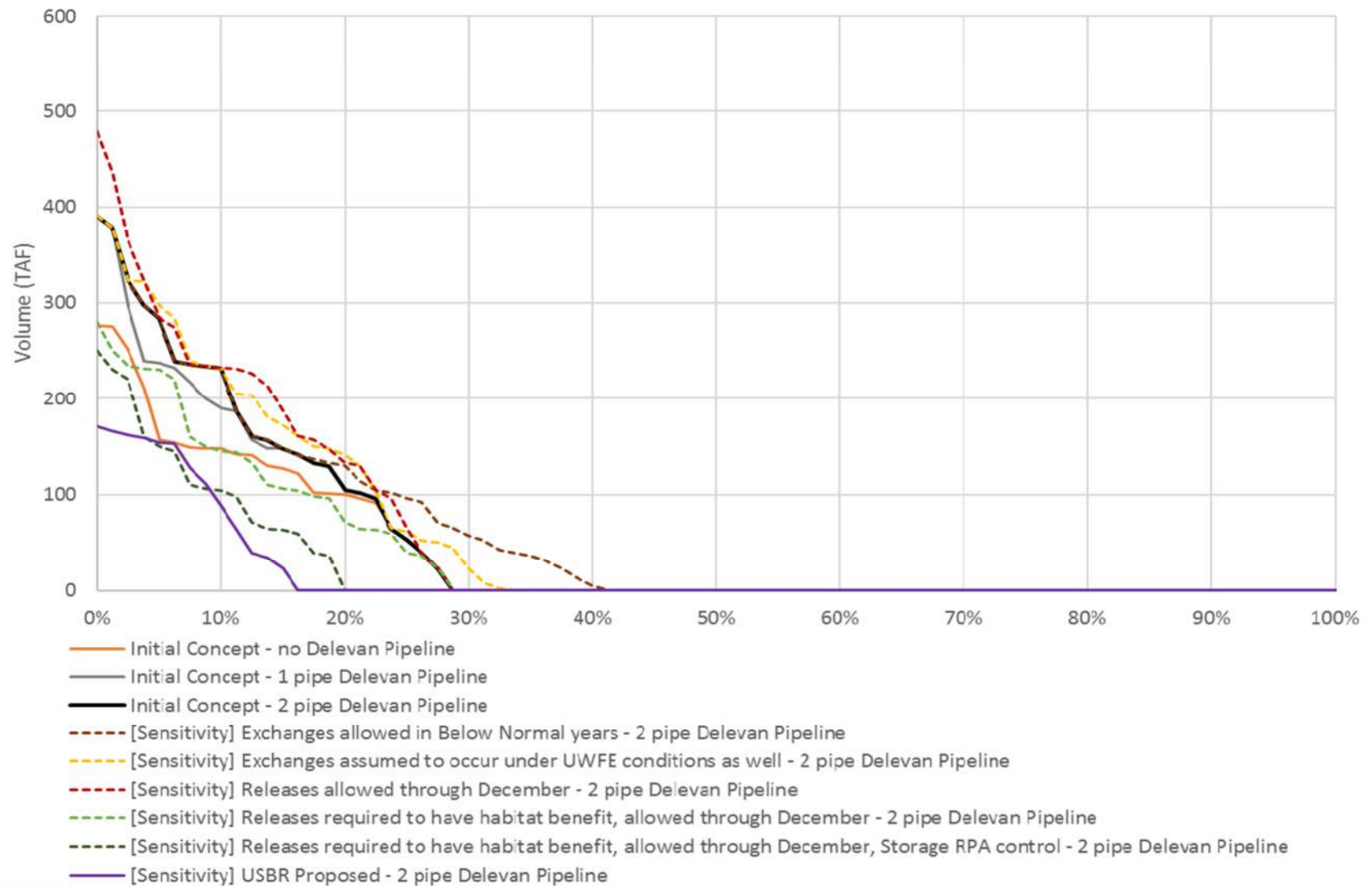
Average Annual Volume of Exchangeable Water



Average Annual Volume of Exchangeable Water by Water-year Type



Annual Volume of Exchangeable Water



4.0 Temperature Post-processing Analysis

Several scenarios were further evaluated for temperature benefits to assess the viability of the exchange. The “Initial Concept - 2 pipe Delevan Pipeline” and “USBR Proposed” scenarios were evaluated as follows:

4.1 Approach

- A post-processing exercise was conducted using the estimated exchange volumes calculated in the previous section.
- Shasta Lake releases were adjusted in the CalSim II output for the DCR 2015 Merged Model No Action Alternative (NAA). This was performed for two scenarios:
 - 1) “Releases Limited by Delivery Capacity”: From April through July, releases are reduced to match the exchange operation developed in the post-processing. From August through November, exchanged water is released at a rate no greater than the delivery capacity calculated in the post-processing until there is no exchanged water left to release. In November, any water remaining is released.
 - 2) “Scheduled Releases”: This scenario assumes that the system can be re-operated to deliver any water released. In this scenario, from April through July, releases are reduced to match the exchange operation developed in the post-processing. In August, 40% of the exchanged water is released. In September, an additional 40% is released. In September, the final 20% is released. In the “USBR – Proposed” scenario, 40% is released in September, 40% is released in October, and 20% is released in November.
 - 3) Since the operation only occurs in dry and critically dry water years, the averages for only those water year types are presented. Within those water year types, only years where the action is greater than 50 TAF are included. This includes 14 of the 18 dry years and 7 of the 12 critically dry years. In dry years with an exchange greater than 50 TAF, the average exchange operation was 182 TAF when releases were limited by delivery capacity and 311 TAF when releases were scheduled. In critically dry years with an exchange greater than 50 TAF, the average exchange was 220 TAF when releases were limited by delivery capacity and 225 TAF when releases were scheduled.
 - 4) Under the USBR Proposed scenario, the exchange only occurred in 5 of the 18 dry years and 5 of the 12 critically dry years. In dry years with an exchange greater than 50 TAF, the average exchange operation was 141 TAF when releases were limited by delivery capacity and 167 TAF when releases were scheduled. In critically dry years with an exchange greater than 50 TAF, the average exchange was 130 TAF when releases were limited by delivery capacity and 130 TAF when releases were scheduled.
 - 5) The Upper Sacramento River Water Quality Model (USRWQM) in HEC-5Q was run using the revised CalSim II outputs.

4.2 Results

Temperature results are in the tables below. Our preliminary screening analysis shows that there is some potential for temperature reduction below the targets specified by Reclamation, but further analysis will be needed to further evaluate the benefits of the exchange operation.

Temperature changes (°F) between No Project and Project with no Reclamation Investment									
Initial Concept - 2-pipe Delevan Pipeline									
Releases Limited by Delivery Capacity									
Dry Year Averages (with action >50 TAF)									
		APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV
Sacramento River below Keswick	No Action	48.2	48.7	49.5	50.9	52.6	52.9	54.7	54.3
	With Project	48.2	49.0	49.6	50.8	52.1	52.6	54.0	53.9
	Difference	0.0	0.2	0.1	-0.1	-0.5	-0.4	-0.7	-0.4
Sacramento River below Clear Creek	No Action	49.7	50.3	51.0	52.2	54.0	54.6	55.2	54.1
	With Project	49.7	50.7	51.3	52.2	53.4	54.1	54.5	53.8
	Difference	0.0	0.4	0.3	0.1	-0.6	-0.5	-0.7	-0.3
Critically Dry Year Averages (with action >50 TAF)									
		APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV
Sacramento River below Keswick	No Action	48.9	50.6	51.8	53.0	55.5	58.1	57.9	55.4
	With Project	48.8	50.4	51.8	52.9	54.2	57.7	57.9	55.5
	Difference	0.0	-0.3	-0.1	-0.2	-1.3	-0.4	0.1	0.1
Sacramento River below Clear Creek	No Action	50.2	52.2	53.2	54.4	56.8	59.4	58.2	55.2
	With Project	50.3	52.2	53.3	54.3	55.4	58.9	58.3	55.2
	Difference	0.1	0.0	0.1	-0.1	-1.4	-0.5	0.0	0.1
Initial Concept - 2-pipe Delevan Pipeline									
Scheduled Releases (40% Aug, 40% Sep, 20% Oct)									
Dry Year Averages (with action >50 TAF)									
		APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV
Sacramento River below Keswick	No Action	48.2	48.7	49.5	50.9	52.6	52.9	54.7	54.3
	With Project	48.2	49.0	49.7	50.8	51.9	52.1	54.5	54.3
	Difference	0.0	0.2	0.1	-0.1	-0.6	-0.9	-0.1	0.0
Sacramento River below Clear Creek	No Action	49.7	50.3	51.0	52.2	54.0	54.6	55.2	54.1
	With Project	49.8	50.7	51.3	52.3	53.2	53.4	55.0	54.1
	Difference	0.0	0.4	0.3	0.1	-0.8	-1.2	-0.2	0.0
Critically Dry Year Averages (with action >50 TAF)									
		APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV
Sacramento River below Keswick	No Action	48.9	50.6	51.8	53.0	55.5	58.1	57.9	55.4
	With Project	48.9	50.4	51.8	52.9	54.3	57.3	58.0	55.6
	Difference	0.0	-0.2	0.0	-0.1	-1.2	-0.8	0.1	0.1
Sacramento River below Clear Creek	No Action	50.2	52.2	53.2	54.4	56.8	59.4	58.2	55.2
	With Project	50.3	52.2	53.3	54.3	55.5	58.4	58.3	55.3
	Difference	0.1	0.0	0.1	-0.1	-1.3	-1.0	0.1	0.1

Temperature changes (°F) between No Project and Project with no Reclamation Investment									
USBR Proposed- 2-pipe Delevan Pipeline									
Releases Limited by Delivery Capacity									
Dry Year Averages (with action >50 TAF)									
		APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV
Sacramento River below Keswick	No Action	48.5	48.9	50.0	51.5	53.4	53.8	55.4	55.2
	With Project	48.5	49.4	49.8	51.2	53.2	53.2	55.3	55.1
	Difference	0.0	0.5	-0.2	-0.3	-0.2	-0.6	-0.1	-0.1
Sacramento River below Clear Creek	No Action	50.2	50.3	51.3	52.7	54.7	55.5	56.0	55.0
	With Project	50.2	51.3	51.2	52.4	54.6	54.7	55.8	54.9
	Difference	0.0	1.0	-0.1	-0.3	-0.2	-0.8	-0.2	-0.1
Critically Dry Year Averages (with action >50 TAF)									
		APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV
Sacramento River below Keswick	No Action	49.0	51.0	52.4	53.2	56.3	59.5	58.3	55.3
	With Project	49.0	50.9	52.3	53.1	55.3	58.7	58.5	55.4
	Difference	0.0	-0.1	-0.1	-0.1	-1.0	-0.9	0.2	0.1
Sacramento River below Clear Creek	No Action	50.3	52.5	53.8	54.6	57.6	60.6	58.7	55.1
	With Project	50.5	52.6	53.7	54.5	56.6	59.6	58.8	55.2
	Difference	0.2	0.1	-0.1	-0.1	-1.0	-1.0	0.1	0.1
USBR Proposed- 2-pipe Delevan Pipeline									
Scheduled Releases (40% Sep, 40% Oct, 20% Nov)									
Dry Year Averages (with action >50 TAF)									
		APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV
Sacramento River below Keswick	No Action	48.5	48.8	49.9	51.5	53.3	53.6	55.4	55.2
	With Project	48.5	49.4	49.8	51.2	53.1	53.1	55.3	55.0
	Difference	0.0	0.5	-0.2	-0.3	-0.2	-0.5	-0.1	-0.1
Sacramento River below Clear Creek	No Action	50.1	50.2	51.3	52.8	54.7	55.3	55.9	54.9
	With Project	50.1	51.2	51.2	52.5	54.5	54.6	55.8	54.8
	Difference	0.0	1.0	-0.1	-0.3	-0.2	-0.7	-0.2	-0.1
Critically Dry Year Averages (with action >50 TAF)									
		APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV
Sacramento River below Keswick	No Action	49.0	51.0	52.4	53.2	56.3	59.5	58.3	55.3
	With Project	49.0	50.9	52.3	53.0	55.3	58.5	58.4	55.5
	Difference	0.0	-0.1	-0.1	-0.1	-1.0	-1.0	0.0	0.1
Sacramento River below Clear Creek	No Action	50.3	52.5	53.8	54.6	57.6	60.6	58.7	55.1
	With Project	50.5	52.6	53.7	54.5	56.6	59.6	58.7	55.3
	Difference	0.2	0.1	-0.1	-0.1	-1.0	-1.0	0.0	0.2

Appendix B-3 Colusa Basin Drain Value Planning Evaluation Technical Memorandum



To: Value Planning Work Group
CC: Lee Frederiksen
Date: April 7, 2020
From: Anne Williams - MBK
Subject: Colusa Basin Drain Value Planning Alternative

The Sites Reservoir Project is currently undergoing a value planning process to investigate various potential alternatives of the Sites Reservoir Project operations. As part of this process, one alternative proposes that water released from Sites Reservoir is conveyed through the Tehama Colusa Canal (TC Canal) to its terminus, and then to the Colusa Basin Drain (CBD) through Bird Creek or a pipeline near the same location. The alternative proposes to move up to 1,000 cfs of water during May through October through the CBD, and either through the Knights Landing Outfall Gates (KLOG) and into the Sacramento River near Knights Landing, or through the Knights Landing Ridge Cut (Ridge Cut) to the Yolo Bypass and then to the Sacramento River near Rio Vista. The purpose of this memorandum is to provide background information and MBK Engineer's (MBK) knowledge based on experience about the CBD, and to identify potential considerations or risks associated with this proposed alternative to the Sites Reservoir Project Value Planning Work Group (Work Group).

This memorandum is organized by topic, based on a list of questions provided by the Work Group. It is intended to identify initial considerations at a high level, based on MBK's experience and information that was readily available. Attached to this memorandum is a brief presentation with background information and key facilities along the CBD, which was provided and discussed with the Work Group at a meeting on February 13, 2020.

1.0 Flow

In order to understand how water released from Sites Reservoir could be moved through the CBD and into the Sacramento River at Knights Landing, the hydraulics between the CBD, KLOG, and Wallace Weir need to be investigated. MBK has requested any available analyses from Reclamation District 108 (RD 108), which may have been conducted for the KLOG and/or Wallace Weir rehabilitation projects.

The rate of flow from the CBD into the Sacramento River through KLOG, depends on the differential stage in the Sacramento River and in the CBD at KLOG. The stage in the CBD at KLOG is dependent upon the operation of both KLOG and the Wallace Weir. The flow in the CBD has historically been difficult to measure due to backwater effects. To fully understand how far upstream backwater may extend from KLOG, a hydraulic analysis would need to be conducted. Based on the experience of MBK and the landowners, it is estimated that water levels can be affected by the KLOG and Wallace Weir operation to County Line Road, approximately 15 miles upstream of the Ridge Cut and approximately 4 miles upstream of Bird Creek.

Currently, MBK is aware of measurements at the following locations, generally identified from upstream to downstream.

- Colusa Drain near Sidds Rd (Glenn-Colusa Irrigation District [GCID]: Flow, Stage, Water Temperature, pH, Specific Conductance, Salinity, Dissolved Solids, and Dissolved O2)
- Colusa Drain near Road 68 (GCID: Flow, Stage, Water Temperature, pH, Specific Conductance, Salinity, Dissolved Solids, and Dissolved O2)
- Colusa Drain at Lurline Road (GCID: Flow, Stage, Water Temperature, pH, Specific Conductance, Salinity, Dissolved Solids, and Dissolved O2)
- Colusa Drain near Highway 20 (CDEC – CDR: Flow & Stage)
- Colusa Drain at Davis Weir (GCID: Flow, Stage, Water Temperature, pH, Specific Conductance, Salinity, Dissolved Solids, and Dissolved O2)
- Colusa Basin Drain at Knights Landing (CDEC – KLG: Stage & Gate Openings)
- Sacramento River at Knights Landing (CDEC – KNL: Stage)
- Ridge Cut Slough at Knights Landing (CDEC – RCS: Flow, Stage, Velocity, and Water Temperature¹)
- Ridge Cut at Wallace Weir (RD 108 & the California Department of Water Resources [DWR] – RD 108 with approval by DWR: Flow & Stage)
- Yolo Bypass near Woodland (CDEC – YBY: Flow & Stage)

Pursuant to the 1937 Hershey Agreement, DWR limits water levels at KLOG during the irrigation season to no greater than 25.5 ft United States Engineering Datum (USED, also known as the U.S. Army Corps of Engineers Datum). During this period DWR also attempts to maintain a water level of no less than 24.5 ft USED. These elevations are identified to prevent localized flooding and impacts to the ability to drain fields in the lower portion of the CBD and the Ridge Cut (which may occur at levels greater than 25.5 ft) and avoid limiting the ability of diverters to pump water for irrigation purposes (which may occur at levels lower than 24.5 ft).

In July 2016, state and federal agencies and local water users and landowners coordinated an Emergency Action for Delta Smelt. The goal of the program was to generate a pulse flow in the Yolo Bypass, using about 400 cfs of water pumped from the Sacramento River into the CBD by GCID and RD 108 over a two-week period in July². The approximate 400 cfs pulse flow was in addition to existing flows in the CBD at the time, about 200 cfs measured at Davis Weir. The resulting maximum flow in the CBD below Davis Weir during the effort was about 850 cfs. The pulse flow was conveyed to the Yolo Bypass using the CBD, Wallace Weir, and the Tule Canal. The action generated a total flow pulse of 12,700 acre-feet in the Yolo Bypass.

Additional Delta Smelt experiments occurred in the fall of 2018 and 2019, planned to generate estimated pulses of 24,000 acre-feet in the Yolo Bypass. These more recent experiments involved the rerouting of agricultural return flow/rice drain water (not the addition of Sacramento River water) from the CBD into the Yolo Bypass via the Ridge Cut (rather than discharging the water to the Sacramento River at KLOG). The 2018 flow action occurred for about one month, late August to late September, and water levels in the CBD at KLOG were raised to 27.0 ft. Measured CBD flows at the Davis Weir during the peak of the 2018 action were about 3,000 cfs. The actual pulse generated in the Yolo Bypass is estimated to have been about 20,000 acre-feet. Similarly, the 2019 flow action raised water levels in the CBD at KLOG to 27.0 ft over a several week period, during late August and September. Measured CBD flows at the Davis Weir during the peak of the 2019 action were about 2,500 cfs, and a pulse was generated in the Yolo Bypass. These efforts were possible with

¹ In addition, certain water quality data (i.e. dissolved oxygen, pH, specific conductance, turbidity, chlorophyll) is available during periods of the Delta Smelt actions, collected by DWR.

² The 2016 action occurred in July due to the construction schedule of the Wallace Weir. Similar programs in the future were identified as more likely to occur in the fall.

significant coordination with local landowners, although they did result in some localized flooding/drainage issues.

Any alternatives that utilize the CBD for conveyance of Sites Reservoir water, should include coordination with the local landowners regarding the project operation and timing of the additional flows. The project should also consider levee improvements (particularly along the western levee which is lower than the eastern Project levee) and other improvements or arrangements that would address flooding and drainage issues due to the increased flows.

The Work Group raised concerns regarding losses due to seepage and groundwater pumping. The area primarily consists of clay soils and therefore losses due to seepage are not a major concern; however, local landowners have expressed concern regarding the potential for seepage through the levees when water levels exceed 25.5 ft. Similarly, the effect of local groundwater pumping is likely minimal, although this has not been investigated. With the implementation of the Sustainable Groundwater Management Act, groundwater pumping in the area may be more restricted in the future.

2.0 Environmental

As previously described, in 2016, 2018, and 2019, as part of the Delta Smelt Emergency Action, pulse flows were generated through the Yolo Bypass. The purpose of these experiments were to improve the food supply in the Northern Delta, focusing on Delta smelt. It is MBK's understanding that these types of experiments may continue in the future.

Another consideration of the Work Group is related to water temperature. Temperature management for fish species is a major operational consideration on the upper Sacramento River. However, MBK is not aware of temperature concerns in the Sacramento River this far downstream (i.e. near Knights Landing). It seems that water released from Sites Reservoir would be the same temperature or colder than summer drain water in the CBD. There is currently water temperature data at several points in the Colusa Drain collected by GCID, in the Ridge Cut (CDEC – RCS) and in the Sacramento River: upstream of Knights Landing at Wilkins Slough (CDEC – WLK) and downstream at Verona (CDEC – VON).

The giant garter snake is the primary endangered species concern in this area. Other special status species identified as potentially found within the area include the California tiger salamander, yellow-billed cuckoo, Western snowy plover, least Bell's vireo, Delta smelt, Central Valley steelhead, Chinook salmon, green sturgeon, Conservancy fairy shrimp, vernal pool fairy shrimp, Valley elderberry longhorn beetle, vernal pool tadpole shrimp, Hoover's spruce, palmate-bracted bird's-beak, Colusa grass, hairy Orcutt grass, slender Orcutt grass, Keck's checker-mallow, and Greene's tuctoria³.

3.0 Water Rights

Landowners and irrigation districts hold varying water rights along the CBD, Ridge Cut, Tule Canal, and Yolo Bypass. MBK conducted an initial review of existing water rights along the CBD downstream of Sites Reservoir using the State Water Resources Control Board's electronic files (see Draft Memorandum: Summary of Downstream Water Rights, dated September 17, 2019). Based on this research there are approximately ten water rights along the CBD between Bird Creek and the Knights Landing Outfall Gates⁴. Generally, these are licensed direct diversion water rights for irrigation purposes during April to October.

In addition, many lands are within the Colusa Drain Mutual Water Company (CDMWC), which holds a contract with the U.S. Bureau of Reclamation (Reclamation) for supplemental water supplies for its shareholders who divert water from the CBD under their respective water rights. As allowed under the contract with Reclamation the CDMWC has purchased supplemental water supplies from GCID for the past several years.

³ Source: https://www.usbr.gov/mp/nepa/includes/documentShow.php?Doc_ID=32942

⁴ Research was not conducted to identify existing water rights along the Ridge Cut, Tule Canal, Sacramento River, or within the Delta.

Appendix C – Environmental Permitting and Planning

Appendix C-1 – Permitting and Environmental Planning Impacts Assessment Technical Memorandum



To: Value Planning Work Group
CC: Lee Frederiksen
Date: March 3, 2020
From: John Spranza, Jelica Arsenijevic - HDR
Laurie Warner Herson – Phenix Environmental
Subject: Permitting and Environmental Planning Impacts Assessment

1.0 Introduction

The Sites Project Authority (Authority) is pursuing development of the Sites Reservoir Project (Project), a new above-ground surface storage reservoir offstream of the Sacramento River in Colusa and Glenn counties, approximately 10 miles west of the town of Maxwell, California. The Project, in addition to providing other important water storage and operational benefits, is being proposed to increase the reliability of water supplies for environmental, agricultural and urban uses. A draft California Environmental Quality Act (CEQA) and National Environmental Policy Act (NEPA) Environmental Impact Report/Environmental Impact Statement (EIR/EIS)¹ has been prepared and was circulated for public review and comment in August, 2017.

In October 2019, the Authority began value planning efforts to identify an alternative that would serve the current needs of the Project participants and potentially reduce overall cost of the Project. The value planning effort has identified several facility modifications, which resulted in 16 new alternatives being considered.

This memorandum (memo) has been prepared to assist with the value planning effort from the environmental permitting and planning perspective. The memo summarizes the alternatives being considered, describing:

- Key differences of the value planning alternatives when compared to Alternative D as described in the Draft EIR/EIS;
- Species within the alternatives footprint that could potentially be impacted through construction and operation of the Project;
- Key permits and approvals required to construct and operate the Project including any additional regulatory requirements beyond those identified in the Draft EIR/EIS;
- Environmental planning considerations related to CEQA/NEPA analysis;
- Qualitative change in mitigation cost; and
- A relative weighting associated with environmentally related criteria (and associated metrics) compared to Alternative D in the Draft EIR/EIS.

Although qualitative in nature, the analysis and conclusions presented in this memo may be used to support the Authority in identifying a revised locally-preferred alternative.

¹ Sites Reservoir Project Draft Environmental Impact Report/Environmental Impact Statement (Sites Project Authority and Reclamation 2017)

2.0 Summary of Alternative D

The Draft EIR/EIS addressed a range of alternatives (Alternatives A, B, C, C1, and D). All alternatives included a Sites Reservoir that would be filled using existing Sacramento River diversion facilities and a proposed Delevan Pipeline on the Sacramento River to allow for release of flows into the Sacramento River. All but one alternative also used the proposed Delevan Pipeline to divert Sacramento River water. The proposed operations varied between Alternatives A, B, C, C1, and those included in Alternative D. The specific operational parameters included in the Draft EIR/EIS were identified to support/evaluate the upper bound of potential impacts. The operations evaluated for Alternative D were based on operations included in the application to the California Water Commission for the Water Storage Investment Program. The operations included in that application were specifically selected to respond to the requirements of that program and its evaluation criteria.

In a letter to Reclamation dated June 25, 2018, the Authority identified Alternative D as the locally preferred alternative:

“As the planning process is nearing completion, the Authority requests Reclamation use Alternative D as the basis for implementing the project and for identifying the federal interest. The current Reclamation-prepared draft Feasibility Report, dated August 14, 2017, identified Alternative D as providing the highest net Regional Economic Development (RED) benefits and as representing the Locally Preferred Alternative; which aligns with the Authority’s decision on June 13, 2016, to formally select Alternative D as our proposed project under CEQA and as the basis for our Proposition 1 application to the Water Commission.”

Alternative D consists of constructing and operating a 1.8 million-acre-foot (MAF) reservoir. The reservoir would be created by constructing two main dams, one on Funks Creek and one on Stone Corral Creek, and nine saddle dams. Under Alternative D, Sites Reservoir would be filled by diverting unappropriated flows originating primarily from tributary streams to the Sacramento River below Keswick Dam. These flows would be diverted from the Sacramento River from using surplus capacity at the Tehama-Colusa Canal (T-C Canal) diversion facility near Red Bluff, and Glenn-Colusa Irrigation District’s (GCID) diversion Facility near Hamilton City. A new diversion facility near Delevan would be constructed to provide additional diversion capacity for filling the reservoir. A pipeline would be constructed to carry water from the Delevan diversion to the forebay/afterbay for Sites Reservoir.

Under Alternative D, modifications would have to be made to the existing infrastructure to accommodate the operation of the reservoir. These include construction of a terminal reregulating reservoir (TRR) on the Glenn-Colusa Canal, expansion of the existing reregulation reservoir on the Tehama-Colusa Canal (known as Funks Reservoir) into a larger reservoir to serve as the forebay/afterbay for Sites Reservoir and to accommodate a pump storage power generating facility, and an inlet/outlet works for moving water in and out of Sites Reservoir. Alternative D has two options under consideration for expansion of Funks Reservoir one primarily to the south that would be named Holthouse Reservoir; and the other to the north and east would be named Fletcher Reservoir.

2.1 Species Potentially Affected

Table C1-1 identifies the federal and state special-status fish and wildlife species that were potentially affected by the construction and operation of Alternative D.

Table C1-1. Special-Status Species Potentially Affected by Alternative D

Species	Listing Status ¹	Critical Habitat
Keck's checkermallow	FE	
Palmate-bracted bird's beak	FE, SE	
Conservancy fairy shrimp	FE	
Vernal pool fairy shrimp	FT	
Vernal pool tadpole shrimp	FE	
Valley elderberry longhorn beetle	FT	
California red-legged frog	FT	
Foothill yellow-legged frog	ST	
California tiger salamander	FE, ST	
Giant garter snake	FT, ST	
Western yellow-billed cuckoo	FT, SE	X
Swainson's hawk	ST	
Bank swallow	ST	
Tricolored blackbird	ST	
Delta smelt	FT	X
Longfin smelt	ST, FC ²	
Southern Distinct Population Segment of North American green sturgeon	FT	X
Sacramento River winter-run Chinook salmon Evolutionarily Significant Unit	FE	X
Central Valley spring-run Chinook salmon	FT	X
Central Valley steelhead	FT	X

¹ Acronyms: FE – federally listed as endangered FT – federally listed as threatened; FC – federally listed as a candidate species; SE – state listed as endangered ST – state listed as threatened

² Federal candidacy is only for San Francisco Bay-Delta distinct population segment.

2.2 Permits and Approvals Required

Alternative D identified over 20 permits that would be required from regulatory agencies, including, but not limited to California Department of Fish and Wildlife (CDFW), U.S. Fish and Wildlife Service (USFWS), U.S. Army Corps of Engineers (USACE), Regional Water Quality Control Board (RWQCB), State Water Resources Control Board (SWRCB), National Marine Fisheries Service (NMFS), and State Historic Preservation Office (SHPO). Table C1-2 identifies the key permits and approvals required for Alternative D, as well as the agency responsible for issuance of permit/approval, recommended pre-requisites for submittal, and estimated processing time. Key permits are those permits that have the ability to significantly affect the cost or schedule of the construction and operation of the Project.

Table C1-2. Summary of Key Permits and Approvals Required for Alternative D

Agency and Associated Permit or Approval	Recommended Pre-requisites for Submittal	Estimated Processing Time
Federal		
USACE Clean Water Act (CWA) Section 404 Nationwide Permit or Individual Permit Rivers and Harbors Act Section 10 Permit	Application Biological Assessment for submittal to USFWS/NMFS Section 401 Water Quality Certification permit or application NEPA document Section 106 compliance documentation Wetland delineation Mitigation and Monitoring Plan Alternatives analysis (for Individual Permit)	4 to 6 months for Nationwide Permit 8 to 24 months for Individual Permit
USFWS/NMFS Endangered Species Act Section 7 Consultation Biological Opinion(s) Magnuson-Stevens Fisheries Conservation and Management Act	Ongoing informal technical consultation Biological Assessment NEPA document	135 days
USFWS Fish and Wildlife Coordination Act Report	Ongoing informal technical consultation Biological Assessment NEPA document	Generally accompanies USFWS's Biological Opinion
USFWS National Wildlife Refuge Special Use Permit	Application Biological Assessment Section 106 compliance documentation	Over 6 months
SHPO National Historic Preservation Act Section 106 Programmatic Agreement	Cultural Resources Survey and Evaluation Report (if mitigation is necessary to resolve adverse effects to historic properties, then additional reports would be required for SHPO consultation that detail the results of these efforts)	9 months (up to 18 months, if mitigation necessary)
State		
RWQCB Clean Water Act Section 401 Water Quality Certification	Application Fish and Game Code Section 1602 Notification or Alteration Agreement CWA Section 404 permit or application CEQA document	8 to 24 months
SWRCB Water Right Permit	Application Water Availability Analysis Coordination with SWRCB Staff Coordinate with potential protesters CEQA document and Mitigation Plan	18 to 24 months
CDFW California Endangered Species Act 2081 Incidental Take Statement	Ongoing informal technical consultation Application Biological document for 2081 Permit, if requesting Incidental Take Permit CEQA document and Mitigation Plan	6 to 24 months
CDFW	Notification Package	6 to 8 months

Agency and Associated Permit or Approval	Recommended Pre-requisites for Submittal	Estimated Processing Time
Fish and Game Code Section 1602 Notification Section 1603 Streambed Alteration Agreement	Section 401 Water Quality Certification or application CWA Section 404 permit or application CEQA document and Mitigation Plan	

2.3 Summary of Environmental Effects

The Project has the potential to influence Central Valley Project (CVP) and State Water Project (SWP) system operations and water deliveries. For the Draft EIR/EIS analysis, three study areas were developed to evaluate potential Project impacts: the Extended, Secondary, and Primary study areas. Based on the analysis, implementation of all alternatives would affect environmental resources in all three study areas to varying degrees, with most impacts potentially occurring in the Primary Study Area. Under Alternative D, potentially significant environmental effects to aquatic, botanical, and terrestrial biological resources were identified but mitigation was identified to mitigate effects to less than significant levels, except for effects to golden eagles. Similarly, effects to wetlands and other jurisdictional waters were considered less than significant after implementation of proposed mitigation.

The Draft EIR/EIS determined that Alternative D (as well as the other alternatives) would likely result in the following potentially significant and unavoidable direct and indirect environmental effects:

Terrestrial Biological Resources (Golden Eagle)

Construction and filling of the proposed Sites Reservoir Inundation Area, as well as construction of the proposed Recreation Areas, would result in the permanent loss of foraging and nesting habitat for the golden eagle. Although implementation of compensatory mitigation including land preservation and/or acquisition is proposed, these measures would not reduce this loss of habitat to less-than-significant levels.

Paleontological Resources

Construction of the proposed Project facilities could affect paleontological resources. Mitigation measures would reduce the impacts, but not to a less-than-significant level if such resources are encountered during construction.

Cultural Resources (Historical and Tribal Resources, Human Remains)

Construction of the proposed Project facilities would affect built historical and tribal resources, as well as human remains associated with a designated cemetery and adjacent areas. If these resources and/or areas are determined to be eligible for listing in the California Register of Historical Resources or National Register of Historic Places, mitigation measures would not reduce the impact to less-than-significant levels.

Land Use (Community of Sites and Existing Land Uses)

Construction and filling of the proposed Sites Reservoir Inundation Area would result in the physical division and loss of the community of Sites, resulting in a significant and unavoidable impact. Construction of the proposed Project facilities would result in conversion of Prime Farmland, Unique Farmland or Farmland of Statewide Importance to non-agricultural use, resulting in significant and unavoidable impacts. Implementation of mitigation measures would not reduce these impacts to less-than-significant levels.

Air Quality (PM10, ROG, and NOx)

Construction activities associated with all proposed Primary Study Area Project facilities, as well as activities (such as use of roads, recreation, electricity generation and consumption, and sediment dredging) associated with the long-term operation and maintenance of the Project, would result in significant and unavoidable emissions of particulate matter less than 10 microns in diameter (PM10), reactive organic gas (ROG), and nitrogen oxide (NOx).

Climate Change and Greenhouse Gas Emissions

The greenhouse gas (GHG) emissions estimated for construction, operation, and maintenance of the Project when compared to applicable county standards would contribute to a cumulatively considerable effect that would be significant and unavoidable.

Growth-inducing Impacts

Implementation of the Project would improve water supply reliability for agricultural, urban, and environmental uses; provide more options for water management; increase recreational opportunities; and increase temporary and permanent employment opportunities. Although it is not anticipated that the water made available from the Project would result in a direct increase in population or employment, the potential exists for the quantity of water made available by the Project to result in secondary effects of growth consistent with local general plans and regional growth projections in an agency's respective service area.

These significant and unavoidable environmental effects were common to all of the alternatives analyzed in the Draft EIR/EIS due to the magnitude of construction activities and future reservoir-related inundation of resources. There were changes in the level of effects for some alternatives depending on construction and operation of the Delevan Intake including:

- Impact Fish-1c: Hydrostatic Pressure Waves, Noise, and Vibration – Delevan Facilities.
- Impact Fish-1d: Predation Risk – Delevan Facilities.
- Impact Fish-1e: Stranding, Impingement, and Entrainment – Delevan Facilities.
- Impact Fish 1f: Modification of Pulse Flows and Entrainment during Diversions at the Delevan Facilities.

However, the Draft EIR/EIS concluded that these effects were less than significant after implementation of mitigation.

2.4 Estimated Mitigation Costs

In 2016, costs for potential mitigation requirements of Alternative D were estimated to be approximately \$500 million. The 2016 estimated mitigation costs identified that there was uncertainty in the estimate as the Project's impact assessment and associated mitigation ratios/acres had yet to be finalized and determined by the state and federal regulatory agencies in their respective permits and approvals. The HDR Permitting Integration Team reviewed the 2016 estimated mitigation costs in late 2019 and found that the addition of new facilities and removal/refinement of proposed facilities resulting from the Value Planning provides the same challenges to providing an accurate estimate of mitigation requirements (see Attachment 1 of Sites Project Value Planning Alternatives Appraisal Report [2020]).

3.0 Value Planning Alternatives

As described above, 16 new alternatives have been developed during the value planning effort. Table C1-3 below presents the differences among each alternative, including cost, size of reservoir, diversion, conveyance, bridge and road considerations, and type of dam.

Table C1-3. Alternatives Considered During Value Planning

Features	Value Planning Alternatives															
	1	2	3	4a	4b	5a	5b	6a	6b	VP1	VP2	VP3	VP4	VP5	VP6	VP7
Cost (\$billions)	\$4.0	\$4.0	\$3.9	\$3.8	\$3.9	\$3.5	\$3.9	\$3.4	\$3.6	\$3.3	\$2.8	\$3.3	\$3.0	\$2.7	\$2.9	\$2.9
Savings from 1.8 MAF Alternative D (\$billions)	\$1.2	\$1.2	\$1.3	\$1.4	\$1.3	\$1.7	\$1.3	\$1.8	\$1.6	\$1.9	\$2.3	\$1.9	\$2.1	\$2.4	\$2.2	\$2.2
1.5 MAF Reservoir	•	•	•	•	•	•	•	•								•
1.3 MAF Reservoir									•	•	•	•	•	•	•	
Funks/Sites PGP	•	•		•	•	•	•									
Funks PGP											•	•	•	•	•	•
TRR and TRR PGP	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
TCRR with Pumping Plant and Pipeline			•					•	•	•						
Delevan Canal/Pipeline Release	•	•	•	•	•											
Delevan Pipeline												•				
Dunnigan Pipeline to CBD Release (750 cfs)						•		•		•	•					
Dunnigan Pipeline to CBD Release (1,000 cfs)														•		•
Dunnigan to River Release (750 cfs)							•		•							
Dunnigan Pipeline to River Release (1,000 cfs)													•		•	
Bridge (sized for 1.3 MAF)									•		•	•	•			
Bridge (sized for 1.5 MAF)	•		•	•	•	•	•	•		•				•	•	•
South Road to Lodoga		•														
South Road to Local Residents	•		•	•	•	•	•	•	•	•	•	•	•	•	•	•
Rockfill Embankment Dam	•	•	•			•	•									
Earthfill Dam				•				•	•	•	•	•	•	•	•	•
Hardfill Dam					•											

Note: Alternatives VP1, VP2, and VP3 were also evaluated at 1.0 MAF and 1.5 MAF. Alternative VP4 was also evaluated at 1.5 MAF.

Acronyms: PGP – pumping/generating plant; TCRR – Tehama-Colusa regulating reservoir; CBD – Colusa Basin Drain

3.1 Alternative 1

Compared to Alternative D in the EIR/EIS, Alternative 1 reduces the size of the reservoir to 1.5 MAF and uses a multi-span bridge to reduce costs (Figure C1-1 in Appendix A of main report). The other features are generally consistent with Alternative D, including a facility at Funks Reservoir, Delevan Canal, construction of a multi-spanning bridge and southern road for local residents, and conveyance of water through a pipeline to the Sacramento River.

It is assumed that the Delevan Canal would have a maximum capacity of approximately 750 cubic-feet-per-second (cfs) of water.

The key difference between Alternative D and Alternative 1, is that a new diversion facility at Delevan on the Sacramento River is not proposed. Only an outlet is proposed.

3.1.1 Species Potentially Affected

Alternative 1 would potentially affect the same species and critical habitat as Alternative D due to the same relative magnitude of impacts associated with the Project footprint and operations.

3.1.2 Permits and Approvals Required

Like Alternative D, the same environmental permits and approvals identified for Alternative D (Table C1-2) would be required for Alternative 1. There would be little, if any, substantial change in timing or cost of these permits due to the same relative magnitude of impacts associated with the Project footprint and operations.

3.1.3 CEQA/NEPA Considerations

The reduction in reservoir size may reduce effects to inundated cultural, biological, and land use (agricultural) resources but not to less-than-significant levels. A Delevan Canal rather than pipeline could increase significant and unavoidable effects to agriculture through severing parcels and leaving portions of parcels with challenging access for large agricultural equipment or leaving smaller parcels that would no longer be economically viable for production.

3.1.4 Mitigation Differences and Considerations

Due to this alternative's similar relative magnitude of impacts associated with the Project footprint and operations, the challenges of detailed costing for mitigation identified within Attachment 1 continue to place the approximate cost of mitigation at \$500 million (ICF [2020] memorandum in Attachment 1). However, some mitigation costs associated with facilities that would not be built (i.e., Delevan diversion) or reduced in size (i.e., smaller construction footprint of river outfall pipeline) would result in some level of mitigation cost savings compared to those of Alternative D. These costs could be developed once a final Value Planning Alternative is selected and some level of initial design detail of the Project footprint is completed. Considerations for seeking to avoid and/or minimize impacts to the extent possible during the design process would also be important to reducing mitigation cost.

3.1.5 Summary of Score

Table C1-4, *Relative Permittability of Each Alternative Compared to Alternative D*, provides a comparison of relative permitting difficulty of each Value Planning Alternative to that of Alternative D (0 = more difficult; 1 = approximately the same; 2 = slightly less difficult; 3 = moderately less difficult). To provide a comparable permittability estimate Table C1-4 holds permitting regulations static from the time when the Draft EIR/EIS was first published (2017) and does not take into consideration new regulations, modeling or other changes in baseline conditions that would prevent an equitable relative comparison between Alternative D and a Value Planning Alternative.

Using the scoring methodology provided in Table C1-4, with no Delevan diversion, a slightly smaller inundation area (smaller size), a narrower easement to river and a river outfall/outlet, Value Planning Alternative 1 is relatively less difficult to permit than Alternative D with a total score of 15 points and an average score of 1.88.

3.2 Alternative 2

Alternative 2 (Figure C1-2 in Appendix A) is very similar to Alternative 1. Alternative 2 uses the southern road to the town of Lodoga in place of the multi-span bridge. Like Alternative 1, it is assumed that approximately 750 cfs of water would be conveyed to the Sacramento River through the Delevan Canal and pipeline. No diversion facility is proposed at Delevan on the Sacramento River.

3.2.1 Species Potentially Affected

Alternative 2 would potentially affect the same species and critical habitat as Alternative D due to the very similar footprint.

3.2.2 Permit Considerations

Like Alternative D, the same environmental permits and approvals would be required for Alternative 2. Table C1-2 identifies the key permits and approvals required for Alternative 2.

3.2.3 CEQA/NEPA Considerations

Similar to Alternative 1, the reduction in reservoir size may reduce effects to inundated cultural, biological, and land use (agricultural) resources but not to less-than-significant levels. For the same reasons as identified for Alternative 1, a Delevan Canal rather than pipeline could increase significant and unavoidable effects to agriculture.

The proposed addition of the South Road to Lodoga would require additional studies to determine environmental effects but it is assumed that through the additional ground disturbance associated with road construction there would be an increase in potential environmental effects.

3.2.4 Mitigation Differences and Considerations

Due to this alternative's similar relative magnitude of impacts associated with the Project footprint and operations, the challenges of detailed costing for mitigation identified within Attachment 1 continue to place the approximate cost of mitigation at \$500 million (ICF [2020] memorandum in Attachment 1). However, some mitigation costs associated with facilities that would not be built (i.e., Delevan diversion) or reduced in size (i.e., smaller construction footprint of river outfall pipeline) would result in some level of mitigation cost savings compared to those of Alternative D. These costs could be developed once a final Value Planning Alternative is selected and some level of initial design detail of the Project footprint is completed. Considerations for seeking to avoid and/or minimize impacts to the extent possible during the design process would also be important to reducing mitigation cost.

3.2.5 Summary of Score

Using the scoring methodology provided in Table C1-4, with no Delevan diversion, a slightly smaller inundation area (smaller size), a narrower easement to river and a river outfall/outlet, Value Planning Alternative 2 is relatively less difficult to permit compared to Alternative D with a total score of 15 points and an average score of 1.88.

3.3 Alternative 3

Alternative 3 (Figure C1-3 in Appendix A) eliminates the Sites Pumping/Generating Plant and replaces it with the TCRR and Pumping Plant near Road 69 in combination with an upgraded TRR to fill Sites Reservoir. Water would be released to the Sacramento River through a canal/pipeline to the Delevan release structure. The two-span bridge is used in this alternative.

Like Alternatives 1 and 2, it is assumed that approximately 750 cfs of water would be conveyed to the Sacramento River through the Delevan Canal and pipeline. No diversion facility is proposed at Delevan on the Sacramento River.

3.3.1 Species Potentially Affected

Alternative 3 would potentially affect the same species as Alternative D due to the similar footprint. The newly proposed facilities at the northernmost portion of the future reservoir is outside of the footprint already analyzed; however, the same species would be analyzed for potential Project effects.

3.3.2 Permit Considerations

Like Alternative D, the same environmental permits and approvals would be required for Alternative 3. Table C1-2 identifies the key permits and approvals required for Alternative 3.

3.3.3 CEQA/NEPA Considerations

Similar to Alternatives 1 and 2, the reduction in reservoir size may reduce effects to inundated cultural, biological, and land use (agricultural) resources but not to less-than-significant levels. For the same reasons as identified for Alternative 1, a Delevan Canal rather than pipeline could increase significant and unavoidable effects to agriculture through stranding parcels that would no longer be viable for production.

Replacement of the Funks/Sites Pumping/Generating Plant (PGP) with the TCRR and upgraded TRR PGP would result in the potential for similar environmental effects but in areas on the northeast side of the proposed reservoir.

3.3.4 Mitigation Differences and Considerations

Due to this alternative's similar relative magnitude of impacts associated with the Project footprint and operations, the challenges of detailed costing for mitigation identified within Attachment 1 continue to place the approximate cost of mitigation at \$500 million (ICF [2020] memorandum in Attachment 1). However, more specific costs could be developed once a final Value Planning Alternative is selected and some level of initial design detail of the Project footprint is completed. Considerations for seeking to avoid and/or minimize impacts to the extent possible during the design process would also be important to reducing mitigation cost.

3.3.5 Summary of Score

Using the scoring methodology provided in Table C1-4, with no Delevan diversion, a slightly smaller inundation area (smaller size), a narrower easement to river and a river outfall/outlet, Value Planning Alternative 3 is relatively less difficult to permit compared to Alternative D with a total score of 15 points and an average score of 1.88.

3.4 Alternatives 4a and 4b

Alternatives 4a and 4b (Figures C1-4a and C1-4b in Appendix A) include the single Sites PGP with releases through the Delevan Canal/Pipeline. Alternative 4a uses an earthfill dam and Alternative 4b uses a hardfill dam in place of the zoned rockfill dam.

Like Alternatives 1 and 2, it is assumed that approximately 750 cfs of water would be conveyed to the Sacramento River through the Delevan Canal/Pipeline. No diversion facility is proposed at Delevan on the Sacramento River.

3.4.1 Species Potentially Affected

Alternatives 4a and 4b would potentially affect the same species as Alternative D due to the similar footprint.

3.4.2 Permit Considerations

Like Alternative D, the same environmental permits and approvals would be required for Alternatives 4a and 4b. Table C1-2 identifies the key permits and approvals required for Alternatives 4a and 4b.

3.4.3 CEQA/NEPA Considerations

Similar to Alternatives 1, 2 and 3, the reduction in reservoir size may reduce effects to inundated cultural, biological, and land use (agricultural) resources but not to less-than-significant levels. For the same reasons as identified for Alternative 1, a Delevan Canal rather than pipeline could increase significant and unavoidable effects to agriculture.

Proposed construction under Alternative 4a of an earthfill dam and under Alternative 4b of a hardfill dam rather than rockfill embankment dam would need to be analyzed for potential changes in environmental effects associated with construction technique (e.g., borrow on site versus hauling) and materials (e.g., onsite cement batch plant) including potential air quality, greenhouse gas, noise and transportation effects.

3.4.4 Mitigation Differences and Considerations

Due to this alternative's similar relative magnitude of impacts associated with the Project footprint and operations, the challenges of detailed costing for mitigation identified within Attachment 1 continue to place the approximate cost of mitigation at \$500 million (ICF [2020] memorandum in Attachment 1). However, more specific costs could be developed once a final Value Planning Alternative is selected and some level of initial design detail of the Project footprint is completed. Considerations for seeking to avoid and/or minimize impacts to the extent possible during the design process would also be important to reducing mitigation cost.

3.4.5 Summary of Score

Using the scoring methodology provided in Table C1-4, with no Delevan diversion, a slightly smaller inundation area (smaller size), a narrower easement to river and a river outfall/outlet, Value Planning Alternative 4a and 4b are relatively less difficult to permit compared to Alternative D with a total score of 15 points and an average score of 1.88.

3.5 Alternative 5a and 5b

Alternatives 5a and 5b (Figures C1-5a and C1-5b in Appendix A) replace the Delevan Canal/Pipeline with a southern release near the southern terminus of the T-C Canal. Alternative 5a releases water to the CBD. Water released to the CBD would be conveyed through the lower portion of the CBD to the Sacramento River. Alternative 5b conveys water by canal to the CBD, then uses a siphon and pumping plant to convey water to the Sacramento River.

Under Alternatives 5a and 5b, the canal and pipeline being considered to convey water to either the CBD or Sacramento River would have a capacity of 750 cfs.

Compared to Alternative D, no diversion facility or outlet is proposed at Delevan on the Sacramento River.

3.5.1 Species Potentially Affected

Alternatives 5a and 5b would potentially affect the same species as Alternative D due to the similar footprint. However, due to new facilities, diversions, conveyance features proposed south of Dunnigan, new species have the potential to occur and may be affected by the construction and/or operation of the Project. California tiger salamander is known to occur in the vicinity of those Project features.

3.5.2 Permit Considerations

Like Alternative D, the same environmental permits and approvals would be required for Alternatives 5a and 5b. Table C1-2 identifies the key permits and approvals required for Alternatives 5a and 5b. However, a USFWS special-use permit would not be required for Alternatives 5a and 5b, as the Delevan Canal/Pipeline is not proposed.

3.5.3 CEQA/NEPA Considerations

Similar to the prior alternatives, the reduction in reservoir size may reduce effects to inundated cultural, biological, and land use (agricultural) resources but not to less-than-significant levels. Eliminating releases

through a Delevan pipeline or canal would potentially reduce agricultural effects in that area but effects would still be considered significant and unavoidable for the Project as a whole due to effect of the reservoir inundation.

Release from the southern terminus of the T-C Canal to the CBD would require additional study. This expands the direct impact area of the Project beyond what was previously analyzed in the Draft EIR/EIS. While it is assumed that significant and unavoidable effects identified in the Draft EIR/EIS would be the same or similar, the potential for new significant effects would need to be analyzed. Areas that would need to be considered would include, but may not be limited to, seepage along the CBD and ensuring and additional use of the CBD does not affect its existing water delivery, flood control and flood conveyance purposes.

3.5.4 Mitigation Differences and Considerations

Due to these alternative's similar relative magnitude of impacts associated with the Project footprint and operations, the challenges of detailed costing for mitigation identified within Attachment 1 continue to place the approximate cost of mitigation at \$500 million (ICF [2020] memorandum in Attachment 1). However, more specific costs could be developed once a final Value Planning Alternative is selected and some level of initial design detail of the Project footprint is completed. Considerations for seeking to avoid and/or minimize impacts to the extent possible during the design process would also be important to reducing mitigation cost.

3.5.5 Opportunities Associated with the CBD Alternatives

Moving water through the CBD provides multiple opportunities under Alternative 5a. Recent activities within the lower portions of the CBD have included integrating floodplain agricultural and water delivery activities to create pulse flows containing plankton blooms to provide food for the federally listed Delta smelt. Under the pulse flow, water is redirected from the Sacramento River down the CBD, through the Knights Landing Ridge Cut Slough, past Wallace Weir, through the Yolo Bypass and into the Delta where it is utilized by Delta smelt and other planktivorous fish.

Additional mitigation opportunities that could be realized include upgrading and/or adding gauge structures along the CDB, upgrading of grade control facilities in the CBD to better control the flow of water and the acquisition of CBD lands from willing sellers that are prone to flooding that could be used for wetland and state and federal listed species mitigation for the Project. The potential to improve water quality in the CBD also exists and would also need to be assessed in detail.

3.5.6 Summary of Score

3.5.6.1 Alternative 5a

Using the scoring methodology provided in Table C1-4, with no Delevan diversion, a slightly smaller inundation area (smaller size), no pipeline easement to river, a shorter conveyance off T-C Canal, and northern regulating reservoir facilities, Value Planning Alternative 5a is relatively less difficult to permit compared to Alternative D with a total score of 19 points and an average score of 2.38.

3.5.6.2 Alternative 5b

Using the scoring methodology provided in Table C1-4, with no Delevan diversion, a slightly smaller inundation area (smaller size), no Delevan pipeline easement to river, an easement to the river off the T-C Canal, a river outfall and northern regulating reservoir facilities, Value Planning Alternative 5b is relatively less difficult to permit compared to Alternative D with a total score of 13 points and an average score of 1.63.

3.6 Alternative 6a and 6b

Alternatives 6a and 6b (Figures C1-6a and C1-6b in Appendix A) combine the TCRR and upgraded TRR with the southern release structure and an earthfill dam. More specifically, the TCRR pipeline and TCRR pumping

plant would be constructed to release approximately 2,100 cfs of water into the northernmost portion of the 1.5 MAF proposed reservoir.

Under Alternatives 6a and 6b, the canal and pipeline being considered to convey water to either the CBD or Sacramento River would have a capacity of 750 cfs.

Compared to Alternative D, no diversion facility or outlet is proposed at Delevan on the Sacramento River.

3.6.1 Species Potentially Affected

Alternatives 6a and 6b would potentially affect the same species as Alternative D due to the similar footprint. However, due to new facilities, diversions, conveyance features proposed south of Dunnigan, new species have the potential to occur and may be affected by the construction and/or operation of the Project. California tiger salamander is known to occur in the vicinity of those Project features.

3.6.2 Permit Considerations

Like Alternative D, the same environmental permits and approvals would be required for Alternatives 6a and 6b. Table C1-2 identifies the key permits and approvals required for Alternatives 6a and 6b. However, a USFWS special-use permit would not be required for Alternatives 5a and 5b, as the Delevan Canal/Pipeline is not proposed.

3.6.3 CEQA/NEPA Considerations

As noted above, these alternatives combine the TCRR and upgraded TRR under Alternative 3 with the southern release structure of Alternatives 6a and 6b.

Similar to the prior alternatives, the reduction in reservoir size may reduce effects to inundated cultural, biological, and land use (agricultural) resources but not to less-than-significant levels. Eliminating releases through a Delevan pipeline or canal would potentially reduce agricultural effects in that area but effects would still be considered significant and unavoidable for the Project as a whole due to effect of the reservoir inundation.

Replacement of the Funks/Sites PGP with the TCRR and upgraded TRR PGP would result in the potential for similar environmental effects but in areas on the northeast side of the proposed reservoir.

Release from the southern terminus of the T-C Canal to the CBD would require additional study. This expands the direct impact area of the Project beyond what was previously analyzed in the Draft EIR/EIS. While it is assumed that significant and unavoidable effects identified in the Draft EIR/EIS would be the same or similar, the potential for new significant effects would need to be analyzed. Areas that would need to be considered would include, but may not be limited to, seepage along the CBD and ensuring and additional use of the CBD does not affect its existing water delivery, flood control and flood conveyance purposes.

3.6.4 Mitigation Differences and Considerations

Due to these alternative's similar relative magnitude of impacts associated with the Project footprint and operations, the challenges of detailed costing for mitigation identified within Attachment 1 continue to place the approximate cost of mitigation at \$500 million (ICF [2020] memorandum in Attachment 1). However, more specific costs could be developed once a final Value Planning Alternative is selected and some level of initial design detail of the Project footprint is completed. Considerations for seeking to avoid and/or minimize impacts to the extent possible during the design process would also be important to reducing mitigation cost.

3.6.5 Opportunities Associated with the CBD Alternatives

Moving water through the CBD under Alternative 6a has the potential to provide the same benefits as described under Alternative 5a (see section 3.5.5).

3.6.6 Summary of Score

3.6.6.1 Alternative 6a

Using the scoring methodology provided in Table C1-4, with no Delevan diversion, a slightly smaller inundation area (smaller size), no pipeline easement to river, a shorter conveyance off T-C Canal, and northern regulating reservoir facilities, Value Planning Alternative 6a is relatively less difficult to permit compared to Alternative D with a total score of 19 points and an average score of 2.38.

3.6.6.2 Alternative 6b

Using the scoring methodology provided in Table C1-4, with no Delevan diversion, a slightly smaller inundation area (smaller size), no Delevan pipeline easement to river, an easement to the river off the T-C Canal, a river outfall and northern regulating reservoir facilities, Value Planning Alternative 6b is relatively less difficult to permit compared to Alternative D with a total score of 13 points and an average score of 1.63.

4.0 Refined Value Alternatives

Further refinement to alternatives occurred during the Value Planning process. This resulted in the identification of following additional alternatives, VP1 through VP7. All of the refined value planning alternatives propose earthfill dams and include reservoir sizes that are less than the 1.8 MAF proposed under Alternative D. Similar to the prior alternatives, the reduction in reservoir size may reduce effects to inundated cultural, biological, and land use (agricultural) resources but not to less-than-significant levels. Construction of an earthfill dam rather than rockfill embankment dam would need to be analyzed for potential changes in environmental effects associated with construction technique (e.g., borrow on site versus hauling) including potential air quality, greenhouse gas, noise and transportation effects. All of the VP alternatives also propose the south road to local residents and a bridge crossing to serve the western side of the reservoir, similar to Alternative D and therefore assumed to have similar environmental effects.

4.1 Alternative VP1

In addition to design features noted above, Alternative VP1 (Appendix A) uses the TCRR and TRR to fill Sites Reservoir and water is conveyed from the T-C Canal into the CBD at a maximum rate of 750 cfs. VP1 proposes construction of a bridge sized for a 1.5 MAF reservoir.

Compared to Alternative D, no diversion facility or outlet is proposed at Delevan on the Sacramento River.

4.1.1 Species Potentially Affected

Alternative VP1 would potentially affect the same species as Alternative D due to the similar footprint. However, due to new facilities, diversions, conveyance features proposed south of Dunnigan, new species have the potential to occur and may be affected by the construction and/or operation of the Project. California tiger salamander is known to occur in the vicinity of those Project features.

4.1.2 Permit Considerations

Like Alternative D, the same environmental permits and approvals would be required for Alternative VP1. Table C1-2 identifies the key permits and approvals required for Alternative VP1. However, a USFWS special-use permit would not be required for Alternative VP1, as the Delevan Canal/Pipeline is not proposed.

4.1.3 CEQA/NEPA Considerations

Replacement of the Funks/Sites PGP with the TCRR and upgraded TRR PGP would result in the potential for similar environmental effects to those identified under Alternative D but in areas on the northeast side of the proposed reservoir.

Release from the southern terminus of the T-C Canal to the CBD would require additional study. This expands the direct impact area of the Project beyond what was previously analyzed in the Draft EIR/EIS. While it is assumed that significant and unavoidable effects identified in the Draft EIR/EIS would be the same or similar, the potential for new significant effects would need to be analyzed. Areas that would need to be considered include, but may not be limited to seepage along the CBD and ensuring and additional use of the CBD does not affect its existing water delivery, flood control and flood conveyance purposes.

4.1.4 Mitigation Differences and Considerations

Due to this alternative's similar relative magnitude of impacts associated with the Project footprint and operations, the challenges of detailed costing for mitigation identified within Attachment 1 continue to place the approximate cost of mitigation at \$500 million (ICF [2020] memorandum in Attachment 1). However, more specific costs could be developed once a final Value Planning Alternative is selected and some level of initial design detail of the Project footprint is completed. Considerations for seeking to avoid and/or minimize impacts to the extent possible during the design process would also be important to reducing mitigation cost.

4.1.5 Opportunities Associated with the CBD Alternatives

Moving water through the CBD (750 cfs) under Alternative VP1 has the potential to provide the same benefits as described under Alternative 5a (see section 3.5.5).

4.1.6 Summary of Score

Using the scoring methodology provided in Table C1-4, with no Delevan diversion, a reduced inundation area, no pipeline easement to river and a shorter conveyance off the T-C Canal, Alternative VP1 is relatively less difficult to permit compared to Alternative D with a total score of 19 points and an average score of 2.38.

4.2 Alternatives VP2 and VP3

In addition to design features noted above, VP2 and VP3 (Figures VP2 and VP 3 in Appendix A) fill the reservoir using the Funks Reservoir and TRR and include a bridge sized for a 1.3 MAF reservoir. Primary changes are related to where and how releases occur. VP2 proposes releases of 750 cfs from the T-C Canal to the CBD via a pipeline at Dunnigan. VP3 proposes releases of 1,500 cfs to the Sacramento River via a Delevan Pipeline.

Compared to Alternative D, no diversion facility or outlet is proposed at Delevan on the Sacramento River under VP2.

4.2.1 Species Potentially Affected

Alternatives VP2 and VP3 would potentially affect the same species as Alternative D due to the similar footprint. However, due to new facilities, diversions, conveyance features proposed south of Dunnigan under VP2, new species have the potential to occur and may be affected by the construction and/or operation of the Project. California tiger salamander is known to occur in the vicinity of those Project features being considered under VP2.

4.2.2 Permit Considerations

Like Alternative D, the same environmental permits and approvals would be required for Alternatives VP2 and VP3. Table C1-2 identifies the key permits and approvals required for Alternatives VP2 and VP3. However, a USFWS special-use permit would not be required for Alternative VP2, as the Delevan Canal/Pipeline is not proposed.

4.2.3 CEQA/NEPA Considerations

Changes in bridge configuration under VP2 and VP3 and use of a Delevan pipeline for releases to the Sacramento River under VP3 would result in effects similar to those identified in the Draft EIR/EIS under Alternative D.

Eliminating releases through a Delevan pipeline or canal as proposed under VP2 would potentially reduce agricultural effects in that area but effects would still be considered significant and unavoidable for the Project as a whole due to reservoir inundation.

Releases from the southern terminus of the T-C Canal to the CBD proposed under VP2 would require additional study. This expands the direct impact area of the Project beyond what was previously analyzed in the Draft EIR/EIS. While it is assumed that significant and unavoidable effects identified in the Draft EIR/EIS would be the same or similar, the potential for new significant effects would need to be analyzed. Areas that would need to be considered would include, but may not be limited to, seepage along the CBD and ensuring that the additional use of the CBD does not affect its existing water delivery, flood control and flood conveyance purposes.

4.2.4 Mitigation Differences and Considerations

Due to this alternative's similar relative magnitude of impacts associated with the Project footprint and operations, the challenges of detailed costing for mitigation identified within Attachment 1 continue to place the approximate cost of mitigation at \$500 million (ICF [2020] memorandum in Attachment 1). However, more specific costs could be developed once a final Value Planning Alternative is selected and some level of initial design detail of the Project footprint is completed. Considerations for seeking to avoid and/or minimize impacts to the extent possible during the design process would also be important to reducing mitigation cost.

4.2.5 Opportunities Associated with the CBD Alternatives

Moving water through the CBD under Alternative VP2 has the potential to provide the same benefits as described under Alternative 5a and 6a.

4.2.6 Summary of Score

Using the scoring methodology provided in Table C1-4, with no Delevan diversion, a reduced inundation area, no pipeline easement to river and a shorter conveyance off T-C Canal, Value Planning Alternative VP2 is relatively less difficult to permit compared to Alternative D with a total score of 19 points and an average score of 2.38.

However, with VP3 proposing to release of 1,500 cfs to the Sacramento River via a Delevan Pipeline, a Section 408 permit would be triggered. Alternative VP3 is relatively less difficult to permit compared to Alternative D with a total score of 15 points and an average score of 1.88.

4.3 Alternative VP4

Alternative VP4 (VP4 in Appendix A) fills the reservoir from Funks Reservoir and the TRR with releases of 1,000 cfs from the southern end of the T-C Canal into the CBD. Similar to Alternatives 6b, VP2, and VP3, VP4 has a bridge that is sized for a 1.3 MAF reservoir.

Compared to Alternative D, no diversion facility or outlet is proposed at Delevan on the Sacramento River under VP2.

4.3.1 Species Potentially Affected

Alternative VP4 would potentially affect the same species as Alternative D due to the similar footprint. However, due to new facilities, diversions, conveyance features proposed south of Dunnigan under VP4, new species have the potential to occur and may be affected by the construction and/or operation of the Project. California tiger salamander is known to occur in the vicinity of those Project features being considered under VP4.

4.3.2 Permit Considerations

Like Alternative D, the same environmental permits and approvals would be required for Alternative VP4. Table C1-2 identifies the key permits and approvals required for Alternative VP4. However, a USFWS special-use permit would not be required for Alternative VP4, as the Delevan Canal/Pipeline is not proposed.

4.3.3 CEQA/NEPA Considerations

Changes in bridge configuration under VP4 would result in effects similar to those identified in the Draft EIR/EIS under Alternative D.

Eliminating releases through a Delevan pipeline or canal as proposed under VP4 would potentially reduce agricultural effects in that area but effects would still be considered significant and unavoidable for the Project as a whole due to reservoir inundation.

Releases from the southern terminus of the T-C Canal to the Sacramento River proposed under VP4 would require additional study. This expands the direct impact area of the Project beyond what was previously analyzed in the Draft EIR/EIS. While it is assumed that significant and unavoidable effects identified in the Draft EIR/EIS would be the same or similar, the potential for new significant effects would need to be analyzed. In addition, the pipeline be constructed in proximity to federal project levees which may also require supplemental environmental analysis under NEPA for the Section 408 permitting process.

4.3.4 Mitigation Differences and Considerations

Due to this alternative's similar relative magnitude of impacts associated with the Project footprint and operations, the challenges of detailed costing for mitigation identified within Attachment 1 continue to place the approximate cost of mitigation at \$500 million (ICF [2020] memorandum in Attachment 1). However, more specific costs could be developed once a final Value Planning Alternative is selected and some level of initial design detail of the Project footprint is completed. Considerations for seeking to avoid and/or minimize impacts to the extent possible during the design process would also be important to reducing mitigation cost.

4.3.5 Opportunities Associated with the CBD Alternatives

Moving water through the CBD under Alternative VP4 has the potential to provide the same benefits as described under Alternative 5a and 6a.

4.3.6 Summary of Score

Using the scoring methodology provided in Table C1-4, with no Delevan diversion, a reduced inundation area, a pipeline easement to the Sacramento River off the T-C Canal, VP4 is relatively less difficult to permit compared to Alternative D with a total score of 15 points and an average score of 1.88. Similar to VP3, a Section 408 permit would be triggered with construction of a pipeline on the levee, east of the CBD.

4.4 Alternatives VP5, VP6, and VP7

During a meeting of the Ad Hoc Value Planning Work Group on March 2, 2020, the proposed value planning alternatives were further refined. Three alternatives were recommended for consideration in determining the preferred project. Table C1-4 provides a summary of facilities under each alternative.

Table C1-4. Recommended Alternatives and Alternates

Major Facilities	VP5	VP6	VP7 Recommended
Reservoir Size	1.3 MAF	1.3 MAF	1.5 MAF
Bridge Size (avoids future traffic Interruption)	1.5 MAF	1.5 MAF	1.5 MAF
South Road to Local Residents	Included	Included	Included
Misc. Local and Project Roads	Included	Included	Included
Diversion Locations	Funks and TRR	Funks and TRR	Funks and TRR
Dunnigan Release	1,000 cfs to CBD	1,000 cfs to River	1,000 cfs to CBD

As indicated in Table C1-4, VP5, VP6, and VP7 (Figures VP5, VP6, and VP7 in Appendix A) all propose the use of Funks PGP, the TRR and TRR PGP, an earthfill dam and a bridge sized for a 1.5 MAF reservoir. However, VP5 and VP6 propose a 1.3 MAF reservoir size while VP7, identified as the recommended preferred alternative, proposes a 1.5 MAF reservoir. Both VP5 and VP7 would release 1,000 cfs from the T-C Canal to the CBD via a pipeline at Dunnigan. VP6 would release 1,000 cfs from the T-C Canal through a pipeline to the Sacramento River at Dunnigan.

4.4.1 Species Potentially Affected

Alternatives VP5, 6, and 7 would potentially affect the same species as Alternative D due to the similar footprint. However, due to new facilities, diversions, conveyance features proposed south of Dunnigan under VP5, VP6 and VP7, new species have the potential to occur and may be affected by the construction and/or operation of the Project. California tiger salamander is known to occur in the vicinity of those Project features being considered under the three alternatives.

4.4.2 Permit Considerations

Like Alternative D, the same environmental permits and approvals would be required for Alternatives VP5, VP6, and VP7. Table C1-2 identifies the key permits and approvals required for Alternative VP5, VP6, and VP7. However, a USFWS special-use permit would not be required for these alternatives, as the Delevan Pipeline/Canal is not proposed.

4.4.3 CEQA/NEPA Considerations

As noted above, eliminating releases through a Delevan pipeline or canal would potentially reduce agricultural effects in that area but effects would still be considered significant and unavoidable for the Project as a whole due to reservoir inundation. Effects related to bridge size and configuration would likely be similar to those identified in the Draft EIR/EIS for Alternative D.

Releases from the southern terminus of the T-C Canal to the CBD proposed under VP5 and VP7 would require additional study. This expands the direct impact area of the Project beyond what was previously analyzed in the Draft EIR/EIS. While it is assumed that significant and unavoidable effects identified in the Draft EIR/EIS would be the same or similar, the potential for new significant effects would need to be analyzed. Areas that would need to be considered would include, but may not be limited to, seepage along the CBD and ensuring that the additional use of the CBD does not affect its existing water delivery, flood control and flood conveyance purposes.

Releases from the southern terminus of the T-C Canal to the Sacramento River proposed under VP6 would also require additional study. This expands the direct impact area of the Project beyond what was previously

analyzed in the Draft EIR/EIS. While it is assumed that significant and unavoidable effects identified in the Draft EIR/EIS would be the same or similar, the potential for new significant effects would need to be analyzed. In addition, the pipeline would be constructed in proximity to federal project levees which may require supplemental environmental analysis under NEPA for the Section 408 permitting process.

4.4.4 Mitigation Differences and Considerations

Due to this alternative's similar relative magnitude of impacts associated with the Project footprint and operations, the challenges of detailed costing for mitigation identified within Attachment 1 continue to place the approximate cost of mitigation at \$500 million (ICF [2020] memorandum in Attachment 1). However, more specific costs could be developed once a final Value Planning Alternative is selected and some level of initial design detail of the Project footprint is completed. Considerations for seeking to avoid and/or minimize impacts to the extent possible during the design process would also be important to reducing mitigation cost.

4.4.5 Opportunities Associated with the CBD Alternatives

Moving water through the CBD under Alternatives VP5, VP6, and VP7 has the potential to provide the same benefits as described under Alternative 5a and 6a.

4.4.6 Summary of Score

Using the scoring methodology provided in Table C1-4, with no Delevan diversion, a reduced inundation area, no pipeline easement to river and a shorter conveyance off T-C Canal, VP5 through VP7 is relatively less difficult to permit compared to Alternative D with a total score of 19 points and an average score of 2.38. VP6 would release 1,000 cfs from the T-C Canal through a pipeline to the Sacramento River at Dunnigan, thereby has a reduced total score for VP6 is 15 and an average score of 1.88.

Table C1-5. Relative Permittability of Each Alternative Compared to Alternative D

Permits	Alternatives															
	D (EIR/EIS)	1	2	3	4a and 4b	5a	5b	6a	6b	VP1	VP2	VP3	VP4	VP5	VP6	VP7
Federal																
Clean Water Act (404)	1	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
Section 408	1	2	2	2	2	3	2	3	2	3	3	1	1	3	1	3
Federal ESA (NMFS and USFWS)	1	2	2	2	2	3	2	3	2	3	3	2	2	3	2	3
Section 106	1	2	2	2	2	3	2	3	2	3	3	2	2	3	2	3
State																
Clean Water Act (401) and Wetland Policy	1	2	2	2	2	2	1	2	1	2	2	2	2	2	1	2
California ESA	1	2	2	2	2	3	2	3	2	3	3	2	2	3	2	3
1602 Lake and/or Streambed Alteration Agreements	1	2	2	2	2	2	1	2	1	2	2	1	2	2	1	2
Water Right(s)	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
sum of points	8	15	15	15	15	19	13	19	13	19	19	15	15	19	15	19
Average	1.00	1.88	1.88	1.88	1.88	2.38	1.63	2.38	1.63	2.38	2.38	1.88	1.88	2.38	1.88	2.38
Notes: Relative Permeability Scale: 0 = more difficult; 1 = approximately the same; 2 = slightly less difficult; 3 = moderately less difficult higher number - relatively easier to obtain permit/approval from regulatory resource agency compared to Alternative D																
	No Delevan diversion, slightly smaller inundation (smaller size), narrower Delevan easement to river, river outfall															
	No Delevan diversion, slightly smaller inundation (smaller size), no easement to river, shorter conveyance off T-C Canal, northern regulating reservoir facilities (6a)															
	No Delevan diversion, slightly smaller inundation (smaller size), no Delevan easement to river, easement to river off T-C Canal and river outfall, northern regulating reservoir facilities (6b)															
	No Delevan diversion, slightly smaller inundation (smaller size), no Delevan easement to river, easement to river off T-C Canal and river outfall, northern regulating reservoir facilities removed															
	No Delevan diversion, slightly smaller inundation (smaller size), Delevan Canal/Pipeline easement to river, easement to river off T-C Canal and river outfall, northern regulating reservoir facilities removed															

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Attachment C-1-1

Sites Reservoir Project: Review of Value Planning - Mitigation Cost Estimate

Update of 2016 Technical Memorandum & Evaluation of Value Planning
Alternatives



March 23, 2020

Mr. John Spranza, MS, CCN
Senior Ecologist/Regulatory Specialist
HDR
2379 Gateway Oaks Drive, Suite 200
Sacramento, CA 95833

Subject: Sites Reservoir Project: Review of Value Planning - Mitigation Cost Estimate Update of 2016 Technical Memorandum & Evaluation of Value Planning Alternatives 1 – 7 (VP1 – VP7)

Dear Mr. Spranza:

Per your request, ICF has completed our review of the Value Planning technical memorandum (memo), dated October 11, 2019, that was developed by Sites Project team members as part of the initial review and evaluation of the mitigation measures and associated costs for the Sites Project alternatives. The stated purpose of the Value Planning memo was to review the mitigation cost estimate prepared in 2016 (AECOM 2016), based on the then preferred project Alternative C, and to refine the mitigation cost estimate, if possible, to consider the current project alternatives 1, 2, 3, 4a, 4b, 5a, 5b, 6a and 6b being considered in the Value Planning process. In addition to memo review, ICF also evaluated the potential impacts, mitigation measures and associated costs for the recently formulated Value Planning (VP) Alternative 1 – 7.

The memo was developed based on Site's Permitting Integration Team's initial review and applicability of the 2016 mitigation cost estimate, a mitigation planning analysis performed in 2019 by ICF International, and Alternatives developed during the Value Planning process, including most recent versions of Alternatives 6a and 6b.

The findings of the memo are consistent with ICF's 2019 review of the 2016 mitigation acreage assumptions and mitigation cost estimate for the project alternatives, including Alternative 6a, 6b, and VP1- VP7. As stated in the Value Planning memo, a detailed comparison of the 2016 mitigation cost estimate to the present-day project mitigation requirements cannot be performed with precision because 1) the project's impact assessment on terrestrial and aquatic resources, including listed species, has yet to be finalized, and 2) the associated mitigation ratios/acres have yet to be determined by the state and federal regulatory agencies. ICF also concurs with the memo's finding that review of existing analyses and mitigation cost estimates currently being used do not result in any significant changes in estimated mitigation costs (>\$50M) when applied to the Value Planning Alternatives.

ICF's 2019 evaluation of the 2016 mitigation assumptions and mitigation cost estimate did not include the more recently developed Alternatives 6a and 6b or VP1 – VP7. A detailed evaluation and comparison of mitigation and mitigation costs associated with Alternatives 6a, 6b and VP1 – VP7

cannot be performed with precision because the project's impact assessment on terrestrial and aquatic resources, including listed species, has yet to be finalized. Based on an evaluation of aerial imagery available on Google Earth, Alternative 6a would appear to affect fewer terrestrial and aquatic resources and Alternative 6b could have impacts comparable to a Delevan diversion. Other considerations that will factor into future evaluations of mitigation and mitigation costs associated with Alternatives 6a, 6b and VP1 – VP7 include the following:

- Alternatives 6a and 6b would eliminate the proposed Delevan diversion and rely on other existing diversions and would include either a Dunnigan release to the Colusa Basin Drain (Alternative 6a) or the Sacramento River (Alternative 6b).
- VP4 and VP7 would both have 1.5 million acre feet (MAF) and therefore more impacts than the other five VP alternatives which would have 1.3MAF reservoirs.
- VP2 – VP7 would include a Funks Pumping/Generating Plant (PGP). Alternatives 1 – 6b and VP1 would not include a Funks PGP however the biological impacts associated with this PGP would not significantly increase the overall project related impacts.
- VP3 would include a Delevan Pipeline to the Sacramento River. VP1, VP2, VP5 and VP7 alternatives would include a Dunnigan Pipeline to Colusa Basin Drain releases and would therefore have fewer impacts associated than VP3. VP4 and VP6 alternatives would include a Dunnigan Pipeline to the River and impacts would likely be comparable to VP3.

Thank you for the opportunity to review the Value Planning technical memo and the recently formulated VP alternatives. Please contact Monique Briard or me if you have any questions.

Sincerely,

Harry Oakes

Harry Oakes
Senior Restoration Ecologist

cc: Monique Briard - ICF

Value Planning: Mitigation Cost Estimate Update of 2016 Technical Memorandum



Sites Reservoir Project

To: Robert J. Kunde, P.E.
CC: Jeff Herrin, AECOM
Date: October 11, 2019
From: John Spranza, HDR-Sites Integration
Reviewed by: Jelica Arsenijevic, HDR-Sites Integration
Subject: Mitigation Measure Evaluation and Cost Estimate Review of 2016 Technical Memorandum

1.0 Background

In October 2016, AECOM, on behalf of the Sites Project Authority (Authority), prepared a technical memorandum (TM) that presented the results of a mitigation measure evaluation and cost estimate that was developed as a planning-level tool for assessing costs associated with implementing select mitigation measures for the Sites Reservoir (AECOM 2016). The 2016 evaluation and cost estimate was based on the mitigation measures developed for North-of-the-Delta-Offstream Storage (NODOS) Mitigation Monitoring Plan (DWR and Reclamation 2013) and then applied to Alternative C, which are directly applicable in scale and magnitude to Alternative D that was included in the Joint Draft EIR/EIS. These estimates have also been included in the current cost planning and financing efforts that have been occurring for project.

A Value Planning effort has been undertaken by Sites Project members to revisit the current Project (Alternative D) and identify items and actions that could be included, excluded or undertaken to provide clarification on the following items:

- A. **Operational** – as measured by the participants in the Reservoir Project committee based on the storage and delivery reports and progress on the Principles of Agreement with Reclamation and DWR
- B. **Permittable** – as measured by the inclusion of the Sites Project in the California Water Resiliency Portfolio and by discussions with permitting agencies with CDFW and NMFS.
- C. **Affordable** – as measured by the participants in the Reservoir Project committee based on the Affordability Analysis.
- D. **Feasible** – as identified and addressed in the value planning activity and defined by the Authority Feasibility Criteria. This also includes the refinement of operational criteria and the further development of the Principles of an Agreement with Reclamation and DWR.

This memorandum (memo) summarizes HDR's Permitting Integration Team's initial review and applicability of the 2016 mitigation cost estimate, a mitigation planning analysis performed by ICF International (ICF 2019) and Alternatives developed during the Value Planning process to add to the evaluation process of A through D above.

2.0 Purpose

The purpose of this review is to evaluate the mitigation cost estimate included in the 2016 TM, refine the mitigation cost estimate if/where possible to (+/- \$50M) and take into consideration the Alternatives being considered in the Value Planning process. To accomplish this and provide the appropriate context this memo includes: 1) a broad-level review of the line items included in the 2016 mitigation cost estimate; 2) mitigation acreage requirements, unit costs, total costs, and assumptions in the 2016 mitigation cost estimate to identify

and assess their applicability to the project's present mitigation needs and; 3) current market costs that were provided by ICF (2019).

It's important to note that this review is focused on large changes in mitigation liability based off of information that had already been prepared for the project. This evaluation is intended to provide the Sites Project Authority context in mitigation costing and a summary of the issues and concerns that result in the current wide-ranging estimates of mitigation costs during the Value Planning process. It is a gross relative estimation and is for comparison/discussion purposes during the Value Planning process only.

3.0 Alternatives Resulting from the Value Planning

The initial Value Planning meeting on October 2, 2019 identified both modifications to previously evaluated facilities and alternative facilities to reduce cost. To speed the analysis, nine alternatives were developed. They are listed below and in Table 1.

- **Alternative 1** – This alternative reduces the size of the reservoir to 1.5 MAF and uses a multi-span bridge to reduce costs. The other features are generally consistent with Alternative D.
- **Alternative 2** – This alternative is very similar to Alternative 1, but uses the southern road with the more direct route to Lodoga in place of the bridge.
- **Alternative 3** – This alternative eliminates the Sites Pumping/Generating Plant and replaces it with the Tehama-Colusa Regulating Reservoir (TCRR) and Pumping Plant near Road 69 in combination with an upgraded Terminal Regulating Reservoir (TRR) to fill Sites Reservoir. Water would be released to the Sacramento River through a canal/pipeline to the Delevan release structure. The canal portion would begin at the TRR and continue east to the Colusa Basin Drain (CBD). It would be necessary to siphon under the CBD and pump the water to the river. The two-span bridge is used in this alternative.
- **Alternatives 4a and 4b** – These alternatives include the single Sites Pumping/Generating Plant (PGP) with releases through the Delevan Canal/Pipeline. Alternative 4a uses an earthfill dam and Alternative 4b uses a hardfill dam in place of the zoned rockfill dam.
- **Alternatives 5a and 5b** – These alternatives replace the Delevan Canal/Pipeline with a southern release near the southern terminus of the T-C Canal. Alternative 5a releases water to the CBD. Water released to the CBD would be conveyed through the lower portion of the CBD to the Sacramento River. Alternative 5b conveys water by canal to the CBD, then uses a siphon and pumping plant to convey water on to the Sacramento River.
- **Alternatives 6a and 6b** – These alternatives combine the TCRR and upgraded TRR with the southern release structure and an earthfill dam. These alternatives appear to have the lowest construction cost.

Table 1. Initial Value Planning Alternatives for Consideration.

Features	<i>Initial Alternatives</i>								
	1	2	3	4a	4b	5a	5b	6a	6b
1.5 MAF Reservoir	•	•	•	•	•	•	•	•	
1.3 MAF Reservoir									•
Funks/Sites PGP	•	•		•	•	•	•		
TCCR and Upgraded TRR PGP			•					•	•
Delevan Canal/Pipeline Release	•	•	•	•	•				
Dunnigan Canal to CBD Release						•		•	
Dunnigan to River Release							•		•
Multi-Span Bridge	•		•	•	•	•	•	•	•
South Road to Lodoga		•							
South Road to Residents	•		•	•	•	•	•	•	•
Rockfill Embankment Dam	•	•	•			•	•		
Earthfill Dam				•				•	•
Hardfill Dam					•				

4.0 Review and Applicability of 2016 Cost Estimate to Alternative D and Value Planning Alternatives

This section provides a discussion of the estimated mitigation costs by resource category that resulted from the 2016 TM as well as a comparison of that estimate, and its applicability to Alternative D. This then provides a basis for evaluating potential changes in mitigation costs of +/- \$50M resulting from the Value Planning alternatives. As previously discussed, review is a gross relative estimation and is for comparison/discussion purposes during the Value Planning process only.

A detailed comparison of the 2016 cost estimate to the present-day project mitigation requirements cannot be performed with precision as the project's impact assessment and associated mitigation ratios/acres have yet to be finalized and determined by the state and federal regulatory agencies¹. It is anticipated that this information will be obtained in 2020/21 during the permitting and agreement process. However, ICF (2019) did identify assumptions used for the 2016 AECOM TM and Cost Estimate (Table 2) that could result in changes in mitigation-related cost and should be re-evaluated as the project design and environmental documentation phases move forward. These changes are also applicable to any refinements resulting from the Value Planning process and could result in an increase or decrease to the overall \$350M² – \$500M³ mitigation-related cost estimate. However, as discussed in the bullets below, ICF (2019) determined there are too many unknown variables to accurately estimate a percent change in total cost at the time their review was undertaken. Similarly, the HDR's Permitting Integration Team's current review and mitigation cost analysis continues to find that the addition of new facilities and removal/refinement of proposed facilities resulting from the Value Planning provides the same challenges to providing an accurate estimate of mitigation requirements.

Table 2. Initial 2016 Cost Estimation for Alternative C Mitigation

Habitat Type	Estimated Mitigation Costs
Construction-Related Mitigation¹	
Vegetation Communities/Botanical Resources	\$91,800,000.00
Wetlands/Surface Waters	\$83,000,000.00
Aquatic Resources	\$56,000,000.00
Wildlife Habitat	\$53,000,000.00
Cultural/Historic/Paleontological Resources	\$35,000,000.00
Land and Agriculture	\$31,000,000.00
Air Quality	\$200,000.00
Total Construction Mitigation	\$350,000,000.00
Operational-Related Mitigation²	
Riverine-based species and habitats	\$150,000,000.00
Total Estimated Mitigation	\$500,000,000.00
Note: Total includes Mobilization and Contract Cost Allowances	
¹ Source: Sites Reservoir Feasibility Study Technical Memorandum Mitigation Measure Evaluation and Cost Estimate, October 2016, AECOM	
² Source: Estimate from WISP Application for Alternative D	

- **Project Alternative:** The 2016 TM was based on impacts for the Alternative C project features and presumed mitigation ratios required by the state and federal regulatory agencies in 2016. Alternative D is now the preferred project alternative. Although the two alternatives are similar, Alternative D includes components that were either not part of Alternative C or have been modified since the 2016 evaluation.

¹ California Endangered Species Act, federal Endangered Species Act and Clean Water Act

² \$350M taken from the AECOM 2016 TM

³ \$500M taken from the updated estimate provided during the September 2019 Joint Workshop.

The addition of new facilities and removal/refinement of proposed facilities resulting from the Value Planning provides the same challenges.

- **Impact Acreage:** The TM impact assessment for the proposed project, both Alternative D and any refinements resulting from the Value Planning continues to be under development and the total acreage of compensatory state and federal regulatory agency mitigation that will ultimately be required for the project is unknown. Therefore, a direct and accurate 1:1 comparison of mitigation measures related to impact/mitigation acreage to the current project alternative and Value Planning refinements cannot be developed at this time but a comparison that applies some general assumptions and analysis has been included below to provide the requested Value Planning update.
- **Mitigation Ratios:** Mitigation ratios for Alternative D and any Value Planning refinements have yet to be determined by the regulatory agencies. Although some of the presumed mitigation ratios presented in the 2016 TM may ultimately be applied, some of the mitigation ratios in the “Estimate Worksheet” tables in Attachment 2 of the 2016 evaluation appear to be low and could be subject to change. For example, the mitigation ratio used for permanent impacts to the Blue Oak Woodland vegetation community is 1:1, current mitigation ratios required for onsite/offsite Blue Oak Woodland creation are higher than 1:1. Additionally, it is unknown at this time how mitigation ratios may be applied, or overlap, in terms of permanent/temporary impacts for vegetation communities and for special-status species mitigation. This information will be developed during the mitigation planning phase once a preferred project has been identified.
- **Land Acquisition Costs:** Some of the mitigation measures assumed the purchase of land through fee-title or the establishment of conservation easement. The unit prices used in the 2016 evaluation for natural vegetation communities ranged from \$2,500/acre for annual grassland to \$3,000/acre for blue/valley oak woodland. The unit prices used in the 2016 evaluation for agricultural land cover types ranged from \$2,000/acre for dryland grain and seed crops to \$4,500/acre for deciduous orchards. It is likely that the land acquisition costs assumed in the 2016 evaluation have increased, or will have increased, by the time land is acquired for mitigation purposes. In some instances, higher-than-market prices may be realized because willing sellers could raise the asking prices based on the nature of the project and the conservation easement requirements that could be placed upon their lands.
- **Mitigation Bank Credit Availability:** Based on the anticipated mitigation acreage required it is unlikely that there will be sufficient mitigation bank credits available for purchase on the open market to meet the need of Alternative D and/or any Value Planning refinements that may occur. It may be beneficial to develop a project specific bank(s) to address some of the mitigation requirements. Bank development costs were not assumed in the 2016 TM, although the mitigation bank unit prices per acre that were assumed may adequately cover bank development costs. Further investigation of mitigation banking feasibility and costs will occur during the mitigation planning phase once a preferred project has been identified.
- **Vegetation Community Unit Costs:** The accuracy of the estimated costs based on present-day rates vary based on the type of habitat.
 - The unit cost for wetland habitats was based on mitigation bank credit prices and are comparable to present-day unit costs.
 - The unit cost for riparian restoration (\$65,000) may be low because there are numerous variables that could factor in to restoring riparian habitat (e.g., grading costs, water costs).
 - Oak woodland mitigation is assumed to be covered by conservation easements of existing habitat. The current cost estimate does not include oak woodland creation which could be considerably higher than \$3,000/acre.
- **Onsite Mitigation and Associated Costs:** Costs assumptions for onsite mitigation were not included in the “Estimate Worksheet” tables in the 2016 evaluation and could not be reviewed. Onsite mitigation was assumed for impacts to streams and aquatic habitat and some terrestrial communities. Stream impacts are presented on an acreage basis as determined by stream length and width categories (e.g., streams 5-10 feet wide). Based on an assumed 2:1 mitigation ratio, a total of 455 acres of onsite stream restoration would be required. It is unknown if this mitigation could be restored/created onsite

and what level of planning and construction would be required to implement onsite restoration for streams, aquatic habitat and terrestrial communities.

- **O&M Phase Mitigation Costs:** Table 3 in the 2016 TM summarizes the O&M mitigation phase costs. The total estimated annual cost was approximately \$5.5 million. The estimate annual cost for some mitigation categories appears to be low and should be re-evaluated in more detail as project mitigation measures are developed and finalized (e.g., vegetation communities/botanical resources [\$85,000]; wildlife habitat [\$12,400]).
- **Onsite Land Management:** Annual mitigation land management and monitoring costs for on-site restoration were assumed to be \$400/acre. Onsite restoration monitoring was assumed to be required for 31 acres (\$12,400/year). This cost appears to be low and should be re-evaluated in more detail as project mitigation measures are developed and finalized.
- **Design Contingency:** Table 1 in the 2016 TM summarizes the cost estimate allowances and contingencies for mitigation costs and recommended that the design contingency be increased to 12% of project costs to account for design and scope changes and cost estimate refinements. This increase could cover costs of future opportunities and constraints analysis, mitigation site suitability assessments, and studies required to develop mitigation site plans (e.g., hydraulic studies, soil and rare plant surveys).
- **Cultural Resources Costs:** The potential mitigation costs for each individual measure are estimates based on finding from surveys that still need to be conducted, conditions found during construction, and mitigation that will be developed during consultation so conducting a cost estimate at an individual measure level was not performed. However, the overall estimated cost of \$27M should be sufficient for these variables.
- **Air Quality Costs:** ICF (2019) confirmed that neither Colusa nor Glenn County currently have a voluntary offset program that will require annual mitigation fees to offset construction NOx emissions. The overall cost of \$200,000 appears to be reasonable.

4.1 Potential Mitigation Cost Refinements for Value Planning

Construction-based Mitigation Costs

After assessing estimated relative changes in construction-based mitigation types and volumes among the Value Planning Alternatives no substantial changes (>\$50M) in the costs of mitigation from those identified in the 2016 TM are readily apparent. The reason for this is twofold. First there is a general lack of readily available data on impacts by habitat/resource type for the Value Planning Alternatives which makes direct computational comparisons not possible. Second, when looked at as a package by each Alternative, construction-based impacts tend to have counterbalancing effects that nullify the overall increase/decrease of any specific effect.

An example of this is that Alternatives 1, 2, and 3 all have a change from a Delevan pipeline to a Delevan canal. While this may have substantial construction cost savings, the footprint of the two variations are approximately the same and although there would undoubtedly be a change in mitigation costs, that difference would be muted by the overall magnitude of the residual mitigation requirement. Table 3 provides an example of this for the changes estimated mitigation costs associated with impacts to vegetation communities. In this case, the largest difference between the all Alternatives is the size of the reservoir and the resulting effects to vegetation communities/botanical resources, which is the largest overall construction-related mitigation cost Table 3. The Alternative C and D reservoirs are 1.8 MAF and would impact 14,200 acres of annual grassland where Alternative 6b is 1.3 MAF impacting 12,500 acres of annual grassland. When those values are used in the calculation of potential annual grassland mitigation costs, it results in an approximate 9 percent reduction of annual grassland mitigation costs (\$8.26M), which equates to an approximately 2.3 percent reduction in overall construction mitigation costs. Consequently, although a 1,700 acre reduction in grassland impacts is substantial, when working at such large scales it is a relatively small change in the overall project's estimated construction-related mitigation costs and the \$350M estimate in Table 3 should be retained until additional analysis can be performed on a better-defined project description.

Operational-based Mitigation Costs

The removal of the Delevan diversion results in the elimination of a major operational component that would reduce the overall operational effects of the Value Planning Alternatives. It would eliminate the need for approximately \$7.5M in aquatic studies (15 @\$500k) as well as the cost of mitigating for the entrainment/impingement of fish at the diversion and mitigation costs associated with the diversion of up to 2,000 cfs from the River. Although the Alternatives would be taking less water overall, the place of diversion would be shifted upstream from a priority at Delevan, to Red Bluff and Hamilton City. As the River reach from below Keswick Dam to Hamilton City has a higher biological value to spawning and rearing salmonids, the reduction in overall pumping from three diversions to two does not directly relate to a net reduction in riverine effects and resulting mitigation costs due to the change in pumping locations and resulting effects on riverine resources. Review of existing modeling and analysis performed for the Joint draft EIR/EIS, Biological Assessment and CDFW 60-day negotiations, as well as discussions with the Jacobs modeling team has not resulted in the identification of any currently-available analysis that is reliable enough to identify and quantify the net change in potential operational-mitigation costs. Consequently, the \$150M estimate in Table 3 should be retained until additional modeling can be performed.

Table 3. Mitigation Cost Comparison Example

Habitat Type	Estimated Mitigation Costs Alt C	Estimated Potential Change	Estimated Change in Costs
Construction-Related Mitigation¹			
Vegetation Communities/Botanical Resources	\$91,800,000.00	-9%	-\$8,262,000.00
Wetlands/Surface Waters	\$83,000,000.00		
Aquatic Resources	\$56,000,000.00		
Wildlife Habitat	\$53,000,000.00		
Cultural/Historic/Paleontological Resources	\$35,000,000.00		
Land and Agriculture	\$31,000,000.00		
Air Quality	\$200,000.00		
Total Construction Mitigation	\$350,000,000.00		
Operational-Related Mitigation²			
Riverine-based species and habitats	\$150,000,000.00	unknown	unknown
Total Estimated Mitigation	\$500,000,000.00	-2.3%	-\$8,262,000.00
Note: Total includes Mobilization and Contract Cost Allowances ¹ Source: Sites Reservoir Feasibility Study Technical Memorandum Mitigation Measure Evaluation and Cost Estimate, October 2016, AECOM ² Source: Estimate from WISP Application for Alternative D			

5.0 Findings

Review of existing analyses and mitigation cost estimates currently being used did not result in any significant changes in estimated mitigation costs (>\$50M) when applied to the Value Planning Alternatives. While there will certainly be changes in cost among and between mitigation categories in Table 3 when a final project description is selected, until additional analysis can be performed on a specific project description the \$500M estimate in Tables 2 and Table 3 should be retained.

6.0 Sources

AECOM. 2016. Sites Reservoir Feasibility Study Technical Memorandum Mitigation Measure Evaluation and Cost Estimate, October.

DWR and Reclamation 2013. Mitigation Monitoring Plan Costs for North-of-the-Delta Off stream Storage. Prepared for the California Department of Water Resource and United States Department of Interior, Bureau of Reclamation. Sacramento, CA. November.

Appendix D – Repayment

Appendix D Financial Analysis in Support of March 2020 Value Planning



To: Value Planning Work Group
CC: JP Robinette
Date: April 10, 2020
From: Brian Grubbs
Quality Review by: Doug Montague
Authority Agent Review by: Lee Frederiksen
Subject: Financial Analysis in Support of March 2020 Value Planning

1.0 Purpose and Background

This memorandum documents the financial evaluation of the delivered cost of water given variations in project facility configuration and operational flows in support of the Value Planning Analysis. Montague DeRose and Associates (MDA) provided the following analysis in support of the overall project affordability analysis for the Sites Project Authority (SPA).

- Review of public agencies similar to SPA to determine the potential credit rating for revenue bonds
- Review of historical tax-exempt revenue bond interest rates to determine a projected cost of borrowing for SPA
- Review of Bureau of Labor Statistics indices to determine appropriate escalation factors for construction and labor costs
- Development of an enterprise financial model (FM) to support projected revenues, expenses and appropriate cash balances during the design and construction and through project operations.

2.0 Analysis

2.1 Description of Scenarios

Scenarios analyzed consisted of various combinations of construction costs, hydrological conditions and financing options. AECOM and Jacobs coordinated to provide costs for 13 different facility cost scenarios based on reservoir size and amount of water available for release at FOB Holthouse. The financial model did not add additional costs for transportation of water past that point. These scenarios were entered in the financial model and run through potential financing options including with and without a Water Infrastructure Finance and Innovation Act (WIFIA) Loan of \$1.1 billion. There was no funding from the US Bureau of Reclamation (USBR) assumed in these scenarios. The below table provides a summary of these scenarios with relevant details for financial modeling. Additional details of specific items to be constructed are provided in the engineering technical memorandum.

Scenario Name	Reservoir Size	Water Release at Holt House	Average Cost from AECOM Range
	(MAF)	(TAF)	(2019\$ billion)

VP1	1.0	191	3.160
	1.3	230	3.386
	1.5	236	3.600
VP2	1.0	191	2.684
	1.3	230	2.910
	1.5	236	3.098
VP3	1.0	not analyzed	
	1.3	243	3.388
	1.5	253	3.602
VP4	1.0	not analyzed	
	1.3	234	2.927
	1.5	243	3.115
VP5	1.3	234	2.855
VP6	1.3	234	2.988
VP7	1.5	243	3.037

2.2 Methodology

MDA developed an enterprise financial model (FM) based on monthly cash flows of the expected revenue and expense streams. The difference between revenue and expense streams determines that amount of funding needed from external borrowing (revenue bonds) and the monthly cash flow modeling provides the timing of when those funds are needed. While many of the revenues are technically grants or loans, this document will refer to all sources of funds as revenues.

Funding Priority: The FM sets up two primary funds to transfer money for construction. The first is the Construction Fund. Inflows are (in order of priority based on lowest cost): WSIP funds, WIIN Act Funds (if available), Cash from Participants, Interim Loan Draws, WIFIA Loan Draws and finally revenue bond draws. Transfers from the Construction Fund will fund the Interim Loan Payoff at the end of Phase 2 and Construction Expenses. The model is programmed to maintain a minimum Construction Fund balance each month to reflect prudent cash flow management practices. When expenses would result in the monthly ending balance dropping below the minimum balance, draws are initiated from the available sources in priority order. Each year in June from 2023 to 2029, revenue bonds are issued to provide enough funds to cover expenses and not allow the Construction fund to fall below the minimum balance before the next revenue bond issue is sold.

The other fund utilized during project construction is the Revenue Bond Fund. Starting in June 2023, a revenue bond is issued to refinance the Phase 2 interim loan balance and provide funds (along with the other sources of revenue) to pay for construction expenses until the next revenue bonds are issued. The initial revenue bond sale in 2023 provides the initial deposit to the Revenue Bond Fund and each month a draw is made to transfer funds from the Revenue Bond Fund to the Construction Fund. Funds remaining in the Revenue Bond Fund earn interest at a short-term rate. Additionally, with each revenue bond offering, a portion of the proceeds will be deposited in a Revenue Bond Fund subaccount called the Debt Service Reserve Fund (DSRF) where it will be held for the benefit of revenue bondholders if there is ever a shortfall in debt service payments on revenue bonds. The DSRF balance earns interest at a long-term rate. These interest earnings add to the Revenue Bond Fund balance and are used pay construction costs. For the VP7 scenario (with WIFIA loan), the interest earned from 2023-2030 on the Revenue Bond Fund balance is projected to be \$31 million. The interest earned on the DSRF from 2023-2030 is \$5 million. Following the end of construction, interest earned in the DSRF is used to reduce the annual revenue bond debt service cost.

Construction Cost Expense: AECOM provided monthly pre-construction and quarterly construction cash flows for a 1.8 MAF reservoir in June 2018 in 2015\$. These estimated cash flows were for January 2019 through June 2030. With guidance from AECOM, the Value Planning scenarios have a reduced construction schedule due to no longer constructing the Delevan Pipeline. Instead of starting construction in July 2022, it now begins

in July 2023. Construction is still completed in June 2030. This is seven years of construction as compared to the prior analysis having eight years of construction. AECOM provided scenarios of construction costs in 2019\$, however these were not provided as monthly or quarterly cash flow, but instead for total costs for construction. As the total construction costs varied by scenario, the prior AECOM 2015\$ monthly and quarterly cash flows were scaled with the Excel Goal Seek function to output the desired total cost in 2019\$. Once 2019\$ construction costs had been calculated, escalation factors were applied for inflation to determine total pre-construction and construction costs in nominal\$. Pre-construction and construction nominal costs were further escalated by a 4.2% risk mitigation factor provided by AECOM to account for project delays or cost overruns. A sub-category in the construction costs of environmental mitigation costs was escalated for inflation, however it was not escalated by the risk mitigation factor, under guidance from AECOM.

The table below shows the cost schedule for the VP7 scenario (with WIFIA) in 2019\$, the cost escalation factor used for escalating construction costs (pre-construction costs are escalated by a different percentage), and the total costs for the reservoir in nominal\$. Additional detail on cost escalation is provided in the Assumptions section.

	Costs Schedule (\$millions, 2019\$)					Percent Cost Escalation for Construction	Costs Schedule (\$millions, nominal\$)				
	Pre Const	Cons	Enviro	Risk Adder	Total		Pre Const	Cons	Enviro	Risk Adder	Total
2021	75	-	-	3	78	4.1%	77	-	-	3	80
2022	84	-	-	4	88	6.2%	88	-	-	4	92
2023	64	182	13	10	270	8.3%	68	198	14	11	291
2024	-	431	22	18	471	10.5%	-	476	24	20	520
2025	-	439	10	18	467	12.7%	-	494	11	21	526
2026	-	367	10	15	393	15.0%	-	423	11	18	452
2027	-	367	10	15	393	17.3%	-	431	12	18	461
2028	-	367	10	15	393	19.7%	-	440	12	18	470
2029	-	367	10	15	393	22.1%	-	449	12	19	480
2030	-	184	5	8	196	24.6%	-	229	6	10	245
Total	223	2,705	89	123	3,140		233	3,139	102	142	3,616

Water Storage Investment Program (WSIP) Revenues: WSIP revenues are projected to total \$816 million. WSIP revenues do not escalate for inflation or vary based on the size of the reservoir. The FM draws WSIP revenues to cover the construction expenses allocated to the State. Based on input provided by Larsen Wurzel & Associates, Inc., each March, 75% of the current year's costs allocated to the State are drawn and transferred to the Construction Fund. Also in March, an additional 20% of the prior year's costs are drawn and transferred to the Construction Fund. The final 5% of State allocated costs are drawn upon when significant construction points are completed which was estimated to occur every three years during construction. This formulation results in WSIP revenues being provided each year through 2030. The highest WSIP revenue year is 2026 when \$139 million is provided.

Water Infrastructure Improvements for the Nation (WIIN Act) Revenues: In the Value Planning analysis no WIIN Act revenues are assumed.

US Department of Agriculture (USDA) Loan: In November 2018, the U.S. Department of Agriculture approved a \$439 million USDA Community Facilities Direct Loan for the permanent financing of the Maxwell Intertie. The FM transfers the full USDA loan proceeds to the Revenue Bond Fund in December 2024 and treats the transfer as it would a transfer of the proceeds of a revenue bond sale. The USDA loan debt service is based on 40-year principal amortization starting in December 2025 and with last payment in December 2064. Per the USDA Letter of Conditions, a \$10 million Depreciation Fund will be funded that "may be used only for emergency maintenance and for replacement of short-lived assets which have a useful life significantly

less than the repayment period of the loan.” Additionally, a debt service reserve fund will also be funded to equal 10% of the annual loan debt service.

Interim Loan: To provide funds during the balance of Phase 2 an interim loan is modeled as a bank line of credit. Interest is due each month based on the outstanding balance of the bank line. Any un-utilized amount of the bank line is also charged a lower un-utilized bank fee. The first revenue bonds issued will refinance the principal balance of the interim loan.

Water Infrastructure Finance and Innovation Act (WIFIA) Loan: While the SPA has not yet applied for a WIFIA loan, a scenario run using the FM was the inclusion of a \$1.1 billion loan. The main benefit of a WIFIA loan is the potential for a lower interest rate than revenue bond financing. Upon loan closing, the WIFIA loan rate will be set based on the yield of the US Treasury Bond that most closely matches the projected average life of the WIFIA loan plus 1 basis point (.01%). Once the loan is approved, the WIFIA loan performs like a line-of-credit that can be drawn upon over time. The FM assumes the first draw from the WIFIA line of credit occurs in June 2023 and because it is expected to have a lower borrowing cost than revenue bonds, it eliminates the need for any revenue bond financing for the next several years. Interest is due each month on the total amount drawn to date, with the amortization of the full amount beginning within five years of substantial project completion. The WIFIA loan must be fully repaid within 35 years of substantial project completion. The FM assumes the amortization will begin in 2030 with final payments made in 2064.

Revenue Bonds: To meet the construction draw schedule, revenue bonds are generally assumed to be issued each year in June from 2023 through 2029. The first issue in June 2023 is the largest as it must refinance the interim loan that paid for pre-construction costs as well as fund construction costs for the next year. For the VP7 scenario without a WIFIA loan this first revenue bond issue is \$401 million. Follow-on issuances are less than \$400 million each. The bonds are issued as 40-year bonds with interest-only payments until the project is complete. The first bonds issued in June 2023 have eight years of interest-only payments and 32 years of principal and interest payments. The last bond issuance in June 2029 has two years of interest-only payments and 38 years of principal and interest payments. All revenue bond principal payments begin in 2032 which is the “worst-case” year to begin water deliveries, assuming the reservoir takes two years to fill.

The funding schedule for VP7 scenario with and without a WIFIA loan is:

Funding Schedule (\$millions, nominal\$)						WIFIA - Funding Schedule (\$millions, nominal\$)					
	WSIP	WIINACT	Revenue Bonds	USDA	WIFIA		WSIP	WIINACT	Revenue Bonds	USDA	WIFIA
2020	8	-	-	-	-	2020	8	-	-	-	-
2021	18	-	-	-	-	2021	18	-	-	-	-
2022	10	-	-	-	-	2022	10	-	-	-	-
2023	37	-	561	-	-	2023	37	-	-	-	382
2024	97	-	-	439	-	2024	97	-	-	439	423
2025	112	-	331	-	-	2025	112	-	-	-	295
2026	139	-	327	-	-	2026	139	-	118	-	-
2027	98	-	361	-	-	2027	98	-	362	-	-
2028	100	-	350	-	-	2028	100	-	352	-	-
2029	119	-	379	-	-	2029	119	-	381	-	-
2030	79	-	-	-	-	2030	79	-	-	-	-
Total	816	-	2,309	439	-	Total	816	-	1,213	439	1,100

Following the construction of the project there will be ongoing operational revenues and expenses.

Operation, Maintenance and Repair Expenses: AECOM provided annual estimates of expenses for various categories of OM&R.

Fixed Expenses: These costs were split into Operation and Maintenance, and Administrative and General categories based on files from AECOM provided in June 2018. Updated expenses were provided for the

Value Planning in 2016\$. These expenses were fixed and did not vary by the size of the reservoir. These costs, on a per AF basis, are higher for the smaller sized reservoirs. This is due to the fact that there is less water being released across which to spread the costs. The costs in 2016\$ are escalated each year by the inflation rate as found in the assumptions section.

Variable Expense: These costs were split into sub-categories of Fill Wheeling Cost and Pumping Costs based on files provided by AECOM in June 2018. Updated expenses were provided in 2016\$. These costs are impacted by the reservoir size as they are dependent on the amount of water passing through the reservoir. These costs were annualized and tied to the amount of water being filled for each reservoir size. The 2016\$ costs were escalated each year by the inflation rate found in the assumptions section. Since each annualized cost is based on a projected level of water flows, when the water flows are adjusted by various operational scenarios the expense is scaled proportionally.

Electrical Generation Revenue: AECOM provided electrical generation revenue estimates in June 2018 and updated them in 2016\$. These revenues are impacted by the reservoir size as they are a function of the amount of water being released. These revenues were annualized and tied to the amount of water being released for each reservoir size. The 2016\$ revenues were escalated each year by the inflation rate found in the assumptions section. Since each annualized revenue is based on the projected level of water releases when the water releases are adjusted by various operational scenarios the revenue is scaled proportionally. Following AECOM scenarios, there are no pump-back operations in the Value Planning scenarios.

2.3 Assumptions

Item	Value	Notes
Interim Loan		
Interest Rate	3.00%	
Unutilized Rate	0.75%	
Revenue Bonds		
Interest Rate	5.00%	1
DSRF% of Maximum Annual Debt Service	50%	
DSRF Earnings Rate	4.00%	
Bond Fund Interest Earnings Rate	2.00%	
First Maturity	12/1/2032	
Final Maturity	6/1/2066	
USDA Loan		
Interest Rate	3.875%	
WIFIA Loan		
Interest Rate	3.500%	2
Construction Risk Mitigation Percentage	4.20%	3
Inflation Escalators		
Pre-Construction Escalation/year	1.50%	4
Construction Escalation/year	2.02%	5
Labor Inflation Rate/year	2.00%	6
Non-Labor inflation rate/year	2.00%	7
Electrical Generation Price Escalation/year	2.00%	8
Months for Generation post COD	24	

Note 1: Based on the 20-year average (Jul 1999-Jun 2019) of the Municipal Market Data Index of 30-year "AAA" rated municipal revenue bond issues. 40 basis points has been added to the interest rate to reflect the higher borrowing cost for an "A" rated water utility. The resultant average interest rate was 4.87%. The FM uses 5%.

Note 2: Based on the 10-year average of the 30-year Treasury Bond (Aug 2009-Jul 2019) and adding one basis point. This equaled 3.27%. The FM uses 3.50%.

Note 3: As provided by AECOM.

Note 4: Based on average of BLS Series PCU5416-5416, the PPI for management and technical consulting = 0.98% over last 10 years and BLS Series PCU5413-5413, the PPI for architectural and engineering services = 1.32% over last 10 years.

Note 5: Based on discussions with AECOM, based on the type of construction involved which is mainly the movement of dirt as opposed to construction of office buildings or hotels which would be a much higher rate. This amount is equal to 15% over seven years and is supported by the Army Corps of Engineers and the Bureau of Reclamation.

Note 6: Based on BLS Series CWUR0400SA0, the CPI for all West urban wage earners = 1.45 over last 10 years.

Note 7: Based on BLS Series CUUR0400SA0, the CPI for all West urban consumers = 1.53 over last 10 years.

Note 8: June-2018 NYMEX ticker for California ISO NP 15 peak and off-peak power was 3.6% per year over the next 54 months. MDA believes this is too high for conservative estimation of future revenues. MDA believes 2% per year escalation is more prudent.

2.4 Results

Additional details for these scenarios are provided in the attached file: "Sites Value Planning-FM-VP Alternatives - 04-10-2020.xlsx"

Scenario			VP1			VP2			VP3			VP4			VP5	VP6	VP7
Reservoir Size		(MAF)	1.0	1.3	1.5	1.0	1.3	1.5	1.0	1.3	1.5	1.0	1.3	1.5	1.3	1.3	1.5
Project Cost	(2019\$)	(\$millions)	3,160	3,386	3,600	2,684	2,910	3,098		3,388	3,602		2,927	3,115	2,855	2,988	3,037
Project Cost	(\$nominal)	(\$millions)	3,784	4,055	4,311	3,214	3,485	3,710		4,057	4,313		3,505	3,730	3,419	3,578	3,637
Capital Funds																	
PWA (revenue bonds)	(\$nominal)	(\$millions)	2,529	2,800	3,056	1,959	2,230	2,455		2,802	3,058		2,250	2,475	2,164	2,323	2,382
PWA (USDA loan)	(\$nominal)	(\$millions)	439	439	439	439	439	439		439	439		439	439	439	439	439
Total PWA	(\$nominal)	(\$millions)	2,968	3,239	3,495	2,398	2,669	2,894		3,241	3,497		2,689	2,914	2,603	2,762	2,821
State (WSIP)	(\$nominal)	(\$millions)	816	816	816	816	816	816		816	816		816	816	816	816	816
Federal (WIIN Act)	(\$nominal)	(\$millions)	-	-	-	-	-	-		-	-		-	-	-	-	-
Capital Funds Percentage																	
PWA		(%)	78%	80%	81%	75%	77%	78%		80%	81%		77%	78%	76%	77%	78%
State		(%)	22%	20%	19%	25%	23%	22%		20%	19%		23%	22%	24%	23%	22%
Federal		(%)	0%	0%	0%	0%	0%	0%		0%	0%		0%	0%	0%	0%	0%
Annualized AF/year Releases																	
PWA NOD		(TAF)	44	53	55	42	52	54		56	59		53	55	52	53	55
PWA SOD		(TAF)	117	143	148	113	139	144		151	159		141	149	141	142	148
PWA		(TAF)	161	196	203	155	191	198		207	218		194	204	193	195	203
State		(TAF)	30	34	33	36	39	38		36	35		40	39	41	39	40
Federal		(TAF)	-	-	-	-	-	-		-	-		-	-	-	-	-
Total		(TAF)	191	230	236	191	230	236		243	253		234	243	234	234	243
PWA Annual Costs During Repayment																	
Debt Service (w/o WIFIA)	(2020\$)	(\$millions)	124	135	146	99	111	121		136	147		112	121	108	115	117
Operating Costs	(2020\$)	(\$millions)	16	19	19	16	18	19		19	20		18	19	18	19	19
Operating Revenue	(2020\$)	(\$millions)	(1)	(2)	(2)	(1)	(2)	(2)		(2)	(2)		(2)	(2)	(2)	(2)	(2)
Total	(2020\$)	(\$millions)	139	152	164	114	127	137		153	164		128	138	124	131	134
(2020\$) (\$/AF)			862	776	805	730	667	693		738	754		660	678	644	674	661
With WIFIA Loan of \$1.1 Billion (Operating Cost and Operating Revenue do not change)																	
Debt Service (w/WIFIA)	(2020\$)	(\$millions)	114	125	136	89	101	110		125	136		102	111	98	105	107
Total	(2020\$)	(\$millions)	129	142	153	103	117	127		143	154		118	128	114	121	124
(2020\$) (\$/AF)			799	724	755	665	614	642		689	708		608	628	592	622	611
Cost Difference Due to WIFIA loan			(63)	(52)	(50)	(65)	(53)	(51)		(49)	(46)		(52)	(50)	(52)	(52)	(50)

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3.0 Limitations and Risks

All scenarios were prepared using a projected revenue bond interest rate of 5.00% and scenarios with WIFIA loans were based on a 3.50% loan rate. These interest rates are dependent on interest rate levels at the time of the initiation of each revenue bond series and the closing of the WIFIA loan, respectively. While current interest rates are lower than these projected rates, MDA used long-term historical averages to determine the most prudent interest rate for this analysis and then used a discount rate when necessary to provide costs in current dollars as desired by SPA.

The value of the results from this modeling is dependent on the quality and reasonableness of the inputs provided by the other members of the Sites project team. The FM is built as a cash flow model that incorporates the time value of money through interest rates and inflation escalators. If construction is delayed, pushing costs farther into the future, this will escalate those costs. Additionally, if State and Federal funds are not made available at the times and in the amounts projected in our modeling, the costs the Federal and/or State monies would have funded will need to be funded with additional revenue bonds or interim loans. This will increase costs. Likewise, if the construction schedule proves to be conservative and actual construction occurs ahead of schedule, this would have the potential to lower both construction costs and debt costs.

4.0 Conclusions and Recommendations

As with any long-term construction project steps can be taken to lower the final construction and borrowing cost. These include:

1. Reduction in the cost of construction.
2. Pursuit of the additional funding grants from State and Federal programs.
3. Pursuit of low interest loans such as WIFIA and similar programs such as the Reclamation Infrastructure Finance and Innovation Act (RIFIA). The analysis used a \$1.1 billion WIFIA loan, however the WIFIA program may be able to provide more funds, if pursued.
4. Working to have grants and lower cost financing made available earlier in the construction period to reduce interim financing costs before permanent financing begins.
5. Increasing the strength of the Participant credit pool by either adding new rated participants to the project or increasing the percentage participation of existing rated Participants, allowing lower cost financing to be obtained in the credit markets.

Additionally, MDA recommends a review of the value of the future water Sites Reservoir will make available. Any financial decision is most easily understood when it can be brought down to the basics of revenue and expenses over time. The certainty of 30 years of un-escalating level debt service payments provides an opportunity for substantial value if the potential revenue stream is not level but increases each year with inflation. The analysis provided here has focused solely on the expenses in building the Sites Reservoir. If clarity can be obtained on the potential revenue stream (or avoided expenses) that the AF of released water represents then clarity can be obtained on the best financial course for participants to take.



Topic: **Authority Board Agenda Item 2-1.b**

2020 April 22

Subject: **September 1, 2020 through December 2021 Updated Work Plan (Amendment 2)**

Requested Action:

Consider approval of the work plan with a period of performance of September 1, 2020 to December 31, 2021 for the following uses:

1. Planning cash call timing for participating agencies.
2. Producing a draft Exhibit A, "Amendment 2 Work Plan", to the Second Amendment to 2019 Reservoir Project Agreement.
3. Developing consultant task orders for the next stage of project development.

Detailed Description/Background:

The Sites Project currently follows a work plan (Amendment 1B) that identifies project activities and funding sources through August 31, 2020. It is anticipated that the Reservoir Committee's current participation agreement will be amended to extend the period of performance to December 31, 2021 (Amendment 2); therefore, a new work plan has been developed to continue advancing the project. Input from the Reservoir Committee and Authority Board in February and March has been incorporated into this work plan.

The work plan in Attachment A has been reviewed by the Ad-Hoc Budget and Finance Committee and no changes were requested. The work plan:

- Includes funding from the Reservoir Committee totaling \$100 per acre foot (AF) and leverages state and federal funds for a total revenue of \$31.75M.
- Advances the value planning preferred project through feasibility and remains eligible for \$775M in Prop 1 construction funding.
- Improves operational and permitting certainty by advancing key agreements and permits to inform funding decisions for the next phase of work.

Prior Action:

March 30, 2020: At a joint workshop, staff provided information that included a process overview of task order development; an updated project schedule; cash flows for Reservoir Committee and Authority Board; and preliminary task budgets including assigned resources.

Status:	Draft	Preparer:	Watson	Phase:	2	Version:	B
Purpose:	Staff Report	QA/QC:	AEF/JAT	Date:	2020 April 22		
Caveat:	Informational	Authority Agent:	Trapasso	Ref/File #:	12.221		
Notes:				Page:	1	of	2

March 19, 2020: Staff provided information on the goals, schedule, cash flow, and preliminary budget allocation by subject assuming a cash call of \$100/AF. Staff provided a preliminary cash call schedule of \$60/AF due September 1, 2020 and \$40 due February 1, 2021.

February 21, 2020: Staff provided information on three possible revenue scenarios and a task list for Amendment 2 (September 1, 2020 and ending December 31, 2021). Staff received direction to continue to develop the \$100/AF revenue scenario.

January 17, 2020: Staff provided information regarding the proposed process for developing a work plan. This work plan proposes to focus on improving certainty related to project operations, permitting, and affordability, and to meeting the January 1, 2022 Prop 1 (WSIP) milestone to remain eligible to receive funding.

Fiscal Impact/Funding Source:

To extend the period of performance to December 31, 2021 and meet the work plan goals, the Reservoir Committee cash call for Phase 2 will increase from \$60/AF (received in 2019) to \$160/AF total. The additional \$100/AF cash call will be invoiced on the following schedule:

- \$60/AF, due September 1, 2020.
- \$40/AF, due February 1, 2021.

Staff Contact:

Joe Trapasso

Attachments:

Attachment A: Amendment 2 Work Plan

DRAFT: Sites Project Authority Work Plan from September 2020 through December 2021



To: Jerry Brown
CC: Joe Trapasso
From: JP Robinette
Quality Review by: Christina Romano
Authority Agent Review by: Jim Watson
Subject: Work Plan from September 1, 2020, to December 31, 2021

Attachments

Attachment A – Amendment 2 Budget by Deliverable

Attachment B – Amendment 2 Preliminary Budget by Firm (Resource)

Attachment C – Critical Path Schedule Report

1.0 Introduction

The Sites Project currently follows a work plan (Amendment 1B) that identifies project activities and funding sources through August 31, 2020. It is anticipated that the Reservoir Committee's current participation agreement will be amended to extend the period of performance to December 31, 2021; therefore, a new work plan will be needed to continue advancing the project as a part of phase 2, planning.

This document outlines the work to be performed between September 1, 2020, and December 31, 2021, to meet project goals that were developed with input from the Authority Board and Reservoir Committee in early 2020. The plan provides the deliverables, schedule, and operational budget needed to help the Sites team improve operational and permit certainty while advancing the preferred project identified in a value planning study through the Authority's project feasibility process. It also includes Authority Board and Reservoir Committee revenues and expenses. While this work plan does complete the majority of phase 2 activities, there are activities needed beyond this work plan to fully complete the planning phase of the Sites Project. This work plan will be superseded by a new participation agreement and work plan, including a project plan of finance, in January of 2022.

After the Authority Board and Reservoir Committee approve this plan, a summary will be included as an exhibit to the amended participation agreement (Amendment 2). The work plan will then be used as a basis for developing consultant task order scopes, schedules, and commitments. The development and negotiation of task orders is beyond the scope of this work plan document.

2.0 Work Plan Goals and Schedule Targets

Project goals and a project schedule, based on targets determined by the Reservoir Committee and Authority Board, have been established to form the basis of the work plan by providing high level outcomes and required

Status: Draft
Filename: Work Plan September 1, 2020 through December 31, 2021
Notes:

Phase: 2 Revision: B
Date: April 13, 2020
Page: 1 of 11

timing. The goals and schedule are used to determine deliverables, required revenue and expenses, and a cash flow for the duration of the work plan.

2.1 Work Plan Goals

The project goals are based on near-term priorities as directed by the Reservoir Committee and the Authority Board and form the basis of the work plan. The project goals of this work plan are to:

1. Improve certainty related to the reservoir's operations (fills; releases; levels of local, state, and federal investment; etc.) and degree of operational integration with the State Water Project and Central Valley Project (cooperative operations agreement) to produce benefits for both water supply and reliability purposes and water dedicated to environmental purposes.
2. Improve certainty related to the project's permitability through earlier and more focused consultations with permitting agencies that will allow the team to efficiently and effectively prepare applications for key federal and state permits and the state's water rights.
3. Largely complete the environmental analysis and documentation as required under CEQA and NEPA.
4. Improve certainty surrounding the project's affordability by advancing engineering and implementing risk management to improve the accuracy of the cost estimates, and by pursuing low-interest financing and potential grants.
5. Continue to cultivate and strengthen partnerships with local landowners, communities, and key stakeholders that represent environmental, business, labor, and other interests.
6. Meet the January 1, 2022, Prop 1 (WSIP) milestone to remain eligible to receive the \$775M in construction funding.
7. Identify continued participation Go/No-Go decision points with staggered cash calls.
8. Develop a plan of finance and a successor participation agreement, including a work plan, to advance the Sites Project beyond December 31, 2021.

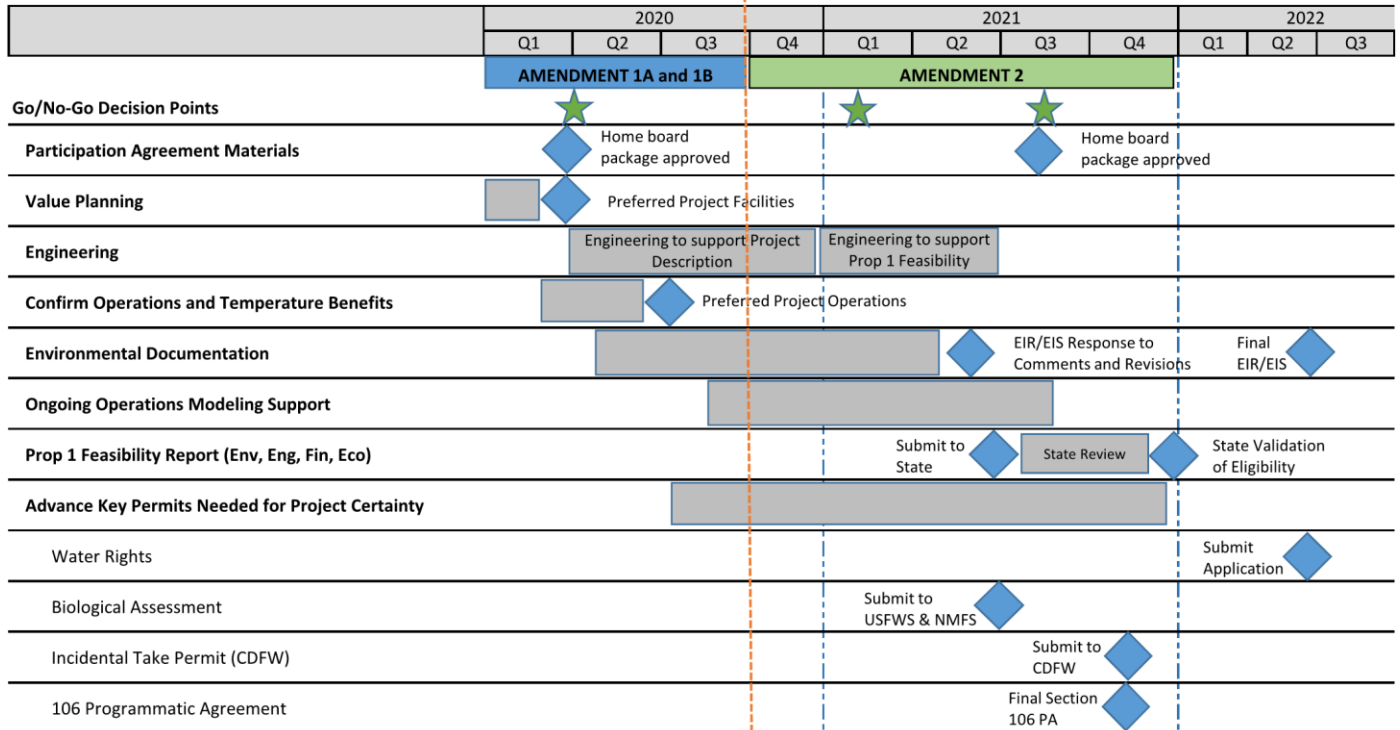
2.2 Project Schedule Targets

Schedule targets were developed by Authority staff and reviewed with the Reservoir Committee and Authority Board. The project master schedule through December 31, 2021, is based on the work plan goals and the necessary steps to achieve them. Attachment C shows a critical path view of the master schedule based on the targets identified on Figure 1. The schedule is cost-loaded and provides the basis for revenue and expense budgets discussed in later sections.

Sites Reservoir Program
Updated 2020-2021 Schedule Drivers



September 1, 2020



NOTE: This graphic includes schedule drivers only and does not include all activities/deliverables. This work plan is based on current participation commitments.

Figure 1. Work Plan schedule targets

Participant funding Go / No Go decisions will be required on:

- January 2021: Decision to release second Reservoir Committee cash call invoice for payment to continue advancing the project
- August 2021: Release board package for successor agreement. Include finance plan and RFP for lending services.

3.0 Deliverables

To meet the goals and schedule targets and provide measurable progress, a list of key deliverables has been developed, shown in Table 1. This list is not exhaustive but provides a level that will be used to report progress through December 31, 2021. The progress as of August 1, 2021, is notable as this coincides with funding decisions that will be needed to advance the project beyond 2021.

Table 1 – Work Plan Key deliverables

Deliverable	Start	Finish	Anticipated Status 12/31/21	Progress Metric as 8/1/21
Draft EIR/EIS Project Description Chapter	1-Sep-20	28-Dec-20	Complete	Complete
Revised Public Draft EIR/EIS	1-Sep-20	14-Jul-21	Complete	Complete
Summary Report for CWC	28-Sep-21	3-Dec-21	CWC Determination of Environmental Feasibility	Awaiting public comments

Table 1 – Work Plan Key deliverables

Deliverable	Start	Finish	Anticipated Status 12/31/21	Progress Metric as 8/1/21
Full Operations Analysis	1-Sep-20	31-Dec-20	Complete and used to support environmental, permitting, integrated operations, and financial decisions	Complete and used to support environmental, permitting, integrated operations, and financial decisions
Term Sheets for Key Operational Agreements	1-Jan-20	31-Dec-21	Complete	Submitted for Ad-Hoc Committee Review
Operations Plan, Version 1	1-Jan-20	31-Dec-21	Complete	Submitted for Ad-Hoc Committee Review
Final Feasibility Report (without Environmental)	20-May-21	20-Aug-21	CWC Determination of Feasibility	Submitted for Ad-Hoc Committee Review
Water Right Application Advanced	1-Sep-20	31-Dec-21	Internal draft application completion within 14 days	Water Availability Analysis Complete
Biological Assessment	1-Oct-20	28-Jun-21	Complete	Reclamation submits BA to USFWS/NMFS
Section 106 Programmatic Agreement	1-Sep-20	31-Dec-21	Complete	Programmatic Agreement in final review
ITP – Section 2081 Permit	1-Sep-20	7-Dec-21	Complete	Draft ITP Application completion within 30 days
Clean Water Act 404/401 Applications	1-Sep-20	7-Dec-21	Complete	Delineation and Mitigation Plan Complete
Summary Report for Early Mitigation / Geotech Mitigation	1-Sep-20	31-Dec-21	Geotech mitigation costs (as needed) or initial payment on contract for early biological mitigation actions	Geotech mitigation costs better defined
Preliminary Hydraulics Model	20-May-21	16-Jul-21	Complete and used to integrate design	Complete and used to integrate design
WIFIA Application	5-Jan-21	29-Jun-21	Letter of Interest Submitted to EPA	Letter of Interest Submitted to EPA
Plan of Finance	1-Mar-21	2-Aug-21	Complete	Submitted for Ad-Hoc Committee Review

Table 1. Work Plan key deliverables

4.0 Revenue Budget

It is anticipated that \$31.75M in revenue will be generated during the work plan period, as shown in Table 2. This revenue will be generated from the following four sources:

- **Reservoir Committee cash calls:** These are individual agency cash call invoices based on member agencies' level of participation in terms of dollars per acre foot of participation. The Reservoir Committee has directed staff to develop a work plan based on \$100 per acre-foot at Phase 2 (2019) participation levels (rounded to 192,000 acre-feet).
- **Authority Board annual seat dues:** Each Authority Board member pays membership dues annually. The work period includes the dues for 2021 membership at the same level as 2020.
- **State funding:** California provides revenue in the form of reimbursements through Prop 1 (Water Storage Investment Program) early funding. This funding is subject to the terms of the existing Early Funding Agreement and is capped at \$40.8M. Generally, the state reimburses 50 percent of eligible activities. For this work plan, it is assumed that approximately 30 percent of the non-state spend is reimbursable, which is consistent with prior eligibility ranges.
- **Federal funding:** Federal participation is assumed to continue through the Water Infrastructure Improvements for the Nation (WIIN) Act. The work plan includes a portion of the federal \$6M WIIN Act

appropriation that occurred in December 2019. This funding will be in the form of reimbursements accessed through an upcoming Financial Assistance Agreement with the Bureau of Reclamation.

Table 2. Estimated Work Plan Revenue	
Work Plan Funding Source	Revenue
Projected total cash on hand as of 8.1.2020 (carryover funds)	\$750,000
Reservoir Committee Cash Calls (\$100/acre-foot)	\$19,200,000
Authority Board Seats*	500,000
Federal (WIIN Act) Funding	\$4,000,000
State (Prop 1)	\$7,300,000
Total Revenue Sept. 1, 2020 through Dec. 31, 2021	\$31,750,000

* Assumes change in Reservoir Committee or Authority Board participation from 2019 levels.

5.0 Expense Budget

Estimated task-level costs were developed by Authority staff and loaded into the project master schedule. Preliminary costs by subject area are shown in Table 3 and on Figure 2. Detailed tables can be found in Attachment A by deliverable and Attachment B by resource. The attached tables include information on Authority Board and Reservoir Committee share of expenses.

Table 3. Budgets by Subject Area	
Subject Area	Work Plan Budget
Permitting	\$7,569,000
Early Mitigation	\$2,500,000
Environmental Planning	\$4,331,800
Operations Modeling	\$2,146,200
Engineering	\$4,940,500
Geotechnical	\$2,543,800
Real Estate	\$383,000
Communications	\$975,800
Project Controls	\$2,156,800
Funding	\$705,600
Support	\$800,400
Growth	\$1,022,400
Management	\$1,622,600
Grand Total	\$31,697,900

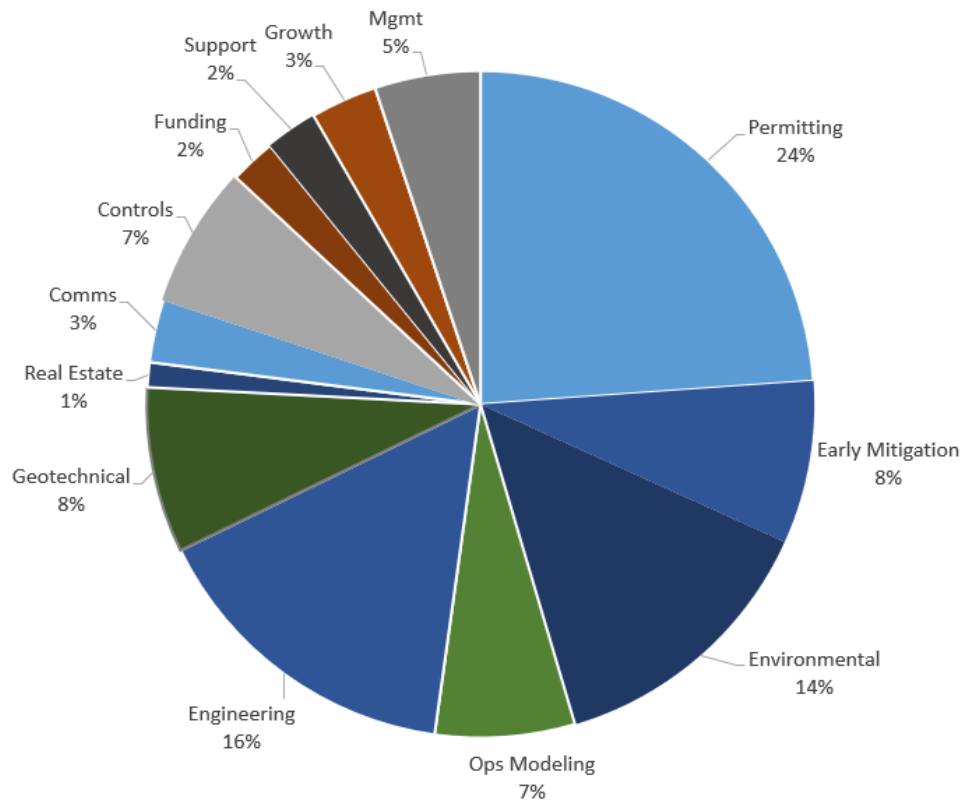


Figure 2. Budget percent by subject area

6.0 Work Plan Cash Flow

The master schedule was used to create a cash flow and determine the required timing of cash calls from the Reservoir Committee. A preliminary cash call schedule has been developed to maintain a cash-positive position to help avoid project delays. Cash call invoices totaling \$100/acre-foot (AF) will occur as follows:

- \$60/AF, due September 1, 2020
- \$40/AF, due February 1, 2021

Cash flow graphs are included for the Reservoir Committee and Authority Board on Figure 3 and Figure 4, respectively.

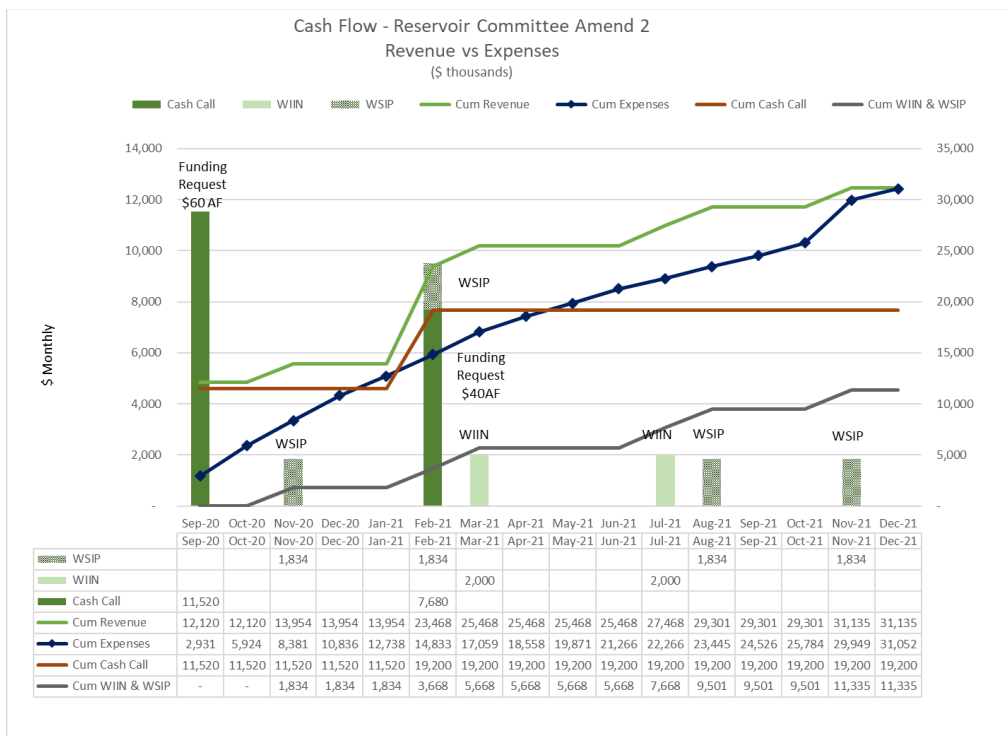


Figure 3. Amendment 2 cash flow, Reservoir Committee

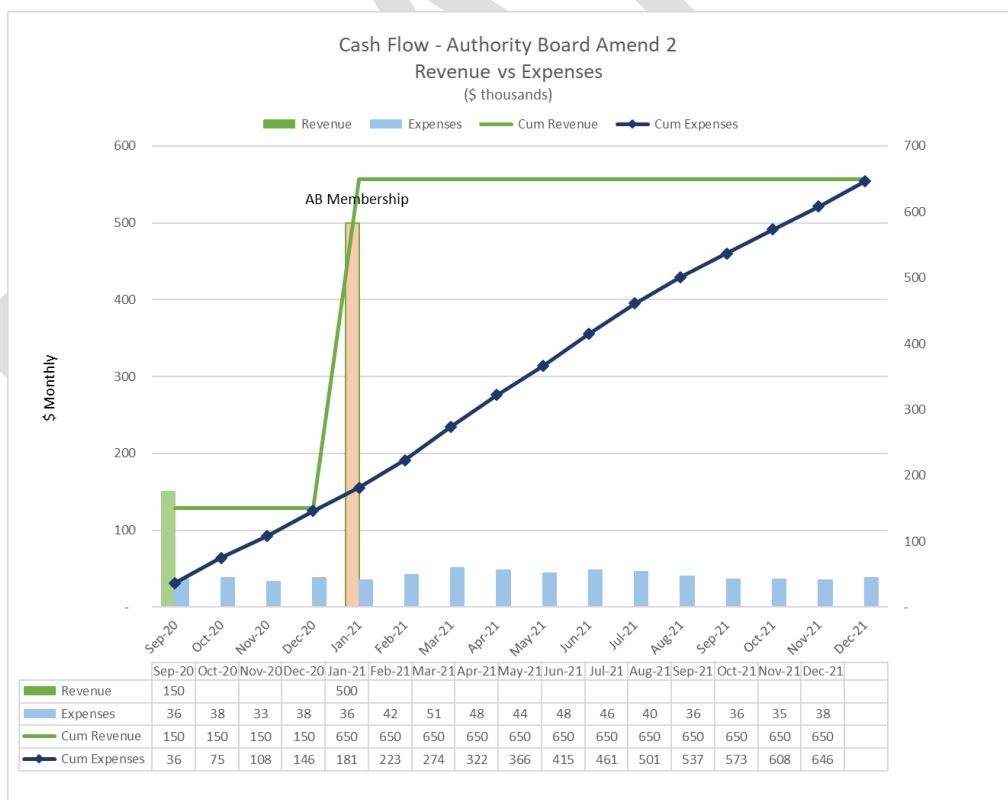


Figure 4. Amendment 2 cash flow, Authority Board

7.0 Work Plan Outcomes by Subject

The following outcomes will be used in conjunction with the deliverables list included in Attachment A as a starting point for project consultants to develop task orders within each subject area. The task orders will be based on a bottoms-up estimate and will contain budgets less than the subject area budgets defined in the work plan.

1. Permitting

Authority Agent Lead: Ali Forsythe

Outcomes:

- Federal Endangered Species Act (ESA) compliance document received (Biological Opinion)
- California Endangered Species Act (CESA) Incidental Take Permit applications submitted
- National Historic Preservation Act compliance: Section 106 Programmatic Agreement final submitted for signatures
- Sites water rights application advanced
- State and Federal Clean Water Act (CWA) permit application packets submitted (404 and 401)
- Mitigation costs for Prop 1 Feasibility Report completed
- Additional geotechnical data collection field monitoring completed
- Public benefit agreements (Prop 1) completed

2. Early Mitigation

Authority Agent Lead: Ali Forsythe

Outcomes:

- Geotech mitigation completed

3. Environmental Planning

Authority Agent Lead: Ali Forsythe

Outcomes:

- Description of Preferred Project and Alternatives for EIR/EIS Analysis
- AB 52 Consultation On-going
- Draft EIR/EIS Released for Public Review and Comment
- Summary Report for California Water Commission completed
- Draft Responses to Comments and Final EIR/EIS advanced
- Environmental Feasibility for Prop 1 completed
- Environmental Planning Support for Outreach and Public Meetings

4. Operations Modeling

Authority Agent Lead: Ali Forsythe

Outcomes:

- Development of operations criteria and operations project description
- Full operations analysis completed with updated criteria, including the following:
- Hydrology & System Operations
 - Fisheries
 - Delta Hydrodynamics

- Delta Water Quality
- Power
- Economics
- Development of Operations Plan, Version 1 completed
- Additional modeling and operations to support permit applications
- Bridging simulation(s) to support California Water Commission
- Term Sheets for Key Operational Agreements with DWR, Reclamation, TCCA, GCID, and the Colusa Basin Drain entities completed

5. Engineering

Authority Agent Lead: Lee Frederiksen

Outcomes:

- Feasibility level designs completed
- CADD drawings of key facilities
- GIS drawings of facility footprints to support environmental analyses completed
- Class 4 construction estimate completed
- Construction sequencing and schedule completed
- Support geotechnical field investigation for feasibility study
- Support development of geotechnical field investigation plan for design
- Develop and implement DSOD engagement plan
- Support development design/construction/permitting plan
- Advance of hydraulic modeling
- Support environmental/permitting
- Update risk assessment

Engineering Support for:

- Prop 1 Feasibility Report (technical & economic)
- Environmental analysis & documentation
- Critical permits
- Water right application

6. Geotechnical

Authority Agent Lead: Lee Frederiksen

Outcomes:

- Support planning and permitting, right of access, scheduling for feasibility field investigation
- Conduct field investigation for feasibility field investigation
- Complete data evaluation and prepare geotechnical design reports for feasibility study
- Complete data gap assessment design level geotechnical field investigation plan

7. Real Estate

Authority Agent Lead: Kevin Spesert

Outcomes:

- Landowner engagement and coordination
- Negotiate TROE agreements in support of field activities
- Support for public outreach & public meetings

8. Communications

Authority Agent Lead: Kevin Spesert

Outcomes:

- Authority strategic communications
- Government (Federal & State) outreach, advocacy, and funding support
- Local Government/Agency coordination
- Stakeholder coordination and general public outreach

9. Project Controls

Authority Agent Lead: Joe Trapasso

Outcomes:

- Financial and project cost management
- Document, data and schedule management
- Contract procurement, management and compliance
- Monthly, quarterly, and annual reporting continued
- Accounting compliance (Authority Board and Reservoir Committee)

10. Funding

Authority Agent Lead: Joe Trapasso

Outcome:

- Funding agreements administered to maximize utilization of participant funding
- WIFIA letter of interest submitted

11. Support

Authority Agent Lead: Joe Trapasso

Outcomes:

- Support is provided to the Authority as a business including legal, IT, office space, document management

12. Growth

Authority Agent Lead: Joe Trapasso

Outcomes:

- Project plan of finance in place
- Successor agreement developed and executed for work beyond 2021, including an updated work plan
- Organizational assessment actions completed

13. Management

Authority Agent Lead: Joe Trapasso

Outcomes:

- Project oversight and governance
- Support to Authority Board & Reservoir Committee
- Document, data and schedule management
- Government (Federal & State) outreach, advocacy, and funding support
- Local Government/Agency coordination
- Stakeholder coordination and general public outreach

8.0 Activities Needed to Complete the Planning Phase

The activities in this work plan significantly complete the planning phase. The activities needed to fully complete the planning phase, Phase 2 and begin Phase 3 are:

- A Final EIR/EIS
- Accepted Water Rights
- Finalize remaining permits
 - Completing tier 1 environmental permits as listed in the Amendment 2 work plan
 - Completing tier 2 environmental permits
 - Completing tier 3 technical permits (DSOD)
- Finalize operational agreements to comply with Prop 1
 - Operations with Reclamation and DWR
 - Operations with CDFW
 - Recreation and flood with DWR
 - Funding agreement with CWC
- Repay Phase 1 contributed credit to former participants
- Acquire temporary rights of entry
- Develop policies, procedures, and implement systems necessary to complete phase 3

Attachment A - Amendment 2 Budget by Deliverable

ATTACHMENT A: BUDGET BY DELIVERABLE

Subject Area	Authority Board	Reservoir Committee	Total
Permitting		\$7,569,000	\$7,569,000
Clean Water Act 404/401 Permit Applications		\$1,417,500	\$1,417,500
Biological Assessment/Biological Opinion Support		\$1,302,000	\$1,302,000
Water Right Application		\$1,016,500	\$1,016,500
Section 106 Programmatic Agreement		\$927,500	\$927,500
ITP-Section 2081 Permit- Construction Application		\$599,500	\$599,500
ITP-Section 2081 Permit-Operations Application		\$576,000	\$576,000
Mitigation Plan		\$465,800	\$465,800
Geotechnical Field Monitoring		\$450,400	\$450,400
Section 408 Draft Packet		\$313,000	\$313,000
Adaptive Management Plan		\$299,300	\$299,300
Focused Species Surveys		\$201,500	\$201,500
Early Mitigation		\$2,500,000	\$2,500,000
Early Mitigation		\$2,500,000	\$2,500,000
Environmental Planning		\$4,331,750	\$4,331,750
Revised Admin Draft EIR/EIS		\$2,676,500	\$2,676,500
Admin Final EIR/EIS Response to Comments		\$611,250	\$611,250
Revised Public Draft EIR/EIS		\$450,250	\$450,250
Response to Comments/Summary Report for CWC		\$242,750	\$242,750
Draft EIR/EIS Project Description Chapter		\$230,500	\$230,500
Public Review Period/Public Meetings		\$120,500	\$120,500
Operations Modeling		\$2,146,200	\$2,146,200
Full Operations Analysis		\$1,486,400	\$1,486,400
Ops/Modeling Coordination		\$659,800	\$659,800
Engineering		\$4,940,535	\$4,940,535
Feasibility Design and CADD Drawings for Modified Alternative A		\$1,350,948	\$1,350,948
Project Description Key Project Features & Facilities		\$605,254	\$605,254
Cost Estimate, Feasibility, Constructability Analysis for Feasibility Report		\$525,374	\$525,374
Class 4 Cost Estimate		\$508,424	\$508,424
DSOD Engagement Plan		\$423,684	\$423,684
Draft Feasibility Report		\$387,370	\$387,370
Risk Workshop Outcomes TM		\$270,000	\$270,000
Engineering Project Coordination		\$217,896	\$217,896
Final Feasibility Report		\$181,579	\$181,579
Economics and Financial for Feasibility Report		\$179,474	\$179,474
Program Design/Construction/Permit Implementation		\$121,054	\$121,054
Preliminary Hydraulics Model		\$121,054	\$121,054
Geotechnical Permit Planning & Investigation Plan		\$48,424	\$48,424
Geotech		\$2,543,840	\$2,543,840
Field Data Collection Work Plan/Cost Estimate		\$1,443,840	\$1,443,840
Geotechnical Data Reports		\$650,000	\$650,000
Preliminary Planning for Design		\$300,000	\$300,000
Site Plan with Proposed Borings		\$150,000	\$150,000
Real Estate	\$20,800	\$362,200	\$383,000
Real Estate Landowner Coordination	\$20,800	\$362,200	\$383,000
Communications	\$205,005	\$770,795	\$975,800
Government Affairs WP 2021	\$153,700	\$278,150	\$431,850
Communications		\$400,000	\$400,000
Government Affairs WP 2020	\$51,305	\$92,645	\$143,950
Project Controls	\$123,600	\$2,033,200	\$2,156,800
Monthly Board/Res Comm Support	\$107,600	\$603,600	\$711,200
Accounts Payable and Receivable	\$16,000	\$479,600	\$495,600

Subject Area	Authority Board	Reservoir Committee	Total
Contract Management		\$490,000	\$490,000
Project Master Schedule		\$360,000	\$360,000
State Invoice/Progress Reports & Quarterly Reports		\$100,000	\$100,000
Funding		\$705,600	\$705,600
State Invoice/Progress Reports & Quarterly Reports		\$465,600	\$465,600
WIFIA Application		\$240,000	\$240,000
Support	\$284,400	\$516,000	\$800,400
Business Management Vendors	\$12,400	\$335,000	\$347,400
Legal Counsel	\$240,000		\$240,000
Business Management	\$32,000	\$64,000	\$96,000
IT and GIS Support		\$63,000	\$63,000
Document Management		\$54,000	\$54,000
Growth	\$12,400	\$1,010,000	\$1,022,400
Successor Agreement		\$480,000	\$480,000
Successor Agreement Work Plan		\$250,000	\$250,000
Plan of Finance	\$12,400	\$180,000	\$192,400
Organizational Assessment		\$100,000	\$100,000
Management		\$1,622,600	\$1,622,600
Project Management		\$730,600	\$730,600
Executive Director		\$672,000	\$672,000
Business Management		\$120,000	\$120,000
Strategic Planner		\$100,000	\$100,000
Total	\$646,205	\$31,051,720	\$31,697,925

Attachment B - Amendment 2 Preliminary Budget by Resource

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ATTACHMENT B: BUDGET BY RESOURCE

Subject Area	Authority Board	Reservoir Committee	Total
01-HDR		\$4,413,575	\$4,413,575
Engineering		\$910,535	\$910,535
Feasibility Design and CADD Drawings for Modified Alternative A		\$234,948	\$234,948
Risk Workshop Outcomes TM		\$120,000	\$120,000
Project Description Key Project Features & Facilities		\$105,254	\$105,254
Cost Estimate, Feasibility, Constructability Analysis for Feasibility Report		\$91,374	\$91,374
Class 4 Cost Estimate		\$88,424	\$88,424
DSOD Engagement Plan		\$73,684	\$73,684
Draft Feasibility Report		\$67,370	\$67,370
Engineering Project Coordination		\$37,896	\$37,896
Final Feasibility Report		\$31,579	\$31,579
Program Design/Construction/Permit Implementation		\$21,054	\$21,054
Preliminary Hydraulics Model		\$21,054	\$21,054
Economics and Financial for Feasibility Report		\$9,474	\$9,474
Geotechnical Permit Planning & Investigation Plan		\$8,424	\$8,424
Environmental Planning		\$832,000	\$832,000
Revised Admin Draft EIR/EIS		\$520,000	\$520,000
Admin Final EIR/EIS Response to Comments		\$110,000	\$110,000
Revised Public Draft EIR/EIS		\$70,000	\$70,000
Response to Comments/Summary Report for CWC		\$52,000	\$52,000
Public Review Period/Public Meetings		\$50,000	\$50,000
Draft EIR/EIS Project Description Chapter		\$30,000	\$30,000
Funding		\$200,000	\$200,000
WIFIA Application		\$160,000	\$160,000
State Invoice/Progress Reports & Quarterly Reports		\$40,000	\$40,000
Geotech		\$43,840	\$43,840
Field Data Collection Work Plan/Cost Estimate		\$43,840	\$43,840
Growth		\$160,000	\$160,000
Successor Agreement Work Plan		\$70,000	\$70,000
Plan of Finance		\$60,000	\$60,000
Successor Agreement		\$30,000	\$30,000
Management		\$327,000	\$327,000
Project Management		\$207,000	\$207,000
Business Management		\$120,000	\$120,000
Modeling		\$211,200	\$211,200
Full Operations Analysis		\$158,400	\$158,400
Ops/Modeling Coordination		\$52,800	\$52,800
Permitting		\$1,096,000	\$1,096,000
Biological Assessment/Biological Opinion Support		\$219,200	\$219,200
Water Right Application		\$137,000	\$137,000
Section 106 Programmatic Agreement		\$137,000	\$137,000
Clean Water Act 404/401 Permit Applications		\$137,000	\$137,000
ITP-Section 2081 Permit-Operations Application		\$109,600	\$109,600
Mitigation Plan		\$87,680	\$87,680
ITP-Section 2081 Permit- Construction Application		\$82,200	\$82,200
Adaptive Management Plan		\$60,280	\$60,280
Section 408 Draft Packet		\$54,800	\$54,800
Geotechnical Field Monitoring		\$43,840	\$43,840
Focused Species Surveys		\$27,400	\$27,400
Project Controls		\$260,000	\$260,000
Monthly Board/Res Comm Support		\$100,000	\$100,000
Project Master Schedule		\$80,000	\$80,000
Contract Management		\$50,000	\$50,000
Accounts Payable and Receivable		\$30,000	\$30,000

Subject Area	Authority Board	Reservoir Committee	Total
Real Estate		\$160,000	\$160,000
Real Estate Landowner Coordination		\$160,000	\$160,000
Support		\$213,000	\$213,000
Business Management Vendors		\$96,000	\$96,000
IT and GIS Support		\$63,000	\$63,000
Document Management		\$54,000	\$54,000
02-Brown & Caldwell		\$2,360,000	\$2,360,000
Engineering		\$160,000	\$160,000
Risk Workshop Outcomes TM		\$80,000	\$80,000
Economics and Financial for Feasibility Report		\$80,000	\$80,000
Funding		\$480,000	\$480,000
State Invoice/Progress Reports & Quarterly Reports		\$400,000	\$400,000
WIFIA Application		\$80,000	\$80,000
Growth		\$380,000	\$380,000
Successor Agreement Work Plan		\$180,000	\$180,000
Plan of Finance		\$120,000	\$120,000
Successor Agreement		\$80,000	\$80,000
Project Controls		\$1,340,000	\$1,340,000
Monthly Board/Res Comm Support		\$360,000	\$360,000
Accounts Payable and Receivable		\$360,000	\$360,000
Project Master Schedule		\$280,000	\$280,000
Contract Management		\$240,000	\$240,000
State Invoice/Progress Reports & Quarterly Reports		\$100,000	\$100,000
03-Katz & Associates		\$400,000	\$400,000
Communications		\$400,000	\$400,000
Communications		\$400,000	\$400,000
04-CH2M Hill Engineers		\$1,730,000	\$1,730,000
Modeling		\$1,730,000	\$1,730,000
Full Operations Analysis		\$1,205,000	\$1,205,000
Ops/Modeling Coordination		\$525,000	\$525,000
05-ICF Environmental		\$2,705,000	\$2,705,000
Environmental Planning		\$2,705,000	\$2,705,000
Revised Admin Draft EIR/EIS		\$1,745,000	\$1,745,000
Admin Final EIR/EIS Response to Comments		\$400,000	\$400,000
Revised Public Draft EIR/EIS		\$280,000	\$280,000
Draft EIR/EIS Project Description Chapter		\$120,000	\$120,000
Response to Comments/Summary Report for CWC		\$110,000	\$110,000
Public Review Period/Public Meetings		\$50,000	\$50,000
06-ICF Permitting		\$4,400,000	\$4,400,000
Permitting		\$4,400,000	\$4,400,000
Biological Assessment/Biological Opinion Support		\$855,000	\$855,000
Section 106 Programmatic Agreement		\$705,000	\$705,000
Clean Water Act 404/401 Permit Applications		\$700,000	\$700,000
ITP-Section 2081 Permit-Operations Application		\$400,000	\$400,000
Geotechnical Field Monitoring		\$400,000	\$400,000
Mitigation Plan		\$365,000	\$365,000
ITP-Section 2081 Permit- Construction Application		\$325,000	\$325,000
Section 408 Draft Packet		\$250,000	\$250,000
Adaptive Management Plan		\$230,000	\$230,000
Focused Species Surveys		\$170,000	\$170,000
08-AECOM		\$1,900,000	\$1,900,000
Engineering		\$1,900,000	\$1,900,000
Feasibility Design and CADD Drawings for Modified Alternative A		\$558,000	\$558,000
Project Description Key Project Features & Facilities		\$250,000	\$250,000
Cost Estimate, Feasibility, Constructability Analysis for Feasibility Report		\$217,000	\$217,000
Class 4 Cost Estimate		\$210,000	\$210,000

Subject Area	Authority Board	Reservoir Committee	Total
DSOD Engagement Plan		\$175,000	\$175,000
Draft Feasibility Report		\$160,000	\$160,000
Engineering Project Coordination		\$90,000	\$90,000
Final Feasibility Report		\$75,000	\$75,000
Preliminary Hydraulics Model		\$50,000	\$50,000
Program Design/Construction/Permit Implementation		\$50,000	\$50,000
Economics and Financial for Feasibility Report		\$45,000	\$45,000
Geotechnical Permit Planning & Investigation Plan		\$20,000	\$20,000
09-Jacobs		\$1,900,000	\$1,900,000
Engineering		\$1,900,000	\$1,900,000
Feasibility Design and CADD Drawings for Modified Alternative A		\$558,000	\$558,000
Project Description Key Project Features & Facilities		\$250,000	\$250,000
Cost Estimate, Feasibility, Constructability Analysis for Feasibility Report		\$217,000	\$217,000
Class 4 Cost Estimate		\$210,000	\$210,000
DSOD Engagement Plan		\$175,000	\$175,000
Draft Feasibility Report		\$160,000	\$160,000
Engineering Project Coordination		\$90,000	\$90,000
Final Feasibility Report		\$75,000	\$75,000
Preliminary Hydraulics Model		\$50,000	\$50,000
Program Design/Construction/Permit Implementation		\$50,000	\$50,000
Economics and Financial for Feasibility Report		\$45,000	\$45,000
Geotechnical Permit Planning & Investigation Plan		\$20,000	\$20,000
10-Fugro		\$2,500,000	\$2,500,000
Geotech		\$2,500,000	\$2,500,000
Field Data Collection Work Plan/Cost Estimate		\$1,400,000	\$1,400,000
Geotechnical Data Reports		\$650,000	\$650,000
Preliminary Planning for Design		\$300,000	\$300,000
Site Plan with Proposed Borings		\$150,000	\$150,000
AA-Authority Agents	\$130,205	\$1,859,595	\$1,989,800
Communications	\$21,005	\$186,795	\$207,800
Government Affairs WP 2021	\$15,700	\$140,150	\$155,850
Government Affairs WP 2020	\$5,305	\$46,645	\$51,950
Engineering		\$70,000	\$70,000
Risk Workshop Outcomes TM		\$70,000	\$70,000
Environmental Planning		\$164,000	\$164,000
Revised Admin Draft EIR/EIS		\$61,500	\$61,500
Admin Final EIR/EIS Response to Comments		\$30,750	\$30,750
Response to Comments/Summary Report for CWC		\$20,500	\$20,500
Draft EIR/EIS Project Description Chapter		\$20,500	\$20,500
Public Review Period/Public Meetings		\$20,500	\$20,500
Revised Public Draft EIR/EIS		\$10,250	\$10,250
Funding		\$25,600	\$25,600
State Invoice/Progress Reports & Quarterly Reports		\$25,600	\$25,600
Growth		\$82,000	\$82,000
Organizational Assessment		\$50,000	\$50,000
Successor Agreement		\$32,000	\$32,000
Management		\$523,600	\$523,600
Project Management		\$523,600	\$523,600
Modeling		\$164,000	\$164,000
Ops/Modeling Coordination		\$82,000	\$82,000
Full Operations Analysis		\$82,000	\$82,000
Permitting		\$164,000	\$164,000
Biological Assessment/Biological Opinion Support		\$32,800	\$32,800
Water Right Application		\$20,500	\$20,500
Section 106 Programmatic Agreement		\$20,500	\$20,500
Clean Water Act 404/401 Permit Applications		\$20,500	\$20,500

Subject Area	Authority Board	Reservoir Committee	Total
ITP-Section 2081 Permit-Operations Application		\$16,400	\$16,400
Mitigation Plan		\$13,120	\$13,120
ITP-Section 2081 Permit- Construction Application		\$12,300	\$12,300
Adaptive Management Plan		\$9,020	\$9,020
Section 408 Draft Packet		\$8,200	\$8,200
Geotechnical Field Monitoring		\$6,560	\$6,560
Focused Species Surveys		\$4,100	\$4,100
Project Controls	\$88,400	\$292,400	\$380,800
Contract Management		\$200,000	\$200,000
Monthly Board/Res Comm Support	\$88,400	\$66,800	\$155,200
Accounts Payable and Receivable		\$25,600	\$25,600
Real Estate	\$20,800	\$187,200	\$208,000
Real Estate Landowner Coordination	\$20,800	\$187,200	\$208,000
AE-Authority Ex Director		\$710,000	\$710,000
Growth		\$38,000	\$38,000
Successor Agreement		\$38,000	\$38,000
Management		\$672,000	\$672,000
Executive Director		\$672,000	\$672,000
OP-Auditor	\$12,400		\$12,400
Growth	\$12,400		\$12,400
Plan of Finance	\$12,400		\$12,400
OP-Board Clerk	\$19,200	\$76,800	\$96,000
Project Controls	\$19,200	\$76,800	\$96,000
Monthly Board/Res Comm Support	\$19,200	\$76,800	\$96,000
OP-Doug Brown		\$50,000	\$50,000
Growth		\$50,000	\$50,000
Successor Agreement		\$50,000	\$50,000
OP-Ferguson Group	\$120,000	\$120,000	\$240,000
Communications	\$120,000	\$120,000	\$240,000
Government Affairs WP 2021	\$90,000	\$90,000	\$180,000
Government Affairs WP 2020	\$30,000	\$30,000	\$60,000
OP-Gary Darling		\$50,000	\$50,000
Growth		\$50,000	\$50,000
Organizational Assessment		\$50,000	\$50,000
OP-Jerry Johns		\$14,000	\$14,000
Permitting		\$14,000	\$14,000
Water Right Application		\$14,000	\$14,000
OP-K-Coe Isom LLP	\$16,000	\$64,000	\$80,000
Project Controls	\$16,000	\$64,000	\$80,000
Accounts Payable and Receivable	\$16,000	\$64,000	\$80,000
OP-Keith Dunn	\$64,000	\$64,000	\$128,000
Communications	\$64,000	\$64,000	\$128,000
Government Affairs WP 2021	\$48,000	\$48,000	\$96,000
Government Affairs WP 2020	\$16,000	\$16,000	\$32,000
OP-MBK Engineers		\$650,000	\$650,000
Permitting		\$650,000	\$650,000
Water Right Application		\$650,000	\$650,000
OP-MDA		\$250,000	\$250,000
Growth		\$250,000	\$250,000
Successor Agreement		\$250,000	\$250,000
OP-Perkins Coie		\$1,250,000	\$1,250,000
Environmental Planning		\$600,000	\$600,000
Revised Admin Draft EIR/EIS		\$350,000	\$350,000
Revised Public Draft EIR/EIS		\$90,000	\$90,000
Draft EIR/EIS Project Description Chapter		\$60,000	\$60,000
Admin Final EIR/EIS Response to Comments		\$50,000	\$50,000

Subject Area	Authority Board	Reservoir Committee	Total
Response to Comments/Summary Report for CWC		\$50,000	\$50,000
Permitting		\$650,000	\$650,000
Clean Water Act 404/401 Permit Applications		\$260,000	\$260,000
Biological Assessment/Biological Opinion Support		\$195,000	\$195,000
ITP-Section 2081 Permit- Construction Application		\$130,000	\$130,000
Section 106 Programmatic Agreement		\$65,000	\$65,000
OP-Strategic Planner		\$100,000	\$100,000
Management		\$100,000	\$100,000
Strategic Planner		\$100,000	\$100,000
OP-Wiseman		\$15,000	\$15,000
Real Estate		\$15,000	\$15,000
Real Estate Landowner Coordination		\$15,000	\$15,000
OP-Young Wooldridge	\$240,000	\$195,000	\$435,000
Permitting		\$195,000	\$195,000
Water Right Application		\$195,000	\$195,000
Support	\$240,000		\$240,000
Legal Counsel	\$240,000		\$240,000
VE-ACWA	\$10,700	\$14,000	\$24,700
Support	\$10,700	\$14,000	\$24,700
Business Management Vendors	\$10,700	\$14,000	\$24,700
VE-JPIA Insurance	\$1,700		\$1,700
Support	\$1,700		\$1,700
Business Management Vendors	\$1,700		\$1,700
VE-Other		\$296,750	\$296,750
Environmental Planning		\$30,750	\$30,750
Admin Final EIR/EIS Response to Comments		\$20,500	\$20,500
Response to Comments/Summary Report for CWC		\$10,250	\$10,250
Modeling		\$41,000	\$41,000
Full Operations Analysis		\$41,000	\$41,000
Support		\$225,000	\$225,000
Business Management Vendors		\$225,000	\$225,000
VE-Permit Fees		\$2,900,000	\$2,900,000
Early Mitigation2		\$2,500,000	\$2,500,000
Early Mitigation		\$2,500,000	\$2,500,000
Permitting		\$400,000	\$400,000
Clean Water Act 404/401 Permit Applications		\$300,000	\$300,000
ITP-Section 2081 Permit- Construction Application		\$50,000	\$50,000
ITP-Section 2081 Permit-Operations Application		\$50,000	\$50,000
VE-Rent	\$32,000	\$64,000	\$96,000
Support	\$32,000	\$64,000	\$96,000
Business Management	\$32,000	\$64,000	\$96,000
Total	\$646,205	\$31,051,720	\$31,697,925

Attachment C – Critical Path Schedule

DRAFT

Sites Reservoir Project

Date: 13-Apr-20

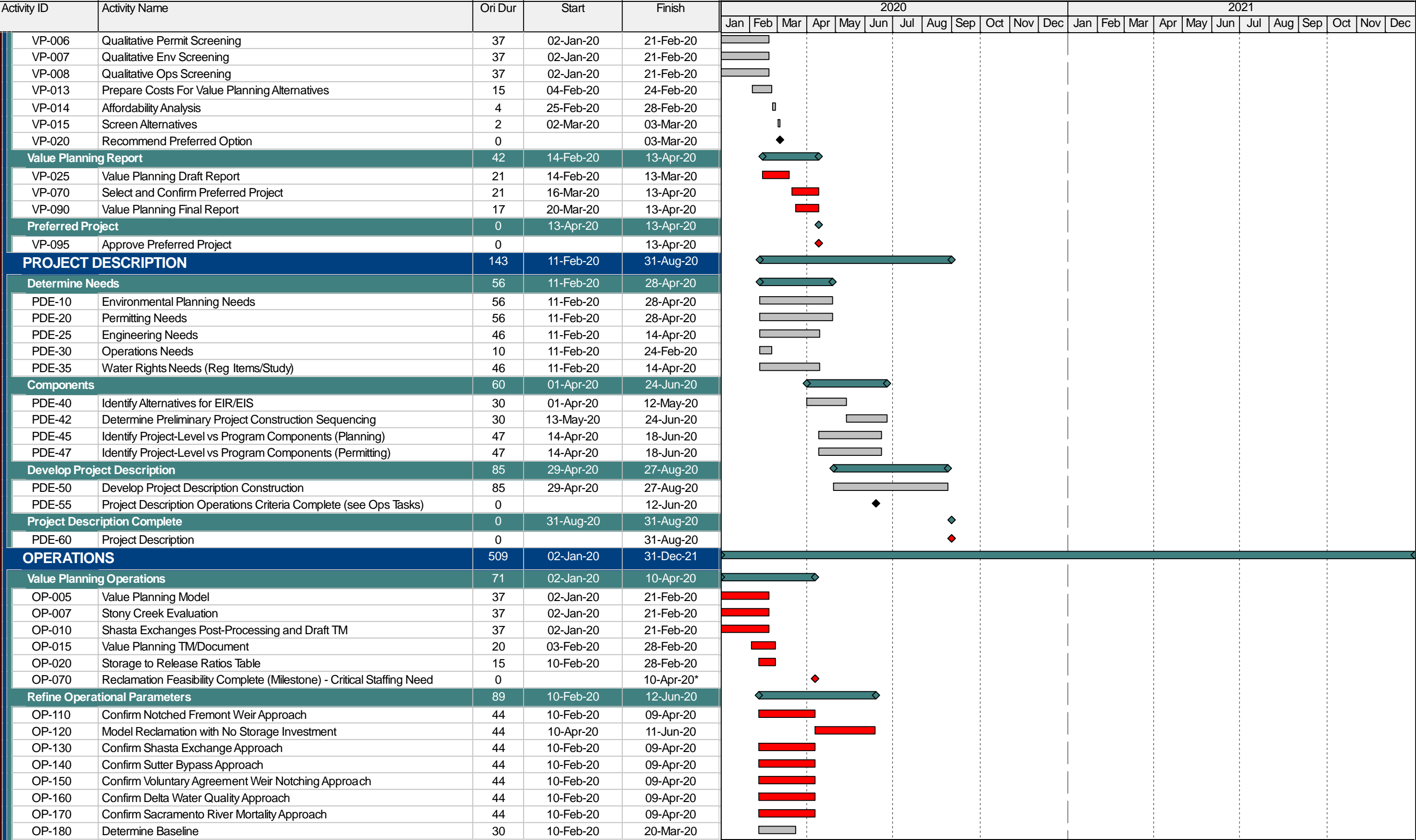
Activity ID		Activity Name	Ori Dur	Start	Finish	2020												2021															
						Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec				
SITES PROJECT			548	02-Jan-20	25-Feb-22																												
MILESTONES			327	31-Aug-20	15-Dec-21																												
MS-001-LF	Local Funding (Go/No-go #1)		0		31-Aug-20																												
MS-002-LF	Local Funding (Go/No-go #2)		0		08-Jan-21																												
MS-003-LF	Local Funding (Go/No-go #3)		0		15-Dec-21																												
LOCAL FUNDING			509	02-Jan-20	31-Dec-21																												
Execute Participation Ageement 1B			95	23-Jan-20	04-Jun-20																												
PA-010	Amend Task Orders		26	23-Jan-20	27-Feb-20																												
PA-020	Final Participation Agreement Amendment 1B		15	18-Mar-20	08-Apr-20																												
PA-030	Engineering Task Orders (HC, HR)		30	23-Jan-20	04-Mar-20																												
PA-040	Amendment 1B Exhibit B		5	01-Apr-20	08-Apr-20																												
PA-050	Executed 1B		0		04-Jun-20																												
Execute Participation Agreement 2			114	18-Mar-20	26-Aug-20																												
PA-120	Draft Participation Agreement Amend 2 for Home Board Review		15	18-Mar-20	08-Apr-20																												
PA-130	Home Board Review - Determine Participation Level		44	17-Apr-20	18-Jun-20																												
PA-140	Rebalance Participation		8	19-Jun-20	30-Jun-20																												
PA-150	Final Participation Agreement Amend 2 with Exhibits		0		30-Jun-20																												
PA-160	Execute Amendment 2		0		26-Aug-20																												
Execute Successor Participation Areement 2			106	02-Aug-21	31-Dec-21																												
PA-210	Prepare Successor Agreement Work Plan		85	02-Aug-21*	01-Dec-21																												
PA-220	Execute Successor Agreement		22	02-Dec-21	31-Dec-21																												
Work Plan Amend 1B			40	02-Jan-20	26-Feb-20																												
WP-005	Incorporate Comments from Dec Res Comm Mtg		9	02-Jan-20*	14-Jan-20																												
WP-015	Prepare Final Work Plan		14	15-Jan-20	03-Feb-20																												
WP-020	Budget & Finance Work Group Review		5	04-Feb-20	10-Feb-20																												
WP-025	Work Plan 1B Approved		0		26-Feb-20																												
Work Plan Amend 2			153	28-Jan-20	01-Sep-20																												
Develop Schedule			29	28-Jan-20	06-Mar-20																												
WP-040	Develop Draft Schedule thru Dec 31, 2021		13	28-Jan-20	13-Feb-20																												
WP-060	Develop Final Schedule through Dec 2021		10	24-Feb-20	06-Mar-20																												
Work Plan Scope Document			50	28-Jan-20	06-Apr-20																												
WP-050	Draft Work Plan Task List		13	28-Jan-20	13-Feb-20																												
WP-070	Final Work Plan Scope Document		31	24-Feb-20	06-Apr-20																												
Work Plan Budget			50	28-Jan-20	06-Apr-20																												
WP-035	Budget Scenarios and Assumptions		2	11-Feb-20	12-Feb-20																												
WP-055	Draft Work Plan Budget		13	28-Jan-20	13-Feb-20																												
WP-090	Final Work Plan Budget		31	24-Feb-20	06-Apr-20																												
Amendment 2			103	07-Apr-20	01-Sep-20																												
WP2-095	Final Amendment 2 Work Plan		5	07-Apr-20	13-Apr-20																												
WP2-110	Develop Task Orders (Sep 2020 to Dec 2021)		51	14-Apr-20	24-Jun-20																												
WP2-120	Work Plan 2 Approved		0		24-Jun-20																												
WP2-130	Start of Amend 2		0	01-Sep-20																													
VALUE PLANNING			73	02-Jan-20	13-Apr-20																												
Value Planning Analysis			44	02-Jan-20	03-Mar-20																												
VP-001	Refine Value Planning Options		3	02-Jan-20	06-Jan-20																												
VP-002	Screen Value Planning Options		20	07-Jan-20	03-Feb-20																												

Actual Work Critical Remaining Work Critical Milestone Cal Days
Remaining Work Milestone Summary

Project Schedule

Sites Reservoir Project

Date: 13-Apr-20

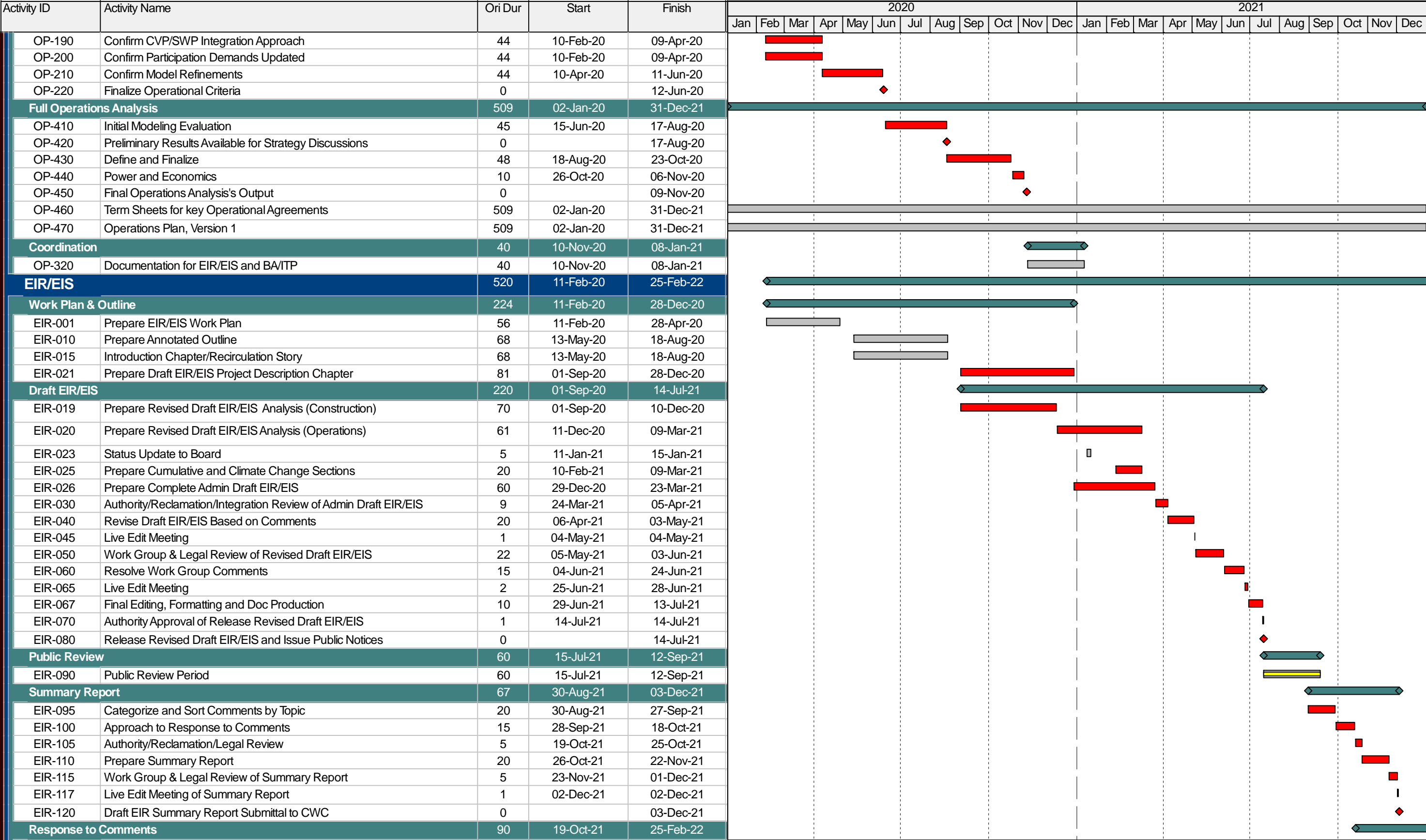


Actual Work Critical Remaining Work Critical Milestone Cal Days
Remaining Work Milestone Summary

Project Schedule

Sites Reservoir Project

Date: 13-Apr-20

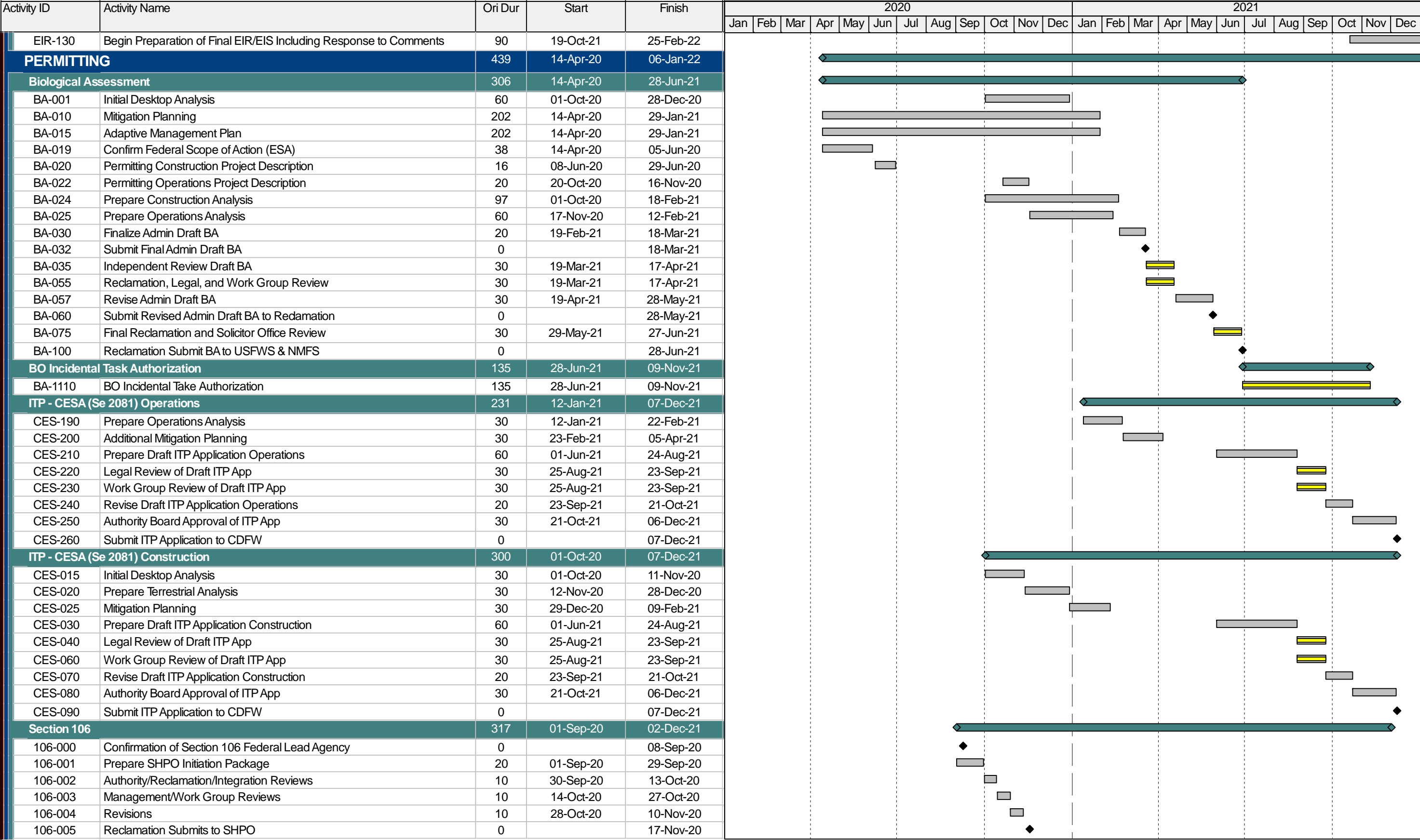


Actual Work Critical Remaining Work Critical Milestone Cal Days
Remaining Work Milestone Summary

Project Schedule

Sites Reservoir Project

Date: 13-Apr-20

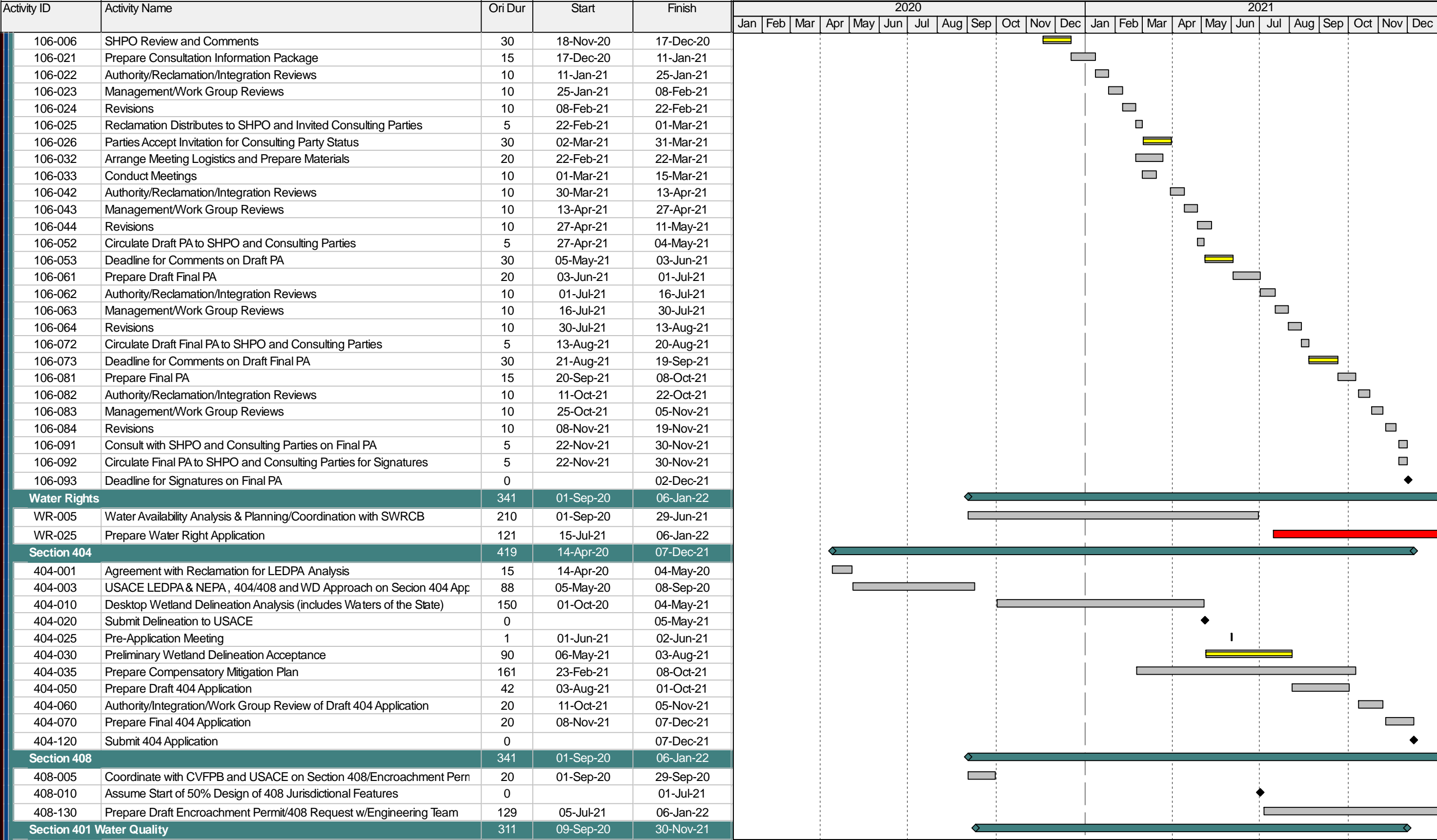


Actual Work Critical Remaining Work Critical Milestone Cal Days
Remaining Work Milestone Summary

Project Schedule

Sites Reservoir Project

Date: 13-Apr-20

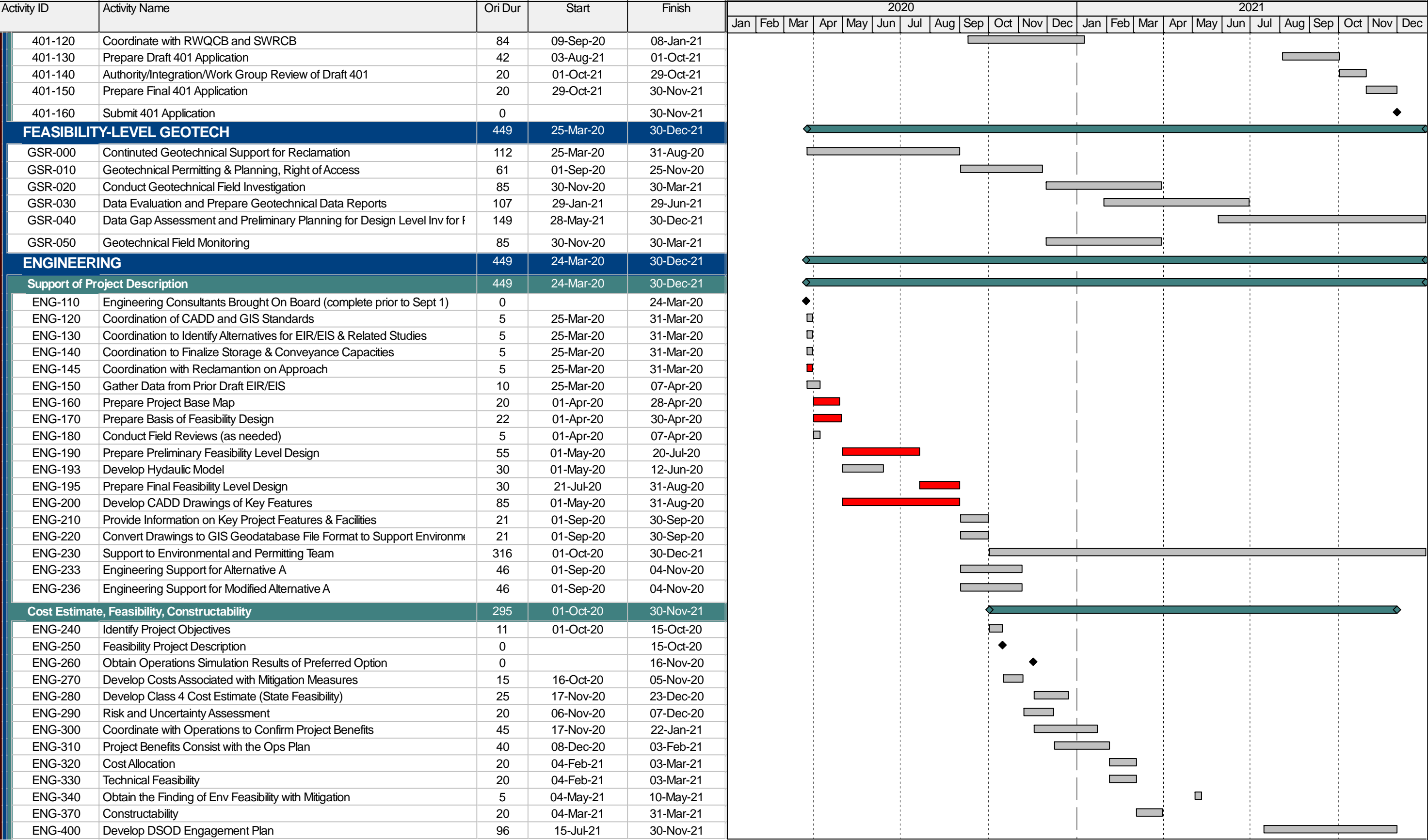


Actual Work Critical Remaining Work Critical Milestone Cal Days
Remaining Work Milestone Summary

Project Schedule

Sites Reservoir Project

Date: 13-Apr-20



Actual Work Critical Remaining Work Critical Milestone Cal Days
Remaining Work Milestone Summary

Project Schedule

Sites Reservoir Project

Date: 13-Apr-20

Activity ID	Activity Name	Ori Dur	Start	Finish	2020												2021											
					Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
	ENG-404	Coordinate on a Geotechnical Investigation Plan	96	15-Jul-21	30-Nov-21																							
	ENG-406	Coordinate to Develop Geotechnical Permitting Plan	96	15-Jul-21	30-Nov-21																							
	ENG-410	Develop Program Design/Construction/Permit Implementation Plan	96	15-Jul-21	30-Nov-21																							
	ENG-420	Advance Preliminary Hydraulics Model	40	20-May-21	16-Jul-21																							
	ENG-440	Final Hydraulics Model	23	19-Jul-21	18-Aug-21																							
Economics and Financial			20	04-Mar-21	31-Mar-21																							
Feasibility Report			20	04-Mar-21	31-Mar-21																							
	ENG-350	Economic Feasibility	5	04-Mar-21	10-Mar-21																							
	ENG-360	Financial Feasibility	20	04-Mar-21	31-Mar-21																							
Authority Feasibility Report			70	01-Apr-21	09-Jul-21																							
Feasibility Report			70	01-Apr-21	09-Jul-21																							
	ENG-380	Prepare Draft Feasibility Report	30	01-Apr-21	12-May-21																							
	ENG-382	Executive Summary (Storyboard)	5	01-Apr-21	07-Apr-21																							
	ENG-384	Executive Summary Final	5	06-May-21	12-May-21																							
	ENG-385	Work Group Review	5	13-May-21	19-May-21																							
	ENG-390	Prepare Final Feasibility Report	30	20-May-21	01-Jul-21																							
	ENG-392	Reservoir Committee and Board Approval	5	05-Jul-21	09-Jul-21																							
PROP 1			289	23-Oct-20	15-Dec-21																							
CWC Feasibility Review			180	31-Mar-21	15-Dec-21																							
	CWC-391	Release for CWC Review Pkg 1: Engineering	0		09-Jul-21																							
	CWC-393	Release for CWC Review Pkg 2: Economic and Finance	0		31-Mar-21																							
	CWC-396	Release for CWC Review Pkg 3: Environmental with Res Ops	0		03-Dec-21																							
	CWC-397	CWC Review Pkg 1: Engineering	30	12-Jul-21	20-Aug-21																							
	CWC-407	CWC Review Pkg 2: Economic and Finance	30	01-Apr-21	12-May-21																							
	CWC-417	CWC Review Pkg 3: Environmental with Res Ops	8	06-Dec-21	15-Dec-21																							
Revised Public Benefits			0	23-Oct-20	23-Oct-20																							
	CWC-420	Provide CWC with Revised Public Benefits	0		23-Oct-20																							
CWC Review of Public Draft EIR/EIS			30	15-Jul-21	25-Aug-21																							
	CWC-450	CWC Public Review Draft EIR/EIS	30	15-Jul-21	25-Aug-21																							
CWC Determination			0	15-Dec-21	15-Dec-21																							
	CWC-500	State Determination of Feasibility	0		15-Dec-21*																							
PROJECT OPERATIONS AND FINANCES			509	02-Jan-20	31-Dec-21																							
REAL ESTATE			509	02-Jan-20	31-Dec-21																							
	RE-200	Real Estate Landowner Coordination	171	02-Jan-20	31-Aug-20																							
	RE-210	Real Estate Landowner Coordination	338	01-Sep-20	31-Dec-21																							
COMMUNICATIONS & GOVERNMENT AFFAIRS			509	02-Jan-20	31-Dec-21																							
	CG-000	Communication & Government Affairs	171	02-Jan-20	31-Aug-20																							
	CG-10	Communication	338	01-Sep-20	31-Dec-21																							
	GS-20	Government Affairs Work Plan 2020	84	01-Sep-20	31-Dec-20																							
	GS-30	Government Affairs Work Plan 2021	254	04-Jan-21	31-Dec-21																							
Organizational Assessment			255	02-Jan-20	31-Dec-20																							
	ORA-000	Organizational Assessment Direction	171	02-Jan-20	31-Aug-20																							
	ORA-010	Organizational Assessment	84	01-Sep-20	31-Dec-20																							
Contract Amendments			486	04-Feb-20	31-Dec-21																							
	CON-010	Contract Management	338	01-Sep-20	31-Dec-21																							

Actual Work Critical Remaining Work Critical Milestone Cal Days
Remaining Work Milestone Summary

Project Schedule

Sites Reservoir Project

Date: 13-Apr-20

Activity ID	Activity Name	Ori Dur	Start	Finish	2020												2021															
					Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec				
CON-022	Revise Service Area Task Orders for Approval	20	04-Feb-20	02-Mar-20																												
Accounts Payable & Receivable		509	02-Jan-20	31-Dec-21																												
AP-010	Accounts Payable & Accounts Receivable	171	02-Jan-20	31-Aug-20																												
AP-012	Accounts Payable & Accounts Receivable	338	01-Sep-20	31-Dec-21																												
Invoicing & Reporting		499	16-Jan-20	31-Dec-21																												
INV-00-30	CWC Invoicing Amend 1B	161	16-Jan-20	31-Aug-20																												
INV-010	CWC Invoicing Amend 2	338	01-Sep-20	31-Dec-21																												
INV-032	Prepare 4Q2019 CWC invoice	17	16-Jan-20*	07-Feb-20																												
INV-033	Prepare Q12020 CWC invoice	18	16-Jan-20*	10-Feb-20																												
REP-010	Quarterly Reporting Amend 2	338	01-Sep-20	31-Dec-21																												
REP-020	Annual Reporting	338	01-Sep-20	31-Dec-21																												
Project Scheduling		509	02-Jan-20	31-Dec-21																												
PS-010	Project Scheduling	171	02-Jan-20	31-Aug-20																												
PS-020	Project Scheduling	338	01-Sep-20	31-Dec-21																												
Monthly Board/Res Comm Support		509	02-Jan-20	31-Dec-21																												
MB-000	Monthly Board/Res Comm Support	171	02-Jan-20	31-Aug-20																												
MB-010	Monthly Board/Res Comm Support	338	01-Sep-20	31-Dec-21																												
Financial Assistance Agreement		79	14-Jan-20	01-May-20																												
FAA-005	Prepare Draft FA Scope and Form 424	15	14-Jan-20	03-Feb-20																												
FAA-010	Review Scope with USBR	5	04-Feb-20	10-Feb-20																												
FAA-015	Prepare Budget Estimates, Narrative and Form 424A/B, SFLLL	44	11-Feb-20	10-Apr-20																												
FAA-020	Review with USBR	5	13-Apr-20	17-Apr-20																												
FAA-025	Finalize Draft FA	10	20-Apr-20	01-May-20																												
Plan of Finance		319	30-Apr-20	02-Aug-21																												
POF-005	Plan of Finance Update 1 (Update Affordability)	0	30-Apr-20*																													
POF-010	Plan of Finance (Fin Feas)	0	01-Mar-21*																													
POF-015	Plan of Finance (WIFIA Loan)	0	01-Apr-21*																													
POF-020	WIFIA/LOI	0	30-Jun-21*																													
POF-025	Plan of Finance (Home Board Pkg)	0		02-Aug-21*																												
WIFIA Loan Application		381	02-Jan-20	29-Jun-21																												
WL-00-00	WIFIA Loan Application Prep	171	02-Jan-20	31-Aug-20																												
WL-005	Prepare Initial Loan Application	60	05-Jan-21	29-Mar-21																												
WL-010	Review Loan Application	35	30-Mar-21	17-May-21																												
WL-015	Prepare Loan Application for Facilities	30	18-May-21	29-Jun-21																												
Risk Assessment		195	25-Feb-20	30-Nov-20																												
RA-005	Risk Analysis of Recommend Option Meeting	40	25-Feb-20	20-Apr-20																												
RA-010	Prepare Cost Risk Update	10	21-Apr-20	04-May-20																												
RA-020	Prepare RA	66	26-Aug-20	30-Nov-20*																												
RA-030	Submit Admin Final RA	0		30-Nov-20*																												
General Counsel		338	01-Sep-20	31-Dec-21																												
GC-020	General Counsel	338	01-Sep-20	31-Dec-21																												
Cost of Year Deliveries		51	02-Jan-20	12-Mar-20																												
CYD-005	Prepare Progress Report	30	02-Jan-20	12-Feb-20																												
CYD-010	In-progress Briefing	1	13-Feb-20	13-Feb-20																												
CYD-015	Prepare Final Report	20	13-Feb-20	11-Mar-20																												
CYD-020	In-progress Briefing	1	12-Mar-20	12-Mar-20																												

Actual Work Critical Remaining Work Critical Milestone Cal Days
Remaining Work Milestone Summary

Project Schedule

Requested Action:

Consider approval of the draft Second Amendment to 2019 Reservoir Project Agreement.

Detailed Description/Background:

Staff worked with Authority bond counsel (Doug Brown, Stradling Yocca Carlson & Rauth) to prepare an amendment to the Authority approved First Amendment to 2019 Reservoir Project Agreement. This amendment addresses the two Project time periods noted below so home boards do not need to review and sign two separate amendments.

- The First Reservoir Participation Agreement Amendment addressed the initial Amendment 1B time period of January 1, 2020 through June 30, 2020. After issuance of the First Amendment to home boards for approval the Authority extended the Amendment 1B time period for an additional two months, though August 31, 2020. This extension requires approval by home boards.
- The Amendment 2 Work Plan time period is from September 1, 2020 through December 31, 2021 which requires approval by home boards.

The Second Amendment also addresses the cash call required to conduct the Amendment 2 scope of work. The second amendment to the 2019 Reservoir Project Agreement has been reviewed by the Ad-Hoc Budget and Finance Committee and no changes were requested.

Prior Action:

December 19, 2019: Approved extending the participation agreement's end date from June 30, 2020 to August 31, 2020 (aka amendment 1B).

November 21, 2019: Provided input to staff to aid in development of a work plan through June 30, 2020.

October 18, 2019: Approved the First Amendment to 2019 Reservoir Project Agreement.

September 20, 2019: Approved a no-cost extension of time to complete activities defined in the Agreement's work plan (aka Exhibit B). Their approval extended the Agreement's period of performance December 31, 2019 through March 31, 2020.

Status:	Final	Preparer:	Trapasso	Phase:	2	Version:	A
Purpose:	Staff Report	QA/QC:	Watson	Date:	2020 April 22		
Caveat:	Informational	Authority Agent:	Trapasso	Ref/File #:	12.221-210.018		
Notes:				Page:	1	of	2

Fiscal Impact/Funding Source:

No impact as included in Amendment 1B and 2 Work Plans.

Staff Contact:

Joe Trapasso

Attachments:

Attachment A: Second Amendment to 2019 Reservoir Project Agreement

SECOND AMENDMENT TO 2019 RESERVOIR PROJECT AGREEMENT

BY AND AMONG

SITES PROJECT AUTHORITY

and

THE PROJECT AGREEMENT MEMBERS LISTED HEREIN

Dated as of July 1, 2020

THIS SECOND AMENDMENT TO 2019 RESERVOIR PROJECT AGREEMENT (this “Second Amendment”), dated as of July 1, 2020, by and among SITES PROJECT AUTHORITY, a joint powers authority duly organized and existing under the laws of the State of California (the “Authority”), and the project agreement members listed in the Agreement referenced below (the “Project Agreement Members”) and amends that certain 2019 Reservoir Project Agreement dated as of April 1, 2019 (the “Original Agreement”), as previously amended by the First Amendment to 2019 Reservoir Project Agreement dated as of January 1, 2020 (the “First Amendment” and, together with the Original Agreement, the “Agreement”), each by and among the Authority and the Project Agreement Members;

WITNESSETH:

WHEREAS, Authority and the Project Agreement Members have determined to approve an Amendment 2 Work Plan and to extend the term of the Agreement to December 31, 2021; and

WHEREAS, under Section 11 of the Agreement, the Agreement may be amended by a writing executed by the Authority and at least 75% of the total weighted vote as provided in Subsection 3(g) of the then-current Committee members; and

WHEREAS, all acts, conditions and things required by law to exist, to have happened and to have been performed precedent to and in connection with the execution and the entering into of this Second Amendment do exist, have happened and have been performed in regular and due time, form and manner as required by law, and the parties hereto are now duly authorized to execute and enter into this Second Amendment;

NOW, THEREFORE, THIS SECOND AMENDMENT WITNESSETH, the Authority and the Project Agreement Members agree, as follows:

ARTICLE I

DEFINITIONS

Section 1.01. **Definitions.** All capitalized terms not otherwise defined herein shall have the meaning set forth in the Agreement.

ARTICLE II

AMENDMENTS TO AGREEMENT

Section 2.01. **Amendments to Section 8(b) of the Agreement.**

(a) The reference in Section 8(b) of the Agreement to June 30, 2020 shall be changed to December 31, 2021. In the event that this Second Amendment is not approved by Project Agreement Members with the requisite percentage of the total weighted vote as set forth in the Agreement by June 30, 2020, the Agreement shall be revived immediately upon approval by such requisite percentage, without any additional approval of the Project Agreement Members, and this Second Amendment shall become effective.

Section 2.02. **Work Plan**

(a) Effective September 1, 2020, the 2019 Work Plan attached as Exhibit B to the Agreement shall be superseded in its entirety by the Work Plan attached hereto as Exhibit A (the “Amendment 2 Work Plan”).

Section 2.03. **Funding**

The Agreement is hereby amended to remove Section 4(a) in its entirety and replace it with the following:

“(a) **Budget.** The Committee shall, in cooperation with the Authority’s Board, provide and approve both a Fiscal Year operating budget and reestablish a Phase 2 budget target, annually or more frequently as needed. The Project Agreement Members shall contribute their respective pro-rata share of the budgeted sums reflected in the 2019 Work Plan (prior to September 1, 2020) and the Amendment 2 Work Plan (on and after September 1, 2020) in accordance with Section 5 of this Project Agreement; provided, however, that in no event shall the amount paid by a Project Agreement Member exceed \$160 per acre-foot (with \$60 of such amount being attributable to the 2019 Work Plan and \$100 of such amount being attributable to the Amendment 2 Work Plan) without the approval of such Project Agreement Member.”

ARTICLE III

MISCELLANEOUS

Section 3.01. **Effectiveness of Agreement.** Except as expressly amended by this Second Amendment, the Agreement is hereby ratified and confirmed and shall continue in full force and effect in accordance with the terms and provisions thereof. The amendments set forth in this Second Amendment shall be incorporated as part of the Agreement upon their effectiveness in accordance with Section 11 of the Agreement.

Section 3.02. **Execution in Several Counterparts.** This Second Amendment may be executed in any number of counterparts and each of such counterparts shall for all purposes be deemed to be an original; and all such counterparts, or as many of them as the Authority and the Project Agreement Members shall preserve undestroyed, shall together constitute but one and the same instrument.

Section 3.03. **Authorization, Ratification and Confirmation of Certain Actions.** The Authority and the Project Agreement Members each hereby authorize, ratify and confirm the extension of the term of the Agreement, as previously extended pursuant to the First Amendment, to August 31, 2020, and the expenditure of funds collected under the Agreement with respect to the 2019 Work Plan on and prior to August 31, 2020.

Section 3.04. **Laws Governing First Amendment.** The effect and meaning of this Second Amendment and the rights of all parties hereunder shall be governed by, and construed according to, the laws of the State.

IN WITNESS WHEREOF, the Authority and Project Agreement Members hereto, pursuant to resolutions duly and regularly adopted by their respective governing bodies, have caused their names to be affixed by their proper and respective officers on the date shown below:

Dated: _____

SITES PROJECT AUTHORITY

By: _____

Name:

Title:

[PROJECT AGREEMENT MEMBER]

Dated: _____

(Authority & Project Agreement Member)

By: _____

Name:

Title:

EXHIBIT A
AMENDMENT 2 WORK PLAN



Topic: **Authority Board Agenda Item 2.1d**

2020 April 22

Subject: **Prepare a Revised Draft EIR based on Value Planning Report Results**

Requested Action:

Consider direction for staff to revise and recirculate a Draft Environmental Impact Report (EIR) to analyze the environmental effects of the options identified in the Final Sites Project Value Planning Alternatives Appraisal Report dated April 13, 2020 (Report), including VP7.

Detailed Description/Background:

In August 2017, the Authority and the Bureau of Reclamation (Reclamation) jointly issued a Draft Environmental Impact Report/Environmental Impact Statement (EIR/EIS) for the Project pursuant to their respective lead agency obligations under the California Environmental Quality Act (CEQA) and the National Environmental Policy Act (NEPA)¹. The public comment period on the Draft EIR/EIS was subsequently extended and then closed on January 15, 2018. A total of 141 comments letters were received on the Draft EIR/EIS along with comments received at two public hearings held during the public review period. From approximately March 2019 thru the end of September 2019, staff were developing responses to the comments received on the Draft EIR/EIS. On October 1, 2019, this work was put on hold in order to focus on the Value Planning Effort by the Ad Hoc Value Planning Workgroup.

The Ad Hoc Value Planning Workgroup completed their effort and has provided the Sites Project Value Planning Alternatives Appraisal Report (Report) for your consideration in Agenda Item 2.1a today. The Report identifies additional project alternatives through a screening process that considered total project cost, impacts on landowners, impacts on traffic and public safety, ability to meet participant demands, ability to provide public benefits to the State, relative magnitude of environmental impacts, and the estimated cost per acre-foot of water delivered.

Staff recommends that the Draft EIR be revised to analyze the environmental effects of the new alternatives in the Report, including VP7, and recirculated for public review. The alternatives considered in the Report generally have smaller footprints and reduced diversions into Sites Reservoir, thus resulting in fewer adverse environmental impacts than the alternatives evaluated in the 2017 Draft EIR/EIS. VP7 consists of a 1.5 million acre-foot reservoir, 1,000 cubic feet per

¹ Release of the draft EIR/EIS for public comment coincided with release of Reclamation's draft Feasibility Report and the Authority's submission of its Proposition 1 (WSIP) application to the California Water Commission.

second release capacity to the Colusa Basin Drain, a bridge to provide access to the west of the reservoir, an unpaved road to maintain access to residents along the southern portion of the reservoir, and would utilize the existing Tehama-Colusa Canal and Glenn-Colusa Canal facilities for diversions into Sites Reservoir.

For full and open disclosure, to provide the opportunity for the public to comment on the new alternatives, and to promote informed decision-making by the Authority and other governmental agencies with approval authority over the Project, Staff will begin development of the revised draft EIR and will return to the Board to (1) identify a preferred alternative once a more complete description of the range of alternatives has been developed; and (2) review and approve release of the recirculated Draft EIR. Direction is needed from the Committee and the Authority Board on how best to move forward with CEQA compliance in consideration of the additional alternatives identified in the Report.

Reclamation will need to make a separate decision on how to proceed with the EIS under NEPA, including possible continuation of the joint EIR/EIS approach followed previously for this Project. Staff will work cooperatively with Reclamation on a joint path forward.

Prior Action:

February 26, 2020: Approved a recommendation to re-start efforts on the EIR for the Sites Reservoir Project and assess the most appropriate approach for completing the EIR pursuant to CEQA.

July 20, 2017: Approved a recommendation to forward the Draft EIR/EIS to the Authority Board for its consideration to formally receive and adopt the document for inclusion in the Authority's Water Storage Investment Project application.

July 31, 2017: Approved the release of the Draft EIR for public and agency review, in connection with the Authority's application to the California Water Commission by August 14, 2017. The document was published as joint Draft EIR/EIS by the Authority under CEQA and Reclamation under NEPA.

December 19, 2016: Approved release of a revised Notice of Preparation to transfer CEQA lead agency status from the Department of Water Resources to the Sites Project Authority. Public scoping meetings were conducted on February 14 and 15, 2017.

Fiscal Impact/Funding Source:

Costs to begin this effort were included in the Phase 1B Work Plan which was approved by the Sites Project Authority at its January 22, 2020 Board meeting.

Costs to complete the recirculated Draft EIR/EIS and begin preparation of the Final EIR/EIS are considered in the Amendment 2 Work Plan.

Costs to complete the Final EIR/EIS will be considered in a future Work Plan.

Staff Contact:

Ali Forsythe

Attachments:

None.

Requested Action:

Consider approval of the Sites Project message platform which has been incorporated into informational materials describing the results of the value planning effort and the proposed work plan and will be used for communicating the Project to all audiences.

Detailed Description/Background:

Staff has been working with the Authority Ad Hoc Legislative and Outreach Committee and several members of the Reservoir Committee to develop an updated message platform and informational materials that highlight the new rightsized Sites Reservoir project.

The updated Sites message platform was used to create informational materials that will be used by our Communications and Government Affairs teams to roll-out the rebranded Sites Reservoir project and serve as the foundation of future communications materials for the broader public. These materials can also be used by our participants and their Boards for outreach to their stakeholders and customers.

Staff recommends approval of the message platform because it is the building block of all project related communication going forward. The informational materials are provided to allow the Committee to see how Staff intends to integrate the platform into all of the materials produced. The materials cover all of the messages in the platform and allow for customizing to fit the needs of the individual agencies. Participating members can work with Staff to receive the materials desired.

The initial materials include:

- **Sites Message Platform** - This document identifies the key high-level messages for the project and would be the basis for all documents going forward.
- **2019 Annual Report** – This is the “inaugural” annual report for the Sites Project Authority. It provides an overview of the project, its history, 2019 key accomplishments, and next steps.
- **Executive Prospectus** – General project overview brochure that highlights the rightsized Sites Reservoir project.
- **PowerPoint presentation** – Updated presentation that “tells the story” about what the project does and highlights the outcomes of the “rightsizing” effort. The presentation is based on the updated message platform and provides an overview of the project, project operations, accomplishments and next steps.

Staff has also developed a roll-out plan for late April 2020 that would run through May 2020 that will include briefings for elected officials, landowner coordination activities, stakeholder outreach, general public outreach and media (both print and social). The roll-out also takes into consideration the limitations and unknown duration of the current shelter in place orders.

Fiscal Impact/Funding Source:

None.

Staff Contact:

Joe Trapasso

Attachments:

Attachment A: Sites Message Platform

Attachment B: 2019 Annual Report

Attachment C: Executive Prospectus

Attachment D: PowerPoint Presentation

SITES RESERVOIR MESSAGE PLATFORM

APRIL 2020

DRAFT

KEY MESSAGE 1 SITES RESERVOIR IS A 21ST CENTURY MULTI-BENEFIT SOLUTION TO CALIFORNIA'S WATER RELIABILITY CHALLENGES

- The Sites Project Authority is **working in collaboration** with a **broad coalition** of project participants and stakeholders - **throughout California** – to address our **statewide water supply challenges and create a resilient water future**.
- Sites Reservoir is a generational opportunity to construct a multi-benefit water storage project that helps **restore flexibility, reliability, and resiliency** to our **statewide** water supply.
- No other storage project currently under consideration in California can **positively influence the operational efficiencies of our existing statewide water system** like Sites Reservoir.
- Sites is **not a “traditional” reservoir project**. It is an **off-stream facility** that **does not dam a major river system** and would **not block fish migration or spawning**.
- Sites **captures and stores stormwater flows** from the **Sacramento River**—after all other water rights and regulatory requirements are met—**for release in dry and critical years** for **environmental use** and for California **communities, farms, and businesses** when it is so desperately **needed**.
- Sites is designed to be **adaptable to a changing climate**. As snowpack declines due to **climate change** and more of our water comes in the form of **atmospheric rivers** – Sites Reservoir will become **even more vital to the future resiliency of our statewide water supply**.
- Sites will be cooperatively managed in conjunction with both the State Water Project and Central Valley Project and **will greatly increase the flexibility, reliability and resiliency of statewide water supplies in drier years for environmental, agricultural, and urban uses**.

KEY MESSAGE 2 OUR STRENGTH IS IN OUR DIVERSE STATEWIDE PARTICIPATION

- The agencies participating in Sites Reservoir are diverse, representing **major urban centers** and **rural agricultural regions** across California.
- **Broad statewide representation** including the **local counties** where the project is located, along with **cities**, and **water and irrigation districts** throughout the **Sacramento Valley, San Joaquin Valley, Bay Area, and Southern California**.

- Working in **close collaboration** with **California Department of Water Resources** and **Bureau of Reclamation** to add **operational flexibility** to the **State Water Project** and **Central Valley Project**.
- **Spirit of teamwork and regional collaboration** to advance a practical solution for our statewide water management challenges.

KEY MESSAGE 3 SITES RESERVOIR IS A “RIGHT SIZED” PROJECT THAT WILL MEET OUR WATER SUPPLY NEEDS FOR TODAY AND IN THE FUTURE

- The Sites Project Authority conducted a **rigorous Value Planning effort** to review the project’s proposed operations and facilities **to develop a project that is “right sized” for our investors and participants while still providing water supply reliability and enhancing the environment.**
- Rightsizing the reservoir was **responsive to input** from **state and federal agencies, NGOs, elected officials, landowners and local communities.** The feedback we received through a robust outreach effort was critical to developing a reservoir that is the right size for both people and the environment.
- The rightsizing has **resulted** in a project that has **a smaller footprint** and **operated in a different manner** than originally designed – due to these changes the Authority will **recirculate its Draft EIR/EIS** – and work with **landowners, tribes, stakeholders, NGOs, and local communities** to develop a **collaborative environmental review process.**
- **It is essential that we build a project now that makes sense for all our participants** – local, state, and federal. This means **rightsizing and optimizing the project for current conditions,** while **maintaining flexibility** to expand and adapt the project to address future conditions.

KEY MESSAGE 4 SITES RESERVOIR PROVIDES ENVIRONMENTAL, WATER SUPPLY, FLOOD PROTECTION AND RECREATION BENEFITS FOR THE STATE OF CALIFORNIA FOR GENERATIONS TO COME

- A significant portion of the **Sites Reservoir Project’s annual water supplies will be dedicated to environment uses** to help improve conditions for **Delta smelt**; help **preserve cold-water pools in Shasta Lake** later into the summer months **to support salmon development, spawning, and rearing**; and **improve Pacific Flyway habitat** for migratory birds and other native species.
- **Water dedicated for the environment** provided by Sites Reservoir will be **managed by state resources agency managers** who will decide how, and when, this water would be used - creating a **water asset** for the state that **does not currently exist.**

- Sites Reservoir will provide **significant regional flood protection benefits** for the Sacramento Valley by **storing flood flows** that would normally impact the communities of **Maxwell** and **Williams** - protecting homes, business and farms.
- Sites Reservoir will benefit the **local and regional economy** by **creating hundreds of construction-related jobs** during each year of the construction period, and **long-term jobs related to operations and recreation**.
- Sites Reservoir will provide **additional recreational opportunities** and **contribute to the overall economy** of the **Sacramento Valley**.

KEY MESSAGE 5 WE ARE ON-TRACK TO DELIVER THIS VITAL PROJECT FOR THE PEOPLE OF CALIFORNIA

- Sites Reservoir is **one of only two statewide projects specifically named as a priority project in Governor Newsom's Water Resilience Portfolio**.
- Sites **participants** have **invested over \$27 million** to advance the project over the last 3 years.
- Sites Reservoir was **awarded \$816 million** in state investment under **Proposition 1** to advance the project, the **largest award given to any project requesting funding**.
- Sites Reservoir has received **significant Federal investment** - including over **\$10 million in Water Infrastructure Improvements for the Nation (WIIN) Act** funding and a **\$449 million loan** from the **US Department of Agriculture's Rural Development** program.
- The Authority is working to **further refine the reservoir's operations and integration with the State Water Project and Central Valley Project** and **improve certainty** related to the project's **permittability** and prepare applications for key **federal and state permits** and the **state's water rights**.
- The Authority will continue to **strengthen partnerships** with **local landowners, communities, and key stakeholders** that represent **environmental, business, labor, and other interests** and continue to **pursue funding** to move the project forward through the **planning and feasibility stage** and into **implementation** beginning in **2022**.

####

Sites Project Authority Annual Report

2019 DRAFT FINAL



Bringing resiliency, reliability, and flexibility to California's water supply

We understand how critical it is to have a water system that provides multiple benefits. **Sites Reservoir will produce significant benefits to the environment and secure water supply resiliency across the state for future generations.**



Letter from the Sites Board Chair

On behalf of the Sites Project Authority (Authority), I am pleased to publish this inaugural annual report to highlight the significant progress we have made in developing Sites Reservoir. Since 2010, the Authority, representing 28 public agencies throughout California, has advanced this important project.

The Authority's strength lies in our participants, which represent the local counties where the project is located, along with cities, and water and irrigation districts throughout the Sacramento Valley, San Joaquin Valley, Bay Area, and Southern California. Through this spirit of teamwork and regional collaboration, the Authority has made great progress in advancing Sites Reservoir.

In 2019, the Authority focused on project permitting, operation modeling, financial analysis, and conducting a proactive stakeholder engagement effort. We have been diligently working on developing a project that meets the needs of our participants and is affordable for our investors. We remain steadfast in our commitment to working in partnership with both landowners and project stakeholders to advance a project that meets the needs of our communities and the environment.

I believe strongly that Sites Reservoir offers a unique and generational opportunity to construct a multi-benefit water storage project that helps restore flexibility, reliability, and resiliency to our statewide water supply, and provide a dedicated supply of water for environmental purposes.

Creating a resilient and reliable water future for California is essential to our environment, economy, and our communities. The Authority is committed to advancing Sites Reservoir and will continue to work in collaboration with our participants, federal and state partners, and stakeholders to deliver this important project for the people of California.

Fritz Durst



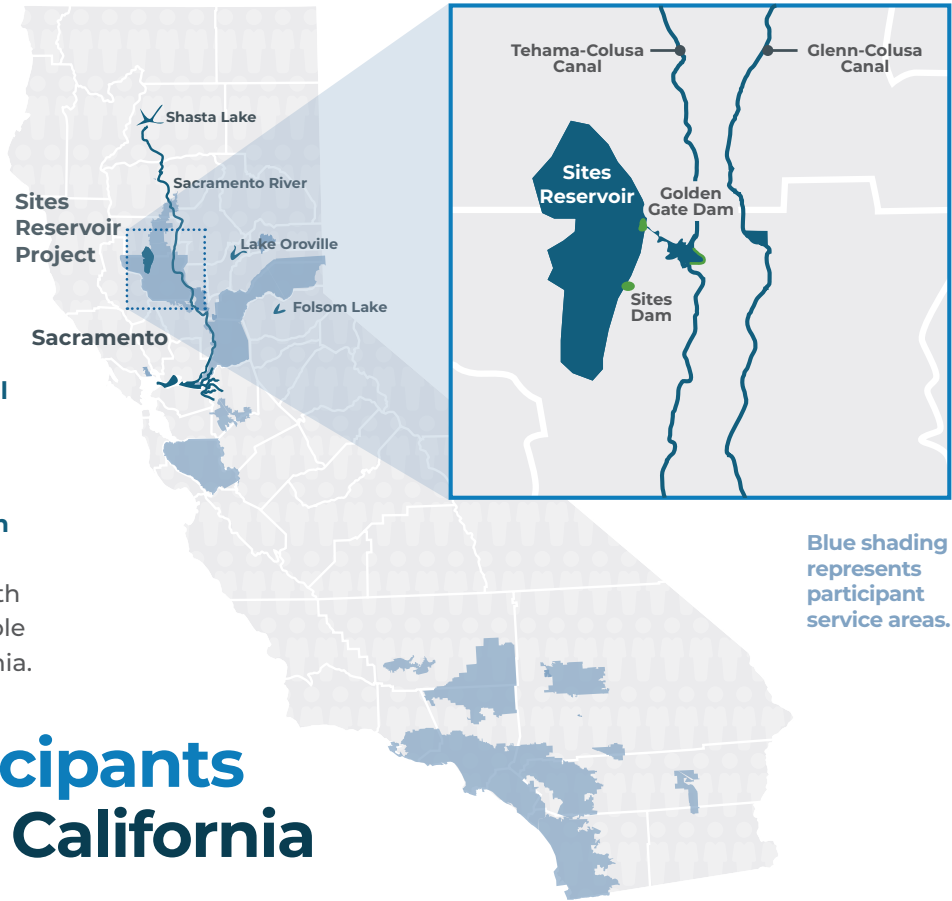
Chairman, Sites Project Authority Board of Directors



Sites Reservoir has **Dedicated Participants** Across California

Now more than ever, California needs to address its statewide water management challenges by implementing innovative solutions that address our need for a sustainable and affordable water supply. **Managing California's water resources remains one of the greatest challenges that will continue to face California policy makers well into the future.**

Our participants provide water for more than half the population of California. Each participant is working together as partners with a unified goal of creating a reliable water supply solution for California.



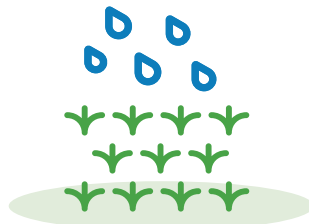
Blue shading represents participant service areas.

28 participants span California

Our participants serve:



Cities/Neighborhoods



Farmland/Irrigation



State/Environment

equating to **24+ million people** and
over **500,000 acres of farmland**

Sites Reservoir Overview: Focusing on Resiliency

California's current water problem

California's water infrastructure is stressed beyond its capabilities. Our demands for water to serve our communities, fuel our economy, and preserve our environment have increased far beyond what the system was designed to reliably and sustainably support. Changing weather conditions only exacerbate an already unsustainable reality.

As we experienced in the 2012-2016 drought, the current water management system is not able to manage future conditions without severe consequences to our communities, families, farms, businesses, and the environment. Reliable dry year water supply is critical to creating a resilient future for California. Sites Reservoir is a vital part of the solution to improving dry year water supply for generations to come.

How Sites Reservoir will provide a solution

Sites Reservoir will significantly improve the state's water management system in drier periods and restore much-needed flexibility and reliability that has been lost in the system. Located 10 miles west of the town of Maxwell in rural Glenn and Colusa counties, Sites Reservoir is an off-stream storage facility that captures and stores stormwater flows from the Sacramento River for release in dry and critical years.

When operating, Sites Reservoir will become a new drought management tool providing significantly more water during drier periods. **Sites Reservoir will be one of the state's largest reservoirs, and will add flexibility to California's water infrastructure by providing up to 1.5 million acre-feet of water storage capacity.**

When operated in conjunction with other Northern California reservoirs, such as Shasta, Oroville, and Folsom that function as the backbone to both the Central Valley Project and the State Water Project, Sites Reservoir will greatly increase the flexibility, reliability and resiliency of statewide water supplies in drier years for environmental, agricultural, and urban uses.

A portion of Site Reservoir's annual water supplies will be provided for environmental flows to help improve conditions for Delta smelt; help preserve the cold-water pools in Shasta Lake later into the summer months to support salmon development, spawning, and rearing; and improve Pacific Flyway habitat for migratory birds and other native species.

Sites Reservoir will benefit the local and regional economy by creating hundreds of construction-related jobs during each year of the construction period, and long-term jobs related to operations and recreation.

Simply put, Sites Reservoir can significantly improve the state's existing water management system in drier years and restore the much-needed flexibility that has been lost. The time is right to build on our momentum and growing support to ensure Sites Reservoir gets across the finish line before the next drought.

Sites Reservoir Fast Facts



Adds significant annual water storage capacity to California's water system **for use in drier periods**



Provides the state of California with up to **1.5 million acre-feet of water storage capacity**



Creates **reliable supplies** for environmental, agricultural, and municipal uses



Provides crucial water for **homes and businesses**



Supported by **28 participating agencies** representing communities across California

Gaining Momentum from planning through 2019

The beginning of more successes in the years to come

From humble beginnings as a discussion around water needs first referred to in the California Department of Water Resources' (DWR) Bulletin 3 in 1957 to becoming Sacramento Valley's best option for surface water storage, Sites Reservoir is the culmination of the lengthy journey toward finding a reliable water source for California.

Initial discussions surrounding the need for additional water storage were prompted by DWR's initial interest in and studies surrounding a north-of-Delta off-stream storage concept that inspired the first official references to Sites Reservoir. Conversations continued about the need for an additional water source, but there was little funding to advance the project. Then, in 1981, the Bureau of Reclamation published findings from an independent feasibility study that set the groundwork for Sites Reservoir as a valid solution to water reliability in California. Following the study, support for the project continued through the 1990s, but the key issue remained finding adequate project funding to make Sites Reservoir a reality.

The early 2000s saw focused efforts on research and data gathering to gain funding and to support the importance of Sites Reservoir to the goals of the CALFED Bay-Delta Program (CALFED). These research efforts included reports and additional studies targeting engineering feasibility, alternative analysis, testing,

and evaluations of California's water systems, canals, treatment plants, and related facilities. The data from these efforts propelled the project forward, paving the way for the Sites Project Authority to form in 2010.

In November 2014, California voters overwhelmingly approved the passage of Proposition 1 that dedicated \$2.7 billion for water storage projects, dams, and reservoirs throughout the state. After a rigorous evaluation process, the Sites Reservoir Project was awarded \$816 million in state investment to advance the project, the largest award given to any project requesting Proposition 1 support.

Today, the Authority remains committed to Sites Reservoir and is committed to maintaining the trust of the community through transparent and efficient practices, and by honoring the water storage efforts that began more than 60 years ago.

1957

Initial Project Identification

DWR Bulletin 3 first references the project, and the project is included in the 1957 California Water Plan.

1997

CALFED Bay-Delta Authorization

The project is evaluated as part of a comprehensive water management framework for ecosystem restoration.

2010

Joint Powers Authority Formed

The Authority is formed to serve as the lead local agency to advance the project.

2014

Proposition 1 Passed

The proposition dedicated \$2.7 billion for water storage projects, dams, and reservoirs.

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2020

And beyond

Additional milestones in the years to come will make this project a reality.

2019

Water Infrastructure Improvements under the WIIN Act Appropriations

Through Authority-led outreach in 2019, the project receives \$6 million, bringing the total in Congressional Appropriations from the Water Infrastructure Improvements for the Nation (WIIN) Act to \$10 million.

California Water Resilience Draft Portfolio

Sites Reservoir is specifically named as one of only two priority project in the Governor's 2019 Water Resilience Draft Portfolio—a plan to provide reliability and resiliency to statewide water supplies.

2018

\$816 million investment from the State of California

The investment meets Proposition 1 criteria in recognition of its significant benefits to the public, the economy, and the environment.

\$449 million in federal funding from the U.S. Department of Agriculture

The project receives a construction loan for the Maxwell Water Intertie Project. (U.S. Secretary of the Interior Ryan Zinke, U.S. Secretary of Agriculture Sonny Perdue, and elected officials tour proposed project facilities)

2016

Reservoir Committee Organized

Authorization is provided to spend \$27 million over 3 years.

Draft Environmental Impact Report/Statement (EIR/EIS) Released

The documents are developed in partnership with the Bureau of Reclamation.

The Resiliency, Reliability, and Flexibility of Sites Reservoir

Sites Reservoir will capture and store stormwater flows from the Sacramento River—after all other water rights and regulatory requirements are met—for release in dry and critical years for environmental use and for California communities, farms, and businesses when it is so desperately needed.

Rain and snowmelt from mountains feed into our rivers and lakes, providing us with water. A small portion of this water will be stored in Sites Reservoir and released in drier water years to provide water for our crops, support wildlife habitat and at-risk species, and provide water for our communities when it is needed most.



Water from Sites Reservoir **directly benefits:**

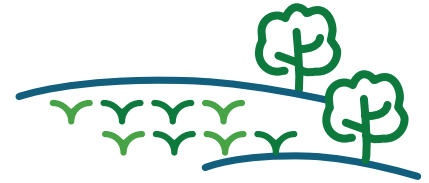
Environment



Communities



Agriculture



Families



California's Water Challenges are multi-layered, but so are the benefits of Sites Reservoir



Floods put many Californian's at risk.

Floods jeopardize our safety and they destroy homes, agricultural land, local businesses, and the environment.

After a severe flood event many homeowners, farmers, and business owners never fully recover. Recently, Sacramento Valley communities have seen local economies suffer overwhelming impacts of flooding. Sites Reservoir will improve local flood control in the Sacramento Valley to help prevent post-flood devastation.



Droughts are a destructive reality in California.

In harsh drought conditions, the life cycle and habitat of many species are at risk, including the thousands of eggs and newly spawned salmon that rely on the Sacramento River to survive. Orchards and other agricultural crops are particularly vulnerable to drought due to limited groundwater stores. Our businesses and communities are also affected, as droughts bring severe economic and employment impacts. Sites Reservoir will provide water during drought and significantly increase the state's storage.

The good news is, significant benefits can be possible if Sites Reservoir becomes a reality, including:



Off-stream Storage

Does not create a barrier to native fish migration



Federal and State Agencies Manage Environmental Water

Adaptable to current and future conditions and priorities



Local Leadership and Cooperation

Aligns with Sacramento Valley's values and fosters regional and statewide collaboration



Recreational Opportunities

Provides northern Sacramento Valley with additional opportunities for recreation



Cooperative Operation

Increases effectiveness and efficiency of existing water storage infrastructure



Adaptable to Climate Change

Improves water system reliability and performance as climate changes



Dry Year Water Supply

Reliable dry year water supply for California communities, farms and businesses



Environmental Support

Provides environmental water in drier periods for native fish, and habitat for native species and birds

2019 Highlights and Milestones

Throughout 2019, the Authority continued to build on the incredible momentum the project gained over the last few years. The Authority focused on several key milestones that position Sites Reservoir for success in 2020. In 2019, the Authority:

Engaged Federal and State Officials

Sites Reservoir gained congressional support in 2017 when the Authority submitted the Water Storage Investment Program (WSIP) application with a letter signed by 53 California House Representatives and another signed by U.S. Representative Doris Matsui. To continue building support throughout 2019, the Authority participated in three legislative events in Washington, D.C., and facilitated a state legislative day with California elected officials.

OUTCOME: With continued outreach and support from elected officials at both the state and federal level, Sites Reservoir continues to receive funding.

Adopted California Environmental Quality Act (CEQA) Guidelines

In March, the Authority adopted CEQA guidelines which identify decision-making and project approval authority and outline CEQA review procedures.

OUTCOME: The guidelines bring the Authority in compliance with State law and identifies an open and transparent process for implementing Sites Reservoir.

Continued Discussions with Landowners and Project Stakeholders

Throughout the project's history the Authority has dedicated time to discussing project progress with landowners and project stakeholders. 2019 was no exception, as the Authority continued to proactively engage landowners.

OUTCOME: The Authority provided transparent communication with affected landowners, local government agencies, project stakeholders, and the general public.

Discussed Permitting with Federal and State Regulatory Agencies

Throughout 2019, the Authority focused on working with federal and state regulatory agencies to discuss the permitting application process.

OUTCOME: The foundation is set to continue the permitting process with the U.S. Fish and Wildlife Service, National Marine Fisheries Service, and California Department of Fish and Wildlife.

Adopted Real Estate Policy

In April, the Authority adopted a real estate policy that described procedures and protocols for acquiring temporary rights of entry in support of 2019 geotechnical field survey activities.

OUTCOME: The team conducted necessary geotechnical investigations efficiently and effectively, helping set the stage for success.

Executed WSIP/Proposition 1 Early Funding Agreement

In June, the Authority worked with staff at the California Water Commission to execute the WSIP/ Proposition 1 Early Funding Agreement.

OUTCOME: The Authority received \$6.1 million in reimbursement of the \$40.8 million early funding agreement with the California Water Commission.

Initiated an Organizational Assessment

An Authority-directed comprehensive organizational assessment began in August.

OUTCOME: The draft assessment provided findings and recommendations in key project areas, including affordability, communications, and governance.

2019 was focused on permitability and affordability. Each key milestone accomplished throughout 2019 sets the stage for success in 2020.



Conducted an Affordability Analysis

The Authority conducted an Affordability Analysis in the second half of 2019. Information was conveyed in a series of joint Reservoir Committee and Authority Board workshops; the efforts culminated in the rollout of a cash flow tool for participants.

OUTCOME: Participants are informed about the cost of water in terms of annual repayment and operations costs.

Began Focused Geotechnical Investigations

Beginning in the 4th quarter, the Authority began biological and cultural monitoring for the Bureau of Reclamation's geotechnical investigations. The focused investigations involved coordination with landowners and local agencies, including Colusa County, Maxwell Irrigation District, and Glenn Colusa Irrigation District.

OUTCOME: Getting "rigs in the field" was an enormous breakthrough for the project and is a significant step toward the next phase.

Executed Bureau of Reclamation Cost Share Amendment

In December, the amendment to the Cost Share Memorandum of Understanding between the Bureau of Reclamation and the Authority was executed for continued planning and pre-construction activities. The agreement was initially executed in 2015, and this first amendment extends the term for 5 additional years from the signing date.

OUTCOME: With support from the Bureau of Reclamation, the Sites Reservoir can continue to advance.

Executed Value Planning

The Authority embarked on a value planning effort that consists of appraisal-level engineering, environmental, permitting, operations, and financial assessments.

OUTCOME: The Authority is identifying the "right-size" project to build under today's conditions through value planning that prioritizes the creation of eligible public benefits (as identified in Proposition 1) and water supply benefits for the public water agencies that have been funding the studies to date.

Secured WIIN Act Funding

At the close of 2019, President Trump signed a bipartisan spending bill that authorized \$6 million from the federal government and appropriated the authorized WIIN Act funds to the Bureau of Reclamation to advance the Sites Reservoir.

OUTCOME: To date, Congress has appropriated roughly \$10 million in WIIN Act funding to the Bureau of Reclamation for Sites Reservoir.

California's Water Resilience Draft Portfolio identified Sites Reservoir as one of only two critical projects.

Executive Order N-10-19 outlines a plan for a water resilience portfolio to provide reliability and resiliency to statewide water supplies. Sites Reservoir was identified as a priority project that supports the goals presented in this document.

Sites Reservoir is recognized as a top priority that will support the water needs of California's communities, economy, and environment through the 21st century.



Looking Ahead

Planning for 2020 and Beyond

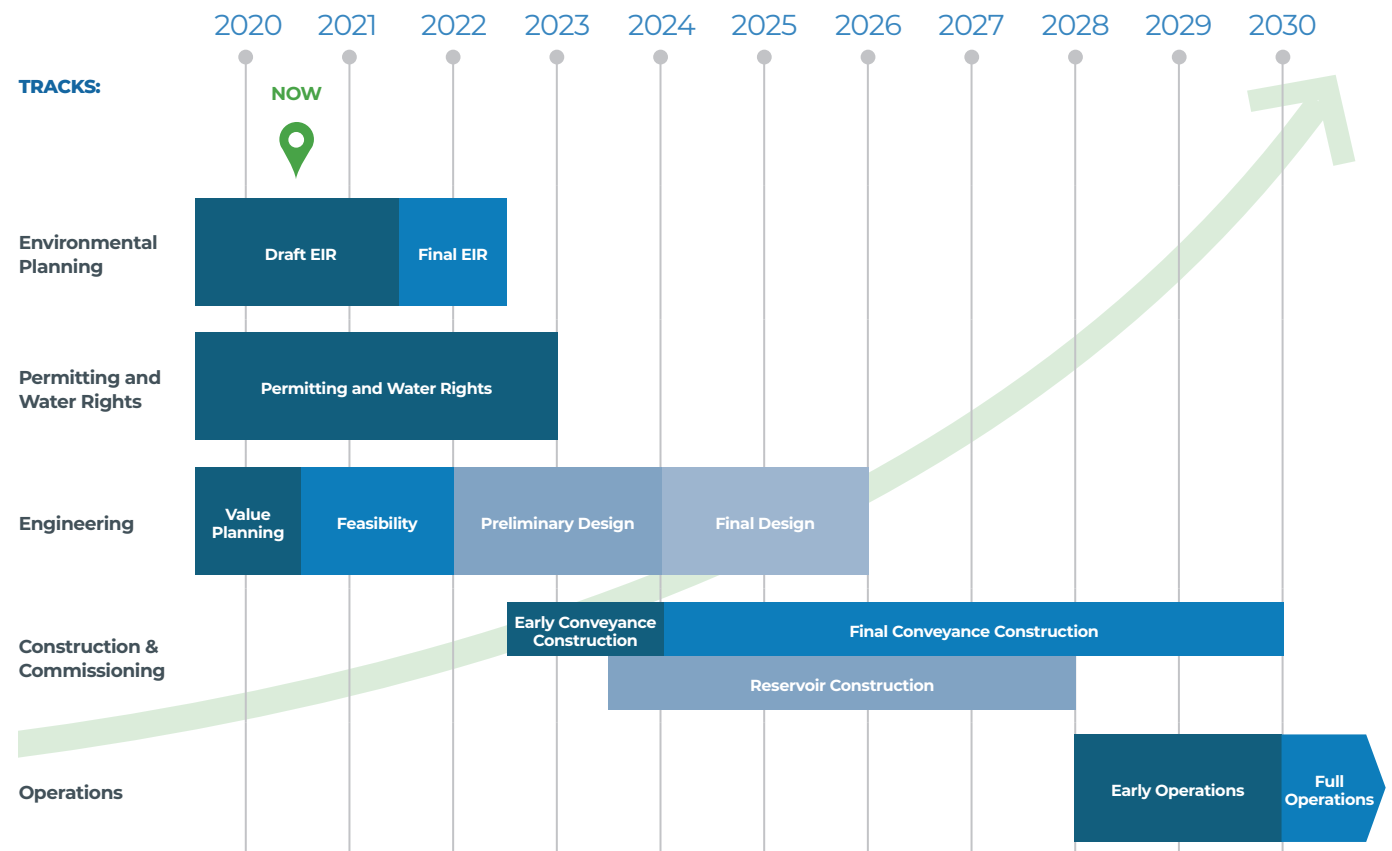
The Authority will build on the significant achievements of 2019 to advance Sites Reservoir toward operations in 2030.

Efforts will remain focused on project affordability and permitability. Value-planning efforts to right-size project facilities and operations will continue in early 2020, and produce the details needed to complete environmental documentation and advance key project permits.

Near-term goals are to:

- Define the reservoir's operations and integration with the State Water Project and Central Valley Project
- Continue to improve certainty related to the project's permitability, and prepare applications for key federal and state permits and a state water right permit
- Continue to improve project affordability by advancing engineering and cost estimates
- Secure additional low-interest financing and other grants
- Cultivate and strengthen partnerships with local landowners, communities, and key stakeholders that represent environmental, business, labor, and other interests
- Continue local, state, and federal funding to move the project forward through the planning and feasibility stage and into implementation beginning in 2022

Sites Reservoir Project Schedule



What our elected officials are saying about Sites Reservoir

From humble beginnings in 1957, Sites Reservoir is swiftly becoming reality as it moves from planning to execution.

“Sites Reservoir is best positioned to help increase our water supply, improve flood protection, improve water quality, and enhance water resources for the foreseeable future.”

—Senator Jim Nielsen

“Sites Reservoir offers a remarkable opportunity to reoperate California’s longest and largest river, the Sacramento, to provide multiple benefits for fish, farms, and cities in an innovative manner.”

—Senator Dianne Feinstein

“Sites is a critical component of what we need to do to prepare for the next drought... it would be a huge addition to our water storage capacity in California.”

—Assemblyman James Gallagher

“Building Sites Reservoir would bring California closer to achieving a drought-resilient water system... Sites will benefit farmers, our communities, and the environment.”

—U.S. Representative John Garamendi

“Sites is the best opportunity we have to increase water storage in California. Dry years or wet—for habitat, farms and Northern California communities—this project brings water security and benefits. I’ll keep fighting to get this project built.”

—Congressman Doug LaMalfa

SOURCES:

Feinstein: sitesproject.org/wp-content/uploads/2018/03/Sites_Support_Letters_Website_2.23.18.pdf

Gallagher: sacramentovalley.org/sites-reservoir/

Garamendi: www.dailydemocrat.com/2020/01/08/sites-reservoir-proposal-receives-6m-in-federal-funds/

LaMalfa: www.dailydemocrat.com/2020/01/08/sites-reservoir-proposal-receives-6m-in-federal-funds/

Nielsen: nielsen.cssrc.us/content/senator-nielsen-pushes-construction-sites-reservoir

Costs and Funding

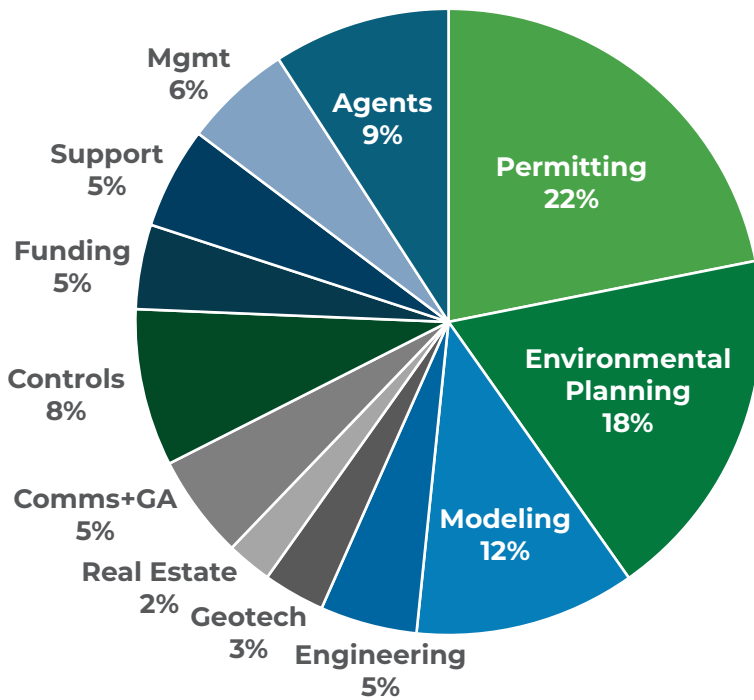
The Authority leveraged local funds in 2019 to improve certainty on project affordability and permitability.

In 2019 the Authority focused resources on improving certainty related to the project's permitability and affordability. The project went through a re-balancing in early 2019 as the project transitioned from phase 1 to phase 2. As participants changed their investment, the Authority re-prioritized funds through the approval of a new phase 2 work plan and schedule. A change in participation also triggered the implementation of the Authority's credit reimbursement policy. The Authority focused on leveraging local investments by executing an early funding agreement with the state using Proposition 1 funding, totaling a third of the project's revenue in 2019. Coordination with

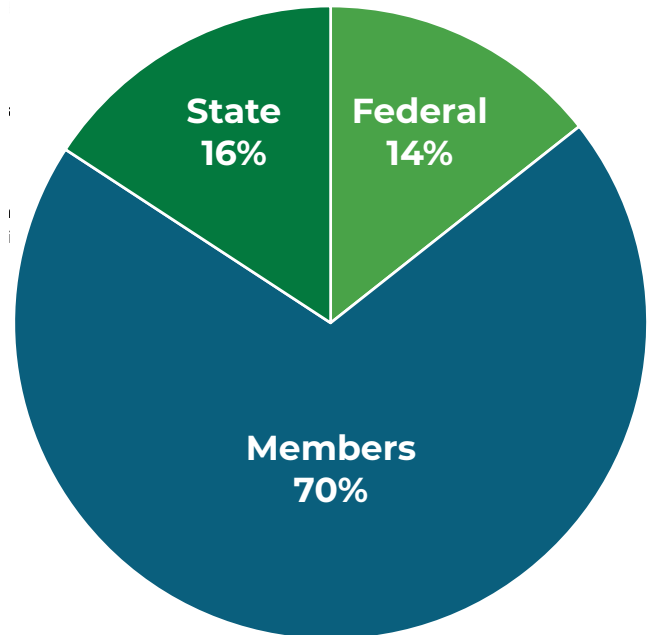
the Bureau of Reclamation also paved the way for a financial assistance agreement to be executed in 2020 to provide federal funds to the Authority and further leverage local investment.

Early in 2019 a management and technical team was assembled to deliver on the Authority's mission. In addition to bolstering critical environmental, permitting, operations, and engineering teams, the team added real estate, outreach, geotech, and project management resources. The team will provide the technical and business infrastructure needed to grow in a way that is efficient, transparent, and responsible.

2019 Costs by Task



**Cost Share (Actuals)
2015 through December 31, 2019**



Authority 2019 Profit and Loss Report***Income**

Membership Admin/Authority	\$505,000
Membership Water	\$11,458,034
Proposition 1 Funding	\$6,123,082
Total Income	\$18,086,116

Expense

Financial Fees and Subscriptions	\$38,846
Office Expenses	\$12,991
Credit Reimbursement (Phase 1)	\$6,503,713
Total Professional Fees	\$10,820,725
Website, Data, Computer Support	\$10,911
Total Expense	\$17,387,187
Net Ordinary Income	\$698,929
Interest	\$121,536
Net Income	\$820,465

*rounded to the nearest dollar

\$27 million

invested by Sites Reservoir participants through 2019.

Sites Reservoir participants are committed to seeing this project constructed.

The Authority has undergone an independent audit each year since 2016.

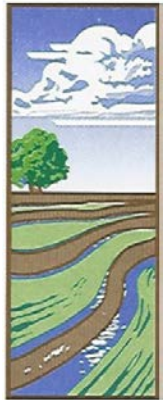
Each audit has confirmed that the Authority has maintained outstanding business practices resulting in efficient and transparent operations.

“In our opinion, the financial statements referred to above present fairly, in all material respects, the financial position of the Authority as of December 31, 2018, and the results of its operations and cash flows for the years then ended in conformity with accounting principles generally accepted in the United States of America.”

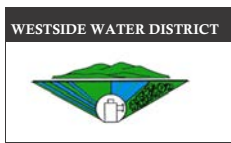
—Sites Project Authority Annual Financial Report with Independent Auditor's Report Theron, December 31, 2018

Auditor/Report Preparer: *Fechter & Company*
 Certified Public Accountants
 Sacramento, California, June 28, 2019

Diverse Statewide Support for Sites Reservoir



RECLAMATION
DISTRICT
108



Carter Mutual Water Company | Colusa County Water District

Cortina Water District | Davis Water District | LaGrande Water District

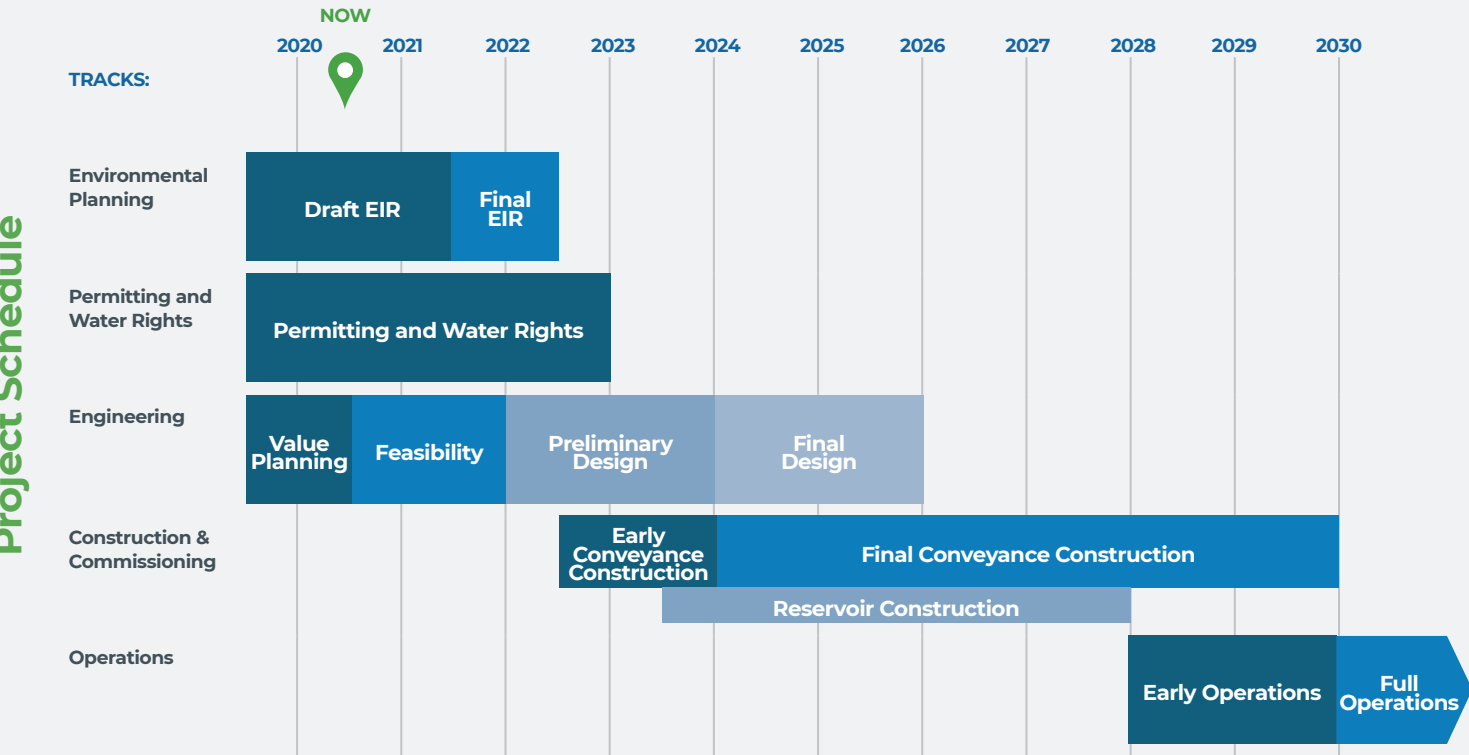
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2019 Annual Report

Affordability Overview

ANNUAL REPAYMENT COSTS PER ACRE FOOT OF RELEASE	
Reservoir Size (MAF)	1.5
Project Cost (2019\$, billions)	\$2.4 - \$2.7
Contingency Cost (2019\$, billions)	\$0.6
Total Project Cost (2019\$, billions)	\$3.0 - \$3.3
Annualized AF/year release (AF/year)	~240
Range of Annual Costs During Repayment Without WIFIA Loans (2020\$, \$/AF)	\$650 - \$710
Range of Annual Costs During Repayment With WIFIA Loans (2020\$, \$/AF)	\$600 - \$660

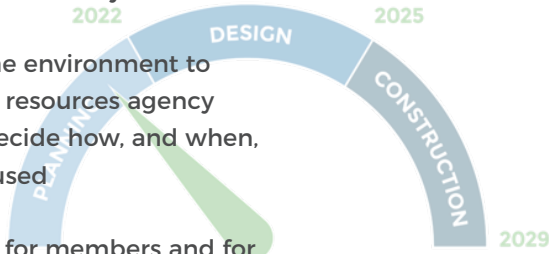


Next Steps to 2021

Improves the state’s water management system in drier periods, restores much-needed flexibility and reliability

Dedicates water to the environment to be managed by state resources agency managers who will decide how, and when, this water would be used

Creates a water asset for members and for the state that does not currently exist



Looking Ahead

Our participants are what makes Sites Reservoir such a unique and promising storage project. We have accomplished a great deal in recent years and are moving into a critical time as we transition to this next phase. As we move forward, we will continue to **strengthen partnerships** with **local landowners, communities, and key stakeholders** that represent **environmental, business, labor, and other interests** and continue to **pursue funding** to move the project forward through the **planning and feasibility stage** and into **implementation** beginning in **2022**.



EXECUTIVE PROSPECTUS

A 21st Century Solution

Sites Reservoir is generational opportunity to construct a multi-benefit water storage project that helps **restore flexibility, reliability, and resiliency** to our statewide water supply. Simply put, no other storage project currently under consideration in California can **positively influence the operational efficiencies of our existing statewide water**.

Perhaps what makes Sites Reservoir so unique is that it is **not** a “traditional” reservoir project. It is an **off-stream facility** that **does not dam a major river system** and would **not block fish migration or spawning**. Rather, Sites Reservoir offers a significant water storage opportunity that benefits both people and the environment.

Sites Reservoir **captures and stores stormwater flows** from the **Sacramento River**—after all other water rights and regulatory requirements are met—for **release in dry and critical years for environmental use** and for California **communities, farms, and businesses** when it is so desperately **needed**. Sites Reservoir is designed to be **adaptable to a changing climate**. As snowpack declines due to **climate change** and more of our water comes in the form of **atmospheric rivers** – Sites Reservoir will become **even more vital to the future resiliency of our statewide water supply**.



28 participants span California

Our participants serve:



Cities/
Neighborhoods



Farmland/
Irrigation



State/
Environment

equating to **24+ million people** and over **500,000 acres of farmland**

MEMBER	RESERVOIR
Public Water Agencies	
North of Delta	52,142 AF
South of Delta	140,750 AF
Subtotal Public Water Agencies	192,892 AF
State of CA (WSIP)	~40,000 AF
Total Requirement	~230,000 AF

Delivering Success: Key Accomplishments



Named in the Governor's Water Resiliency Plan as one of two critical projects



Reduced the construction cost by over \$2B through the value planning process



Leveraged your investment dollars against other federal and state dollars. For every dollar you invested we stretched it into \$1.50



Collaborated with State and Federal permitting agencies to define criteria for project permitability

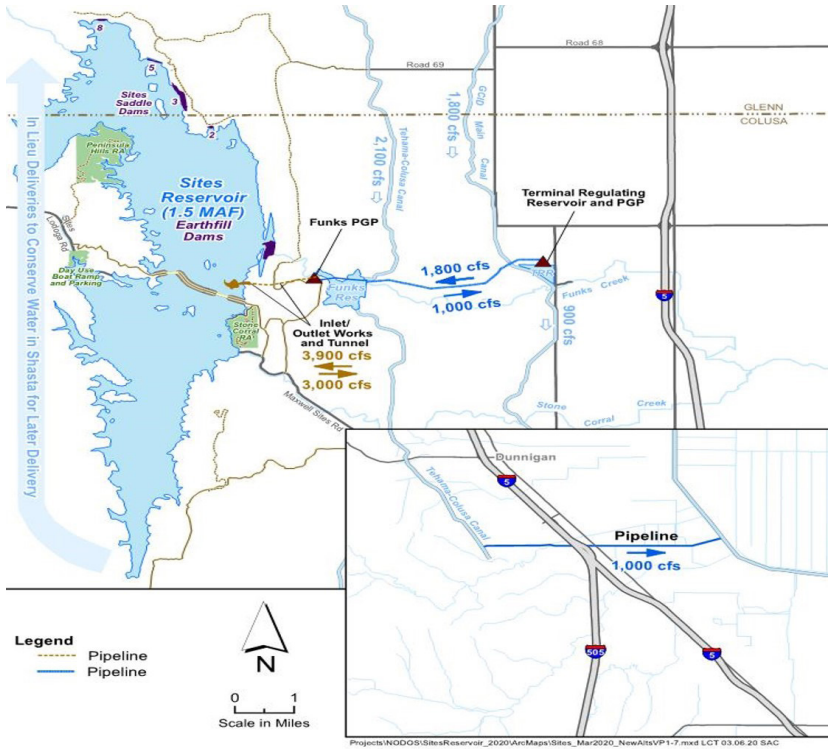
Value Planning

The Sites Project Authority conducted a rigorous value planning effort to review the project's proposed operations and facilities to develop a project that is **"right-sized"** for our investors and participants while still providing water supply reliability and enhancing the environment.


This right-sized reservoir is:

- Responding to extensive member-agency, community, NGO and regulatory input
- Resulting in a smaller footprint
- Optimizing operations for climate conditions


It is essential that we build a project now that makes sense for all our participants – local, state, and federal. This means rightsizing and optimizing the project for current conditions, while maintaining flexibility to expand and adapt the project to address future conditions.




Benefits




Off-stream Storage
Does not create a barrier to native fish migration




Cooperative Operation
Increases effectiveness and efficiency of existing water storage infrastructure




Recreational Opportunities
Provides northern Sacramento Valley with additional opportunities for recreation




Federal and State Agencies Manage Environmental Water
Adaptable to current and future conditions and priorities




Adaptable to Climate Change
Contributes to system reliability and performance with climate change



Environmental Support
Provides environmental water in drier periods for native fish, and habitat for native species and birds



Local Leadership and Cooperation
Aligns with Sacramento Valley's values and fosters regional and statewide collaboration



Dry Year Water Supply
Reliable dry year water supply for California communities, farms and businesses

Environmental Planning & Permitting

- Over 60 meetings to date
- Focused on:
 - » Criteria for diverting water from Sacramento River into Sites Reservoir
 - » Methods of analysis for ESA permits
- Discussions continue with CDFW, NMFS and USFWS
- Initial analysis shows annual deliveries of 200,000 – 250,000 acre-ft on average
- Range may be refined as discussions continue and permits finalized

Operations

Reservoir operations being refined and integrated with the State Water Project and Central Valley Project to improve certainty related to the project's permittability

YEAR TYPE	1,000 CFS RELEASE CAPACITY (TAF/YEAR)
Wet	90 - 120
Above Normal	260 - 290
Below Normal	245 - 275
Dry	355 - 385
Critically Dry	210 - 240
Long Term Average	~240

Sites Reservoir:

Improves the state's water management system in drier periods, restores much-needed flexibility and reliability

Dedicates water to the environment to be managed by state resources agency managers who will decide how, and when, this water would be used

Creates a water asset for members and for the state that does not currently exist

Sites Reservoir



21st Century Solution to California's Water Reliability Challenges

Sites Reservoir is a generational opportunity to construct a multi-benefit water storage project that helps **restore flexibility, reliability, and resiliency** to our statewide water supply



21st Century Solution to California's Water Reliability Challenges

Sites Reservoir is a new perspective for water storage

Captures and stores stormwater flows from the Sacramento River—after all other water rights and regulatory requirements are met—for release in dry and critical years

Sites is not a “traditional” reservoir project. It is an off-stream facility that does not dam a major river system and would not block fish migration or spawning.

Sites Reservoir is one of only two statewide projects specifically named as a priority project in Governor Newsom's Water Resilience Portfolio.



Water from Sites **directly** benefits:



Our Strength is in Our Broad Statewide Participation

Participants are diverse, representing major urban centers and rural agricultural regions across California

The Sites Project Authority is **working in collaboration** with a **broad coalition** of project participants **throughout California** to address our **statewide water supply challenges** and create a **resilient water future**

Working in close collaboration with **California Department of Water Resources** and **Bureau of Reclamation** to add **operational flexibility** to the **State Water Project** and **Central Valley Project**

Spirit of teamwork and regional collaboration to advance a practical solution for our statewide water management challenges

Our participants serve:



Cities/Neighborhoods



Farmland/Irrigation



State/Environment

equating to **24+ million people** and
over **500,000 acres of farmland**

Our Strength is in Our Broad Statewide Participation

Diverse statewide representation of public agencies advancing Sites Reservoir



Participants include
**counties, cities, water
and irrigations districts**

Urban and Rural

Sacramento Valley

San Joaquin Valley

Bay Area

Southern California

Our Strength is in Our Broad Statewide Participation

Sacramento Valley

Carter Mutual Water Company
City of American Canyon
Colusa County
Colusa County Water Agency
Cortina Water District
Davis Water District
Dunnigan Water District
Glenn County
Glenn-Colusa Irrigation District
LaGrande Water District
Placer County Water Agency
Reclamation District 108
City of Roseville
Sacramento County Water Agency
City of Sacramento
Tehama-Colusa Canal Authority
Westside Water District
Western Canal Water District

Bay Area

Santa Clara Valley Water District
Zone 7 Water Agency

San Joaquin Valley

Wheeler Ridge-Maricopa Water Storage
District

Southern California

Antelope Valley - East Kern Water Agency
Coachella Valley Water District
Desert Water Agency
Metropolitan Water District
San Bernardino Valley Municipal Water District
San Geronio Pass Water Agency
Santa Clarita Valley Water Agency



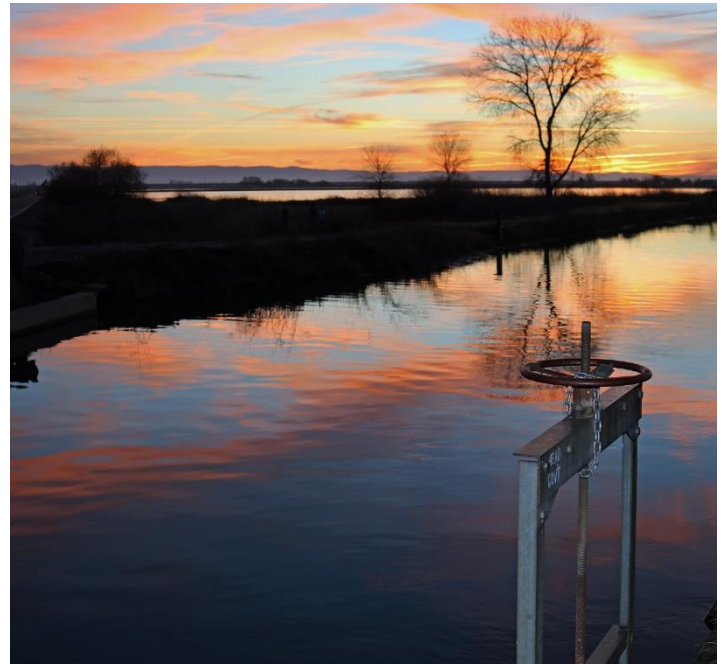
21st Century Solution to California's Water Reliability Challenges

Sites Reservoir would be a vital component of California's integrated statewide water infrastructure

Sites Reservoir will significantly improve the state's water management system in drier periods and **restore much-needed flexibility and reliability** that has been lost in the statewide system

Will add flexibility to California's existing water infrastructure by providing up to 1.5 million acre-feet of additional storage capacity

Sites will be cooperatively managed in conjunction with both the State Water Project and Central Valley Project and **will greatly increase the flexibility, reliability and resiliency of statewide water supplies in drier years for environmental, agricultural, and urban uses**



21st Century Solution to California's Water Reliability Challenges

Sites Reservoir is designed to be adaptable to a changing climate

As **snowpack declines** due to climate change and more of our **water comes in the form of atmospheric rivers** – Sites Reservoir will **become even more vital** to the future resiliency of our statewide water supply

Sites Reservoir captures and stores this water **for release in dry and critical years** adding **resiliency** to future California water supplies

Sites **operates even better** under the most challenging climate change scenarios



Rightsized to Meet Our Current and Future Water Supply Needs

Sites Reservoir has been designed and optimized to meet our water supply needs for today and in the future

The Sites Project Authority conducted a **rigorous Value Planning effort** to review the project's proposed operations and facilities to **develop a project that is “right sized” for our investors and participants** while still providing water supply reliability and enhancing the environment

Rightsizing the reservoir was **responsive to input from state and federal agencies, NGOs, elected officials, landowners and local communities**

The **feedback we received** through a robust outreach effort was **critical** to developing a reservoir that is the **right size for both people and the environment**

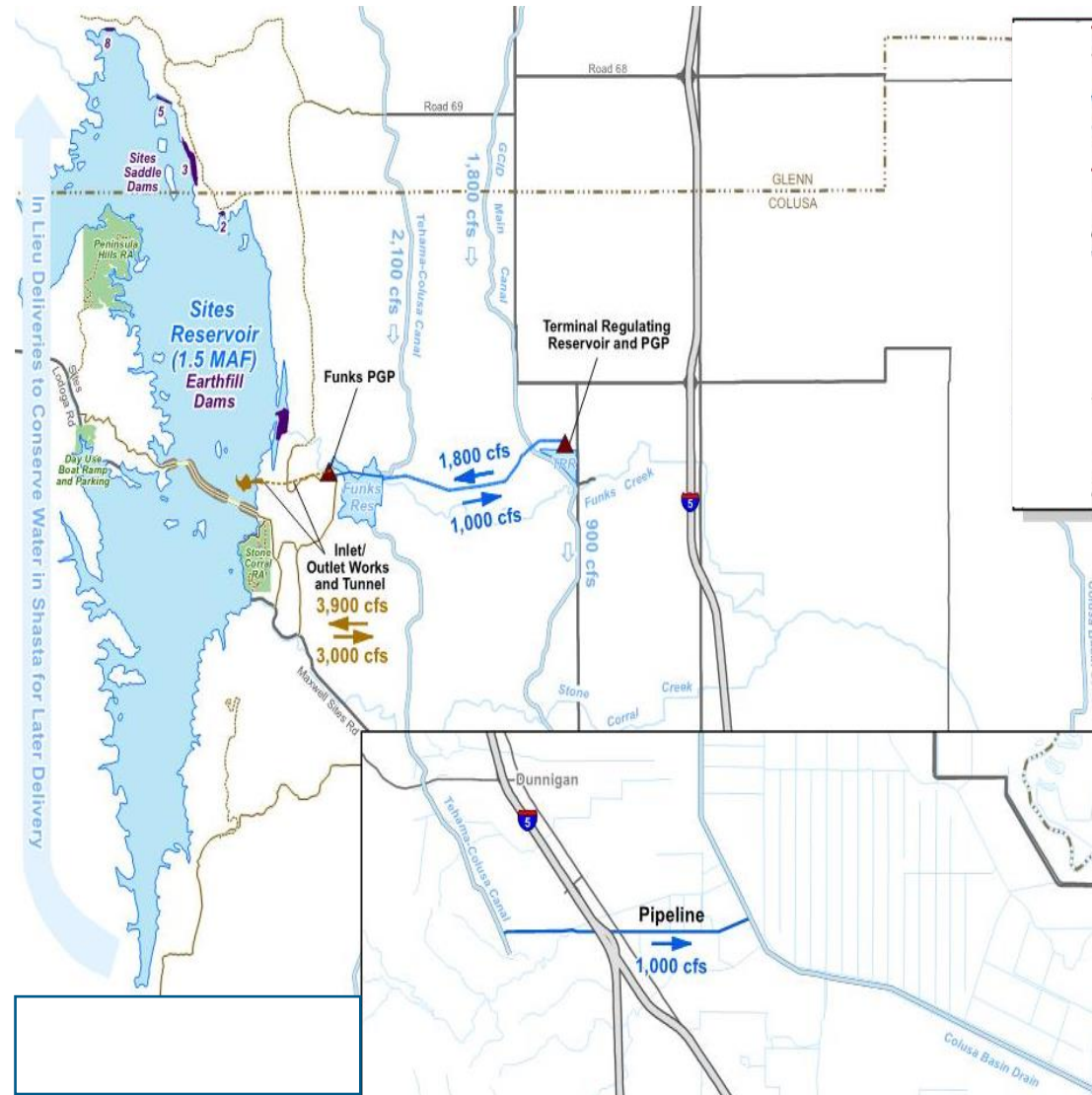


Rightsized to Meet Our Current and Future Water Supply Needs

1.5 million acre-feet

Utilizes the existing **Glenn-Colusa Irrigation District** and **Tehama-Colusa Canal Authority** canals to convey water to Sites Reservoir from the Sacramento River

Delivers water back to the Sacramento River through the **Tehama-Colusa Canal** and through the **Colusa Basin Drain** for participant deliveries and for the environment



Rightsized to Meet Our Current and Future Water Supply Needs

Member	Reservoir Participation(AFY)
Public Water Agencies	
North of Delta	52,142
South of Delta	140,750
Subtotal Public Water Agencies	192,892
State of CA	~ 40,000
Total Requirement	~230,000

Participant Demand

Participant water subscriptions allocated in the **current participation agreement**

Allocation of State of California water subscription is based on the **Proposition 1 water investment**

- Water for Delta Smelt
- Water for Refuges

Release Capacity from Sites

The “rightsized” project can deliver water to meet the demands of our participants and California’s investment of water for the environment

Long term average ~240,000 ac-ft/year

Year Type	1,000 cfs Release Capacity (TAF/year) to the Colusa Basin Drain
Wet	90 - 120
Above Normal	260 - 290
Below Normal	245 - 275
Dry	355 - 385
Critically Dry	210 - 240

Rightsized to Meet Our Current and Future Water Supply Needs

The Value Planning process has **resulted** in a project that has a **smaller footprint** and **operated in a different manner** than originally designed

Due to these changes the Authority will **revise and recirculate its Draft EIR/EIS**

Work with **landowners, tribes, stakeholders, NGOs, and local communities** to develop a **collaborative environmental review process**

It is essential that we **build a project now that makes sense for all our participants** – local, state, and federal



Rightsized to Meet Our Current and Future Water Supply Needs

Reservoir Size (MAF)	1.5
Project Cost (2019\$, billions)	\$2.4 - \$2.7
Contingency Cost (2019\$, billions)	\$0.6
Total Project Cost (2019\$, billions)	\$3.0 - \$3.3
Annualized AF/year release (AF/year)	240,000
Range of Annual Costs During Repayment Without WIFIA Loans (2020\$, \$/AF)	\$650 - \$710
Range of Annual Costs During Repayment With WIFIA Loans (2020\$, \$/AF)	\$600 - \$660

The rightsized project is **roughly \$2 Billion less** than the 2017 preferred alternative

Cost savings primarily from the **removal of the Delevan Diversion** facility on the Sacramento River and the **Delevan Pipeline**

Lowered the Annual Cost during repayment (\$ A/F)

Significant savings to participants with finance through a **WIFIA** government backed loan

Provides Statewide Benefits for Generations to Come

Sites Reservoir provides many multi-layered benefits



Off-stream Storage

Does not create a barrier to native fish migration



Cooperative Operation

Increases effectiveness and efficiency of existing water storage infrastructure



Recreational Opportunities

Provides northern Sacramento Valley with additional opportunities for recreation



Federal and State Agencies Manage Environmental Water

Adaptable to current and future conditions and priorities



Adaptable to Climate Change

Contributes to system reliability and performance with climate change



Environmental Support

Provides environmental water in drier periods for native fish, and habitat for native species and birds



Local Leadership and Cooperation

Aligns with Sacramento Valley's values and fosters regional and statewide collaboration



Dry Year Water Supply

Reliable dry year water supply for California communities, farms and businesses

Provides Statewide Benefits for Generations to Come

Sites Reservoir provides water dedicated to environmental use

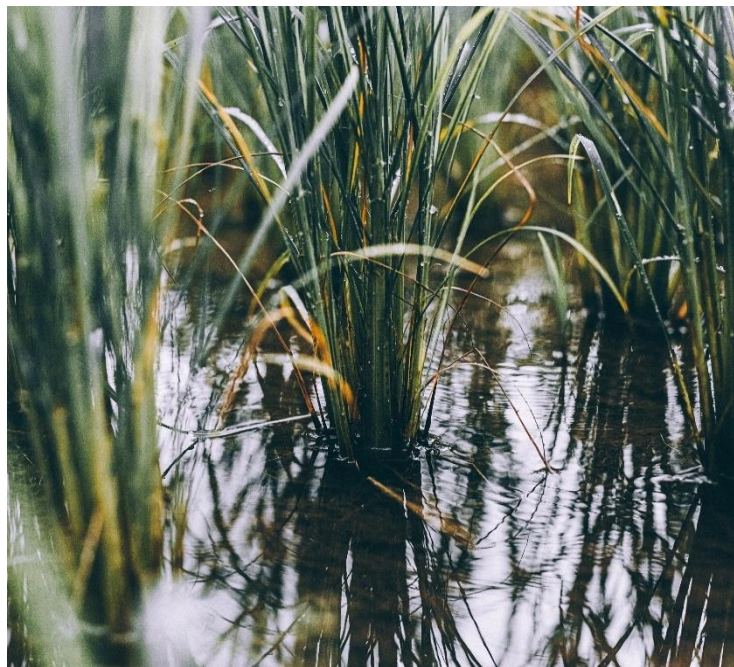
A significant portion of the Sites Reservoir Project's annual water supplies will be dedicated to environment uses:

Preserve cold-water pool in Lake Shasta later into the summer months to support salmon development, spawning and rearing

Provide a reliable supply of refuge water to improve Pacific Flyway habitat for migratory birds and other native species

Provide water dedicated to help improve conditions for the Delta Smelt

Water dedicated for the environment provided by Sites Reservoir will be managed by state resources agency managers who will decide how, and when, this water would be used - creating a water asset for the state that does not currently exist



Provides Statewide Benefits for Generations to Come

Sites Reservoir provides regional flood protection benefits

Provides significant **regional flood protection benefits** for the Sacramento Valley

Will capture and store **flood flows** that would normally impact the communities of **Maxwell** and **Williams** - protecting homes, business and farms

Will help to limit “**down stream**” **flooding issues** by capturing storm flows that sometimes overwhelm the regions flood control facilities



Provides Statewide Benefits for Generations to Come

Sites Reservoir will benefit the local and regional economy

Create hundreds of construction-related jobs during each year of the construction period, and long-term jobs related to operations

Creates new recreation opportunities in the Sacramento Valley which adds to the region's economy

Adding resiliency to the water supply will strengthen the statewide economy and business that rely on a reliable source of water for their operations – particularly agriculture



We are On-Track to Deliver This Vital Project for the People of California

Sites Project Authority has accomplished a lot since it was formed

2010: Sites Project Authority is formed

2016: Reservoir Committee is formed

- **Released** a Draft Environmental Impact Report/Environmental Impact Statement (Draft EIR/EIS) in partnership with the Bureau of Reclamation

2018: Sites Reservoir Project was **awarded \$816 million in state investment** to advance the project, the **largest** award given to any project requesting Proposition 1 support

- **Awarded a \$449 million loan** from the **U.S. Department of Agriculture's Rural Development** program

2019: The project **received \$6 million**, bringing the total in Congressional Appropriations from the Water Infrastructure Improvements for the Nation (WIIN) Act to **\$10 million**

2020: Sites Reservoir is **specifically named as one of only two priority projects** in the Governor's **2019 Water Resilience Draft Portfolio**—a plan to provide reliability and resiliency to statewide water supplies



We are On-Track to Deliver This Vital Project for the People of California

Next Steps for 2020 – 2021 Environmental Permitting

Finalization of the EIR/EIS Project Description Chapter, both construction and operations/maintenance of the project and **alternatives**

Desk top research to **update environmental baseline**, where appropriate, to better support analysis and the administrative record

Continued **outreach to Landowners, Agencies, NGOs, Tribes**, and other stakeholders to proactively address concerns and formulate collaborative solutions

Prepare and circulate a revised Draft EIR/EIS

Review, categorize and draft initial responses to comments received on the recirculated Draft EIR/EIS

Prepare and submit an Environmental Summary Report to support CWC feasibility determination



We are On-Track to Deliver This Vital Project for the People of California

Next Steps for 2020 – 2021 Environmental Permitting

Submit the **Biological Assessment (BA)** and work with U.S. Fish and Wildlife Service to complete a **Biological Opinion (BO)**

Finalize Programmatic Agreement in compliance with the National Historic Preservation Act (Section 106)

Submit Clean Water Act Section **404 Section 401 permit applications**

Development **agreement** on approach for River and Harbors Act **Section 408** approval

Progress **Water Right application**

Submit **required permits** in support of planned **Geotechnical field activities**

We are On-Track to Deliver This Vital Project for the People of California

Next Steps for 2020 – 2021 Engineering

Complete **Final Federal Feasibility Report** in coordination with Bureau of Reclamation

Engage with **Division of Safety of Dams (DSOD)** on dam design and construction approach

Continuing **collecting and analyzing of focused geotechnical data** in support of design

Develop the project-wide **Geotechnical Investigation Plan**

Updated and refine the **project-wide cost estimate**

Support the Environmental Planning and Permitting teams with **engineering and design support**

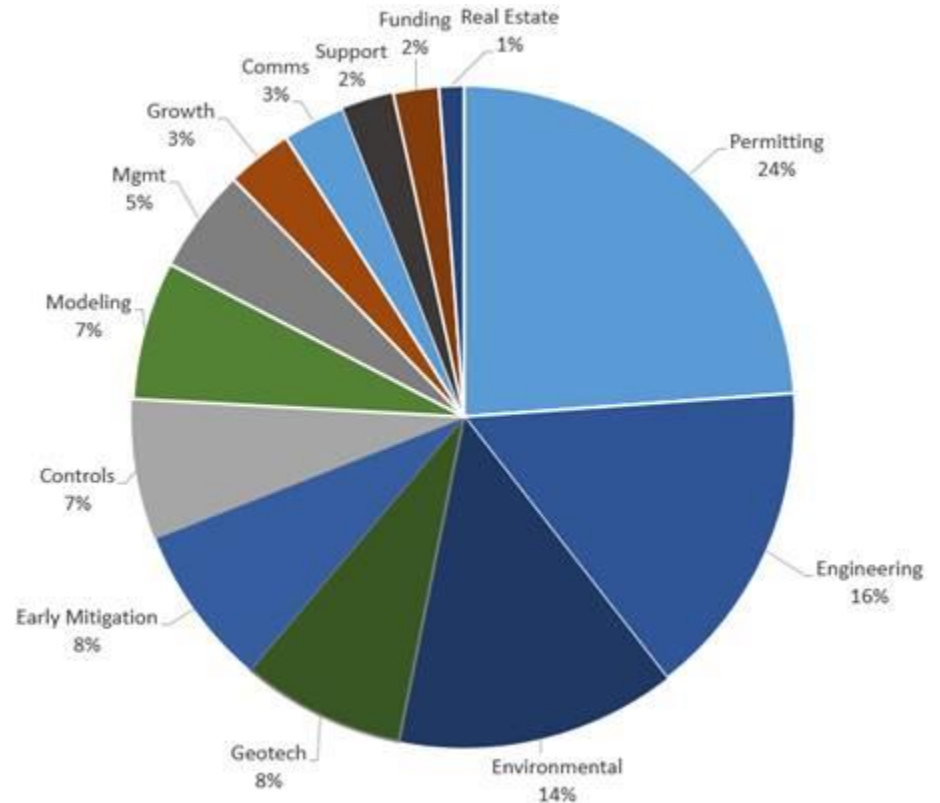


We are On-Track to Deliver This Vital Project for the People of California

\$100/acre-ft funding
request in two installments

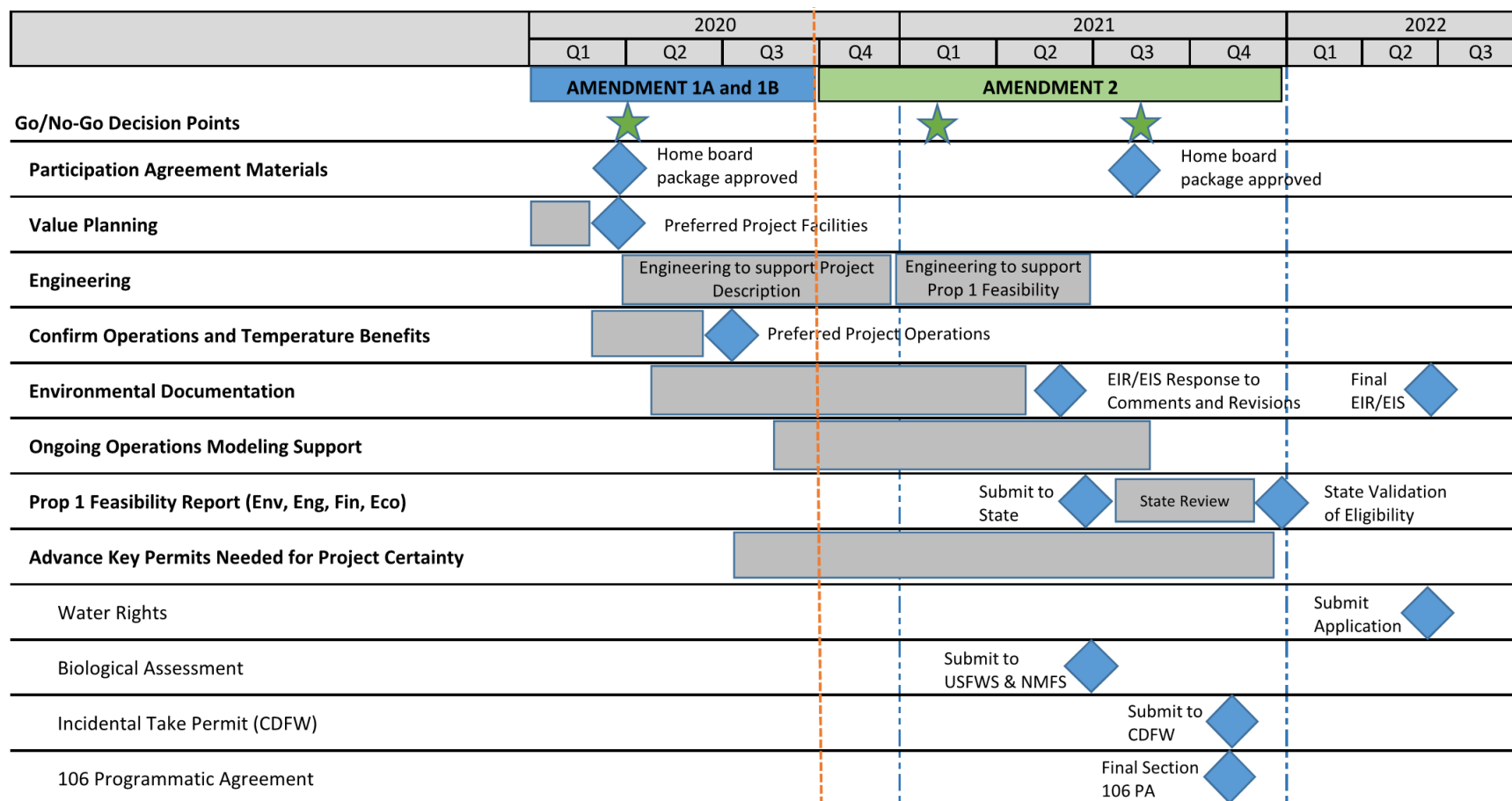
- \$60/acre-ft due
Sept 1, 2020
- \$40/acre-ft due
Feb 1, 2021

Funds would cover work
performed from 9/1/20
through 12/31/21



We are On-Track to Deliver This Vital Project for the People of California

Near-term Project Schedule



NOTE: This graphic includes schedule drivers only and does not include all activities/deliverables.
This work plan is based on current participation commitments.

We are On-Track to Deliver This Vital Project for the People of California

Key Milestones Through 2021

Meet **eligibility requirements under Prop 1 (WSIP)** in order to access the remainder of the \$816 Million in funding

Recirculate Draft EIR/EIS for public comment, proactively engage stakeholders, develop responses to comments to support environmental feasibility determination

Complete Feasibility Report

Secure environmental permit certainty and draft permit applications

Update and refine cost estimate and affordability analysis

Develop Plan of Finance

Adopt Storage Policy that can be used to meet individual investor needs

Improve definition of SWP/CVP exchange, including Operations Plan

Enhance landowner, stakeholder & NGO engagement

Develop Operating Agreement Term Sheets with: DWR, USBR, TCCA, GCID, CBD Authority



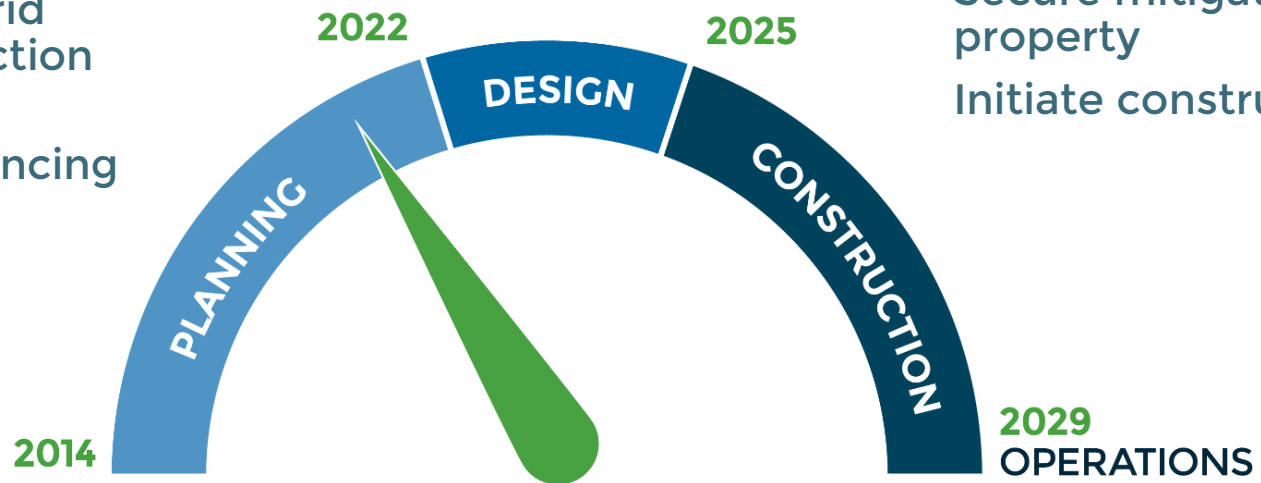
Path Forward Starting 2022

Planning Phase

- Final EIR/EIS
- Final Biological Opinion
- Complete water rights process
- Prop 1 required agreements
- Electrical grid interconnection agreement
- Interim financing

Design Phase

- Geotech explorations
- Engineering designs
- Land acquisition
- Secure final permits
- Secure water rights
- Secure mitigation property
- Initiate construction



21st Century Solution to California's Water Reliability Challenges

Why Sites Reservoir?

Unique opportunity to restore flexibility, reliability and resiliency to statewide water supply

Not a traditional water storage project

Benefits people, farms and the environment

Critical to California's water resiliency



Questions





Topic: **Authority Board Agenda Item 2-3**

2020 April 22

Subject: **Plan and Schedule for Organizational Assessment Findings and Strategic Planning Preparations**

Requested Action:

Consider acceptance of the following actions by the Authority Board relative to the approved Organization Assessment (OA) Report as follows:

- a. Consider acceptance of the plan and schedule for addressing the report findings and recommendations. **(Attachment 2-3 A)**
- b. Consider concurrence with the scope, schedule and budget for strategic planning facilitation services. **(Attachment 2-3 B)**
- c. Consider approval to release a Request for Proposals for strategic planning facilitation services.

Detailed Description/Background:

The approved OA Report includes findings and recommendations aimed at improving the overall effectiveness of the organization. The Authority Board directed Staff to provide a plan and schedule for addressing the report findings. Staff recommends the plan and schedule shown in the attached matrix to address the findings of the OA Report. Along with making these initial determinations, staff is recommending quarterly progress updates to the Reservoir Committee (RC) and Authority Board (AB) until all items are sufficiently addressed.

The Board previously determined that several items in the OA required a facilitated strategic planning exercise involving the RC and AB members and staff. Staff is proposing a scope of work for this effort providing general direction to address issues of teamwork, trust and communication along with revisiting the organization's mission, values and goals. Staff is seeking input to ensure the members expectations for this effort are met. As part of the scope, the facilitator will work with members and staff in developing the final agenda for a strategic planning session expected to be conducted in June 2020. This session needs to be an in-person meeting, so timing is dependent on the shelter in place orders being lifted.

Procuring the services of the best qualified facilitations services provider needs to be initiated. Staff recommends issuing an RFP to a short list of consultants (see attached) known to meet minimum qualifications. Having a short list does not preclude other proposals, however any proposer would have to demonstrate minimum qualifications compliance. The RFP will be publicly advertised on the website. Alternatives to this recommendation include going through the entire RFQ/RFP process or contracting with an existing service provider for these additional services. Neither of these alternatives are as efficient, are equally

Status:	Final	Preparer:	Joe Trapasso	Phase:	2	Version:	A
Purpose:	Sites Staff Report	QA/QC:		Date:	2020 April 22		
Caveat:	Informational	Authority Agent:	Jerry Brown	Ref/File #:			
Notes:				Page:	1	of	2

open and transparent, and would not deliver a better outcome for the project as compared to the proposed approach. The selection committee will consist of the Executive Director and the Chairs of the RC and AB and two Budget and Finance Workgroup members.

Prior Action:

December 20, 2019: Approved Darling H2O to expand the scope of work to support the recruitment of a facilitator for Strategic Planning.

November 21, 2019: Darling H2O Consulting, Inc. presented the draft Organizational Assessment.

August 26, 2019: Approved a budget reallocation for the organizational assessment and execution of a sole-source professional services agreement with Darling H2O to perform an organizational assessment.

July 22, 2019: Discussed working on an organizational assessment plan to evaluate the structure of the Sites Project's program management team, Reservoir Committee and the Authority.

Fiscal Impact/Funding Source:

None.

Staff Contact:

Jerry Brown

Attachments:

Attachment A: Plan and Schedule for OA Findings Matrix

Attachment B: Summary of the Proposed Scope of Work for Strategic Planning Facilitation Services and Short List of Consultants

**Action Items and Schedule in Response to Organization Assessment
April 17, 2020**

Action #	Primary Service Area	Summary of Action	Activities Completed To Date	On-going and Suggested Future Activities and Deliverables	Priority (High, Medium, Low)	Target Board Item Date	Person Responsible	Status
1.1	F	Prepare an analysis of the major regulatory decisions being made regarding flow in the Sacramento River and Delta and determine flow-related permitting strategy with identification of risks.	Permitting strategy memo was prepared by ICF in May 2019 and updated through CDFW meetings in fall/winter 2019. A revised version that will include updates with recent relevant changes is in progress.	Staff will review prior related materials and prepare the analysis identified.	High	August 2020	Ali Forsythe	
1.2	E	Prepare an analysis of the major comments received on the draft EIR/S. Identify approach to addressing those comments and working with specific commenters.	<ul style="list-style-type: none"> March 29, 2019 – Jacobs provided a memo that included Draft EIR/EIS Comments Matrix, Master Response Topics, Key Comment Letter Summaries, and draft Initial Responses. April 12, 2019 – Strategy meetings were initiated with ICF, Reclamation and Authority to address overall approach as well as specific topics. Based on these strategy sessions, an outline for the Final EIR/EIS was prepared and an approach for responding to comments, including master responses to comments was identified and forwarded to both CEQA (Authority) and NEPA (Reclamation) legal counsel. June 5, 2019 – ICF provided master response annotated outlines and commenced preparing responses. In addition, the Authority EPP began meeting with key commenters, (e.g., CDFW, NRDC, Humboldt County, etc.) to clarify issues of concern. 	<ul style="list-style-type: none"> The work that has been completed to date in responding to comments will be utilized in either the completion of a Final EIR/EIS or in preparing a Recirculated Draft EIR/EIS. Assuming recirculation of the Draft EIR/EIS is the preferred approach for moving forward based on the status of the Value Planning effort, ICF is in the process of preparing a strategy/work plan to be completed in May 2020. The Authority EPP will also continue outreach to Draft EIR/EIS commenters and Agencies as efforts move forward. 	High	<ul style="list-style-type: none"> Analysis completed under original work plan and to be updated April 2020 with preparation of EIR/EIS Work Plan Meetings with specific commenters – ongoing throughout 2020 and 2021 	Ali Forsythe	
1.3	E	Identify legal requirements of the environmental laws that Sites will be required to comply with.	Preliminary list of permit requirements and other approvals were included in the Draft EIR/EIS released in August 2017.	The preliminary list will be updated in the development of the Revised Draft EIR/EIS.	Medium	Dec 2020	Ali Forsythe	

**Action Items and Schedule in Response to Organization Assessment
April 17, 2020**

Action #	Primary Service Area	Summary of Action	Activities Completed To Date	On-going and Suggested Future Activities and Deliverables	Priority (High, Medium, Low)	Target Board Item Date	Person Responsible	Status
1.4	F	Establish a permitting flow chart with realistic timelines.	In 2019, the Environmental Planning and Permitting team developed and maintained an MS Project schedule.	<ul style="list-style-type: none"> Environmental Planning and Permitting team along with the Operations and Engineering teams is currently developing a detailed project schedule focusing on activities thru the end of 2021. Develop planning / permitting flow chart and add in key dates from schedule effort. Present summary schedule and flow chart to Res Com and Board and then track progress monthly thereafter. 	High	<ul style="list-style-type: none"> April 2020 Res Com and Board meetings – Detailed and summary schedule completed along with flow chart On-going – Track and report on progress 	Ali Forsythe	
1.5	E/F	Prepare analysis of the draft EIR/S for use by all of the permitting agencies to issue permits upon the finalization of the EIR/S. Identify schedule for document completion.	A preliminary list of permit requirements and other approvals were included in the Draft EIR/EIS released in August 2017.	<ul style="list-style-type: none"> Analysis – As the team works to develop a revised project description and revise the Draft EIR/EIS, the permitting agency comments will be reviewed in response to Action 1.2 and a regulatory agency technical team will be formed in response to Action 2.4. These two efforts will collectively address the analysis request in this action. Schedule – See Action 1.4 for schedule development. 	Addressed thru other Action Items	--	--	--
1.6	Executive Director	Determine if Water Commission has authority to grant schedule relief. If yes, then formally request schedule relief. If no, then figure out a legislative fix and timing.	The relevant deadlines are specific in the voter approved bond language. The current COVID -19 situation presents an opportunity for possible adjustment.	Work with Legal Counsel, and Gov't Relations Team to review statute in detail and determine options. Action plan being developed.	High	May 2020	Jerry Brown	

**Action Items and Schedule in Response to Organization Assessment
April 17, 2020**

Action #	Primary Service Area	Summary of Action	Activities Completed To Date	On-going and Suggested Future Activities and Deliverables	Priority (High, Medium, Low)	Target Board Item Date	Person Responsible	Status
1.7	C	Prepare an analysis of the pros and cons along with a staff recommendation to present to the governance bodies on whether to spend additional time and money pursuing WIIN Act funding.	Extensive coordination with Reclamation has been conducted to date and Reclamation anticipates providing its final review process of their Feasibility Report in April. Staff has also developed a strategy on how to bring the Federal Feasibility Report in line with the Value Planning effort by next summer (2021).	Staff will prepare the analysis requested and elevate for decision-making to the Reservoir Committee and Board.	High	June 2020	Kevin Spesert	
1.8	--	Determine if there is a viable strategy to phasing, which could allow for additional project partners.	The Value Planning exercise has formulated potential projects around meeting the needs of current participants with the opportunity to expand in the future.	Reservoir Committee/Board will be selecting a preferred project in April. All alternatives have the ability to be phased should the Reservoir Committee/Board chose to do that.	No Action	--	--	--
2.1	F	Develop an interest, science based permitting strategy.	See item 1.1 above.		High	August 2020	Ali Forsythe	
2.2	F	Determine when appropriate for project staff and governance members to be involved in the permitting process and at what level.	--	This will be addressed in the strategic planning exercise.		June 2020	--	--
2.3	F	Determine if overall project provides a "net environmental benefit" beyond cold water pool in Shasta. If yes, then work to get agency and NGO buy in.	Outside of the Refuge water supply and Delta smelt benefits, net environmental benefits were identified in the WSIP application related to cold water pool management in Shasta. CDFW expressed concerns with using these net environmental benefits to offset impacts in their 2081 permit – requesting "assurances" that benefits would occur.	<ul style="list-style-type: none"> Revised net environmental benefits will be determined as part of the development of operational criteria. Agency and NGO discussions are planned to occur throughout 2020. 	High	December 2020	Ali Forsythe	

**Action Items and Schedule in Response to Organization Assessment
April 17, 2020**

Action #	Primary Service Area	Summary of Action	Activities Completed To Date	On-going and Suggested Future Activities and Deliverables	Priority (High, Medium, Low)	Target Board Item Date	Person Responsible	Status
2.4	F	Establish a regulatory agency technical advisory committee at the staff level that meets regularly.	A number of meetings were held with CDFW, USFWS, and NMFS in 2019, including the CDFW "60-day" process that included technical, management, and executive level meetings.	A regulatory agency technical team will be established in spring / early summer 2020 as environmental planning and permitting activities are restarted. In addition, the internal Sites team (EPP, Integration and ICF) hold regularly established coordination and work planning meetings.	High	June 2020	Ali Forsythe	
3.1	D	Quantify and get agreement from the state and feds as to what the benefits are to an integrated operation with the SWP and CVP.	Modeling of Sites Reservoir operations scenarios have assumed an integrated operation of the SWP and CVP. Numerous discussions have occurred with DWR and Reclamation on operations criteria and benefits.	<ul style="list-style-type: none"> Development of a revised operational scenario is scheduled to be completed in June 2020. Modeling and analysis to quantify benefits of the revised operational scenario is scheduled to be completed in December 2020. Sites staff will be working with Reclamation and DWR throughout the development and analysis of the revised scenarios to both quantify and obtain agreement on criteria and resulting benefits of an integrated operation with the SWP and CVP. Discussions with SWP and CVP should be memorialized in draft agreements and the Operations Plan, Version 1.0 in 2020. 	High	December 2020	Ali Forsythe	

**Action Items and Schedule in Response to Organization Assessment
April 17, 2020**

Action #	Primary Service Area	Summary of Action	Activities Completed To Date	On-going and Suggested Future Activities and Deliverables	Priority (High, Medium, Low)	Target Board Item Date	Person Responsible	Status
3.2	C	Establish a strategy to get state and federal agencies to be storage investors.	<ul style="list-style-type: none"> The State is committed to being an investor in the project through the WSIP program. Federal participation is addressed in Action Item #1.7. 	<ul style="list-style-type: none"> Build schedule to meet the current requirements of the CWC WSIP to maintain state current level of investment Continue to position with CWC to get additional funding through WSIP should funds come available. Working with government affairs work group to position for potential funds in a November state water bond. Address Federal participation through Action Item #1.7. 	High	July 2020	Kevin Spesert	
4.1	H	Review all facility planning previously completed by DWR to make certain that there are not missed opportunities to integrate new facilities with existing facilities.	The Value Planning effort has taken a close look at project facility needs and costs and has re-evaluate all of the previously identified facilities.	Complete the Value Planning Report and adopt a new Preferred Alternative.	High	April 2020	Lee Fredrickson	
5.1	B	Once a schedule is developed, then make certain to include all anticipated Board decisions that are critical path to project development.	The work plan through December 2021 includes a detailed schedule that is nearing complete and will serve as the basis for adding in key board decision dates.	A detailed project schedule that includes identification of critical path actions and focuses on activities thru the end of 2021 is under development.	High	August 2020	Jim Watson	
5.2	Board / Res Comm	Once a new schedule is agreed to, governance members need to dedicate enough time to keep up with the agreed upon pace of this project.		This will be addressed in the strategic planning exercise.				
5.3	Executive Director	Get materials to governance members at least a week in advance that clearly identifies decisions to be made, any analysis being made in support of the authority staff recommended decisions, and other options that were considered.	Staff have previously developed templates for Reservoir Committee and Authority Board materials.	<ul style="list-style-type: none"> Actions to implement a more inclusive and effective policy making process have been initiated. Progress to be evaluated as part of strategic planning exercise. 	High	April 2020 (with further adjustments thereafter)	Jerry Brown	
5.4	Board / Res Comm	As part of the new schedule, each governance member should identify which decisions warrant staff making a presentation to their individual agency to make certain that they are in concurrence with the direction the project is moving.					Fritz Durst / Thad Bettner	

**Action Items and Schedule in Response to Organization Assessment
April 17, 2020**

Action #	Primary Service Area	Summary of Action	Activities Completed To Date	On-going and Suggested Future Activities and Deliverables	Priority (High, Medium, Low)	Target Board Item Date	Person Responsible	Status
5.5	--	Use joint Board workshops and individual agency meetings to walk thru assumptions and anticipated outcomes so that when a decision comes to governance members for approval, the information will not be new.	Staff has started to utilize joint Board / Reservoir Committee workshops in 2019.	<ul style="list-style-type: none"> Staff will continue to propose and utilize joint Board / Reservoir Committee workshops as appropriate for specific topics. Individual agency meetings may be initiated by staff or by an individual agency and tracked thru the process developed under Action Item #13 below. No additional specific action will be taken to address this Action Item. 	--	Ongoing	--	--
5.6	C	Review the costs and deliverables accrued to date and tie future cash calls to anticipated deliverables.	Staff worked to tie cash calls to deliverables in Amendment 1B efforts. However, some activities are more ongoing business that do not necessarily result in a deliverable. Draft Amendment 2 Workplan includes deliverables by service area and explains areas where there may not be a "deliverable".	<ul style="list-style-type: none"> Draft 2019 Annual Report prepared addressing items such as accomplishments and expenditures in 2019. Waiting review and comments from Authority and staff will finalize April 2020. Draft Amendment 2 will be finalized end of April 2020. 	High	April 2020	Joe Trapasso	
6.1	A	Determine process and schedule to deliver cost per acre-foot and long-term debt information to project investors.	Cost per acre-foot has historically been developed and shared with members. In late 2019, staff developed a "Cash Flow" tool to help show long-term debt information.	<ul style="list-style-type: none"> Continue to present cost per acre-foot when discussing affordability. Update Cash Flow tool periodically as assumptions change or become outdated. 	High	<ul style="list-style-type: none"> April 2020 – Updates as a result of Value Planning efforts Future – Periodic updates as changes occur 	Lee Fredrickson	

**Action Items and Schedule in Response to Organization Assessment
April 17, 2020**

Action #	Primary Service Area	Summary of Action	Activities Completed To Date	On-going and Suggested Future Activities and Deliverables	Priority (High, Medium, Low)	Target Board Item Date	Person Responsible	Status
7.1	--	Determine process and schedule to deliver how long-term costs of this project compare to other sources of water.	Information on costs of other sources of water is difficult to obtain. In addition the "value proposition" for each member agency will be different depending on a number of factors including ag, M&I uses, water located north or south of Delta, length of agreement, and risks.	As this is different for each member and information is difficult to obtain, no additional work is proposed.	Low	--	--	--
8.1	A	Prepare a financial plan that lays out the potential sources of funding including California IBank.	<ul style="list-style-type: none"> The scope and budget for the development of a financial plan was deferred by the Reservoir Committee / Board to a later date. Exploratory conversations with IBank date back to September 28, 2017. Changes to their program would be needed for members to use this source. 	<ul style="list-style-type: none"> Develop finance plan as part of Amendment 2. Continue to identify potential grant and other funding sources - at both the state and federal levels - that could reduce the project's finance costs. Continue to work with Water Commission on timing of additional Prop 1 funds becoming available, since the original funding amount was less than the amount they deemed Sites to be eligible to receive. 	Medium	July 2021	Jim Watson	
9.1	F	Prepare a Board briefing on the comparative costs of mitigation from comparable projects to help determine a level of reasonableness.	Mitigation cost technical memorandum was prepared by CH2M Hill in 2016. Additional mitigation cost reviews were prepared in October of 2019 and February 2020 for the Value Planning Process.	Mitigation planning and a class 4 cost estimate are scoped to occur in Amendment 2 (late 2020/early 2021).	High	Late 2020	Ali Forsythe	
10.1	Executive Director	Determine process and schedule to deliver information regarding the cost of storage versus the cost of yield in the context of developing a tiered pricing approach.	--	Moving from yield to storage has been suggested to be a topic of the strategic planning session. This topic will be addressed and a plan developed as part of that effort.	Medium	Nov 2020	Jerry Brown	

**Action Items and Schedule in Response to Organization Assessment
April 17, 2020**

Action #	Primary Service Area	Summary of Action	Activities Completed To Date	On-going and Suggested Future Activities and Deliverables	Priority (High, Medium, Low)	Target Board Item Date	Person Responsible	Status
11.1	B	Once the governance members agree on a project schedule then have staff only focus on scope thru permitting and come up with a budget.	Work Plans are developed by staff and approved by the Authority Board. These Work Plans identify specific tasks and priorities and Authority staff work to execute these plans as written.	Draft Amendment 2 work plan completed and will be reviewed and commented on by Authority in April 2020. Staff will make necessary changes and finalize. Focus activities thru December 2021 on those activities identified in the Amendment 2 Work Plan.	High	August 2020	Joe Trapasso	
12.1	Board / Res Comm	Hold team building sessions to better understand how governance members process information and make decisions with the anticipated outcome for governance members and Authority staff to agree upon their respected roles and responsibilities.					Fritz Durst / Thad Bettner	
12.2	Executive Director	Authority staff should work to make Board meetings more of a final sign off or endorsement of a policy decision or budget approval.	This action item is similar to Action Item #5.5.	See Action Item #5.5.	--	Ongoing	Jerry Brown	--
13 (13.1 to 13.5)	B	Staff will document and track all governance member questions and provide responses to the governance members.	--	Staff initiated work on a tracking tool to track member questions and information requests and update it on a regular basis.	High	August 2020	Joe Trapasso	
14.1	F	Concerns with the structure and information flow from the CDFW discussions.	--	<ul style="list-style-type: none"> Hold more frequent Environmental and Permitting Work Group meetings to provide updates on the CDFW efforts. Continue to provide updates at the Operations Work Group meetings on the CDFW efforts. 	High	Throughout 2020	Ali Forsythe	
15.1	Executive Director	Prepare a discussion paper on what lessons have been learned by other similar projects that can potentially be adopted for use by the Sites Project.	--	Staff continuously monitors other projects for lesson learned and applies them to this Project as appropriate.	Low	Ongoing, verbal	Jerry Brown	
15.2	Board / Res Comm	Create a joint strategic plan for the Reservoir Committee and Board.		This will be addressed as part of the strategic planning exercise.				
16.1	C	Create a strategy to get Reclamation to the table to describe what the local investment will do for their contracts.	See Action Item #1.7.	Such as strategy will be coordinated with Action Item #1.7.	High	June 2020	Kevin Spesert	

**Action Items and Schedule in Response to Organization Assessment
April 17, 2020**

Action #	Primary Service Area	Summary of Action	Activities Completed To Date	On-going and Suggested Future Activities and Deliverables	Priority (High, Medium, Low)	Target Board Item Date	Person Responsible	Status
16.2	B	Explore the concept of beneficiary pays to accurately account for the benefits received by each investor and consider a tiered pricing system.	The concept of beneficiary pays has been discussed a number of times. Once a Preferred Project has been selected and additional design / use / beneficiary information is better understood, the concept of beneficiary pays can be explored further. See Action 10.1.	<ul style="list-style-type: none"> Explore the concept of beneficiary pays as design and cost information progresses. Refine and have an agreed upon approach for Phase 3 (post 2021). Governance considerations including potential tiered pricing will be discussed in the strategic planning exercise. 	Medium	June 2021	Joe Trapasso	
16.3	Board / Res Comm	Formally request south of Delta investors to identify ways of keeping north of Delta ag in the project.		This will be discussed as part of the strategic planning exercise.				
17.1	B	Perform analysis to validate if increased partnerships would result in the project becoming more affordable.	--	Dependent on approval of upcoming funding request results.	Medium	August 2020	Joe Trapasso	
18.1	Board / Res Comm	Celebrate and memorialize the cooperative relationship between north of Delta and south of Delta participants on the Project.		This will be discussed as part of the strategic planning exercise.				
19.1	Board / Res Comm	Formalize the roles and responsibilities between the Res Comm and Board and look for ways to reduce duplication.		This will be discussed as part of the strategic planning exercise.				
20.1	Board / Res Comm	Complete analysis of the legal requirements for the Res Comm and Board governance. Consult with other Prop 1 recipients that have multiple partners to see how they are set up.		This will be discussed as part of the strategic planning exercise.				
20.2	Board / Res Comm	Depending on the results of Action Item #21.1, have a policy level discussion to decide if the Res Comm and Board make-up can be and should be changed.		This will be discussed as part of the strategic planning exercise.				
21.1	Board / Res Comm	Rules for membership on the Authority Board are not understood. Get a legal and policy review of the composition of the Board to inform a discussion and decision on Board composition.		This will be discussed as part of the strategic planning exercise.				
22.1	Executive Director	Prepare a legal analysis of what are appropriate materials to be covered in closed session.		The analysis will be prepared and presented to the Res Comm and Board.	High	August 2020	Scott Kuney	



Sites Reservoir Project

Strategic Planning Facilitation Services For the Sites Project Authority

Scope: To address findings in the 2019 Organizational Assessment involving teamwork, trust, communications and team morale. The Project would like for the facilitator to design a strategic planning program around the findings that the facilitator thinks are most important to the success to the Project and include, but not be limited to:

- Mission/Vision, Governance, Subcommittees, other
- Outside Relations
- Communications
- Trust
- Work Product
- Timing of Services
- Meeting Locations

Schedule:

Activity	Date (2020)
Release of RFP	April 23
Submission of written RFP questions	April 27 Noon
Response to written questions emailed to Respondents	April 29
Proposals due to Authority	May 8 Noon
Authority Review of Proposals/Firms Selected for Interview	May 11
Notification of Interviews, if appropriate	May 11
Telephone interviews, at Authority's discretion	May 15
Authority Board reviews and approves contract award	May 27
Execution of contract completed	June 1



Sites Reservoir Project

Budget: There is \$100,000 in the current budget. However, the initial effort will depend on proposals. Staff's goal is to keep the initial work through the planning session to no more than \$25,000 which leaves budget for potential follow-up items.

This will go to the Budget and Finance Committee on April 8th who will provide comment by April 13th.

The following list of consultants will be invited to propose for the strategic planning facilitation services:

1. **Ed Means**, Principal Consultant, Means Consulting LLC,
edmeans@roadrunner.com
2. **Ellen Cross**, Principal Consultant, Strategy Driver Inc.,
Crosse@strategydriver.com
3. **Charles Gardner**, Principal Consultant Catalyst Group,
Charles@CatalystGroupCA.com
4. **Larry Bienati**, Principal Consultant, Bienati Management Consultants,
larry@bienati.com
5. **Ane Deister**, Senior Consultant, Saxon-Hamilton, ane.deister@yahoo.com

Requested Action:

Review and comment on the letter received from participating member Wheeler Ridge-Maricopa Water Storage District (Wheeler Ridge) requesting a broad water right place of use commitment from the Project.

Detailed Description/Background:

Wheeler Ridge is requesting that the Sites Reservoir Project's water right place of use be broadened with the suggestion of using seven of the ten hydrologic regions. The attached Figure 1.3 from the 2017 Draft EIR/EIS represents the study areas currently envisioned for the project which overlaps with the CVP and SWP place of use. Wheeler Ridge would like the broadest place of use possible without impacting the project to enhance the affordability for its customers. The Wheeler Ridge letter request is attached.

Staff has not conducted a thorough analysis of the suggestion, but cursory review indicates pros and cons as follows:

Pros: a broader place of use creates more opportunities for future water transfers to address water shortage over a larger area and adds to the flexibility of the Project. There could be scale efficiencies in cost and time in providing wider coverage if adding the areas does not bring opposition and slow the process.

Cons: introducing greater uncertainty in an already difficult and uncertain water right process could be a significant risk to schedule and cost of the Project. Controversy over water rights is known to already exist in many of the expanded areas. There would be additional cost for environmental documentation and legal support which are difficult to estimate at this time.

The current plan for place of use coverage does not preclude Wheeler Ridge or any other participating member from pursuing water transfers of Sites Project water outside of the Sites place of use in the future. To do so would require that the member work with the Authority to conduct the appropriate analysis and complete the necessary permitting and approval process. The timing for such a process would occur after the water rights for Sites are completed to avoid impacting the Project.

The Reservoir Committee Chair and the Executive Director have met with Wheeler Ridge's representative and discussed the request. Wheeler Ridge has clarified they do not expect any action by the Board at this time.

Prior Action:

None.

Fiscal Impact/Funding Source:

A technical and legal review of this matter was not anticipated in the approved work plan and would not be initiated without the Board's approval.

Staff Contact:

Jerry Brown

Attachments:

Attachment A: Wheeler Ridge Letter Request

Attachment B: Figure 1.3 of the Sites Reservoir Project 2017 Draft EIR/EIS

RESOLUTION NO. (draft)
PLACE OF USE FOR SITES RESERVOIR WATER SUPPLIES

WHEREAS, the Sites Project Authority and its Reservoir Project Committee are jointly developing the Sites Reservoir Project;

WHEREAS, Sites Reservoir will provide water supply benefits for its Members in accordance with their financial support, and environmental water supply benefits to the State of California in accordance with its financial support;

WHEREAS, water supply flexibility, and particularly the ability to deliver that supply to different areas from time to time, is important to members to help justify their financial support of the Sites Project, and to maximize the Sites Project benefits to California's residents, businesses, and environment;

WHEREAS, California's physical and institutional water infrastructure would allow delivery of Sites water, directly or by exchange, to lands and waters within the following Hydrologic Regions as defined by the California Department of Water Resources (e.g. in the California Water Plan - Update 2018): ~~North Coast, North Lahontan~~, Sacramento River, San Francisco Bay, Central Coast, San Joaquin River, Tulare Lake, South Coast, South Lahontan, and Colorado River;

WHEREAS, due to regulations restricting both surface water diversions (e.g. for fishery protections) and groundwater pumping (to comply with the Sustainable Groundwater Management Act), many areas of the state are losing water supplies and need to replace those supplies in order to continue beneficial uses of water to support agriculture, industry, commercial and residential purposes;

WHEREAS, the Sites Project can to some degree mitigate these losses to these areas;

WHEREAS, the Governor's Executive Order N-10-19 outlines a plan for a water resilience portfolio to provide reliability and resiliency to statewide water supplies, and the Sites Reservoir was identified as a priority project that supports the goals of the portfolio;

WHEREAS, in order to provide the greatest resiliency and flexibility for beneficial use of Sites water supplies as conditions change in the future, including from climate change, it is desirable to provide for the broadest current and future geographic distribution of said supplies; and

WHEREAS, it is anticipated the Sites Project will submit a water rights Application to the State Water Resources Control Board in 2022, and said application will describe the proposed place-of-use for Sites water supplies.

NOW, THEREFORE, IT IS RESOLVED that, for the reasons cited above, the place-of-use for the Application and for CEQA/NEPA analyses shall be the Hydrologic Regions cited herein.

From: Rob Kunde <rkunde@wrwmsd.com>

Date: Tuesday, March 31, 2020 at 2:17 PM

To: "tbettner@gcid.net" <tbettner@gcid.net>

Cc: Jerry Brown <jbrown@sitesproject.org>, Jim Watson <jwatson@sitesproject.org>, "jjohnswater@gmail.com" <jjohnswater@gmail.com>, "DRuiz@westsidewd.com" <DRuiz@westsidewd.com>

Subject: Sites - Proposed Policy on the Place of Use for the Water Rights Application

To: Thad Bettner, Chair, Sites Reservoir Project Committee

From: Robert Kunde, Member, Sites Reservoir Project Committee (for Wheeler Ridge-Maricopa Water Storage District)

At a meeting with the Wheeler Ridge landowner funders in January 2020, I reviewed the Affordability Matrix (as it was known at that time) with them. The result was water that was really expensive for ag (I thought too expensive). Each landowner advised they would be willing to fund the next Phase if there were some assurance that the Place of Use (POU) for Sites water would be as broad as possible i.e. not just the Sites funding Members boundaries or even the CVP/SWP POU.

To this end, I have drafted the attached Resolution that, if adopted, would establish that Sites would seek such a broad POU in its SWRCB permit application. I will send a map by separate email. Without such Resolution or equivalent, Wheeler Ridge may have no funders for the next Phase. If such Resolution was adopted in April, it could be included in the Home Board package, or not.

I understand that Sites cannot dictate terms to the SWRCB, but the additional flexibility would add to the value of the Sites Project for Members in that Sites water transfers (temporary or permanent) in the future would be permitted almost anywhere it could be physically delivered or delivered by exchange. Such flexibility for expensive assets is especially important for agriculture so as to be able to respond to changing crop market conditions.

Dan Ruiz was supportive of this idea when I spoke to him about it.

I took the liberty of discussing the idea with Jerry Johns. He said the broad POU would be more challenging than a combined CVP/SWP POU for Sites, but it could be (but is not certain to be) possible with the SWRCB.

I request this matter be considered in some form at the April Reservoir Project Committee for possible adoption by the Reservoir Project Committee and/or the Sites Project Authority.

I welcome questions, comments or concerns.

Robert J. Kunde, P.E.

Retired Annuitant

Wheeler Ridge-Maricopa Water Storage District

12109 Highway 166, Bakersfield, CA 93313

cell: 661-345-3719 email: rkunde@wrwmsd.com

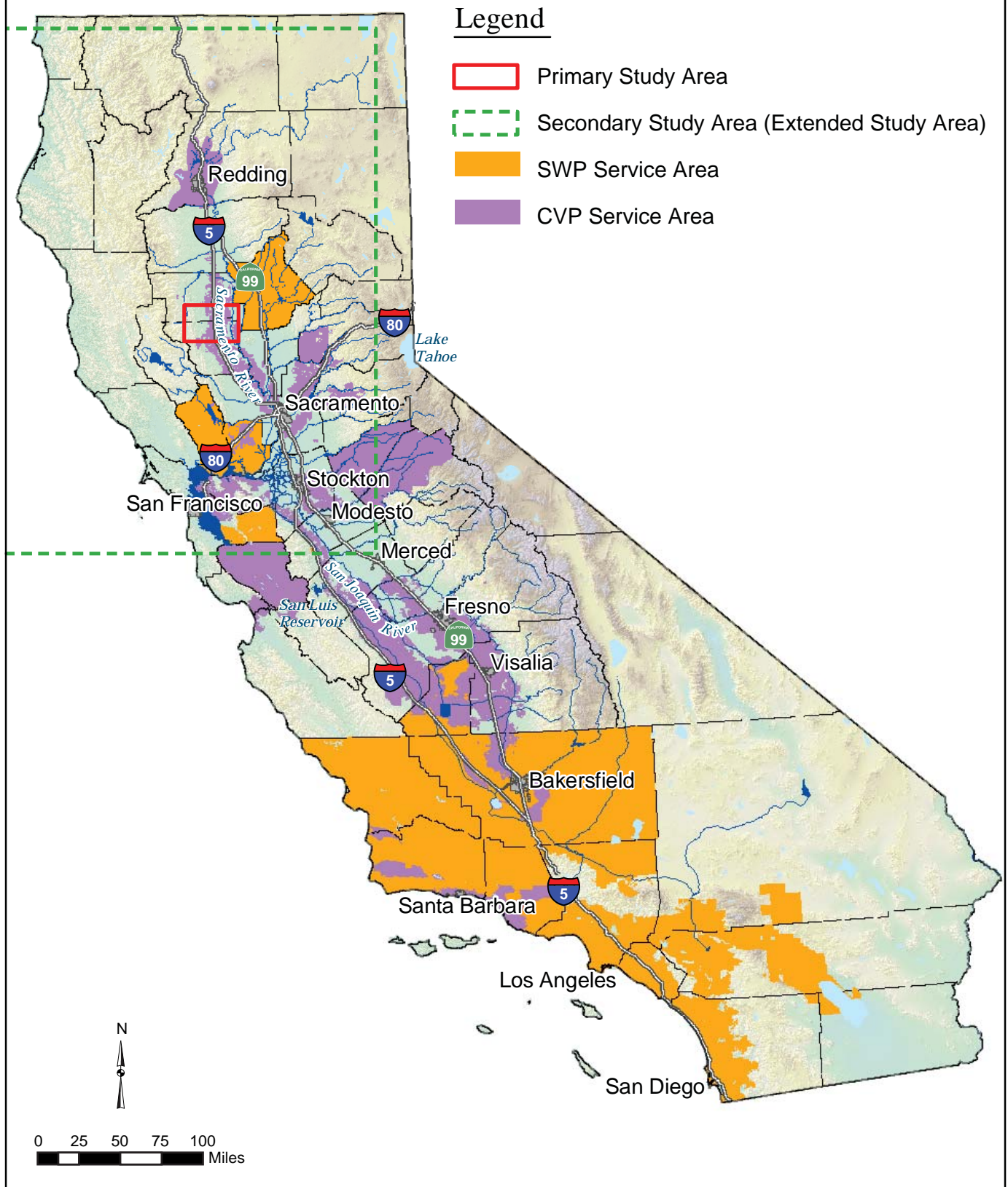


FIGURE 1-3
Primary, Secondary, and
Extended Study Areas
Sites Reservoir Project EIR/EIS

Topic: **Authority Board Agenda Item 3-2**

2020 April 22

Subject: **Service Area G – Real Estate Project Team**

Requested Action:

Review and comment on status of the Service Area G – Real Estate contract.

Detailed Description/Background:

Since the fall of 2019, Bender Rosenthal Inc. (BRI) scope of services for Service Area G – Real Estate have been significantly reduced and is limited to responding to requests from Authority's staff on an as-needed basis.

The anticipated level of effort for Real Estate services through 2021 will be limited to securing temporary right of entry (TROE) permits in support of engineering and environmental field activities, and to support landowner engagement activities. These activities will be conducted by Authority staff with support from our consultant teams.

At the February 2020 Reservoir Committee (*February 17th*) and the Authority Board (*February 26th*) meetings, the Reservoir Committee and the Authority Board delegated to the Joint Authority/Reservoir Committee Coordination Committee to decide on an action regarding the Service Area G -Real Estate contract.

The Joint Coordination Committee met on March 16, 2020 and decided that with the change in scope of real estate services, and the anticipated level of effort needed to support the Project's real estate program through 2021, that the current contract for Service Area G – Real Estate be allowed to expire at the conclusion of the contract (June 30, 2020) and directed staff to review the scope and timing of real estate services needed to support the Project in the future.

Prior Action:

February 21, 2020: Delegated to the Joint Authority/Reservoir Committee Coordination Committee to decide on an action regarding the Service Area G -

December 19, 2019: Approved an amendment to Bender Rosenthal, Inc.'s (BRI) (Real Estate) 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 the Bender Rosenthal, Inc. Phase 2 (2019) task order and budget for real estate services from April 1, 2019 through December 31, 2019.

Status: Draft
Purpose: Staff Report
Caveat: Approval Action
Notes:

Preparer: Spesert
QA/QC: Watson
Authority Agent: Trapasso

Phase: 2 Version: A
Date: 2020 April 22
Ref/File #: 12.221-210.018
Page: 1 of 2

January 18, 2019: Approved the consulting agreement with BRI for Service Area G – Real Estate and to approve an initial task order. This agreement incorporates BRI's Proposal in response to the Authority's RFQ-18-04.

November 16, 2018: Accepted the evaluation panel's selection of BRI for Service Area G – Real Estate.

August 16, 2018: Approved the release of the Project Development Support Services RFQ-18-04.

Fiscal Impact/Funding Source:

No change to existing budget.

Staff Contact:

Joe Trapasso

Attachments:

None.

Topic: **Sites Reservoir Project, Phase 2**

Subject: **Monthly Status Report**

Report Period: **2020 March**

Monthly Status Summary:

The development of the Sites Project continues to make progress in the critical areas associated with the value planning, work plan, and message platform including the following activities:

- Completed the Executive Director search with the selection of Jerry Brown.
- Identified a preferred project and developed the participation agreement and supporting materials to advance this project through December 2021.
- Completed the focused geotechnical data collection, including coordination of biological and cultural monitoring, to advance the Bureau of Reclamation's Feasibility Report.

The following highlights the status of activities conducted during the month:

Engineering:

- Continued work to complete the value planning process. Held ad-hoc Value Planning Work Group meeting on March 2. The Group identified a recommended Project and two options that would provide flexibility to adjust key features to respond to future conditions. Completed the engineering, operations, environmental, permitting and repayment analyses necessary to support the process.
- Prepared draft Sites Project Value Planning Appraisal Report. Distributed the report to the Reservoir Committee and Authority Board members on March 18 for review and comment. A public workshop was held on March 30 to receive input on the draft report. The draft report will be finalized reflecting comments.
- Continued to develop the detailed schedule for the next stage of project development.
- Finalized engineering task order materials including scope, budget and schedule for service areas HC (Conveyance) and HR (Reservoir).

Coordination with Reclamation:

- Continued coordination and support for feasibility-level geotechnical investigations. Reclamation is funding and undertaking additional geotechnical investigations while environmental compliance and monitoring activities are being funded by the Authority. Field activities were completed at Fletcher 1 and 2. Drilling at Fletcher 1 was completed in February and downhole geophysics was completed in early March. Drilling at Fletcher 2 was completed in early March along with downhole geophysics. Both holes were backfilled, and the sites cleaned up. All equipment has been demobilized and the core materials have been shipped to the designated laboratory and storage locations.
- Drafted application for Financial Assistance Agreement to receive WIIN Act funding from Reclamation.

Status: Issued for Use

Preparer: JT, KMS, AF, LF

Phase: 2 Version: A

Purpose: Informational

QA/QC: Watson

Date: 2020 April 22

Caveat: Subject to change

Authority Agent: Watson

Ref/File #: 10211-016000

Notes:

Page: 1 of 2

- Drafted environmental feasibility technical memo summarizing EIR/EIS process to date to support Reclamation's Feasibility Report findings.

Environmental Planning and Permitting:

- Completed implementing the environmental commitments including biological, cultural and tribal field monitoring activities for NODOS geotechnical investigations.
- Continued to support the Value Planning efforts.
- Began efforts on the EIR/EIS Work Plan and approach for key permits, including efforts to formulate a range of alternatives for the EIR/EIS based on the Draft Value Planning Report and identify the appropriate baseline for on-going and future analyses.

Operations:

- Completed value planning analysis including post-processing of average annual deliveries, deliveries by water year type, an assessment of exchanges with Shasta Lake, and an evaluation of the capacity in the Tehama Colusa Canal.
- Continued refinement of analysis tools for daily operations, bypass criteria, floodplain inundation, Shasta within year exchanges and other operational effects.
- Began discussions on model baseline to support the project description development.

Stakeholder Engagement, Public Outreach & Real Estate:

- Continued ongoing coordination efforts with landowners, local community members, state and federal elected officials, government agencies and coalitions of regional and statewide organizations including the following activities:
- Responded to landowner requests for project information, facilitated coordination activities with local government agencies and organizations and planned for future landowner, stakeholders and general public outreach activities and events.
- Developed the 2019 Annual Report and stakeholder engagement materials, including an Executive Prospectus and PowerPoint to support funding decisions. Submitted draft final 2019 Sites Annual Report to participants for review.

Program Management & Administration:

- For the Prop 1 Early Funding Agreement, submitted Invoice/Progress Report No 4 in the amount of \$1.9 million.
- Developed work plan materials for the next stage of the project development through December 2021, including a critical path schedule, task budgets, and cash flows. A public workshop was held on March 30 to receive input on the work plan. The work plan will be finalized reflecting comments.



Topic: **Authority Board Agenda Attachment 4-2 B** 2020 April 22

Subject: **Monthly Status Report of Funding Activities - State's WSIP
and Federal (USDA and WIIN Act)**

VERBAL REPORT TO BE GIVEN BY THE EXECUTIVE DIRECTOR AT THE MEETING

Status: **Draft**
Purpose: **Staff Report**
Caveat: **Informational**
Notes:

Preparer: **Watson**
QA/QC:
Authority
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