

Mission statement of McKinleyville Community Services District:
"Provide McKinleyville with safe and reliable water, wastewater, lighting, open space, parks and recreation, and library services in an environmentally and fiscally responsible manner."

**NOTICE IS HEREBY GIVEN THAT A REGULAR MEETING OF THE
MCKINLEYVILLE COMMUNITY SERVICES DISTRICT BOARD OF DIRECTORS
WILL BE HELD
WEDNESDAY, OCTOBER 4, 2017 AT 7:00pm
Azalea Hall, 1620 Pickett Road
McKinleyville, California**

AGENDA

A. CALL TO ORDER

A.1 Roll Call

A.2 Pledge of Allegiance

A.3 Additions to the Agenda

Items may be added to the Agenda in accordance with Section 54954.2(b)(2) of the Government Code (Brown Act), upon a determination by two-thirds vote of the members of the legislative body present at the time of the meeting, or, if less than two-thirds of the members are present, a unanimous vote of those members present, that there is a need to take immediate action and that the need for action came to the attention of the McKinleyville Community Services District after the Agenda was posted.

A.4 Approval of the Agenda

A.5 Closed Session Discussion

At any time during the regular session, the Board may adjourn to closed session to consider existing or anticipated litigation, liability claims, real property negotiations, license and permit determinations, threats to security, public employee appointments, personnel matters, evaluations and discipline, labor negotiations, or to discuss with legal counsel matters within the attorney-client privilege.

NO CLOSED SESSION SCHEDULED

B. PUBLIC HEARINGS

These are items of a Quasi-Judicial or Legislative nature. Public comments relevant to these proceedings are invited.

NO PUBLIC HEARING SCHEDULED

C. PUBLIC COMMENT AND WRITTEN COMMUNICATIONS

Any person may address the Board at this time upon any subject not identified on this Agenda but within the jurisdiction of the McKinleyville Community Services District; however, any matter that requires action will

*be referred to staff for a report of action at a subsequent Committee or Board meeting. As to matters on the Agenda, an opportunity will be given to address the Board when the matter is considered. **Comments are limited to 3 minutes.** Letters should be used for complex issues.*

D. CONSENT CALENDAR

Consent Calendar items are expected to be routine and non-controversial, to be acted upon by the Board of Directors at one time without discussion. If any Board member, staff member, or interested person requests that an item be removed from the Consent Calendar, it shall be removed so that it may be acted upon separately.

- | | | |
|-----|---|---------------|
| D.1 | Consider Approval of the Minutes of the Board of Directors Regular Meeting of September 6, 2017 | Pg. 5 |
| | Attachment 1 – Draft Minutes from September 6, 2017 | Pg. 6 |
| D.2 | Consider approval of August 2017 Treasurer's Report | Pg. 9 |
| D.3 | Compliance with State Double Check Valve (DCV) Law – Violations | Pg. 30 |

E. CONTINUED AND NEW BUSINESS

- | | | |
|-----|---|----------------|
| E.1 | Consider Approval of the Right of Entry and Design Agreement Between the Humboldt Skate Park Collective and McKinleyville Community Services District | Pg. 31 |
| | Attachment – Right of Entry and Design Agreement Between HSPC and MCSD | Pg. 32 |
| E.2 | Presentation for the 65% Engineering Design Review of the Mad River Estuary Floodplain Project for Off-Channel Habitat | Pg. 34 |
| | Attachment 1 – Presentation Slides | Pg. 35 |
| | Attachment 2 – Basis of Design Report, summarizing the information used to choose a preferred conceptual design and develop 30% Designs | Pg. 42 |
| | Attachment 3 – Hydraulic Design Report, summarizing the methods used to analyze and revise the 30% Designs to develop 65% Designs | Pg. 132 |
| | Attachment 4 – 65% Design Sheets | Pg. 162 |
| E.3 | Review the National Recreation and Park Association (NRPA) Online Metrics Tool and Data Available for Parks & Recreation Services Assessment and Planning | Pg. 170 |
| | Attachment 1 – 2017 NRPA Agency Performance Review | Pg. 172 |
| E.4 | Review Instructions for the "Reflection on Core Values" Worksheets to be Completed by Board of Directors in Preparation for the Board Retreat on November 3, 2017 | Pg. 196 |
| | Attachment 1 – Reflection on Core Values Worksheets | Pg. 198 |
| | Attachment 2 – Example of Completed Core Values Selection Worksheet | Pg. 200 |
| E.5 | Review and Discuss Annual Board Self-Evaluation Policy, Procedure and Evaluation Form | Pg. 201 |
| | Attachment 1 – Resolution 2016-04 | Pg. 202 |

E.6	Approve the Regular Board Meeting Dates, Time and Location for the 2018 Calendar Year	Pg. 206
	Attachment 1 – 2018 Proposed MCSD Regular Board Meeting Schedule	Pg. 207
E.7	Consider Attendance to the Association of California Water Agencies (ACWA) 2017 Fall Conference & Exhibition in Anaheim, CA November 28 th – December 1 st , 2017	Pg. 208
	Attachment 1 – Preliminary Agenda	Pg. 209
	Attachment 2 – Pricing Reference Sheet	Pg. 210
	Attachment 3 – Terms and Conditions	Pg. 211
E.8	Authorize the General Manager to Enter into an Agreement with Kennedy Jenks to Complete a Title 22 Engineer Report (Report)	Pg. 212
	Attachment 1 – Task Order Authorization 3: Title 22 Engineers Report	Pg. 214
E.9	Consider Adoption of Resolution 2017-24 Approving Membership in the Humboldt Area Chapter of the California Special Districts Association (CSDA)	Pg. 217
	Attachment 1 – Resolution 2017-24	Pg. 219
	Attachment 2 – CSDA Humboldt Area Chapter Bylaws	Pg. 220
	Attachment 3 – CSDA Local Chapter Affiliation Agreement	Pg. 235

F. REPORTS

No specific action is required on these items, but the Board may discuss any particular item as required.

F.1 ACTIVE COMMITTEE REPORTS

- a. Recreation Advisory Committee (Couch/Wheeler)
- b. Area Fund (John Kulstad/Burke)
- c. Redwood Region Economic Development Commission (Mayo/Corbett)
- d. McKinleyville Senior Center Advisory Committee (Burke, Wheeler)
- e. Audit (Corbett/Couch)
- f. Employee Negotiations (Couch/Corbett)
- g. Water Task Force (Wheeler/Burke)
- h. AdHoc No Drugs & Toxics Down the Drain (Wheeler/Burke)
- i. McKinleyville Municipal Advisory Committee (Corbett/Mayo)
- j. Cornerstone Committee (Couch/Wheeler)
- k. Groundwater Sustainability Committee (Corbett, Burke)

F.2 STAFF REPORTS

- | | |
|---|----------------|
| a. Support Services Department (Colleen M.R. Trask) | Pg. 243 |
| b. Operations Department (James Henry) | Pg. 245 |
| c. Parks & Recreation Department (Lesley Frisbee) | Pg. 250 |
| Attachment 1 – RAC Meeting Notes 9-21-17 | Pg. 253 |
| d. General Manager (Greg Orsini) | Pg. 256 |
| Attachment 1 – WWMF Monthly Self Monitoring Report | Pg. 259 |

F.3 PRESIDENT'S REPORT

F.4 BOARD MEMBER COMMENTS, ANNOUNCEMENTS, REPORTS AND AGENDA ITEMS REQUESTS

G. ADJOURNMENT

Posted 5:00 pm on September 29, 2017

Pursuant to California Government Code Section 54957.5, this agenda and complete Board packet are available for public inspection on the web at McKinleyvillecsd.com/minutes or upon request at the MCSD office, 1656 Sutter Road, McKinleyville. A complete packet is also available for viewing at the McKinleyville Library at 1606 Pickett Road, McKinleyville. If you would like to receive the complete packet via email, free of charge, contact the Board Secretary at (707)839-3251 to be added to the mailing list.

McKinleyville Community Services District will, on request, make agendas available in appropriate alternative formats to persons with a disability, as required by Section 202 of the Americans with Disabilities Act of 1990 (42 U.S.C. Sec. 12132), and the federal rules and regulations adopted in implementation thereof. Individuals who need this agenda in an alternative format or who need a disability-related modification or accommodation in order to participate in the meeting should contact the Board Secretary at (707) 839-3251. Notification 48 hours prior to the meeting will enable the District to make reasonable arrangements for accommodations.

McKinleyville Community Services District

BOARD OF DIRECTORS

October 4, 2017

TYPE OF ITEM: **ACTION**

ITEM: D.1 **Consider Approval of the Minutes of the Board of Directors Regular Meeting on September 6, 2017**

PRESENTED BY: **Emily Abfalter, Board Secretary**

TYPE OF ACTION: **Roll Call Vote – Consent Calendar**

Recommendation:

Staff recommends that the Board review the draft minutes from the September 6, 2017 Regular Board Meeting; recommend edits and adopt.

Discussion:

The Draft Minutes are attached for the above listed meetings.

Alternatives:

Staff analysis consists of the following potential alternative

- Take No Action

Fiscal Analysis:

Not applicable

Environmental Requirements:

Not applicable

Exhibits/Attachments:

- Attachment 1 – Draft Minutes from September 6, 2017

**MINUTES OF THE REGULAR MEETING OF THE MCKINLEYVILLE COMMUNITY SERVICES
DISTRICT HELD ON WEDNESDAY, SEPTEMBER 6, 2017 AT 7:00 PM
AZALEA HALL, 1620 PICKETT ROAD, MCKINLEYVILLE, CA**

AGENDA ITEM A. CALL TO ORDER

A.1 Roll Call: The regular session of the Board of Directors of McKinleyville Community Services District convened at 7:03 pm with the following Directors and staff in attendance:

Dennis Mayo, President	Gregory Orsini, General Manager
Mary Burke, Director	Colleen Trask, Finance Director
John Corbett, Director	James Henry, Operations Director
David Couch, Director	Lesley Frisbee, Recreation Director
George Wheeler, Director	Emily Abfalter, Board Secretary

A.2 Pledge of Allegiance: The Pledge of Allegiance was led by Director Wheeler.

A.3 Additions to the Agenda: There were no additions to the agenda.

A.4 Approval of the Agenda:

Motion: It was moved to adopt the agenda.

Motion By: Director Corbett; Second: Director Couch
There were no comments from the Board or Public.

Roll Call: Ayes: Burke, Corbett, Couch, Mayo and Wheeler Nays: None Absent: None

Motion Summary: Motion Passed

A.5 Closed Session Discussion: No closed session.

AGENDA ITEM B. PUBLIC HEARINGS: There were no public hearings scheduled.

AGENDA ITEM C. PUBLIC COMMENT AND WRITTEN COMMUNICATIONS: President Mayo opened the public comment portion of the meeting and the following members of the public spoke:

Bette Wilkinson of McKinleyville spoke regarding water and sewer rates for seniors.

AGENDA ITEM D. CONSENT CALENDAR:

D.1 Consider Approval of the Minutes of the Board of Directors Regular Meeting on August 2, 2017 and Special Meeting on August 14, 2017

D.2 Consider Approval of July 2017 Treasurer's Report

D.3 Compliance with State Double Check Valve (DCV) Law – Violations

D.4 Approve Conveyance of Water, Sewer and Streetlight Facilities Related to Central Estates Phase 2D Development

D.5 Consider Approval to Declare 2000 Chevrolet 2500 Truck and 2002 Vac-Con Surplus

Motion: It was moved to approve the consent calendar.

Motion By: Director Corbett; Second: Director Burke
There were no comments from the Board or Public.

Roll Call: Ayes: Burke, Corbett, Couch, Mayo and Wheeler Nays: None Absent: None

Motion Summary: Motion Passed

AGENDA ITEM E. CONTINUED AND NEW BUSINESS:

E.1 Annual Board Self-Evaluation Review and Discussion. Presented by Board Secretary, Emily Abfalter. Directors Burke and Wheeler commented on the self-evaluation worksheet. General Manager Orsini recommended that at the Board's request, bring back the Board Self-Evaluation for review and

revisions at the October meeting. Additional comments and discussion by Directors Corbett and Couch, President Mayo and General Manager Orsini.

E.2 Review Information Regarding the MCSD Board Retreat. Presented by Recreation Director, Lesley Frisbee. Director Corbett and President Mayo commented on possible additional topics for the Board Retreat, to which Recreation Director, Lesley Frisbee, responded. Additional discussion by Directors Wheeler and Burke and General Manager Orsini. Public comment opened, Steve Madrone commended the Board for planning a Board Retreat and suggested a public survey, public comment closed.

E.3 Consider Approval of Proposal by Jackson & Eklund to Provide Accounting Support Services for FY2017-18, FY2018-19 and FY2019-20. Item presented by Finance Director, Colleen Trask. Board and staff discussion regarding receipt of only one proposal. Comment offered by President Mayo. Public comment opened, no comments, public comment closed. Additional Board comments by Director Corbett and President Mayo.

Motion: Authorize General Manager to execute a Professional Services Agreement with Jackson & Eklund to provide accounting support services per staff recommendation.

Motion By: Director Corbett; Second: Director Wheeler

Roll Call: Ayes: Burke, Corbett, Couch, Mayo and Wheeler Nays: None Absent: None

Motion Summary: Motion Passed

E.4 Review Information Pertaining to Continued Bathroom Concerns at District Owned Facilities. Presented by Operations Director, James Henry. General Manager Orsini asked questions regarding the correlation between increased vandalism and the change in opening and closing times. Director Wheeler commented about the possibility of video surveillance. Directors Burke and Couch thanked staff for their efforts. President Mayo asked about the correlation between vandalism and the clearing out of the old Pacific Lumber Co. mill. Public comment opened, none received, public comment closed.

E.5 Consider Adoption of Resolution 2017-23 in Support of General Manager Orsini's Nomination for California Special District Association (CSDA) Board President. General Manager Orsini reviewed the item and noted that the election would be held at annual conference. Public comment opened, none received, public comment closed. President Mayo commended General Manager Orsini. Directors stood for roll call to show support of General Manager Orsini's nomination for CSDA Board President.

Motion: Approve Resolution 2017-23, supporting the nomination of General Manager Orsini for election to the CSDA Board President seat per staff recommendation.

Motion By: Director Corbett; Second: Director Wheeler

Roll Call: Ayes: Burke, Corbett, Couch, Mayo and Wheeler Nays: None Absent: None

Motion Summary: Motion Passed

AGENDA ITEM F. REPORTS

F.1 ACTIVE COMMITTEE REPORTS

- a. **Recreation Advisory Committee (Couch/Wheeler):** Director Couch noted that they met, McKinleyville Little League had a presence at the meeting and to refer to Recreation Director, Lesley Frisbee's notes.
- b. **Area Fund (John Kulstad/Burke):** Did not meet.
- c. **Redwood Region Economic Development Commission (Mayo/Corbett):** President Mayo noted that they did meet, the Vice President has resigned and a representative from the Redwood Coast Energy Authority spoke.

- d. **McKinleyville Senior Center Advisory Committee (Wheeler, Burke):** Director Burke attended both the regular McKinleyville Senior Center Board meeting and the Executive Committee meeting and discussed the strategic planning process progress.
- e. **Audit (Corbett/Couch):** Did not meet.
- f. **Employee Negotiations (Couch/Corbett):** Did not meet.
- g. **Water Task Force (Wheeler/Burke):** Did not meet.
- h. **AdHoc No Drugs & Toxics Down the Drain (Wheeler/Burke):** Did not meet.
- i. **McKinleyville Municipal Advisory Committee (Corbett/Mayo):** Director Corbett noted that they met and discussed discrimination in McKinleyville. Additional comments from Directors Burke and Wheeler.
- j. **Cornerstone Committee (Couch/Wheeler):** Did not meet.
- k. **Groundwater Sustainability Committee (Corbett, Burke):** Did not meet.

F.2 STAFF REPORTS

- a. **Support Services Department (Colleen M.R. Trask):** Finance Director, Colleen Trask, reviewed her report and explained in detail page 2 of the Treasurers Report.
- b. **Operations Department (James Henry):** Operations Director, James Henry, had nothing further to add to his written report. Director Wheeler gave thanks for the added graph.
- c. **Parks & Recreation Department (Lesley Frisbee):** Recreation Director, Lesley Frisbee, had nothing further to add to her written report. Director Burke asked question regarding the NRPA Metrics tool. Recreation Director, Lesley Frisbee, responded that she will showcase the tool as an informational item at the October meeting.
- d. **General Manager (Greg Orsini):** General Manager Orsini highlighted the Districts Make a Difference video shoot, the Wastewater Management Facility and the succession plan progress.

President Mayo called for F.4 prior to F.3.

F.4 BOARD MEMBER COMMENTS, ANNOUNCEMENTS, REPORTS AND AGENDA ITEM REQUESTS: Board and staff discussion about the proposed community forest.

F.3 PRESIDENT'S REPORT: President Mayo passed out and discussed two handouts from ACWA, in addition to a proposal for an anti-discrimination policy for all MCSD programs and facilities not covered by the personnel policy. President Mayo announced that he is activating a new committee, the Miscellaneous Advisory Committee on Discrimination, and assigned the General Manager, Director Burke, as well as himself, to the committee. Additional Board comments by Directors Corbett and Wheeler.

G. ADJOURNMENT: 9:55pm

Motion to adjourn made by Director Corbett; Second: Director Burke

Emily Abfalter, Board Secretary

**McKinleyville Community Services District
DRAFT Treasurer's Report
August 2017**

Table of Contents

Page 2	Investments & Cash Flow Report
Page 3	Consolidated Balance Sheet by Fund
Page 4	Activity Summary by Fund with Selected Graphic Comparisons
Page 11	Capital Expenditure Report
Page 12	Summary of Long-Term Debt Report
Page 13	Cash Disbursement Report

McKinleyville Community Services District
Investments & Cash Flow Report
As of August 31, 2017

Petty Cash & Change Funds 8,892.60

Cash

Operating & Money Market - Beginning Balance 2,805,065.81

Cash Receipts:

Utility Billings & Other Receipts	778,202.34
Money Market Account Interest	490.23
Transfers from County Funds #2560, #4240, CalTRUST, Meas. B	-
Other Cash Receipts (incl. WWMF SRF Loan disbursements)	1,149,320.00

Total Cash Receipts 1,928,012.57

Cash Disbursements:

Transfers to County Funds #2560, #4240, CalTRUST	-
Payroll Related Expenditures	(225,128.12)
Debt Service	(13,695.71)
Capital & Other Expenditures	(566,783.18)

Total Cash Disbursements (805,607.01)

Operating & Money Market - Ending Balance 3,927,471.37

Total Cash 3,936,363.97

Investments (Interest and Market Valuation will be re-calculated as part of the year-end close, if material)

LAIF - Beginning Balance 130,253.25

Interest Income	-
-----------------	---

LAIF - Ending Balance 130,253.25

Humboldt Co. #2560 - Beginning Balance 611,067.32

Property Taxes and Assessments	-
Transfer to/from Operating Cash	-
Interest Income (net of adjustments)	656.90

Humboldt Co. #2560 - Ending Balance 611,724.22

Humboldt Co. #4240 - Beginning Balance 2,920,386.75

Transfer to/from Operating Cash	-
Transfer to/from Biosolids Reserve	-
Interest Income	2,383.73

Humboldt Co. #4240 - Ending Balance 2,922,770.48

Humboldt Co. #9390 - Beginning Balance 937,318.68

Reserves Recovery Deposits/Other Bal Withdrawals	-
Interest Income	-

Humboldt Co. #9390 - Ending Balance 937,318.68

USDA Bond Reserve Fund - Beginning Balance 181,895.14

Bond Reserve Payment	7,395.83
Debt Service Payment, Principal/Interest	(81,125.00)
Interest Adjustment	30.43

USDA Bond Reserve Fund - Ending Balance 108,196.40

CalTRUST - Beginning Balance 1,248,598.83

Net Transfer to/from Meas. B Teen Ctr Funds	-
Net Transfer to/from Water Fund Capacity Fees Acct	-
Net: Interest Income/Unrealized Gain/Loss	2,957.60

CalTRUST - Ending Balance 1,251,556.43

Total Investments 5,967,836.94

Total Cash & Investments - Current Month 9,904,200.91

Total Cash & Investments - Prior Month 8,849,495.85

Net Change to Cash & Investments This Month 1,054,705.06

Cash & Investment Summary

Cash & Cash Equivalents	9,026,646.72
Davis-Grunsky Loan Reserve	606,433.08
Waste Water Capital Reserve	102,924.71
USDA Bond Reserve	108,196.40
I-Bank Loan Reserve	60,000.00

Total Cash & Investments 9,904,200.91

McKinleyville Community Services District
DRAFT Consolidated Balance Sheet by Fund
As of August 31, 2017

	Governmental Funds			Proprietary Funds		
	Parks & General	Measure B	Streetlights	Water	Wastewater	Total (Memorandum Only)
ASSETS						
Current Assets						
Unrestricted cash & cash equivalents	\$ 1,073,252.86	\$ (557,289.78)	\$ (21,077.26)	\$ 3,836,939.01	\$ 4,754,239.01	\$ 9,086,063.84
Accounts receivable	2,364.34	-	3,566.88	328,671.05	315,296.07	649,898.34
Prepaid expenses & other current assets	50,937.76	-	2,454.72	114,861.83	53,895.92	222,150.23
Total Current Assets	1,126,554.96	(557,289.78)	(15,055.66)	4,280,471.89	5,123,431.00	9,958,112.41
Noncurrent Assets						
Restricted cash & cash equivalents	149,174.07	-	-	666,433.08	211,121.11	1,026,728.26
Other noncurrent assets	-	-	-	38,216.52	41,750.04	79,966.56
Capital assets (net)	-	-	-	8,291,034.95	25,143,323.11	33,434,358.06
Total Noncurrent Assets	149,174.07	-	-	8,995,684.55	25,396,194.26	34,541,052.88
TOTAL ASSETS	\$ 1,275,729.03	\$ (557,289.78)	\$ (15,055.66)	\$ 13,276,156.44	\$ 30,519,625.26	\$ 44,499,165.29
LIABILITIES & FUND BALANCE/NET ASSETS						
Current Liabilities						
Accounts payable & other current liabilities	\$ 68,244.95	\$ 519.23	\$ 2,154.29	\$ 308,711.57	\$ 671,154.41	\$ 1,050,784.45
Accrued payroll & related liabilities	99,623.22	-	-	56,969.46	57,099.01	213,691.69
Total Current Liabilities	167,868.17	519.23	2,154.29	365,681.03	728,253.42	1,264,476.14
Noncurrent Liabilities						
Long-term debt	-	-	-	2,723,339.59	11,182,752.63	13,906,092.22
Other noncurrent liabilities	-	-	-	991,602.41	1,039,265.94	2,030,868.35
Total Noncurrent Liabilities	-	-	-	3,714,942.00	12,222,018.57	15,936,960.57
TOTAL LIABILITIES	167,868.17	519.23	2,154.29	4,080,623.03	12,950,271.99	17,201,436.71
Fund Balance/Net Assets						
Fund balance	(57,615.24)	(557,809.01)	(17,209.95)	-	-	(632,634.20)
Net assets	1,165,476.10	-	-	3,627,838.05	3,608,782.79	8,402,096.94
Investment in capital assets, net of related debt	-	-	-	5,567,695.36	13,960,570.48	19,528,265.84
Total Fund Balance/Net Assets	1,107,860.86	(557,809.01)	(17,209.95)	9,195,533.41	17,569,353.27	27,297,728.58
TOTAL LIABILITIES & FUND BALANCE/NET ASSETS	\$ 1,275,729.03	\$ (557,289.78)	\$ (15,055.66)	\$ 13,276,156.44	\$ 30,519,625.26	\$ 44,499,165.29
Difference in Reclass from Cap Assets to Net Assets:						
Investment in General Capital Assets	\$ 3,147,357.23					
General Long-term Liabilities						
PG&E Streetlights Loan	46,281.33					
Meas. B Loan: Teen/Community Center	1,269,902.00					
OPEB Liability	506,005.70					
CalPERS Pension Liability/Deferred Inflows-Outflows	510,949.66					
Accrued Compensated Absences	86,838.94					
TOTAL GENERAL LONG-TERM LIABILITIES	\$ 2,419,977.63					

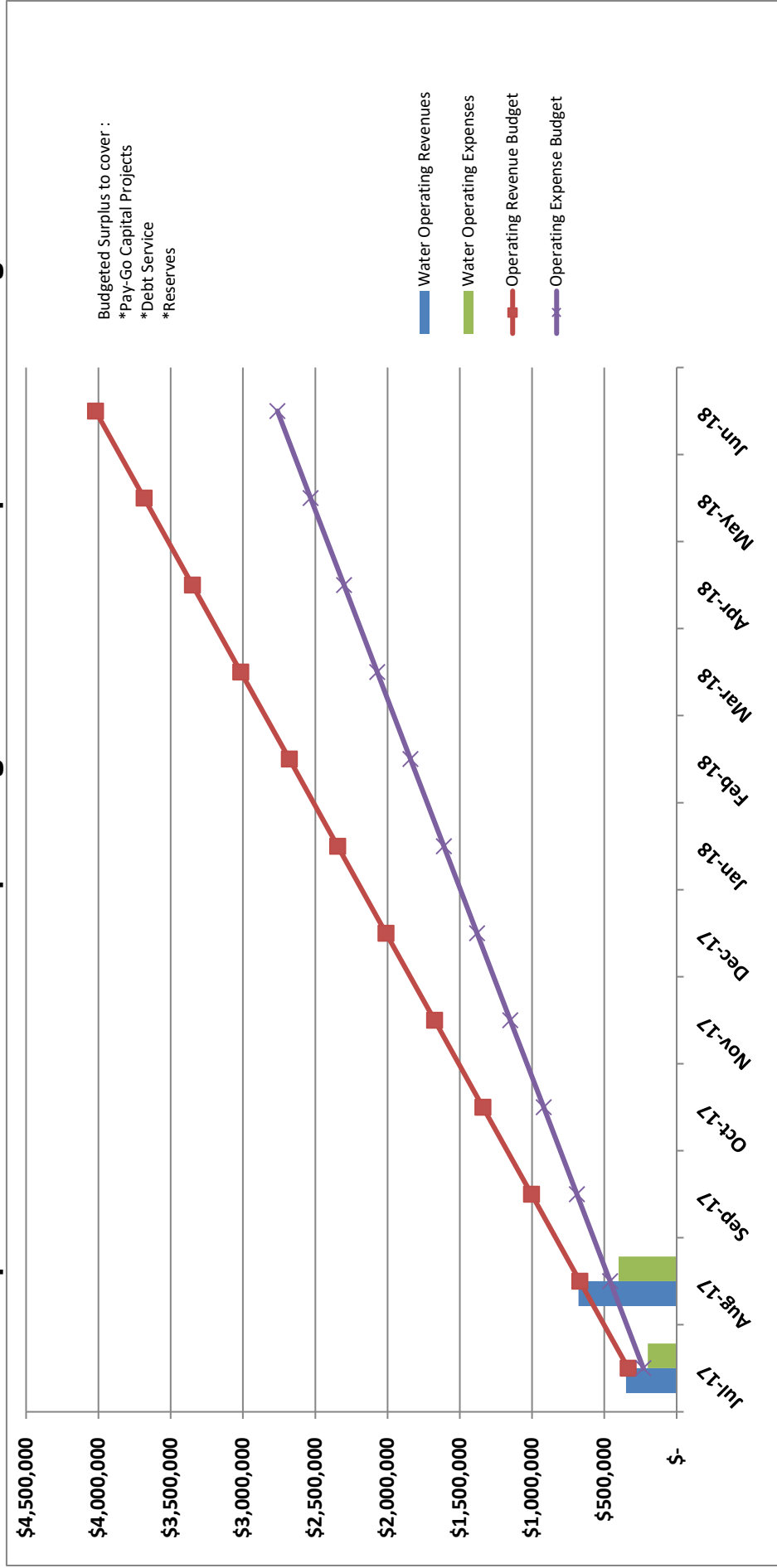
McKinleyville Community Services District
DRAFT Activity Summary by Fund, Approved Budget
August 2017

Department Summaries		August	% of Year 16.67% YTD	Original YTD Budget	Over (Under) YTD Budget	Over (Under) YTD Budget %	Notes
<u>Water</u>							
Water Sales		306,565	645,052	605,523	39,529	6.53%	Budget is spread evenly across 12 months, but actuals vary by month Includes YTD Capacity Fees of \$7,123. No Contrib.Construction at this time
Other Revenues		20,789	33,285	64,393	(31,108)	-48.31%	
Total Operating Revenues		327,354	678,337	669,916	8,421	1.26%	
Salaries & Benefits		75,816	147,390	154,567	(7,177)	-4.64%	Budget is spread evenly across 12 months, but actuals vary by month Budget is spread evenly across 12 months, but actuals vary by month Budget is spread evenly across 12 months, but actuals vary by month 0.11%
Water Purchased		73,728	146,395	167,543	(21,148)	-12.62%	
Other Expenses		22,983	49,861	79,796	(29,935)	-37.51%	
Depreciation		29,200	58,400	58,333	67	0.11%	
Total Operating Expenses		201,728	402,045	460,239	(58,194)	-12.64%	
Net Operating Income		125,625	276,292	209,677	(49,773)		
Interest Income		3,095	5,112	4,167	945	22.69%	
Interest Expense		(5,512)	(11,146)	(11,167)	(21)	-0.19%	
Net Income (Loss)		123,208	270,259	202,677	67,582		
<u>Wastewater</u>							
Wastewater Service Charges		284,450	579,971	565,360	14,611	2.58%	
Other Revenues		11,394	15,913	68,050	(52,137)	-76.62%	Includes no YTD Capacity Fees yet. No Contrib.Construction at this time
Total Operating Revenues		295,844	595,884	633,410	(37,526)	-5.92%	
Salaries & Benefits		85,614	169,505	165,790	3,715	2.24%	Budget is spread evenly across 12 months, but actuals vary by month
Other Expenses		54,007	92,392	130,540	(38,148)	-29.22%	
Depreciation		41,250	82,500	82,500	-	0.00%	
Total Operating Expenses		180,871	344,397	378,830	(34,433)	-9.09%	
Net Operating Income		114,973	251,487	254,580	(3,093)		
Interest Income		2,717	5,294	3,667	1,627	44.37%	Higher-than-estimated interest rates on the County Trust Account Interest posted on the SRF WWMF loan per loan draw received
Interest Expense		(1,852)	(3,726)	(155,345)	(151,619)	-97.60%	
Net Income (Loss)		115,839	253,054	102,902	150,152		
Enterprise Funds Net Income (Loss)		239,047	523,313	305,579	217,734		

Treasurer's Report Page 4

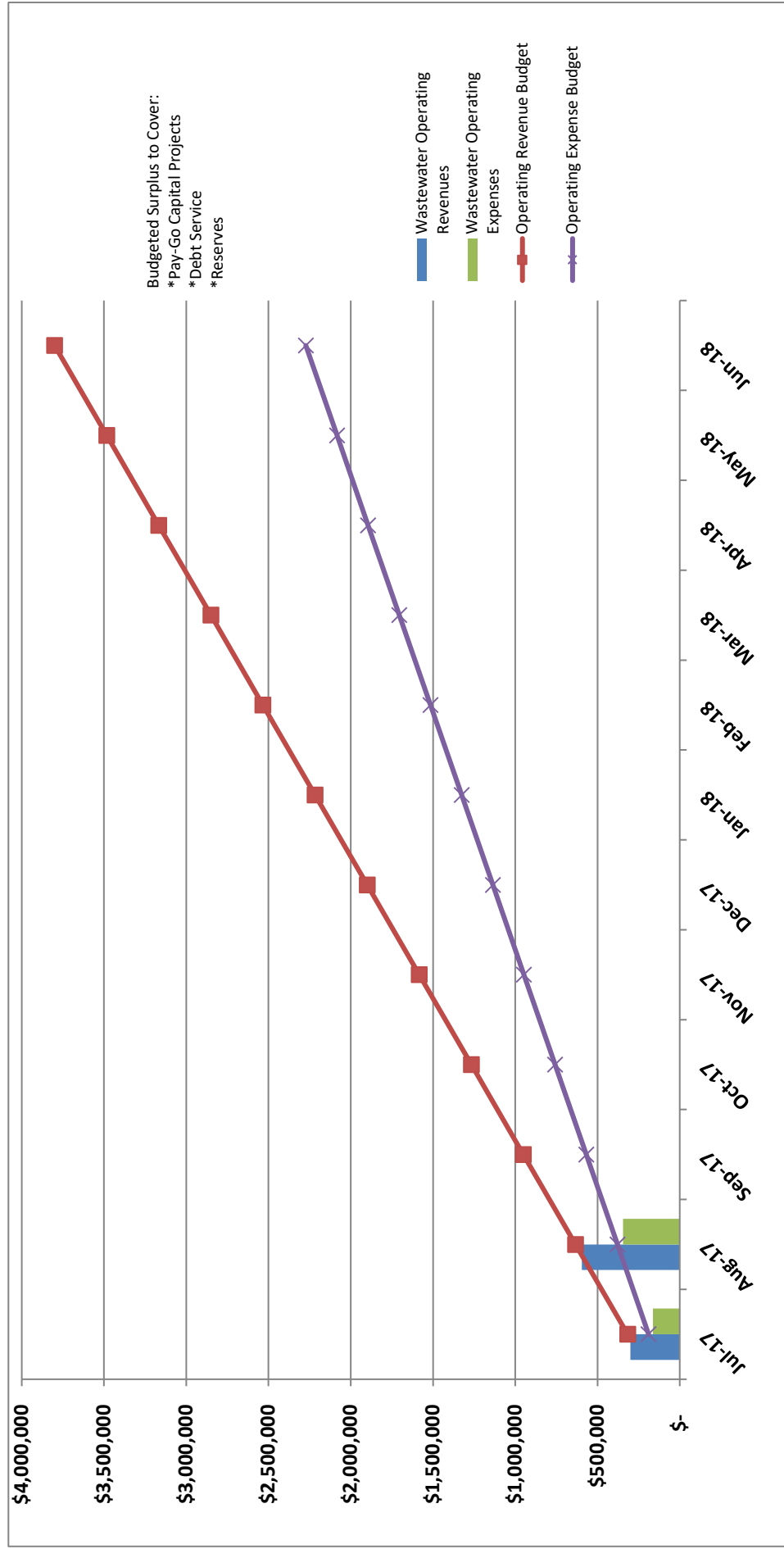
McKinleyville Community Services District August 2017

Comparison of Water Fund Operating Revenues & Expenses to Budget



McKinleyville Community Services District August 2017

Comparison of Wastewater Fund Operating Revenues & Expenses to Budget

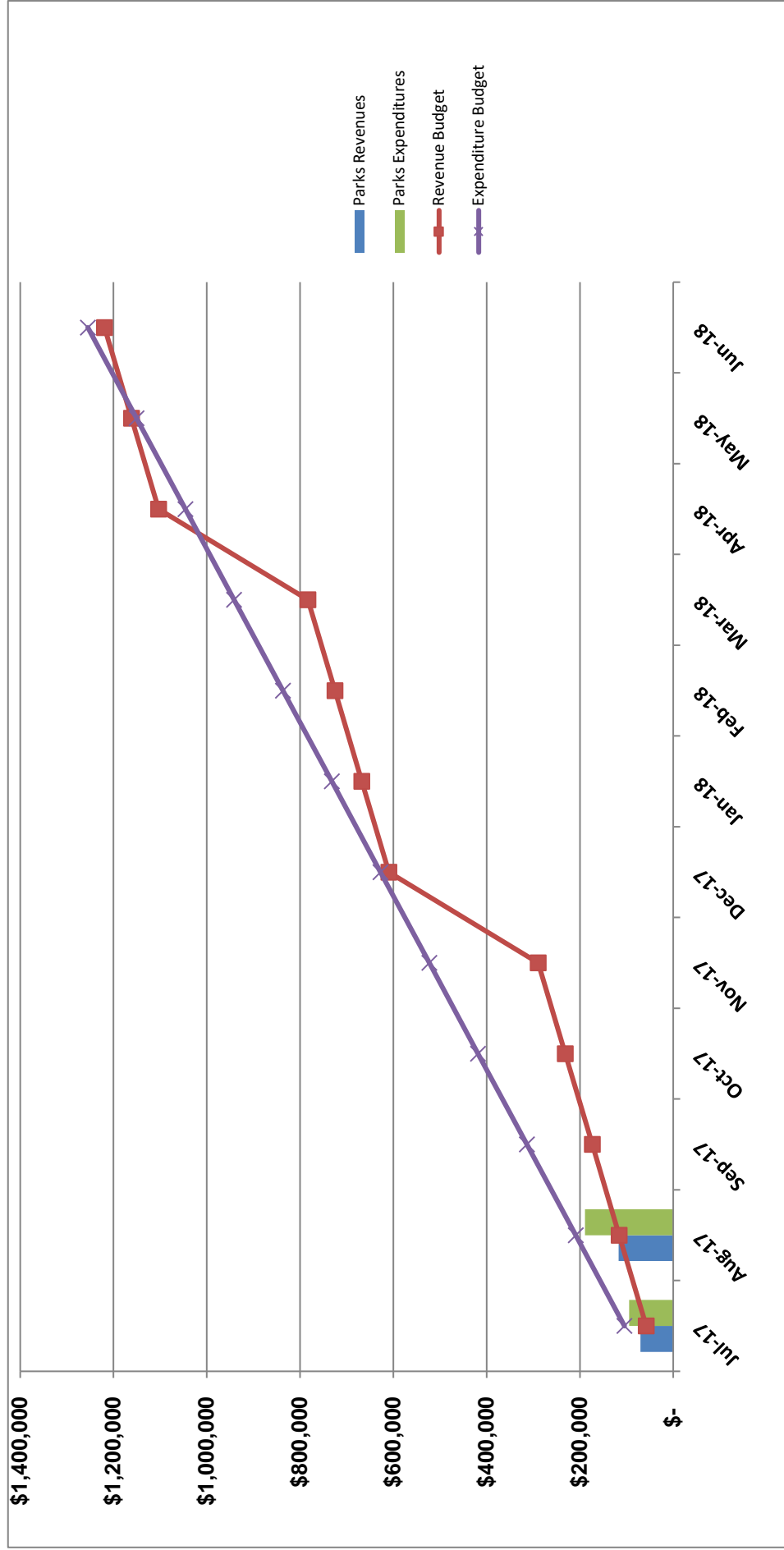


McKinleyville Community Services District
DRAFT Activity Summary by Fund, Approved Budget
August 2017

		August	% of Year 16.67% YTD	Original YTD Budget	Over (Under) YTD Budget	Over (Under) YTD Budget %	Notes
Department Summaries							
Parks & Recreation							
Program Fees	29,847	73,328	69,823	3,505	5.02%		
Rents & Related Fees	5,619	13,609	19,929	(6,320)	-31.71%		Budget is spread evenly across 12 months, but actuals vary by month
Property Taxes	-	-	87,500	(87,500)	-100.00%		County Tax remittance December/April/June
Other Revenues	10,291	28,364	24,290	4,074	16.77%		Budget is spread evenly across 12 months, but actuals vary by month
Interest Income	931	1,746	1,667	79	4.75%		
Total Revenues	46,688	117,047	203,209	(86,162)	-42.40%		
Salaries & Benefits	74,047	149,753	156,699	(6,946)	-4.43%		
Other Expenditures	20,538	39,330	45,481	(6,151)	-13.52%		Budget is spread evenly across 12 months, but actuals vary by month
Capital Expenditures	-	(112)	7,000	(7,112)	-101.60%		Budget is spread evenly across 12 months, but actuals vary by month
Total Expenditures	94,585	188,971	209,180	(20,209)	-9.66%		
Excess (Deficit)	(47,897)	(71,924)	(5,971)	(65,953)			
Measure B Assessment							
Total Revenues	(78)	(200)	35,777	(35,977)	-100.56%		Interest & unrealized gains/losses; County Tax remittance December/April/June
Salaries & Benefits	4,894	8,835	9,077	(242)	-2.66%		Budget is spread evenly across 12 months, but actuals vary by month
Other Expenditures	519	3,762	5,400	(1,638)	-30.33%		Budget is spread evenly across 12 months, but actuals vary by month
Capital Expenditures/Loan Repayment	-	-	21,242	(21,242)	-100.00%		Budget is spread evenly across 12 months, but actuals vary by month
Total Expenditures	5,414	12,598	35,719	(23,121)	-64.73%		
Excess (Deficit)	(5,492)	(12,798)	58	(12,856)			
Street Lights							
Total Revenues	9,291	17,786	16,875	911	5.40%		
Salaries & Benefits	2,692	6,059	7,258	(1,199)	-16.52%		Budget is spread evenly across 12 months, but actuals vary by month
Other Expenditures	2,213	4,274	5,944	(1,670)	-28.09%		Budget is spread evenly across 12 months, but actuals vary by month
Capital Expenditures/Loan Repayment	1,655	3,311	3,644	(333)	-9.14%		
Total Expenditures	6,560	13,644	16,846	(3,202)	-19.01%		
Excess (Deficit)	2,731	4,142	29	(4,113)			
Governmental Funds Excess (Deficit)	(50,658)	(80,579)	(5,884)	(74,695)			

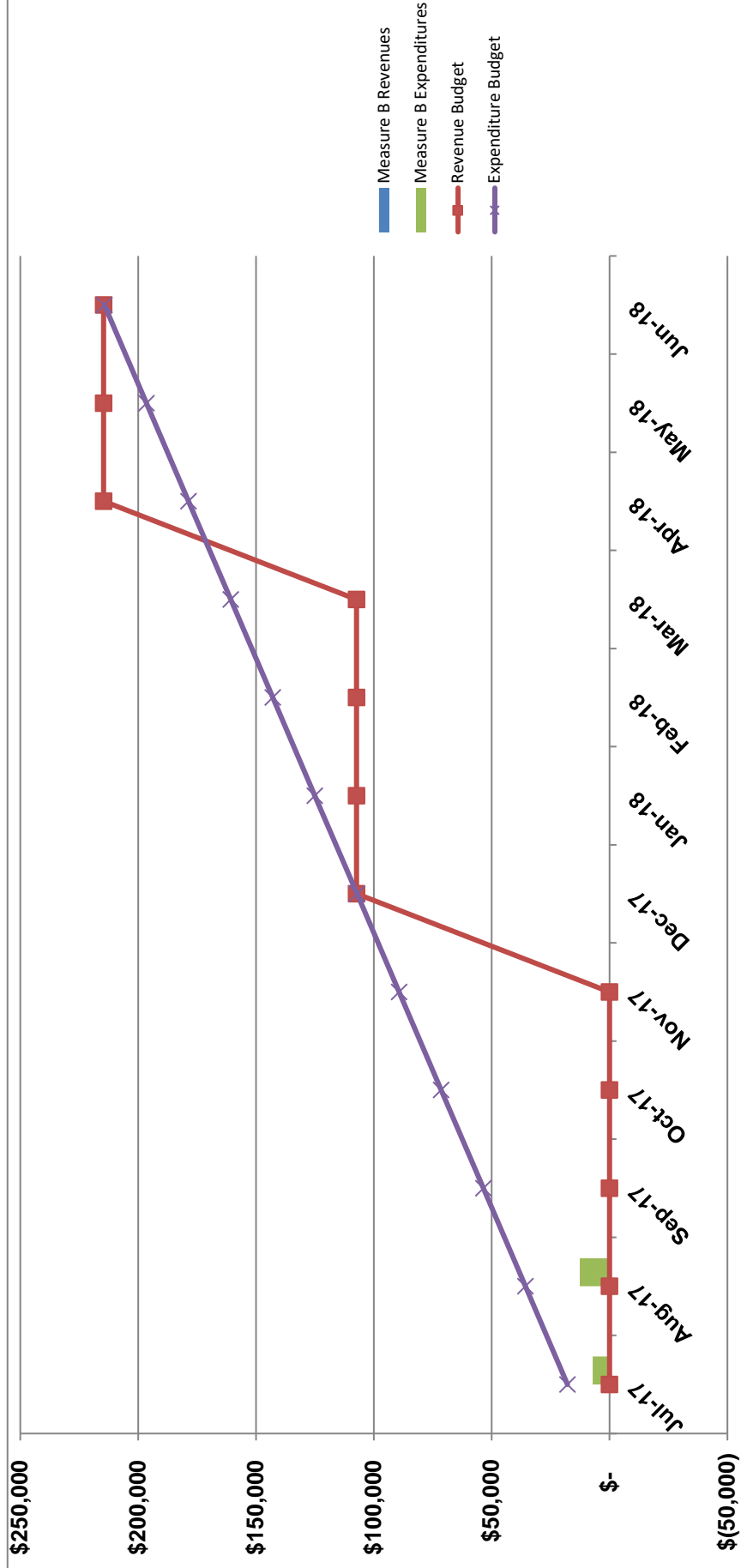
McKinleyville Community Services District August 2017

Comparison of Parks & Recreation Total Revenues & Expenditures to Budget



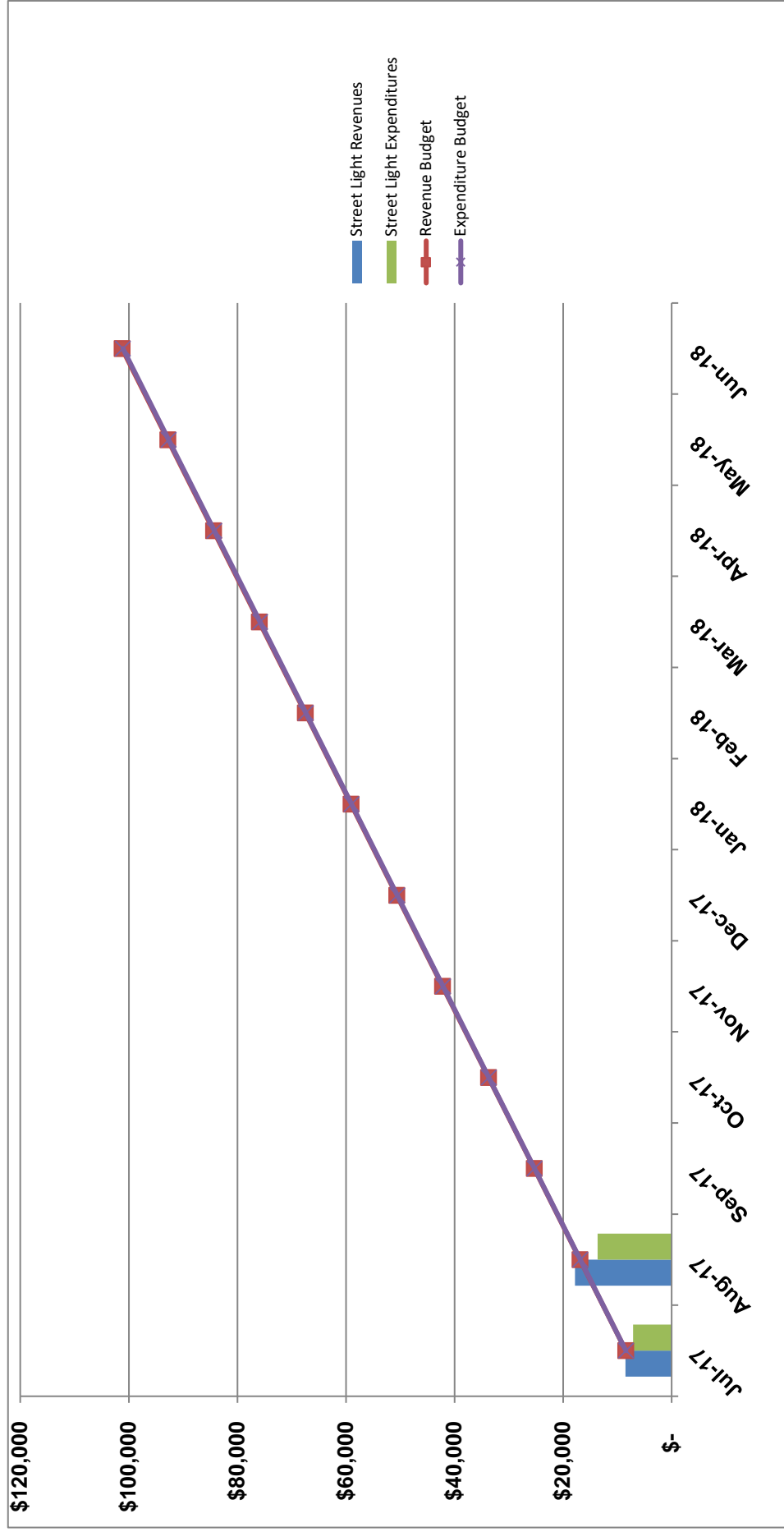
McKinleyville Community Services District August 2017

Comparison of Measure B Fund Total Revenues & Expenditures to Budget



McKinleyville Community Services District August 2017

Comparison of Street Light Fund Total Revenues & Expenditures to Budget



McKinleyville Community Services District
DRAFT Capital Expenditure Report
As of August 31, 2017

	August	YTD Total	FY 17-18 Budget	Remaining		
				Budget \$	Budget %	Notes
<u>Water Department</u>						
Ramey Pump Upgrades	-	-	-	-	#DIV/0!	
Water Tank Upgrade	-	72	-	(72)	#DIV/0!	Cochran Tank Repainting
Alternative Energy Master Plan	-	-	50,000	50,000	100%	Alternative energy master plan
4.5m New Water Tank	-	-	700,000	700,000	100%	Drilling, LACO Assoc.
Production Meter Replacements	-	-	8,000	8,000	100%	Production Meter Replacement
Emergency Water Supply	-	-	50,000	50,000	100%	Emergency Water Supply
Emergency Response Equipment	-	-	50,000	50,000	100%	Emergency Generator
Fire Hydrant System Upgrade	-	-	7,000	7,000	100%	Fire Hydrant System Upgrade
Customer Radio Meter Replacements	103,979	103,979	200,000	96,021	48%	Radio meters purch/install
Radio Telemetry Upgrade	-	-	150,000	150,000	100%	Radio Telemetry upgrade
Water Main Rehab & Replacement	-	2,725	100,000	97,275	97%	Water Main Rehab
Property Purchase & Improvements	-	-	200,000	200,000	100%	Property Purch/Improvements
Subtotal	103,979	106,775	1,515,000	1,408,225	93%	
<u>Wastewater Department</u>						
Sewer Main Rehab & Replacement	-	4,087	90,000	85,913	95%	Sewer Main Rehab
WWMF Sludge Disposal - next	-	-	240,000	240,000	100%	Sludge handling/disposal
WWMF/Fischer Lift Stn Grinder Upgrade	-	-	17,000	17,000	100%	Fischer Lift Stn Grinder Upgrade
Alternative Energy Master Plan	-	-	50,000	50,000	100%	Alternative energy master plan
WWMF Chlorine Injector/Controllers	-	-	10,000	10,000	100%	Chlorine Injector/Controllers
Collection System Upgrades	-	-	10,000	10,000	100%	Collection System upgrades
Fischer Lift Station Generator	-	-	50,000	50,000	100%	Fischer Lift Stn Generator
WWMF Upgrade/CEQA/Permitting	368,023	383,283	200,000	(183,283)	-92%	WWMF construction
Radio Telemetry Upgrade	-	-	150,000	150,000	100%	Radio Telemetry upgrade
WWMF Engr Study (next NPDES Permit)	427	427	50,000	49,573	99%	
Customer Radio Meter Replacements	-	-	200,000	200,000	100%	Radio meters purch/install
Sewer Lift Station Other Upgrades	-	-	6,000	6,000	100%	
Subtotal	368,450	387,797	1,073,000	685,203	64%	
<u>Water & Wastewater Operations</u>						
Heavy Equipment	-	-	10,000	10,000	100%	Tractor attachmt
Utility Vehicles	86	86	48,000	47,914	100%	CCTV truck, 3/4 or 1-ton Pickup
Office, Corporate Yard & Shops	-	-	69,000	69,000	100%	Facilities upgrade/sealcoat
Computers & Software	-	-	11,000	11,000	100%	Server, PCs, GIS/SEMS/CADD
Fischer Ranch - Reclamation Site Upgrade (tr	-	-	30,000	30,000	100%	Match to 3rd party grant funding
Fischer Ranch - Barn & Fence upgrades, Und	669	3,504	15,000	11,496	77%	Underground valving/piping
Fischer Ranch -Disposal Site Upgrade	-	-	1,500,000	1,500,000	100%	Disposal Site Upgrade
Small Equipment & Other	-	-	35,000	35,000	100%	Emergency Eq, GPS Survey Eq
Subtotal	86	3,590	1,718,000	1,714,410	100%	
Enterprise Funds Total	473,183	498,162	4,306,000	3,807,838	88%	
<u>Parks & Recreation Department</u>						
Hiller Park & Sports Complex	-	-	5,000	5,000	100%	Other Equipment & Signage
Azalea Hall Projects	-	-	27,000	27,000	100%	Flooring, Pkg Lot resurface
McKinleyville Activity Center Upgrades	-	-	2,000	2,000	100%	Roof replacement
Projects Funded by Quimby/Other Funds	-	-	15,000	15,000	100%	Covered Picnic Area
Other Parks Projects & Equipment	-	-	5,000	5,000	100%	Brush&LawnMowers/Trailer
Subtotal	-	-	54,000	54,000	100%	
<u>Streetlights</u>						
Pole Replacement	-	-	2,000	2,000	100%	Pole Replacement
Subtotal	-	-	2,000	2,000	100%	
Governmental Funds Total	-	-	56,000	56,000	100%	
All Funds Total	473,183	498,162	4,362,000	3,863,838	89%	

McKinleyville Community Services District
DRAFT Summary of Long-Term Debt Report
As of August 31, 2017

			Maturity		Balance - July 31, 2017	Balance - August 31, 2017	Principal Maturities and Scheduled Interest	
			%	Date			FY-18	Thereafter
Water Fund:								
I-Bank								
Interest			3.37%	8/1/30	P	716,222.88	716,222.88	716,222.94
					I		-	168,053.98
State of CA Energy Commission (ARRA)								
Interest			1.0%	12/22/26	P	112,566.19	112,566.19	101,212.57
					I		1,097.43	4,619.28
State of CA (Davis Grunsky)								
State of CA (Davis Grunsky) Deferred Interest				1/1/33	P	1,621,993.95	1,621,993.95	1,538,300.70
Interest			2.5%	1/1/33	P	272,556.57	272,556.57	255,521.45
					I		40,549.85	325,345.73
Total Water Fund-Principal						2,723,339.59	2,723,339.59	2,611,257.66
Total Water Fund-Interest							53,715.66	498,018.99
Total Water Fund						2,723,339.59	2,723,339.59	3,109,276.65
Wastewater Fund:								
WWMF SRF Loan								
Interest			1.6%	7/31/47	P	9,613,164.00	10,762,484.00	13,961,525.73
					I		-	-
State of CA WRCB (SCEP II)								
Interest			2.6%	3/27/18	P	27,175.60	27,175.60	27,176.10
					I		706.57	-
Umpqua Bank								
Interest			5.5%	12/4/17	P	22,652.50	18,093.03	17,964.48
					I		241.16	-
USDA (Sewer Bond)								
Interest			5.0%	8/1/22	P	445,000.00	375,000.00	375,000.00
					I		9,375.00	46,375.00
Total Wastewater Fund-Principal						10,107,992.10	11,182,752.63	14,336,525.73
Total Wastewater Fund-Interest							10,322.73	46,375.00
Total Sewer Fund						10,107,992.10	11,182,752.63	14,382,900.73
Meas. B Fund: Teen/Comm Center Loan								
				11/1/29	P	1,269,902.00	1,269,902.00	1,194,394.00
			3.55%		I		44,619.29	270,762.12
Streetlights Fund: LED Proj Loan, PG&E								
			0.0%		P	47,936.73	46,281.33	30,396.95
					I		16,254.00	-
Total Principal						14,149,170.42	15,222,275.55	18,172,574.34
Total Interest							108,657.68	815,156.11
Total						14,149,170.42	15,222,275.55	18,987,730.45

McKinleyville Community Services District
Cash Disbursement Report
For the Period August 1 through August 31, 2017

Check Number	Check Date	Vendor Number	Name	Net Amount	Invoice #	Description
Accounts Payable Disbursements						
32907	8/15/2017	CWE02	CALIFORNIA WATER	(93.00)	B70731u	Ck# 032907 Reversed
32913	8/7/2017	ACT01	ACTION RENTAL	214.25	B70807	KIDS CAMP SUPPLIES
32914	8/7/2017	ADV01	ADVANCED SECURITY SYSTEMS	561.18	387381	SECURITY SYSTEM/ REPAIRS
32915	8/7/2017	ARC02	Arcata Stationers	42.52	B70802	OFFICE SUPPLIES
32916	8/7/2017	BUR01	MARY C. BURKE	125.00	B70807	BOARD MTG 7/5/2017
32917	8/7/2017	COA01	COASTAL BUSINESS SYSTEMS	368.01	21007966	COPIER MONTHLY PMT
32918	8/7/2017	COR01	CORBIN WILLITS SYSTEMS, INC	888.42	B70802	MOMS MONTHLY PMT
32919	8/7/2017	COS03	CAPITAL ONE COMMERCIAL (COSTCO)	301.68	B70802	SUPPLIES PURCHASED
32920	8/7/2017	HAR13	The Hartford - Priority A	431.23	B70802	GRP. LIFE INSURANCE
32921	8/7/2017	HUM01	HUMBOLDT BAY MUNICIPAL WATER DISTRICT	72,666.39	B70807	WATER PURCHASED
32922	8/7/2017	HUM08	HUMBOLDT SANITATION	1,593.60	B70802	TRASH SERVICE
32923	8/7/2017	JON04	ERIK M. JONES	296.00	B70406	WONDERWARE TRAINING
32924	8/7/2017	MAY02	DENNIS MAYO	125.00	B70807	BOARD MTG 7/5/2017
32925	8/7/2017	MAY03	DENNIS MAYO	24.00	B70807	ACWA BOARD OF DIRECTORS M
32926	8/7/2017	PGE05	PG&E	1,971.52	B70807	STLT LOAN MONTHLY PMT

Check Number	Check Date	Vendor Number	Name	Net Amount	Invoice #	Description
32927	8/7/2017	PGE06	PG&E-STREETLIGHTS	14.43	B70807	GAS & ELECTRIC S.L.- ZONE
32928	8/7/2017	PGE07	PG&E STREETLIGHTS	897.36	B70807	STREETLIGHT ACCT 0908
32929	8/7/2017	PGE08	PG&E STREETLIGHTS	13.80	B70807	GAS & ELECTRIC S.L.- ZONE
32930	8/7/2017	PGE09	PG&E STREETLIGHTS	70.24	B70807	GAS & ELECTRIC S.L.- ZONE
32931	8/7/2017	PGE11	PG&E STREETLIGHTS	26.42	B70807	STREETLIGHTS
32932	8/7/2017	PGE13	PG&E	9.86	B70807	STREETLIGHTS
32933	8/7/2017	SLO01	FLEX SPENDING REIMB. - DS	547.17	B70807	FLEX SPENDING REIMBURSEMENT
32934	8/7/2017	SUD01	SUDDENLINK	325.29	B70807	INTERNET SERVICES
32935	8/7/2017	UPS01	UPS	34.82	B70807	LAB TESTING SHIPMENT
32936	8/7/2017	USB01	U.S. BANK TRUST N.A.	7,395.83	B70807	SEWER BOND PMT
32937	8/7/2017	\C005	MQ CUSTOMER REFUND FOR CO	80.30	000B70801	MQ CUSTOMER REFUND FOR CO
32938	8/7/2017	\E002	MQ CUSTOMER REFUND FOR EM	77.72	000B70801	MQ CUSTOMER REFUND FOR EM
32939	8/7/2017	\F003	MQ CUSTOMER REFUND FOR FU	60.00	000B70801	MQ CUSTOMER REFUND FOR FU
32940	8/7/2017	\H009	MQ CUSTOMER REFUND FOR HE	51.36	000B70801	MQ CUSTOMER REFUND FOR HE
32941	8/7/2017	\J008	MQ CUSTOMER REFUND FOR JO	70.18	000B70801	MQ CUSTOMER REFUND FOR JO
32942	8/7/2017	\K010	MQ CUSTOMER REFUND FOR KA	48.14	000B70801	MQ CUSTOMER REFUND FOR KA
32943	8/7/2017	\K011	MQ CUSTOMER REFUND FOR KE	7.56	000B70801	MQ CUSTOMER REFUND FOR KE
32944	8/7/2017	\K017	MQ CUSTOMER REFUND FOR KO	92.74	000B70801	MQ CUSTOMER REFUND FOR KO
32945	8/7/2017	\L014	MQ CUSTOMER REFUND FOR LE	57.72	000B70801	MQ CUSTOMER REFUND FOR LE

Check Number	Check Date	Vendor Number	Name	Net Amount	Invoice #	Description
32946	8/7/2017	\M015	MQ CUSTOMER REFUND FOR MA	16.00	000B70801	MQ CUSTOMER REFUND FOR MA
32947	8/7/2017	\M032	MQ CUSTOMER REFUND FOR ME	30.80	000B70801	MQ CUSTOMER REFUND FOR ME
32948	8/7/2017	\M033	MQ CUSTOMER REFUND FOR MI	22.97	000B70801	MQ CUSTOMER REFUND FOR MI
32949	8/7/2017	\P003	MQ CUSTOMER REFUND FOR PH	13.16	000B70801	MQ CUSTOMER REFUND FOR PH
32950	8/7/2017	\S005	MQ CUSTOMER REFUND FOR SE	72.77	000B70801	MQ CUSTOMER REFUND FOR SE
32951	8/7/2017	\W007	MQ CUSTOMER REFUND FOR WA	140.37	000B70801	MQ CUSTOMER REFUND FOR WA
32952	8/7/2017	\W009	MQ CUSTOMER REFUND FOR WH	126.62	000B70801	MQ CUSTOMER REFUND FOR WH
32953	8/7/2017	\W010	MQ CUSTOMER REFUND FOR WI	41.06	000B70801	MQ CUSTOMER REFUND FOR WI
32954	8/7/2017	\W011	MQ CUSTOMER REFUND FOR WI	83.31	000B70801	MQ CUSTOMER REFUND FOR WI
32955	8/7/2017	\Y002	MQ CUSTOMER REFUND FOR YU	49.42	000B70801	MQ CUSTOMER REFUND FOR YU
32956	8/14/2017	*0019	REC PROGRAM REFUND KM	107.00	B70810	REC PROGRAM REFUND KM
32957	8/14/2017	ACW01	CB&T/ACWA-JPIA	9,214.77	B70810	GRP. HEALTH INS
32958	8/14/2017	ALV01	ALVES INC.	530.00	34890	PROFESSIONAL SERVICES
32959	8/14/2017	ATT01	AT&T	35.26	B70814	TELEPHONE SERVICES
32960	8/14/2017	ATT05	AT&T	91.76	B70814	TELEPHONE TEEN/FAM CTR
32961	8/14/2017	ATT06	AT&T	134.07	B70814	TELEPHONE AZALEA HALL
32962	8/14/2017	BAN01	BANKCARD CENTER	3,889.37	B70809	TRAINING/TRAVEL/OFFICE SUPPL
32963	8/14/2017	COA01	COASTAL BUSINESS SYSTEMS	978.13	21094418	COPIER MONTHLY PMT
32964	8/14/2017	DEP05	DEPARTMENT OF JUSTICE	32.00	247884	FINGERPRINTING

Check Number	Check Date	Vendor Number	Name	Net Amount	Invoice #	Description
32965	8/14/2017	EUR06	EUREKA READY MIX	1,242.36	35909	REPAIRS/SUPPLY
32966	8/14/2017	FAN01	RODRIGO FANTI	649.68	B70808	CONTRACT INSTRUCTOR PMT
32967	8/14/2017	GHD01	GHD	5,019.75	85677	PROFESSIONAL SERVICES
32968	8/14/2017	HAR03	HARPER MOTORS CO.	37,133.11	B70810	VEHICLE PURCHASED
32969	8/14/2017	HAY01	BRAD HAYMAN	276.00	B70810	PLAYGROUND SAFETY INSPECTOR
32970	8/14/2017	KER01	KERNEN CONSTRUCTION	492.16	3045	REPAIRS/ SUPPLIES
32971	8/14/2017	MCK11	MCKINLEYVILLE SENIOR CENTER	37.93	B70809	PARKS SHARE OF INTERNET
32972	8/14/2017	MEN01	MENDES SUPPLY CO.	-	B70809/10	Ck# 032972 Reversed
32973	8/14/2017	NAP02	NAPA AUTO PARTS	30.36	B70809	REPAIRS/SUPPLIES
32974	8/14/2017	NOR01	NORTH COAST LABORATORIES	3,115.00	B70809	LAB TESTS
32975	8/14/2017	ORE01	O'REILLY AUTOMOTIVE, INC.	60.48	B70809	REPAIRS/SUPPLY
32976	8/14/2017	ORI01	ORIENTAL TRADING CO. INC.	406.77	684888263	REC PROGRAM SUPPLIES
32977	8/14/2017	PEA01	PEACHY AG.	2,835.00	2808	FISCHER RANCH IRRIGATION
32978	8/14/2017	PGE01	PG & E (Office & Field)	34,697.69	B70810	GAS & ELECTRIC
32979	8/14/2017	REN01	RENNER PETROLEUM	2,531.04	B70809	GAS/OIL/LUBE
32980	8/14/2017	ROW01	LYNDON ROWELLS	200.00	B70808	CONTRACT RECREATION SPECIALIST
32981	8/14/2017	SAF04	SAFEWAY INC. FILE # 72905	92.35	B70810	REC PROGRAM SUPPLIES
32982	8/14/2017	SIE02	SIERRA CHEMICAL CO.	1,121.74	2	CHLORINE/CONTAINER DEPOSIT
				1,121.74	B70810	CHLORINE/CONTAINER DEPOSIT
			Check Total:	2,243.48		

Check Number	Check Date	Vendor Number	Vendor Name	Net Amount	Invoice #	Description
32983	8/14/2017	STA11	STAPLES CREDIT PLAN	205.51	B70814	OFFICE SUPPLIES
32984	8/14/2017	THO02	Thomas Home Center	88.84	B70810	REPAIRS/SUPPLY
32985	8/14/2017	THR01	THRIFTY SUPPLY COMPANY	2,751.56	1426370	REPAIRS/ SUPPLIES
32986	8/14/2017	VER01	VERIZON WIRELESS	60.76	B70809	CELL PHONES FOR JULY 2017
32987	8/21/2017	*0020	MAC DEPOSIT REFUND AM	100.00	B70821	MAC DEPOSIT REFUND AM
32988	8/21/2017	*0021	WLA REFUND FROM S/T - PM	292.14	B70821	WLA REFUND FROM S/T - PM
32989	8/21/2017	10101	101 THINGS TO DO PUBLICATION	419.00	17KD20	ADS/MARKETING
32990	8/21/2017	ATT04	AT&T	909.98	B70821	TELEMETRY PMT
32991	8/21/2017	AUB01	AUBURN CONSTRUCTORS, INC.	334,241.18	17	WWMF UPGRADE
32992	8/21/2017	DIL01	DILLING MACHINE WORKS	100.36	579768	REPAIRS/SUPPLY
32993	8/21/2017	EUR05	Eureka Oxygen Co	190.95	437287	PROFESSIONAL SERVICES
32994	8/21/2017	FED02	FEDAK & BROWN LLP	2,200.00	B70810	ACCT. / AUDIT
32995	8/21/2017	GHD01	GHD	6,812.25	85680	PROFESSIONAL SERVICES
32996	8/21/2017	HAC01	HACH COMPANY	238.85	10542673	WWMF UPGRADE
32997	8/21/2017	HAR03	HARPER MOTORS CO.	815.57	B70807	VEHICLE REPAIRS
32998	8/21/2017	HIG01	HIGH YIELD IND. PRODUCTS	165.20	204180	REPAIRS/ SUPPLIES
32999	8/21/2017	KEN02	KENNEDY/JENKS CONSULTANTS	765.00	114250	WWMF UPGRADE
33000	8/21/2017	MCK04	MCK ACE HARDWARE	455.88	B70821	REPAIRS/SUPPLY
33001	8/21/2017	MCM01	McMaster-Carr Supply Co.	95.32	39325794	REPAIRS/ SUPPLIES

Check Number	Check Date	Vendor Number	Name	Net Amount	Invoice #	Description
33002	8/21/2017	MEN01	MENDES SUPPLY CO.	1,312.62	B70821	REPAIRS/SUPPLY
33003	8/21/2017	MIT01	Mitchell, Brisso, Delaney	203.00	39893	LEGAL SERVICES
33004	8/21/2017	NOR13	NORTHERN CALIFORNIA SAFETY CONSORTIUM	80.00	2356	SAFETY TRAINING
33005	8/21/2017	NYL01	NYLEX.NET	315.00	3861	PROFESSIONAL SERVICES
33006	8/21/2017	OSC01	OSCAR LARSON & ASSOCIATES	71.58	8968A	COCHRAN TANK RECOATING
			Check Total:	74.68	8968B	COCHRAN TANK RECOATING
				146.26		
33007	8/21/2017	SEC03	SECURITY LOCK & ALARM	65.00	104758	PROFESSIONAL SERVICES
33008	8/21/2017	STE03	DONNY STEELE	250.00	B70821	CONTRACT SOFTBALL UMPIRE
33009	8/21/2017	TWO01	TWO BROTHERS CATHODIC SERVICE	1,200.00	610	PROFESSIONAL SERVICES
33010	8/21/2017	UND01	UNDERGROUND SERVICE ALERT	519.58	17070590	SUBSCRIPTIONS
33011	8/21/2017	USA01	USA BLUEBOOK	776.93	309972	REPAIRS/ SUPPLIES
				861.77	310130	WWMF UPGRADE
				261.91	312555	WWMF UPGRADE
			Check Total:	1,900.61		
33012	8/21/2017	USP02	USPS: ARCATA BMEU	1,500.00	B70809	BULK MAIL PERMIT 202
33013	8/21/2017	WIL09	WILLDAN FINANCIAL SERVICE	3,066.36	010-35205	PROFESSIONAL SERVICES
33014	8/21/2017	ZEP01	ZEP MANUFACTURING CO.	132.36	900291829	REPAIRS/ SUPPLIES
33015	8/29/2017	*0022	REC PROGRAM REIMB SM	55.00	B70828	REC PROGRAM REIMB SM
33016	8/29/2017	*0023	KIDS CLUB REIMB. EF	270.00	B70828	KIDS CLUB REIMB. EF
33017	8/29/2017	*0024	AZALEA HALL DEPOSIT REFUND DS	100.00	B70828	AZALEA HALL DEPOSIT REFUND DS
33018	8/29/2017	*0025	AZALEA HALL DEPOSIT REFUND JH	100.00	B70829	AZALEA HALL DEPOSIT REFUND JH

Check Number	Check Date	Vendor Number	Name	Net Amount	Invoice #	Description
33019	8/29/2017	*0026	CUSTOMER REFUND JOB AM7 - RB	55.18	B70829	CUSTOMER REFUND JOB AM7 - RB
33020	8/29/2017	DIS03	DISCOUNT SCHOOL SUPPLY	383.37	P35963920	REC PROGRAM SUPPLIES
33021	8/29/2017	FUT01	FUTURE PRO, INC./B-B GOAL	4,190.00	19599	REC PROGRAM SUPPLIES
33022	8/29/2017	GOL01	GOLDEN GATE BRIDGE TOLL	7.75	B70829	TOLL BRIDGE PMT
33023	8/29/2017	IND01	INDEPENDENT BUS. FORMS	2,580.67	B70810	OFFICE SUPPLIES
33024	8/29/2017	ISE01	I-SECURE INC.	215.00	56303	ONSITE SHREDDING
33025	8/29/2017	JAC04	JACKSON & EKLUND, INC.	4,009.00	190217	ACCT/AUDIT
33026	8/29/2017	MIT01	Mitchell, Brisso, Delaney	614.00	39893	LEGAL SERVICES
33027	8/29/2017	NYL01	NYLEX.NET	52.50	3901	PROFESSIONAL SERVICES
			Check Total:	437.50	3917	PROFESSIONAL SERVICES
				490.00		
33028	8/29/2017	PGE06	PG&E-STREETLIGHTS	14.41	B70829	GAS & ELECTRIC S.L.- ZONE
33029	8/29/2017	PGE07	PG&E STREETLIGHTS	900.44	B70828	GAS & ELECTRIC
33030	8/29/2017	PGE08	PG&E STREETLIGHTS	-	B70828/29	Ck# 033030 Reversed
33031	8/29/2017	PGE09	PG&E STREETLIGHTS	70.25	B70829	GAS & ELECTRIC S.L.- ZONE
33032	8/29/2017	PGE10	PG&E STREETLIGHTS	2.97	B70828	GAS & ELECTRIC S.L.- ZONE
33033	8/29/2017	PRO01	PROFESSIONAL CREDIT SERVICE	61.68	93330078	RECOVERY OF BAD DEBT
33034	8/29/2017	S&S02	S & S WORLDWIDE, INC.	951.40	9814440	REC PROGRAM SUPPLIES
33035	8/29/2017	SLO01	FLEX SPENDING REIMB. DS	180.00	B70828	FLEX SPENDING REIMB. DS
33036	8/29/2017	USP02	USPS: ARCATA BMEU	1,500.00	B70828	REFILL PERMIT 202-BULK MAIL

Check Number	Check Date	Vendor Number	Vendor Name	Net Amount	Invoice #	Description
D00012	8/7/2017	COR07	JOHN W. CORBETT	125.00	B70807	BOARD MTG 7/05/2017
		COU09	DAVID R. COUCH	125.00	B70807	BOARD MTG 7/5/2017
		WHE02	GEORGE WHEELER	125.00	B70807	BOARD MTG 07/05/2017
			Check Total:	375.00		
				574,794.00		
			Total Disbursements, Accounts Payable:	574,794.00		

Payroll Related Disbursements

14746-14774	8/9/2017		Various Employees	17,935.41		Payroll Checks
14775	8/9/2017	CAL12	CalPERS 457 Plan	6,508.51	B70809	RETIREMENT
				508.70	1B70809	PERS 457 LOAN PMT
			Check Total:	7,017.21		
14776	8/9/2017	DIR01	DIRECT DEPOSIT VENDOR- US	32,475.24	B70809	Direct Deposit
14777	8/9/2017	EMIP01	Employment Development	1,754.16	B70809	STATE INCOME TAX
				632.74	1B70809	SDI
			Check Total:	2,386.90		
14778	8/9/2017	HEA01	HEALTH EQUITY, ATTN: CLINT	92.00	B70809	HSA
14779	8/9/2017	HUM29	UMPQUA BANK--PAYROLL DEP.	6,322.01	B70809	FEDERAL INCOME TAX
				8,711.48	1B70809	FICA
				2,037.36	2B70809	MEDICARE
			Check Total:	17,070.85		
14780	8/9/2017	ACW01	CB&T/ACWA-JPIA	52,709.80	B70731	MED-DENTAL-EAP INSUR
14781	8/9/2017	PUB01	Public Employees PERS	16,721.63	B70731	PERS PAYROLL REMITTANCE
14782	8/9/2017		Employee	279.12		Payroll hand check
14783-14811	8/24/2017		Various Employees	17,232.49		Payroll Checks

Check Number	Check Date	Vendor Number	Vendor Name	Net Amount	Invoice #	Description
14812	8/24/2017	CAL12	CalPERS 457 Plan	6,527.98	B70824	RETIREMENT
			Check Total:	508.70	1B70824	PERS 457 LOAN PMT
				7,036.68		
14813	8/24/2017	DIR01	DIRECT DEPOSIT VENDOR- US	32,516.89	B70824	Direct Deposit
14814	8/24/2017	EMIP01	Employment Development	-	B70809A	STATE INCOME TAX
				1,682.04	B70824	STATE INCOME TAX
				2.97	1B70809A	SDI
				625.23	1B70824	SDI
			Check Total:	2,310.24		
14815	8/24/2017	HEA01	HEALTH EQUITY, ATTN: CLINT	92.00	B70824	HSA
14816	8/24/2017	HUM29	UMPQUA BANK--PAYROLL DEP.	23.39	B70809A	FEDERAL INCOME TAX
				6,167.17	B70824	FEDERAL INCOME TAX
				40.88	1B70809A	FICA
				8,590.44	1B70824	FICA
				9.56	2B70809A	MEDICARE
				2,009.06	2B70824	MEDICARE
			Check Total:	16,840.50		
14817	8/31/2017		Employee	2,411.16		Payroll Hand Check
			Total Disbursements, Payroll:	225,128.12		
			Total Check Disbursements:	799,922.12		

McKinleyville Community Services District

BOARD OF DIRECTORS

October 4, 2017

TYPE OF ITEM: **ACTION**

ITEM: D.3 **Compliance with State Double Check Valves (DCV) Law**

PRESENTED BY: **James Henry, Operations Director**

TYPE OF ACTION: **Roll Call Vote – Consent Calendar**

Recommendation:

Staff recommends that the Board authorize staff to provide the listed customers with formal notice that their water service will be discontinued in one month if they have not come into compliance with state law regarding water service cross-connection in accordance with MCSD Rules 7 and 10.

Discussion:

Customers listed below are currently not in compliance with State Law regarding cross connection control for water customers with an alternate water supply. These customers have been notified of their respective violations, as noted, and have been provided notification of this meeting.

1st Notice	August 11, 2017
10 Day Notice	September 20, 2017
Board Meeting	October 4, 2017
Lock	November 6, 2017
ROUTE 14	

Account #	Address	Model of DCV	Date s/o out
14-544-000	1110 Eucalyptus	Febco	
14-050-000	1344 Bel Nor	Febco 850	

McKinleyville Community Services District

BOARD OF DIRECTORS

October 4, 2017

TYPE OF ITEM: **ACTION**

ITEM: E.1 **Consider Approval of the Right of Entry and Design Agreement Between the Humboldt Skate Park Collective and McKinleyville Community Services District**

PRESENTED BY: **Lesley Frisbee, Recreation Director**

TYPE OF ACTION: **Roll Call Vote**

Recommendation:

Staff recommends that the Board review the information provided, air questions, take public comment, discuss and approve the Right of Entry and Design Agreement between the Humboldt Skate Park Collective (HSPC) and the McKinleyville Community Services District

Discussion:

In June 2017 the Board of Directors approved a site recommendation and term length of three years for a right of entry agreement between HSPC and MCSD for the design and construction of a skate park in the lot south of the Law Enforcement Facility and east of Umpqua Bank. Working with the HSPC, staff drafted a Right of Entry and Design Agreement, **Attachment 1**.

Due to a recent request from the County Sheriff Dept. to expand the Law Enforcement Facility in McKinleyville, an option to add six additional months to the Right of Entry and Design Agreement has been added, in order to accommodate potential delays due to redesign and shifting of the current park layout. HSPC understands the need to accommodate the County's request to expand the Law Enforcement Facility in order to meet the needs of the community and is willing to work with District staff and county to ensure that the needs of all organizations and the community can be met.

The Agreement has been reviewed by District Counsel.

Alternatives:

Staff analysis consists of the following potential alternative

- Take No Action

Fiscal Analysis:

Not applicable

Environmental Requirements:

Not applicable

Exhibits/Attachments:

- Attachment 1 – Right of Entry and Design Agreement Between HSPC and MCSD

RIGHT OF ENTRY AND DESIGN AGREEMENT

THIS RIGHT OF ENTRY AND DESIGN AGREEMENT (this "Agreement") is entered into on October 4, 2017, by and between the between the MCKINLEYVILLE COMMUNITY SERVICES DISTRICT ("DISTRICT") and the HUMBOLDT SKATEPARK COLLECTIVE for the MCKINLEYVILLE SKATE PARK (hereinafter referred to as "COMMITTEE").

RECITALS

- A. The DISTRICT owns real property located at Pierson Park and has consented to enter into this Agreement for the sole purpose of allowing COMMITTEE to develop a proposal for the design and potential construction of a Skate Park on the property located immediately south in the vicinity of the existing horseshoe pits and bocce ball courts, as more specifically described in attached **Exhibit A** (the "DISTRICT Property").
- B. The COMMITTEE, as a public service to the citizens of McKinleyville, wishes to assist in the potential project including assistance with the development, financing, design, construction and establishment of a maintenance plan for said Skatepark.

AGREEMENT

THEREFORE, IT IS AGREED:

- 1. For a period of thirty-six (36) months from the date hereof, with an option to extend the agreement an additional six (6) months if needed and if said need is communicated and requested within six (6) months of the of the original thirty-six (36) month period, DISTRICT hereby grants to COMMITTEE the right to enter upon the DISTRICT Property for the limited purposes and on the terms and conditions stated in this Agreement. Further agreements for construction and conveyance that meet state contract and prevailing wage laws will be required before any project is authorized or any construction can commence. The District is not obligated to proceed with any project and makes no commitment to do so by method of this Agreement.
- 2. COMMITTEE shall work to develop a Skatepark engineering design and submit said design to the DISTRICT'S Board of Directors for approval of the final design, in the Board's sole and absolute discretion. COMMITTEE shall further seek financing for construction based on grants, charitable donations and other sources for submission to the DISTRICT'S Board when considering the final design and whether to sponsor and approve, in the Board's sole and absolute discretion, construction of a Skatepark measuring approximately 20,000 square feet (the "Skatepark") on DISTRICT Property for use by the public and the community.
- 3. During the thirty-six (36) month term of this Agreement the COMMITTEE shall:
 - 3.1 Seek and demonstrate to the Board sufficient financing and committed supplies and services from local businesses to cover the entire costs of the engineering design, development, inspection, construction, maintenance and administration of the Skatepark, except as noted below. No work of construction shall be commenced unless and until the DISTRICT'S Board, in its sole and absolute discretion, approves the final design, agrees to sponsor a project, and the COMMITTEE demonstrates sufficient and secure financing for all aspects of design, permitting and construction of the Skatepark.
 - 3.2 Cause the preparation of plans and specifications suitable for the construction of the

Skatepark at its sole cost and expense.

- 3.3 If approved by the DISTRICT, cause to be obtained all necessary permits and approvals for the construction of the Skatepark as required by law, expressly including, without limitation, review and analysis under the California Environmental Quality Act ("CEQA") (California Public Resources Code Section 21000, et seq.). The parties acknowledge that before the DISTRICT approves the construction of the Skatepark, the District will need to complete CEQA assessment, including without limitation a determination as to whether the project is exempt from CEQA; if not exempt, a preliminary analysis to determine whether an environmental impact report or negative declaration is required; and preparation of an environmental impact report or negative declaration.
4. COMMITTEE shall submit a progress report to the DISTRICT's Recreation Director quarterly. Said progress report shall include the following information:
- A. Summary of current fundraising efforts;
 - B. Summary of current funds raised to date; and
 - C. Summary of grant application status.
5. COMMITTEE shall consult with DISTRICT representatives during the design phase, and the plans and specifications for the construction shall be subject to DISTRICT's written approval, in the DISTRICT's sole and absolute discretion, before the plans and specifications are submitted to the DISTRICT's Board of Directors for consideration.
6. COMMITTEE shall hold harmless, indemnify and defend DISTRICT, its officers, agents, employees, and directors from and against any and all claims, liabilities, demands, costs and contracts of any nature arising out of, resulting from or in any way related to the activities under this Agreement. This obligation shall survive the delivery of the PROJECT to the DISTRICT.

McKINLEYVILLE COMMUNITY SERVICES DISTRICT

Dennis Mayo, President MCSD Board of Directors

Date

Emily Abfalter, Board Secretary MCSD Board of Directors

Date

HUMBOLDT SKATEPARK COLLECTIVE

Charles E. Caldwell II, Director – Humboldt Skatepark Collective

Date

Travis Gall, Secretary - Humboldt Skatepark Collective

Date

McKinleyville Community Services District

BOARD OF DIRECTORS

October 4, 2017

TYPE OF ITEM: **INFORMATIONAL**

ITEM: E.2 **Presentation for the 65% Engineering Design Review of the Mad River Estuary Floodplain Project for Off-Channel Habitat**

PRESENTED BY: **Rose Patenaude, Design Engineer, NHE**

TYPE OF ACTION: **None**

Recommendation:

Staff recommends that the Board participate in the presentation, review the information provided, air questions and take public comment.

Discussion:

The 65% Designs for the Mad River Estuary Floodplain Project for Off-Channel Habitat have been reviewed by a multi-agency technical review team and submitted to the project's environmental compliance team to prepare the necessary planning documents. Rose will present the designs to date. Final Engineering Designs are planned for completion this winter.

Alternatives:

Take Action

Fiscal Analysis:

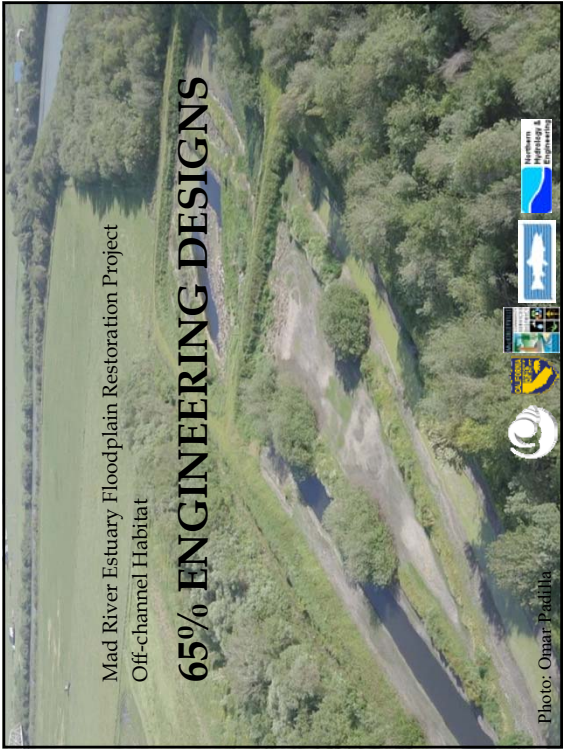
The motivations for this project are related to decommissioning of the Percolations Pond so MCSD will remain in compliance with regulatory requirements. Funding will result from multiple agency grants and Wastewater Capitol Reserves.

Environmental Requirements:

Permitting will be addressed during the next phase of the project.

Exhibits/Attachments:

- Attachment 1 – Presentation Slides
- Attachment 2 – Basis of Design Report, summarizing the information used to choose a preferred conceptual design and develop 30% Designs
- Attachment 3 – Hydraulic Design Report, summarizing the methods used to analyze and revise the 30% Designs to develop 65% Designs
- Attachment 4 – 65% Design Sheets



Project Team

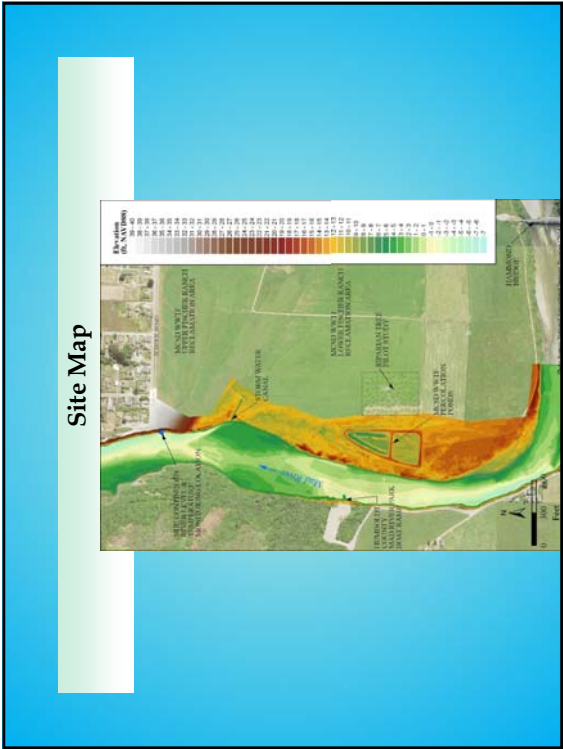
Project Funding
State of California Coastal Conservancy
State of California Department of Fish and Wildlife FRGP
McKinleyville Community Services District (In-kind)

Contract and Project Manager
Mary Burke, California Trout, Inc.

Consultants
Design Engineer: Rose Patenaude, NHE
Trail Consultant: Chris Turner
Environmental Compliance Planner: Aldaron Laird, TA

Project Timeline

Spring 2015	Project funding
Summer 2015 - Fall 2016	Data Collection
Spring 2016	Conceptual Design Development
Winter 2017	Final Engineering Designs
Summer 2017 - Spring 2018	Environmental Compliance
Summer 2019	Implementation



Design Approach

- Synthesize existing and collected data.
- Develop a suite of design options, included in three conceptual design alternatives.
- Choose one alternative for hydraulic analysis to evaluate individual design elements:
 - Low flow conditions to evaluate when river levels are influenced by the flood and ebb of ocean tides.
 - High flow conditions to evaluate when the river levels are dominated by the flood and recession of storm event discharge.
- Refine design elements to optimize design features.
- Develop final engineering designs and specifications.

Habitat Design Objectives: Juvenile Rearing

- Expand the floodplain through the project area to provide off-channel refugia with shallower depths and lower velocities to the main channel
- Offer juvenile salmon protection from predation and slow moving water enabling the conservation of energy in preparation for outmigration

Habitat Design Objectives: Increased Productivity

- Create off-channel areas to provide an abundance of terrestrial and aquatic food sources
- Through restoration of riparian vegetation with hydrological connectivity to the river, facilitate nutrient and organic material exchange between and land and water and increase habitat complexity by way of food subsidies and debris
- Increase riparian habitat to benefit species such as aquatic insects and beaver that in turn, are important elements to salmon ecology

Habitat Design Objectives: Floodplain/Channel Structure and Estuary Function

- Expand the riparian floodplain by removing levees and infrastructure.
- Improve the hydrologic connection between the river and floodplain.
- If feasible, provide tidal inundation and estuarine habitat.

Habitat Design Criteria

- Fish Passage
- Pool Depths
- Water Quality: Temperature and Dissolved Oxygen

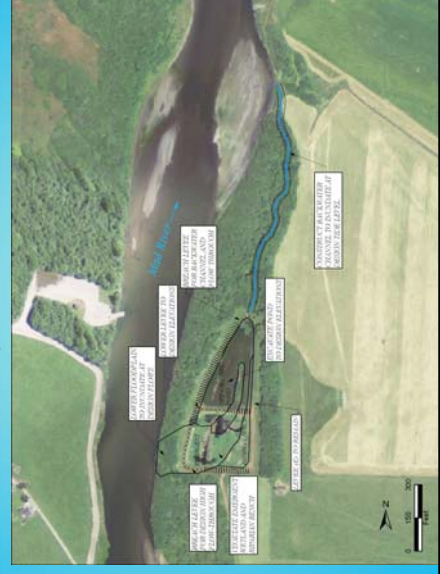
Habitat Design Constraints

- Target fish and other aquatic species
- Wildlife use
- Geomorphology
- Geology; landforms and tectonics
- Surface hydrology; seasonal instream flow variation
- Ocean tides; sea level rise
- Hydraulics
- Water quality (temperature and dissolved oxygen)
- Suspended sediment concentrations
- Bedload

Habitat Design Constraints

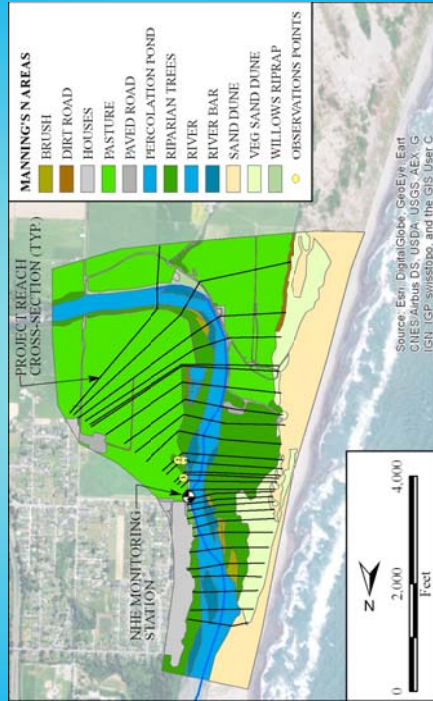
- Debris
- Invasive species
- Pond soil quality: whether to leave on-site or remove existing material
- Land ownership/property boundaries
- NPDES permit restriction to adjacent land reclamation areas
- Access and constructability

Preferred Conceptual Design Project Elements

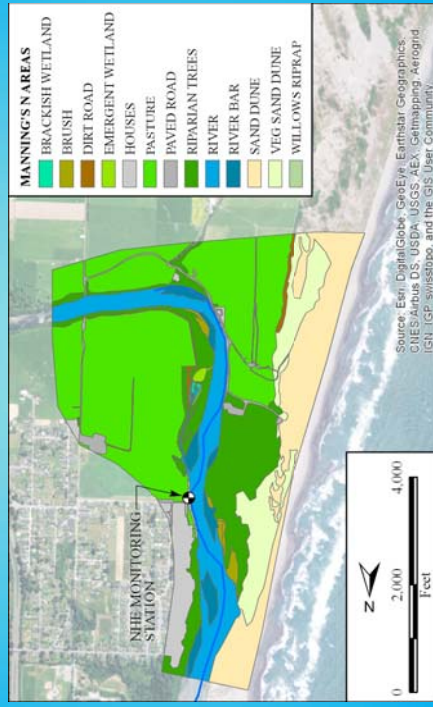


The graph displays the existing conditions 1-D hydraulic modeling for the Mad River Profile. The vertical axis represents Slope (ft. NAD 1985) from -50 to 50. The horizontal axis represents Mad River Stationing (feet) from -5,000 to 18,000. The graph includes a solid line for the Estimated Channel Slope and Form, a dashed line for the Right-of-Way Boundary, and a dotted line for the Right-of-Way Survey Easement. Key locations marked include Pacific Ocean, River Mouth, Project Monitoring Section, and Project Site. A scale bar indicates 1 vertical foot equals 40 horizontal feet.

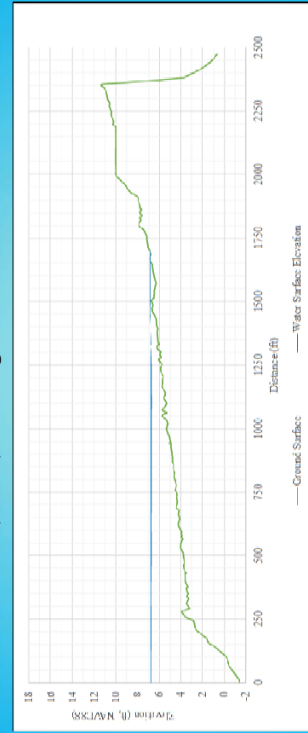
Existing Conditions 1-D Hydraulic Modeling Roughness Coefficient (Manning's n) Areas



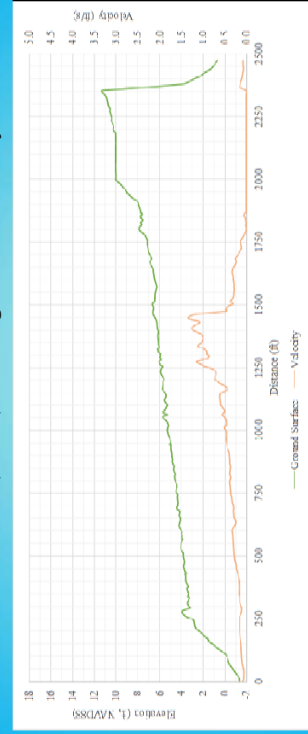
Design Conditions 2-D Hydraulic Modeling Roughness Coefficient (Manning's n) Areas



Design Conditions Hydraulic Modeling Low Flow (50 cfs) and High Tide: Water Elevation



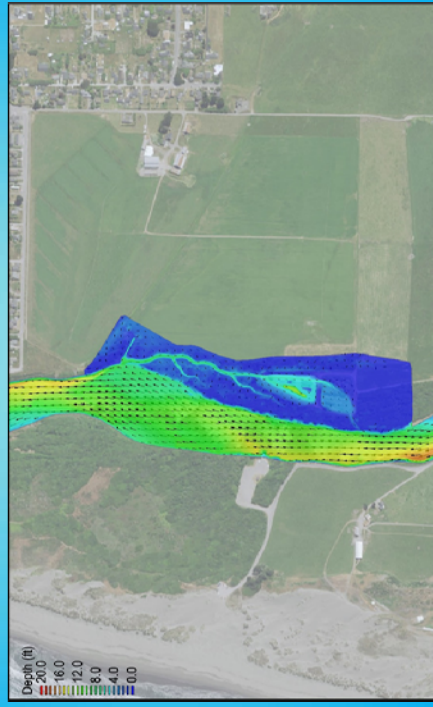
Design Conditions Hydraulic Modeling Low Flow (50 cfs) and High Tide: Velocity



Design Conditions Hydraulic Modeling Bankfull Flow (26,500 cfs): Water Elevation



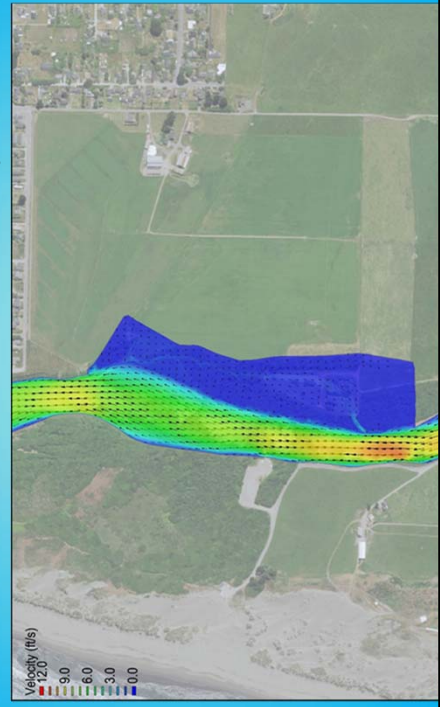
Design Conditions Hydraulic Modeling Bankfull Flow (26,500 cfs): Water Depth



Design Conditions Hydraulic Modeling Bankfull Flow (26,500 cfs): Velocity



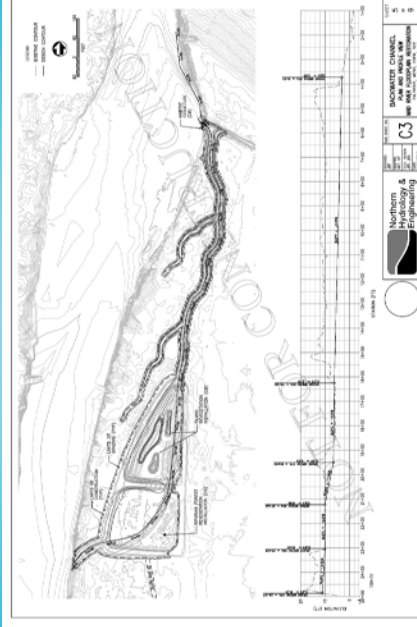
Design Conditions Hydraulic Modeling Bankfull Flow (26,500 cfs): Velocity



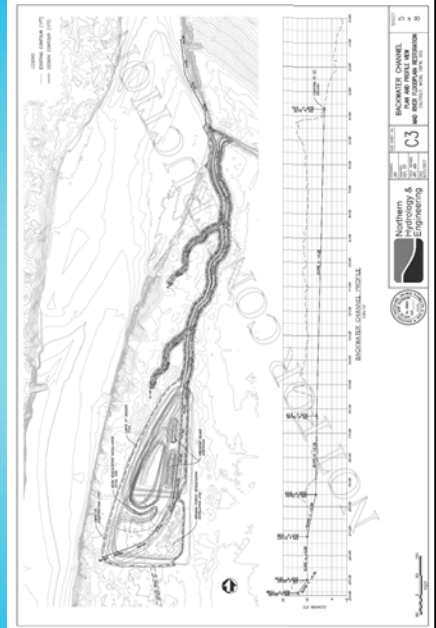
Hydraulic Modeling Recommendations

- Remove the upstream swale
- Maintain the upstream (south) pond as a seasonal wetland
- Broaden the deep-water portion of the off-channel pond
- Add shallow benches for emergent wetlands along the pond edges
- * Relocate the upland islands to the existing upland island areas
- Recontour the berm between the two ponds for a more natural transition between landscapes
- * Broaden the backwater channel mouth at the storm water canal confluence by an inset floodplain for sedimentation to the east (towards the pasture)*

30% Design Plan and Profile



65% Design Plan and Profile



Questions?

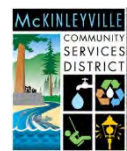
Basis of Engineering Designs

Mad River Estuary Restoration: Off-channel Habitat Design

CDFW Fisheries Restoration Grant Program No. P1410511 and SCC Grant No. 14-067



California Trout, Inc.
615 11th Street
Arcata, CA 95521



McKinleyville Community Services District
P.O. Box 2037
1656 Sutter Rd
McKinleyville, CA 95519



California Department of Fish and Wildlife
619 Second Street
Eureka, CA 95501



State Coastal Conservancy
1515 Clay Street, 10th Floor
Oakland, CA 94612



PO Box 2515
1560 Betty Court, Suite B2
McKinleyville, CA 95519

April 2017



Basis of Engineering Designs

*Mad River Estuary Restoration: Off-channel Habitat Design
CDFW Fisheries Restoration Grant Program No. P1410511 and SCC Grant No. 14-067*

Prepared for



California Trout, Inc.



McKinleyville Community Services District



California Department of Fish and Wildlife



State Coastal Conservancy

Prepared by



April 2017

TABLE OF CONTENTS

ACRONYMS AND ABBREVIATIONS.....	iv
1. INTRODUCTION.....	1
1.1 Project Background	1
1.2 Project Purpose.....	1
1.3 MCSD Waste Water Treatment Facility	1
1.4 Site Description	4
1.5 Design Approach.....	4
2. EXISTING CONDITIONS.....	5
2.1 Topography	5
2.2 Geomorphic Setting.....	5
2.3 Fish Surveys	5
2.4 Mad River Hydrology	5
2.4.1 River Level Monitoring	5
2.4.2 Mad River Discharge	6
2.4.3 Tides	7
2.5 Mad River Water Quality	8
2.5.1 Temperature	8
2.5.2 Salinity	8
2.5.3 Suspended Sediment Grain Size	9
2.6 Groundwater Levels and Temperature Monitoring	10
2.7 Percolation Pond Soils.....	12
2.7.1 Lithology.....	12
2.7.2 Soil Quality	12
3. PROJECT OBJECTIVES, CRITERIA, AND CONSTRAINTS	21
3.1 Project Objectives.....	21
3.2 Project Criteria	21
3.2.1 Fish Passage.....	21
3.2.2 Pool Depths.....	21
3.2.3 Water Quality.....	21
3.3 Project Constraints	22
4. OPTIONS ANALYSIS.....	22
4.1 Alternative 1: Restore Existing Conditions Active Floodplain	22
4.1.1 Benefits	22
4.1.2 Impacts.....	23
4.1.3 Limitations and Constraints	23
4.1.4 Conclusions.....	23
4.2 Alternative 2: Create Backwater Channel and Off-Channel Backwater Pond	25
4.2.1 Benefits	25
4.2.2 Impacts.....	25
4.2.3 Limitations and Constraints	25
4.2.4 Conclusions.....	25

TABLE OF CONTENTS

4.3	Alternative 3: Create Backwater Channel and Off-Channel Backwater Pond with Emergent Wetlands and Swale for High Flow Through and Sediment Trapping	27
4.3.1	Benefits	27
4.3.2	Impacts	27
4.3.3	Limitations and Constraints	27
4.3.4	Conclusions	29

5. PROPOSED DESIGN ELEMENTS 29

5.1	Backwater Channel.....	29
5.2	Off-Channel Pond.....	29
5.3	Wetland Flats and Islands.....	30
5.4	Upstream Swale and Emergent Wetland/Sedimentation Basin.....	30
5.5	Riparian Bench.....	30

6. REFERENCES 32**LIST OF TABLES**

Table 1.	Peak Flow Estimates for Recurrence Intervals at USGS Gaging Station No. 11481000	7
Table 2.	Salinity profile at the NHE river monitoring location August 2, 2016 at 12:50 PM	8
Table 3.	Salinity profile at the NHE river monitoring location August 3, 2016 at 7:15 AM.....	9
Table 4.	Pond Soil Chemical Analyses	14

LIST OF FIGURES

Figure 1.	Location Map.....	2
Figure 2.	Project Site Map	3
Figure 3.	River levels near the project site and stream flow at USGS Gage Station No. 11481000	6
Figure 4.	Annual peak flood flow exceedence probabilities for the USGS Gaging Station No. 11481000 .	7
Figure 5.	River Levels and Temperature near the Project Site	8
Figure 6.	Mad River Suspended Sediment Grain Size Distribution, WY 1966-1974	9
Figure 8.	Groundwater Well and Soil Sampling Site Map	11
Figure 7.	Ground Water Levels at Project Monitoring Wells.....	12
Figure 9.	Metals Results (Cr, Ni, Zn, Ar, Cu, Pb) and Marine Sediment Toxicity Screening Thresholds .	19
Figure 10.	Metals Results (Cd, Se, Ag, Hg) and Marine Sediment Toxicity Screening Thresholds	20
Figure 11.	Semi-volatile Organics Results and Marine Sediment Toxicity Screening Thresholds	20
Figure 12.	Alternative 1 Concept Design.....	24
Figure 13.	Alternative 2 Concept Design.....	26
Figure 14.	Alternative 3 Concept Design.....	28
Figure 15.	Alternative 3 Project Design Planform and Profile	31

LIST OF APPENDICES

Appendix A:	Fish Surveys
Appendix B:	SHN Geotechnical Study
Appendix C:	Laboratory Results

LIST OF ACRONYMS

AET	Apparent effects threshold
CalTrout	California Trout, Inc.
CDFW	California Department of Fish and Wildlife
cfs	Cubic feet per second
D50	Median grain size
EDL	Estimated detection limit
ERL	Effects range low
ERM	Effects range median
FRGP	Fisheries Restoration Grants Program
ft	Feet
LC10	Lethal concentration to 10 percent of sample population
LC50	Lethal concentration to 50 percent of sample population
LiDAR	Light Detection and Ranging
MCSD	McKinleyville Community Services District
MDL	Method detection limit
mg/kg	Milligrams per kilogram
mm	Millimeter
MRFZ	Mad River Fault Zone
mS/cm	MilliSiemens per centimeter
MW	Groundwater monitoring well
NAD83	North American Datum of 1983
NAVD88	North American Vertical Datum of 1988
ND	Non-detect
NHE	Northern Hydrology & Engineering
NOAA	National Oceanic and Atmospheric Administration
NPDES	National Pollutant Discharge Elimination System
PELs	Probable effects levels
pg/g	Picograms per gram
ppt	Parts per thousand (or trillion?)
RWQCB	Regional Water Quality Control Board
SCC	State Coastal Conservancy
SHN	SHN Consulting Engineers & Geologists, Inc.
SQuirt	Screening quick reference table
TELs	Threshold effects levels
USGS	United State Geological Survey
WDRs	Waste Discharge Requirements
WWTF	Wastewater Treatment Facility
WY	Water year
µg/kg	Micrograms per kilogram

1. INTRODUCTION

1.1 Project Background

California Trout, Inc. (CalTrout) received a grant from the California Department of Fish and Wildlife (CDFW) Fisheries Restoration Grants Program (FRGP), Agreement No. P1410511, to prepare engineering designs to reconnect lower Mad River to approximately 4.25 acres of leveed percolation ponds (historical active floodplain) to provide critical juvenile salmonid rearing habitat and off-channel refugia for coho salmon (*Oncorhynchus kisutch*). The State Coastal Conservancy provided necessary supplementary funding for the off-channel habitat enhancement project (Grant No. 14-067) and expanded the project scope to improve public access to the river and implement a biofiltration study on the adjacent floodplain. The project area is owned by the McKinleyville Community Services District (MCSD) and is located along the east bank of the lower Mad River (Figure 1). MCSD has provided in-kind labor and equipment.

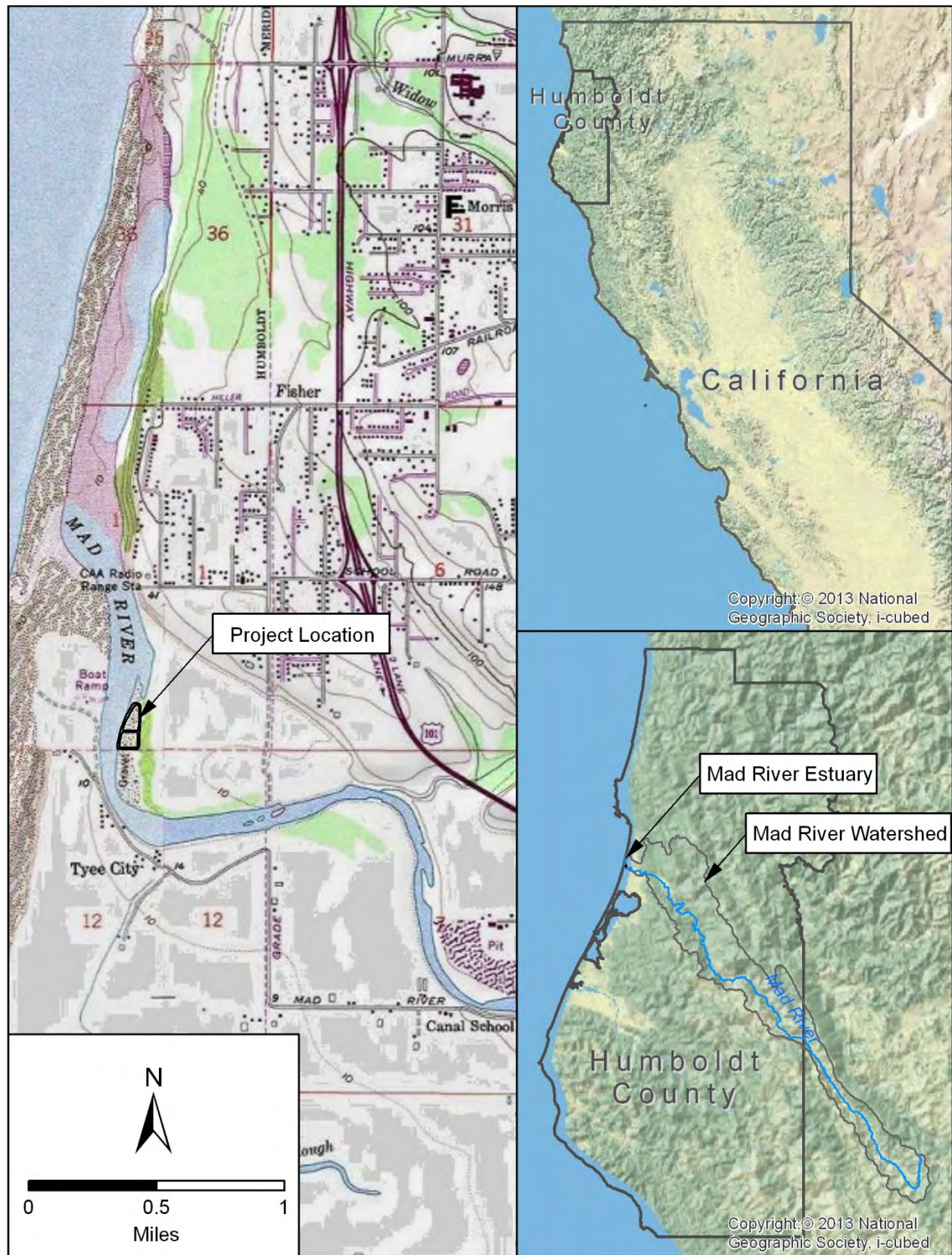
CalTrout employed Northern Hydrology & Engineering (NHE) to develop engineering designs to decommission the existing MCSD Wastewater Treatment Facility's (WWTF) percolation ponds and reconnect the river to its historical active floodplain, enhancing off-channel habitat for salmonids. A geologic investigation was performed by SHN Consulting Engineers & Geologists, Inc. (SHN) to install groundwater wells, characterize the floodplain subsurface soils, and evaluate the physical and engineering properties of the pond levees for potential material reuse. Toxicity screening of pond soils was performed at TestAmerica Laboratories, Inc.

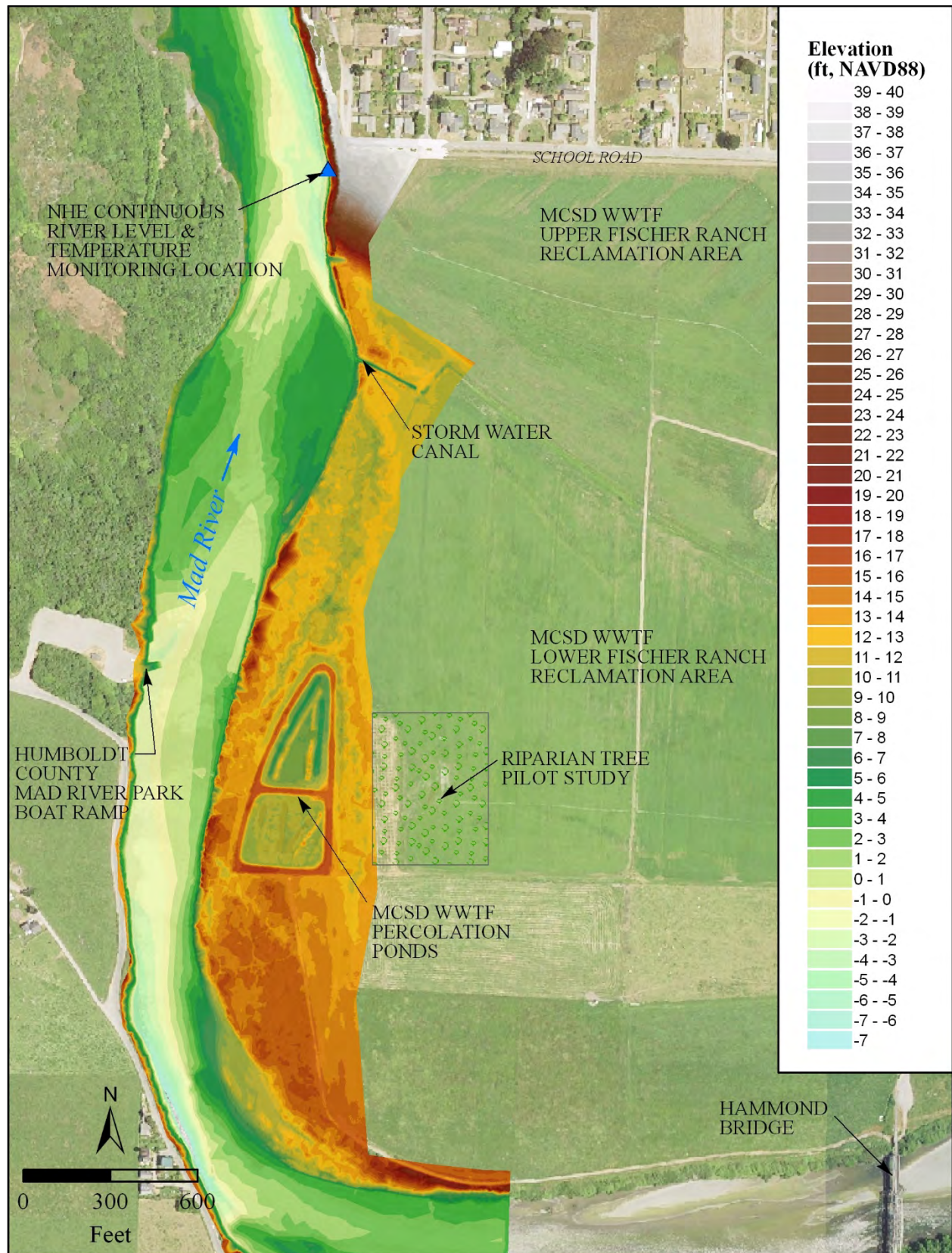
1.2 Project Purpose

The Mad River coho salmon population is recognized to have a high extinction risk, with key limiting stresses of altered sediment supply, lack of floodplain and channel structure, impaired water quality, and impaired estuary/mainstem function (NMFS 2014). The Mad River is listed under Section 303(d) in the Clean Water Act to be impaired with sediment, turbidity, and temperature, stressors to salmonid productivity and survival. The highest priority coho salmon recovery actions include the construction of off-channel and backwater ponds and alcoves. Protected and slow flowing side channels that fill during high flows provide some of the best over-wintering habitat in coho salmon streams (CDFW 2004). Increase in juvenile coho salmon rearing in the estuary and lower Mad River could result in increased survival and productivity of the population that spawns and rears in the river's tributaries (NMFS 2014). The proposed project is to design low velocity juvenile salmon habitat off the mainstem river directly related to the recovery of the Mad River coho salmon population.

1.3 MCSD Waste Water Treatment Facility

The McKinleyville Community Services District (MCSD) is an independent, special district formed in 1970. MCSD maintains and operates a Wastewater Treatment Facility (WWTF) that serves the community of McKinleyville. The WWTF discharges directly to the surface waters of the Mad River at the Hammond Bridge during a permitted "discharge period", through a National Pollutant Discharge Elimination System (NPDES) permit governed by the California Regional Water Quality Control Board (RWQCB) that includes Waste Discharge Requirements (WDRs) for effluent treatment, discharge, and reclamation. The river discharge prohibition period is May 15 through September 30, when effluent is discharged to the percolation ponds and/or to land for reclamation. The percolation ponds were constructed on the active floodplain in 1983 and include two separate ponds that are annually alternated in use (Figure 2). Although the use of the percolation ponds for effluent disposal is allowed under the current permit, the RWQCB has indicated that future discharge permits may limit this use.





About 7 years ago, MCSD began pursuing efforts to decommission the percolation ponds to restore the area back into active floodplain for salmonid habitat. MCSD recognized the opportunity and initiated a study to increase the available land reclamation area's capacity to off-set the percolation pond discharge allocation. A pilot project was conceived to test the assumption that changing the pasture-based crop cover to a riparian forest on the large floodplain used for reclamation could increase the land's capacity to uptake nutrients and water. In 2012, a small grant from the Arbor Day Foundation funded an acre plot of reclamation pasture to be planted with black cottonwoods. As part of the expanded portion of the off-channel habitat design project funded by the State Coastal Conservancy, the pilot project has been increased to include three more acres of red alder, a mixed riparian forest, and a pasture control area. In addition, groundwater wells were installed to monitor water levels and collect water quality samples. Implementation of the pasture crop conversion pilot project is intended to provide MCSD with data to make changes to future NPDES permits and for percolation pond decommissioning.

1.4 Site Description

The project site is located on the eastern floodplain of the Mad River at the inside of a meander bend (Figure 2). A mature, intact riparian forest has developed on the active floodplain, lee side of a long riffle downstream of the Mad River County Park Boat Ramp. A historical backwater channel remains as a depression in the forest floor and is inundated during high flows. The project area focal point is a pair of constructed percolation ponds that are leveed from the river's floods and ringed with cyclone fencing to prohibit access. The ponds maintain inundated water levels when in use for treated wastewater discharge and drain into emergent wetlands when they are unfilled. The southern pond is generally 10 feet in elevation with a single linear ridge that is over 13 feet high. The northern pond ranges from around 5.5 feet in dredged areas to 13 feet on elevated ridges that serve as islands when the pond is in use. Isolated willows provide habitat diversity within the ponds, particularly up on the elevated ridges. The levees range from 15 feet on the northern end to above 17 feet on the southern end. Adjacent floodplain areas range from around 10 feet in historic depressions and existing backwater areas to 14 feet elevation. When the river banks overtop, water backwaters through a system of human-made footpaths back to a historical backwater area, which stays ponded for a period as flow waters recede and standing waters infiltrate and evaporate.

The habitat restoration project area is bound to the north by an existing storm water canal that drains the floodplain to the east through a canal gate that remains open through the winter season and is closed when MCSD is applying treated wastewater to their fields. The project is limited to the south by a neighboring property and to the east by the floodplain used for MCSD's treated wastewater reclamation.

1.5 Design Approach

The design approach was to synthesize existing and collected data to better understand existing conditions, including river and site topography, local geology, surface and groundwater hydrology, biology, ocean tides, pertinent water and soils data. These data were used to develop a suite of design options, included in three conceptual design alternatives. A single alternative was chosen for further hydraulic analysis. An existing conditions one-dimensional hydraulic model will be used to estimate hydraulic parameters. A two-dimensional hydrodynamic model of the river and project area will be used to evaluate individual design elements. Low flow conditions will be simulated to evaluate design elements when river levels were influenced by the flood and ebb of ocean tides. High flow conditions will be simulated to evaluate the design elements when the river levels were dominated by the flood and recession of storm event discharge.

2. EXISTING CONDITIONS

2.1 Topography

Base map topography was a compilation of existing data sets, including: 2010/2011 Coastal LiDAR (NOAA 2012), and 2008 channel cross-sections surveyed as part of the Mad River bluff restoration project implemented by Humboldt County by Points West Surveying in 2008, and 2011 river bathymetry along the toe of the Mad River bluff restoration project collect by Graham Matthews & Associates in 2013. Project surveying control was established by Points West Surveying. Additional topography and bathymetry was collected by NHE. Project topography is reported in US survey feet and is referenced to the North American Datum of 1983 (NAD83), California State Plane Zone 1, 2007 Epoch. Elevations are reported in feet, referenced to the North American Vertical Datum of 1988 (NAVD88).

2.2 Geomorphic Setting

The project site is located on the active floodplain at the downstream-most meander bend of the Mad River. To the south, the river “bottoms,” or wide alluvium and soil floodplain, transitions into Humboldt Bay. West of the river are large foredunes built up between the Pacific Ocean and a thick riparian forest. From the project site, the river flows 3 miles north to the Pacific Ocean between a long sand spit and marine terraces. The river mouth is transient along the sand spit; therefore, this distance is relative to when the mouth was located just south of Vista Point on Highway 101.

The Mad River Fault Zone (MRFZ) has been described in detail and mapped in geologic reports. The principal faults of the MRFZ are designated as the Fickle Hill, Mad River, McKinleyville, Blue Lake, and Trinidad faults (Carver 1985). The multi-strand Mad River fault offsets marine terraces along the coastline north of the project (Carver 1992). The remnant terrace that defines the southernmost lower plate of the Mad River fault is buried beneath the greater river floodplain associated with the project site (McCrary 1996, Carver et al. 1986).

2.3 Fish Surveys

On February 17, 2015, the Humboldt State University (HSU) Biology of Pacific Salmon class, led by professor Darren Ward surveyed fish species abundance in the storm water canal, downstream of the project site, the flood ditch for the pastures east of the canal and the river backwater channel that drains the canal. Species collected included coho salmon (age 1+), young of the year Chinook salmon, tidewater goby, western mosquitofish, *Cottus spp.*, and three-spined stickleback. A report of this survey is included in Appendix A.

On January 8, 2016, Bob Pagliuco surveyed the storm water canal and upstream flood ditch and found a 95 mm coho salmon in the flood ditch, as well as prickly sculpin and three-spined stickleback. A report of this survey is included in Appendix A.

On February 17, 2016, the HSU class repeated the surveys and found Chinook salmon, *Cottus spp.*, and three-spined stickleback. The class surveyed the canal again on February 14, 2017 and found a juvenile coho. No reports from these past two surveys are in circulation.

2.4 Mad River Hydrology

2.4.1 River Level Monitoring

A pressure transducer with a temperature sensor was installed in the Mad River in a pool immediately downstream of the project site to monitor continuous water depths and temperature from November 24,

2015 to July 15, 2016 and from August 2, 2016 to December 6, 2016. Water depths were converted to water surface elevations, which displayed tidal fluctuations and waters rising and falling during storm events. Water levels were compared to the stream discharge hydrograph reported approximately 5.5 miles upstream at the US Geological Survey (USGS) gaging station No. 11481000, Mad River near Arcata CA (Figure 3).

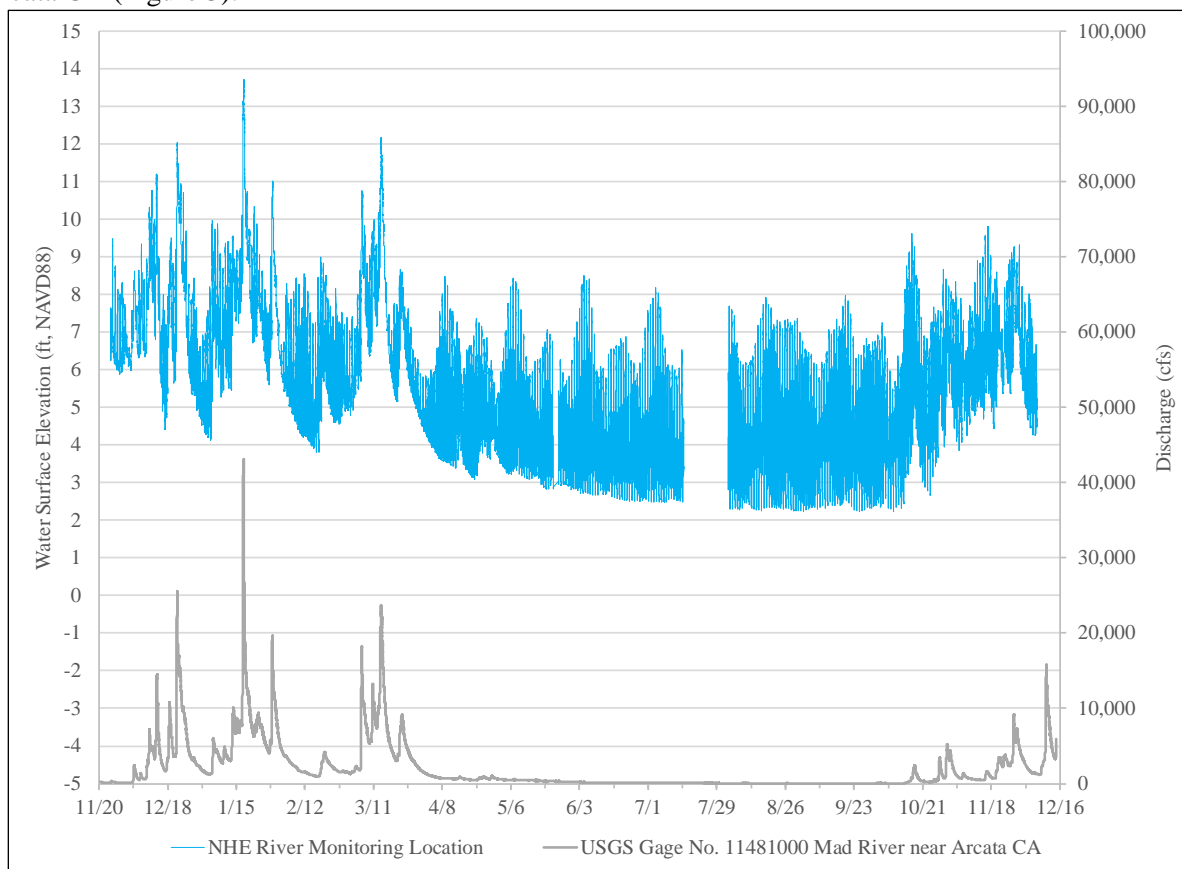


Figure 3. River levels near the project site and stream flow at USGS Gage Station No. 11481000

2.4.2 Mad River Discharge

The USGS gaged the Mad River near Arcata, CA (Station No. 11481000) from October 1, 1910 to September 30, 1913 (water years [WY] 1911 to 1913) and from October 1, 1950 to the present day (WY 1951 to 2017). During the project monitoring record, high flow events occurred several times during the winter, including a 5-year recurrence interval event that peaked on January 17, 2016.

Annual peak flow data is available through WY 2015. During the 68-year period of record, annual peak discharge events ranged from 3,360 cubic feet per second (cfs) on March 7, 1977 to 81,000 cfs on December 22, 1964. The USGS flood frequency software PeakFQ was used to estimate flood recurrence intervals, including the 1.5-, 2-, 10-, 50- and 100-year flood events (Table 1). Figure 4 illustrates the annual peak flood flow frequency analysis results as exceedence probabilities, including a 95% confidence interval.

Table 1. Peak Flow Estimates for Recurrence Intervals at USGS Gaging Station No. 11481000

Recurrence Interval	PeakFQ Bulletin 17B Estimated Peak Discharge (cfs)
1.5-year	20,550
2-year	26,410
5-year	41,560
10-year	51,670
25-year	64,280
50-year	73,460
100-year	82,420

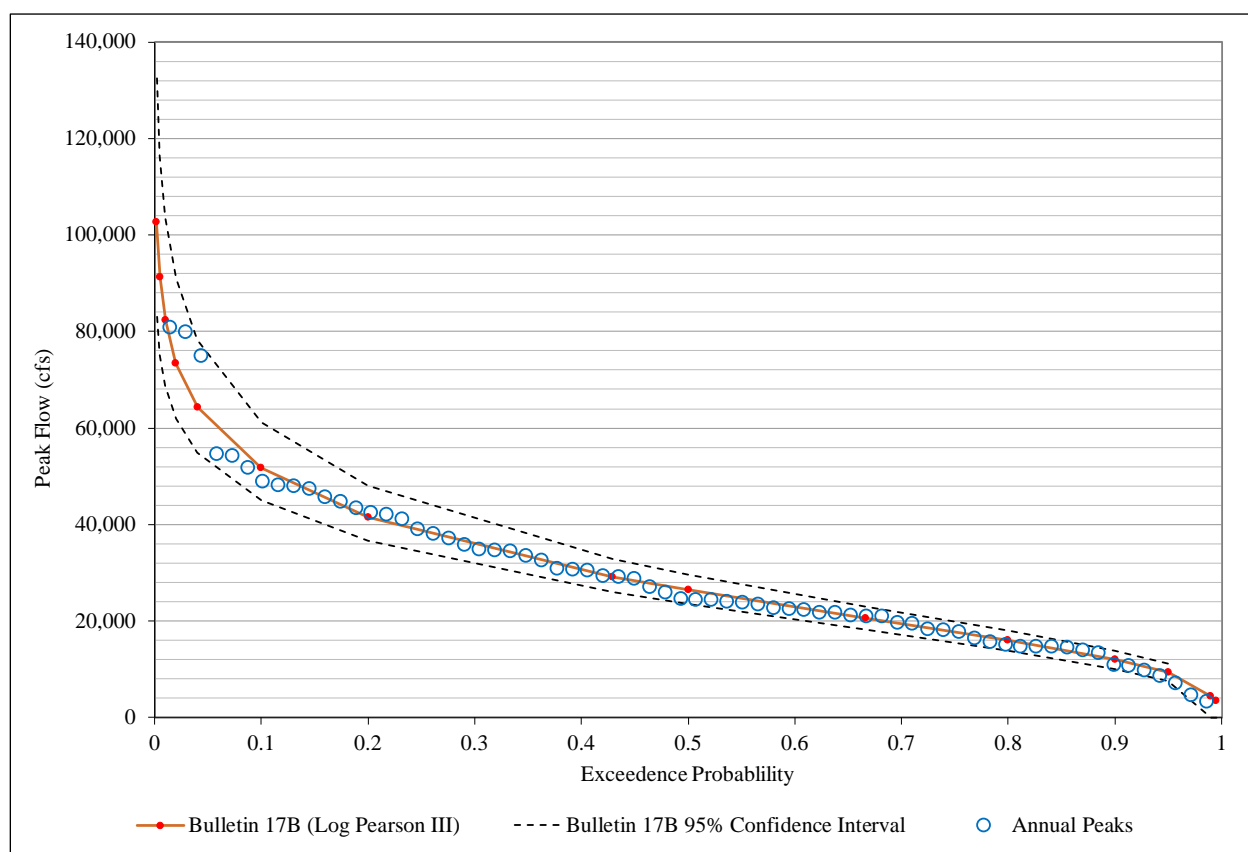


Figure 4. Annual peak flood flow exceedence probabilities for the USGS Gaging Station No. 11481000

2.4.3 Tides

Monitored river levels were compared to local tidal data at the NOAA Station ID 9418767 (North Spit) and Station ID 9419750 (Crescent City). In general, the Mad River tides were in sync with the North Spit tidal gage. Project reach river levels were controlled by the bed elevations at the river mouth, which periodically scours the bed during winter storms to form a sand bar in the ocean. The monitoring data displayed a transition in the river level control before and after the first storm events, when the river forms a sand bar offshore of the mouth (Figure 3).

2.5 Mad River Water Quality

2.5.1 Temperature

Continuous stream temperature was monitored at the NHE river monitoring location, downstream of the project site. Figure 5 displays the diurnal and seasonal fluctuation in the stream temperature.

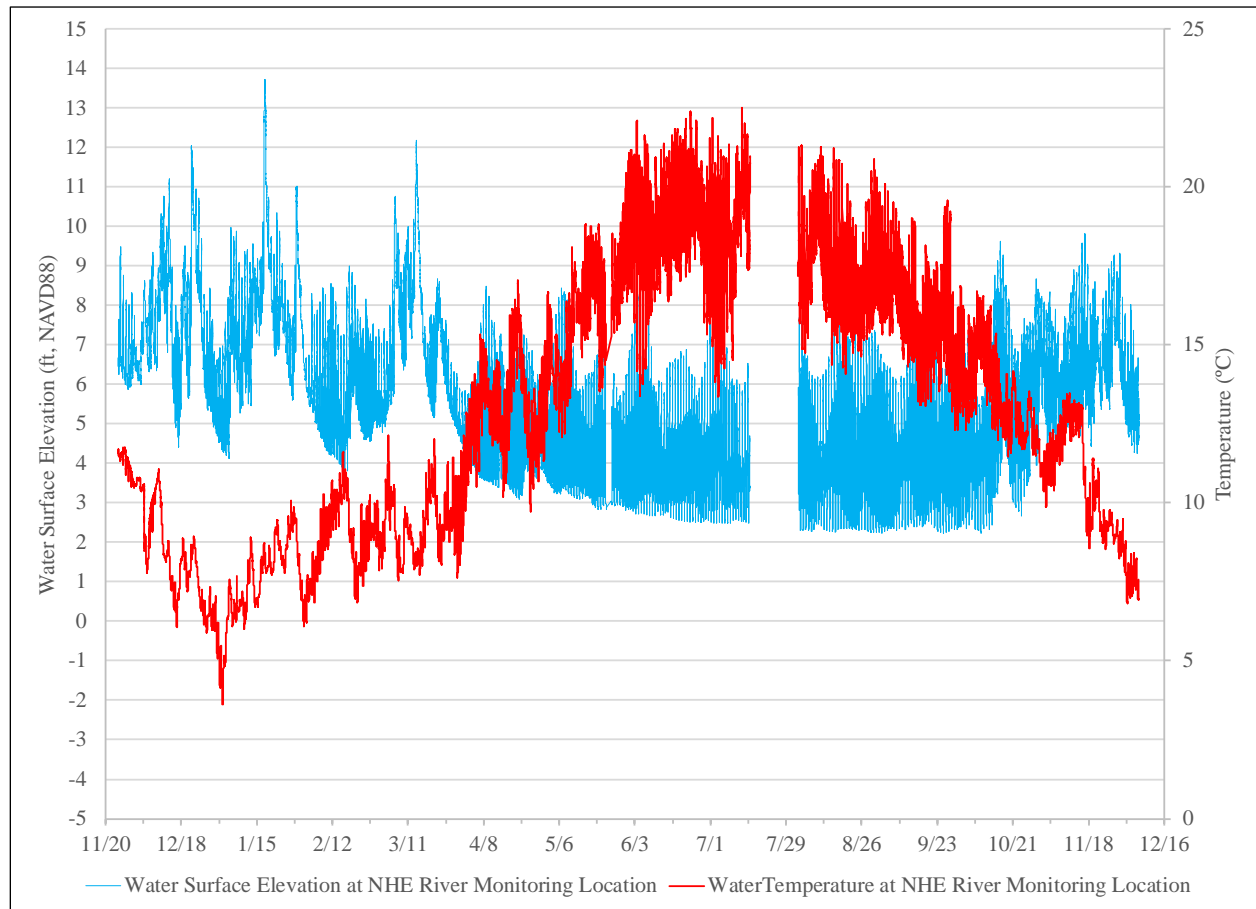


Figure 5. River Levels and Temperature near the Project Site

2.5.2 Salinity

On August 2, 2016 at 12:50 PM, at high tide and low flow (approximately 50 cfs), a salinity profile was measured at the NHE river monitoring location (Table 2).

Table 2. Salinity profile at the NHE river monitoring location August 2, 2016 at 12:50 PM

Water Depth	Temperature (°C)	Salinity (ppt)	Conductivity (mS/cm)
Surface to 5 feet	19.7	14.1	23.25
5 to river bed	18.4	19.6	31.1

On August 3, 2016 at 7:15 AM, at low tide and low flow (approximately 50 cfs), a salinity profile was measured at the NHE river monitoring location (Table 3).

Table 3. Salinity profile at the NHE river monitoring location August 3, 2016 at 7:15 AM

Water Depth	Temperature (°C)	Salinity (ppt)	Conductivity (mS/cm)
Surface to 3 feet	18.6	3.6	6.45
3 to 4 feet	18.3	14.8	24.8
4 to 6 feet	16.7	27.2	42.17
6 feet to river bed	16.4	29.5	45.4

High salinity levels were expected to be present during high tide; however, salinity stratification differences between the two samples were likely due to mixing during the mid-day high tide sample.

On August 7, 2016 at 4:45 PM during high tide, salinity was measured to be 15.0 ppt in the storm water canal, downstream of the project area. Water temperature was 20.4 °C and conductivity was 24.3 mS/cm.

2.5.3 Suspended Sediment Grain Size

The USGS collected and analyzed water quality data at the gaging station No. 11481000, including grain size distribution of suspended sediment samples from the gaging station for WY 1966 to 1974. Figure 6 displays the range in the results. In general, all suspended sediment was less than 2 mm, indicative of sands and finer. The median grain size, or D50 ranged from 0.004 mm (very fine silt) to 0.067 mm (very fine sand).

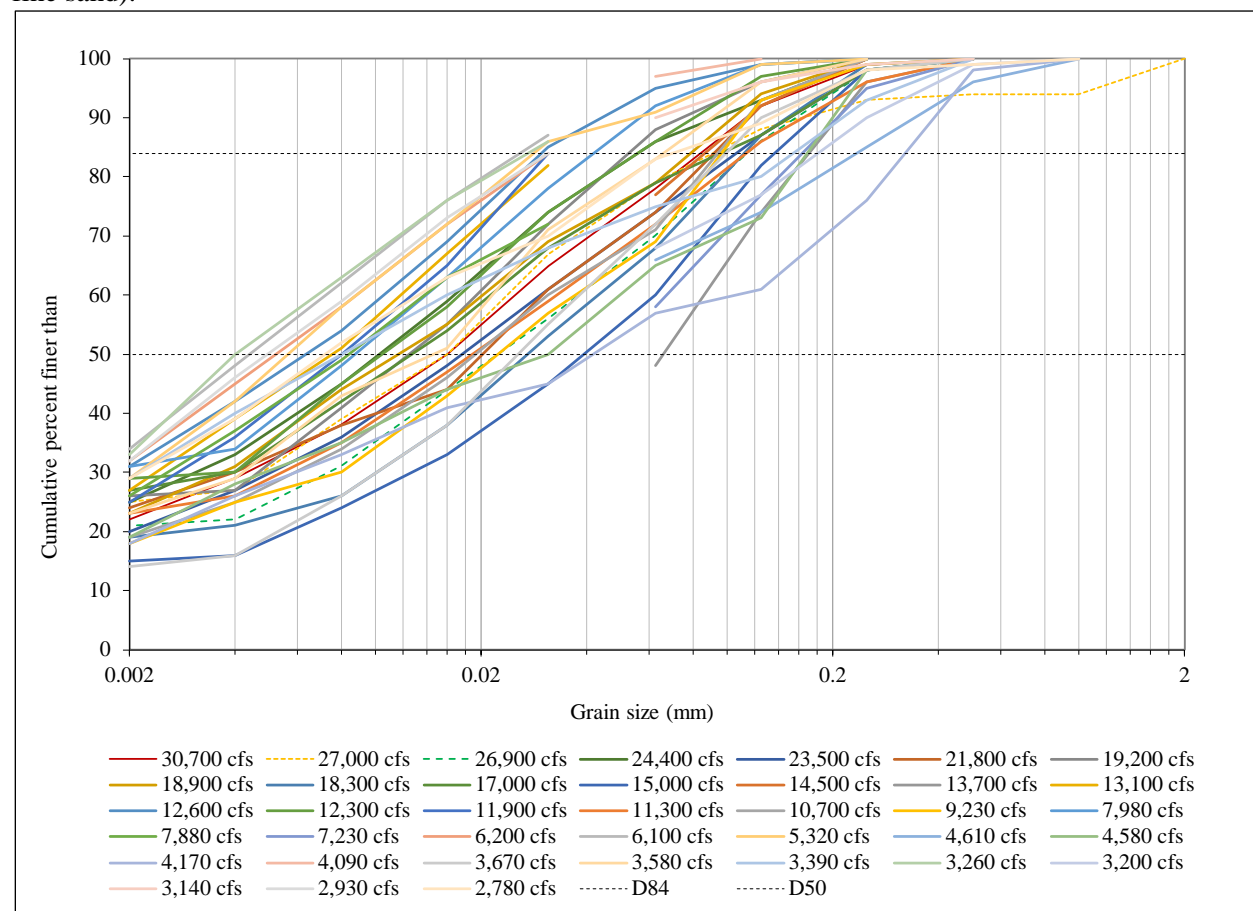


Figure 6. Mad River Suspended Sediment Grain Size Distribution, WY 1966-1974

2.6 Groundwater Levels and Temperature Monitoring

Six 1.5-inch diameter groundwater wells were drilled on the Mad River floodplain, recorded as MW-23, MW-24, MW-25, MW-26, MW-27, and MW-28 (Figure 7). Nearby MW-21 and 22 were previously installed by MCSD. Well logs shown in Appendix B illustrate the soil profiles at each of the project wells. The four groundwater wells installed within MCSD's treated wastewater reclamation area were paired groundwater wells, and located north and south of the tree planting plots for the biofiltration study. These paired wells consisted of a shallow well (10 feet below ground surface) and a deep well (20 feet below ground surface). The two wells on the active floodplain adjacent to the percolation ponds were located outside of the pond levee and were 10 feet deep.

Pressure transducers with temperature sensors were installed in the wells to monitor continuous water depths and temperature (Figure 8). Water depths were converted to water surface elevations. Groundwater levels were compared to river levels at the NHE river monitoring location.

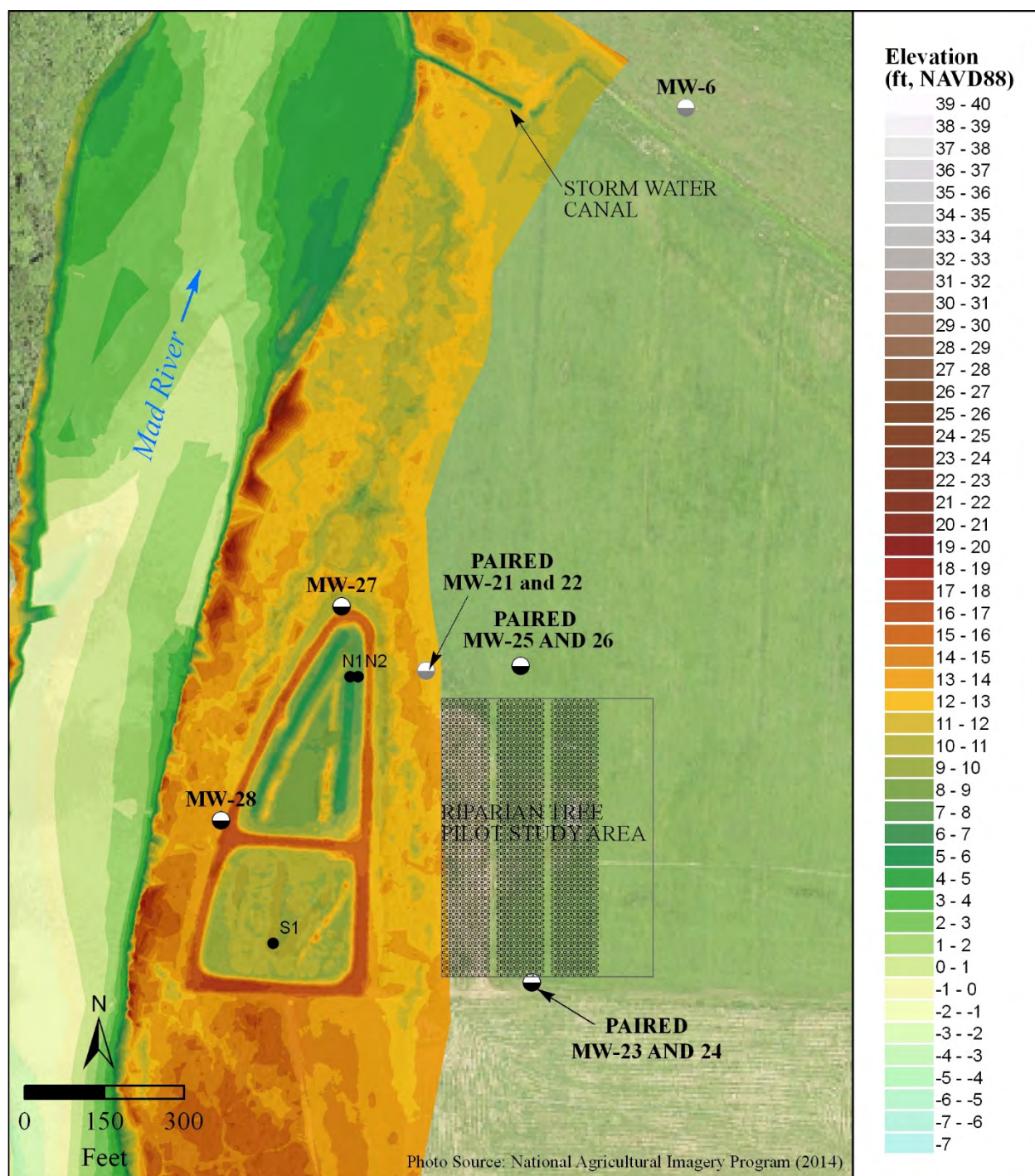


Figure 7. Groundwater Well and Soil Sampling Site Map

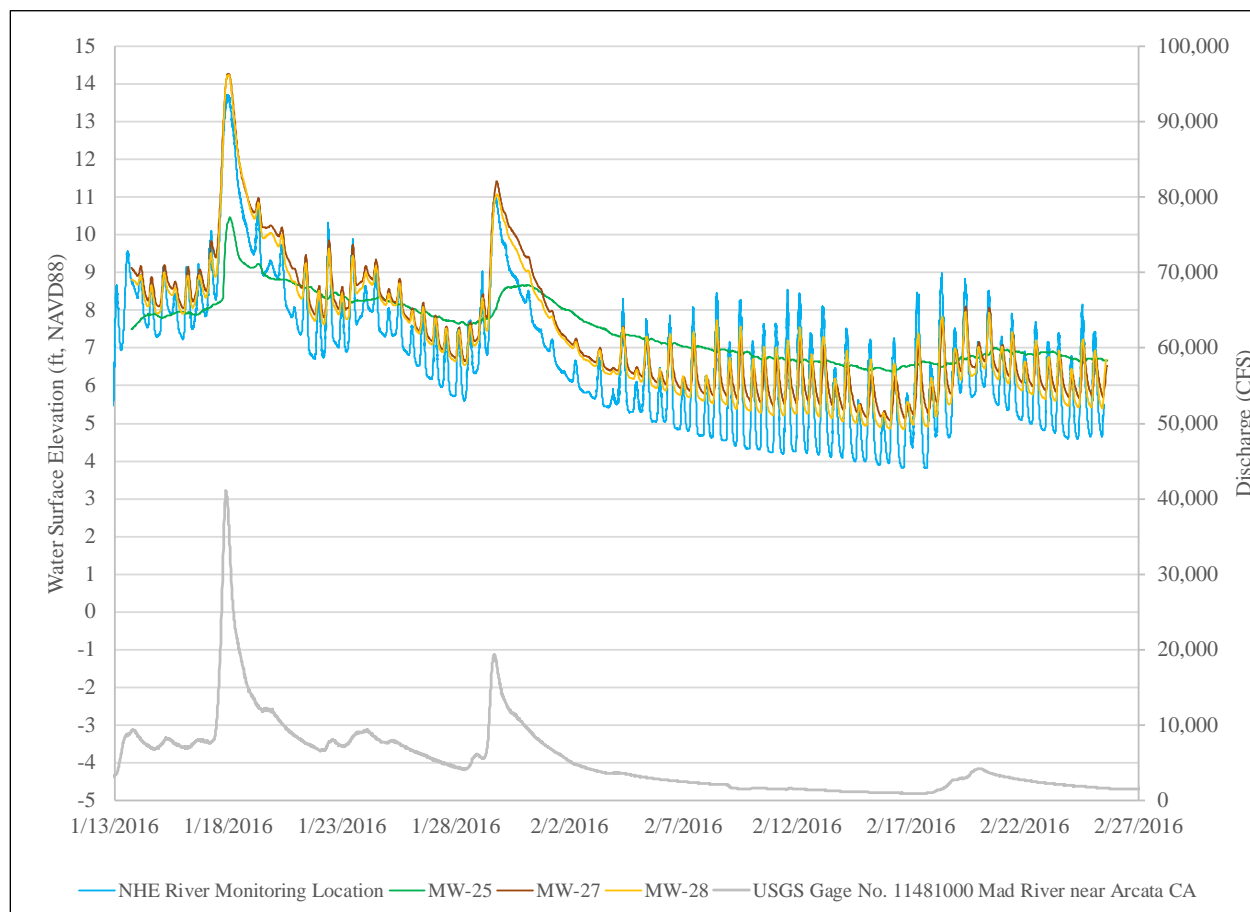


Figure 8. Ground Water Levels at Project Monitoring Wells

Tidal fluctuations were observed in the two wells near the percolation ponds and responses to high flow events were observed in all wells at varying degrees.

2.7 Percolation Pond Soils

2.7.1 Lithology

SHN logged soil lithology when the groundwater wells were installed and collected representational soil samples for analysis (Appendix B). At MW-27, north of the ponds and levee, a thin layer of sandy organic soil covers approximately 3.5 feet of silty sand that overlays 15.5 feet of well graded sand with gravel. Lean clay was observed 19 feet below ground surface, which was approximately 10.5 feet elevation. At MW-28, west of the ponds and levee, a thin layer of organic soil and sand covers approximately 7.5 feet of layered silty sand, silty sand with gravel, and well graded sand with silt that overlays at least 12.5 feet of well graded gravel with sand. The ground elevation at MW-28 is approximately 13.5 feet

2.7.2 Soil Quality

Soil samples were collected from the percolation ponds on May 12, 2016, prior to the start of annual use for treated wastewater discharge. The north and south ponds received treated wastewater during the discharge prohibition periods of 2014 and 2015, respectively. Treated wastewater was pumped into the ponds from pipes located at the eastern corners of the ponds at the central levee. Soil quality in the ponds

was analyzed for elevated levels of constituents of concern, providing initial data for the feasibility of material reuse to be incorporated into the project design surface.

Three soil samples were collected from the two ponds, of which two were collected from the north pond (N1 and N2) and one was collected from the south pond (S1; Figure 7). Sample locations were based on site reconnaissance and professional judgement. Stratification of organic matter was observed in the ponds: submerged, lower elevation areas maintained a higher composition of fine organic matter and mid-elevation vegetated areas were underlain with a mix of coarser material mixed with organic matter.

The north pond was mostly dry with small patch of water remaining from winter rains. Two samples were collected, within 10 feet of each other. Sample N1 was collected from the recently dried bottom of the pond in an unvegetated, low elevation area. Sample N2 was collected below the root level of a well vegetated, mid-elevation plain. The south pond sample, S1, was collected in an area that was representative of the south pond, on a semi-vegetated plain. Single samples were collected (versus sample composites) because the treated wastewater ponding, subsequent precipitation, and varying elevation plains created a distinct stratification layers of corresponding sample types, based on fine sediment organic matter. Sample N1 represents aged pond soil quality at the lowest pond elevation and highest accumulation of fine sediments with high organic content and no vegetation. Sample N2 represents aged pond soil quality on a vegetated plain. Sample S1 represents pond soil quality of recently applied treated wastewater.

All samples were collected with a trenching shovel with a goal sample volume from a hole of 8 inches deep and 8 inches wide. Soil samples were packed on ice in a cooler and sent overnight to TestAmerica Laboratories in Sacramento. The laboratory homogenized and randomly subsampled each submitted sample prior to analysis. Results are included in Appendix C. Table 4 summarizes the analytes, methods used, reporting limits, results, and method detection limits for results of non-detect.

Table 4. Pond Soil Chemical Analyses

Chemical Analyte	Method	Units	Reporting Limit (dry weight)	Soil Analysis Results		
				N1	N2	S1
General Chemistry						
Total Kjeldahl Nitrogen	USEPA 351.2	mg/kg	180	2100	1100	1200
Diesel Range Organics						
Diesel Range Organics	USEPA 3550 B	mg/kg	90	210	31	37
Motor Oil Range Organics		mg/kg	450	950	110	140
Metals						
Silver	USEPA 6010 B	mg/kg	0.49-0.91	0.35 J ¹	ND ² ($<MDL^3 = 0.089$)	ND ($<MDL = 0.092$)
Arsenic		mg/kg	2.0-3.6	2.7 J	1.3 J	1.7 J
Barium		mg/kg	0.99-1.8	95	67	57
Beryllium		mg/kg	0.20-0.36	0.51	0.42	0.36
Cadmium		mg/kg	0.20-0.36	0.14 J	ND ($<MDL = 0.030$)	ND ($<MDL = 0.031$)
Cobalt		mg/kg	0.49-0.91	16	8.3	5.9
Chromium		mg/kg	0.49-0.91	80	60	42
Copper		mg/kg	1.5-2.7	100	30	23
Molybdenum		mg/kg	2.0-3.6	ND ($<MDL = 1.4$)	ND ($<MDL = 0.74$)	ND ($<MDL = 0.77$)
Nickel		mg/kg	0.99-1.8	110	70	46
Lead		mg/kg	0.99-1.8	10	6.3	5
Selenium		mg/kg	2.0-3.6	ND ($<MDL = 2.5$)	ND ($<MDL = 1.4$)	ND ($<MDL = 1.4$)
Antimony		mg/kg	2.0-3.6	ND ($<MDL = 1.7$)	ND ($<MDL = 0.93$)	ND ($<MDL = 0.96$)
Thallium		mg/kg	2.0-3.6	ND ($<MDL = 1.5$)	ND ($<MDL = 0.83$)	ND ($<MDL = 0.86$)
Vanadium		mg/kg	0.49-0.91	47	40	37
Zinc		mg/kg	2.0-3.6	130	63	50
Total Mercury	USEPA 7471 A	mg/kg	0.024-0.044	0.10	0.046	0.029

Chemical Analyte	Method	Units	Reporting Limit (dry weight)	Soil Analysis Results		
				N1	N2	S1
PCBs						
PCB 1016	USEPA 8082	µg/kg	33-590	ND (<MDL = 60)	ND (<MDL = 3.4)	ND (<MDL = 3.5)
PCB 1221		µg/kg	33-590	ND (<MDL = 92)	ND (<MDL = 5.3)	ND (<MDL = 5.4)
PCB 1232		µg/kg	33-590	ND (<MDL = 110)	ND (<MDL = 6.5)	ND (<MDL = 6.6)
PCB 1242		µg/kg	33-590	ND (<MDL = 130)	ND (<MDL = 7.5)	ND (<MDL = 7.6)
PCB 1248		µg/kg	33-590	ND (<MDL = 100)	ND (<MDL = 5.8)	ND (<MDL = 5.9)
PCB 1254		µg/kg	33-590	ND (<MDL = 48)	ND (<MDL = 2.7)	ND (<MDL = 2.8)
PCB 1260		µg/kg	33-590	ND (<MDL = 52)	ND (<MDL = 2.9)	ND (<MDL = 3.0)
Organotins						
Monobutyltin	Organotins (TestAmerica Method)	µg/kg	2.6-4.8	ND (<MDL = 1.2)	ND (<MDL = 0.68)	ND (<MDL = 0.66)
Dibutyltin		µg/kg	4.3-7.8	ND (<MDL = 1.8)	ND (<MDL = 1.0)	ND (<MDL = 1.0)
Tributyltin		µg/kg	2.3-4.2	ND (<MDL = 0.92)	ND (<MDL = 0.52)	ND (<MDL = 0.51)
Tetra-n-butyltin		µg/kg	13-24	ND (<MDL = 6.9)	ND (<MDL = 3.9)	ND (<MDL = 3.8)
Semi-volatile Organic Compounds						
Acenaphthene	USEPA 8270 C SIM	µg/kg	48-90	ND (<MDL = 8.5)	ND (<MDL = 4.8)	ND (<MDL = 4.6)
Acenaphthylene		µg/kg	48-90	ND (<MDL = 5.9)	ND (<MDL = 3.4)	ND (<MDL = 3.2)
Anthracene		µg/kg	48-90	ND (<MDL = 7.1)	ND (<MDL = 4.0)	ND (<MDL = 3.8)
Benzo(a)anthracene		µg/kg	48-90	ND (<MDL = 5.5)	ND (<MDL = 3.1)	ND (<MDL = 2.9)

Chemical Analyte	Method	Units	Reporting Limit (dry weight)	Soil Analysis Results		
				N1	N2	S1
Semi-volatile Organic Compounds (continued)						
Benzo(a)pyrene	USEPA 8270 C SIM	µg/kg	48-90	ND (<MDL = 7.2)	ND (<MDL = 4.1)	ND (<MDL = 3.9)
Benzo(b)fluoranthene		µg/kg	48-90	25 J	11 J	4.9 J
Benzo(g,h,i)perylene		µg/kg	48-90	ND (<MDL = 18)	ND (<MDL = 10)	ND (<MDL = 9.7)
Benzo(k)fluoranthene		µg/kg	48-90	ND (<MDL = 14)	ND (<MDL = 7.7)	ND (<MDL = 7.4)
Chrysene		µg/kg	48-90	28 J	12 J	4.7 J
Dibenz(a,h)anthracene		µg/kg	48-90	ND (<MDL = 22)	ND (<MDL = 12)	ND (<MDL = 12)
Fluoranthene		µg/kg	48-90	14 J	5.4 J	3.5 J
Fluorene		µg/kg	48-90	41 J	11 J	5.0 J
Indeno(1,2,3-cd)pyrene		µg/kg	48-90	8.8 J	ND (<MDL = 4.9)	ND (<MDL = 4.6)
Naphthalene		µg/kg	48-90	36 J	11 J	4.9 J
Phenanthrene	µg/kg	48-90	120	47 J	22 J	
Pyrene	µg/kg	48-90	24 J	8.9 J	4.8 J	
Pentachlorophenol	µg/kg	66-120	110 J	43 J	42 J	
Organochlorine Pesticides						
2,4'-DDD	USEPA 8081 B	µg/kg	34-60	ND (<MDL = 12)	ND (<MDL = 6.8)	ND (<MDL = 6.9)
4,4'-DDD		µg/kg	17-30	ND (<MDL = 4.6)	ND (<MDL = 2.6)	ND (<MDL = 2.7)
2,4'-DDE		µg/kg	34-60	ND (<MDL = 12)	ND (<MDL = 6.8)	ND (<MDL = 6.9)
4,4'-DDE		µg/kg	17-30	ND (<MDL = 3.9)	ND (<MDL = 2.2)	ND (<MDL = 2.3)
2,4'-DDT		µg/kg	34-60	ND (<MDL = 12)	ND (<MDL = 6.8)	ND (<MDL = 6.9)
4,4'-DDT		µg/kg	17-30	ND (<MDL = 7.1)	ND (<MDL = 4.1)	ND (<MDL = 4.1)
Aldrin		µg/kg	17-30	ND (<MDL = 3.7)	ND (<MDL = 2.1)	ND (<MDL = 2.2)

Chemical Analyte	Method	Units	Reporting Limit (dry weight)	Soil Analysis Results		
				N1	N2	S1
Organochlorine Pesticides (continued)						
Alpha-BHC	USEPA 8081 B	µg/kg	17-30	ND (<MDL = 3.9)	ND (<MDL = 2.2)	ND (<MDL = 2.3)
Alpha-Chlordane		µg/kg	17-30	ND (<MDL = 3.6)	ND (<MDL = 2.0)	ND (<MDL = 2.1)
Beta-BHC		µg/kg	17-30	ND (<MDL =5.9)	ND (<MDL = 3.3)	ND (<MDL = 3.4)
Delta-BHC		µg/kg	17-30	ND (<MDL = 2.8)	ND (<MDL = 1.6)	ND (<MDL = 1.7)
Dieldrin		µg/kg	17-30	6.4 J	ND (<MDL = 0.92)	ND (<MDL = 0.94)
Endosulfan-I		µg/kg	17-30	ND (<MDL = 0.92)	ND (<MDL = 0.53)	ND (<MDL = 0.54)
Endosulfan-II		µg/kg	17-30	ND (<MDL = 1.8)	ND (<MDL = 1.0)	ND (<MDL = 1.0)
Endosulfan sulfate		µg/kg	17-30	4.0 J	ND (<MDL = 0.93)	ND (<MDL = 0.95)
Endrin		µg/kg	17-30	ND (<MDL = 2.0)	ND (<MDL = 1.1)	ND (<MDL = 1.1)
Endrin aldehyde		µg/kg	17-30	ND (<MDL = 2.0)	ND (<MDL = 1.1)	ND (<MDL = 1.1)
Endrin ketone		µg/kg	17-30	ND (<MDL = 6.0)	ND (<MDL = 3.4)	ND (<MDL = 3.5)
Gamma-BHC (Lindane)		µg/kg	17-30	ND (<MDL = 3.0)	ND (<MDL = 1.7)	ND (<MDL = 1.8)
Gamma-Chlordane		µg/kg	17-30	ND (<MDL = 0.94)	2.8 J	1.1 J
Heptochlor		µg/kg	17-30	ND (<MDL = 3.4)	ND (<MDL = 1.9)	ND (<MDL = 2.0)
Heptochlor epoxide		µg/kg	17-30	ND (<MDL = 2.1)	ND (<MDL = 1.2)	ND (<MDL = 1.2)
Methoxychlor		µg/kg	34-60	ND (<MDL = 23)	ND (<MDL = 13)	ND (<MDL = 13)
Toxaphene		µg/kg	680-1200	ND (<MDL = 360)	ND (<MDL = 200)	ND (<MDL = 210)

Chemical Analyte	Method	Units	Reporting Limit (dry weight)	Soil Analysis Results		
				N1	N2	S1
Dioxins and Furans						
2,3,7,8-TCDD TEQ	WHO 2005/ OEHHA Public Health Goal	pg/g	N/A	0.42	0.092	0.032
2,3,7,8-TCDD	USEPA 1613 B	pg/g	1-1.8	ND (<EDL ⁴ = 0.23)	ND (<EDL = 0.10)	ND (<EDL = 0.072)
2,3,7,8-TCDF		pg/g	1.8	ND (<EDL = 0.54)	ND (<EDL = 0.25)	ND (<EDL = 0.22)
1,2,3,7,8-PeCDD		pg/g	5.0-9.1	ND (<EDL = 1.3)	ND (<EDL = 0.48)	ND (<EDL = 0.38)
1,2,3,7,8-PeCDF		pg/g	5.0-9.1	ND (<EDL = 0.13)	ND (<EDL = 0.054)	ND (<EDL = 0.041)
2,3,4,7,8-PeCDF		pg/g	5.0-9.1	0.16 J	ND (<EDL = 0.057)	ND (<EDL = 0.043)
1,2,3,4,7,8-HxCDD		pg/g	5.0-9.1	0.40 J	0.097 J	ND (<EDL = 0.052)
1,2,3,6,7,8-HxCDD		pg/g	5.0-9.1	0.53 J	0.14 J	0.12 J
1,2,3,7,8,9-HxCDD		pg/g	5.0-9.1	0.86 J	ND (<EDL = 0.048)	ND (<EDL = 0.043)
1,2,3,4,7,8-HxCDF		pg/g	5.0-9.1	ND (<EDL = 0.090)	0.088 J	ND (<EDL = 0.029)
1,2,3,6,7,8-HxCDF		pg/g	5.0-9.1	0.21 J	0.091 J	ND (<EDL = 0.026)
1,2,3,7,8,9-HxCDF		pg/g	5.0-9.1	ND (<EDL = 0.074)	ND (<EDL = 0.030)	ND (<EDL = 0.022)
2,3,4,6,7,8-HxCDF		pg/g	5.0-9.1	0.29 J	0.082 J	ND (<EDL = 0.022)
1,2,3,4,6,7,8-HpCDD		pg/g	5.0-9.1	10	2.9 J	1.7 J
1,2,3,4,6,7,8-HpCDF		pg/g	5.0-9.1	2.2 J	0.74 J	ND (<EDL = 0.49)
1,2,3,4,7,8,9-HpCDF		pg/g	5.0-9.1	ND (<EDL = 2.4)	ND (<EDL = 0.72)	ND (<EDL = 0.72)
OCDD	pg/g	10-18	55	17	8.7 J	
OCDF	pg/g	10-18	2.6 J	0.87 J	0.46 J	
1. J: Approximate concentration when the reporting limit > result ≥ method detection limit			3. MDL: Method detection limit			
2. ND: Non-detect			4. EDL: Estimated detection limit			

Figure 9 - Figure 11 shows the laboratory analysis results for metals and semi-volatile organics relative to available toxicity screening thresholds for marine sediment, listed in the National Oceanic and Atmospheric Administration (NOAA) screening quick reference tables (SQuirTs; NOAA 2016). Due to the range between the data and toxicity screening thresholds, a logarithmic scale of the concentrations was used. Non-detects were not estimated at any limit and therefore have a value of zero; however, method detection limits are tabulated in Table 4.

T20 and T50: Chemical concentrations corresponding to 20 and 50 percent probability of observing toxicity calculated from individual chemical logistic regression models based on 10-day survival results from marine amphipod tests (*Ampelisca a.* and *Rhepoxynius a.*).

Threshold Effects Levels (TELs) and Probable Effects Levels (PELs): Geometric mean of a database of synoptic contaminant concentrations and sediment toxicity bioassays or benthic community metrics. Different from the ERLs/ERMs, these benchmarks use the entire database, including non-toxic data results.

Effects Range Low (ERLs) and Effects Range Median (ERMs): 10th and 50th percentiles from samples categorized as toxic for a given analyte, of a database primarily of synoptic marine sediment chemistry and sediment toxicity bioassay data. As such, these benchmarks are not analogous to LC10s or LC50s (lethal concentrations to 10 or 50 percent of the sample population).

Apparent Effect Thresholds (AET): Benchmark based upon empirical relationships between sediment concentrations and observed toxicity bioassay results or observed benthic community impacts. For each analyte, paired observations are ranked in increasing concentrations. The highest concentration associated with a non-toxic sample, such that only toxic samples are observed at higher concentrations.

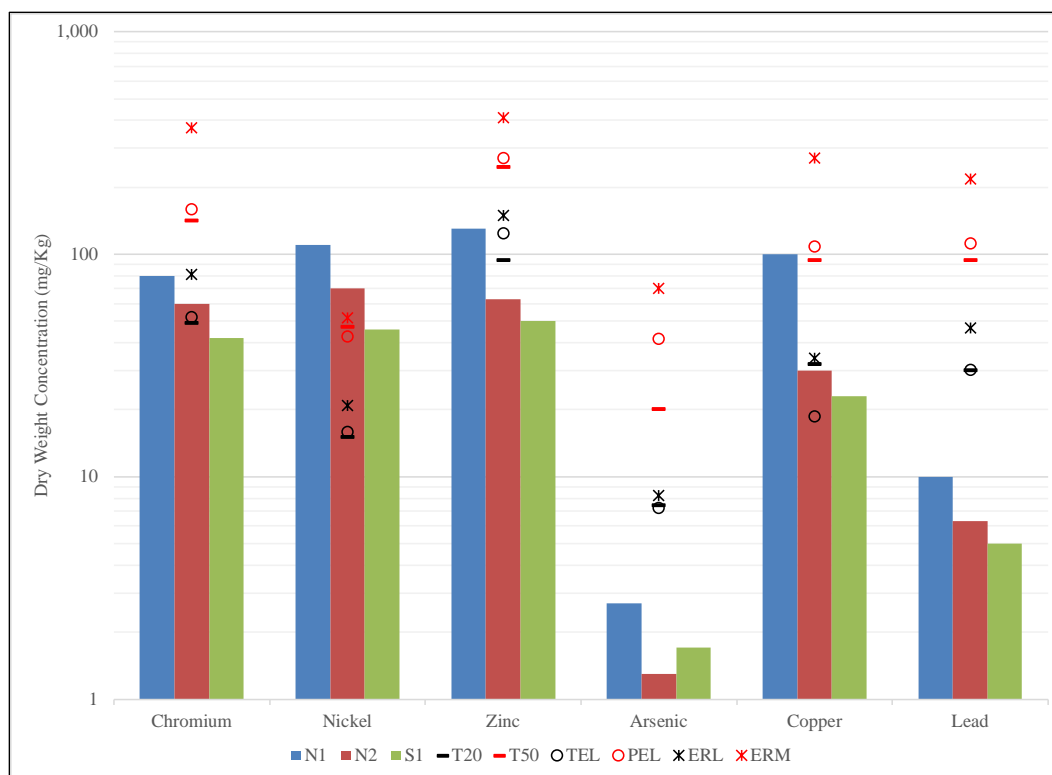


Figure 9. Metals Results (Cr, Ni, Zn, Ar, Cu, Pb) and Marine Sediment Toxicity Screening Thresholds

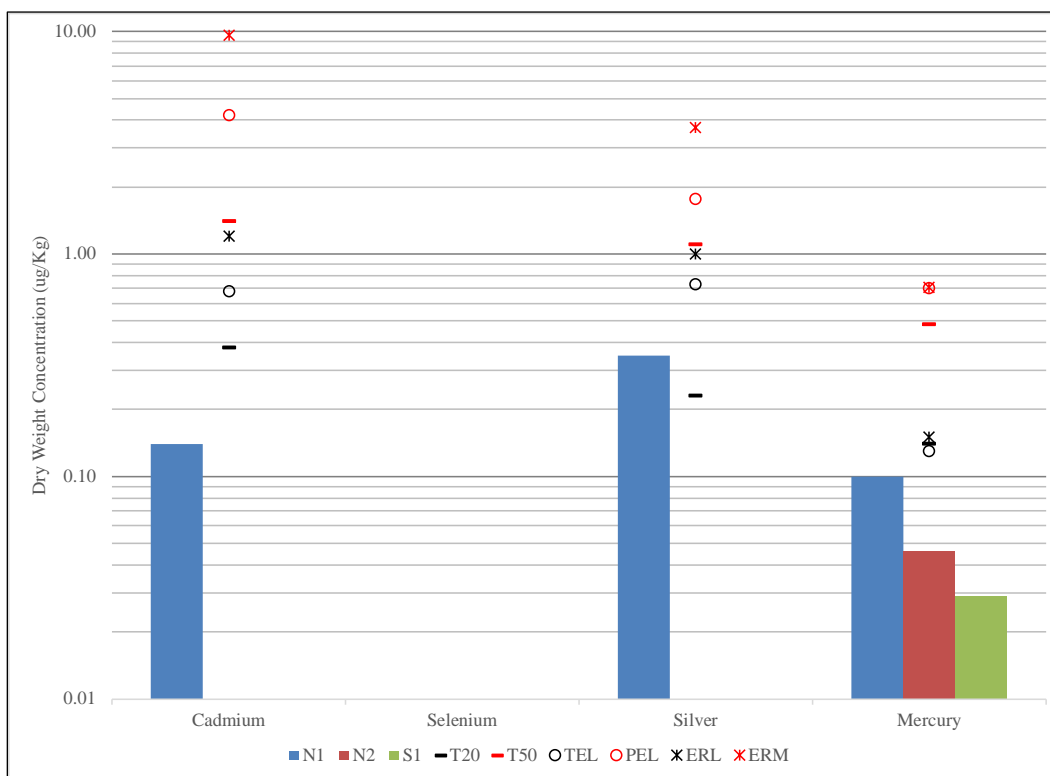


Figure 10. Metals Results (Cd, Se, Ag, Hg) and Marine Sediment Toxicity Screening Thresholds

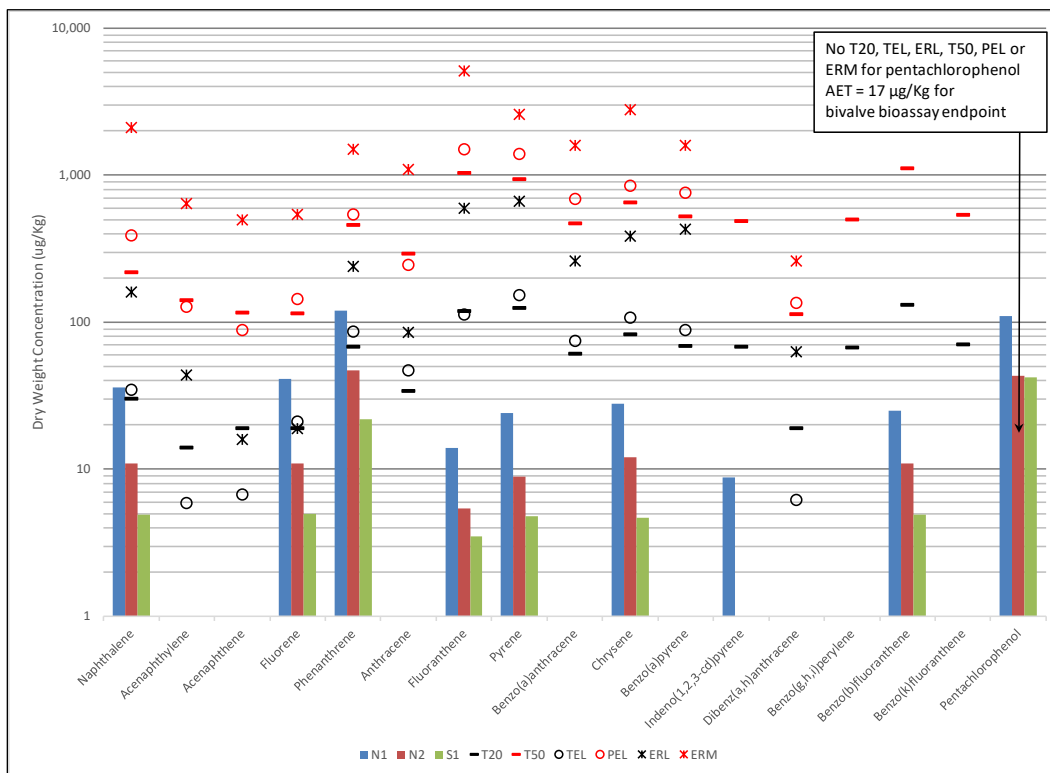


Figure 11. Semi-volatile Organics Results and Marine Sediment Toxicity Screening Thresholds

Levels of nickel and pentachlorophenol exceeded the marine sediment toxicity screening thresholds. The pentachlorophenol results were estimated (J flagged) and therefore not conclusive. Without sampling “background” conditions, it is assumed that all constituents are sourced from the treated wastewater. It is prudent to assume that all fine material will be removed from the project site within the pond area and placed at a permitted facility. MCSD is currently working with the RWQCB to permit their reclamation areas to the east of the project site to receive fine sediment from the ponds. It is anticipated that construction will require the separation of coarse material from fine material and that all coarse material will remain.

3. PROJECT OBJECTIVES, CRITERIA, AND CONSTRAINTS

3.1 Project Objectives

When implemented, the project will try to achieve specific habitat benefits:

- **Juvenile rearing:** Expand the floodplain through the project area to provide off-channel refugia with shallower depths and lower velocities to the main channel. Offer juvenile salmon protection from predation and slow moving water enabling the conservation of energy in preparation for outmigration.
- **Increased productivity:** Create off-channel areas to provide an abundance of terrestrial and aquatic food sources. Through restoration of riparian vegetation with hydrological connectivity to the river, facilitate nutrient and organic material exchange between land and water and increase habitat complexity by way of food subsidies and debris. Increase riparian habitat to benefit species such as aquatic insects and beaver that in turn, are important elements to salmon ecology.
- **Floodplain/channel structure and estuary function:** Expand the riparian floodplain by removing levees and infrastructure. Improve the hydrologic connection between the river and floodplain, and if feasible provide tidal inundation and estuarine habitat.

3.2 Project Criteria

3.2.1 Fish Passage

NOAA Fisheries provides hydraulic criteria for juvenile salmonid passage that will be considered (NOAA 2001):

- Minimum water depth is 0.5 feet
- Maximum average water velocity is 1 ft/s
- Maximum water surface drop heights are 0.5 feet.

3.2.2 Pool Depths

Pool depths should range from a minimum in shallow areas to a minimum of 3 feet in areas intended for open water to inhibit emergent vegetation from colonizing. Target deep water areas should be 5-6 feet. Hydrological connectivity between the project area groundwater and the river was observed below fine sediment deposits.

3.2.3 Water Quality

Coho salmon can survive in water temperatures that range from 0 to 25.6 °C, but prefer water temperatures ranging from 11.7 to 14.4 °C (Bell 1990). Growth rate and food conversion efficiency of juvenile salmon is optimum at dissolved oxygen (DO) concentrations above 5 mg/l (Brett and Blackburn

1981), but have been found thriving in Strawberry Creek and Lawrence Creek in at DO concentrations as low as 3 mg/l, provided that water temperatures were below 18 °C (Bob Pagliuco, pers. comm.)

3.3 Project Constraints

The project is constrained by the site's existing conditions, including, but not limited to:

- Target fish and other aquatic species
- Wildlife use
- Geomorphology
- Geology; landforms and tectonics
- Surface hydrology; seasonal instream flow variation
- Ocean tides; sea level rise
- Hydraulics
- Water quality (temperature and dissolved oxygen)
- Suspended sediment concentrations
- Bedload
- Debris
- Invasive species
- Pond soil quality: whether to leave on-site or remove existing material
- Land ownership/property boundaries
- NPDES permit restriction to adjacent land reclamation areas
- Access and constructability

4. OPTIONS ANALYSIS

An options analysis for decommissioning the MCSD WWTF percolation ponds and improving fish off-channel habitat to the river's active floodplain was prepared as part of the initial planning for the project designs. Specific design options were included in three conceptual design alternatives, which were presented and discussed in the project agency review meeting on April 25, 2016. These alternatives were revised based on input from the agencies and presented to the public at an MCSD Board meeting on May 4, 2016.

4.1 Alternative 1: Restore Existing Conditions Active Floodplain

The intent of Alternative 1 is to restore the percolation ponds to existing active floodplain conditions that can be backwatered through human use footpaths that serve as high flow channels during bankfull flood events (Figure 12). Alternative 1 considers the following actions:

1. Completely remove pond levees and grade ponds to the adjacent active floodplain elevation, leaving a wetland depression.
2. Revegetate the restored area with native wetland and riparian plants.

4.1.1 Benefits

By removing the levees around the percolation ponds, the Mad River will potentially gain approximately 4.25 acres of high flow-refugia during overbank storm events, similar in character and quality to the active floodplain areas adjacent to the existing ponds. The conversion of the percolation ponds to active floodplain with an emergent wetland depression would provide ecological connectivity currently bisected by the large levees and chain link fence that ring the ponds.

4.1.2 Impacts

Short-term impacts to wildlife use of the area are expected from demolition of the levees and wastewater infrastructure. By decommissioning the percolation ponds, there will be a net loss of open water habitat currently used by terrestrial and avian wildlife.

4.1.3 Limitations and Constraints

Project site inundation would be limited to the occurrence of river connectivity by backwatering during a high flow floodplain overtopping flood event. Backwater flooding enters the floodplain along foot pathways created by human recreational use. Removal of the levees will allow floodwaters and river settled out suspended sediment to build up the area over time and could convert areas of emergent wetland into riparian forest, similar to adjacent floodplain areas. Long term sustainability of the proposed design features would be limited to the site's hydrology necessary to sustain an emergent wetland and the floodplain topography that could be built up by river suspended sediment loads during flood events and reconfigured by human use.

Excess levee material would need to be relocated outside of the active floodplain. All demolished infrastructure materials would need to be removed to an off-site location.

4.1.4 Conclusions

Active floodplain flooding events typically occur every 1-2 years, and the area would be expected to backwater and then drain completely as river levels decrease. Although the existing condition of the active floodplain could provide limited high flow refugia habitat for salmonids, the active floodplain area drains as flood waters recede and fish stranding may be a concern if this alternative was implemented. Emergent wetlands could provide a good food source to the river's fisheries if these areas were hydrologically connected by surface water.

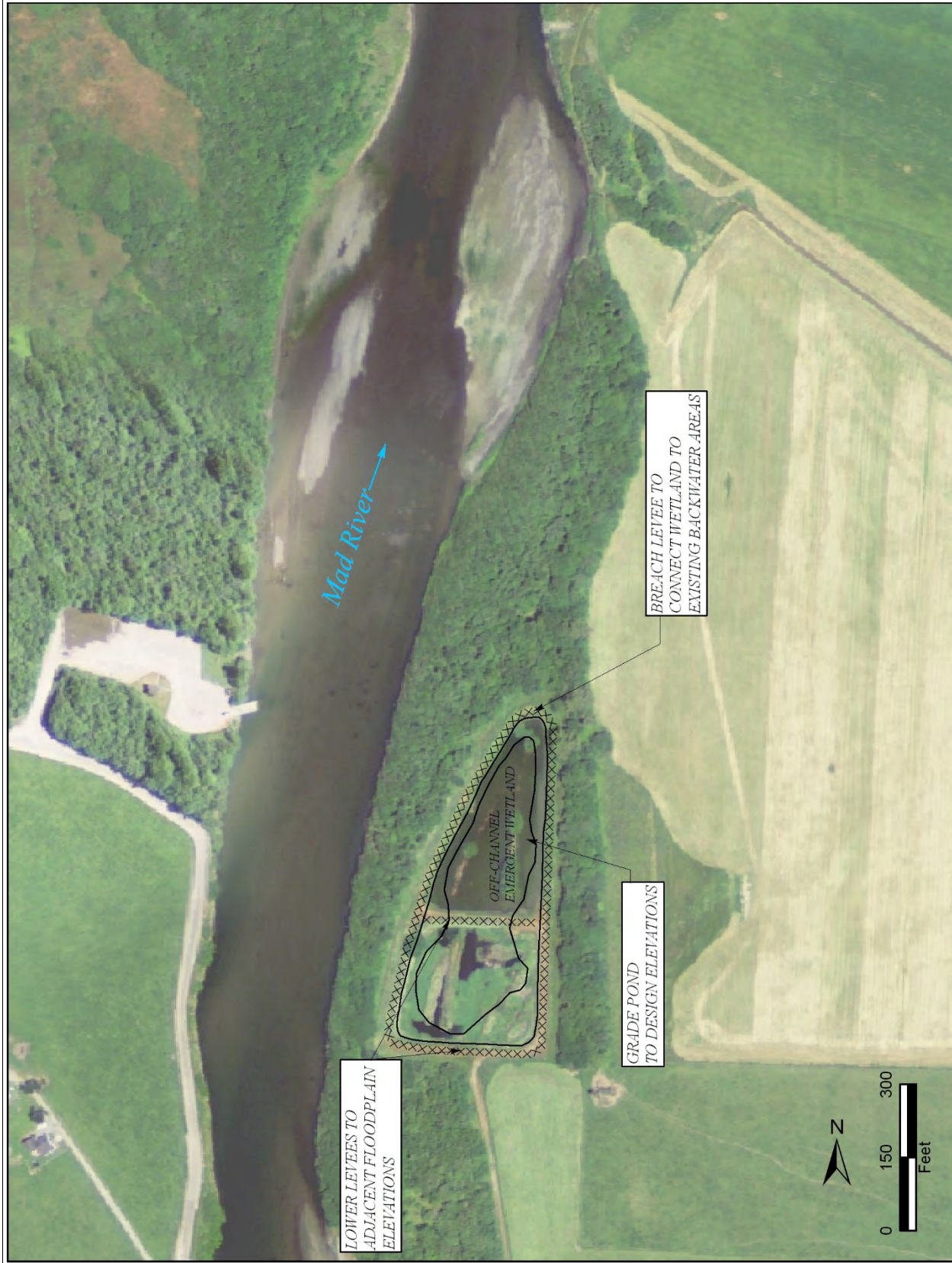


Figure 12. Alternative 1 Concept Design

4.2 Alternative 2: Create Backwater Channel and Off-Channel Backwater Pond

The intent of Alternative 2 is to create a channel that is tidally inundated during the river's low-flow period that backwaters during high flow periods into an off-channel pond (Figure 13). Alternative 2 considers the following actions:

1. Remove the river-side and interior levees and leave the landward levee.
2. Construct an approximately 1200-foot backwater channel to directly connect the storm water canal to an off-channel pond.
3. Excavate ponds to create a single, large and deep off-channel pond.

4.2.1 Benefits

By removing the river-side levees and fences around the percolation ponds, the Mad River will potentially gain approximately 4.25 acres of high flow-refugia during overbank storm events, with relatively higher quality than the active floodplain areas adjacent to the existing ponds. When floodwaters recede, the excavated pond is intended to provide deep water off-channel habitat and the constructed channel is intended to provide access back to the river. If the channel maintains an open water connection to the storm water canal, the channel would ideally exchange water between the river and pond during a tidal cycle.

4.2.2 Impacts

Short-term impacts to wildlife use of the area are expected from demolition of the levees and wastewater infrastructure, and by excavating a deep pond. Construction of the channel will require removing riparian trees from the floodplain, and removing floodplain fill material.

4.2.3 Limitations and Constraints

Backwater flooding will enter the floodplain from the constructed channel and will not be controlled or inhibited by the river-side levees. Uncertainty of the sustainability of the design inundation features are due to the impacts from river suspended sediment settling out within the channel and pond. If the channel fills to a level that tidally driven waters cannot inundate upstream design features, there are chances of seasonal to long-term stranding from hydrological disconnection between the pond and the river. Over time, the pond could fill with settled out suspended sediment from high flow events in the river.

4.2.4 Conclusions

Tidally driven flows into the channel will occur diurnally. If sediment fills the channel, the frequency of tidal inundation will be reduced. Initially, the channel will convey surface water during a flood tide from the river back to the pond and drain the channel back to the river during an ebb tide. The site has valuable backwatering conditions, which in turn present low energy areas to settle suspended sediment. Removal of the levees will reconnect the site to the active floodplain during high flow events to provide high flow refugia habitat for salmonids. Backwater features should incorporate emergent wetlands along banks and pond edges to promote sedimentation in targeted areas. Emergent wetlands could provide a good food source to the river's fisheries if these areas were hydrologically connected by surface water.

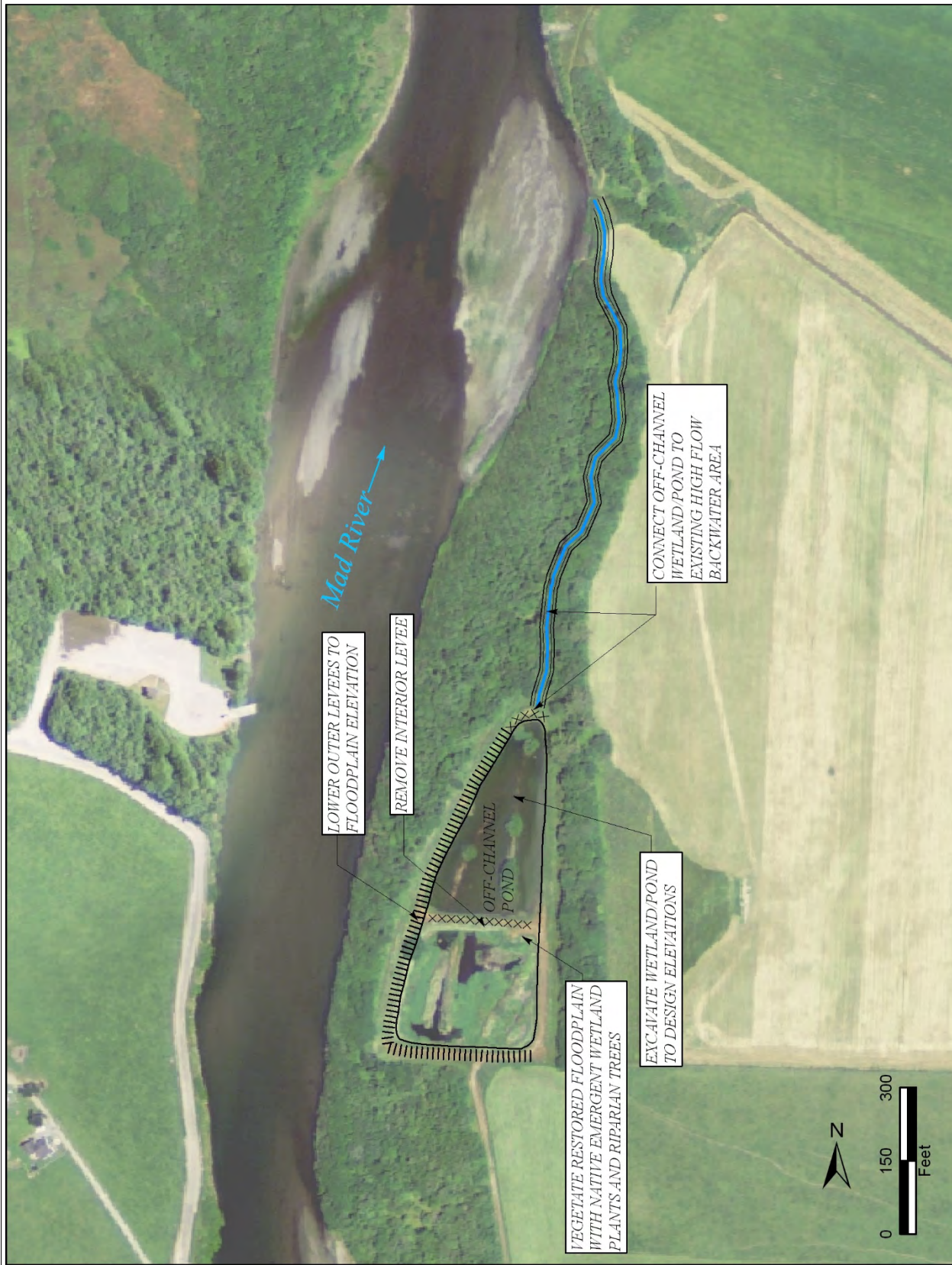


Figure 13. Alternative 2 Concept Design

4.3 Alternative 3: Create Backwater Channel and Off-Channel Backwater Pond with Emergent Wetlands and Swale for High Flow Through and Sediment Trapping

The intent of Alternative 3 is to create a backwater channel that is tidally inundated during the river's low-flow period and backwaters during high flow periods into the off-channel pond. The upstream swale is to provide flow-through from overtopping river events. The southern emergent wetland is expected to accumulate sediment at a faster rate than downstream design elements, extending the longevity of the downstream ponds. (Figure 14). Alternative 3 considers the following actions:

1. Remove the river-side and interior levees and leave the landward levee to remain.
2. Construct an approximately 1200-foot backwater channel to directly connect the storm water canal to an off-channel pond.
3. Excavate the northern (downstream) pond to create a deep off-channel pond with interior islands.
4. Leave the southern (upstream) pond and fill the southeastern edge to create a riparian bench.
5. Lower the floodplain, riverside of the southern pond to create a swale that connects to the river during high flows.
6. Revegetate the southern pond densely with emergent wetland plants and the benched areas and islands with riparian trees.

4.3.1 Benefits

By removing the river-side levees and fences around the percolation ponds, the Mad River will potentially gain approximately 4.25 acres of high flow-refugia during overbank storm events, with relatively higher quality than the active floodplain areas adjacent to the existing ponds. When floodwaters recede, the excavated pond is intended to provide deep water off-channel habitat and the constructed channel is intended to provide migration access back to the river. If the channel maintains an open water connection to the storm water canal (the channel does not clog with settled suspended sediment during storm flows), the channel could convey surface water during a flood tide and maintain the off-channel pond and its connection to the river all year. The upstream swale and emergent wetlands are intended to provide overtopping flows to settle suspended sediments and provide energy to scour sand from the backwater channel.

4.3.2 Impacts

Short-term impacts to wildlife use of the area are expected from demolition of the levees and wastewater infrastructure, and by excavating a deep pond. Construction of the swale and channel will require removing riparian trees from the floodplain, and removing floodplain fill material, which could impact wildlife use; however, the riparian forest is mature and continuous throughout the site.

4.3.3 Limitations and Constraints

Backwater flooding will primarily enter the floodplain from the constructed channel and will not be controlled or inhibited by the river-side levees. During high flow events, the swale is intended to overtop

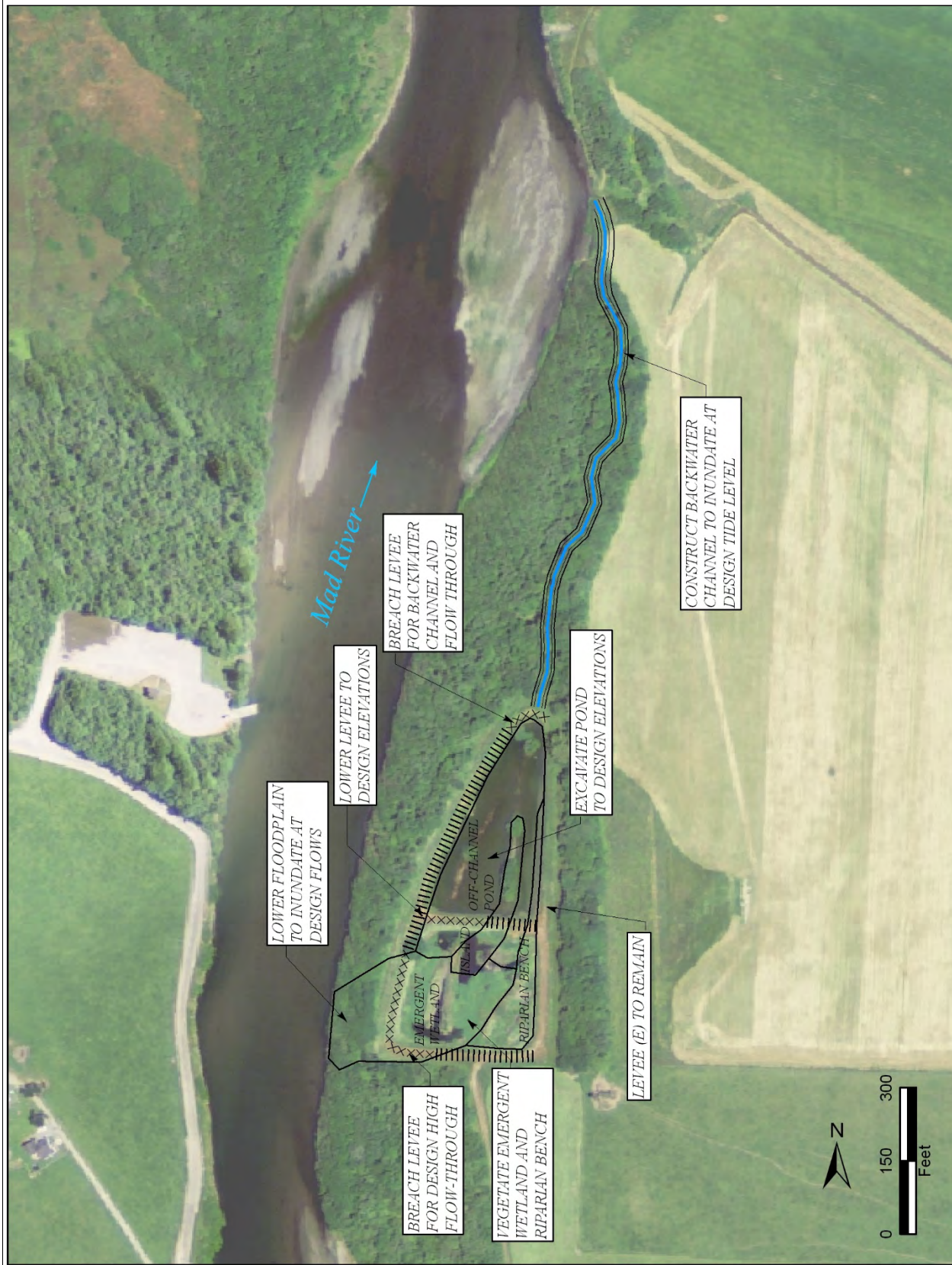


Figure 14. Alternative 3 Concept Design

and carry river water into the upstream emergent wetland, providing energy to the backwater channel to as flows recede. Uncertainty of the sustainability of the design inundation features are due to the impacts from river suspended sediment settling out within the channel and pond. If the channel fills to a level that tidally driven waters cannot inundate upstream design features, there are chances of seasonal to long-term stranding from hydrological disconnection between the pond and the river. Over time, the pond could fill with settled out suspended sediment from high flow events in the river. The location of the swale is not ideal and would be better suited in a location further upstream that could gain more hydraulic head before entering the site; however, the project is limited by landownership and must be kept within the boundaries of MCSD's property.

4.3.4 Conclusions

Tidally driven flows into the channel will occur diurnally. If sediment fills the channel, the frequency of tidal inundation will be reduced. Initially, the channel will convey surface water during a flood tide from the river back to the pond and drain the channel back to the river during an ebb tide. The site has valuable backwatering conditions, which in turn present low energy areas to settle suspended sediment. Removal of the levees will reconnect the site to the active floodplain during high flow events to provide high flow refugia habitat for salmonids. Backwater features incorporate emergent wetlands at an upstream swale to allow flood waters to settle sediment and promote scour in the backwater channel as surface water recedes. Emergent wetlands provide a good food source to the pond and potentially to the river if they maintain a hydrological connection by surface water.

Alternative 3 conceptual design was chosen for hydraulic analysis because it was the most complex of the three alternatives and will ultimately test assumptions of the site's hydraulics and design options for all three alternatives. A preferred design alternative will be based on the results of the hydraulic analysis.

5. PROPOSED DESIGN ELEMENTS

Figure 15 illustrates the initial draft design planform map and channel longitudinal profile. Key design features are annotated. The alignment is stationed from the existing river backwater channel, upstream through the proposed backwater channel, continuing up through the two converted percolation ponds and returning to the river through a swale.

5.1 Backwater Channel

The project's backwater channel is located within the active floodplain, continuing upstream from an existing river backwater channel, located at the eastside of a large riffle and gravel bar (Figure 15). The mouth of the project's backwater channel will empty at and through an existing storm water canal that drains the high pasture floodplain to the east through a canal gate. The downstream elevation of the backwater channel is controlled by the topography of the storm water canal, which is currently at approximately 3.5 to 4 feet elevation, and an existing river backwater channel that the storm water canal drains into which grades down to approximately -4 feet elevation near the County's culvert outlet. The channel grades up from approximately 3 feet elevation to approximately 6.2 feet elevation over a slope of 0.25% for 1250 feet. The channel flattens to a slope of 0.11% through the north pond reach for 325 feet and then steepens to a 2% slope up to the emergent wetland.

5.2 Off-Channel Pond

An off-channel pond is proposed approximately 1200 feet upstream of the backwater channel confluence with the storm water canal. The pond will be excavated to 0 feet elevation with a 20-foot width and 100-foot length. The pond is located off-set from the backwater channel, to reduce sediment loading. Minimum depths of approximately 6 feet are to inhibit emergent vegetation from colonizing.

5.3 Wetland Flats and Islands

The area between the off-channel pond and the backwater channel is intended to provide wetland flats at an elevation of 7 to 8 feet and elevated topography as isolated islands vegetated with riparian trees at a peak of 11 to 13 feet elevation. The wetlands will likely be emergent freshwater wetlands; however, there is a possibility that salt-tolerant, brackish vegetation could colonize.

5.4 Upstream Swale and Emergent Wetland/Sedimentation Basin

South of the off-channel pond is a proposed overflow system where the river can overtop a swale and spread inflowing water through an emergent wetland/sedimentation basin prior to draining into the backwater channel. It is assumed that flow direction will reverse when the swale overtops. The swale will grade from 11 feet down towards the sedimentation pond at 10 feet elevation over a slope of 0.55%. The wetland maintains a slight slope of 0.01% towards the backwater channel, but is a large flat feature.

5.5 Riparian Bench

A bench at 13 to 14 feet elevation is proposed for riparian trees along the east side of the emergent wetland to increase habitat complexity and direct overtopping flow-through towards the emergent wetland and backwater channel.

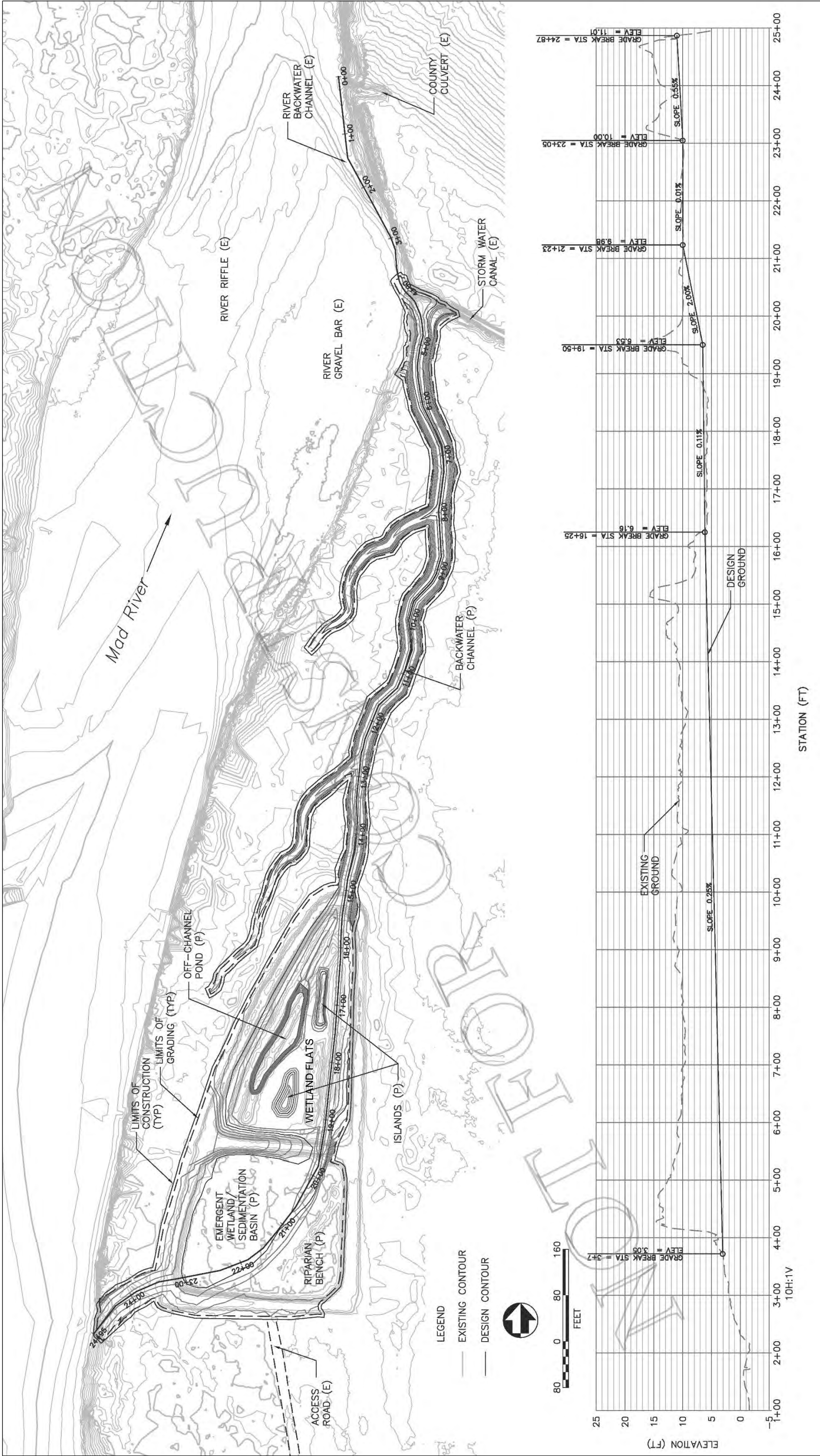


Figure 15. Alternative 3 Project Design Planform and Profile

6. REFERENCES

- Bell, M.C.. 1990. *Fisheries handbook of engineering requirements and biological criteria*. Fish Passage Development and Evaluation Program. U.S. Army Corps of Engineers.
- Brett, J. R., and J.M. Blackburn. 1981. *Oxygen requirements for growth of young coho (Oncorhynchus kisutch) and sockeye (O. nerka) salmon at 15°C*. Can. J. Fish. Aquat. Sci. 38:399-404
- California Department of Fish and Wildlife. 2004. *Recovery strategy for California coho salmon*. Report to the California Fish and Game Commission. Sacramento, CA:CDFW.
- . 2009. Chapter XII of the *California Salmonid Stream Habitat Restoration Manual*. Sacramento, CA:CDFW.
- Carver, G.A. 1985. *Quaternary tectonics north of the Mendocino triple junctions*, in Kelsey, H.M., et al. eds. Redwood Country guidebook. Arcata, CA. American Geomorphological Field Group. 1985 Field Trip, p. 155-167.
- . 1992. *Late Cenozoic tectonics of coastal northern California*, in Carver, G.A., and Aalto, K.R., eds., Field guide to the late Cenozoic subduction tectonics and sedimentation of northern coastal California: American Association of Petroleum Geologists, v. GB-71, p. 1-9.
- Carver, G.A., Burke, R.M., and Kelsey, H.M., 1986, *Quaternary deformation in the region of the Mendocino triple junction: Technical report to U.S. Geological Survey*. Reston, Virginia, under Contract 14-08-001-22009, 25 p.
- California Geological Society. 1999. Fault number 13, *Mad River fault zone*, in *Quaternary fault and fold database of the United States*. Accessed 12/05/2016. NR:CGS.
<https://earthquakes.usgs.gov/hazards/qfaults>.
- McCorry, P.A., 1996, *Evaluation of fault hazards, northern coastal California: U.S. Geological Survey Open-File Report 96-656*, 87 p., 2 pls.
- National Oceanic and Atmospheric Administration. 2001. *National Marine Fisheries Service Guidelines for Salmonid Passage at Stream Crossings*. NR:NOAA.
- . 2012. *2009-2011 CA Coastal Conservancy Coastal Lidar Project*. Office for Coastal Management National Ocean Service, National Oceanic and Atmospheric Administration, U.S. Department of Commerce; California Coastal Conservancy, Ocean Protection Council, Scripps Institution of Oceanography; and the Joint Airborne Lidar Bathymetry Technical Center of Expertise. Charleston, SC: NOAA.
- . 2016. *Screening Quick Reference Tables (SQuiRTs)*. Accessed on June 5, 2016. NR:NOAA.
<http://response.restoration.noaa.gov/cpr/sediment/squirt/squirt.html>.
- National Marine Fisheries Service. 2014. *Final Recovery Plan for the Southern Oregon/Northern California Coast Evolutionarily Significant Unit of Coho Salmon (Oncorhynchus kisutch)*. National Marine Fisheries Service. Arcata, CA:NMFS.

APPENDIX A: FISH SURVEY REPORTS

Mad River fish community composition in the drainage channel on the School Road trail

Multiple fish species of conservation concern in the Mad River watershed- including Chinook salmon, coho salmon, and tidewater goby- use off-channel habitats in the lower basin and estuary as feeding areas and refuge from high winter flows. Currently, the small channel providing winter drainage from the pasture on the east side of the Mad River at School Road in McKinleyville is one of the few places potentially providing such habitat in the tidal portion of the lower Mad River. Projects in the planning phase, particularly the proposed decommissioning and floodplain reconnection of a nearby infiltration pond owned and operated by McKinleyville Community Services district, could greatly expand the area of off-channel habitat in this area and provide a conservation benefit to fish.

To provide more information about the species currently using off-channel habitats in the lower Mad River, the Biology of Pacific Salmon class from Humboldt State University sampled the winter drainage channel at School Road on 17 February 2015. Seventeen students used seines and minnow traps to sample the channel from the confluence with the Mad River to the culvert and flow control device at the edge of the pasture (ca. 70 m), two pools and a reach of the ditch above the culvert (30 m) as well as adjacent areas in the Mad River side channel near the confluence (Figure 1). Six species were collected, including juvenile Chinook salmon and coho salmon (Table 1). Most species were collected in the pool immediately below the culvert. A goby collected was field-identified as a tidewater goby and photographed, but the photographs were not adequate for confirmation of the field identification (Figure 2). Molly Schmelzle and Andrew Kinziger are planning a follow-up analysis of environmental DNA in water samples to confirm the presence of tidewater goby.

Table 1. Catch data for each sampling technique and location. Refer to Figure 1 for the location of sample sites.

Site number	Site description	Technique	Species	Catch
1	Downstream of confluence in side-channel; ca. 100 m by 5 m of habitat sampled; max. depth > 1 m.	Seine	Chinook salmon (young of the year)	5
			Cottus spp.†	6
			Three-spined stickleback	5
		Minnow trap	Cottus spp.†	3
2	Side channel at confluence; ca. 10 m by 20 m of habitat sampled; 0.8 m max depth.	Seine	Chinook salmon (young of the year)	7
			Cottus spp.†	7
			Three-spined stickleback	2
		Minnow trap	--	0
3	Lower ditch channel from confluence up; 20 m by 1 m of habitat sampled; < 10 cm max depth.	Seine	--	0
4	Pool immediately below culvert; 3 m by 6 m of habitat sampled; 0.7 m max depth.	Seine	Coho salmon (age 1+)	2
			Cottus spp.†	1
			Three-spined stickleback	150
			Tidewater goby*	1
			Western mosquitofish	1
		Minnow trap	Cottus spp.†	9
			Three-spined stickleback	26
5	Pool immediately above culvert; ca. 3 m by 3 m of habitat sampled; max depth 0.7 m.	Seine	Three-spined stickleback	150
5		Minnow trap	Three-spined stickleback	7
6	Channel above culvert; ca. 25 m by 1 m of habitat sampled; max. depth 0.5 m.	Seine	Three-spined stickleback	12
6		Minnow trap	--	0
†Species not distinguished, potentially includes prickly sculpin and coast range sculpin.				
*Field identification as tidewater goby, awaiting eDNA confirmation				

Figure 1. Approximate location of sample sites. Google Earth imagery dated 23 August 2012.



Figure 2. Purported tidewater goby.



Report submitted by Darren Ward and the Spring 2015 Biology of Pacific Salmon class: Justin Alvarez, Timothy Ash, Nick Easterbrook, Naomi Gair, Molly Gorman, Jon Hollis, Joe Jackson, Kyle Johnson, Dylan Keel, Dan Marsant, Kaitlyn O'Brien, Brad Padilla, Bernie Rolf, James Schwartz, Angela Shaver, Libby Toning, Woody Vernard.

Sampling the McKinleyville Community Service District's Drainage Channel in the Mad River Estuary

January 8, 2016

Prepared by Bob Pagliuco

Background

Funding has become available through the Fisheries Restoration Grant Program to develop restoration design alternatives at the McKinleyville Community Service District's (MCSD) Mad River Estuary ponds at the bottom of School Road. Caltrout has been working with MCSD and Rose Patenaude from Northern Hydrology to develop wells and conduct topographic surveys to inform design development.

On February 17, 2015, Darren Ward took his "Biology of Pacific Salmon" class out to sample the winter drainage channel that drains the hay pasture and assess the fish assemblages with seins and minnow traps. The Mad River was approximately 1500 cfs. They found several species below the tidegate structure including juvenile Chinook, coho, tidewater goby, stickleback, mosquitofish and sculpin. Only stickleback were found above the tidegate structure.

On January 8, 2016 Rose Patenaude and I revisited this site and deployed minnow traps to see if fish were utilizing this channel for off channel habitat and had made it above the tidegate structure. The Mad River was approximately 2700 cfs and there was a significant gradient and velocity through the tidegate structure and channel downstream of the tidegate structure. Six minnow traps were deployed throughout the reach, baited with frozen steelhead roe and soaked for 45 minutes to 1 hour (See Figure 1 and 2). In addition to stickleback and sculpin, a coho was found above the tidegate structure.

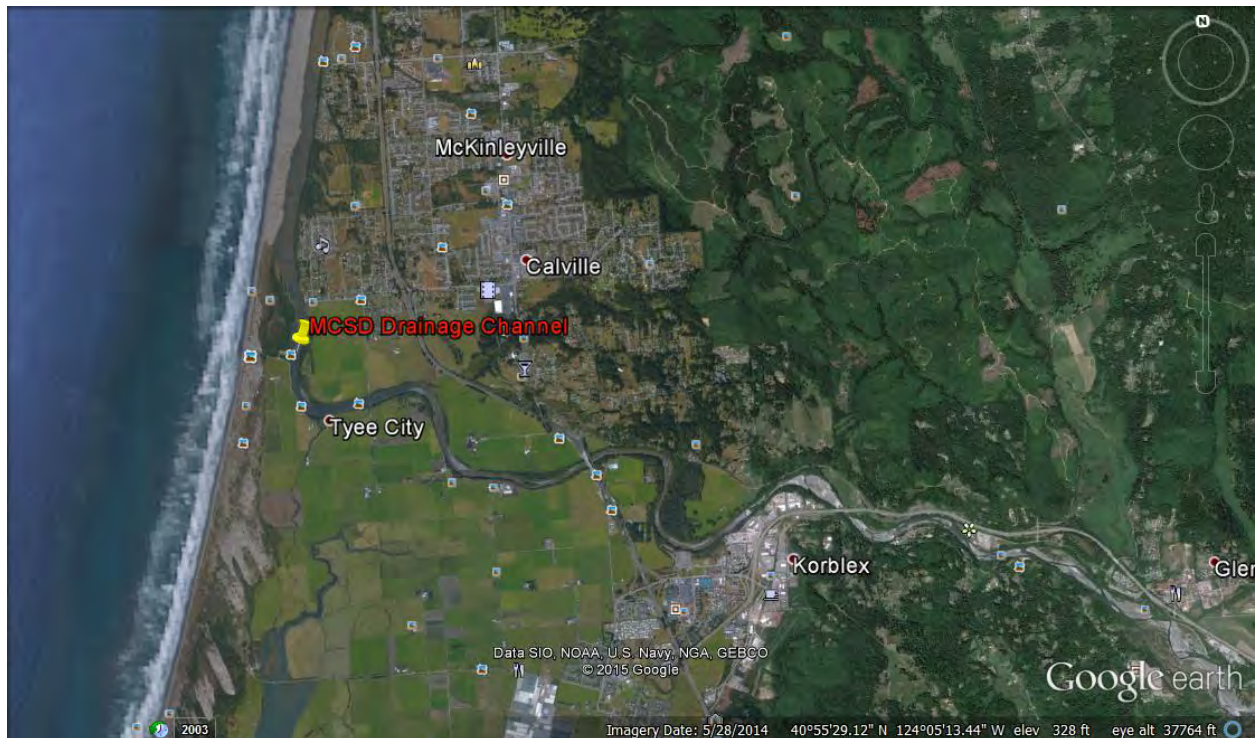


Figure 1 – Overview of MCSD Sampling Area

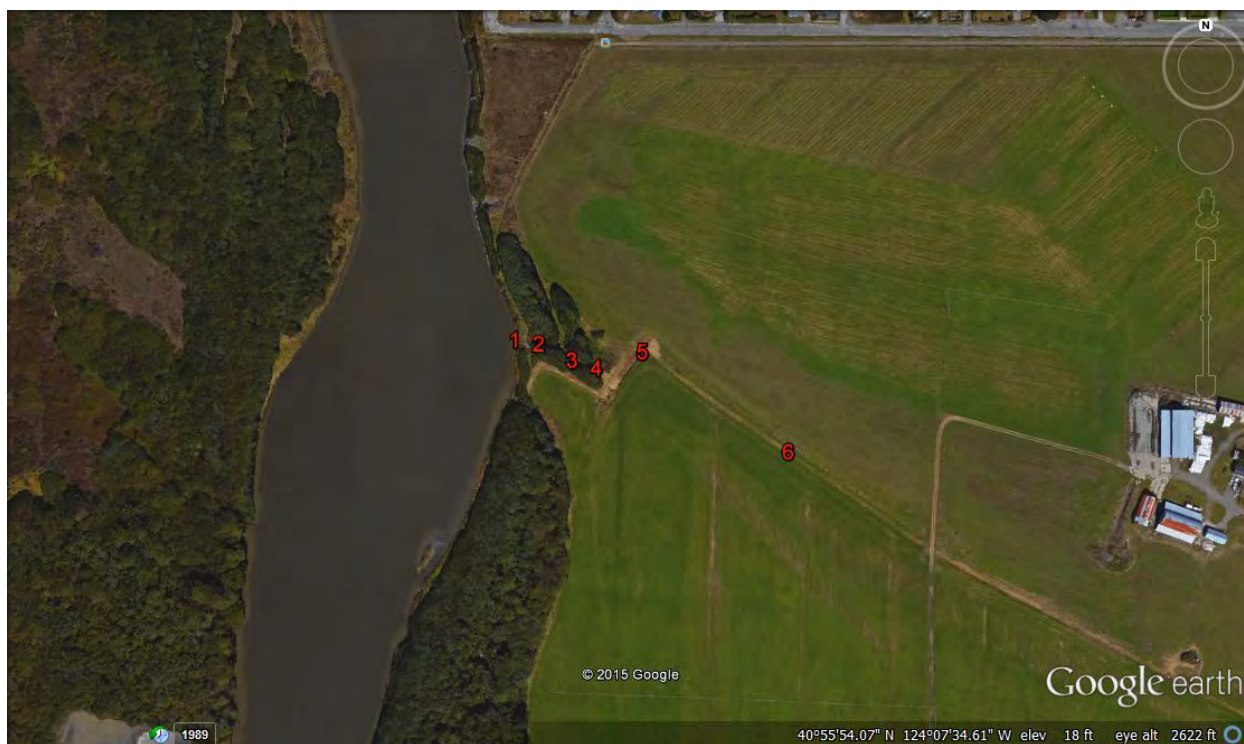


Figure 2 – Specific Sampling sites

Results

Site Number	Site Description	Temperature ©	Dissolved Oxygen (mg/l)	Species	Catch
1	Mad River at channel confluence	8.6	11.1	Stickleback	1
2	Ten feet above footbridge in drainage channel	9.5	8.1	No Fish	0
3	Pool below tidegate	9.3	6.7	Stickleback	1
4	Pool above tidegate	9.2	6.5	No Fish	0
5	Slow water habitat at 90 degree turn in pasture channel	9.2	6.5	Coho (95mm)	1
5	Slow water habitat at 90 degree turn in pasture channel	9.2	6.5	Prickly Sculpin	1
6	Pasture Channel	9.3	6.4	Stickleback	2

APPENDIX B: SHN FILL REUSE REPORT



Reference: 015169

June 28, 2016

Ms. Mary Burke
California Trout, Inc.
615 - 11th Street
Arcata, CA 95521

Subject: Fieldwork Summary, Suitability of Levee Material for Reuse as Fill for McKinleyville Community Services District Ponds, Mad River, McKinleyville, California

Introduction

This letter presents the results of SHN Engineers & Geologists summary of fieldwork and qualitative assessment for the potential reuse of pond levee soils as select engineered and/or general fill material. The scope of work included the following:

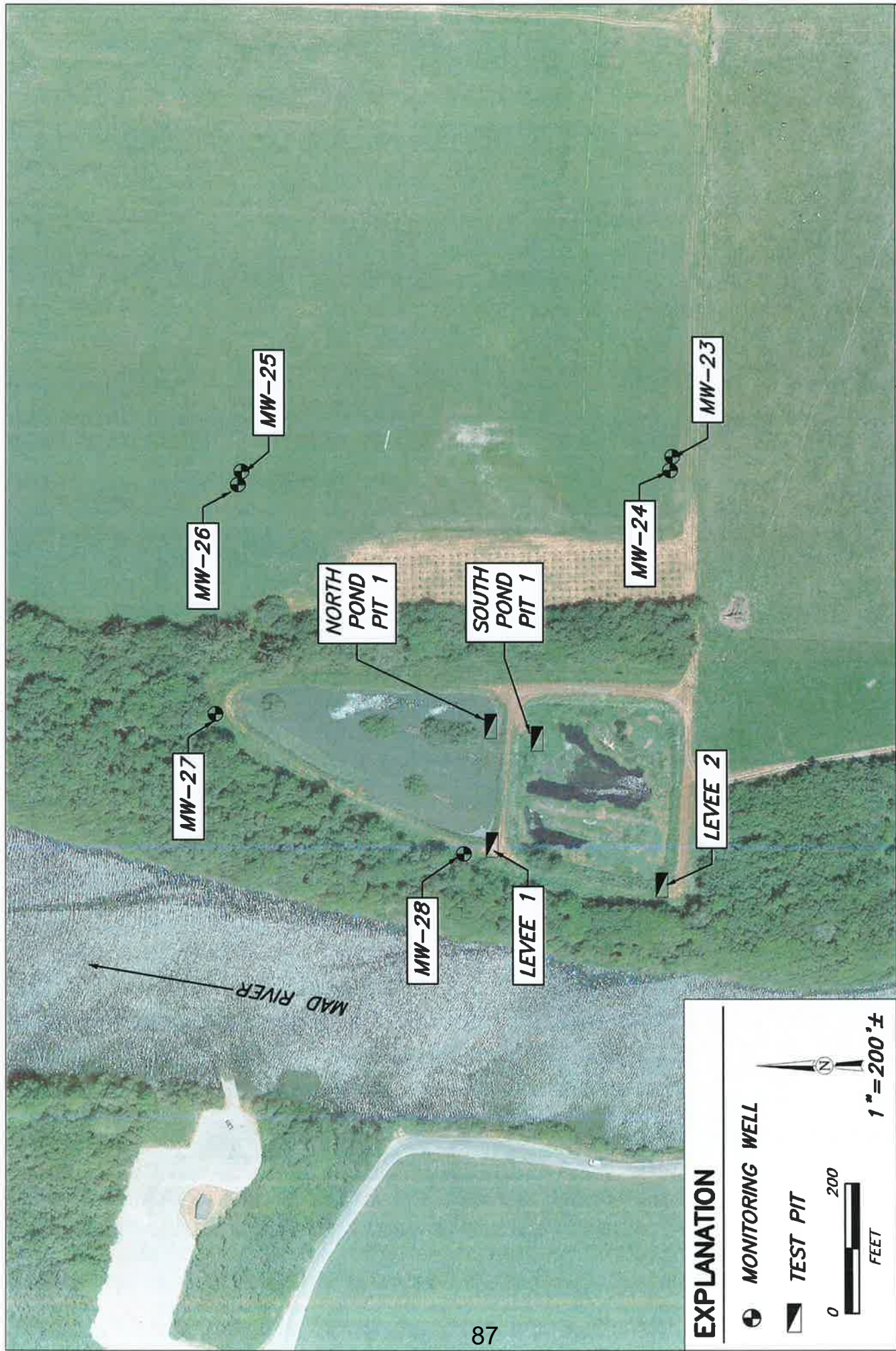
- Installing six groundwater monitoring wells
- Installing four backhoe test pits
- Laboratory analysis of select soil samples
- Submittal of this work summary

SHN's characterization of the levee material is based on our observations of subsurface conditions conducted during the excavation of backhoe test pits into the levee slopes and pond edges. As part of this investigation, SHN conducted laboratory testing of bulk soil samples collected from the test pits. The laboratory testing program included sieve analyses and a determination of the materials plasticity.

Soil profile logs for excavations and monitoring wells are included as Attachment 1. Laboratory test data is included as Attachment 2. Notes and forms describing procedures and observations made during field work to install monitoring wells and excavations are included in Attachment 3. A site map presenting approximate locations of monitoring wells and test pits installed during field efforts is presented as Figure 1.

Reuse of Levee Material as Select Engineered Fill

In general, select fill used for construction purposes including road and trail building, and foundation support typically consists of non-plastic and non-expansive granular soil that is free of organic materials and contains less than 30% fines (silt and clay combined). The sieve analysis and plastic index test results indicate that the upper 3 feet of the levee fill may meet the minimum



EXPLANATION

- MONITORING WELL
- TEST PIT
- 0 200 FEET
- 1" = 200' ±

NOTE: ALL LOCATIONS ARE APPROXIMATE;
BASEMAP FROM GOOGLE EARTH (2014)



California Trout, Inc.
MCSD Ponds
Fischer Ranch, McKinleyville, California
June 2016
Figure1_SiteMap

Site Map
SHN 015169

Figure 1

criteria to be considered as select engineered fill. This material consists of rounded, fine to coarse gravel and sand used to armor the levee slope faces. Provided this gravelly material is segregated during levee removal it has the potential to be reused as select engineered fill. The material appears well suited for use as sub-base for any future roads and/or trails at the project site provided the sub-base is properly compacted and armored with a layer of crushed aggregate base rock.

The soil test pit logs indicate that the levee materials grade finer with depth and are comprised largely of silt and fine sand with low plasticity fines. On this basis, we expect that the majority of the levee materials will not meet the minimum criteria to be considered as select fill. It is also expected that the levee materials will be extremely heterogeneous, which will likely be difficult to compact. Therefore, it is recommended that levee material below a depth of about 3 feet not be used as select structural fill to support concrete foundations, retaining walls, roadways, or any other type of structure that will rely on compacted fill for bearing support.

Reuse of Levee Material as General Fill

Soil obtained from the core of the levees and pond bottoms may be suitable for use as general fill, provided the materials are free of debris and organic matter. General fill may be used for raising site grades on grazing land and pastures, infilling drainage swales and ditches, or as landscaping fill. Proper compaction of general fill, if required, will depend on the moisture content at the time of compaction. It is expected that the moisture content of the levee materials will generally exceed optimum moisture levels for compaction immediately after levee removal. Levee material to be reused as general fill will require aeration prior to reuse.

Because the levee soils to be used as general fill is likely to be heterogeneous, mixing, blending, and moisture conditioning will be required to create a material that can be placed and adequately compacted. All fill stockpiles should be scarified, plowed, disked, and/or bladed until the material is uniform in consistency and free of large, unbroken clods of soil. Clods of soil or rock particles larger than 4 inches in greatest dimension either should be broken down by heavy earthmoving equipment or removed from the fill during placement.

The placement of levee material as general fill during the wet season could be problematic due the fine-grained nature of the material and its high moisture holding capacity. Over-optimum moisture conditions will greatly influence the time and effort required to achieve minimum compaction requirements. Wet or over-saturated plastic soils will also be difficult to spread with heavy equipment.

Ms. Mary Burke
Suitability of Levee Material for Reuse as Fill
June 28, 2016
Page 3

Please call me at 707-441-8855 if you have any questions.

Sincerely,

SHN Engineers & Geologists



Giovanni A. Vadurro
Engineering Geologist



GAV:lms

Attachments: 1. Test Pit and Monitoring Well Logs
2. Laboratory Test Data
3. Field Notes and Forms

1

Test Pit and Monitoring Well Logs



Consulting Engineers & Geologists, Inc.

812 West Wabash, Eureka, CA 95501
350 Hartnell Ave. St B, Redding, CA 96002

ph. (707) 441-8855 fax. (707) 441-8877
ph. (530) 221-5424 fax. (530) 221-0135

PROJ. NAME: CALTrout-MCSD
PROJ. NUMBER: 015169
OPERATOR: MCSD
EXCAVATION METHOD: Backhoe
SAMPLER TYPE: Grab
LOGGED BY: J. Wellik

LOCATION: Fischer Ranch, McKinleyville, CA
GROUND ELEV.: 21 feet NAVD88
DEPTH OF EXCAVATION: 7 feet
INITIAL WATER LEVEL: NA
STABILIZED WATER LEVEL: NA
DATE: 4/25/2016

EXCAVATION ID
Levee 1

ELEVATION (ft) DEPTH (FT.)	WATER LEVEL	SAMPLE % RECOVERY INTERVAL	USCS	LITHOLOGY	SOIL DESCRIPTION	REMARKS
21 0			SM		SILTY SAND WITH GRAVEL, yellowish brown, moist, loose, fine sand, fine to coarse rounded gravel, silt.	
20 -1						
19 -2						
18 -3						
17 -4		100	ML/SM		SANDY SILT, olive, soft, moist, silt, fine sand, occasional roots, low plasticity.	
16 -5						
15 -6			SM		SILTY SAND, bluish gray, moist, loose to medium dense, fine sand, silt.	
14 -7						
13 -8						

The log and data presented are a simplification of actual conditions encountered at the time of drilling at the drilled location. Subsurface conditions may differ at other locations and with the passage of time.

FIELD LOG

Page Number 1 of 1



Consulting Engineers & Geologists, Inc.

812 West Wabash, Eureka, CA 95501
350 Hartnell Ave. St B, Redding, CA 96002

ph. (707) 441-8855 fax. (707) 441-8877
ph. (530) 221-5424 fax. (530) 221-0135

PROJ. NAME: CALTrout-MCSD
PROJ. NUMBER: 015169
OPERATOR: MCSD
EXCAVATION METHOD: Backhoe
SAMPLER TYPE: Grab
LOGGED BY: J. Wellik

LOCATION: Fischer Ranch, McKinleyville, CA
GROUND ELEV.: 21 feet NAVD88
DEPTH OF EXCAVATION: 10 feet
INITIAL WATER LEVEL: NA
STABILIZED WATER LEVEL: NA
DATE: 4/25/2016

EXCAVATION ID

Levee 2

ELEVATION (ft) DEPTH (FT.)	WATER LEVEL	SAMPLE % RECOVERY INTERVAL	USCS	LITHOLOGY	SOIL DESCRIPTION	REMARKS
21 0			SM		SILTY SAND WITH GRAVEL, yellowish brown, moist, loose, fine sand, fine to coarse rounded gravel, silt.	
20 -1						
19 -2						
18 -3			ML/ SM		SANDY SILT, olive, soft, moist, silt, fine sand, low plasticity.	
17 -4						
16 -5		100				
15 -6						
14 -7						
13 -8						
12 -9			SM		POORLY GRADED SAND WITH SILT, grayish brown, moist, loose to medium dense, fine sand, silt.	
11 -10						
10 -11						

The log and data presented are a simplification of actual conditions encountered at the time of drilling at the drilled location. Subsurface conditions may differ at other locations and with the passage of time

FIELD LOG

Page Number 1 of 1



Consulting Engineers & Geologists, Inc.

812 West Wabash, Eureka, CA 95501
350 Hartnell Ave. St B, Redding, CA 96002

ph. (707) 441-8855 fax. (707) 441-8877
ph. (530) 221-5424 fax. (530) 221-0135

PROJ. NAME: CALTrout-MCSD
PROJ. NUMBER: 015169
OPERATOR: MCSD
EXCAVATION METHOD: Backhoe
SAMPLER TYPE: NA
LOGGED BY: J. Wellik

LOCATION: Fischer Ranch, McKinleyville, CA
GROUND ELEV.: 11 feet NAVD88
DEPTH OF EXCAVATION: 4.5 feet
INITIAL WATER LEVEL: 4.5 feet
STABILIZED WATER LEVEL: NA
DATE: 4/25/2016

EXCAVATION ID
North Pond Pit 1

ELEVATION (ft) DEPTH (FT.)	WATER LEVEL	SAMPLE % RECOVERY INTERVAL	USCS	LITHOLOGY	SOIL DESCRIPTION	REMARKS
11 0			SM/ ML		SILTY SAND, olive, loose, moist, fine sand, silt, trace fine rounded gravel, sulfur odor present.	
10 -1						
9 -2						
8 -3		100				
7 -4			ML PT ML SM/ SP		SILT WITH SAND, olive, soft, moist, silt, fine sand, low plasticity. PEAT, dark reddish brown, moist, fibrous texture, roots, wood, fine sand, silt. SILT WITH SAND, olive, soft, moist, silt, fine sand, low plasticity. POORLY GRADED SAND WITH SILT, gray with salt and pepper sand grains, loose, wet, fine to medium sand, silt, sulfur odor present.	
6 -5						sidewall failure occurring due to poorly cohesive soils that comprise the sidewalls and presence of the water table
5 -6						

The log and data presented are a simplification of actual conditions encountered at the time of drilling at the drilled location. Subsurface conditions may differ at other locations and with the passage of time.

FIELD LOG

Page Number 1 of 1



Consulting Engineers & Geologists, Inc.

812 West Wabash, Eureka, CA 95501
350 Hartnell Ave. St B, Redding, CA 96002

ph. (707) 441-8855 fax. (707) 441-8877
ph. (530) 221-5424 fax. (530) 221-0135

PROJ. NAME: CALTrout-MCSD
PROJ. NUMBER: 015169
OPERATOR: MCSD
EXCAVATION METHOD: Backhoe
SAMPLER TYPE: NA
LOGGED BY: J. Wellik

LOCATION: Fischer Ranch, McKinleyville, CA
GROUND ELEV.: 11 feet NAVD88
DEPTH OF EXCAVATION: 5 feet
INITIAL WATER LEVEL: 4.75 feet
STABILIZED WATER LEVEL: NA
DATE: 4/25/2016

EXCAVATION ID
South Pond Pit 1

ELEVATION (ft) DEPTH (FT.)	WATER LEVEL	SAMPLE % RECOVERY INTERVAL	USCS	LITHOLOGY	SOIL DESCRIPTION	REMARKS
11 0			SM/ ML		SILTY SAND, olive, loose, moist, fine sand, silt, trace fine rounded gravel, sulfur odor present.	
10 -1						
9 -2						
8 -3		100				
7 -4						
6 -5			SM/ SP		POORLY GRADED SAND WITH SILT, gray with salt and pepper sand grains, loose, wet, fine to medium sand, silt, sulfur odor present.	sidewall failure occurring due to poorly cohesive soils that comprise the sidewalls and presence of the water table
5 -6						

The log and data presented are a simplification of actual conditions encountered at the time of drilling at the drilled location. Subsurface conditions may differ at other locations and with the passage of time.

FIELD LOG

Page Number 1 of 1



Consulting Engineers & Geologists, Inc.

812 West Wabash, Eureka, CA 95501
350 Hartnell Ave. St B, Redding, CA 96002

ph. (707) 441-8855 fax. (707) 441-8877
ph. (530) 221-5424 fax. (530) 221-0135

PROJ. NAME: CalTrout-MCSD
PROJ. NUMBER: 015169
DRILLER: Fisch Environmental
DRILLING METHOD: GeoProbe
SAMPLER TYPE: Dual-Tube
LOGGED BY: J. Wellik

LOCATION: Fischer Ranch, McKinleyville, CA
GROUND ELEV.: ~16 Feet NAVD88
DEPTH OF BORING/WELL: 20/20 feet
INITIAL WATER LEVEL: NA
STABILIZED WATER LEVEL: NA
DATE: 11/23/2015

MONITORING WELL ID

MW-23

ELEVATION (ft) DEPTH (FT.)	WATER LEVEL	SAMPLE % RECOVERY INTERVAL	USCS	LITHOLOGY	SOIL DESCRIPTION	REMARKS	MONITORING WELL CONSTRUCTION
19 - 3							
18 - 2							1.5-inch diameter Blank PVC casing
17 - 1							
16 - 0							
15 - -1			ML		SANDY SILT, olive to grayish brown, soft, moist, silt, fine sand, roots in top 6 inches of return, no plasticity.		
14 - -2		75					cement slurry seal
13 - -3							
12 - -4							
11 - -5			ML		SILT WITH SAND, olive to grayish brown, soft, moist, silt/clay, fine sand, low plasticity.	mottling present above 8 feet	
10 - -6		70					
9 - -7							
8 - -8			CL/ML		LEAN CLAY, gray, soft, moist, clay, silt, fine sand, moderate plasticity.	Soil Sample Collected	
7 - -9							
6 - -10		85					
5 - -11							
4 - -12							
3 - -13							hydrated bentonite seal
2 - -14		100					
1 - -15							
0 - -16						minor manganese precipitation below 15 feet BGS	#8 sand filter pack
-1 - -17					SANDY SILT, gray, soft, moist, silt, fine sand, low plasticity.	Soil Sample Collected	
-2 - -18		100	ML/CL/ML/PT		LEAN CLAY, gray, soft, moist, clay, silt, fine sand, low plasticity.		1.5-inch diameter 0.010 slot PVC screen
-3 - -19							
-4 - -20						Halt at 20 feet BGS in same	
-5 - -21					INTERBEDDED PEAT AND LEAN CLAY, peat is brown to black, soft, moist, 100 percent organic detritus; clay is gray, soft, moist, and comprises clay, silt, fine sand, low plasticity.		
-6 - -22							
-7 - -23							
-8 - -24							
-9 - -25							

The log and data presented are a simplification of actual conditions encountered at the time of drilling at the drilled location. Subsurface conditions may differ at other locations and with the passage of time

WELL LOG

Page Number 1 of 1



Consulting Engineers & Geologists, Inc.

812 West Wabash, Eureka, CA 95501
350 Hartnell Ave. St B, Redding, CA 96002

ph. (707) 441-8855 fax. (707) 441-8877
ph. (530) 221-5424 fax. (530) 221-0135

PROJ. NAME: CalTrout-MCSD
PROJ. NUMBER: 015169
DRILLER: Fisch Environmental
DRILLING METHOD: GeoProbe
SAMPLER TYPE: Dual-Tube
LOGGED BY: J. Wellik

LOCATION: Fischer Ranch, McKinleyville, CA
GROUND ELEV.: ~16 Feet NAVD88
DEPTH OF BORING/WELL: 10/10 feet
INITIAL WATER LEVEL: NA
STABILIZED WATER LEVEL: NA
DATE: 11/23/2015

MONITORING WELL ID

MW-24

ELEVATION (ft) DEPTH (FT.)	WATER LEVEL	SAMPLE % RECOVERY INTERVAL	USCS	LITHOLOGY	SOIL DESCRIPTION	REMARKS	MONITORING WELL CONSTRUCTION
19 - 3							
18 - 2							1.5-inch diameter Blank PVC casing
17 - 1							
16 - 0			ML		SANDY SILT, olive to grayish brown, soft, moist, silt, fine sand, roots in top 6 inches of return, no plasticity.		
15 - -1		85					cement slurry seal
14 - -2							
13 - -3							hydrated bentonite seal
12 - -4							
11 - -5			ML		SILT WITH SAND, olive to grayish brown, soft, moist, silt/clay, fine sand, low plasticity.	mottling present above 8 feet	#8 sand filter pack
10 - -6		85					
9 - -7							
8 - -8			CL/ML		LEAN CLAY, gray, soft, moist, clay, silt, fine sand, moderate plasticity.		1.5-inch diameter 0.010 slot PVC screen
7 - -9		100					
6 - -10						Halt at 10 feet BGS in same	
5 - -11							

The log and data presented are a simplification of actual conditions encountered at the time of drilling at the drilled location. Subsurface conditions may differ at other locations and with the passage of time.

WELL LOG

Page Number 1 of 1



Consulting Engineers & Geologists, Inc.

812 West Wabash, Eureka, CA 95501
350 Hartnell Ave. St B, Redding, CA 96002

ph. (707) 441-8855 fax. (707) 441-8877
ph. (530) 221-5424 fax. (530) 221-0135

PROJ. NAME: CalTrout-MCSD
PROJ. NUMBER: 015169
DRILLER: Fisch Environmental
DRILLING METHOD: GeoProbe
SAMPLER TYPE: Dual-Tube
LOGGED BY: J. Wellik

LOCATION: Fischer Ranch, McKinleyville, CA
GROUND ELEV.: ~12 Feet NAVD88
DEPTH OF BORING/WELL: 20/20 feet
INITIAL WATER LEVEL: 16 feet BGS
STABILIZED WATER LEVEL: NA
DATE: 11/23/2015

MONITORING WELL ID

MW-25

ELEVATION (ft) DEPTH (FT.)	WATER LEVEL	SAMPLE % RECOVERY INTERVAL	USCS	LITHOLOGY	SOIL DESCRIPTION	REMARKS	MONITORING WELL CONSTRUCTION
15 - 3							
14 - 2							1.5-inch diameter Blank PVC casing
13 - 1							
12 - 0							
11 - -1			SM		SILTY SAND, olive to grayish brown, loose, moist, fine sand, silt, clay, roots/organics at ground surface, non-plastic.	iron mottling present between 0 and 7 feet BGS	
10 - -2		90					cement slurry seal
9 - -3			ML				
8 - -4					SANDY SILT, grayish brown, soft, moist, silt, fine sand, low plasticity.		
7 - -5			ML/CL				
6 - -6		80			SILT WITH SAND, olive with iron mottling present, soft, moist, silt, fine sand, low plasticity.		
5 - -7			CL/PT				
4 - -8					LEAN CLAY, gray with yellowish brown streaks, soft, moist, clay, fine sand, moderate plasticity, organic content high at thin peat layers.	Soil Sample Collected	
3 - -9		75				Interbedded Clay and Peat layers are present from approximately 7 to 14 feet BGS; Peat layer thicknesses vary between 0.5 inch to 5 inches.	
2 - -10			PT/SM		PEAT, brown to reddish brown, organic detritus, moist, interbedded with silty sand		
1 - -11							
0 - -12			CL/PT		LEAN CLAY, gray, soft, moist, clay, fine sand, moderate plasticity, interbedded with peat		hydrated bentonite seal
-1 - -13		80					
-2 - -14							
-3 - -15			SM/PT		SILTY SAND, gray, loose, wet, fine sand, silt, clay, non-plastic, interbedded with peat.	Soil Sample Collected	#8 sand filter pack
-4 - -16							
-5 - -17							
-6 - -18		100	PT		PEAT, brown to reddish brown, organic detritus, moist.	Interbedded Silty Sand and Peat layers are present from approximately 16 to 17 feet BGS; Peat layer thicknesses vary between 1 inch to 2 inches.	1.5-inch diameter 0.010 slot PVC screen
-7 - -19						Halt at 20 feet BGS in same	
-8 - -20							
-9 - -21							
-10 - -22							
-11 - -23							
-12 - -24							
-13 - -25							

The log and data presented are a simplification of actual conditions encountered at the time of drilling at the drilled location. Subsurface conditions may differ at other locations and with the passage of time

WELL LOG

Page Number 1 of 1



Consulting Engineers & Geologists, Inc.

812 West Wabash, Eureka, CA 95501
350 Hartnell Ave. St B, Redding, CA 96002

ph. (707) 441-8855 fax. (707) 441-8877
ph. (530) 221-5424 fax. (530) 221-0135

PROJ. NAME: CalTrout-MCSD
PROJ. NUMBER: 015169
DRILLER: Fisch Environmental
DRILLING METHOD: GeoProbe
SAMPLER TYPE: Dual-Tube
LOGGED BY: J. Wellik

LOCATION: Fischer Ranch, McKinleyville, CA
GROUND ELEV.: ~12 Feet NAVD88
DEPTH OF BORING/WELL: 10/10 feet
INITIAL WATER LEVEL: 5 feet BGS
STABILIZED WATER LEVEL: NA
DATE: 11/23/2015

MONITORING WELL ID
MW-26

ELEVATION (ft) DEPTH (FT.)	WATER LEVEL	SAMPLE % RECOVERY INTERVAL	USCS	LITHOLOGY	SOIL DESCRIPTION	REMARKS	MONITORING WELL CONSTRUCTION
15 3							
14 2							1.5-inch diameter Blank PVC casing
13 1							
12 0			SM		SILTY SAND, olive, loose, moist to wet from 5 to 6 feet BGS, fine sand, silt, clay, low plasticity, roots in top 4 inches.	Iron mottling present to 6.5 feet BGS	
11 -1							cement slurry seal
10 -2		75				clay fraction increases	hydrated bentonite seal
9 -3							
8 -4							
7 -5	▽						#8 sand filter pack
6 -6		80					
5 -7			ML/ CL		SILT WITH SAND, gray, soft, moist, silt, clay, fine sand, low plasticity.		1.5-inch diameter 0.010 slot PVC screen
4 -8							
3 -9		100					
2 -10							
1 -11							

The log and data presented are a simplification of actual conditions encountered at the time of drilling at the drilled location. Subsurface conditions may differ at other locations and with the passage of time.

WELL LOG

Page Number 1 of 1



Consulting Engineers & Geologists, Inc.

812 West Wabash, Eureka, CA 95501
350 Hartnell Ave. St B, Redding, CA 96002

ph. (707) 441-8855 fax. (707) 441-8877
ph. (530) 221-5424 fax. (530) 221-0135

PROJ. NAME: CalTrout-MCSD
PROJ. NUMBER: 015169
DRILLER: Fisch Environmental
DRILLING METHOD: GeoProbe
SAMPLER TYPE: Dual-Tube
LOGGED BY: J. Wellik

LOCATION: Fischer Ranch, McKinleyville, CA
GROUND ELEV.: ~12 Feet NAVD88
DEPTH OF BORING/WELL: 20/20 feet
INITIAL WATER LEVEL: 1 foot BGS
STABILIZED WATER LEVEL: NA
DATE: 11/24/2015

MONITORING WELL ID
MW-27

ELEVATION (ft) DEPTH (FT.)	WATER LEVEL	SAMPLE % RECOVERY INTERVAL	USCS	LITHOLOGY	SOIL DESCRIPTION	REMARKS	MONITORING WELL CONSTRUCTION
15 - 3							
14 - 2							1.5-inch diameter Blank PVC casing
13 - 1							
12 - 0							
11 - -1			ML		SANDY ORGANIC SOIL, brown, soft, moist, silt, clay, fine sand, low plasticity, roots.		
10 - -2		50	SM				cement slurry seal
9 - -3							
8 - -4			SW/		SILTY SAND, olive gray, loose, wet, fine sand, silt, non-plastic.		
7 - -5			GP				
6 - -6		40			WELL GRADED SAND WITH GRAVEL, gray, loose, wet, well graded sand, fine rounded to subrounded gravel, trace silt, non-plastic.		
5 - -7							
4 - -8							
3 - -9							hydrated bentonite seal
2 - -10		40					
1 - -11							
0 - -12						soil sample collected	#8 sand filter pack
-1 - -13							
-2 - -14		10					
-3 - -15							
-4 - -16							
-5 - -17							
-6 - -18		60					1.5-inch diameter 0.010 slot PVC screen
-7 - -19			CL		LEAN CLAY, gray, firm, moist, clay, silt, fine sand, medium plasticity.	Halt at 20 feet BGS in same.	
-8 - -20							
-9 - -21							
-10 - -22							
-11 - -23							
-12 - -24							
-13 - -25							

The log and data presented are a simplification of actual conditions encountered at the time of drilling at the drilled location. Subsurface conditions may differ at other locations and with the passage of time.

WELL LOG

Page Number 1 of 1



Consulting Engineers & Geologists, Inc.

812 West Wabash, Eureka, CA 95501
350 Hartnell Ave. St B, Redding, CA 96002

ph. (707) 441-8855 fax. (707) 441-8877
ph. (530) 221-5424 fax. (530) 221-0135

PROJ. NAME: CalTrout-MCSD
PROJ. NUMBER: 015169
DRILLER: Fisch Environmental
DRILLING METHOD: GeoProbe
SAMPLER TYPE: Dual-Tube
LOGGED BY: J. Wellik

LOCATION: Fischer Ranch, McKinleyville, CA
GROUND ELEV.: ~12 Feet NAVD88
DEPTH OF BORING/WELL: 20/20 feet
INITIAL WATER LEVEL: 7 feet BGS
STABILIZED WATER LEVEL: NA
DATE: 11/24/2015

MONITORING WELL ID
MW-28

ELEVATION (ft) DEPTH (FT.)	WATER LEVEL	SAMPLE % RECOVERY INTERVAL	USCS	LITHOLOGY	SOIL DESCRIPTION	REMARKS	MONITORING WELL CONSTRUCTION
15 3							
14 2							
13 1							1.5-inch diameter Blank PVC casing
12 0							
11 -1			OL		ORGANIC SOIL WITH SAND, brown, soft, moist, organic detritus/roots, silt, fine sand, non-plastic.		
10 -2		50	SM/GM				cement slurry seal
9 -3							
8 -4					SILTY SAND, yellowish brown, loose, moist grading to dry at 0.5 feet BGS, fine sand, silt, non-plastic.		
7 -5			SW/SM				
6 -6		50			SILTY SAND WITH GRAVEL, yellowish brown, loose, dry, well graded sand, well graded rounded to subrounded gravel, silt, non-plastic.		
5 -7			GW				hydrated bentonite seal
4 -8							
3 -9					WELL GRADED SAND WITH SILT, gray, loose, dry grading to wet at 7 feet BGS, well graded sand, silt, trace coarse subrounded to rounded gravel, non-plastic.		
2 -10		60				soil sample collected	#8 sand filter pack
1 -11							
0 -12					WELL GRADED GRAVEL WITH SAND, gray, loose, wet, well graded subrounded to rounded gravel, well graded sand, trace silt, non-plastic.		
-1 -13		60					
-2 -14							
-3 -15							
-4 -16							
-5 -17							
-6 -18		0					1.5-inch diameter 0.010 slot PVC screen
-7 -19							
-8 -20						Halt at 20 feet BGS in same.	
-9 -21							
-10 -22							
-11 -23							
-12 -24							
-13 -25							

The log and data presented are a simplification of actual conditions encountered at the time of drilling at the drilled location. Subsurface conditions may differ at other locations and with the passage of time.

WELL LOG

Page Number 1 of 1

2

Laboratory Test Data



CONSULTING ENGINEERS & GEOLOGISTS, INC.

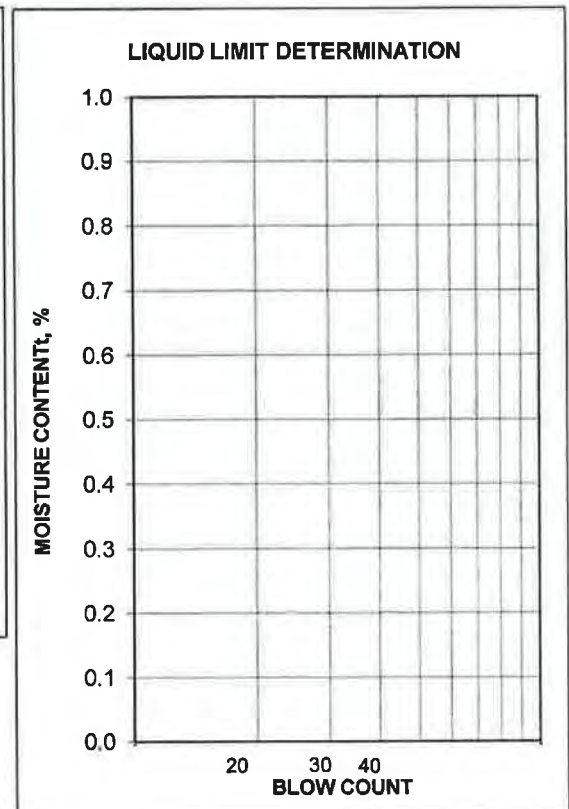
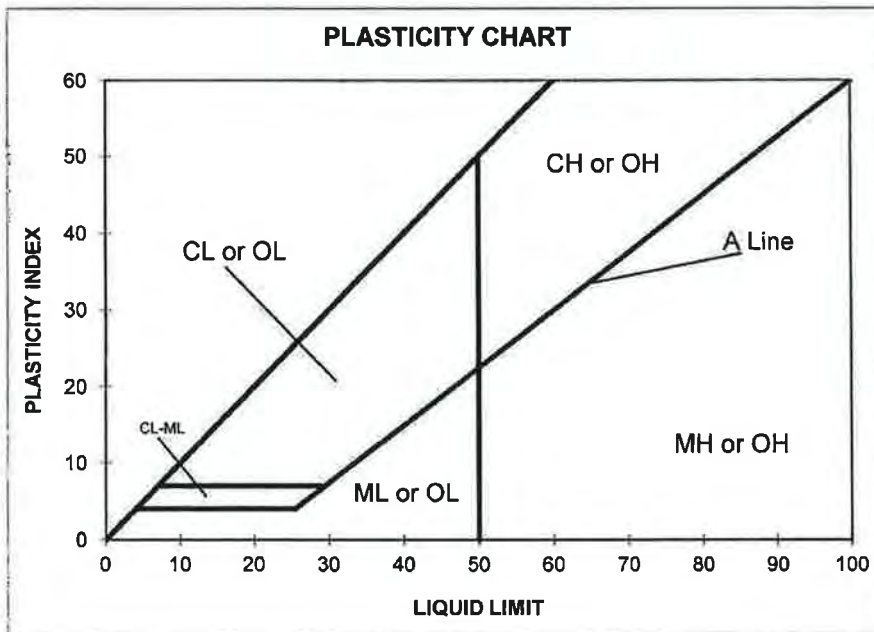
812 W. Wabash Eureka, CA 95501-2138 Tel: 707/441-8855 FAX: 707/441-8877 E-mail: shninfo@shn-engr.com

LIQUID LIMIT, PLASTIC LIMIT, and PLASTICITY INDEX (ASTM-D4318)

JOB NAME: Trout MCSD JOB #: 015169 LAB SAMPLE #: 16-445
SAMPLE ID: Levee 1 0-12" PERFORMED BY: JMA DATE: 4/28/2016
PROJECT MANGER: RR CHECKED BY: [Signature] DATE: 5/2/16

LINE NO.		TRIAL NO. 1	TRIAL NO. 2	TRIAL NO. 1	TRIAL NO. 2	TRIAL NO. 3
A	PAN #	15	16	4	5	6
B	PAN WT. (g)	20.590	21.000	29.310	28.790	29.600
C	WT. WET SOIL & PAN (g)					
D	WT. DRY SOIL & PAN (g)					
E	WT. WATER (C-D)					
F	WT. DRY SOIL (D-B)					
G	BLOW COUNT	--	--			
H	MOISTURE CONTENT (E/F*100)	NP	NP	NP	NP	NP

LIQUID LIMIT	PLASTIC INDEX	PLASTIC LIMIT
	Non Plastic	





CONSULTING ENGINEERS & GEOLOGISTS, INC.

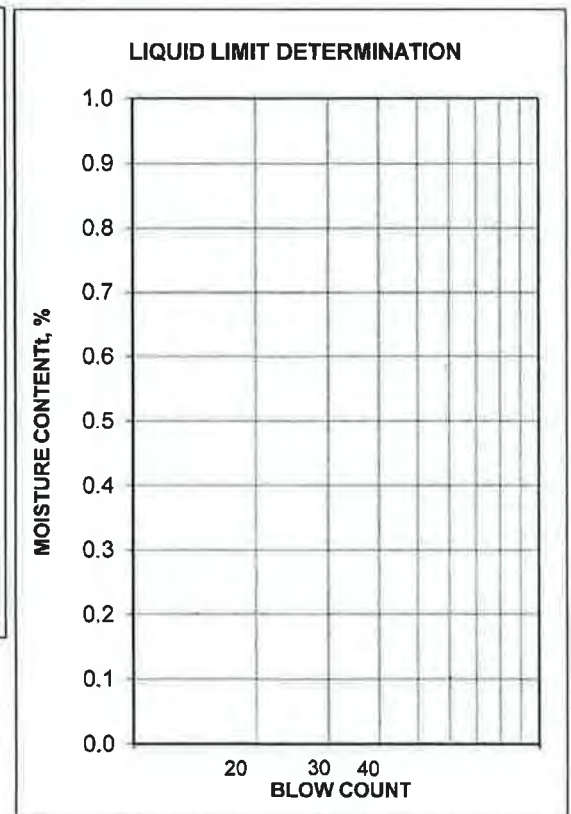
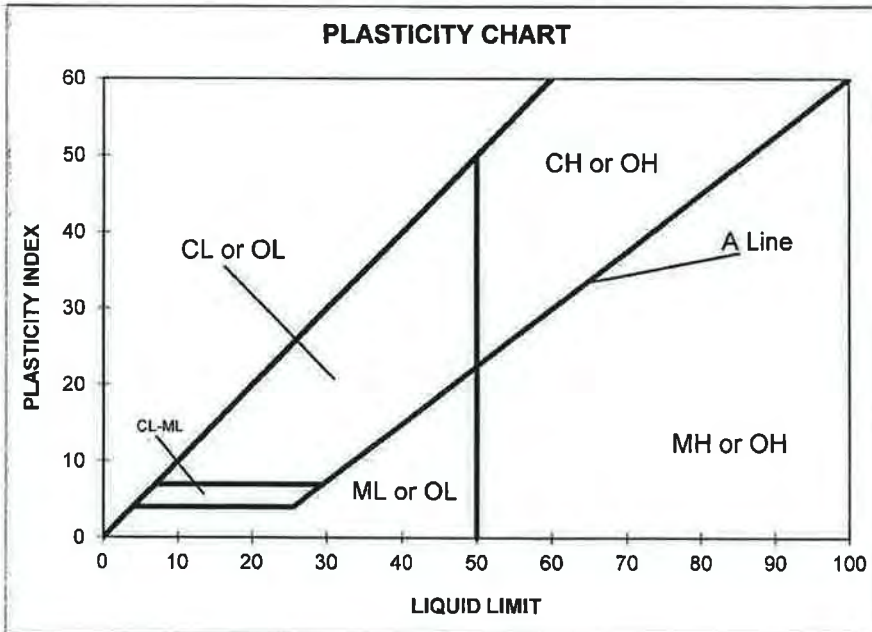
812 W. Wabash Eureka, CA 95501-2138 Tel: 707/441-8855 FAX: 707/441-8877 E-mail: shninfo@shn-engr.com

LIQUID LIMIT, PLASTIC LIMIT, and PLASTICITY INDEX (ASTM-D4318)

JOB NAME: Trout MCSD JOB #: 015169 LAB SAMPLE #: 16-446
 SAMPLE ID: Levee 2 0-12" PERFORMED BY: JMA DATE: 4/28/2016
 PROJECT MANGER: RR CHECKED BY: *[Signature]* DATE: 5/3/16

LINE NO.		TRIAL NO. 1	TRIAL NO. 2	TRIAL NO. 1	TRIAL NO. 2	TRIAL NO. 3
A	PAN #	17	18	1	2	3
B	PAN WT. (g)	20.440	20.220	29.860	29.220	29.240
C	WT. WET SOIL & PAN (g)					
D	WT. DRY SOIL & PAN (g)					
E	WT. WATER (C-D)					
F	WT. DRY SOIL (D-B)					
G	BLOW COUNT	--	--			
H	MOISTURE CONTENT (E/F*100)	NP	NP	NP	NP	NP

LIQUID LIMIT	PLASTIC INDEX	PLASTIC LIMIT
	Non Plastic	





CONSULTING ENGINEERS & GEOLOGISTS, INC.

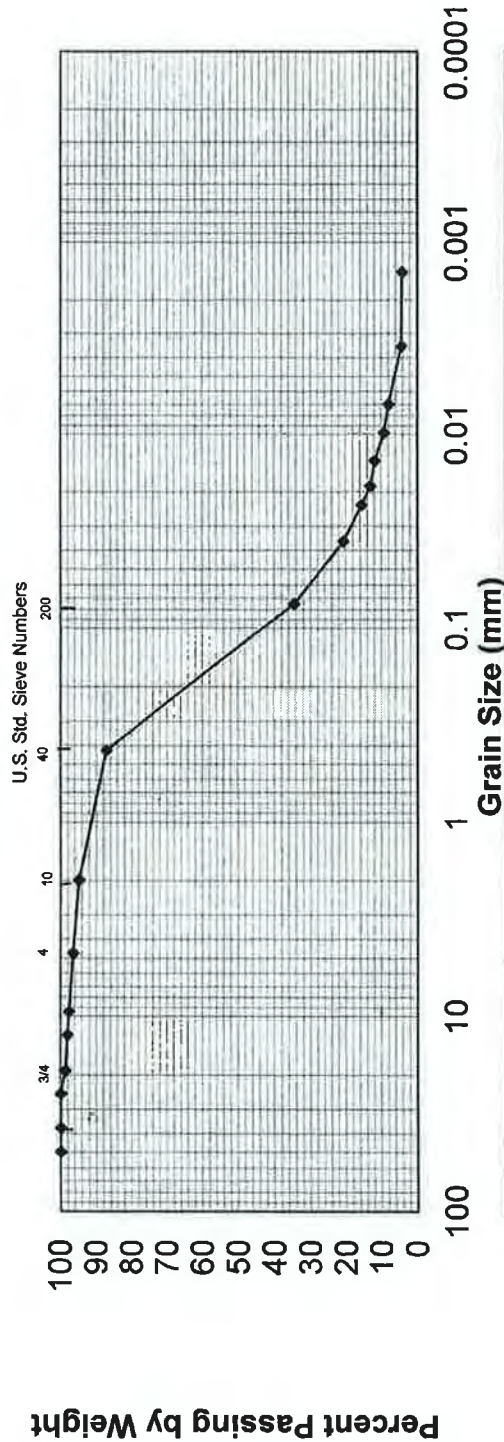
812 W. Wabash Eureka, CA 95501-2138 Tel: 707/441-9877 Fax: 707/441-9877 E-mail: shirinfo@shir-engr.com

Project Name: **Trout MCSD**
 Boring ID: **--**
 Sample Depth: **0-12"**
 Sample Number: **Levee 2**

Project Number: **015169**
 Lab #: **16-446**
 Checked By: **SD**
 Date: **5/3/16**

SIEVE	2"	1.5"	1"	0.75"	0.5"	0.375"	#4	#10	#40	#200							
SIEVE SIZE (mm)	50	37.50	25	19.00	12.5	9.5	4.75	2.00	0.425	0.075	0.0361	0.0234	0.0188	0.0138	0.0099	0.0070	0.0035
PERCENT PASSING	100	100	100	98.8	98.2	97.8	96.6	95.0	87.3	34.7	20.8	15.8	13.2	12.0	9.5	8.1	4.5
																	4.3

Gradation Test Results



GRAVEL		SAND		SILT		CLAY	
Coarse	Fine	Coarse	Medium	Fine			

% Gravel 3.4 % Sand 61.9 % Silt 30.3 % Clay 4.4



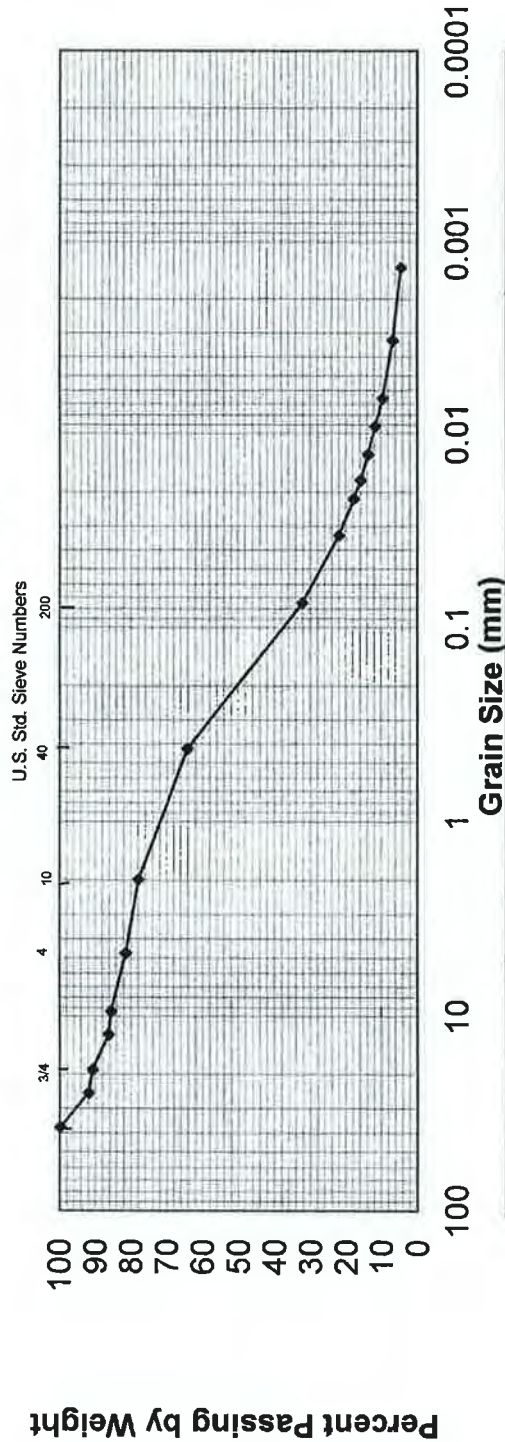
CONSULTING ENGINEERS & GEOLOGISTS, INC.

612 W. Wabash Eureka, CA 95501-2138 Tel: 707/441-8877 FAX: 707/441-8877 E-mail: shninfo@shn-engr.com

Project Name:	Trout MCSD	Project Number:	015169
Boring ID:	--	Lab #:	16-445
Sample Depth:	0-12"	Checked By:	<i>[Signature]</i>
Sample Number:	Levee 1	Date:	5/21/06

SIEVE	2"	1.5"	1"	0.75"	0.5"	0.375"	#4	#10	#40	#200							
SIEVE SIZE (mm)	50	37.50	25	19.00	12.5	9.5	4.75	2.00	0.425	0.075	0.0335	0.0218	0.0175	0.0129	0.0092	0.0066	0.0033
PERCENT PASSING		100	92.0	91.0	86.4	85.7	81.6	78.2	64.3	32.3	22.1	18.0	15.9	13.9	11.8	9.6	6.8
																	4.5

Gradation Test Results



GRAVEL		SAND		SILT		CLAY	
Coarse	Fine	Coarse	Fine				

% Gravel 18.4 % Sand 49.3 % Silt 26.8 % Clay 5.5



Reference: 015169

April 21, 2016

Caltrout - MCSD

SOIL PERCOLATION SUITABILITY / TEXTURAL ANALYSIS RESULTS

Job Name: Caltrout - MCSD
Date Sampled: 11/23/15
Date Received: 4/12/16

Sampled By: JMW
Date Tested: 4/21/16
AP Number: --

Sample ID	Depth	% Sand	% Clay	% Silt	% Coarse Fragments by		Zone	Bulk Density
					Volume			
MW-23	16-18'	9.3	36.3	54.4	0.0		4	*
	Material:	Silty Clay Loam						
MW-24	7-9'	9.2	28.6	62.2	0.0		4	*
	Material:	Silty Clay Loam						
MW-25	16-18'	79.7	6.9	13.4	0.0		2	*
	Material:	Loamy Sand						
MW-26	7-10'	16.1	28.1	55.8	0.0		4	*
	Material:	Silty Clay Loam						

* = no peds provided

Regional Water Quality Control Board Zone Descriptions:

Zone 1 - Soils in this zone are very high in sand content. They readily accept effluent, but because of their low silt and clay content they provide minimal filtration. These soils demand greater separation distances from groundwater.

Zone 2 - Soils in this zone provide adequate percolation rates and filtration of effluent. They are suitable for use of a conventional system without further testing.

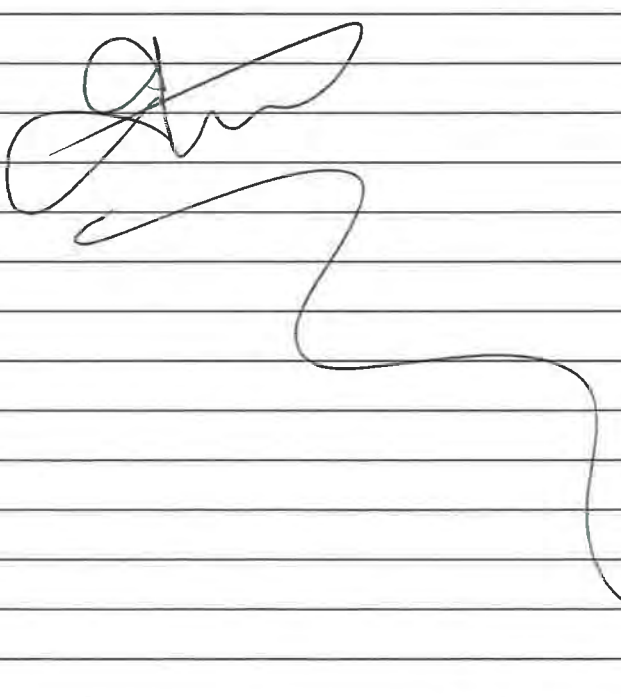
Zone 3 - Soils in this zone are expected to provide good filtration of effluent, but their ability to accept effluent at a suitable rate is questionable. These soils require wet-weather percolation tests to verify their suitability for effluent disposal by conventional leachfield methods.

Zone 4 - Soils in this zone are unsuitable for a conventional leachfield because of their severe limitations for accepting effluent.

3

Field Notes and Forms



Daily Field Report		Job No. 015169	
		Page 1 of 1	
Project Name CALTROUT-MCSD	Client/Owner MCSD	Weather PARTLY CLOUDY, COOL	
General Location of Work FISCHER RANCH	Project Manager R. RUEBER	Date 11/3/15	Day of Week TUESDAY
Type of Work USA MARKINGS		Field Personnel JMW	
1600	ARRIVE ONSITE, PLACE USA MARKS ON FISCHER RD., CONTACT MCSD PERSONNEL AT PUMP STATION AND INFORM THEM OF NEED TO ACCESS WORKSITE. FOR USA PURPOSES, REQUEST IS MADE THAT I DO NOT DRIVE DOWN WET ROADWAY IN FIELDS		
1615	PARK AT HAY BARN AND WALK TO WORK AREA WITH STAKES / FLAGGING, SLEDGE HAMMER. SET MARKERS AT WELL LOCATIONS BASED OFF OF WORKPLAN MAP, MARK SOIL SAMPLING LOCATIONS ON POND BERMS.		
1730	OFFSITE, END OF DAY.		
			
Copy given to:		Reported By: JMW	



Daily Field Report		Job No. 015169	
		Page 1	of 1
Project Name MCSO - CAL TROUT	Client/Owner MCSO - CAL TROUT	Weather CLOUDY, COOL	
General Location of Work FISCHER RANCH	Project Manager R. RUEBER	Date 11/23/15	Day of Week MONDAY
Type of Work WELL INSTALLATION		Field Personnel JMW	
0915	ARRIVE ONSITE, FISCH DRILLING ONSITE, ROSE P. ONSITE, LOAD WELL SUPPLIES ON TRUCK, MOB TO DRILL LOCATION		
0945	WALK DRILL LOCATIONS WITH RICK AND NATE, WALK POND LOCATIONS FOR RIG ACCESS; SHOULD WORK OUT OK.		
1030	SET UP ON SOUTHERN WELL PAIR AND CONT. CORE TO DEPTH. OF 20', CURRENTLY IDEO AS MW-SOUTH		
1100	AT 20' WITH CONT. CORE, LOG CORES, CONSTRUCT 20' DEEP WELL 1.5" DIAM PVC, 0.010 SLOT SCREEN FROM 20-15', #8 SAND 20-14' BENTONITE TO 13', CEMENT TO GRADE		
1130	STEP OVER TO SET SHALLOW WELL WITH SCREEN INTERVAL FROM 5 TO 10' MW-SOUTH SHALLOW, #8 SAND 10-4', BENTONITE TO 3', CEMENT TO GRADE.		
1145	ROSE CHECKS IN, DISCUSSES SCREEN ^{DEPTH} RELATIVE TO CLAY LAYER AND JMW DESCRIBES OBSERVED STRATIGRAPHY + COLLECTION OF SOIL SAMPLES FROM WITHIN THE SCREENED INTERVALS OF BOTH WELLS, ROSE ASKS ABOUT WELL HEAD PROTECTION AND WELLS BEING SET IN A PAD, JMW NOTES OUTSIDE OF WORKSCOPE, NOT INCLUDED IN WORK PLAN, JMW & ROSE AGREE MCSO CAN PLACE AT A LATER DATE.		
1200	ROSE OFFSITE, MOB TO MW-NORTH LOCATION.		
1215	BREAK FOR LUNCH		
1245	REPEAT CORING AND WELL CONSTRUCTION AT NORTHERN LOCATION.		
1330	AT DEPTH (~20') AT MW-NORTH LOCATION, SI = 20-15, #8 SAND 20-14 BENTONITE 14-13', CEMENT TO GRADE. ~2.5' OF BLANK ABOVE GRADE.		
1355	STEP OVER AND CORE + CONSTRUCT MW-NORTH SHALLOW, MOBE ~1' WEST. SHALLOW WELL = SI = 5-10', SANDS (#8) 10-4', BENTONITE CHIPS 4-3' CEMENT TO GRADE, MOBE OFFSITE		
1515	JMW + RICK SCOUT PATHWAY AND CHECK GATES TO POND LOCATIONS		
1545	END OF DAY.		
		Copy given to:	Reported By: JMW



ENGINEERS & GEOLOGISTS

812 W. Wabash Ave.
Eureka, CA 95501-2138

Tel. 707 / 441-8855
Fax: 707 / 441-8877

JOB 01-101

SHEET NO. 1

OF 1

CALCULATED BY

DATE 11/23/15

CHECKED BY

DATE

SCALE

HEALTH & SAFETY MTG., NO TOXICS, PPE, PINCH POINTS

JOHN WELCH SMN

Nathan Olsson Fisch

Rick Bertolino Fish-Drill



Job No. 015169

Page 1 of 1

Client/Owner

Weather	RAIN
---------	------

Project Manager
P. RUEBER

Date 11/24/15	Day of Week TUESDAY
------------------	------------------------

Type of Work
WELL INSTALLATION

Field Personnel	Jim W.
-----------------	--------

750	ONSITE WITH FISCH AT HAMMOND BRIDGE, MOBE TO DRILLING LOCATION AT PERC PONDS
-----	---

0840	INITIATE CORING AT MW-POND-NORTH, COARSE SAND AND GRAVEL TO 12', WILL CORE TO 20' AND CONSTRUCT WELL, BOTTOM 1' HAS ML/CL (19-20'), BUILD MW-POND-N WITH 10' OF SCREEN FROM 10-20', SAND TO 9', BENTONITE TO 8', CEMENT TO GRADE, ELEVATED WATER TABLE INCREASES DIFFICULTY OF ADDING SAND TO WELL SCREEN
------	---

0915	CONSTRUCT WELL, SOIL SAMPLE COLLECTED FROM UPPER PORTION OF SF @ 12-14'
------	--

0945	MOBE TO GW-POND-W ^{EST} LOCATION NEAR BERM BI-SECTION
	PONDS

1000	BEGIN CONTINUOUS CORING ^{Jaeger} AT BW-POND-WEST
------	---

1030	CONSTRUCT WELL SAME AS GW-POND-NORTH, SOIL SAMPLE COLLECTED AT 12-14' DEPTH RANGE.
------	--

Copy given to:

Reported By:



Daily Field Report		Job No. 015169	
		Page 1	of 1
Project Name CALTROUT	Client/Owner MCSO - CAL TROUT	Weather SUNNY, WINDY, COOL	
General Location of Work INFILTRATION PONDS	Project Engineer	Date 4/25/16	Day of Week MONDAY
Type of Work EXCAVATION + GEOTECH SOIL SAMPLING	Supervisor R. R.	Technician JMW	
0845	JMW ONSITE IN FIELDS - MOB TO PONDS WITH SAMPLING GEAR + FIELD SUPPLIES		
0900	MCSO JAMES NOTES THAT OPERATOR ERIC WILL BE ~20 MIN LATE JMW TAKES PHOTOS OF PONDS		
0925	ERIC MCSO ONSITE - CONDUCT TAILBOARD + DISCUSS WORK SCOPE		
0930	INSTALL SOUTH POND PIT @ BASE OF RAMP, CHOSE HIGHER PORTION BECAUSE OF SHALLOW WATER, WATER @ ~5' FROM TOP OF GROUND. PIT ID SP PIT 1		
0950	LOGGED SOILS IN SO. POND - BACKFILL PIT; MOB TO NP PIT 1 LOCATION. AND POT HOLE.		
1010	CLOSE NP PIT 1, MOBE TO LEVEE 1		
1030	LEVEE 1 TRENCH EXCAVATED ~15' INTO LEVEE OF NORTH POND @ SW CORNER TOTAL DEPTH ~7'		
1055	SET UP ON LEVEE 2 TRENCH, SW CORNER OF SO. POND. LEVEE 2 TRENCH EXCAVATED ~20' INTO LEVEE DEPOSITS SIMILAR TO LEVEE 1 OBSERVATIONS - ~2' VENEER OF GRAVELLY ROAD BASE, ~6-8' SILTY SAND/SANDY SILT, BLUE GRAY SP/SM AT BASE OF EXCAVATION, COLLECTED 5 GAL BUCKET OF MATERIAL FOR LAB. BACKFILL AND COMPACT LEVEE 2 EXCAVATION, JMW MOBS GEAR TO VEHICLE.		
1230	VEHICLE STUCK IN SOFT SEDS OFF OF ROAD BASE, MCSO ASSISTS WITH EXTRACTION.		
1245	OFFSITE. MOB TO SHN EUREKA.		
Note: All purge and decon water was transported to SHN's P.W.S.T. located at 812 W. Wabash Ave. Eureka, Ca. gallons total.			
Copy given to:		Reported By: JMW	

[illegible]

APPENDIX C: LABORATORY ANALYSIS RESULTS

Client Sample Results

Client: Northern Hydrology & Engineering
Project/Site: Mad River Ponds

TestAmerica Job ID: 320-18842-1

Client Sample ID: PERC POND-NORTH N1

Date Collected: 05/12/16 12:00

Date Received: 05/13/16 09:35

Lab Sample ID: 320-18842-1

Matrix: Solid

Percent Solids: 55.1

Method: 8270C SIM - Semivolatile Organic Compounds (GC/MS SIM)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acenaphthene	ND		90	8.5	ug/Kg	☼	05/24/16 13:40	05/31/16 14:54	10
Acenaphthylene	ND		90	5.9	ug/Kg	☼	05/24/16 13:40	05/31/16 14:54	10
Anthracene	ND		90	7.1	ug/Kg	☼	05/24/16 13:40	05/31/16 14:54	10
Benzo[a]anthracene	ND		90	5.5	ug/Kg	☼	05/24/16 13:40	05/31/16 14:54	10
Pentachlorophenol	110	J F1	120	31	ug/Kg	☼	05/26/16 13:29	05/27/16 20:00	10
Benzo[a]pyrene	ND		90	7.2	ug/Kg	☼	05/24/16 13:40	05/31/16 14:54	10
Benzo[b]fluoranthene	25	J	90	9.1	ug/Kg	☼	05/24/16 13:40	05/31/16 14:54	10
Benzo[g,h,i]perylene	ND		90	18	ug/Kg	☼	05/24/16 13:40	05/31/16 14:54	10
Benzo[k]fluoranthene	ND		90	14	ug/Kg	☼	05/24/16 13:40	05/31/16 14:54	10
Chrysene	28	J	90	6.2	ug/Kg	☼	05/24/16 13:40	05/31/16 14:54	10
Dibenz(a,h)anthracene	ND		90	22	ug/Kg	☼	05/24/16 13:40	05/31/16 14:54	10
Fluoranthene	14	J	90	5.3	ug/Kg	☼	05/24/16 13:40	05/31/16 14:54	10
Fluorene	41	J	90	8.8	ug/Kg	☼	05/24/16 13:40	05/31/16 14:54	10
Indeno[1,2,3-cd]pyrene	8.8	J	90	8.6	ug/Kg	☼	05/24/16 13:40	05/31/16 14:54	10
Naphthalene	36	J	90	5.5	ug/Kg	☼	05/24/16 13:40	05/31/16 14:54	10
Phenanthrene	120		90	6.3	ug/Kg	☼	05/24/16 13:40	05/31/16 14:54	10
Pyrene	24	J	90	6.3	ug/Kg	☼	05/24/16 13:40	05/31/16 14:54	10

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Terphenyl-d14	33	X	42 - 151	05/26/16 13:29	05/27/16 20:00	10
2,4,6-Tribromophenol	24	X	28 - 143	05/26/16 13:29	05/27/16 20:00	10
Nitrobenzene-d5	57		53 - 113	05/24/16 13:40	05/31/16 14:54	10
Terphenyl-d14	82		70 - 144	05/24/16 13:40	05/31/16 14:54	10
2-Fluorobiphenyl (Surr)	77		53 - 113	05/24/16 13:40	05/31/16 14:54	10

Method: Organotins - Organotins, PSEP (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Dibutyltin	ND		7.8	1.8	ug/Kg	☼	05/25/16 10:28	06/01/16 13:16	1
Monobutyltin	ND		4.8	1.2	ug/Kg	☼	05/25/16 10:28	06/01/16 13:16	1
Tetra-n-butyltin	ND		24	6.9	ug/Kg	☼	05/25/16 10:28	06/01/16 13:16	1
Tributyltin	ND		4.2	0.92	ug/Kg	☼	05/25/16 10:28	06/01/16 13:16	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Triphenyltin	71		20 - 151	05/25/16 10:28	06/01/16 13:16	1

Method: 8015B - Diesel Range Organics (DRO) (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Diesel Range Organics [C10-C28]	210		90	45	mg/Kg	☼	05/25/16 11:00	05/27/16 10:03	50
Motor Oil Range Organics [C28-C40]	950		450	340	mg/Kg	☼	05/25/16 11:00	05/27/16 10:03	50

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
o-Terphenyl (Surr)	111		63 - 141	05/25/16 11:00	05/27/16 10:03	50

Method: 8081B - Organochlorine Pesticides (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aldrin	ND		30	3.7	ug/Kg	☼	05/24/16 10:53	06/05/16 17:43	1
alpha-BHC	ND		30	3.9	ug/Kg	☼	05/24/16 10:53	06/05/16 17:43	1
beta-BHC	ND		30	5.9	ug/Kg	☼	05/24/16 10:53	06/05/16 17:43	1
gamma-BHC (Lindane)	ND		30	3.0	ug/Kg	☼	05/24/16 10:53	06/05/16 17:43	1
delta-BHC	ND		30	2.8	ug/Kg	☼	05/24/16 10:53	06/05/16 17:43	1

TestAmerica Sacramento

Client Sample Results

Client: Northern Hydrology & Engineering
Project/Site: Mad River Ponds

TestAmerica Job ID: 320-18842-1

Client Sample ID: PERC POND-NORTH N1

Lab Sample ID: 320-18842-1

Date Collected: 05/12/16 12:00

Matrix: Solid

Date Received: 05/13/16 09:35

Percent Solids: 55.1

Method: 8081B - Organochlorine Pesticides (GC) (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
alpha-Chlordane	ND		30	3.6	ug/Kg	☼	05/24/16 10:53	06/05/16 17:43	1
gamma-Chlordane	ND		30	0.94	ug/Kg	☼	05/24/16 10:53	06/05/16 17:43	1
4,4'-DDD	ND		30	4.6	ug/Kg	☼	05/24/16 10:53	06/05/16 17:43	1
4,4'-DDE	ND		30	3.9	ug/Kg	☼	05/24/16 10:53	06/05/16 17:43	1
4,4'-DDT	ND		30	7.1	ug/Kg	☼	05/24/16 10:53	06/05/16 17:43	1
Dieldrin	6.4	J	30	1.6	ug/Kg	☼	05/24/16 10:53	06/05/16 17:43	1
Endosulfan I	ND		30	0.92	ug/Kg	☼	05/24/16 10:53	06/05/16 17:43	1
Endosulfan II	ND		30	1.8	ug/Kg	☼	05/24/16 10:53	06/05/16 17:43	1
Endosulfan sulfate	4.0	J p	30	1.6	ug/Kg	☼	05/24/16 10:53	06/05/16 17:43	1
Endrin	ND		30	2.0	ug/Kg	☼	05/24/16 10:53	06/05/16 17:43	1
Endrin aldehyde	ND		30	2.0	ug/Kg	☼	05/24/16 10:53	06/05/16 17:43	1
Endrin ketone	ND		30	6.0	ug/Kg	☼	05/24/16 10:53	06/05/16 17:43	1
Heptachlor	ND		30	3.4	ug/Kg	☼	05/24/16 10:53	06/05/16 17:43	1
Heptachlor epoxide	ND		30	2.1	ug/Kg	☼	05/24/16 10:53	06/05/16 17:43	1
Methoxychlor	ND		60	23	ug/Kg	☼	05/24/16 10:53	06/05/16 17:43	1
Toxaphene	ND		1200	360	ug/Kg	☼	05/24/16 10:53	06/05/16 17:43	1
2,4'-DDD	ND		60	12	ug/Kg	☼	05/24/16 10:53	06/05/16 17:43	1
2,4'-DDE	ND		60	12	ug/Kg	☼	05/24/16 10:53	06/05/16 17:43	1
2,4'-DDT	ND		60	12	ug/Kg	☼	05/24/16 10:53	06/05/16 17:43	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
DCB Decachlorobiphenyl	94		49 - 119	05/24/16 10:53	06/05/16 17:43	1
DCB Decachlorobiphenyl	109		49 - 119	05/24/16 10:53	06/05/16 17:43	1
Tetrachloro-m-xylene	92		58 - 111	05/24/16 10:53	06/05/16 17:43	1
Tetrachloro-m-xylene	88		58 - 111	05/24/16 10:53	06/05/16 17:43	1

Method: 8082 - Polychlorinated Biphenyls (PCBs) by Gas Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
PCB-1016	ND		590	60	ug/Kg	☼	05/24/16 12:07	06/07/16 13:36	1
PCB-1221	ND		590	92	ug/Kg	☼	05/24/16 12:07	06/07/16 13:36	1
PCB-1232	ND		590	110	ug/Kg	☼	05/24/16 12:07	06/07/16 13:36	1
PCB-1242	ND		590	130	ug/Kg	☼	05/24/16 12:07	06/07/16 13:36	1
PCB-1248	ND		590	100	ug/Kg	☼	05/24/16 12:07	06/07/16 13:36	1
PCB-1254	ND		590	48	ug/Kg	☼	05/24/16 12:07	06/07/16 13:36	1
PCB-1260	ND		590	52	ug/Kg	☼	05/24/16 12:07	06/07/16 13:36	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
DCB Decachlorobiphenyl	173	X	77 - 123	05/24/16 12:07	06/07/16 13:36	1

Method: 1613B - Dioxins and Furans (HRGC/HRMS)

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
2,3,7,8-TCDD	ND		1.8	0.23	pg/g	☼	05/24/16 13:07	05/25/16 17:57	1
1,2,3,7,8-PeCDD	ND		9.1	1.3	pg/g	☼	05/24/16 13:07	05/25/16 17:57	1
1,2,3,7,8-PeCDF	ND		9.1	0.13	pg/g	☼	05/24/16 13:07	05/25/16 17:57	1
2,3,4,7,8-PeCDF	0.16	J q	9.1	0.15	pg/g	☼	05/24/16 13:07	05/25/16 17:57	1
1,2,3,4,7,8-HxCDD	0.40	J q	9.1	0.15	pg/g	☼	05/24/16 13:07	05/25/16 17:57	1
1,2,3,6,7,8-HxCDD	0.53	J q	9.1	0.15	pg/g	☼	05/24/16 13:07	05/25/16 17:57	1
1,2,3,7,8,9-HxCDD	0.86	J	9.1	0.12	pg/g	☼	05/24/16 13:07	05/25/16 17:57	1
1,2,3,4,7,8-HxCDF	ND		9.1	0.090	pg/g	☼	05/24/16 13:07	05/25/16 17:57	1
1,2,3,6,7,8-HxCDF	0.21	J q	9.1	0.081	pg/g	☼	05/24/16 13:07	05/25/16 17:57	1

TestAmerica Sacramento

Client Sample Results

Client: Northern Hydrology & Engineering
Project/Site: Mad River Ponds

TestAmerica Job ID: 320-18842-1

Client Sample ID: PERC POND-NORTH N1

Lab Sample ID: 320-18842-1

Date Collected: 05/12/16 12:00

Matrix: Solid

Date Received: 05/13/16 09:35

Percent Solids: 55.1

Method: 1613B - Dioxins and Furans (HRGC/HRMS) (Continued)

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
1,2,3,7,8,9-HxCDF	ND		9.1	0.074	pg/g	☼	05/24/16 13:07	05/25/16 17:57	1
2,3,4,6,7,8-HxCDF	0.29	J	9.1	0.068	pg/g	☼	05/24/16 13:07	05/25/16 17:57	1
1,2,3,4,6,7,8-HpCDD	10		9.1	0.33	pg/g	☼	05/24/16 13:07	05/25/16 17:57	1
1,2,3,4,6,7,8-HpCDF	2.2	J q B	9.1	2.0	pg/g	☼	05/24/16 13:07	05/25/16 17:57	1
1,2,3,4,7,8,9-HpCDF	ND		9.1	2.4	pg/g	☼	05/24/16 13:07	05/25/16 17:57	1
OCDD	55	B	18	0.27	pg/g	☼	05/24/16 13:07	05/25/16 17:57	1
OCDF	2.6	J B	18	0.11	pg/g	☼	05/24/16 13:07	05/25/16 17:57	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C-2,3,7,8-TCDD	59		25 - 164	05/24/16 13:07	05/25/16 17:57	1
13C-1,2,3,7,8-PeCDD	54		25 - 181	05/24/16 13:07	05/25/16 17:57	1
13C-1,2,3,7,8-PeCDF	56		24 - 185	05/24/16 13:07	05/25/16 17:57	1
13C-2,3,4,7,8-PeCDF	56		21 - 178	05/24/16 13:07	05/25/16 17:57	1
13C-1,2,3,4,7,8-HxCDD	57		32 - 141	05/24/16 13:07	05/25/16 17:57	1
13C-1,2,3,6,7,8-HxCDD	67		28 - 130	05/24/16 13:07	05/25/16 17:57	1
13C-1,2,3,4,7,8-HxCDF	60		26 - 152	05/24/16 13:07	05/25/16 17:57	1
13C-1,2,3,6,7,8-HxCDF	66		26 - 123	05/24/16 13:07	05/25/16 17:57	1
13C-2,3,4,6,7,8-HxCDF	62		28 - 136	05/24/16 13:07	05/25/16 17:57	1
13C-1,2,3,7,8,9-HxCDF	57		29 - 147	05/24/16 13:07	05/25/16 17:57	1
13C-1,2,3,4,6,7,8-HpCDD	62		23 - 140	05/24/16 13:07	05/25/16 17:57	1
13C-1,2,3,4,6,7,8-HpCDF	60		28 - 143	05/24/16 13:07	05/25/16 17:57	1
13C-1,2,3,4,7,8,9-HpCDF	62		26 - 138	05/24/16 13:07	05/25/16 17:57	1
13C-OCDD	62		17 - 157	05/24/16 13:07	05/25/16 17:57	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	103		35 - 197	05/24/16 13:07	05/25/16 17:57	1

Method: 1613B - Dioxins and Furans (HRGC/HRMS) - RA

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
2,3,7,8-TCDF	ND		1.8	0.54	pg/g	☼	05/24/16 13:07	05/25/16 18:21	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C-2,3,7,8-TCDF	57		24 - 169	05/24/16 13:07	05/25/16 18:21	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	94		35 - 197	05/24/16 13:07	05/25/16 18:21	1

Method: 6010B - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Silver	0.35	J	0.91	0.16	mg/Kg	☼	05/26/16 07:00	05/31/16 17:24	2
Arsenic	2.7	J	3.6	2.4	mg/Kg	☼	05/26/16 07:00	05/31/16 17:24	2
Barium	95	F1	1.8	0.22	mg/Kg	☼	05/26/16 07:00	05/31/16 17:24	2
Beryllium	0.51		0.36	0.054	mg/Kg	☼	05/26/16 07:00	05/31/16 17:24	2
Cadmium	0.14	J	0.36	0.054	mg/Kg	☼	05/26/16 07:00	05/31/16 17:24	2
Cobalt	16		0.91	0.45	mg/Kg	☼	05/26/16 07:00	05/31/16 17:24	2
Chromium	80	F2	0.91	0.25	mg/Kg	☼	05/26/16 07:00	05/31/16 17:24	2
Copper	100	F2	2.7	0.40	mg/Kg	☼	05/26/16 07:00	05/31/16 17:24	2
Molybdenum	ND		3.6	1.4	mg/Kg	☼	05/26/16 07:00	05/31/16 17:24	2
Nickel	110	F1	1.8	0.43	mg/Kg	☼	05/26/16 07:00	05/31/16 17:24	2
Lead	10		1.8	0.47	mg/Kg	☼	05/26/16 07:00	05/31/16 17:24	2
Selenium	ND		3.6	2.5	mg/Kg	☼	05/26/16 07:00	05/31/16 17:24	2
Antimony	ND	F1 F2	3.6	1.7	mg/Kg	☼	05/26/16 07:00	05/31/16 17:24	2

TestAmerica Sacramento

Client Sample Results

Client: Northern Hydrology & Engineering
Project/Site: Mad River Ponds

TestAmerica Job ID: 320-18842-1

Client Sample ID: PERC POND-NORTH N1

Lab Sample ID: 320-18842-1

Date Collected: 05/12/16 12:00

Matrix: Solid

Date Received: 05/13/16 09:35

Percent Solids: 55.1

Method: 6010B - Metals (ICP) (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Thallium	ND		3.6	1.5	mg/Kg	☼	05/26/16 07:00	05/31/16 17:24	2
Vanadium	47	F1	0.91	0.34	mg/Kg	☼	05/26/16 07:00	05/31/16 17:24	2
Zinc	130	F1 F2	3.6	0.34	mg/Kg	☼	05/26/16 07:00	05/31/16 17:24	2

Method: 7471A - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	0.10		0.044	0.0094	mg/Kg	☼	05/27/16 08:28	05/27/16 13:46	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Kjeldahl Nitrogen	2100	F1	180	140	mg/Kg	☼	05/24/16 17:22	05/25/16 19:35	2

Client Sample ID: PERC POND-SOUTH S1

Lab Sample ID: 320-18842-2

Date Collected: 05/12/16 12:00

Matrix: Solid

Date Received: 05/13/16 09:35

Percent Solids: 98.7

Method: 8270C SIM - Semivolatile Organic Compounds (GC/MS SIM)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acenaphthene	ND		48	4.6	ug/Kg	☼	05/20/16 10:56	05/24/16 16:46	10
Acenaphthylene	ND		48	3.2	ug/Kg	☼	05/20/16 10:56	05/24/16 16:46	10
Anthracene	ND		48	3.8	ug/Kg	☼	05/20/16 10:56	05/24/16 16:46	10
Benzo[a]anthracene	ND		48	2.9	ug/Kg	☼	05/20/16 10:56	05/24/16 16:46	10
Pentachlorophenol	42	J	66	17	ug/Kg	☼	05/26/16 13:29	05/27/16 21:07	10
Benzo[a]pyrene	ND		48	3.9	ug/Kg	☼	05/20/16 10:56	05/24/16 16:46	10
Benzo[b]fluoranthene	4.9	J	48	4.9	ug/Kg	☼	05/20/16 10:56	05/24/16 16:46	10
Benzo[g,h,i]perylene	ND		48	9.7	ug/Kg	☼	05/20/16 10:56	05/24/16 16:46	10
Benzo[k]fluoranthene	ND		48	7.4	ug/Kg	☼	05/20/16 10:56	05/24/16 16:46	10
Chrysene	4.7	J	48	3.4	ug/Kg	☼	05/20/16 10:56	05/24/16 16:46	10
Dibenz(a,h)anthracene	ND		48	12	ug/Kg	☼	05/20/16 10:56	05/24/16 16:46	10
Fluoranthene	3.5	J	48	2.8	ug/Kg	☼	05/20/16 10:56	05/24/16 16:46	10
Fluorene	5.0	J	48	4.8	ug/Kg	☼	05/20/16 10:56	05/24/16 16:46	10
Indeno[1,2,3-cd]pyrene	ND		48	4.6	ug/Kg	☼	05/20/16 10:56	05/24/16 16:46	10
Naphthalene	4.9	J	48	3.0	ug/Kg	☼	05/20/16 10:56	05/24/16 16:46	10
Phenanthrene	22	J	48	3.4	ug/Kg	☼	05/20/16 10:56	05/24/16 16:46	10
Pyrene	4.8	J	48	3.4	ug/Kg	☼	05/20/16 10:56	05/24/16 16:46	10

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Terphenyl-d14	89		42 - 151	05/26/16 13:29	05/27/16 21:07	10
2,4,6-Tribromophenol	87		28 - 143	05/26/16 13:29	05/27/16 21:07	10
Nitrobenzene-d5	77		53 - 113	05/20/16 10:56	05/24/16 16:46	10
Terphenyl-d14	79		70 - 144	05/20/16 10:56	05/24/16 16:46	10
2-Fluorobiphenyl (Surr)	76		53 - 113	05/20/16 10:56	05/24/16 16:46	10

Method: Organotins - Organotins, PSEP (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Dibutyltin	ND		4.3	1.0	ug/Kg	☼	05/25/16 10:28	06/01/16 13:39	1
Monobutyltin	ND		2.6	0.66	ug/Kg	☼	05/25/16 10:28	06/01/16 13:39	1
Tetra-n-butyltin	ND		13	3.8	ug/Kg	☼	05/25/16 10:28	06/01/16 13:39	1
Tributyltin	ND		2.3	0.51	ug/Kg	☼	05/25/16 10:28	06/01/16 13:39	1

TestAmerica Sacramento

Client Sample Results

Client: Northern Hydrology & Engineering
Project/Site: Mad River Ponds

TestAmerica Job ID: 320-18842-1

Client Sample ID: PERC POND-SOUTH S1

Lab Sample ID: 320-18842-2

Date Collected: 05/12/16 12:00

Matrix: Solid

Date Received: 05/13/16 09:35

Percent Solids: 98.7

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Tripentyltin	50		20 - 151	05/25/16 10:28	06/01/16 13:39	1

Method: 8015B - Diesel Range Organics (DRO) (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Diesel Range Organics [C10-C28]	37		10	5.2	mg/Kg	☼	05/25/16 11:00	05/27/16 10:32	10
Motor Oil Range Organics [C28-C40]	140		52	39	mg/Kg	☼	05/25/16 11:00	05/27/16 10:32	10

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
o-Terphenyl (Surr)	106		63 - 141	05/25/16 11:00	05/27/16 10:32	10

Method: 8081B - Organochlorine Pesticides (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aldrin	ND		18	2.2	ug/Kg	☼	05/20/16 11:18	06/05/16 16:23	1
alpha-BHC	ND		18	2.3	ug/Kg	☼	05/20/16 11:18	06/05/16 16:23	1
beta-BHC	ND		18	3.4	ug/Kg	☼	05/20/16 11:18	06/05/16 16:23	1
gamma-BHC (Lindane)	ND		18	1.8	ug/Kg	☼	05/20/16 11:18	06/05/16 16:23	1
delta-BHC	ND		18	1.7	ug/Kg	☼	05/20/16 11:18	06/05/16 16:23	1
alpha-Chlordane	ND		18	2.1	ug/Kg	☼	05/20/16 11:18	06/05/16 16:23	1
gamma-Chlordane	1.1	J	18	0.55	ug/Kg	☼	05/20/16 11:18	06/05/16 16:23	1
4,4'-DDD	ND		18	2.7	ug/Kg	☼	05/20/16 11:18	06/05/16 16:23	1
4,4'-DDE	ND		18	2.3	ug/Kg	☼	05/20/16 11:18	06/05/16 16:23	1
4,4'-DDT	ND		18	4.1	ug/Kg	☼	05/20/16 11:18	06/05/16 16:23	1
Dieldrin	ND		18	0.94	ug/Kg	☼	05/20/16 11:18	06/05/16 16:23	1
Endosulfan I	ND		18	0.54	ug/Kg	☼	05/20/16 11:18	06/05/16 16:23	1
Endosulfan II	ND		18	1.0	ug/Kg	☼	05/20/16 11:18	06/05/16 16:23	1
Endosulfan sulfate	ND		18	0.95	ug/Kg	☼	05/20/16 11:18	06/05/16 16:23	1
Endrin	ND		18	1.1	ug/Kg	☼	05/20/16 11:18	06/05/16 16:23	1
Endrin aldehyde	ND		18	1.1	ug/Kg	☼	05/20/16 11:18	06/05/16 16:23	1
Endrin ketone	ND		18	3.5	ug/Kg	☼	05/20/16 11:18	06/05/16 16:23	1
Heptachlor	ND		18	2.0	ug/Kg	☼	05/20/16 11:18	06/05/16 16:23	1
Heptachlor epoxide	ND		18	1.2	ug/Kg	☼	05/20/16 11:18	06/05/16 16:23	1
Methoxychlor	ND		35	13	ug/Kg	☼	05/20/16 11:18	06/05/16 16:23	1
Toxaphene	ND		690	210	ug/Kg	☼	05/20/16 11:18	06/05/16 16:23	1
2,4'-DDD	ND		35	6.9	ug/Kg	☼	05/20/16 11:18	06/05/16 16:23	1
2,4'-DDE	ND		35	6.9	ug/Kg	☼	05/20/16 11:18	06/05/16 16:23	1
2,4'-DDT	ND		35	6.9	ug/Kg	☼	05/20/16 11:18	06/05/16 16:23	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
DCB Decachlorobiphenyl	104		49 - 119	05/20/16 11:18	06/05/16 16:23	1
DCB Decachlorobiphenyl	108		49 - 119	05/20/16 11:18	06/05/16 16:23	1
Tetrachloro-m-xylene	99		58 - 111	05/20/16 11:18	06/05/16 16:23	1
Tetrachloro-m-xylene	103		58 - 111	05/20/16 11:18	06/05/16 16:23	1

Method: 8082 - Polychlorinated Biphenyls (PCBs) by Gas Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
PCB-1016	ND		34	3.5	ug/Kg	☼	05/20/16 11:31	05/25/16 16:38	1
PCB-1221	ND		34	5.4	ug/Kg	☼	05/20/16 11:31	05/25/16 16:38	1
PCB-1232	ND		34	6.6	ug/Kg	☼	05/20/16 11:31	05/25/16 16:38	1
PCB-1242	ND		34	7.6	ug/Kg	☼	05/20/16 11:31	05/25/16 16:38	1
PCB-1248	ND		34	5.9	ug/Kg	☼	05/20/16 11:31	05/25/16 16:38	1

TestAmerica Sacramento

Client Sample Results

Client: Northern Hydrology & Engineering
Project/Site: Mad River Ponds

TestAmerica Job ID: 320-18842-1

Client Sample ID: PERC POND-SOUTH S1

Lab Sample ID: 320-18842-2

Date Collected: 05/12/16 12:00

Matrix: Solid

Date Received: 05/13/16 09:35

Percent Solids: 98.7

Method: 8082 - Polychlorinated Biphenyls (PCBs) by Gas Chromatography (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
PCB-1254	ND		34	2.8	ug/Kg	☼	05/20/16 11:31	05/25/16 16:38	1
PCB-1260	ND		34	3.0	ug/Kg	☼	05/20/16 11:31	05/25/16 16:38	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
DCB Decachlorobiphenyl	16	X	77 - 123				05/20/16 11:31	05/25/16 16:38	1

Method: 1613B - Dioxins and Furans (HRGC/HRMS)

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
2,3,7,8-TCDD	ND		1.0	0.072	pg/g	☼	05/24/16 13:07	05/25/16 18:43	1
1,2,3,7,8-PeCDD	ND		5.0	0.38	pg/g	☼	05/24/16 13:07	05/25/16 18:43	1
1,2,3,7,8-PeCDF	ND		5.0	0.041	pg/g	☼	05/24/16 13:07	05/25/16 18:43	1
2,3,4,7,8-PeCDF	ND		5.0	0.043	pg/g	☼	05/24/16 13:07	05/25/16 18:43	1
1,2,3,4,7,8-HxCDD	ND		5.0	0.052	pg/g	☼	05/24/16 13:07	05/25/16 18:43	1
1,2,3,6,7,8-HxCDD	0.12	J	5.0	0.053	pg/g	☼	05/24/16 13:07	05/25/16 18:43	1
1,2,3,7,8,9-HxCDD	ND		5.0	0.043	pg/g	☼	05/24/16 13:07	05/25/16 18:43	1
1,2,3,4,7,8-HxCDF	ND		5.0	0.029	pg/g	☼	05/24/16 13:07	05/25/16 18:43	1
1,2,3,6,7,8-HxCDF	ND		5.0	0.026	pg/g	☼	05/24/16 13:07	05/25/16 18:43	1
1,2,3,7,8,9-HxCDF	ND		5.0	0.022	pg/g	☼	05/24/16 13:07	05/25/16 18:43	1
2,3,4,6,7,8-HxCDF	ND		5.0	0.022	pg/g	☼	05/24/16 13:07	05/25/16 18:43	1
1,2,3,4,6,7,8-HpCDD	1.7	J	5.0	0.066	pg/g	☼	05/24/16 13:07	05/25/16 18:43	1
1,2,3,4,6,7,8-HpCDF	ND		5.0	0.49	pg/g	☼	05/24/16 13:07	05/25/16 18:43	1
1,2,3,4,7,8,9-HpCDF	ND		5.0	0.72	pg/g	☼	05/24/16 13:07	05/25/16 18:43	1
OCDD	8.7	J B	10	0.055	pg/g	☼	05/24/16 13:07	05/25/16 18:43	1
OCDF	0.46	J B	10	0.036	pg/g	☼	05/24/16 13:07	05/25/16 18:43	1

Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C-2,3,7,8-TCDD	75		25 - 164				05/24/16 13:07	05/25/16 18:43	1
13C-1,2,3,7,8-PeCDD	71		25 - 181				05/24/16 13:07	05/25/16 18:43	1
13C-1,2,3,7,8-PeCDF	72		24 - 185				05/24/16 13:07	05/25/16 18:43	1
13C-2,3,4,7,8-PeCDF	72		21 - 178				05/24/16 13:07	05/25/16 18:43	1
13C-1,2,3,4,7,8-HxCDD	76		32 - 141				05/24/16 13:07	05/25/16 18:43	1
13C-1,2,3,6,7,8-HxCDD	84		28 - 130				05/24/16 13:07	05/25/16 18:43	1
13C-1,2,3,4,7,8-HxCDF	78		26 - 152				05/24/16 13:07	05/25/16 18:43	1
13C-1,2,3,6,7,8-HxCDF	83		26 - 123				05/24/16 13:07	05/25/16 18:43	1
13C-2,3,4,6,7,8-HxCDF	81		28 - 136				05/24/16 13:07	05/25/16 18:43	1
13C-1,2,3,7,8,9-HxCDF	75		29 - 147				05/24/16 13:07	05/25/16 18:43	1
13C-1,2,3,4,6,7,8-HpCDD	80		23 - 140				05/24/16 13:07	05/25/16 18:43	1
13C-1,2,3,4,6,7,8-HpCDF	86		28 - 143				05/24/16 13:07	05/25/16 18:43	1
13C-1,2,3,4,7,8,9-HpCDF	82		26 - 138				05/24/16 13:07	05/25/16 18:43	1
13C-OCDD	80		17 - 157				05/24/16 13:07	05/25/16 18:43	1

Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	98		35 - 197				05/24/16 13:07	05/25/16 18:43	1

Method: 1613B - Dioxins and Furans (HRGC/HRMS) - RA

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
2,3,7,8-TCDF	ND		1.0	0.22	pg/g	☼	05/24/16 13:07	05/25/16 19:06	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C-2,3,7,8-TCDF	70		24 - 169				05/24/16 13:07	05/25/16 19:06	1

TestAmerica Sacramento

Client Sample Results

Client: Northern Hydrology & Engineering
Project/Site: Mad River Ponds

TestAmerica Job ID: 320-18842-1

Client Sample ID: PERC POND-SOUTH S1

Date Collected: 05/12/16 12:00

Date Received: 05/13/16 09:35

Lab Sample ID: 320-18842-2

Matrix: Solid

Percent Solids: 98.7

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	92		35 - 197	05/24/16 13:07	05/25/16 19:06	1

Method: 6010B - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Silver	ND		0.51	0.092	mg/Kg	☼	05/26/16 07:00	05/31/16 17:48	2
Arsenic	1.7	J	2.1	1.3	mg/Kg	☼	05/26/16 07:00	05/31/16 17:48	2
Barium	57		1.0	0.12	mg/Kg	☼	05/26/16 07:00	05/31/16 17:48	2
Beryllium	0.36		0.21	0.031	mg/Kg	☼	05/26/16 07:00	05/31/16 17:48	2
Cadmium	ND		0.21	0.031	mg/Kg	☼	05/26/16 07:00	05/31/16 17:48	2
Cobalt	5.9		0.51	0.26	mg/Kg	☼	05/26/16 07:00	05/31/16 17:48	2
Chromium	42		0.51	0.14	mg/Kg	☼	05/26/16 07:00	05/31/16 17:48	2
Copper	23		1.5	0.23	mg/Kg	☼	05/26/16 07:00	05/31/16 17:48	2
Molybdenum	ND		2.1	0.77	mg/Kg	☼	05/26/16 07:00	05/31/16 17:48	2
Nickel	46		1.0	0.25	mg/Kg	☼	05/26/16 07:00	05/31/16 17:48	2
Lead	5.0		1.0	0.27	mg/Kg	☼	05/26/16 07:00	05/31/16 17:48	2
Selenium	ND		2.1	1.4	mg/Kg	☼	05/26/16 07:00	05/31/16 17:48	2
Antimony	ND		2.1	0.96	mg/Kg	☼	05/26/16 07:00	05/31/16 17:48	2
Thallium	ND		2.1	0.86	mg/Kg	☼	05/26/16 07:00	05/31/16 17:48	2
Vanadium	37		0.51	0.19	mg/Kg	☼	05/26/16 07:00	05/31/16 17:48	2
Zinc	50		2.1	0.19	mg/Kg	☼	05/26/16 07:00	05/31/16 17:48	2

Method: 7471A - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	0.029		0.024	0.0052	mg/Kg	☼	05/27/16 08:28	05/27/16 13:48	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Kjeldahl Nitrogen	1200		100	76	mg/Kg	☼	05/24/16 17:22	05/25/16 19:35	2

Client Sample ID: PERC POND N2

Date Collected: 05/12/16 12:00

Date Received: 05/13/16 09:35

Lab Sample ID: 320-18842-3

Matrix: Solid

Percent Solids: 99.1

Method: 8270C SIM - Semivolatile Organic Compounds (GC/MS SIM)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acenaphthene	ND		51	4.8	ug/Kg	☼	05/20/16 10:56	05/24/16 17:16	10
Acenaphthylene	ND		51	3.4	ug/Kg	☼	05/20/16 10:56	05/24/16 17:16	10
Anthracene	ND		51	4.0	ug/Kg	☼	05/20/16 10:56	05/24/16 17:16	10
Benzo[a]anthracene	ND		51	3.1	ug/Kg	☼	05/20/16 10:56	05/24/16 17:16	10
Pentachlorophenol	43	J	68	17	ug/Kg	☼	05/26/16 13:29	05/27/16 21:30	10
Benzo[a]pyrene	ND		51	4.1	ug/Kg	☼	05/20/16 10:56	05/24/16 17:16	10
Benzo[b]fluoranthene	11	J	51	5.1	ug/Kg	☼	05/20/16 10:56	05/24/16 17:16	10
Benzo[g,h,i]perylene	ND		51	10	ug/Kg	☼	05/20/16 10:56	05/24/16 17:16	10
Benzo[k]fluoranthene	ND		51	7.7	ug/Kg	☼	05/20/16 10:56	05/24/16 17:16	10
Chrysene	12	J	51	3.5	ug/Kg	☼	05/20/16 10:56	05/24/16 17:16	10
Dibenz(a,h)anthracene	ND		51	12	ug/Kg	☼	05/20/16 10:56	05/24/16 17:16	10
Fluoranthene	5.4	J	51	3.0	ug/Kg	☼	05/20/16 10:56	05/24/16 17:16	10
Fluorene	11	J	51	5.0	ug/Kg	☼	05/20/16 10:56	05/24/16 17:16	10
Indeno[1,2,3-cd]pyrene	ND		51	4.9	ug/Kg	☼	05/20/16 10:56	05/24/16 17:16	10
Naphthalene	11	J	51	3.1	ug/Kg	☼	05/20/16 10:56	05/24/16 17:16	10
Phenanthrene	47	J	51	3.6	ug/Kg	☼	05/20/16 10:56	05/24/16 17:16	10

TestAmerica Sacramento

Client Sample Results

Client: Northern Hydrology & Engineering
Project/Site: Mad River Ponds

TestAmerica Job ID: 320-18842-1

Client Sample ID: PERC POND N2

Date Collected: 05/12/16 12:00

Date Received: 05/13/16 09:35

Lab Sample ID: 320-18842-3

Matrix: Solid

Percent Solids: 99.1

Method: 8270C SIM - Semivolatile Organic Compounds (GC/MS SIM) (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Pyrene	8.9	J	51	3.6	ug/Kg	☼	05/20/16 10:56	05/24/16 17:16	10

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Terphenyl-d14	82		42 - 151	05/26/16 13:29	05/27/16 21:30	10
2,4,6-Tribromophenol	79		28 - 143	05/26/16 13:29	05/27/16 21:30	10
Nitrobenzene-d5	54		53 - 113	05/20/16 10:56	05/24/16 17:16	10
Terphenyl-d14	73		70 - 144	05/20/16 10:56	05/24/16 17:16	10
2-Fluorobiphenyl (Surr)	60		53 - 113	05/20/16 10:56	05/24/16 17:16	10

Method: Organotins - Organotins, PSEP (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Dibutyltin	ND		4.4	1.0	ug/Kg	☼	05/25/16 10:28	06/01/16 14:02	1
Monobutyltin	ND		2.7	0.68	ug/Kg	☼	05/25/16 10:28	06/01/16 14:02	1
Tetra-n-butyltin	ND		14	3.9	ug/Kg	☼	05/25/16 10:28	06/01/16 14:02	1
Tributyltin	ND		2.4	0.52	ug/Kg	☼	05/25/16 10:28	06/01/16 14:02	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Tripentyltin	37		20 - 151	05/25/16 10:28	06/01/16 14:02	1

Method: 8015B - Diesel Range Organics (DRO) (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Diesel Range Organics [C10-C28]	31		10	5.0	mg/Kg	☼	05/25/16 11:00	05/27/16 11:01	10
Motor Oil Range Organics [C28-C40]	110		50	38	mg/Kg	☼	05/25/16 11:00	05/27/16 11:01	10

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
o-Terphenyl (Surr)	105		63 - 141	05/25/16 11:00	05/27/16 11:01	10

Method: 8081B - Organochlorine Pesticides (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aldrin	ND		17	2.1	ug/Kg	☼	05/20/16 11:18	06/05/16 16:39	1
alpha-BHC	ND		17	2.2	ug/Kg	☼	05/20/16 11:18	06/05/16 16:39	1
beta-BHC	ND		17	3.3	ug/Kg	☼	05/20/16 11:18	06/05/16 16:39	1
gamma-BHC (Lindane)	ND		17	1.7	ug/Kg	☼	05/20/16 11:18	06/05/16 16:39	1
delta-BHC	ND		17	1.6	ug/Kg	☼	05/20/16 11:18	06/05/16 16:39	1
alpha-Chlordane	ND		17	2.0	ug/Kg	☼	05/20/16 11:18	06/05/16 16:39	1
gamma-Chlordane	2.8	J p	17	0.54	ug/Kg	☼	05/20/16 11:18	06/05/16 16:39	1
4,4'-DDD	ND		17	2.6	ug/Kg	☼	05/20/16 11:18	06/05/16 16:39	1
4,4'-DDE	ND		17	2.2	ug/Kg	☼	05/20/16 11:18	06/05/16 16:39	1
4,4'-DDT	ND		17	4.1	ug/Kg	☼	05/20/16 11:18	06/05/16 16:39	1
Dieldrin	ND		17	0.92	ug/Kg	☼	05/20/16 11:18	06/05/16 16:39	1
Endosulfan I	ND		17	0.53	ug/Kg	☼	05/20/16 11:18	06/05/16 16:39	1
Endosulfan II	ND		17	1.0	ug/Kg	☼	05/20/16 11:18	06/05/16 16:39	1
Endosulfan sulfate	ND		17	0.93	ug/Kg	☼	05/20/16 11:18	06/05/16 16:39	1
Endrin	ND		17	1.1	ug/Kg	☼	05/20/16 11:18	06/05/16 16:39	1
Endrin aldehyde	ND		17	1.1	ug/Kg	☼	05/20/16 11:18	06/05/16 16:39	1
Endrin ketone	ND		17	3.4	ug/Kg	☼	05/20/16 11:18	06/05/16 16:39	1
Heptachlor	ND		17	1.9	ug/Kg	☼	05/20/16 11:18	06/05/16 16:39	1
Heptachlor epoxide	ND		17	1.2	ug/Kg	☼	05/20/16 11:18	06/05/16 16:39	1
Methoxychlor	ND		34	13	ug/Kg	☼	05/20/16 11:18	06/05/16 16:39	1
Toxaphene	ND		680	200	ug/Kg	☼	05/20/16 11:18	06/05/16 16:39	1

TestAmerica Sacramento

Client Sample Results

Client: Northern Hydrology & Engineering
Project/Site: Mad River Ponds

TestAmerica Job ID: 320-18842-1

Client Sample ID: PERC POND N2

Date Collected: 05/12/16 12:00

Date Received: 05/13/16 09:35

Lab Sample ID: 320-18842-3

Matrix: Solid

Percent Solids: 99.1

Method: 8081B - Organochlorine Pesticides (GC) (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
2,4'-DDD	ND		34	6.8	ug/Kg	☼	05/20/16 11:18	06/05/16 16:39	1
2,4'-DDE	ND		34	6.8	ug/Kg	☼	05/20/16 11:18	06/05/16 16:39	1
2,4'-DDT	ND		34	6.8	ug/Kg	☼	05/20/16 11:18	06/05/16 16:39	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
DCB Decachlorobiphenyl	96		49 - 119				05/20/16 11:18	06/05/16 16:39	1
DCB Decachlorobiphenyl	101		49 - 119				05/20/16 11:18	06/05/16 16:39	1
Tetrachloro-m-xylene	89		58 - 111				05/20/16 11:18	06/05/16 16:39	1
Tetrachloro-m-xylene	93		58 - 111				05/20/16 11:18	06/05/16 16:39	1

Method: 8082 - Polychlorinated Biphenyls (PCBs) by Gas Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
PCB-1016	ND		33	3.4	ug/Kg	☼	05/20/16 11:31	05/25/16 16:58	1
PCB-1221	ND		33	5.3	ug/Kg	☼	05/20/16 11:31	05/25/16 16:58	1
PCB-1232	ND		33	6.5	ug/Kg	☼	05/20/16 11:31	05/25/16 16:58	1
PCB-1242	ND		33	7.5	ug/Kg	☼	05/20/16 11:31	05/25/16 16:58	1
PCB-1248	ND		33	5.8	ug/Kg	☼	05/20/16 11:31	05/25/16 16:58	1
PCB-1254	ND		33	2.7	ug/Kg	☼	05/20/16 11:31	05/25/16 16:58	1
PCB-1260	ND		33	2.9	ug/Kg	☼	05/20/16 11:31	05/25/16 16:58	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
DCB Decachlorobiphenyl	18	X	77 - 123				05/20/16 11:31	05/25/16 16:58	1

Method: 1613B - Dioxins and Furans (HRGC/HRMS)

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
2,3,7,8-TCDD	ND		1.0	0.10	pg/g	☼	05/24/16 13:07	05/25/16 19:28	1
1,2,3,7,8-PeCDD	ND		5.0	0.48	pg/g	☼	05/24/16 13:07	05/25/16 19:28	1
1,2,3,7,8-PeCDF	ND		5.0	0.054	pg/g	☼	05/24/16 13:07	05/25/16 19:28	1
2,3,4,7,8-PeCDF	ND		5.0	0.057	pg/g	☼	05/24/16 13:07	05/25/16 19:28	1
1,2,3,4,7,8-HxCDD	0.097	J q	5.0	0.059	pg/g	☼	05/24/16 13:07	05/25/16 19:28	1
1,2,3,6,7,8-HxCDD	0.14	J q	5.0	0.058	pg/g	☼	05/24/16 13:07	05/25/16 19:28	1
1,2,3,7,8,9-HxCDD	ND		5.0	0.048	pg/g	☼	05/24/16 13:07	05/25/16 19:28	1
1,2,3,4,7,8-HxCDF	0.088	J	5.0	0.037	pg/g	☼	05/24/16 13:07	05/25/16 19:28	1
1,2,3,6,7,8-HxCDF	0.091	J	5.0	0.033	pg/g	☼	05/24/16 13:07	05/25/16 19:28	1
1,2,3,7,8,9-HxCDF	ND		5.0	0.030	pg/g	☼	05/24/16 13:07	05/25/16 19:28	1
2,3,4,6,7,8-HxCDF	0.082	J q	5.0	0.028	pg/g	☼	05/24/16 13:07	05/25/16 19:28	1
1,2,3,4,6,7,8-HpCDD	2.9	J	5.0	0.087	pg/g	☼	05/24/16 13:07	05/25/16 19:28	1
1,2,3,4,6,7,8-HpCDF	0.74	J B q	5.0	0.53	pg/g	☼	05/24/16 13:07	05/25/16 19:28	1
1,2,3,4,7,8,9-HpCDF	ND		5.0	0.72	pg/g	☼	05/24/16 13:07	05/25/16 19:28	1
OCDD	17	B	10	0.092	pg/g	☼	05/24/16 13:07	05/25/16 19:28	1
OCDF	0.87	J B	10	0.048	pg/g	☼	05/24/16 13:07	05/25/16 19:28	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C-2,3,7,8-TCDD	57		25 - 164				05/24/16 13:07	05/25/16 19:28	1
13C-1,2,3,7,8-PeCDD	53		25 - 181				05/24/16 13:07	05/25/16 19:28	1
13C-1,2,3,7,8-PeCDF	55		24 - 185				05/24/16 13:07	05/25/16 19:28	1
13C-2,3,4,7,8-PeCDF	56		21 - 178				05/24/16 13:07	05/25/16 19:28	1
13C-1,2,3,4,7,8-HxCDD	55		32 - 141				05/24/16 13:07	05/25/16 19:28	1
13C-1,2,3,6,7,8-HxCDD	63		28 - 130				05/24/16 13:07	05/25/16 19:28	1
13C-1,2,3,4,7,8-HxCDF	56		26 - 152				05/24/16 13:07	05/25/16 19:28	1
13C-1,2,3,6,7,8-HxCDF	61		26 - 123				05/24/16 13:07	05/25/16 19:28	1

TestAmerica Sacramento

Client Sample Results

Client: Northern Hydrology & Engineering
Project/Site: Mad River Ponds

TestAmerica Job ID: 320-18842-1

Client Sample ID: PERC POND N2

Date Collected: 05/12/16 12:00

Date Received: 05/13/16 09:35

Lab Sample ID: 320-18842-3

Matrix: Solid

Percent Solids: 99.1

Method: 1613B - Dioxins and Furans (HRGC/HRMS) (Continued)

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C-2,3,4,6,7,8-HxCDF	59		28 - 136	05/24/16 13:07	05/25/16 19:28	1
13C-1,2,3,7,8,9-HxCDF	54		29 - 147	05/24/16 13:07	05/25/16 19:28	1
13C-1,2,3,4,6,7,8-HpCDD	59		23 - 140	05/24/16 13:07	05/25/16 19:28	1
13C-1,2,3,4,6,7,8-HpCDF	62		28 - 143	05/24/16 13:07	05/25/16 19:28	1
13C-1,2,3,4,7,8,9-HpCDF	61		26 - 138	05/24/16 13:07	05/25/16 19:28	1
13C-OCDD	59		17 - 157	05/24/16 13:07	05/25/16 19:28	1
Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	108		35 - 197	05/24/16 13:07	05/25/16 19:28	1

Method: 1613B - Dioxins and Furans (HRGC/HRMS) - RA

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
2,3,7,8-TCDF	ND		1.0	0.25	pg/g	☼	05/24/16 13:07	05/25/16 19:48	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C-2,3,7,8-TCDF	53		24 - 169				05/24/16 13:07	05/25/16 19:48	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	96		35 - 197				05/24/16 13:07	05/25/16 19:48	1

Method: 6010B - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Silver	ND		0.49	0.089	mg/Kg	☼	05/26/16 07:00	05/31/16 17:51	2
Arsenic	1.3	J	2.0	1.3	mg/Kg	☼	05/26/16 07:00	05/31/16 17:51	2
Barium	67		0.99	0.12	mg/Kg	☼	05/26/16 07:00	05/31/16 17:51	2
Beryllium	0.42		0.20	0.030	mg/Kg	☼	05/26/16 07:00	05/31/16 17:51	2
Cadmium	ND		0.20	0.030	mg/Kg	☼	05/26/16 07:00	05/31/16 17:51	2
Cobalt	8.3		0.49	0.25	mg/Kg	☼	05/26/16 07:00	05/31/16 17:51	2
Chromium	60		0.49	0.14	mg/Kg	☼	05/26/16 07:00	05/31/16 17:51	2
Copper	30		1.5	0.22	mg/Kg	☼	05/26/16 07:00	05/31/16 17:51	2
Molybdenum	ND		2.0	0.74	mg/Kg	☼	05/26/16 07:00	05/31/16 17:51	2
Nickel	70		0.99	0.24	mg/Kg	☼	05/26/16 07:00	05/31/16 17:51	2
Lead	6.3		0.99	0.26	mg/Kg	☼	05/26/16 07:00	05/31/16 17:51	2
Selenium	ND		2.0	1.4	mg/Kg	☼	05/26/16 07:00	05/31/16 17:51	2
Antimony	ND		2.0	0.93	mg/Kg	☼	05/26/16 07:00	05/31/16 17:51	2
Thallium	ND		2.0	0.83	mg/Kg	☼	05/26/16 07:00	05/31/16 17:51	2
Vanadium	40		0.49	0.19	mg/Kg	☼	05/26/16 07:00	05/31/16 17:51	2
Zinc	63		2.0	0.19	mg/Kg	☼	05/26/16 07:00	05/31/16 17:51	2

Method: 7471A - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	0.046		0.024	0.0052	mg/Kg	☼	05/27/16 08:28	05/27/16 13:50	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Kjeldahl Nitrogen	1100		100	75	mg/Kg	☼	05/24/16 17:22	05/25/16 19:38	2

TestAmerica Sacramento

Toxicity Summary

Client: Northern Hydrology & Engineering
Project/Site: Mad River Ponds

TestAmerica Job ID: 320-18842-1

Client Sample ID: PERC POND-NORTH N1

Lab Sample ID: 320-18842-1

Analyte	Result	Qualifier	NONE	NONE	Unit	WHO 2005		Method
						ND = 0		
						TEF	TEQ	
Total Dioxin/Furan TEQ					pg/g		0.42	TEQ
Total TEQ					pg/g		0.42	TEQ

Analyte	Result	Qualifier	RL	EDL	Unit	WHO 2005		Method
						ND = 0		
						TEF	TEQ	
2,3,7,8-TCDD	ND		1.8	0.23	pg/g	1	0.00	1613B
1,2,3,7,8-PeCDD	ND		9.1	1.3	pg/g	1	0.00	1613B
1,2,3,7,8-PeCDF	ND		9.1	0.13	pg/g	0.03	0.00	1613B
2,3,4,7,8-PeCDF	0.16	J q	9.1	0.15	pg/g	0.3	0.048	1613B
1,2,3,4,7,8-HxCDD	0.40	J q	9.1	0.15	pg/g	0.1	0.040	1613B
1,2,3,6,7,8-HxCDD	0.53	J q	9.1	0.15	pg/g	0.1	0.053	1613B
1,2,3,7,8,9-HxCDD	0.86	J	9.1	0.12	pg/g	0.1	0.086	1613B
1,2,3,4,7,8-HxCDF	ND		9.1	0.090	pg/g	0.1	0.00	1613B
1,2,3,6,7,8-HxCDF	0.21	J q	9.1	0.081	pg/g	0.1	0.021	1613B
1,2,3,7,8,9-HxCDF	ND		9.1	0.074	pg/g	0.1	0.00	1613B
2,3,4,6,7,8-HxCDF	0.29	J	9.1	0.068	pg/g	0.1	0.029	1613B
1,2,3,4,6,7,8-HpCDD	10		9.1	0.33	pg/g	0.01	0.10	1613B
1,2,3,4,6,7,8-HpCDF	2.2	J q B	9.1	2.0	pg/g	0.01	0.022	1613B
1,2,3,4,7,8,9-HpCDF	ND		9.1	2.4	pg/g	0.01	0.00	1613B
OCDD	55	B	18	0.27	pg/g	0.0003	0.017	1613B
OCDF	2.6	J B	18	0.11	pg/g	0.0003	0.00078	1613B
2,3,7,8-TCDF - RA	ND		1.8	0.54	pg/g	0.1	0.00	1613B

Client Sample ID: PERC POND-SOUTH S1

Lab Sample ID: 320-18842-2

						WHO 2005		
						ND = 0		
Analyte	Result	Qualifier	NONE	NONE	Unit	TEF	TEQ	Method
Total Dioxin/Furan TEQ					pg/g		0.032	TEQ
Total TEQ					pg/g		0.032	TEQ

						WHO 2005		
						ND = 0		
Analyte	Result	Qualifier	RL	EDL	Unit	TEF	TEQ	Method
2,3,7,8-TCDD	ND		1.0	0.072	pg/g	1	0.00	1613B
1,2,3,7,8-PeCDD	ND		5.0	0.38	pg/g	1	0.00	1613B
1,2,3,7,8-PeCDF	ND		5.0	0.041	pg/g	0.03	0.00	1613B
2,3,4,7,8-PeCDF	ND		5.0	0.043	pg/g	0.3	0.00	1613B
1,2,3,4,7,8-HxCDD	ND		5.0	0.052	pg/g	0.1	0.00	1613B
1,2,3,6,7,8-HxCDD	0.12	J	5.0	0.053	pg/g	0.1	0.012	1613B
1,2,3,7,8,9-HxCDD	ND		5.0	0.043	pg/g	0.1	0.00	1613B
1,2,3,4,7,8-HxCDF	ND		5.0	0.029	pg/g	0.1	0.00	1613B
1,2,3,6,7,8-HxCDF	ND		5.0	0.026	pg/g	0.1	0.00	1613B
1,2,3,7,8,9-HxCDF	ND		5.0	0.022	pg/g	0.1	0.00	1613B
2,3,4,6,7,8-HxCDF	ND		5.0	0.022	pg/g	0.1	0.00	1613B

TEF Reference:

WHO 2005 = World Health Organization (WHO) 2005 TEF, Dioxins, Furans and PCB Congeners

TestAmerica Sacramento

Toxicity Summary

Client: Northern Hydrology & Engineering
Project/Site: Mad River Ponds

TestAmerica Job ID: 320-18842-1

Client Sample ID: PERC POND-SOUTH S1 (Continued)

Lab Sample ID: 320-18842-2

Analyte	Result	Qualifier	RL	EDL	Unit	WHO 2005		Method
						ND = 0		
						TEF	TEQ	
1,2,3,4,6,7,8-HpCDD	1.7	J	5.0	0.066	pg/g	0.01	0.017	1613B
1,2,3,4,6,7,8-HpCDF	ND		5.0	0.49	pg/g	0.01	0.00	1613B
1,2,3,4,7,8,9-HpCDF	ND		5.0	0.72	pg/g	0.01	0.00	1613B
OCDD	8.7	J B	10	0.055	pg/g	0.0003	0.0026	1613B
OCDF	0.46	J B	10	0.036	pg/g	0.0003	0.00014	1613B
2,3,7,8-TCDF - RA	ND		1.0	0.22	pg/g	0.1	0.00	1613B

Client Sample ID: PERC POND N2

Lab Sample ID: 320-18842-3

Analyte	Result	Qualifier	NONE	NONE	Unit	WHO 2005		Method
						ND = 0		
						TEF	TEQ	
Total Dioxin/Furan TEQ					pg/g		0.092	TEQ
Total TEQ					pg/g		0.092	TEQ

Analyte	Result	Qualifier	RL	EDL	Unit	WHO 2005		Method
						ND = 0		
						TEF	TEQ	
2,3,7,8-TCDD	ND		1.0	0.10	pg/g	1	0.00	1613B
1,2,3,7,8-PeCDD	ND		5.0	0.48	pg/g	1	0.00	1613B
1,2,3,7,8-PeCDF	ND		5.0	0.054	pg/g	0.03	0.00	1613B
2,3,4,7,8-PeCDF	ND		5.0	0.057	pg/g	0.3	0.00	1613B
1,2,3,4,7,8-HxCDD	0.097	J q	5.0	0.059	pg/g	0.1	0.0097	1613B
1,2,3,6,7,8-HxCDD	0.14	J q	5.0	0.058	pg/g	0.1	0.014	1613B
1,2,3,7,8,9-HxCDD	ND		5.0	0.048	pg/g	0.1	0.00	1613B
1,2,3,4,7,8-HxCDF	0.088	J	5.0	0.037	pg/g	0.1	0.0088	1613B
1,2,3,6,7,8-HxCDF	0.091	J	5.0	0.033	pg/g	0.1	0.0091	1613B
1,2,3,7,8,9-HxCDF	ND		5.0	0.030	pg/g	0.1	0.00	1613B
2,3,4,6,7,8-HxCDF	0.082	J q	5.0	0.028	pg/g	0.1	0.0082	1613B
1,2,3,4,6,7,8-HpCDD	2.9	J	5.0	0.087	pg/g	0.01	0.029	1613B
1,2,3,4,6,7,8-HpCDF	0.74	J B q	5.0	0.53	pg/g	0.01	0.0074	1613B
1,2,3,4,7,8,9-HpCDF	ND		5.0	0.72	pg/g	0.01	0.00	1613B
OCDD	17	B	10	0.092	pg/g	0.0003	0.0051	1613B
OCDF	0.87	J B	10	0.048	pg/g	0.0003	0.00026	1613B
2,3,7,8-TCDF - RA	ND		1.0	0.25	pg/g	0.1	0.00	1613B

TEF Reference:

WHO 2005 = World Health Organization (WHO) 2005 TEF, Dioxins, Furans and PCB Congeners

TestAmerica Sacramento

Client Sample Results

Client: Northern Hydrology & Engineering
Project/Site: Mad River Ponds

TestAmerica Job ID: 320-18842-2

Client Sample ID: PERC POND-NORTH N1

Lab Sample ID: 320-18842-1

Date Collected: 05/12/16 12:00

Matrix: Solid

Date Received: 05/13/16 09:35

Method: D422 - Grain Size

Analyte	Result	Qualifier	NONE	NONE	Unit	D	Prepared	Analyzed	Dil Fac
Gravel	0.3				%			06/27/16 11:58	1
Coarse Sand	2.6				%			06/27/16 11:58	1
Medium Sand	11.0				%			06/27/16 11:58	1
Fine Sand	12.8				%			06/27/16 11:58	1
Silt	57.6				%			06/27/16 11:58	1
Clay	15.7				%			06/27/16 11:58	1
Sieve Size 3 inch	0.0				%			06/27/16 11:58	1
Sieve Size 2 inch	0.0				%			06/27/16 11:58	1
Sieve Size 1.5 inch	0.0				%			06/27/16 11:58	1
Sieve Size 1 inch	0.0				%			06/27/16 11:58	1
Sieve Size 0.75 inch	0.0				%			06/27/16 11:58	1
Sieve Size 0.375 inch	0.0				%			06/27/16 11:58	1
Sieve Size #4	0.3				%			06/27/16 11:58	1
Sieve Size #10	2.6				%			06/27/16 11:58	1
Sieve Size #20	7.5				%			06/27/16 11:58	1
Sieve Size #40	3.6				%			06/27/16 11:58	1
Sieve Size #60	2.8				%			06/27/16 11:58	1
Sieve Size #140	6.1				%			06/27/16 11:58	1
Sieve Size #200	0.0				%			06/27/16 11:58	1
Sieve Size #230	4.0				%			06/27/16 11:58	1
Sand	26.4				%			06/27/16 11:58	1

Client Sample ID: PERC POND-SOUTH S1

Lab Sample ID: 320-18842-2

Date Collected: 05/12/16 12:00

Matrix: Solid

Date Received: 05/13/16 09:35

Method: D422 - Grain Size

Analyte	Result	Qualifier	NONE	NONE	Unit	D	Prepared	Analyzed	Dil Fac
Gravel	20.9				%			06/27/16 11:58	1
Coarse Sand	11.3				%			06/27/16 11:58	1
Medium Sand	35.6				%			06/27/16 11:58	1
Fine Sand	22.8				%			06/27/16 11:58	1
Silt	6.2				%			06/27/16 11:58	1
Clay	3.3				%			06/27/16 11:58	1
Sieve Size 3 inch	0.0				%			06/27/16 11:58	1
Sieve Size 2 inch	0.0				%			06/27/16 11:58	1
Sieve Size 1.5 inch	0.0				%			06/27/16 11:58	1
Sieve Size 1 inch	0.0				%			06/27/16 11:58	1
Sieve Size 0.75 inch	0.0				%			06/27/16 11:58	1
Sieve Size 0.375 inch	0.0				%			06/27/16 11:58	1
Sieve Size #4	20.9				%			06/27/16 11:58	1
Sieve Size #10	11.3				%			06/27/16 11:58	1
Sieve Size #20	14.1				%			06/27/16 11:58	1
Sieve Size #40	21.5				%			06/27/16 11:58	1
Sieve Size #60	14.5				%			06/27/16 11:58	1
Sieve Size #140	6.8				%			06/27/16 11:58	1
Sieve Size #200	0.0				%			06/27/16 11:58	1
Sieve Size #230	1.5				%			06/27/16 11:58	1
Sand	69.7				%			06/27/16 11:58	1

TestAmerica Sacramento

Client Sample Results

Client: Northern Hydrology & Engineering
Project/Site: Mad River Ponds

TestAmerica Job ID: 320-18842-2

Client Sample ID: PERC POND N2

Lab Sample ID: 320-18842-3

Date Collected: 05/12/16 12:00

Matrix: Solid

Date Received: 05/13/16 09:35

Method: D422 - Grain Size

Analyte	Result	Qualifier	NONE	NONE	Unit	D	Prepared	Analyzed	Dil Fac
Gravel	10.9				%			06/27/16 11:58	1
Coarse Sand	4.4				%			06/27/16 11:58	1
Medium Sand	19.5				%			06/27/16 11:58	1
Fine Sand	27.0				%			06/27/16 11:58	1
Silt	25.3				%			06/27/16 11:58	1
Clay	13.0				%			06/27/16 11:58	1
Sieve Size 3 inch	0.0				%			06/27/16 11:58	1
Sieve Size 2 inch	0.0				%			06/27/16 11:58	1
Sieve Size 1.5 inch	0.0				%			06/27/16 11:58	1
Sieve Size 1 inch	0.0				%			06/27/16 11:58	1
Sieve Size 0.75 inch	0.0				%			06/27/16 11:58	1
Sieve Size 0.375 inch	0.0				%			06/27/16 11:58	1
Sieve Size #4	10.9				%			06/27/16 11:58	1
Sieve Size #10	4.4				%			06/27/16 11:58	1
Sieve Size #20	6.4				%			06/27/16 11:58	1
Sieve Size #40	13.1				%			06/27/16 11:58	1
Sieve Size #60	11.8				%			06/27/16 11:58	1
Sieve Size #140	11.4				%			06/27/16 11:58	1
Sieve Size #200	0.0				%			06/27/16 11:58	1
Sieve Size #230	3.8				%			06/27/16 11:58	1
Sand	50.9				%			06/27/16 11:58	1

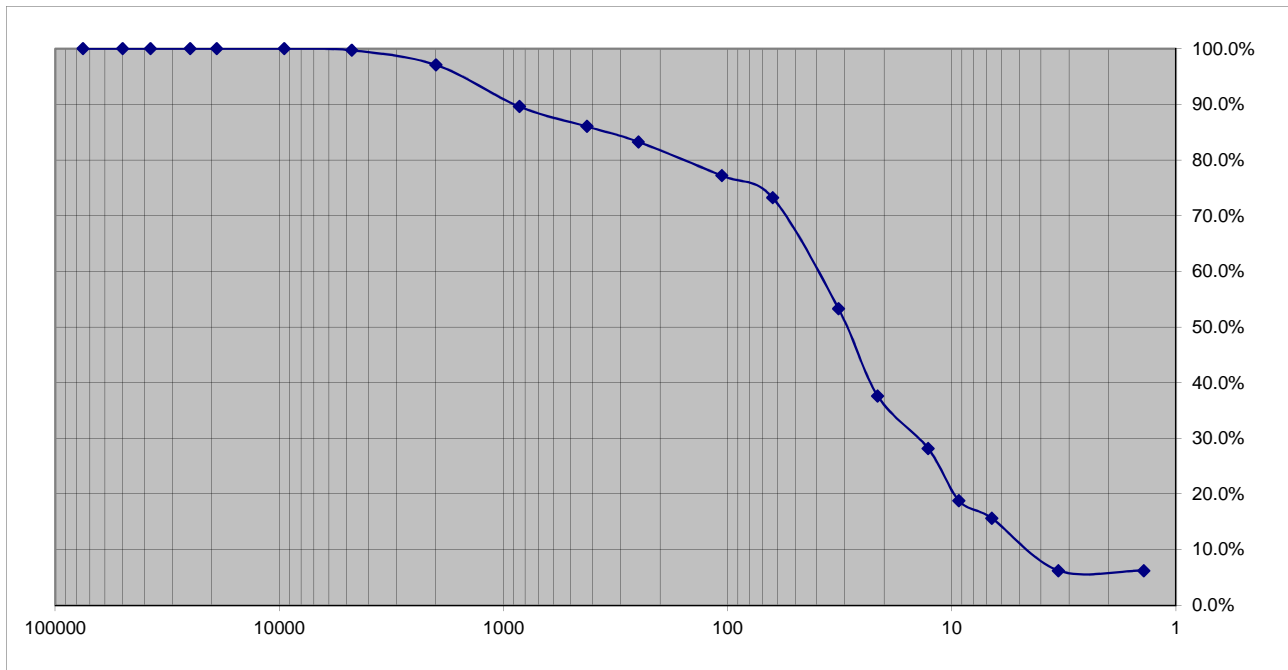
Grain Size ASTM D422

320-18842-C-1

Largest Partical Size #4

Partical Size	Partical Size	Percent Finer	Incremental Percent
3 inch	75000	100.0%	0.0%
2 inch	50000	100.0%	0.0%
1.5 inch	37500	100.0%	0.0%
1 inch	25000	100.0%	0.0%
3/4 inch	19000	100.0%	0.0%
3/8 inch	9500	100.0%	0.0%
#4	4750	99.7%	0.3%
#10	2000	97.1%	2.6%
#20	850	89.6%	7.5%
#40	425	86.0%	3.6%
#60	250	83.3%	2.8%
#140	106	77.2%	6.1%
#230	63	73.2%	4.0%
Hydrometer	32	53.3%	19.9%
Hydrometer	21	37.6%	15.7%
Hydrometer	13	28.2%	9.4%
Hydrometer	9	18.8%	9.4%
Hydrometer	7	15.7%	3.1%
Hydrometer	3	6.3%	9.4%
Hydrometer	1	6.3%	0.0%

Soil Clasification Percent	320-18842-C-1
Gravel	0.3%
Sand	26.5%
Corse Sand	2.6%
Medium Sand	11.0%
Fine Sand	12.8%
Silt	57.6%
Clay	15.7%



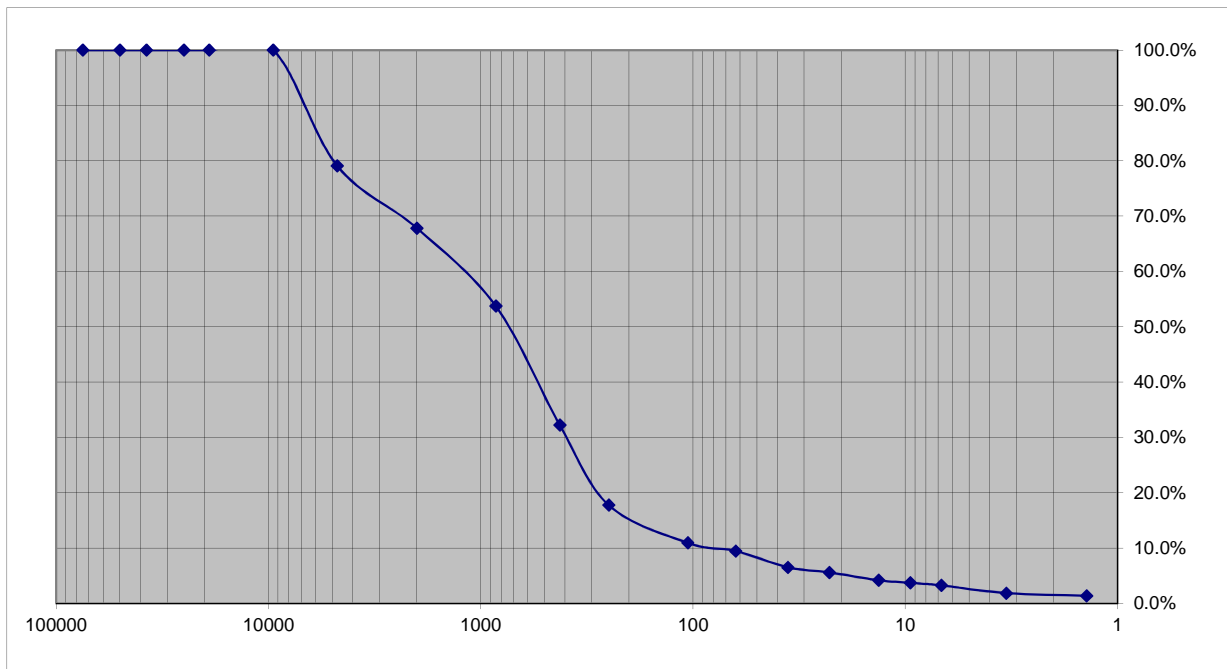
Grain Size ASTM D422

320-18842-C-2

Largest Partical Size #4

Partical size	Partical Size	Percent Finer	Incremental Percent
3 inch	75000	100.0%	0.0%
2 inch	50000	100.0%	0.0%
1.5 inch	37500	100.0%	0.0%
1 inch	25000	100.0%	0.0%
3/4 inch	19000	100.0%	0.0%
3/8 inch	9500	100.0%	0.0%
#4	4750	79.1%	20.9%
#10	2000	67.8%	11.3%
#20	850	53.8%	14.1%
#40	425	32.3%	21.5%
#60	250	17.8%	14.5%
#140	106	11.0%	6.8%
#230	63	9.5%	1.5%
Hydrometer	36	6.5%	2.9%
Hydrometer	23	5.6%	0.9%
Hydrometer	13	4.2%	1.4%
Hydrometer	9	3.7%	0.5%
Hydrometer	7	3.3%	0.5%
Hydrometer	3	1.9%	1.4%
Hydrometer	1	1.4%	0.5%

Soil Clasification Percent	320-18842-C-2
Gravel	20.9%
Sand	69.6%
Corse Sand	11.3%
Medium Sand	35.6%
Fine Sand	22.8%
Silt	6.2%
Clay	3.3%



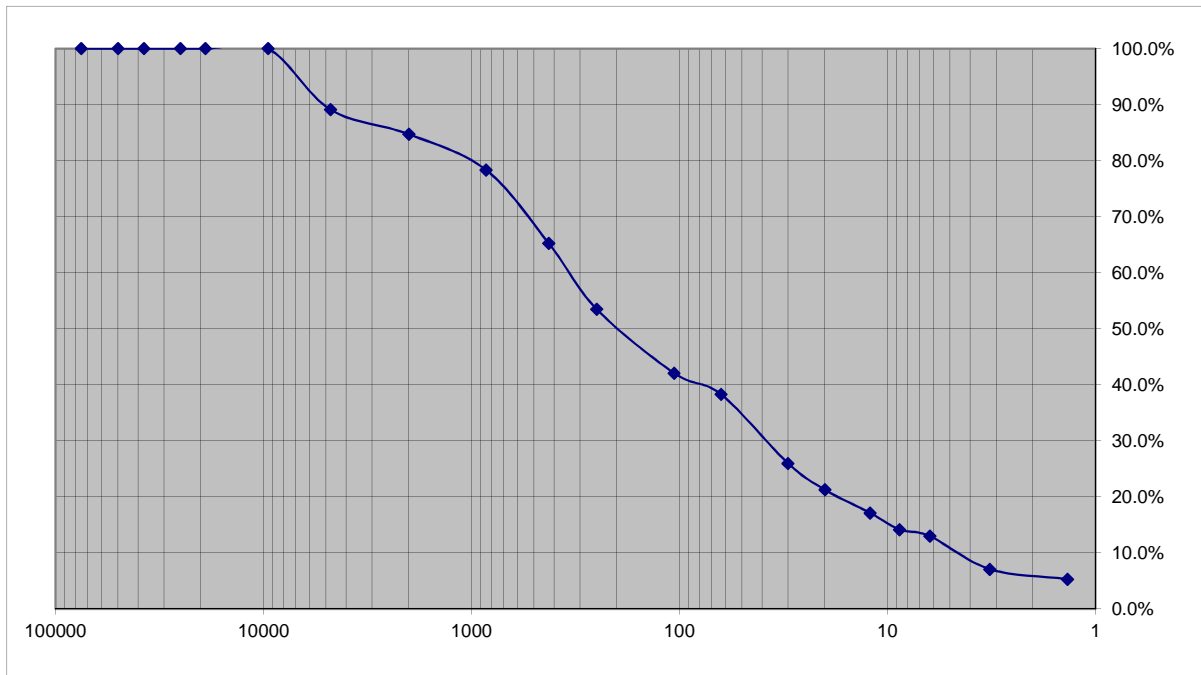
Grain Size ASTM D422

320-18842-C-3

Largest Partical Size #4

Partical size	Partical Size	Percent Finer	Incremental Percent
3 inch	75000	100.0%	0.0%
2 inch	50000	100.0%	0.0%
1.5 inch	37500	100.0%	0.0%
1 inch	25000	100.0%	0.0%
3/4 inch	19000	100.0%	0.0%
3/8 inch	9500	100.0%	0.0%
#4	4750	89.1%	10.9%
#10	2000	84.7%	4.4%
#20	850	78.3%	6.4%
#40	425	65.3%	13.1%
#60	250	53.5%	11.8%
#140	106	42.1%	11.4%
#230	63	38.3%	3.8%
Hydrometer	30	26.0%	12.3%
Hydrometer	20	21.3%	4.7%
Hydrometer	12	17.1%	4.1%
Hydrometer	9	14.2%	3.0%
Hydrometer	6	13.0%	1.2%
Hydrometer	3	7.1%	5.9%
Hydrometer	1	5.3%	1.8%

Soil Clasification Percent	320-18842-C-3
Gravel	10.9%
Sand	50.8%
Corse Sand	4.4%
Medium Sand	19.5%
Fine Sand	27.0%
Silt	25.3%
Clay	13.0%



Hydraulic Analysis Report

Mad River Estuary Restoration: Off-channel Habitat Design

CDFW Fisheries Restoration Grant Program No. P1410511 and SCC Grant No. 14-067



California Trout, Inc.
615 11th Street
Arcata, CA 95521



McKinleyville Community Services District
P.O. Box 2037
1656 Sutter Rd
McKinleyville, CA 95519



California Department of Fish and Wildlife
619 Second Street
Eureka, CA 95501



State Coastal Conservancy
1515 Clay Street, 10th Floor
Oakland, CA 94612



PO Box 2515
1560 Betty Court, Suite B2
McKinleyville, CA 95519

June 2017

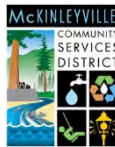


Hydraulic Analysis Report

*Mad River Estuary Restoration: Off-channel Habitat Design
CDFW Fisheries Restoration Grant Program No. P1410511 and SCC Grant No. 14-067*



California Trout, Inc.



McKinleyville Community Services District



California Department of Fish and Wildlife



State Coastal Conservancy

Prepared by



June 2017

TABLE OF CONTENTS

LIST OF TABLES	iv
LIST OF FIGURES	iv
ACRONYMS AND ABBREVIATIONS	v
1. INTRODUCTION	1
1.1 Project Background	1
1.2 Geographic Setting	1
1.3 Site Description	1
1.4 Site Geology	5
1.5 Climate	6
2. HYDROLOGY	6
2.1 Mad River Discharge	6
2.2 Flood Frequency Analysis	6
2.3 River Level Monitoring	6
2.4 Tides	7
3. HYDRAULIC ANALYSES	8
3.1 Topography and Bathymetry	8
3.2 One-Dimensional Existing Conditions Open Channel Flow Model	8
3.2.1 HEC-RAS Model Extents	9
3.2.2 HEC-RAS Boundary Conditions	9
3.2.3 HEC-RAS Model Calibration	10
3.2.4 HEC-RAS Model Results	12
3.3 Two-Dimensional Design Conditions Open Channel Flow Model	14
3.3.1 SRH-2D Model Extents	14
3.3.2 SRH-2D Boundary Conditions	14
3.3.3 SRH-2D Model Results and Discussion	16
3.4 Geomorphic Assessment	22
3.4.1 Suspended Sediment Composition	22
3.4.2 Suspended Sediment Concentration	23
3.4.3 Fine Sediment Mobility	23
4. CONCLUSIONS AND RECOMMENDATIONS FOR A PREFERRED DESIGN	24
4.1 Conclusions	24
4.2 Recommendations for a Preferred Design	24
5. REFERENCES	25

List of Tables

Table 1. Peak Flow Estimates for Recurrence Intervals at USGS Gaging Station No. 11481000	6
Table 2. Manning's Roughness Coefficient Values.....	11
Table 3. River Stage Observations.....	12
Table 4. HEC-RAS Model Calibration Results	13

List of Figures

Figure 1. Location Map.....	2
Figure 2. Watershed Map.....	3
Figure 3. Project Site Map	4
Figure 4. River Levels near the Project Site and Stream Flow at USGS Gage Station No. 11481000.....	7
Figure 5. Longitudinal Profile of the Mad River	8
Figure 6. HEC-RAS Model Cross-section Layout.....	9
Figure 7. HEC-RAS Model Project Reach Manning's N Areas and River Stage Observation Points	11
Figure 8. Alternative 3 Project Design Planform and Profile	15
Figure 9. SRH-2D Model Manning's N Areas	16
Figure 10. SRH-2D Low Flow Results (t=2 hrs): Water Surface Elevation Profile.....	17
Figure 11. SRH-2D Low Flow Results (t=2 hrs): Depth-averaged Velocity Profile.....	17
Figure 12. SRH-2D Low Flow Results (t=2 hrs): Bed Shear Stress Profile	18
Figure 13. SRH-2D High Flow Results (t=4 hrs): Water Surface Elevations with Velocity Vectors	19
Figure 14. SRH-2D High Flow Results (t=4 hrs): Water Depths with Velocity Vectors.....	19
Figure 15. SRH-2D High Flow Results (t=4 hrs): Depth-averaged Velocity Magnitude and Vectors.....	20
Figure 16. SRH-2D High Flow Results (t=4 hrs): Bed Shear Stress with Velocity Vectors.....	20
Figure 17. SRH-2D High Flow Results (t=4 hrs): Water Surface Elevation Profile	21
Figure 18. SRH-2D High Flow Results (t=4 hrs): Depth-averaged Velocity Profile	21
Figure 19. SRH-2D High Flow Results (t=4 hrs): Bed Shear Stress Profile	21
Figure 20. Median and 84 th Percentile Grain Size Diameter vs Stream Discharge	22
Figure 21. Suspended Sediment Concentration Related to Stream Discharge	23

Acronyms and Abbreviations

1-D	One-dimensional
2-D	Two-dimensional
Approx.	Approximate
CalTrout	California Trout, Inc.
CDFW	California Department of Fish and Wildlife
cfs	Cubic feet per second
D50	Median grain size
D84	84 th percentile grain size
(E)	Existing
ELEV	Elevation
Esp.	Especially
FRGP	Fisheries Restoration Grants Program
ft	Feet
HEC-RAS	Hydrologic Engineering Center River Analysis System
Hrs	hours
ID	Identification
LiDAR	Light Detection and Ranging
MCSD	McKinleyville Community Services District
mg/L	Milligrams per liter
mm	Millimeter
MW	Groundwater monitoring well
NAD83	North American Datum of 1983
NAVD88	North American Vertical Datum of 1988
NHE	Northern Hydrology & Engineering
NOAA	National Oceanic and Atmospheric Administration
N/m ²	Newton per meter squared (equal to Pascal)
(P)	Proposed
Pa	Pascal (equal to a N/m ²)
Poss.	Possibly
RM	River Mile
SCC	State Coastal Conservancy
SHN	SHN Consulting Engineers & Geologists, Inc.
STA	Station
t	Time step
TSC	Technical Service Center
(TYP.)	Typical
USACE	United State Army Corps of Engineers
USBOR	United States Bureau of Reclamation
USGS	United State Geological Survey
VEG	Vegetated
WSE	Water surface elevation
WY	Water year

1. INTRODUCTION

1.1 Project Background

California Trout, Inc. (CalTrout) received a grant from the California Department of Fish and Wildlife (CDFW) Fisheries Restoration Grants Program (FRGP), Agreement No. P1410511, to prepare engineering designs to reconnect lower Mad River to approximately 4.25 acres of leveed percolation ponds (historical active floodplain) to provide critical juvenile salmonid rearing habitat and off-channel refugia for coho salmon (*Oncorhynchus kisutch*). The State Coastal Conservancy (SCC) provided necessary supplementary funding for the off-channel habitat enhancement project (Grant No. 14-067) and expanded the project scope to improve public access to the river and implement a biofiltration study on the adjacent floodplain. CalTrout employed Northern Hydrology & Engineering (NHE) to develop the project's engineering designs. The project area is owned by the McKinleyville Community Services District (MCSD) and is located along the east bank of the lower Mad River (Figure 1). MCSD has provided in-kind labor and equipment.

Specific design options were included in three conceptual design alternatives, which were presented and discussed in the project agency review meeting on April 25, 2016. These alternatives were revised based on input from the agencies and presented to the public at an MCSD Board meeting on May 4, 2016. A *Basis of Engineering Designs* report was prepared by NHE and submitted to the design review team on April 20, 2017, which included a summary of data collected and compiled to establish existing conditions, project objectives, criteria and constraints, and the options analysis. Alternative 3 was chosen for further hydraulic analysis to evaluate the most complex design conditions, including options considered in Alternatives 1 and 2. This report summarizes the hydraulic analyses used to evaluate the Alternative 3 design options and provides conclusions and recommendations to adjust the 30% design for the next design phase, 65% designs. Repetition of information between the reports is for the benefit of the reviewer, to provide a clear description on which the hydraulic analyses were built.

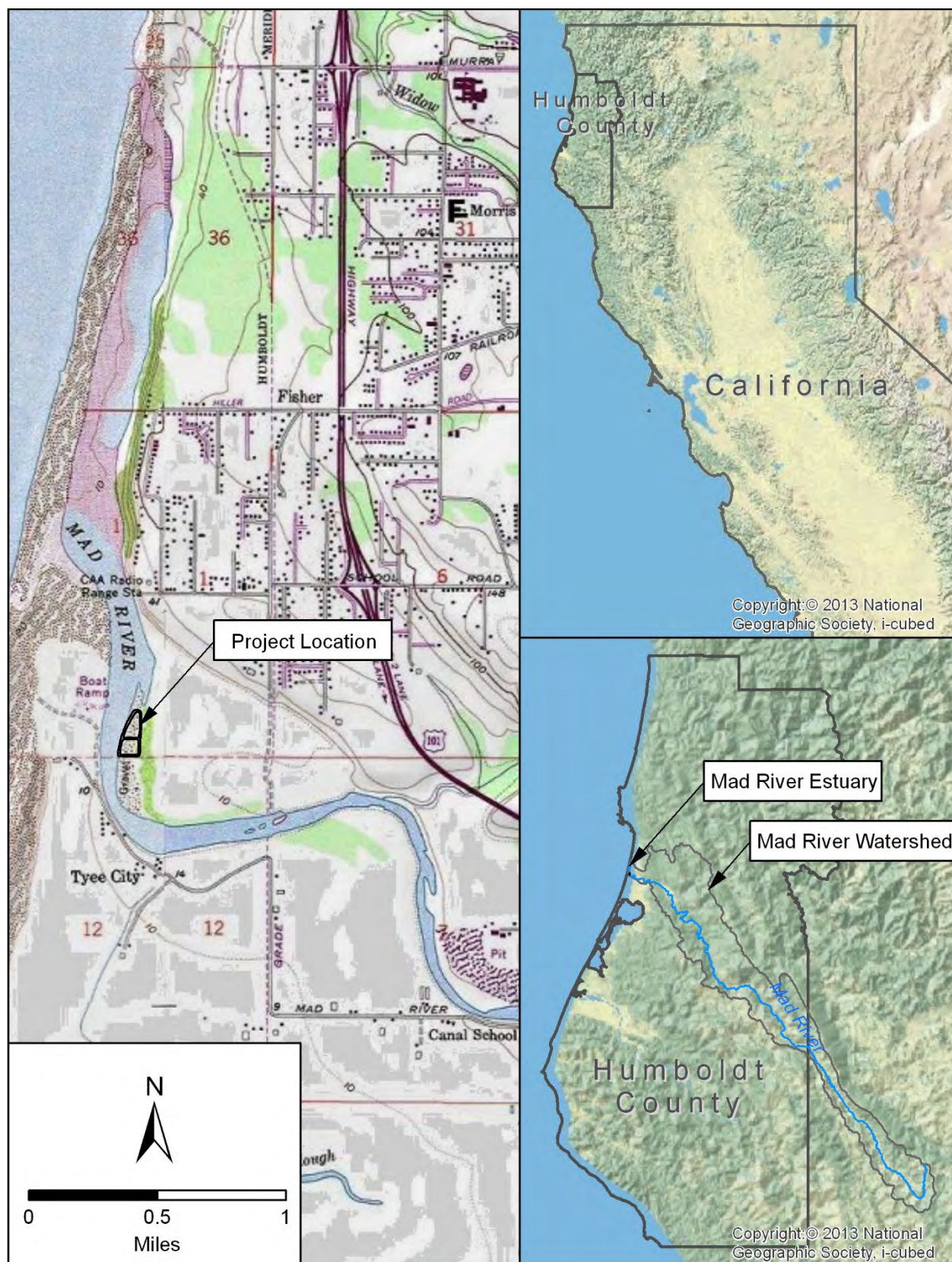
Points West Surveying established project surveying control from School Road to the percolation ponds. Project topography is reported in US survey feet and referenced to the North American Datum of 1983 (NAD83), California State Plane Zone 1, 2007 Epoch. Elevations are reported in feet (ft), referenced to the North American Vertical Datum of 1988 (NAVD88).

1.2 Geographic Setting

The Mad River drains approximately 497 square miles in northern California over a length of roughly 100 miles to the Pacific Ocean near the town of McKinleyville, north of Humboldt Bay (Figure 2). Watershed elevations range from 6,000 ft at the Coast Range headwaters in Trinity County to sea level at the mouth, approximately 6 miles north of Humboldt Bay. Matthews Dam impounds Ruth Lake at river mile (RM) 79, and a natural boulder falls barrier to anadromous salmonids is located on the mainstem river near Bug Creek at approximately RM 50. The project is located at approximately RM 2 within the Mad River estuary.

1.3 Site Description

The project site is located on the eastern floodplain of the Mad River at the inside of a meander bend (Figure 3). The northern, downstream end of the project site is within a mature, intact riparian forest developed on the active floodplain, lee side of a riffle located downstream of the Mad River County Park Boat Ramp. A historical backwater channel remains as a depression in the forest floor and is inundated during high flows. The project area focal point is a pair of constructed percolation ponds that are leveed



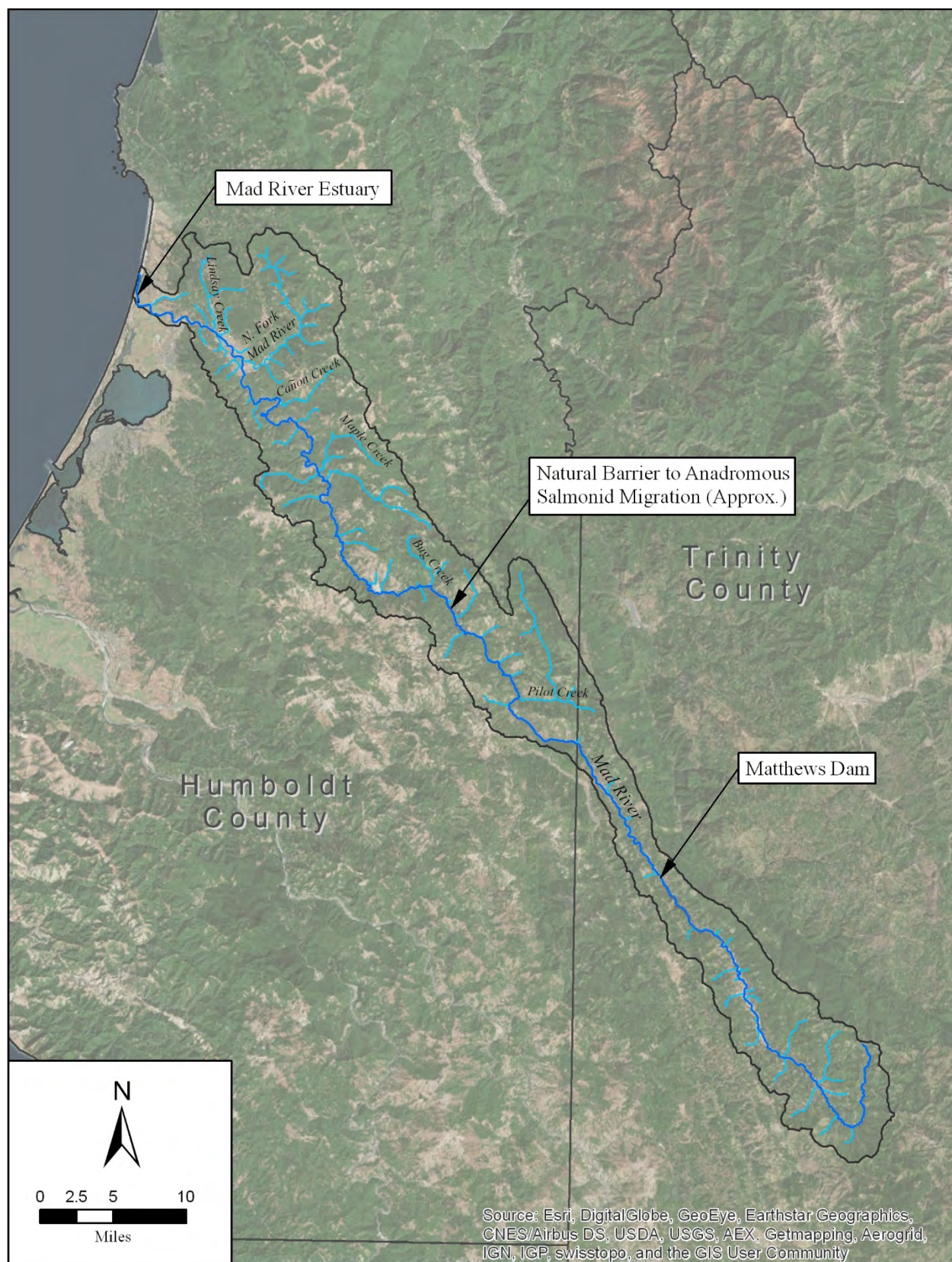


Figure 2. Watershed Map

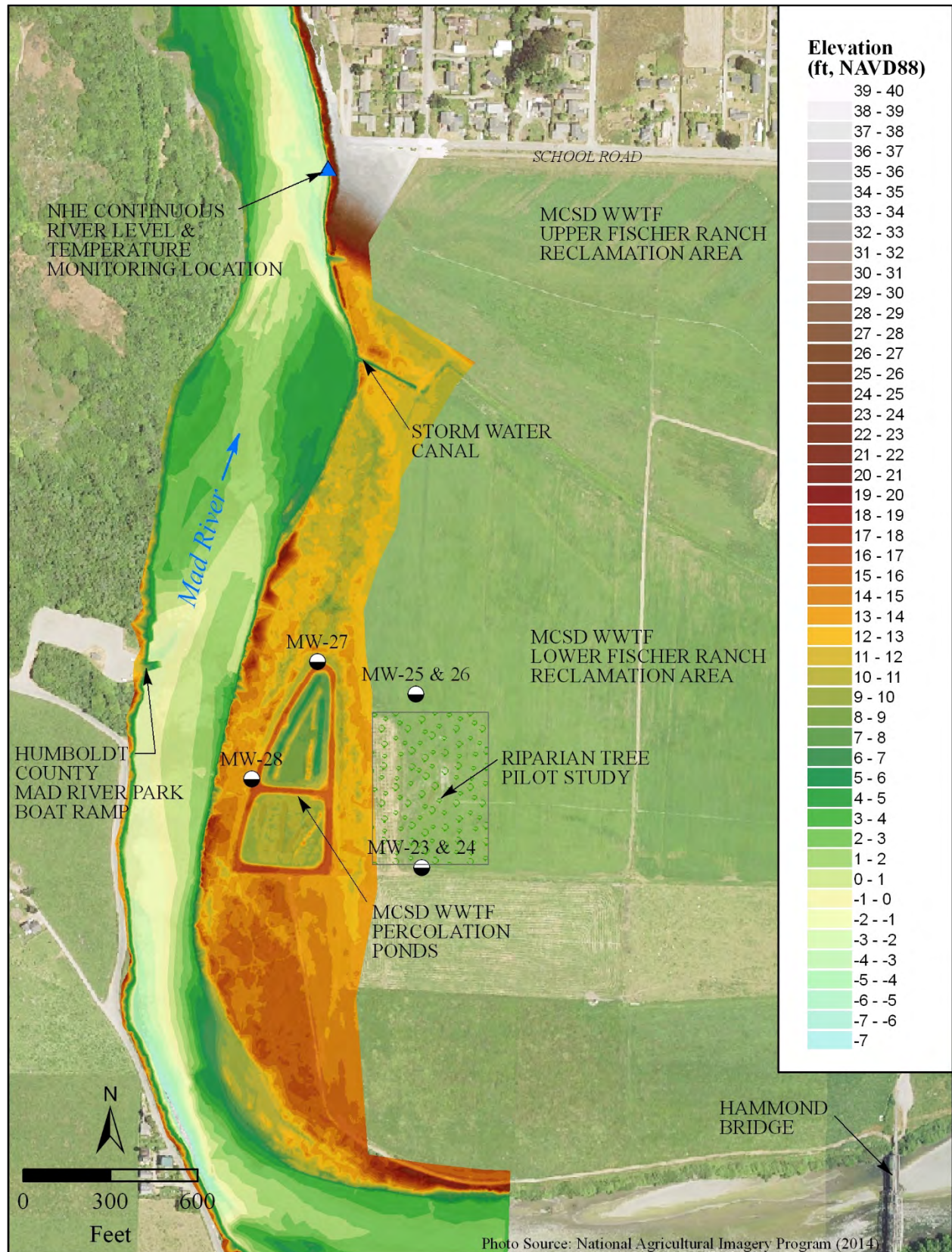


Figure 3. Project Site Map

from the river's floods and ringed with cyclone fencing to prohibit public access. The ponds maintain inundated water levels when in use for treated wastewater discharge and convert to emergent wetlands when they are unfilled. The southern pond is generally 10 ft elevation with a single linear ridge that is over 13 ft high. The northern pond ranges from around 5.5 ft elevation in dredged areas to 13 ft on elevated ridges that serve as islands when the pond is in use. Isolated willows provide habitat diversity within the ponds, particularly up on the elevated ridges. The levees range from 15 ft on the northern end to above 17 ft on the southern end. Adjacent floodplain areas range from around 10 ft in historic depressions and existing backwater areas to 14 ft elevation. When the river banks overtop, water backwaters through a system of human-made footpaths back to a historical backwater area, which stays ponded for a period as flow waters recede and standing waters infiltrate and evaporate. The habitat restoration project area is bound to the north by an existing storm water canal that drains the large, elevated floodplain to the east through a canal gate that remains open through the winter season and is closed when MCSD is applying treated wastewater to their fields. The project is limited to the south by a neighboring property and to the east by the large, elevated floodplain used seasonally for MCSD's treated wastewater reclamation.

1.4 Site Geology

The project site is mapped in the *Geology of the Cape Mendocino, Eureka, Garberville and Southwestern Part of the Hayfork 30 X 60 Minute Quadrangles and Adjacent Offshore Area, Northern California* (McLaughlin et al. 2000). The river and floodplain are mapped as "undeformed marine shoreline and aolian deposits (Holocene and late Pleistocene), consisting of gravel and sand deposited in marine terraces, on benches and on dunes along present shorelines". SHN Consulting Engineers and Geologists, Inc. prepared a *Final Foundation Report* for the Hammond Trail Pedestrian Bridge Replacement, which included a geologic cross-section interpretation of the river and floodplain subsurface in close proximity to the project site (SHN 2015). Subsurface data were collected from excavated machine borings to a depth of 80 ft on the floodplains and approximately 200 ft in the channel. Lithology was logged and geotechnical tests were performed on representative samples. Underlying the floodplain surface were Holocene alluvial deposits, measured to depths of approximately 75 ft. An approximately 40-foot thick defined silt/clay layer was mapped at a depth of approximately 30 ft below the floodplain surface on the north bank (SHN 2015). Holocene alluvium was underlain with late Pliocene to middle Pleistocene age Falor Formation sediments.

SHN logged soil lithology when the groundwater wells were installed (Figure 3). Soil logs were included as an appendix in the *Basis of Engineering Designs* report. MW-27 was installed north of the ponds and levee into the ground surface at an elevation of approximately 10.5 ft. Less than a foot of sandy organic soil covered approximately 3 ft of silty sand (down to elevation of 7 ft) that overlays 15.5 ft of well graded sand with gravel (from elevation 7 ft down to -8.5 ft). Lean clay was observed 19 ft below ground surface (at -8.5 ft elevation). MW-28 was installed west of the ponds and levee in the ground surface at an elevation of approximately 13.5 ft. A thin layer of organic soil and sand covers approximately 2 ft of silty sand (down to an elevation of 11.5 ft), layered over approximately 2.5 ft of silty sand with gravel (down to an elevation of 9 ft), and approximately 3 ft of well graded sand with silt (to an elevation of 6 ft). Below these layered deposits is at least 12.5 ft of well graded gravel with sand (observed from and elevation of 6 ft to -6.5 ft). The lithology logs from these two wells provides some information about the floodplain foundation and the potential composition of native soils of in areas of excavation. For example, the backwater channel base near MW 27 was proposed to daylight at an elevation of 6 ft. It can be expected that the material at the base of the channel near the ponds would be composed of well graded sand with gravel.

1.5 Climate

The climate at the project site was characterized by the National Oceanic & Atmospheric Administration (NOAA) cooperative weather gauge station, located in Eureka, CA at Woodley Island. The gauge recorded precipitation, temperature, and snowfall from January 1, 1906 to the present. Normal precipitation relative to the 1981-2010 epoch indicate that the average annual precipitation is 40 inches and the wet season is from October to May, when 95% of the rainfall occurs (NCDC 2017). Temperatures range from an average high of 64.3 °F in August to an average low of 55.0 °F in December (NCDC 2017).

2. HYDROLOGY

2.1 Mad River Discharge

The United States Geological Survey (USGS) gaged the Mad River near Arcata, CA (Station No. 11481000) from October 1, 1910 to September 30, 1913 (water years [WY] 1911 to 1913) and from October 1, 1950 to the present day (WY 1951 to 2017). Annual peak flow data was reported through WY 2015. During the 68-year period of record, annual peak discharge events ranged from 3,360 cubic feet per second (cfs) on March 7, 1977 to 81,000 cfs on December 22, 1964.

2.2 Flood Frequency Analysis

Flood frequency analysis using the USGS software PeakFQ, can be performed at USGS gauging sites with 10 or more years of annual peak flow records to estimate the design recurrence interval flood events. PeakFQ fits a hydrologic record of annual peak flow events to a flood frequency distribution, using the USGS Bulletin 17B Guidelines of the Hydrology Subcommittee (USGS, 1982). Specifically, PeakFQ uses a Pearson III frequency distribution to fit the logarithms of USGS gauging station instantaneous peak flow formatted records.

The USGS flood frequency software PeakFQ (version 5.2) was used to estimate flood recurrence intervals, including the 1.5-, 2-, 5-, 10-, 25-, 50- and 100-year flood events (Table 1).

Table 1. Peak Flow Estimates for Recurrence Intervals at USGS Gaging Station No. 11481000

Recurrence Interval	PeakFQ Bulletin 17B Estimated Peak Discharge (cfs)
1.5-year	20,550
2-year	26,410
5-year	41,560
10-year	51,670
25-year	64,280
50-year	73,460
100-year	82,420

During the project monitoring period, high flow events occurred several times during the winter, including a 5-year recurrence interval event (provisional report of 43,100 cfs at USGS gaging station No. 11481000) that peaked on January 17, 2016 (Figure 4).

2.3 River Level Monitoring

A pressure transducer monitored continuous water depths in the Mad River at a pool immediately downstream of the project site from November 24, 2015 to July 15, 2016 and from August 2, 2016 to December 6, 2016. Water depths were converted to water surface elevations, which displayed tidal fluctuations and waters rising and falling during storm events. Water levels were compared to the stream

discharge hydrograph reported approximately 5.5 miles upstream at the USGS gaging station No. 11481000, Mad River near Arcata CA (Figure 4).

2.4 Tides

Monitored river levels were compared to local tidal data at the NOAA Station ID 9418767 (North Spit) and Station ID 9419750 (Crescent City). In general, the Mad River tides were in sync with the North Spit tidal gage. Project reach river levels were controlled by the bed elevations at the river mouth, which periodically scours the bed during winter storms to form a sand bar in the ocean. The monitoring data displayed a transition in the river level control before and after the first storm events, when the river formed a sand bar offshore of the mouth (Figure 4).

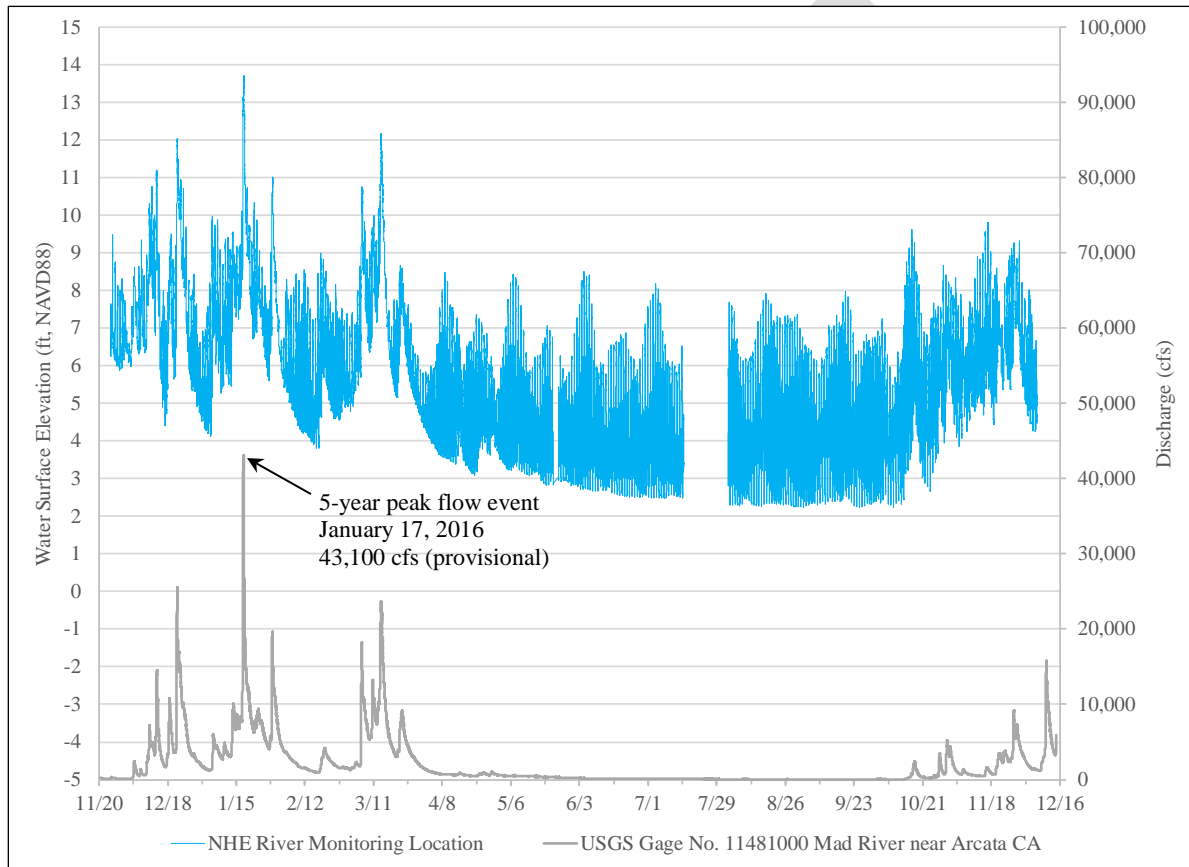


Figure 4. River Levels near the Project Site and Stream Flow at USGS Gage Station No. 11481000

3. HYDRAULIC ANALYSES

3.1 Topography and Bathymetry

A project base map was generated for the design from existing surveyed topography, including:

- 2010/2011 Coastal LiDAR (NOAA 2012).
- 2008 channel cross-sections surveyed by Points West Surveying as part of the Humboldt County Mad River bluff restoration project.
- 2013 river bathymetry measured by Graham Matthews & Associates after the Mad River bluff restoration project was implemented.
- Additional topography was collected by NHE with a surveying total station under the supervision of the project engineer.

The design project base map was combined with available data from the the 2013 *NOAA Coastal California TopoBathy Merge Project*, which included 2010/2011 Coastal LiDAR topography and 2009/2010 ocean bathymetry (NOAA 2013). The extended project map does not include the river bathymetry from the river mouth and ocean bottom upstream to the surveyed river bathymetry near the project reach. Channel slope and form were estimated from the available data by adjusting the channel mouth elevation to recreate measured tidal water surface elevations using the one-dimensional hydraulic model. The channel mouth was assumed to have fluctuated seasonally; lowering after the first storm events and then building back up as flows receded and the local littoral cell moved sands along the shore. This assumption was substantiated in the seasonally fluctuating tidal elevations observed at the project monitoring station. A channel alignment was defined in the Mad River through the project reach that captures grade control breaks, such as riffle crest elevations (Figure 5).

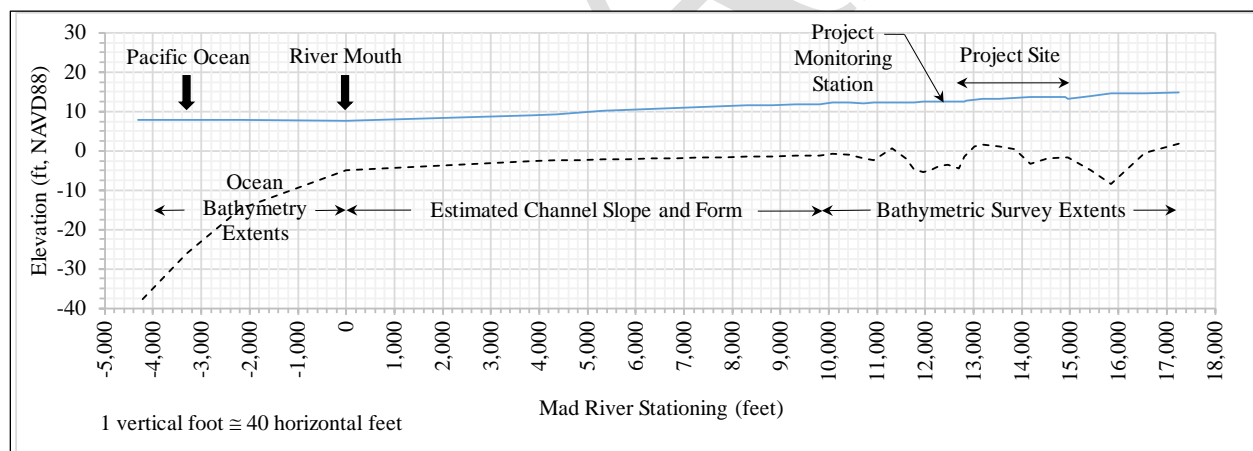


Figure 5. Longitudinal Profile of the Mad River

3.2 One-Dimensional Existing Conditions Open Channel Flow Model

Existing conditions were simulated in a steady-state, sub-critical, single-dimension US Army Corps of Engineers (USACE) Hydrologic Engineering Center River Analysis System (HEC-RAS) version 5.0.1 modeling software (USACE 2016). The HEC-RAS model was used to estimate existing condition water surface elevations through the project reach where channel bathymetry was well-defined and calibration data were collected. The purpose of the existing conditions one-dimensional model was to provide boundary conditions and “Manning’s n” roughness parameters to calculate the drag coefficients for a two-dimensional design conditions simulation model at the project site. The HEC-RAS model calculates one-dimensional water surface profiles and average channel velocities for both steady gradually varied flow

and unsteady flow through a channel. For this analysis, steady flow modeling was used to predict water surface elevations within the project area and modeling reach for design flow conditions. Reference can be made to the HEC-RAS hydraulic manual for information specific to steady-state modeling.

3.2.1 HEC-RAS Model Extents

The upstream boundary of the hydraulic analyses was approximately 1,300 ft downstream of the Hammond Bridge. In-channel bathymetry surveys and LiDAR (NOAA 2012) were used to define the 2,100-foot project reach. Downstream of the surveyed bathymetry, the model reach extended another 12,850 ft to the channel mouth and 4,300 ft out into the Pacific Ocean. Ocean bathymetry the channel mouth from the banks landward were defined by combined bathymetry and topography LiDAR (NOAA 2013). The channel mouth bathymetry form and elevation were estimated from model results to simulate observed water surface elevations at the project monitoring station.

Channel surveys were combined with overbank and ocean bathymetry LiDAR to define 33 cross-sections and a streamline along the thalweg (Figure 6). The channel mouth migrates along its sand spit and periodically breaches during high flows; therefore, the channel mouth cross-section locations were based on the best topographic data available. Thalweg elevations and channel form for the two cross-sections at and directly upstream of the channel mouth were estimated to calibrate the water surface elevations observed at the NHE project monitoring station. Five additional cross-sections were interpolated between the area of surveyed bathymetry and the cross-section upstream of the channel mouth.

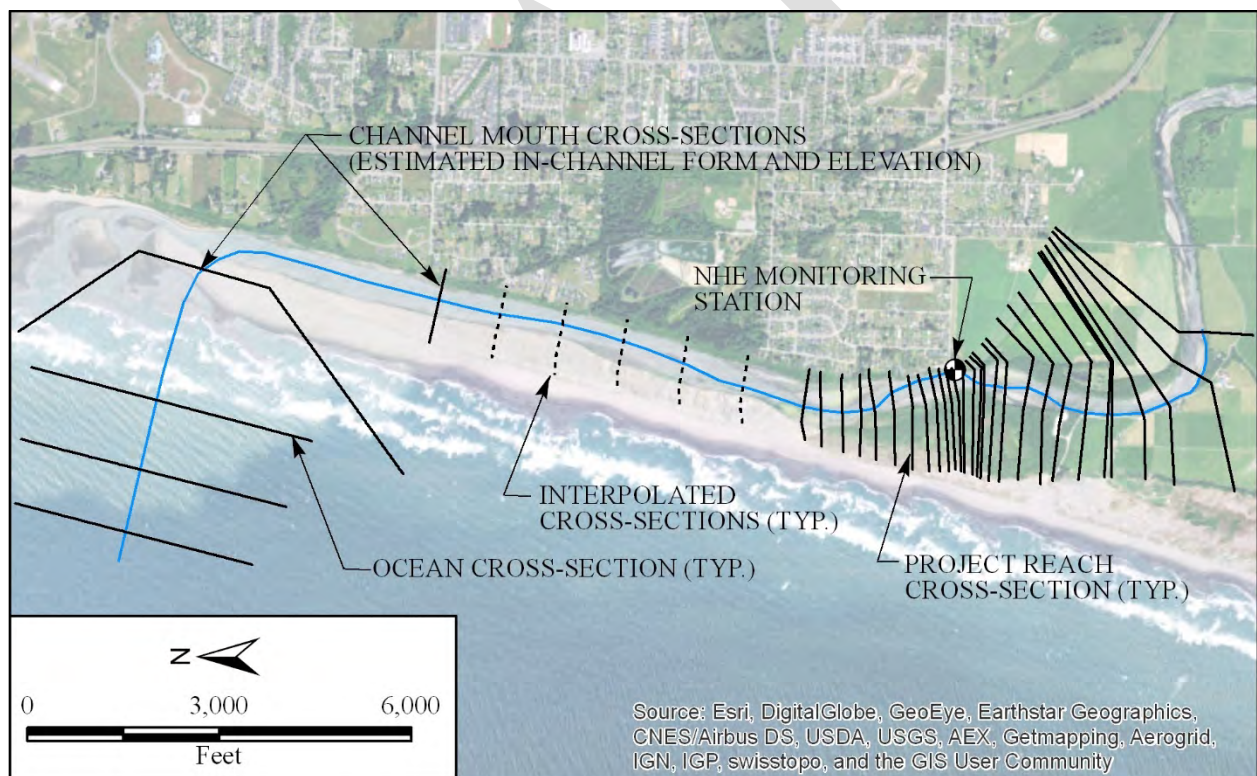


Figure 6. HEC-RAS Model Cross-section Layout

3.2.2 HEC-RAS Boundary Conditions

Downstream Water Surface Elevation Boundary

The downstream boundary for the model was a tidal elevation located approximately 4,000 ft off-shore bound laterally by ineffective flow areas. Bathymetry at the river mouth had not been surveyed and was

seasonally dynamic; therefore, channel elevations at the mouth were synthetically recreated in the model to produce water levels observed in the river upstream. To accurately estimate the channel elevation at the mouth, the downstream tidal boundary of the one-dimensional model needed to initiate in the Pacific Ocean, where bathymetry and tidal elevations were better defined. Tidal conditions in the ocean were estimated based on the NOAA North Spit tidal station. Tidal peaks and lag time correlate well to the water levels observed at the NHE monitoring station, downstream of the project site. River mouth bathymetry was adjusted for the wet season, accounting for changes in the channel pre- and post-winter flows, to calibrate the model simulation of measured water surface elevations at the NHE monitoring station near the project site. In the summer, the low tide levels in the river were observed to be higher than ocean tides, due to the sand spit built up near the mouth. Once the high winter flows reconfigured the sand bar and deepened the mouth, ocean low tides continued to be muted in the river due the channel elevations over a riffle located downstream of the project site. Water levels didn't drop below 2.75 ft elevation for the 2016 period of record at the NHE monitoring station.

Upstream Flow Boundary

River discharge was estimated to be equal to the stream gage discharge reports from the USGS at the Mad River near Arcata Station No. 1481000. Stream discharge peaks were adjusted by lag time to the river stage peaks observed downstream at the NHE monitoring station for calibration (detailed in HEC-RAS model results Table 3).

Manning's n values and river mouth elevations were adjusted to best simulate observed conditions in the channel. Table 4 summarizes the calibration accuracy of the HEC-RAS model to reproduce observed water surface elevations. Results for a single model geometry at the channel mouth and Manning's n values are summarized, which best suit bankfull channel conditions (estimated to be the 2-year flow peak at 26,500 cfs).

During low flow, in-channel Manning's n values were increased to 0.0225-0.0265 to better predict observed conditions. During the monitoring period, measured river stage errors up to 0.5 ft were recorded due to wind waves. The model was not adjusted to better predict higher flow conditions because of uncertainty in the river mouth location and geometry. Model results indicated that the project site backwatered the adjacent riffle and that flows greater than bankfull were deeper, but did not create a side channel through with greater velocities or shear stresses.

3.2.3 HEC-RAS Model Calibration

Manning's Roughness Coefficient

The model considered variations in surface friction represented as the Manning's roughness coefficient, " n ." Each cross-section was divided into sections with separate, distinct roughness values based on channel and overbank definition. Manning's n was estimated based on vegetation or land use type, which were identified from aerial photography and site reconnaissance. Manning's n values were varied to simulate water surface elevations at the NHE monitoring station and river stage observation points during several calibration discharge events. Table 2 summarizes the Manning's n values used to generate water surface elevations observed in the river during various stream discharge events.

Table 2. Manning's Roughness Coefficient Values

Land Use or Vegetation Type	Final (Calibrated) Manning's n
River	0.018 – 0.0185 (bankfull)/0.0225 – 0.0265 (low flow)
Riparian Trees	0.085
Riprap	0.055
Pasture	0.03
Bare Sand Dune	0.02
Vegetated Sand Dune	0.05
Brush	0.07
Emergent Wetlands/Pond	0.03 – 0.035
Houses and Developed Areas	0.03
Paved and Dirt Roads	0.02

The areas with specific Manning's roughness coefficients are delineated in Figure 7.

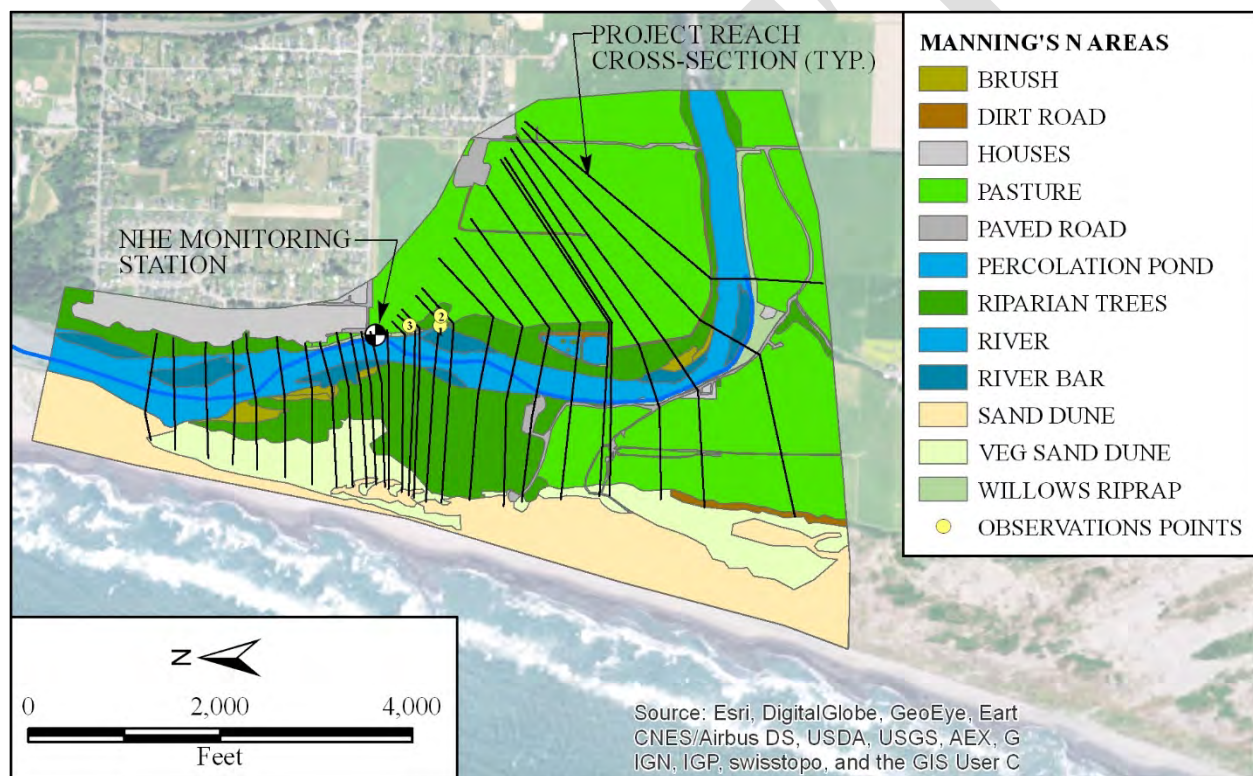


Figure 7. HEC-RAS Model Project Reach Manning's N Areas and River Stage Observation Points

Calibration Measurements

NHE collected river stage data during storm events in addition to the continuous stage data at the project monitoring station (Figure 7). Table 3 lists the river observation point details used for the HEC-RAS model calibration and evaluation.

Table 3. River Stage Observations

River Stage Observation Date and Time	River Stage Observation Location ID	River Stage Observation Location Description	Observed Water Surface Elevation (ft)	Estimated River Discharge (cfs)	NHE Monitoring Station Elevation (ft)	Estimated Tide Elevation (ft)
12/23/2015 8:59	1	Wooden fence post south of storm ditch	10.93	13,700	10.73	8.4
1/17/2016 17:18	2	Wooden corner post north of storm ditch	12.26	21,900	11.78	5.0
1/17/2016 22:30	3	Wooden fence post along field	14.39	43,100	13.58	3.1
1/18/2016 9:50	2	Wooden corner post north of storm ditch	12.19	22,700	11.45	5.0
2/9/2016 12:00	N/A	N/A	N/A	1760	8.26	7.9
2/9/2016 18:18	N/A	N/A	N/A	1730	4.35	-0.9
3/14/2016 3:00	N/A	N/A	N/A	23,700	12.18	7.9

3.2.4 HEC-RAS Model Results

Manning's n values and river mouth elevations were adjusted to best simulate observed conditions in the channel. Table 4 summarizes the calibration accuracy of the HEC-RAS model to reproduce observed water surface elevations. Results for a single model geometry at the channel mouth and Manning's n values is shown. These results best suit the bankfull conditions (estimated to be 26,500 cfs). In-channel Manning's n values were increased from 0.018/0.0185 to 0.0225-0.0265 to better predict winter base flow conditions. During the monitoring period, measured river stage errors up to 0.5 ft were observed in all types of weather conditions due to wind waves. The model was not calibrated to predict flows above bankfull because of the limitations of a one-dimensional model in an estuary.

Table 4. HEC-RAS Model Calibration Results

River Stage Observation Date and Time	Estimated River Discharge (cfs)	Estimated Tide Elevation (ft)	River Stage Observation Location	Observed Water Surface Elevation (ft)	Model Simulation Water Surface Elevation (ft)	Error (ft)	Error Explanation
12/23/2015 8:59	13,700	8.4	1	10.93	10.63	-0.30	Error could be due to waves. Approx. time of winter breach and sandbar set up at the mouth. Raising Manning's n values and elevations near the mouth may provide better predictions.
			NHE Monitoring Station	10.73	10.30	-0.40	
1/17/2016 17:18	21,900	5.0	2	12.26	12.27	+0.01	Storm's rising limb, bankfull. Acceptable error, poss. due to waves.
			NHE Monitoring Station	11.78	11.66	-0.12	
1/17/2016 22:30	43,100	3.1	3	14.39	15.71	+1.37	10-yr flow event. 1-D model cannot capture 2-D floodplain flow, esp. overbank backwater areas. Error may also be due to breaches in the spit and fluctuations in the channel mouth location and elevation.
			NHE Monitoring Station	13.58	15.44	+1.86	
1/18/2016 9:50	22,700	5.0	2	12.19	12.47	+0.28	Storm's receding limb following 10-year event. Bankfull and draining. Error poss. due to established overbank flow paths downstream, waves or fluctuations in the bed.
			NHE Monitoring Station	11.45	11.84	+0.39	
2/9/2016 12:00	1760	7.9	NHE Monitoring Station	8.26	7.98	-0.28	Acceptable error, poss. due to waves.
2/9/2016 18:18	1730	-0.9	NHE Monitoring Station	4.35	4.33	-0.02	Acceptable error.
3/14/2016 3:00	23,700	7.9	NHE Monitoring Station	12.18	12.10	-0.08	Acceptable error.

13 June 2017

Northern Hydrology and Engineering

The analysis of existing conditions showed that there are governing forces dominating the project reach seasonally. Some of these are not predictable, such as the location and form of the river mouth and breaches in the sand spit; however, proposed design elements could be evaluated with the two-dimensional design model under the following conditions:

- Low flow, when the river is dominated by an unsteady downstream tidal boundary and upstream flows are steady-state.
- Bankfull flow, when the river is dominated by a steady or unsteady upstream flow boundary and the downstream base elevation is steady-state.

Measured river stages indicate that the river stage is dominated by the tides during low flows, fluctuating diurnally during the day. In contrast, storm discharges backwater the riffle adjacent to the project site, drowning the effect of the tides.

3.3 Two-Dimensional Design Conditions Open Channel Flow Model

Alternative 3 (Figure 8) was chosen for hydraulic analysis. The purpose of a two-dimensional model was to evaluate habitat design features under various flow conditions, including overbank flows. The United States Bureau of Reclamation (USBOR) Technical Service Center (TSC) two-dimensional hydraulic model SRH-2D (Version 2) was used to solve variables including water surface elevations, water depth, and depth-averaged velocity. In addition, bed shear stress was calculated. The approach uses the following assumptions:

1. the flow is steady (or at least does not vary appreciably over short time scales)
2. the flow is hydrostatic (vertical accelerations are neglected)
3. the turbulence can be treated adequately by relating Reynolds stresses to shear stresses using an isotropic eddy viscosity

3.3.1 SRH-2D Model Extents

The upstream boundary of the two-dimensional hydraulic model was approximately 1,300 ft downstream of the Hammond Bridge, the same as the one-dimensional model. The two-dimensional model extended downstream to the pool where the NHE monitoring data collect river stage. Design topography was incorporated into the existing conditions digital elevation model with AutoCAD Civil 3D for two-dimensional hydraulic analysis, including a backwater channel stemming upstream from the existing storm water canal, removal of the riverfront levee around the percolation ponds, recontouring the ponds and a swale to connect the ponds to the river upstream (Figure 8).

3.3.2 SRH-2D Boundary Conditions

SRH-2D was used to simulate both steady-state and unsteady flow and stage boundary conditions. As stated, the model does not vary flow appreciably over a short time scale; however, rising or falling limbs of the 2-year flow events were gradual enough for the model to converge. High flow conditions maintain very slowly changing downstream boundaries, unlike tidal conditions.

Downstream Water Surface Elevation Boundary

The downstream boundary for the two-dimensional model was located approximately 3,600 ft downstream of the NHE monitoring station and defined by design tidal boundaries. Low flow river stages at the boundary were unsteady, fluctuating with the tides. Bankfull river stages at the boundary were relatively steady varying gradually with the upstream flows.

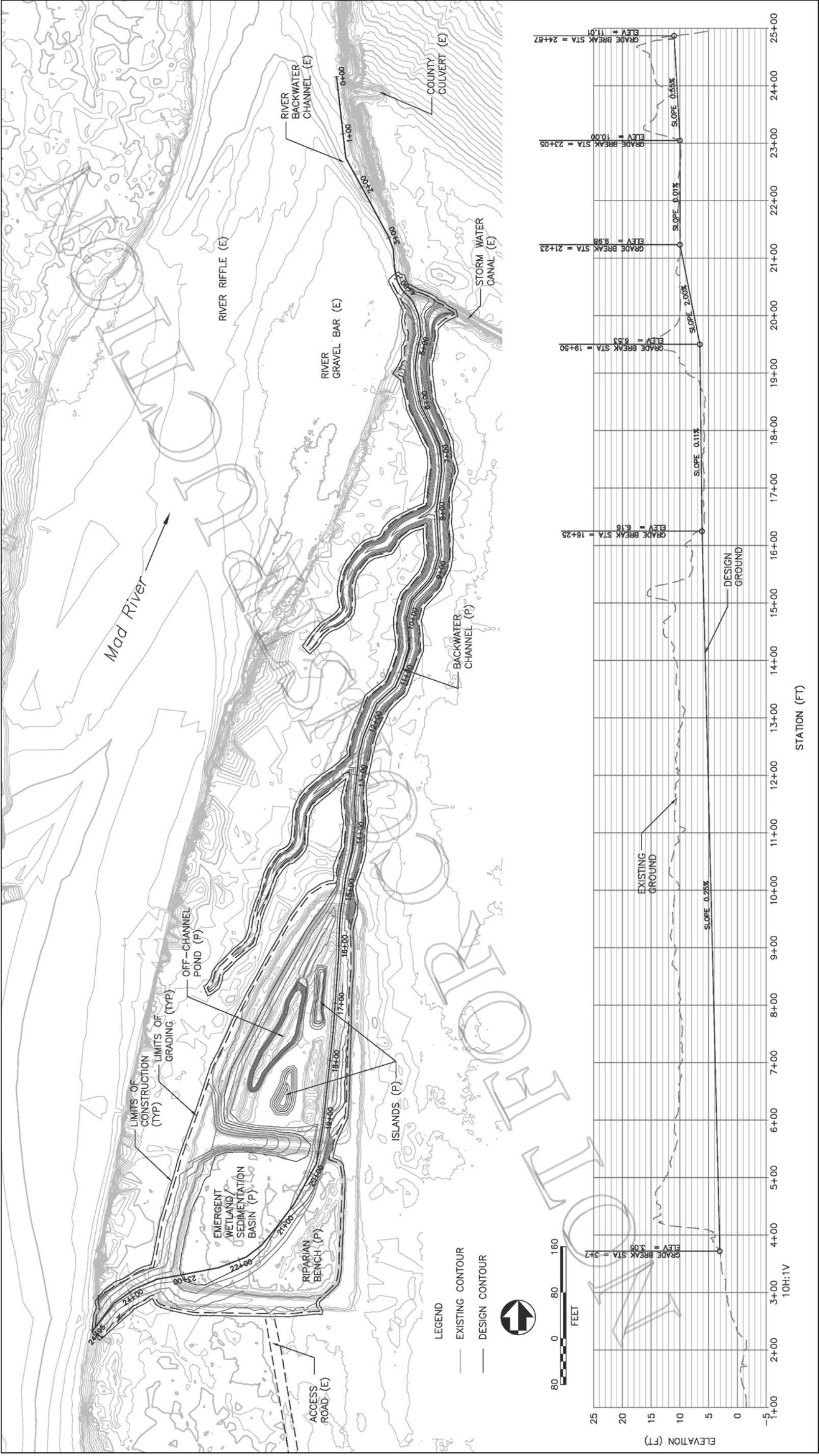


Figure 8. Alternative 3 Project Design Planform and Profile

Upstream Flow Boundary

Low flow design river discharge at the upstream boundary was estimated to be a steady 50 cfs to simulate summer conditions when the tides dominated the river stage. Bankfull design river discharge was estimated to peak at 26,500 cfs to represent a 2-year recurrence interval flow and evaluated for both steady and unsteady simulations.

Manning's Roughness Coefficient

The model considered variations in surface friction represented as Manning's n , as defined in Table 2. Figure 9 illustrates the model roughness areas, including project element areas.

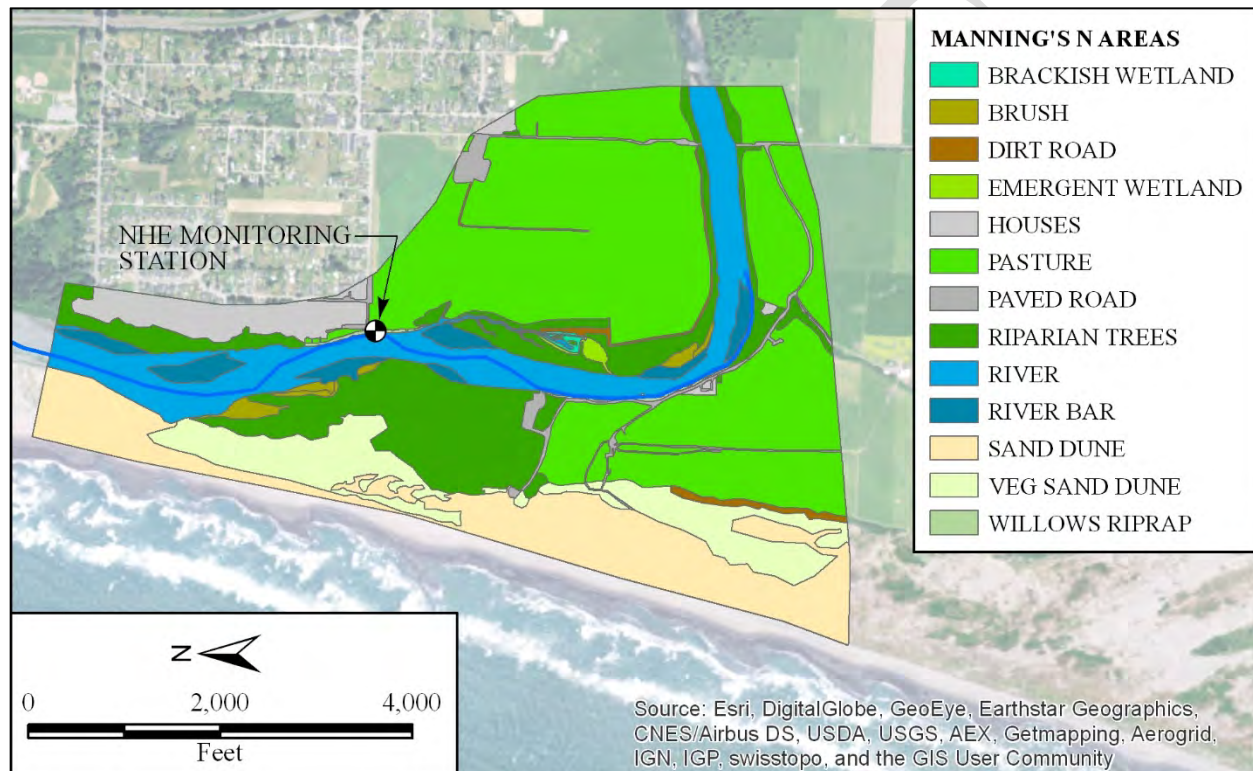


Figure 9. SRH-2D Model Manning's N Areas

The two-dimensional model results were verified by comparison with the one-dimensional model results for in-channel flows.

3.3.3 SRH-2D Model Results and Discussion

Design conditions were based on measured data, altered to simulate specific scenarios. For example, low flow conditions were coupled with a tidal peak that was not measured of 8.5 ft, but would be useful to evaluate for the design. Although a variety of scenarios were simulated, it would not be prudent to present every result; therefore, specific results at chosen time steps are presented for discussion. All profile illustrations of the results are along the channel alignment shown in Figure 8.

Steady-state Low Flow with an Unsteady Downstream Tidal Boundary

Steady-state low flow conditions were simulated with an unsteady downstream tidal boundary to evaluate the project when the river water levels are governed by ocean tides. Upstream low flow was estimated to remain constant at 50 cfs. The downstream boundary was a synthetic high to low tidal curve located near the NHE monitoring station, ranging from 8.5 ft to 2.75 ft over approximately 10 hours. Water surface

elevations during the trough of the ebb tide cannot drop below 2.75 ft at the project site due to a riffle control in the river downstream. Figure 10 - Figure 12 illustrate the design backwater channel profile at the 2-hour time step when water surface elevations were approximately 6.7 ft and maximum velocities and bed shear stresses occurred where the off-channel pond drains into the backwater channel, downstream of backwater channel station 1,500 ft.

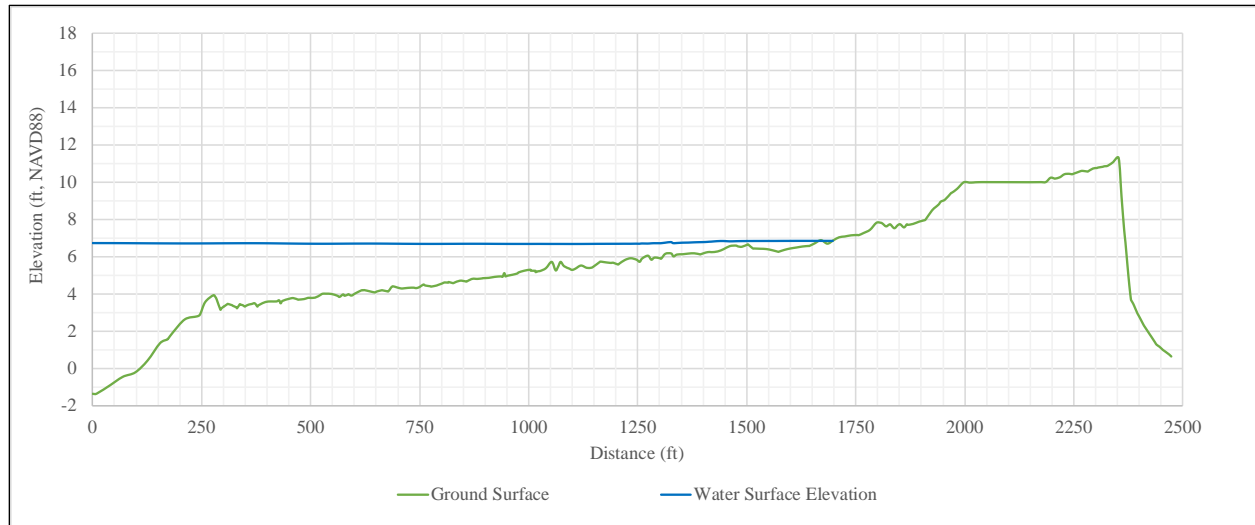


Figure 10. SRH-2D Low Flow Results (t=2 hrs): Water Surface Elevation Profile

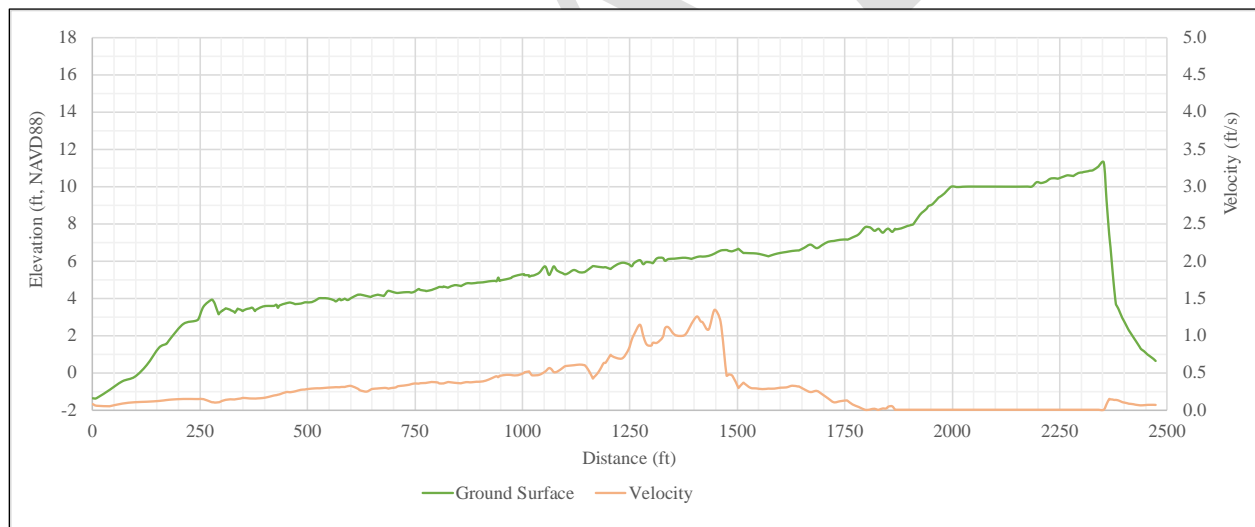


Figure 11. SRH-2D Low Flow Results (t=2 hrs): Depth-averaged Velocity Profile

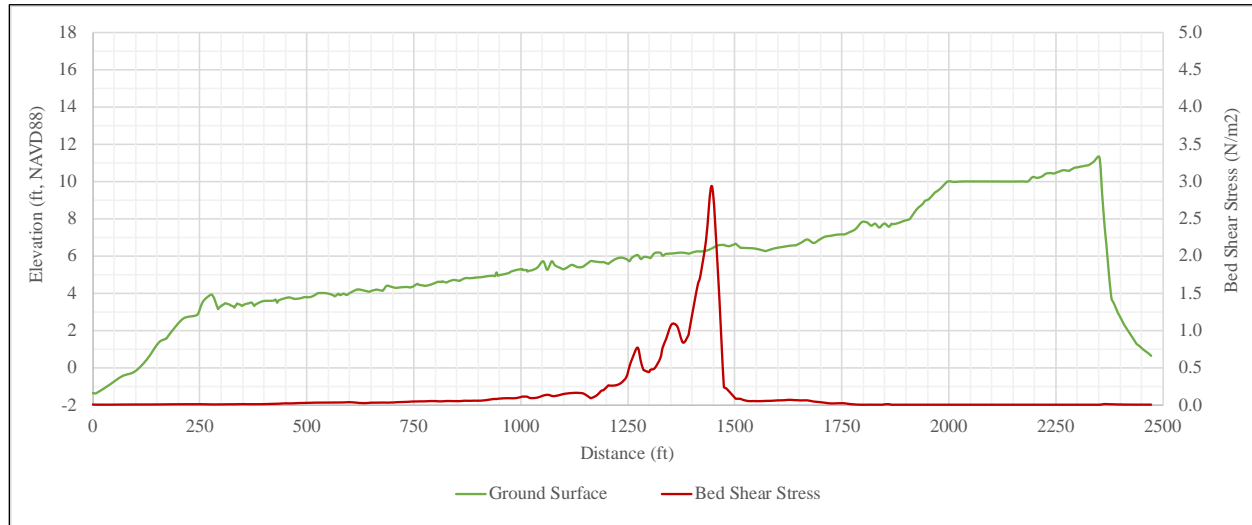


Figure 12. SRH-2D Low Flow Results ($t=2$ hrs): Bed Shear Stress Profile

Steady-state Bankfull Flow with a Downstream Receding Stage Boundary

A steady, design bankfull peak discharge of 26,500 cfs was used at the upstream boundary to recreate steady-state peak flood conditions. The downstream river stage boundary decreases from 12.6 ft to 11 ft over approximately 9 hours, corresponding to an ocean high tide ebbing to low tide during a steady-state river bankfull flow condition. Figure 13 -Figure 16 show the planform results for this scenario and Figure 17 - Figure 19 illustrate the design backwater channel profile at the 4-hour time step when water surface elevations were approximately 12.7 ft. Depth average velocities and bed shear stresses were consistently low through the design backwater features (around 0.2-0.4 ft/s and 0.05 N/m², respectively), due to the mild change in the downstream boundary over the model time. These downstream conditions were consistent with monitored data.

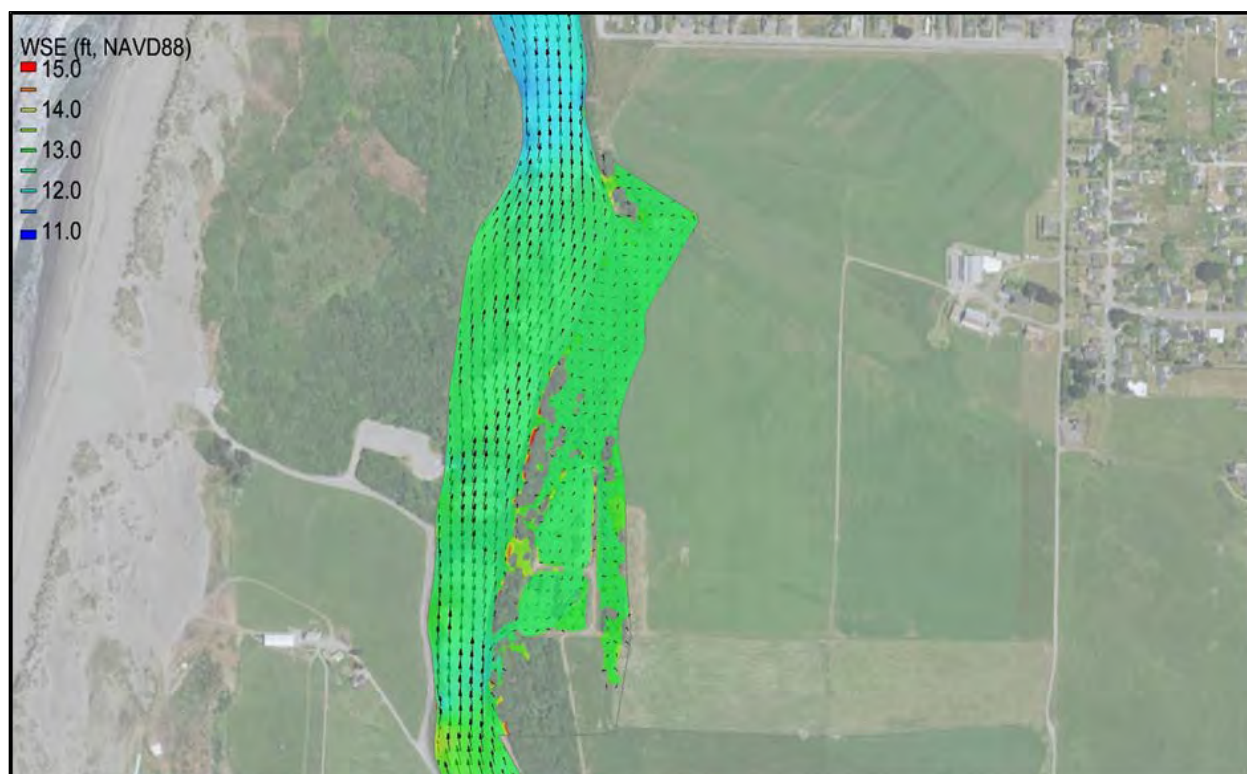


Figure 13. SRH-2D High Flow Results (t=4 hrs): Water Surface Elevations with Velocity Vectors

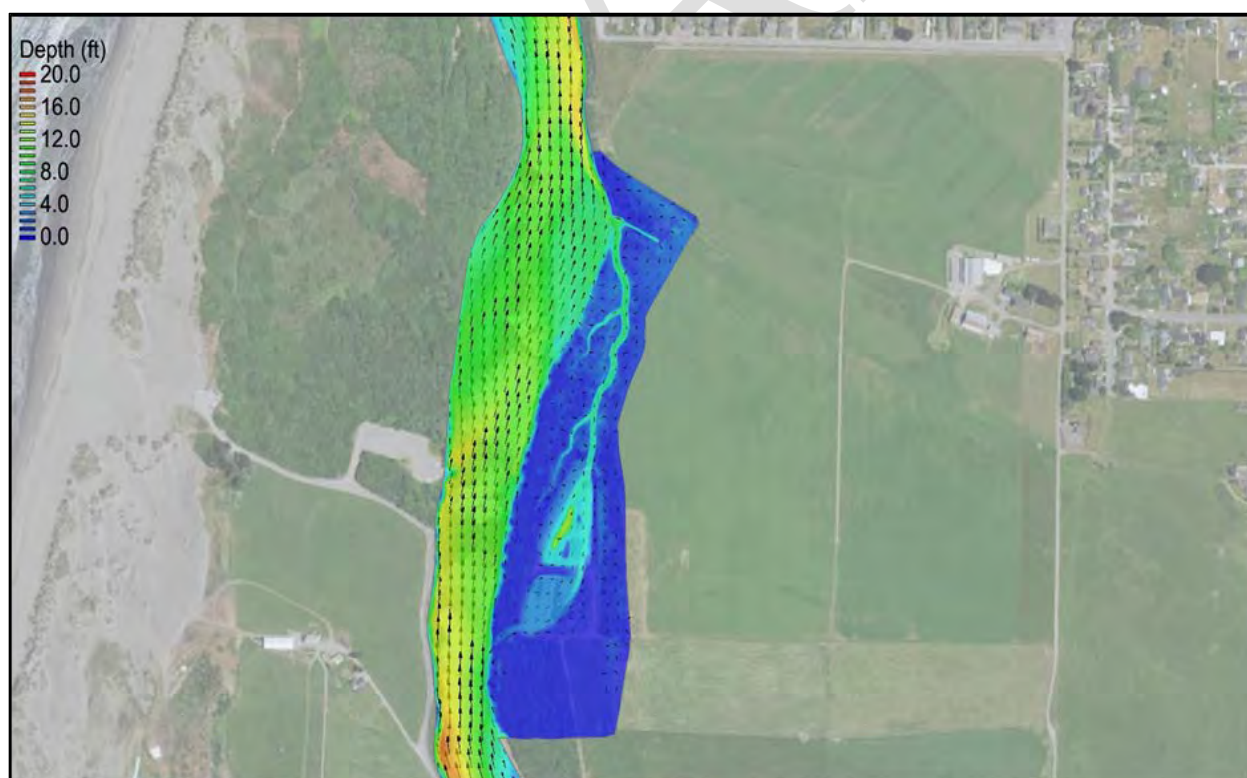


Figure 14. SRH-2D High Flow Results (t=4 hrs): Water Depths with Velocity Vectors

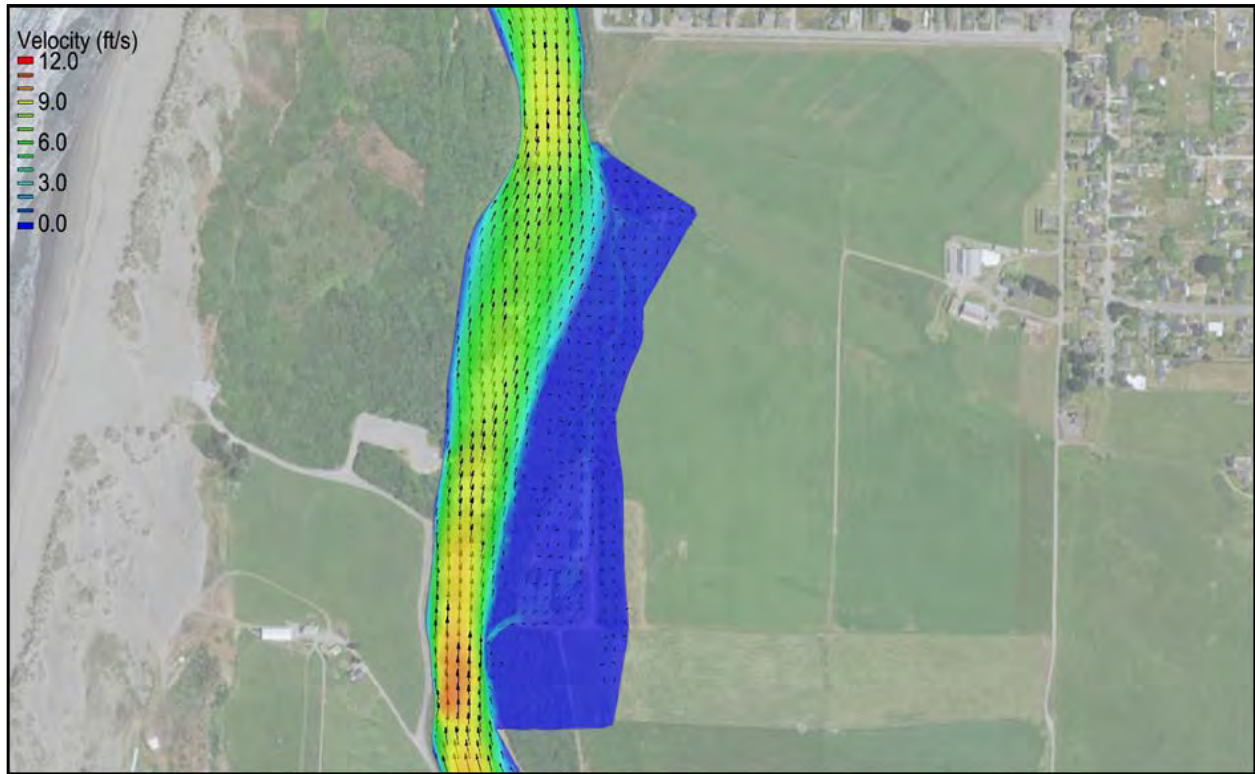


Figure 15. SRH-2D High Flow Results (t=4 hrs): Depth-averaged Velocity Magnitude and Vectors

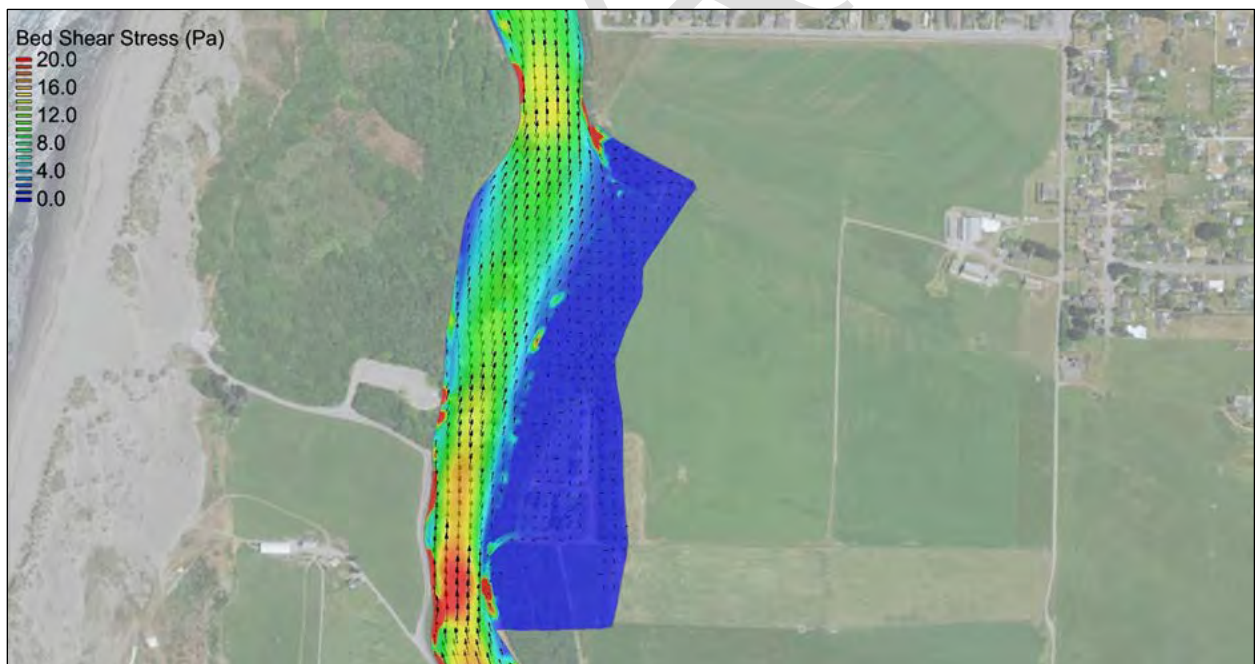


Figure 16. SRH-2D High Flow Results (t=4 hrs): Bed Shear Stress with Velocity Vectors

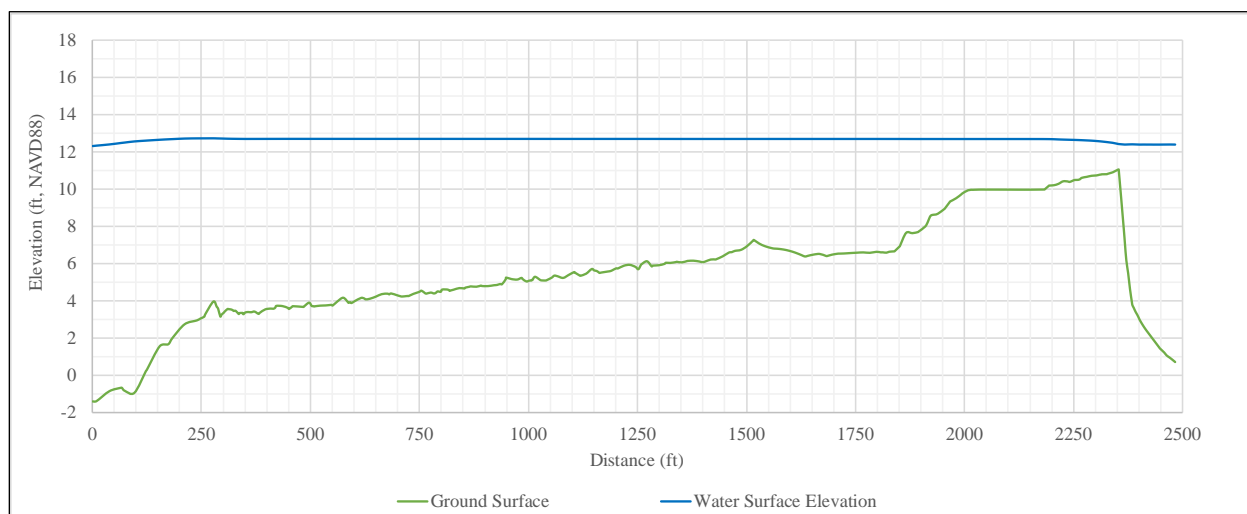


Figure 17. SRH-2D High Flow Results (t=4 hrs): Water Surface Elevation Profile

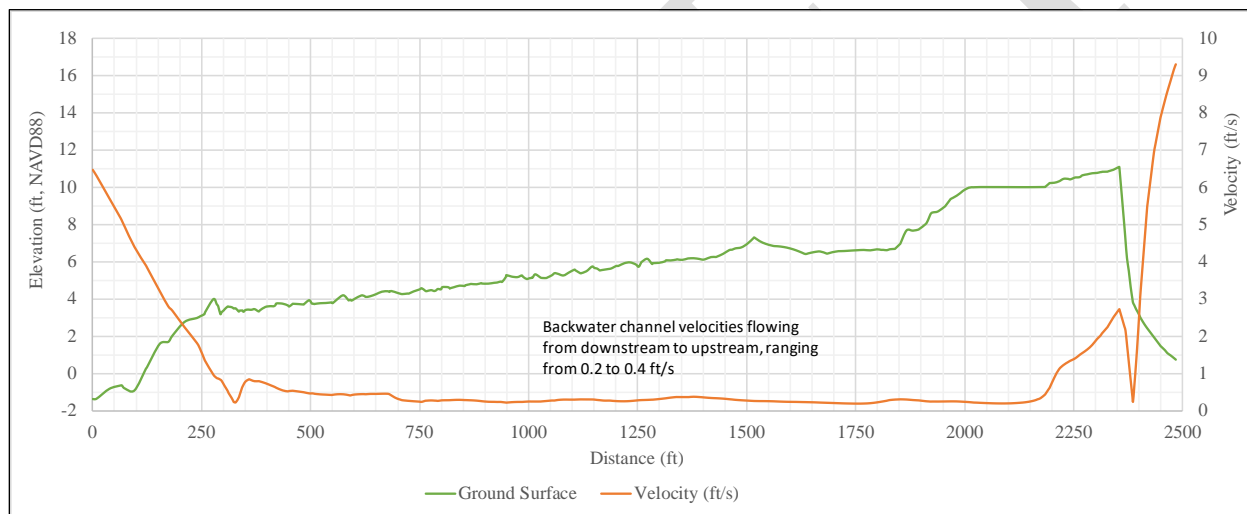


Figure 18. SRH-2D High Flow Results (t=4 hrs): Depth-averaged Velocity Profile

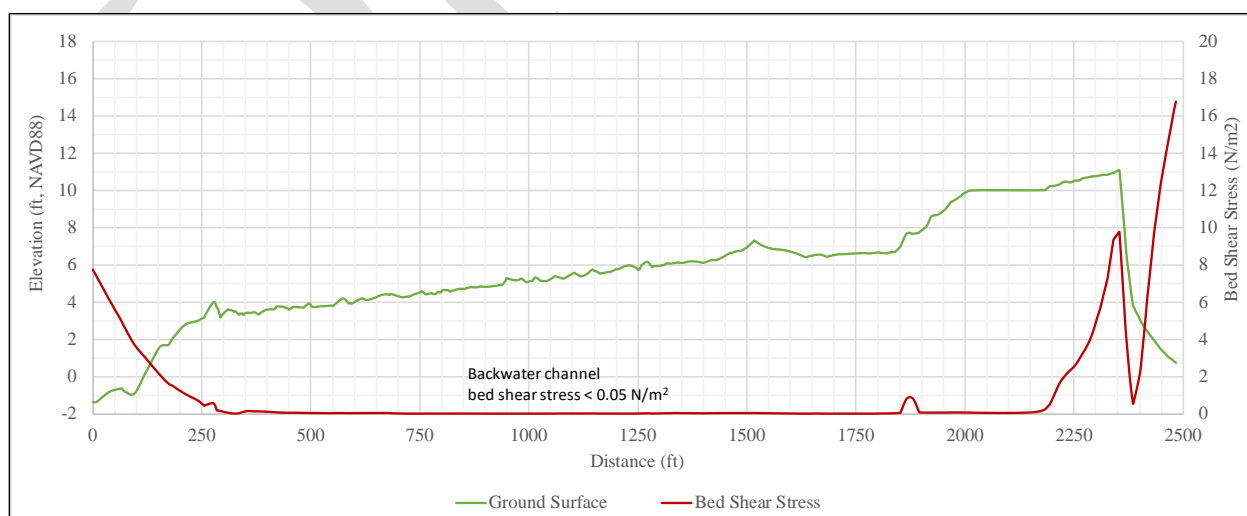


Figure 19. SRH-2D High Flow Results (t=4 hrs): Bed Shear Stress Profile

Water enters the project site through the constructed backwater channel and continues flowing in the upstream direction relative to the river as flood waters rise. Maximum floodplain velocities should occur in the constructed backwater channel. The model results indicate that the upstream overflow swale doesn't function as a flow-through side channel to the river under design high flows, rather it is the upper extent of the backwatering from the downstream channel. The site drains when river levels drop downstream, which requires for the river flow upstream to decrease.

3.4 Geomorphic Assessment

The project is located on an active floodplain and upstream of a backwater channel; therefore, sediment transported through the project site is assumed to be fine sediment carried in suspension. The USGS collected and analyzed water quality data at gaging station No. 11481000, including suspended sediment grain size distribution and concentration for WY 1966 to 1974. From WY 1972 to 1974, instantaneous flow measurements were collected at the same time as the suspended sediment data. Assuming that this data subset can be used to estimate existing conditions, it is discussed herein.

3.4.1 Suspended Sediment Composition

Grain size distributions were measured from a range of stream discharges from 980 to 40,500 cfs. All suspended sediment was less than 2 mm, indicative of coarse sands and finer. The median grain size for all samples ranged from 0.004 mm (very fine silt) to 0.04 mm (coarse silt), with an average value of 0.02 mm (medium silt). Median grain size (D50) and the 84th percentile grain size (D84) for sampled discharge events are shown in Figure 20.

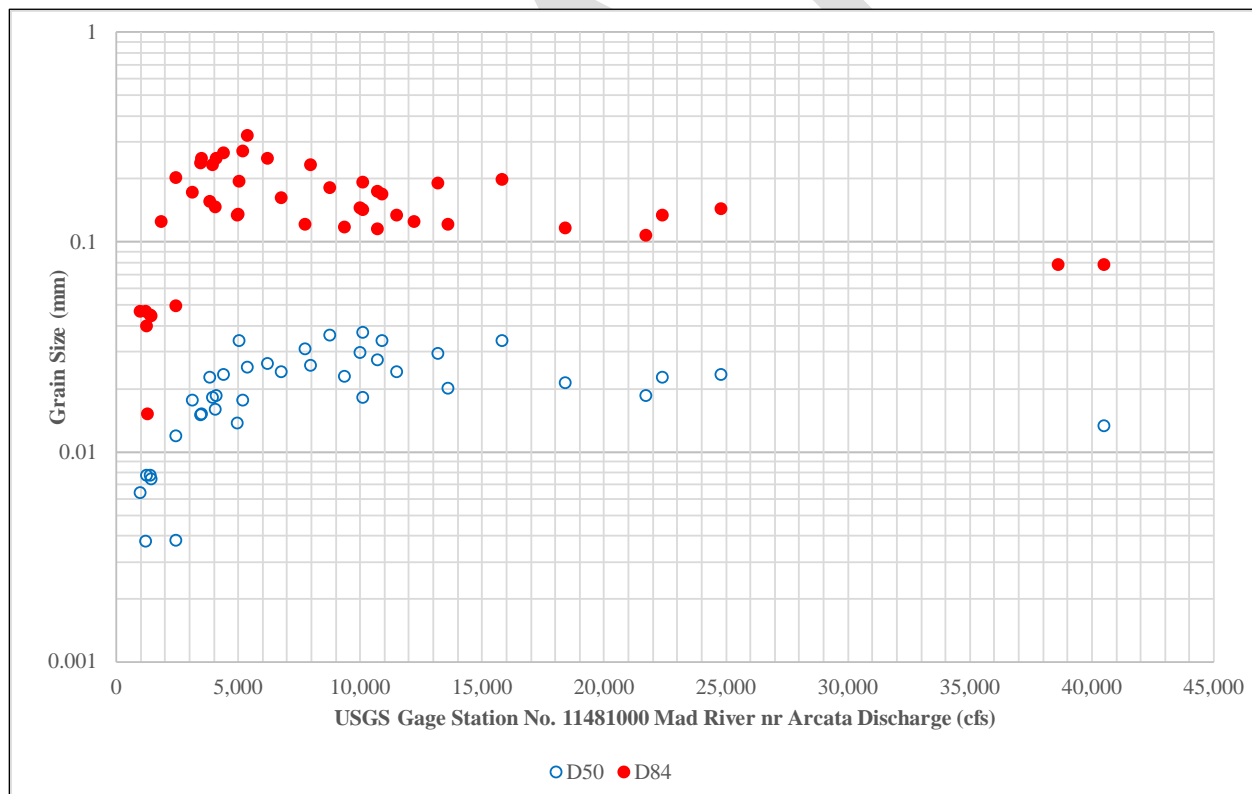


Figure 20. Median and 84th Percentile Grain Size Diameter vs Stream Discharge

Stream discharge from 980 to approximately 5,000 cfs showed a general rise in particle size as flow increased. Above 5,000 cfs, there was little variation in the particle size distribution. A slight decrease in

particle size was observed as flows increased above bankfull discharge (estimated to be the 2-year flow at 26,500 cfs); however, too few samples were collected to be conclusive.

3.4.2 Suspended Sediment Concentration

Sampled suspended sediment concentrations ranged from 11 to 8,580 mg/L for stream discharges ranging from 53 to 40,500 cfs (Figure 21).

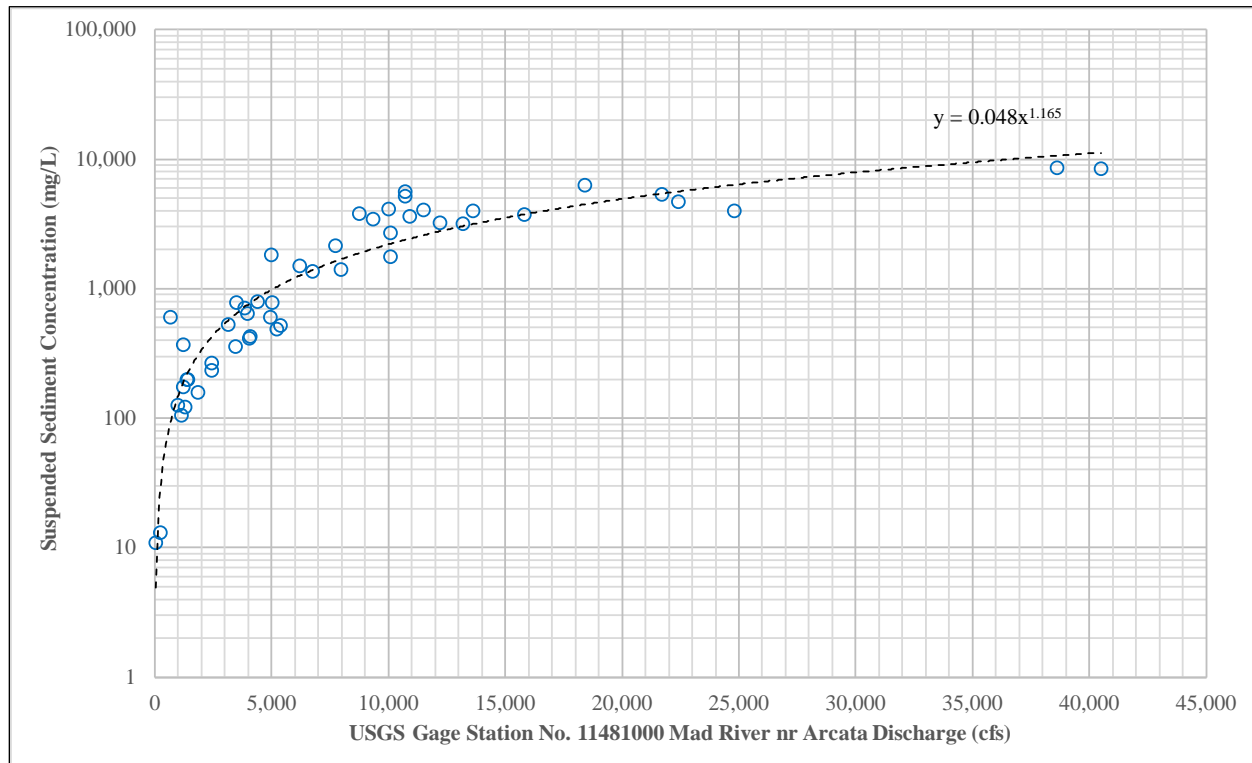


Figure 21. Suspended Sediment Concentration Related to Stream Discharge

A single regression line shows a relation between stream discharge and sampled suspended sediment concentration. An improved model would need more data and a series of regression lines would likely improve the relation estimate.

3.4.3 Fine Sediment Mobility

Sediment mobility was evaluated by a stable particle analysis based on Shield's equation for incipient motion of a grain size (Julien, 1998; Julien 2002). Particle motion was evaluated for the maximum median grain size reported by the USGS of 0.04 mm. Specific gravity of the particles was assumed to be 2.65 (quartz). The settling velocity of a 0.04 mm particle is approximately 0.004 ft/s. Critical bed shear stress necessary for incipient motion of a 0.04 mm particle is on the order of 0.1 N/m².

4. CONCLUSIONS AND RECOMMENDATIONS FOR A PREFERRED DESIGN

4.1 Conclusions

The project area is located on the inside of a meander bend within an active floodplain, which is ideal for backwatering and is a typical area of sedimentation in a river; particularly fine sediment in an estuary reach. Due to the high sediment loading from the Mad River watershed, project features such as the backwater channel and off-channel pond have a likelihood of accruing fine sediments and aggrading over time. Based on the suspended sediment records from the USGS, larger storms tend to bring in greater quantities of fine sediment, as higher flows bring in a greater volume of water and a higher concentration of suspended sediment. It is probable that large magnitude flood events could fill in both backwater and floodplain features or that a series of small flood events could aggrade the project area over time. If the backwater channel aggrades, then summer tides will be disconnected from the river into the pond and may provide wetland habitat. If the pond aggrades, it will transition into emergent and seasonal wetlands. Regardless of aggradation, the area should continue to provide valuable high flow refugia from mainstem river velocities and shear stresses for salmonids. In addition, the project will produce rich food sources to the river and floodplain fauna.

4.2 Recommendations for a Preferred Design

Because it is inevitable that the project site will aggrade, the backwater channel will be designed as a distinct feature in the landscape so that initial conditions will concentrate velocity and shear stress along a single water pathway when flow waters come into the site and drain. Emergent wetland areas will be incorporated into the transition landscape between the channel and main off-channel pond area to promote sedimentation and increase the pool's longevity. These areas may cut off the pool from the channel for periods of time, but should continue to provide a rich food source.

The overflow swale and emergent wetlands/sedimentation area (south pond) do not appear to present additional value to the project design as originally intended (as a side channel during high flow events); therefore, the swale recommended for removal from the design and the south pond will remain as a high, seasonal wetland and suspended sediment settling area to add topographic diversity to the project.

The following recommendations are provided to proceed with a 65% Design:

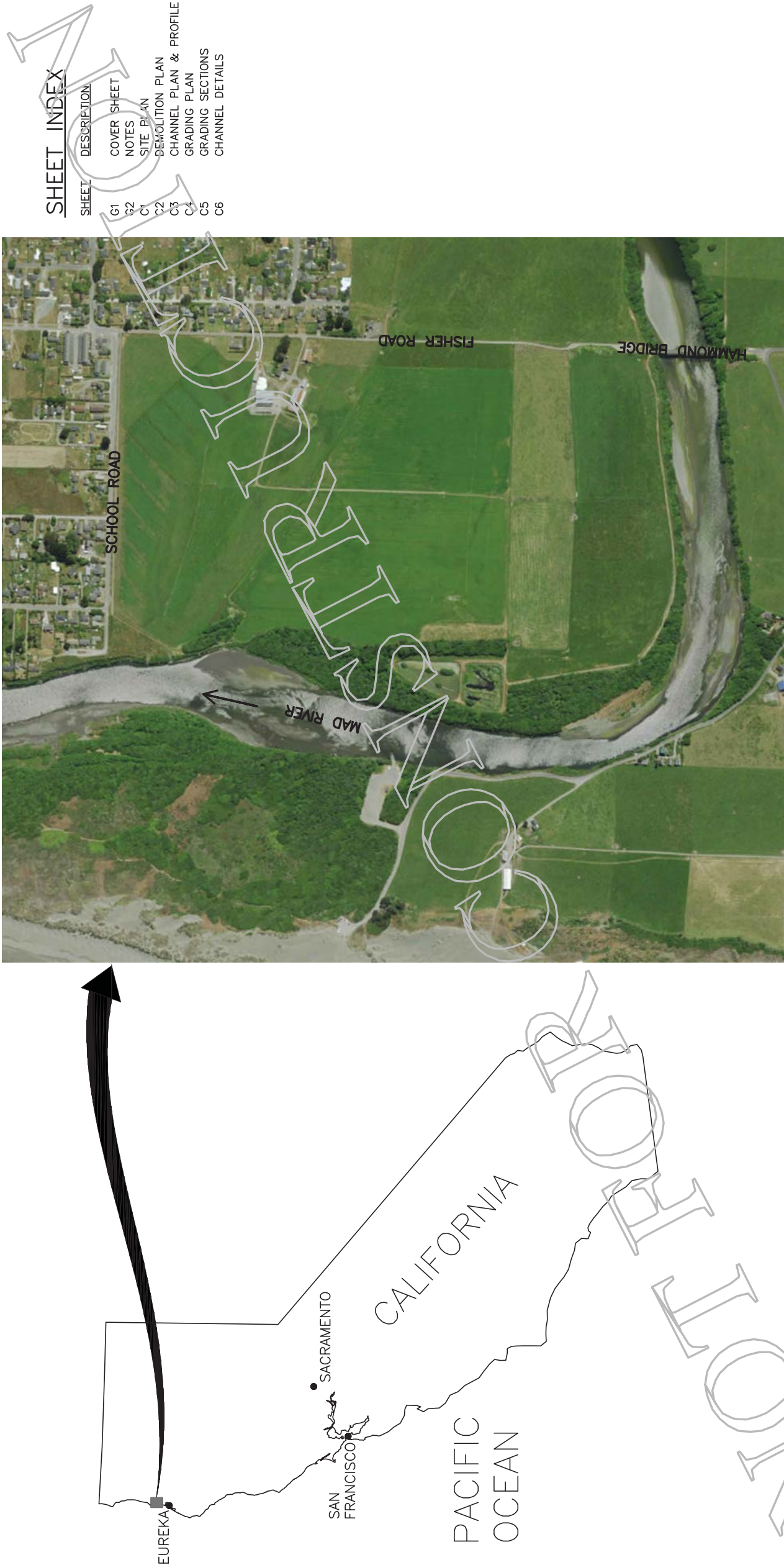
1. Remove the upstream swale
2. Maintain the upstream (south) pond as a seasonal wetland
3. Broaden the deep-water portion of the off-channel pond
4. Add shallow benches for emergent wetlands along the pond edges
5. Relocate the upland islands to the existing upland island areas
6. Recontour the berm between the two ponds for a more natural transition between landscapes
7. Broaden the backwater channel mouth at the storm water canal confluence by an inset floodplain for sedimentation to the east (towards the pasture)*

* This recommendation was proposed by the DFW engineering geologist and discussed between the project engineer and the landowner. The option was not desirable to the landowner; therefore, it was not incorporated into the 65% designs.

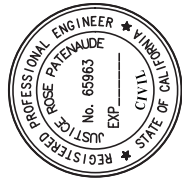
5. REFERENCES


- Julien, Pierre Y. 1998. *Erosion and Sedimentation*. Cambridge, U.K.: University of Cambridge Press.
- . 2002. *River Mechanics*. Cambridge, U.K.: University of Cambridge Press.
- McLaughlin, R.J., Ellen, S.D., Blake, M.C., Jr., Jayko, A.S., Irwin, W.P., Aalto, K.R., Carver, G.A. and Clarke, S. H., Jr. 2000. *Geology of the Cape Mendocino, Eureka, Garberville and Southwestern Part of the Hayfork 30 X 60 Minute Quadrangles and Adjacent Offshore Area, Northern California*. U.S. Geological Survey Miscellaneous Field Studies, MF-2336.
- NOAA National Climatic Data Center. (Accessed January 10, 2017). Eureka Weather Forecast Office Woodley Island, CA 1981-2010 Normals. Accessed at: <http://www.ncdc.noaa.gov/cdo-web/datatools/normals>. NCDC.
- . 2012. *2009-2011 CA Coastal Conservancy Coastal Lidar Project*. Office for Coastal Management National Ocean Service, National Oceanic and Atmospheric Administration, U.S. Department of Commerce; California Coastal Conservancy, Ocean Protection Council, Scripps Institution of Oceanography; and the Joint Airborne Lidar Bathymetry Technical Center of Expertise. Charleston, SC: NOAA.
- . 2013. *2013 NOAA Coastal California TopoBathy Merge Project*. Office for Coastal Management National Ocean Service, National Oceanic and Atmospheric Administration, U.S. Department of Commerce. Charleston, SC: NOAA.
- SHN Consulting Engineers & Geologists, Inc. 2015. *Final Foundation Report: Hammond Trail Pedestrian Bridge Replacement, Mad River Crossing, North of Arcata, Humboldt County, California*. Prepared for: Humboldt County Public Works Department. NR: SHN.
- U.S. Army Corps of Engineers. 2016. *HEC-RAS River Analysis System Hydraulic Reference Manual*, Version 5.0 NR:ACOE.
- U.S. Geological Survey. 1982. *Interagency Advisory Committee on Water Data, Guidelines for Determining Flood-Flow Frequency: Bulletin 17B*. 183 p. Reston, VA: USGS, Hydrology Subcommittee, Office of Water Data Coordination.

MAD RIVER ESTUARY RESTORATION: OFF-CHANNEL HABITAT DESIGNS
HUMBOLDT COUNTY, CALIFORNIA



SHEET INDEX	
SHEET	DESCRIPTION
G1	COVER SHEET
G2	NOTES
C1	SITE PLAN
C2	DEMOLITION PLAN
C3	CHANNEL PLAN & PROFILE
C4	GRADING PLAN
C5	GRADING SECTIONS
C6	CHANNEL DETAILS





Northern Hydrology & Engineering
Engineering - Hydrology - Geomorphology - Water Resources

DESIGNED:
JRP

DRAFTED:
CEP, CP

TECH. REVIEW:
JRP, JKA

DATE:
6/21/2017

COVER

MAD RIVER FLOODPLAIN RESTORATION
CALTROUT, MCSD, CDFW, SCC

SUB SHEET NO.

G1

SHEET

1


OF

8

GENERAL NOTES	
<div>1. THE LAND OWNER IS THE MCKINLEYVILLE COMMUNITY SERVICES DISTRICT. LAND OWNER CONTACT INFORMATION: GREG ORSINI, GENERAL MANAGER MCKINLEYVILLE COMMUNITY SERVICES DISTRICT P.O. BOX 2037 MCKINLEYVILLE, CA 95519 (707) 839-3251</div>	<div>14. UNLESS NOTED OTHERWISE ON THE PLANS, THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE PROTECTION OF ALL EXISTING SURVEY MONUMENTS AND OTHER SURVEY MARKERS IDENTIFIED IN THESE PLANS.</div> <div>15. THE CONTRACTOR SHALL PROVIDE, PLACE, AND MAINTAIN ALL LIGHTS, SIGNS, BARRICADES, FLAG PERSONS, PILOT CAR, OR OTHER DEVICES NECESSARY TO CONTROL TRAFFIC THROUGH THE CONSTRUCTION AREA AND FOR PUBLIC SAFETY IN ACCORDANCE WITH THESE PLANS. THE STANDARD SPECIFICATIONS AND CHAPTER 5 OF THE STATE TRAFFIC MANUAL, "MANUAL OF TRAFFIC CONTROLS."</div> <div>16. THE CONTRACTOR SHALL USE ONLY DESIGNATED SPECIFIC SITES FOR STORAGE OF EQUIPMENT AND MATERIALS AS SHOWN ON THESE PLANS. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE SECURITY OF ALL EQUIPMENT AND MATERIALS.</div> <div>17. AT NO TIME SHALL THE CONTRACTOR UNDERTAKE TO CLOSE OFF ANY EXISTING UTILITY LINES OR OPEN VALVES OR TAKE ANY OTHER ACTION WHICH WOULD AFFECT THE OPERATION OF EXISTING WATER OR UTILITY SYSTEMS WITHOUT PRIOR APPROVAL FROM THE OWNER OR OWNER'S REPRESENTATIVE. APPROVAL SHALL BE REQUESTED AT LEAST 48 HOURS IN ADVANCE OF THE TIME THAT THE INTERRUPTION OF THE EXISTING SYSTEM IS REQUIRED. ANY INTERRUPTION OF SERVICE TO UTILITY SERVICES, WHETHER INTENTIONAL OR NOT, MUST BE KEPT TO A MINIMUM TIME PERIOD.</div> <div>18. THE OWNER, OWNER'S REPRESENTATIVE, OR PROJECT ENGINEER WILL FURNISH THE CONSTRUCTION STAKING TO THE CONTRACTOR.</div> <div>19. ALL CONTROL STATIONING AND DATA DIMENSIONING ARE REFERENCED TO THE CENTERLINE OF THE DESIGN CHANNEL SHOWN UNLESS OTHERWISE NOTED.</div> <div>20. THE CONTRACTOR SHALL PRESERVE AND PROTECT ALL EXISTING UTILITIES AND IMPROVEMENTS WITHIN AND OUTSIDE THE LIMITS OF THE PROJECT AREA.</div> <div>21. EQUIPMENT EXCLUSION AREAS SHALL BE CLEARLY FLAGGED BY THE OWNER OR OWNER'S REPRESENTATIVE PRIOR TO CONSTRUCTION TO SERVE AS A BUFFER FOR SENSITIVE SPECIES AND RESOURCES.</div> <div>22. NO TREES OR WETLAND VEGETATION SHALL BE REMOVED UNLESS THEY ARE SHOWN AND NOTED TO BE REMOVED ON THE PLANS, OR AS DIRECTLY SPECIFIED ON-SITE BY THE OWNER OR OWNER'S REPRESENTATIVE.</div> <div>23. IF DURING CONSTRUCTION, ARCHAEOLOGICAL REMAINS ARE ENCOUNTERED, CONSTRUCTION IN THE VICINITY SHALL BE HALTED, AND THE OWNER, OWNER'S REPRESENTATIVE, OR PROJECT ENGINEER SHALL BE NOTIFIED IMMEDIATELY.</div> <div>24. THE CONTRACTOR SHALL COORDINATE THE WORK WITH OTHERS AT THE LIMITS OF THE CONSTRUCTION LINES SHOWN IN THESE PLANS.</div> <div>25. EROSION CONTROL STRUCTURES SHALL CONTAIN AND CONTROL EROSION AND PROVIDE FOR THE SAFE DISCHARGE OF SILT-FREE RUNOFF FROM THE PROJECT SITE INTO RECEIVING WATER BODIES. SUITABLE SUPPLIES FOR MITIGATING SEDIMENT IMPACTS TO ON-SITE WATERWAYS SHALL BE MAINTAINED AT THE PROJECT SITE BY THE CONTRACTOR DURING CONSTRUCTION. THE CONTRACTOR SHALL BE RESPONSIBLE FOR IMPLEMENTING ALL TEMPORARY EROSION CONTROL MEASURES. THE EROSION CONTROL MEASURES SHALL BE IN ACCORDANCE WITH THESE PLANS. THE STANDARD SPECIFICATIONS, LOCAL, COUNTY AND STATE ORDINANCES, AND APPLICABLE PERMIT REQUIREMENTS. THE CONTRACTOR SHALL CONTACT THE OWNER, OWNER'S REPRESENTATIVE, OR PROJECT ENGINEER PRIOR TO THE COMMENCEMENT OF WORK FOR A PRE-GRADING INSPECTION OF THE INSTALLED TEMPORARY EROSION CONTROL FACILITIES. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE MAINTENANCE AND PERFORMANCE OF THE TEMPORARY EROSION CONTROL MEASURES THROUGHOUT THE DURATION OF THE PROJECT.</div> <div>26. THE CONTRACTOR SHALL KEEP ALL AREAS GENERATING DUST WELL WATERED DURING THE TERM OF THIS CONTRACT. THIS INCLUDES, BUT IS NOT LIMITED TO, ACCESS RAMPS, ROADS, FILL AREAS AND ANY OTHER AREAS THAT MAY GENERATE DUST AS A RESULT OF THE CONTRACTOR'S OPERATIONS.</div> <div>27. NONE OF THE NOTES, OR CONSTRUCTION DRAWINGS SHALL PRECLUDE THE CONTRACTOR FROM SUBSTITUTION OF MATERIALS OR PRACTICES NECESSARY TO COMPLETE THE PROJECT IN A TIMELY AND ECONOMICAL MANNER. ANY SUBSTITUTION OR FORGONE INSPECTIONS WITHOUT THE EXPLICIT CONSENT OF THE OWNER, OWNER'S REPRESENTATIVE, OR PROJECT ENGINEER BECOME THE RESPONSIBILITY OF THE CONTRACTOR. WHERE THE SPECIFICATIONS, NOTES, OR CONSTRUCTION DRAWINGS ARE NOT CONSISTENT WITH LOCAL REGULATIONS, AN EXPLICIT RECONSIDERATION OF PLANS AND SPECIFICATIONS BY THE CONSULTANT TEAM IS REQUIRED PRIOR TO ENACTMENT OF ANY CHANGES.</div>
<div>2. THE PROJECT ENGINEER INFORMATION: J-ROSE PATENAUDE, P.E. NORTHERN HYDROLOGY & ENGINEERING P.O. BOX 2515 MCKINLEYVILLE, CA 95519 707-839-2195</div>	<div>3. THESE PLANS REPRESENT THE WORK TO BE PERFORMED FOR THE MAD RIVER ESTUARY RESTORATION & OFF-CHANNEL HABITAT PROJECT.</div> <div>4. ALL IMPROVEMENTS SHALL BE ACCOMPLISHED UNDER THE APPROVAL, INSPECTION AND TO THE SATISFACTION OF THE OWNER OR OWNER'S REPRESENTATIVE, AND PROJECT ENGINEER. ALL OF THE CONSTRUCTION IMPROVEMENTS SHALL COMPLY WITH THESE PLANS, SPECIFICATIONS AND NOTES.</div> <div>5. SHOULD IT APPEAR THAT THE WORK TO BE DONE, OR ANY MATTER RELATIVE THERETO, IS NOT SUFFICIENTLY DETAILED OR EXPLAINED ON THESE PLANS, THE CONTRACTOR SHALL CONTACT THE PROJECT ENGINEER RESPONSIBLE FOR THE PLAN PREPARATION BEFORE CONDUCTING WORK ON THAT PORTION OF THE PROJECT.</div> <div>6. IT WILL BE THE RESPONSIBILITY OF THE CONTRACTOR TO NOTIFY UNDERGROUND SEARCH ALERT (USA) PRIOR TO THE COMMENCEMENT OF WORK TO VERIFY THE LOCATION OF UNDERGROUND UTILITIES WITHIN THE PROJECT AREA.</div> <div>7. THE LOCATION OF ANY UTILITIES SHOWN ON THESE PLANS IS APPROXIMATE AND FOR INFORMATION ONLY. THE LOCATION, TYPE, SIZE AND/OR DEPTH INDICATED WERE OBTAINED FROM SOURCES OF VARYING RELIABILITY. CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFYING THE ACTUAL LOCATION, TYPE, SIZE AND/OR DEPTH PRIOR TO PERFORMING ANY EXCAVATION OR OTHER WORK CLOSE TO ANY UNDERGROUND PIPELINE, CONDUIT, DUCTS, WIRE, STRUCTURE OR OTHER UTILITIES SUBJECT TO CONCERNS FOR SAFETY, DISPLACEMENT, AND/OR DAMAGE BY REASONS OF THEIR OPERATIONS.</div> <div>8. CONSTRUCTION HOURS SHALL BE MONDAY THROUGH SATURDAY BETWEEN 7:00 A.M. AND 7:00 P.M. UNLESS PRIOR APPROVAL IS RECEIVED FROM THE CONSULTANT TEAM.</div> <div>9. THE CONTRACTOR SHALL AGREE TO ASSUME SOLE AND COMPLETE RESPONSIBILITY FOR JOB SITE CONDITIONS DURING THE COURSE OF CONSTRUCTION OF THIS PROJECT, INCLUDING SAFETY OF ALL PERSONS AND PROPERTY, AND FURTHER AGREES THAT THIS REQUIREMENT SHALL APPLY CONTINUOUSLY AND NOT BE LIMITED TO NORMAL WORKING HOURS IN ACCORDANCE WITH THE PROVISIONS OUTLINED BY THE PROJECT CONTRACT.</div> <div>10. IT IS THE RESPONSIBILITY OF THE CONTRACTOR AND HIS/HER SUBCONTRACTOR(S) TO EXAMINE THE PROJECT SITE PRIOR TO THE COMMENCEMENT OF WORK. THE CONTRACTOR SHALL BECOME FAMILIAR WITH THE CONDITIONS UNDER WHICH THE WORK IS TO BE PERFORMED, SUCH AS THE NATURE AND LOCATION OF THE WORK AND THE GENERAL AND LOCAL CONDITIONS, PARTICULARLY THOSE AFFECTING THE AVAILABILITY OF TRANSPORTATION, ACCESS TO AND FROM THE SITE, THE DISPOSAL, HANDLING, AND STORAGE OF MATERIALS, AVAILABILITY OF LABOR, WATER, ELECTRICITY, ROADS, THE UNCERTAINTIES OF WEATHER, THE CONDITIONS OF THE GROUND, SURFACE AND SUBSURFACE MATERIALS, THE EQUIPMENT AND FACILITIES NEEDED PRIMARILY FOR AND DURING THE PERFORMANCE OF THE WORK, AND THE COSTS THEREOF. ANY FAILURE BY THE CONTRACTOR AND SUBCONTRACTOR(S) TO ACQUAINT HIMSELF WITH ALL THE AVAILABLE INFORMATION WILL NOT RELIEVE HIM FROM RESPONSIBILITY FOR PROPERLY ESTIMATING THE DIFFICULTY AND COST OF SUCCESSFULLY PERFORMING THE WORK.</div> <div>11. THE CONTRACTOR SHALL MAINTAIN A SET OF PLANS ON THE JOB SHOWING "AS-CONSTRUCTED" CHANGES MADE TO DATE. UPON COMPLETION OF THE PROJECT, THE CONTRACTOR SHALL SUPPLY TO THE OWNER, OWNER'S REPRESENTATIVE, OR PROJECT ENGINEER A SET OF PLANS, MARKED UP TO THE SATISFACTION OF THE CONSULTANT TEAM, REFLECTING THE AS-CONSTRUCTED MODIFICATIONS.</div> <div>12. ALL REVISIONS TO THESE PLANS MUST BE MADE BY THE PROJECT ENGINEER RESPONSIBLE FOR THE PLAN PREPARATION, AND SHALL ACCURATELY BE SHOWN ON REVISED PLANS.</div> <div>13. COPIES OF ALL ENVIRONMENTAL PERMITS WILL BE PROVIDED TO THE CONTRACTOR, AND MUST BE KEPT ON-SITE AT ALL TIMES DURING CONSTRUCTION. THE CONTRACTOR SHALL OBTAIN AT HIS/HER OWN EXPENSE ALL PERMITS, LICENSES, INSURANCE POLICIES, ETC., NOT ALREADY OBTAINED BY THE CONSULTANT TEAM, AS MAY BE NECESSARY TO COMPLY WITH STATE AND LOCAL LAWS ASSOCIATED WITH THE PERFORMANCE OF THE WORK. CONTRACTOR IS RESPONSIBLE FOR COMPLYING WITH ALL PERMITS.</div>

DISCLAIMERS	
<div>1. THE PROJECT ENGINEER RESPONSIBLE FOR PREPARATION OF THESE PLANS AND SPECIFICATIONS WILL NOT BE RESPONSIBLE FOR, OR LIABLE FOR UNAUTHORIZED CHANGES TO OR USES OF THESE PLANS. ALL CHANGES TO THE PLANS MUST BE IN WRITING AND MUST BE APPROVED BY THE PROJECT ENGINEER RESPONSIBLE FOR PREPARATION OF THESE PLANS.</div>	
GENERAL GRADING NOTES	
<div>1. ALL GRADING SHALL BE PERFORMED IN ACCORDANCE WITH THESE PLANS AND SPECIFICATIONS, AND ALL APPLICABLE LOCAL, COUNTY, AND STATE GRADING ORDINANCES, AND THE STANDARD SPECIFICATIONS, STATE OF CALIFORNIA, DEPARTMENT OF TRANSPORTATION, DATED MAY 2006. THE FOLLOWING PLANS, NOTES AND SPECIFICATIONS HAVE BEEN DEVELOPED WITHOUT THE BASIS OF FIELD AND LABORATORY TESTING, AND THUS REFLECT GOOD CONSTRUCTION PRACTICES ONLY.</div> <div>2. THE CONTRACTOR SHALL CONFORM TO THE RULES AND REGULATIONS OF THE STATE AND LOCAL CONSTRUCTION SAFETY ORDERS PERTAINING TO EXCAVATIONS AND TRENCHES.</div> <div>3. THE CONTRACTOR IS RESPONSIBLE FOR ALL QUANTITIES AND LANDFORMS. EARTHWORK QUANTITIES SHOWN ON THESE PLANS ARE BASED ON RAW, UNADJUSTED CUT AND FILL VOLUMES AND ARE FURNISHED FOR THE CONTRACTOR'S INFORMATION ONLY. THE ACTUAL AMOUNT OF MATERIAL MOVED WILL VARY DEPENDING ON CONDITIONS IN THE FIELD INCLUDING BUT NOT LIMITED TO COMPACTION AND CONSOLIDATION, BULKING, AND THE CONTRACTOR'S METHOD OF OPERATION.</div> <div>4. EXISTING VEGETATION THAT EXISTS OUTSIDE OF CUT AND FILL AREAS SHALL BE PROTECTED AND LEFT UNDISTURBED AS MUCH AS PRACTICAL.</div> <div>5. THE CONTRACTOR SHALL MAKE EVERY EFFORT TO MINIMIZE VEHICLE MOVEMENT, SPECIFICALLY WHEELED VEHICLES, WITHIN THE CONSTRUCTION AREA. EFFORT SHOULD BE GIVEN TO MAINTAIN SINGLE TRAFFIC ROUTES FOR HAULING OF MATERIAL BETWEEN CUT AND FILL SITES.</div> <div>6. UPON COMPLETION OF THE GRADING WORK ANY ROUTES, STAGING AREAS, ETC. SHALL BE SCARIFIED TO A DEPTH OF 6 TO 12 INCHES.</div> <div>7. SITE PREPARATION SHALL BEGIN WITH THE REMOVAL OF WOODY VEGETATION AND NON-SOIL MATERIALS AS NEEDED WITHIN THE AREA TO BE GRADED.</div> <div>8. ALL SURFACES TO RECEIVE FILL SHOULD BE CLEARED OF EXISTING WOODY VEGETATION, OLD FILL, DEBRIS, AND OTHER UNSUITABLE MATERIALS, AND SCARIFIED TO A DEPTH OF 6 TO 12 INCHES.</div>	<div>9. EXCAVATED CUT AND FILL FINISHED GRADES SHALL BE PLUS OR MINUS 0.1 FEET FROM THE GRADES SHOWN ON THESE PLANS.</div> <div>10. ALL CUT AND FILL SLOPES SHALL BE ROUNDED TO MEET EXISTING GRADES AND BLEND WITH SURROUNDING TOPOGRAPHY. WHEREVER FEASIBLE, GRADING WITHIN OPEN SPACE LANDS SHALL BE CONTOUR-ROUNDED TO MIMIC NATURAL TERRAIN FEATURES AND MANTLE WITH TOPSOIL. ALL GRADED AREAS WILL BE REVEGETATED BY THE OWNER OR OWNER'S REPRESENTATIVE.</div> <div>11. ALL SLOPES SHALL BE CONSTRUCTED PER THE MAXIMUM GRADIENTS INDICATED ON THE GRADING PLAN. ALL GRADIENTS EXCEEDING THESE MAXIMUM SLOPES SHALL BE CONSTRUCTED UTILIZING SUPPLEMENTAL SLOPE STABILIZATION TECHNIQUES AS RECOMMEND BY THE OWNER, OWNER'S REPRESENTATIVE, OR PROJECT ENGINEER AND IN AREAS AS INDICATED ON THE GRADING PLANS.</div> <div>12. THE SITE SHALL BE MAINTAINED IN AN ORDERLY FASHION, FOLLOWING THE CESSATION OF CONSTRUCTION ACTIVITY, ALL CONSTRUCTION DEBRIS SHALL BE REMOVED FROM THE SITE OR PLACED ON-SITE AS DIRECTED BY THE CONSULTING TEAM.</div> <div>13. CONTRACTOR IS RESPONSIBLE FOR DISPOSAL OF UNSUITABLE MATERIAL EXCAVATED ON SITE. UNSUITABLE EXCAVATED MATERIAL SHALL BE REMOVED AND DISPOSED OF FROM SITE IN A MANNER CONSISTENT WITH APPLICABLE LOCAL, COUNTY, AND STATE ORDINANCES.</div> <div>14. ALL DIRT, SAND, MUD OR DEBRIS DEPOSITED OR SPILLED UPON PUBLIC ROADWAYS DURING GRADING, HAULING OR EXPORTING OPERATION SHALL BE IMMEDIATELY CLEANED UP BY THE CONTRACTOR, SUBCONTRACTOR OR AGENTS. FAILURE TO DO SO WILL BE CAUSE FOR STOPPING OF SUCH GRADING, HAULING OR EXPORT WORK UNTIL SUCH TIME AS THE ROADWAYS ARE CLEANED.</div> <div>15. THE CONTRACTOR SHALL REMOVE ANY TEMPORARY CONFORMS AND CONSTRUCT OTHER IMPROVEMENTS TO THE GRADES SHOWN ON THESE PLANS.</div>
TOPOGRAPHY NOTES	
<div>1. BEARINGS, DISTANCES AND COORDINATES FOR THESE PLANS ARE BASED ON THE CALIFORNIA STATE PLANE ZONE 1 NORTH AMERICAN DATUM OF 1983 (NAD83), US FOOT.</div> <div>2. VERTICAL DISTANCE FOR THESE PLANS IS BASED ON THE NATIONAL GEODETIC VERTICAL DATUM OF 1988 (NAVD88), US FOOT.</div> <div>3. TOPOGRAPHY FOR THESE PLANS WAS PROVIDED BY DEL TERRA, INC.</div> <div>4. ALL CONTOURS ILLUSTRATED IN THESE PLANS ARE AT AN INTERVAL OF 1.0 FEET.</div>	

PROJECT TOTAL CUT/FILL VOLUMES AND AREAS			
LOCATION		GRADING AREA (AC)	CUT (CY) FILL (CY)
SOUTH POND SOIL REMOVAL		1.45	2,700
NORTH POND SOIL REMOVAL		1.43	5,100
BACKWATER CHANNEL CONSTRUCTION		1.31	7,600
LEVEE REMOVAL, POND, AND WETLANDS CONSTRUCTION		3.89	12,400
PROJECT TOTAL		8.08	27,800
			6,900



REGISTERED PROFESSIONAL ENGINEER
J-ROSE PATENAUDE
No. 65963
EXP. _____
CIVIL
STATE OF CALIFORNIA

NOTES

MAD RIVER FLOODPLAIN RESTORATION
CALTROUT, MCSD, CDFW, SCC

DESIGNED:
JRP

DRAFTED:
CEP, CP

TECH. REVIEW:
JRP, JKA

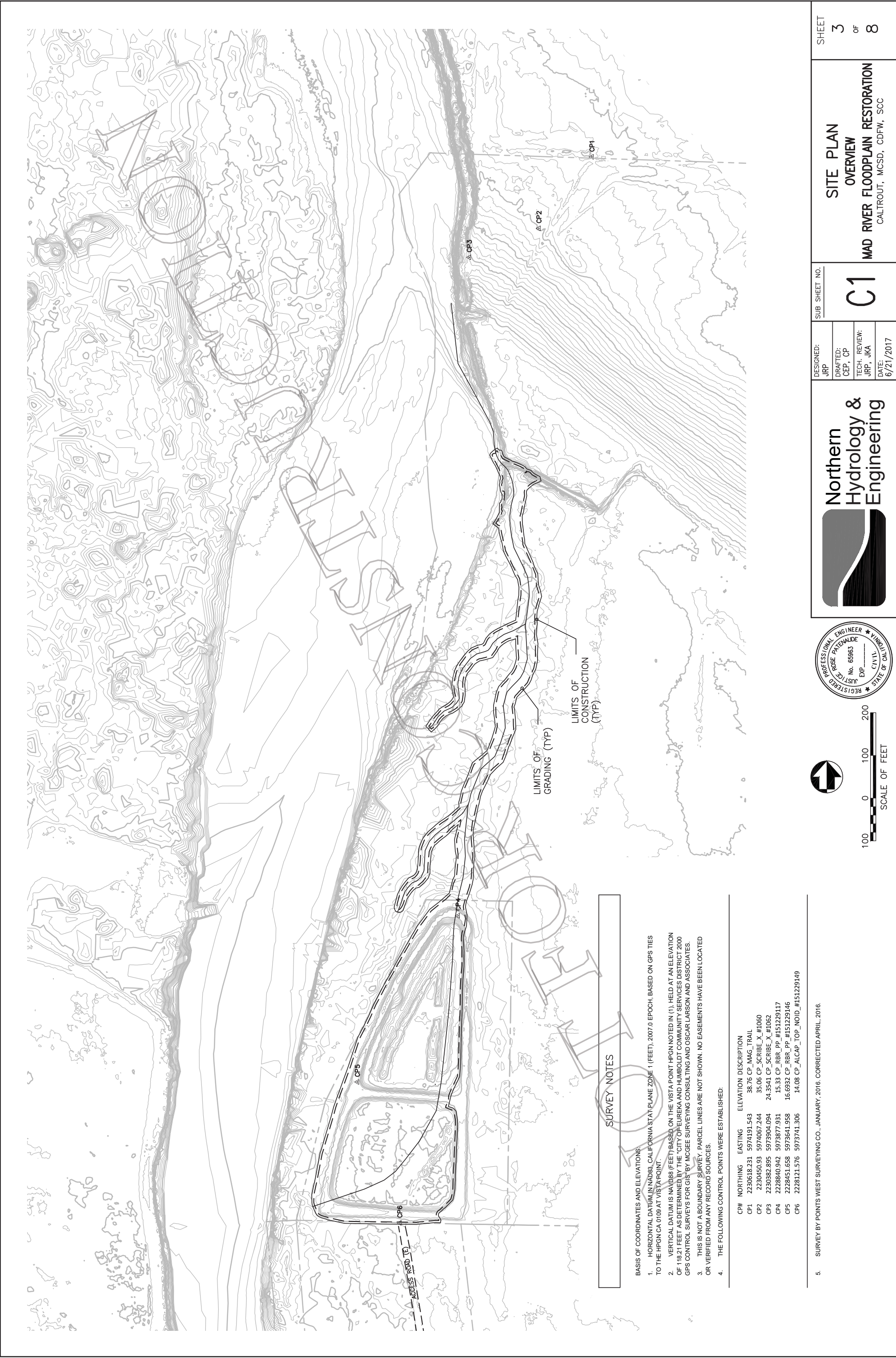
DATE:
6/21/2017

SUB SHEET NO.

G2

SHEET

2 OF 8



DESIGNED:
JRP

DRAFTED:
CEP, CP


TECH. REVIEW:
JRP, JKA

DATE:
6/21/2017

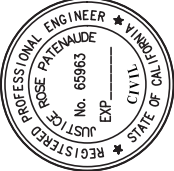
SUB SHEET NO.
C1


SITE PLAN
OVERVIEW
MAD RIVER FLOODPLAIN RESTORATION
CALTROUT, MCSD, CDFW, SCC


SHEET
3
OF
8



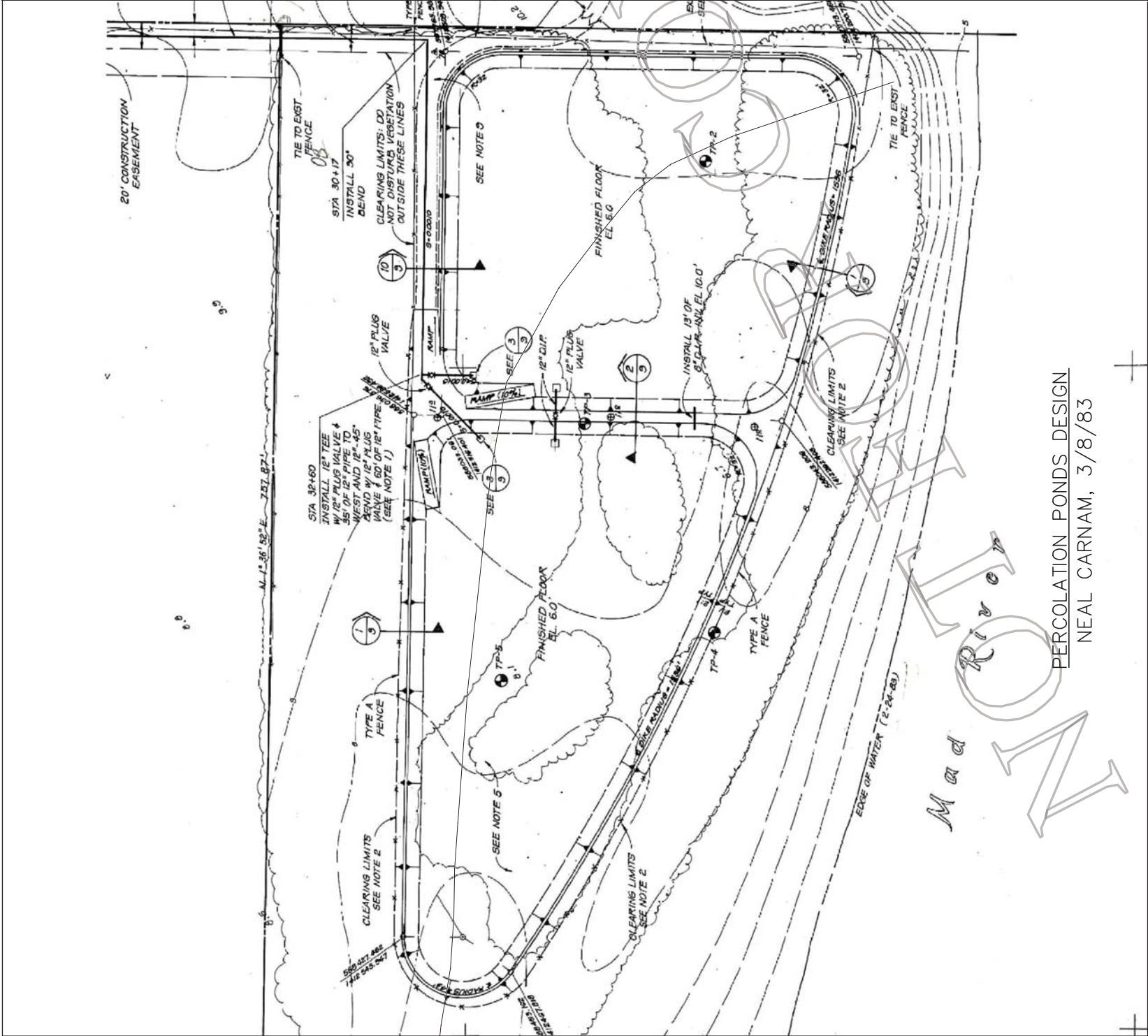
**Northern
Hydrology &
Engineering**



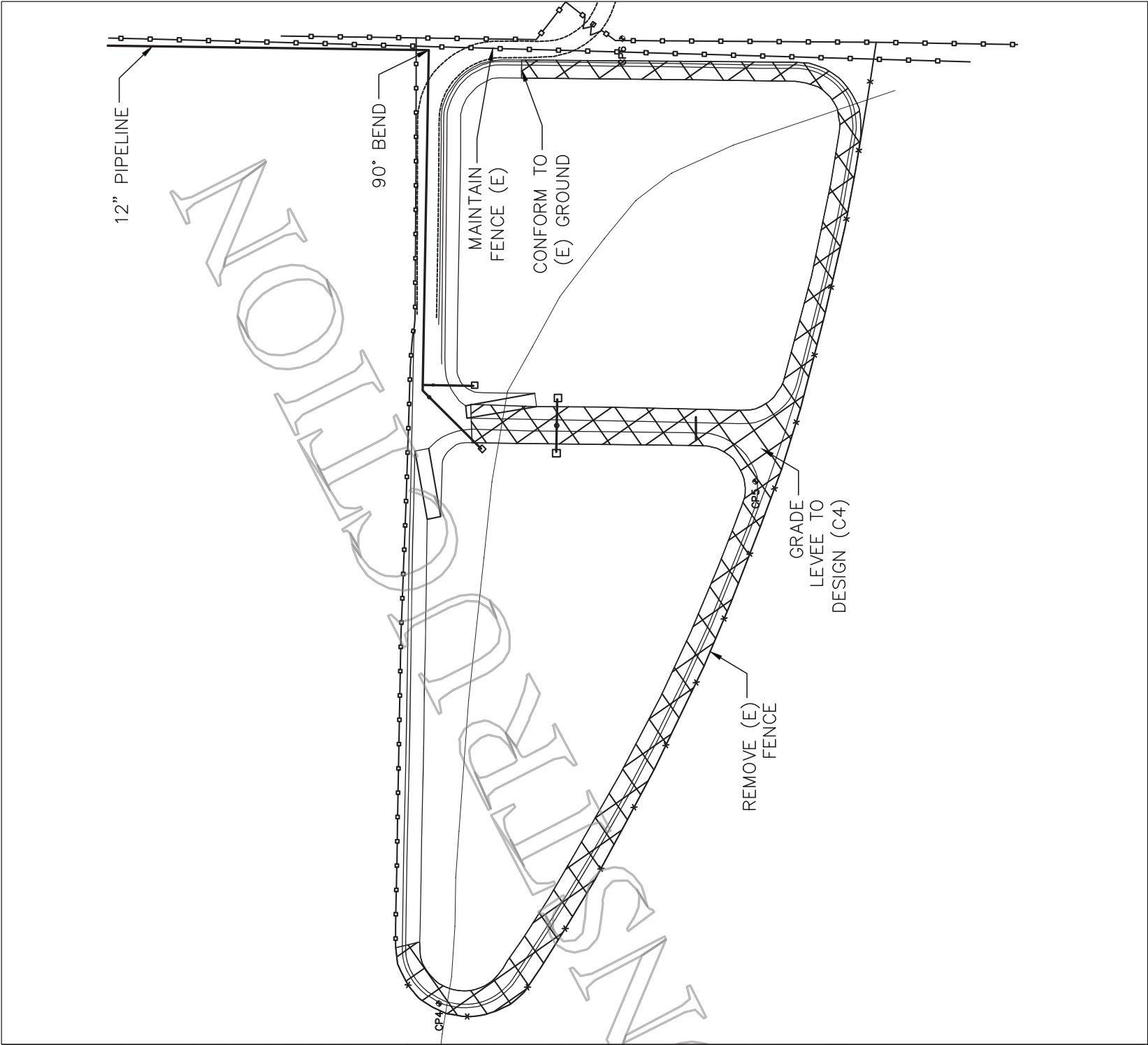




SCALE OF FEET

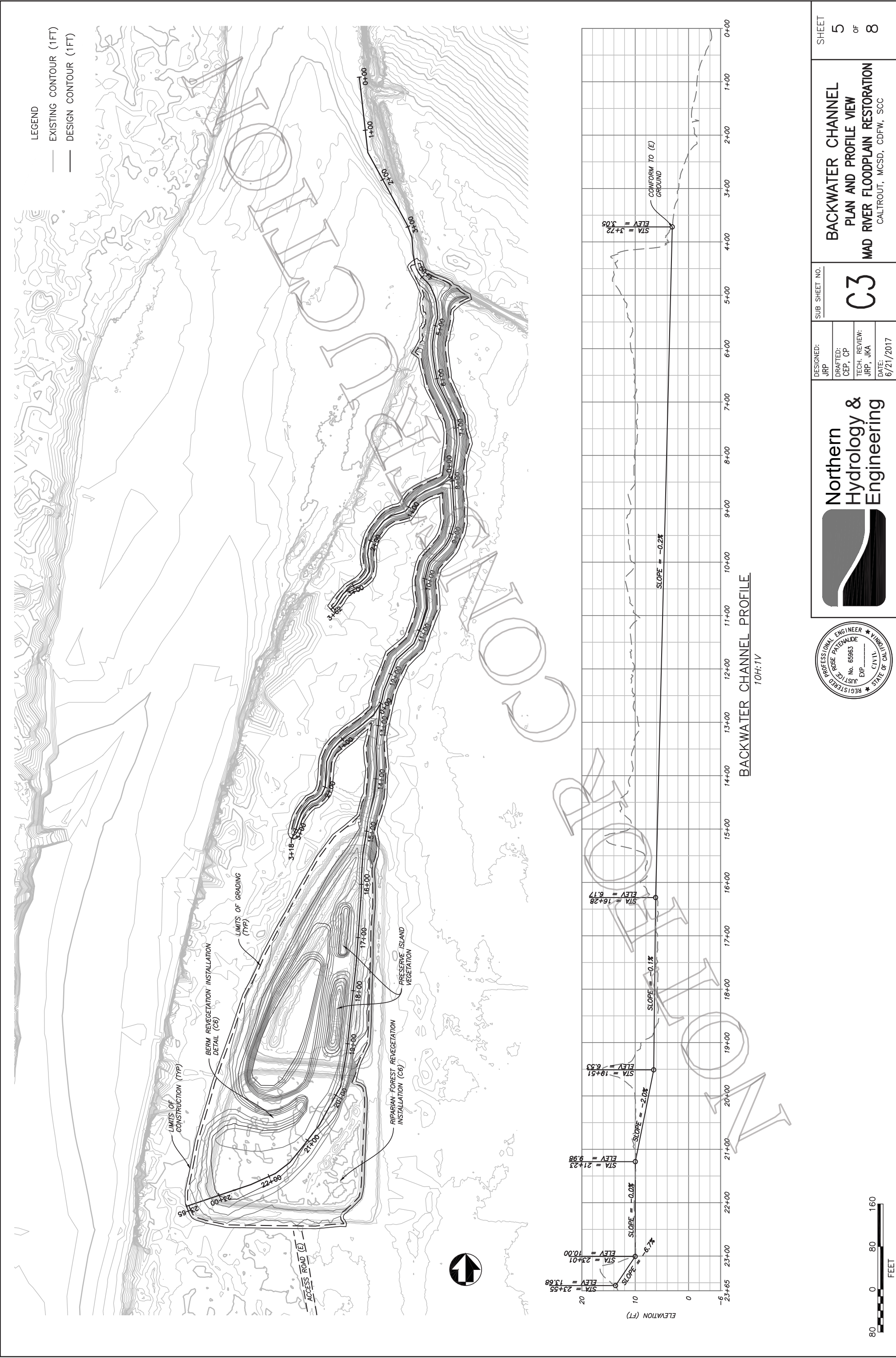


PERCOLATION PONDS DESIGN
NEAL CARNAM, 3/8/83

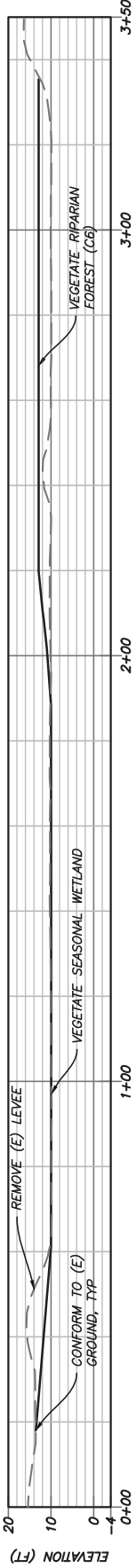


DESIGNED: JRP	SUB SHEET NO. C2
DRAFTED: CEP, CP	
TECH. REVIEW: JRP, JKA	
DATE: 6/21/2017	

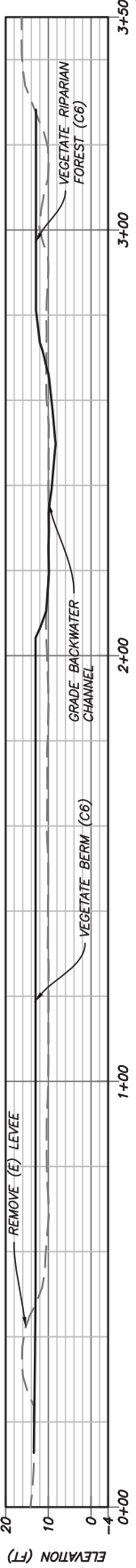
DEMOLITION PLAN
OVERVIEW
MAD RIVER FLOODPLAIN RESTORATION
CALTROUT, MCSD, CDFW, SCC



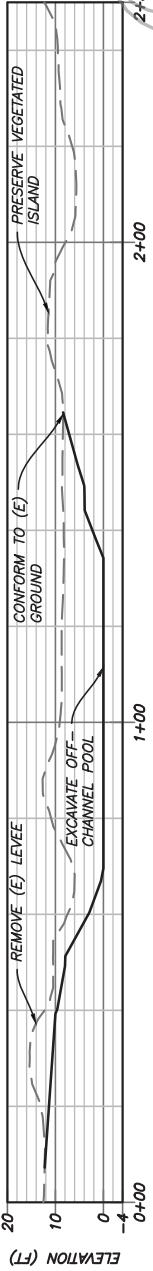




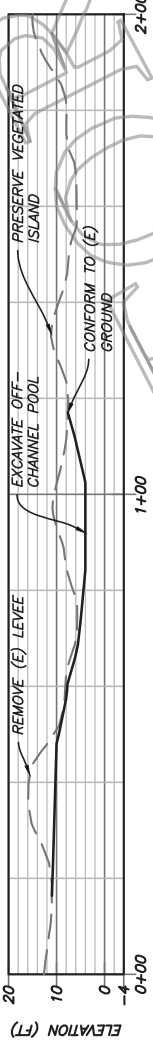
SECTION A
(STATION 21+80) C4



SECTION B
(STATION 20+40) C4



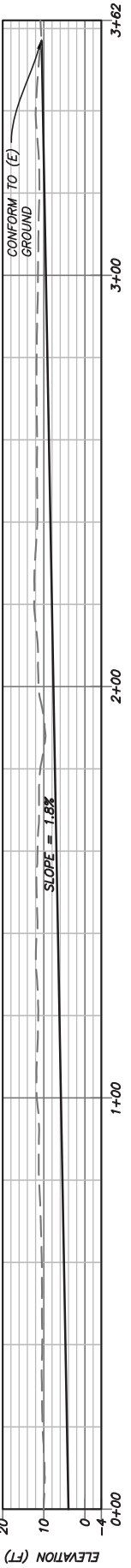
SECTION C
(STATION 18+61) C4



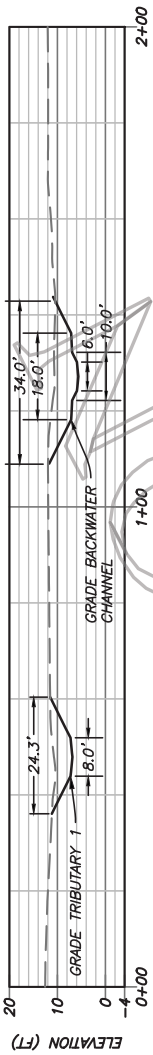
SECTION D
(STATION 17+00) C4



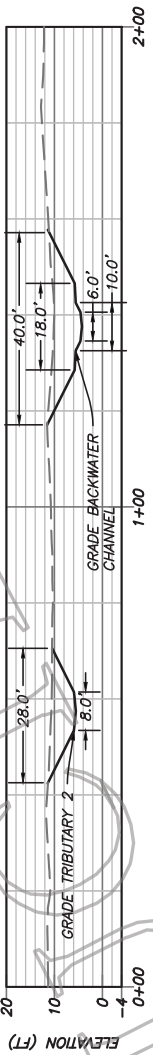
TRIBUTARY PROFILE 1
(CONFLUENCE AT BACKWATER CHANNEL STATION 12+50) C4



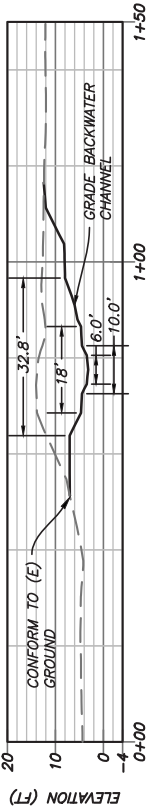
TRIBUTARY PROFILE 2
(CONFLUENCE AT BACKWATER CHANNEL STATION 8+00) C4



SECTION E
(STATION 13+58) C4



SECTION F
(STATION 8+56) C4



SECTION G
(STATION 4+53) C4

LEGEND

- EXISTING GROUND
- DESIGN GROUND



Northern
Hydrology &
Engineering

DESIGNED: JRP	SUB SHEET NO. C5
DRAFTED: CEP, CP	
TECH. REVIEW: JRP, JKA	
DATE: 6/21/2017	

CROSS SECTION
PROFILE VIEWS
MAD RIVER FLOODPLAIN RESTORATION
CALTROUT, MCSD, CDFW, SCC

SHEET
7
OF
8

McKinleyville Community Services District

BOARD OF DIRECTORS

October 4, 2017

TYPE OF ITEM: **INFORMATIONAL**

ITEM: E.3 **Review the National Recreation and Park Association (NRPA) Online Metrics Tool and Data Available for Parks & Recreation Services Assessment and Planning**

PRESENTED BY: **Lesley Frisbee, Recreation Director**

TYPE OF ACTION: **None**

Recommendation:

Staff recommends that the Board review the information provided, discuss, air questions and take public comment regarding the NRPA Online Metrics Tool and the data available for informing the planning and assessment of the community's Parks and Recreation services.

Discussion:

The NRPA is a national non-profit organization dedicated to advancing park, recreation and conservation efforts that enhance quality of life for all people. As part of the NRPA's work to support the parks & recreation profession, they offer an online metrics tool which allows agencies to enter community specific data and generate a variety of reports to assist in effective management and planning.

The NRPA understands that every community is different. Services and opportunities meeting the needs in one community may not meet the needs of another community. There is no simple set of standards to guide management and planning for parks and recreation services in all communities, which is why the NRPA created the Parks Metrics Tool which allows park and recreation agencies to build customized reports that allow for comparisons with peer agencies. The benchmark data provided in these reports can be used to in a variety of ways to better serve our community.

In addition to the customized reports, the NRPA publishes an annual report, the NRPA Agency Performance Review, which provides analysis and summary of the key findings from all of the data entered into the Parks Metrics Tool.

The 2017 NRPA Agency Performance Review has been provided as **Attachment 1**. The NRPA website, www.nrpa.org/publications-research/ParkMetrics offers a variety of ways to drill down into the data provided in the annual report.

Staff intends to use data available from the metrics tool and the annual report to inform components of the Parks & Recreation Master Plan. Exactly how data will be incorporated into the Master Plan is yet to be determined.

Alternatives:

Take Action

Fiscal Analysis:

Not applicable

Environmental Requirements:

Not applicable

Exhibits/Attachments:

- Attachment 1 – 2017 NRPA Agency Performance Review



2017 NRPA AGENCY PERFORMANCE REVIEW

Park and Recreation Agency Performance Benchmarks



NRPA
National Recreation
and Park Association

www.nrpa.org

TABLE OF CONTENTS

Executive Summary.....	1
How to Read the <i>2017 NRPA Agency Performance Review</i>	2
Agency Performance Review at a Glance	3
Index of Figures.....	4
Key Findings	5
Park Facilities	5
Programming	7
Responsibilities of Park and Recreation Agencies	9
Staffing	10
Budget	12
Agency Funding	14
New Threats... But New Opportunities.....	17
Conclusion	19
About NRPA	19

EXECUTIVE SUMMARY

Welcome to the *2017 NRPA Agency Performance Review*, the annual review of data and insights for park and recreation agencies in the United States. The *2017 NRPA Agency Performance Review*, previously known as the NRPA Field Report, summarizes the key findings from NRPA Park Metrics, our benchmarking tool that assists park and recreation professionals in the effective management and planning of their operating resources and capital facilities.

The *2017 NRPA Agency Performance Review* is second to none in providing park and recreation professionals and other key stakeholders with a wealth of valuable benchmarks and insights that inform on the state of the industry. These insights help:

1. Guide park and recreation professionals in the evaluation of the performance of their agencies. Do their agencies provide as much open space, recreation opportunities and programming as their peers? Is the agency properly staffed or sufficiently funded?
2. Make informed decisions on the optimal set of service and facility offerings based on the demographics and, therefore, the needs of a specific community while also providing comparative agency data from other communities/agencies.
3. Show the prevalence of expanded activities and offerings of agencies throughout the nation. This report demonstrates to policy-makers, key stakeholders, the media and the general public the full breadth of service offerings and responsibilities of park and recreation departments throughout the United States.

Data is a valuable tool but not the final answer, in terms of decision-making for local park and recreation agencies. Hence, park and recreation leaders should use the *2017 NRPA Agency Performance Review* and NRPA Park Metrics to start the conversation with internal colleagues, external consultants and partners, and policymakers. Use the insights from this report to help determine the best decisions for your agency and your community.

No two park and recreation agencies are the same. They serve different residents with different needs, desires and challenges and have different access to funding. For example, just because an agency may have more workers per 1,000 residents relative to “typical” park and recreation agencies does not mean that agency should shed staff. It is possible that the agency with more staff offers more hands-on programming because of the unique needs of the population it serves.

A successful agency is one that tailors its services to meet the needs and demands of its community. Knowing who uses your agency’s resources and who may use them in the future (including age, race, income trends) are also factors in shaping the optimal mix of facilities and services to be offered. Every park and recreation agency and the public it serves are unique. Communities look different and so too should their park and recreation agency. This is why NRPA no longer publishes “national standards.”



Consequently, park and recreation professionals should use the *2017 NRPA Agency Performance Review* in conjunction with other resources, including those that are proprietary to an agency, from NRPA and outside sources. Some additional NRPA resources to consider include:



NRPA Facility Market Reports: These customized reports offer key census and marketing data and insights about the market served by your agency's facilities. Your agency will gain a greater understanding of the residents served by a park, aquatic center, recreation center or any other facility. There are now two types of NRPA Facility Market Reports: Community Profile (with detailed demographic data on the population living near the facility studied) and Health & Wellness (with a focus on the health characteristics of people living near the facility studied).



NRPA Connect: There may be no better resource to answer your park and recreation questions than your peers. NRPA Connect is an online professional networking tool that connects you with like-minded park and recreation professionals from across the country and is a valuable resource to receive information, ask industry-related questions and get insight into trends in the field.



Economic Impact of Local Parks: This study finds that operations and capital spending at America's local and regional park agencies were responsible for nearly \$140 billion in annual economic activity and nearly 1 million jobs in 2013. The report also includes estimates of the economic impact of operations and capital spending at local and regional park agencies for all 50 states and the District of Columbia.



Americans' Broad-Based Support for Local Recreation and Park Services: This survey of more than 1,100 Americans affirms their passion for their local public parks. In fact, virtually all Americans agree that their communities benefit from their local public parks, even if they themselves are not regular park users. The support for local public parks crosses nearly every demographic segment of Americans (including age, income, household formation, and political affiliation).



Americans' Engagement with Parks Survey: This new annual NRPA research survey probes Americans' usage of parks, the key reasons that drive their use and the greatest challenges preventing greater usage. Each year, the study probes the importance of public parks in Americans' lives, including how parks compare to other services and offerings of local governments.



Parks & Recreation magazine: Each issue of NRPA's monthly flagship magazine features content on a number of topics, including conservation, health and wellness, social equity, advocacy, law review and operations.

All of these resources can be found at www.nrpa.org

HOW TO READ THE 2017 NRPA AGENCY PERFORMANCE REVIEW AND NRPA PARK METRICS

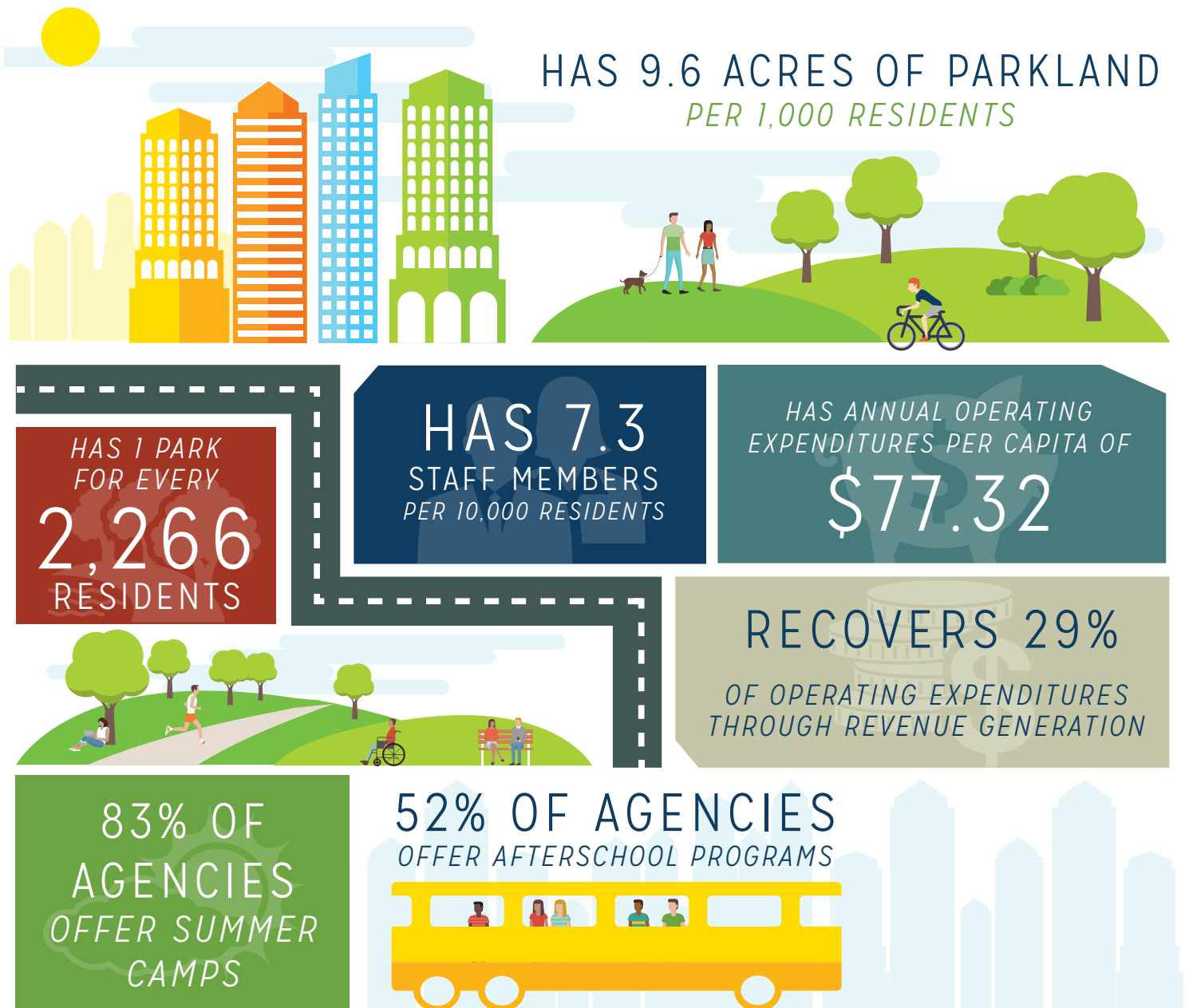
The *2017 NRPA Agency Performance Review* presents most of its data with medians, along with data responses at the lower-quartile (lowest 25 percent) and upper-quartile (highest 25 percent). The data presentation provides insight about where your agency stands compared not only to typical agencies (i.e., those at the median values) but also to the full spectrum of agencies at both the high and low quartiles of values. Many metrics presented include the top-line figures, as well as certain cross tabulations of jurisdiction population or population density. A more comprehensive set of cross tabulations of the data presented in the following pages is available as a set of interactive tables at www.NRPA.org/metrics.

Whereas the *NRPA Agency Performance Review* provides data for "typical" agencies, you can customize key metrics with NRPA Park Metrics to compare the characteristics of your agency to its peers. This may include filtering by agency type, size, and geographic region. You can enhance this experience further when you enter your agency's data into NRPA Park Metrics, which allows the reports to compare your agency's data with the key metrics of agencies throughout the United States.

This report contains data from 925 park and recreation agencies across the United States as reported between 2014 and 2016. **Note:** *Not all agencies answered every survey question.*

AGENCY PERFORMANCE REVIEW AT A GLANCE

THE TYPICAL PARK AND RECREATION AGENCY...



INDEX OF FIGURES

Figures	Top-Line Finding	Page
Park Facilities		
Figure 1: Residents per Park	There is typically one park for every 2,266 residents.	5
Figure 2: Acres of Park Land per 1,000 Residents	The typical park and recreation agency has 9.6 acres of park land for every thousand residents in the jurisdiction.	5
Figure 3: Outdoor Park and Recreation Facilities – Population per Facility	An overwhelming majority of park and recreation agencies have playgrounds (90 percent) and basketball courts (82 percent) in their portfolio of outdoor assets.	6
Figure 4: Indoor Park and Recreation Facilities – Population per Facility	A majority of agencies offer recreation centers, gyms, and community centers, while roughly two in five agencies offer senior centers and fitness centers.	6
Programming		
Figure 5: Programs Offered by Park & Recreation Agencies	Key programming activities include team sports, fitness enhancement classes, and health and wellness education.	8
Figure 6: Targeted Programs for Children, Seniors and People with Disabilities	More than four in five agencies offer summer camp to their residents.	8
Responsibilities of Park and Recreation Agencies		
Figures 7 & 8: Key Responsibilities of Park and Recreation Agencies	Top roles include operating parks, providing recreation programming and services, and operating and maintaining indoor facilities.	9, 10
Staffing		
Figure 9: Park and Recreation Agency Staffing	The typical park and recreation agency is staffed with 35 full-time equivalents (FTEs).	10
Figure 10: Park and Recreation FTEs per 10,000 Residents	The typical park and recreation agency has 7.3 FTEs on staff for each 10,000 residents in the jurisdiction served by the agency.	11
Figure 11: Responsibilities of Park and Recreation Workers	Responsibilities split between maintenance, operations, programming and administration.	11
Budget		
Figure 12: Annual Operating Expenditures	The typical park agency has annual operating expenditures of \$3,500,694.	12
Figure 13: Operating Expenditures per Capita	The typical park and recreation agency has annual operating expenses of \$77.32 on a per capita basis.	12
Figure 14: Operating Expenditures per Acre of Park and Non-Park Sites	The median level operating expenditures is \$6,561 per acre of park and non-park sites managed by the agency.	13
Figure 15: Operations Expenditures Per FTE	The typical park and recreation agency has \$93,748 in annual operating expenditures for each employee.	13
Figure 16: Distribution of Operating Expenditures	At the typical park and recreation agency, personnel services represent 55 percent of the operating budget.	14
Agency Funding		
Figure 17: Sources of Operating Expenditures	Park and recreation agencies derive three-fifths of their operating expenditures from general fund tax support.	14
Figure 18: Park and Recreation Revenues per Capita	The typical park and recreation agency generates \$19.04 in revenue annually for each resident living in the jurisdiction.	15
Figure 19: Revenue as a Percentage of Operating Expenditures (Cost Recovery)	The typical agency recovers 29.1 percent of its operating expenditures from non-tax revenues.	15
Figure 20: 5-Year Capital Budget Spending	Park and recreation agencies have a median of \$3.0 million in capital expenditures budgeted over the next five years.	16
Figure 21: Targets for Capital Expenditures	On average, just over half of the capital budget is designated for renovation while 30 percent is geared toward new development.	16

KEY FINDINGS

PARK FACILITIES

America's local and regional park agencies differ greatly in size and facility offerings. Whereas the typical agency participating in NRPA Park Metrics serves a jurisdiction (e.g., a town, city, county and/or region) of 40,100 people, there are agencies that serve an area of just a few thousand people while others are a primary recreation resource for millions of people.

Naturally, the offerings of these agencies vary as much as the markets they serve. The typical agency has 19 parks comprising a total 400 acres under its watch. After adding in non-park facilities, the median number of parks and non-park facilities increases to 25 comprising of 491 acres.

At the typical agency, there is one park for every 2,266 residents. The number of people per park rises as the population of the town, city, county or region served by the agency increases. At agencies located in jurisdictions with less than 20,000 residents, there is one park for every 1,331 residents. The ratio rises to one park for every 2,401 residents in jurisdictions with 50,000 to 99,999 people and one park for every 5,949 people at agencies serving areas with more than 250,000 people.

The typical park and recreation agency has 9.6 acres of park land for every thousand residents in the jurisdiction. So, which agencies offer the most park land acreage per 1,000 residents? The smallest agencies, serving fewer than 20,000 residents, typically have 10.5 acres per 1,000 residents, compared to 12.2 acres per 1,000 residents at jurisdictions serving more than 250,000 people. At the same time, agencies serving jurisdictions between 100,000 and 250,000 people have 7.9 acres of park land per 1,000 residents.

Park and recreation agencies offer a wide variety of facility types and features. **An overwhelming majority of park and recreation agencies have playgrounds (90 percent) and basketball courts (82 percent) in their portfolio of outdoor assets.** Further, a majority of agencies have diamond fields for baseball and/or softball, tennis courts, outdoor swimming pools and multipurpose rectangular fields.

Figure 1

Residents per Park
(by Jurisdiction Population)

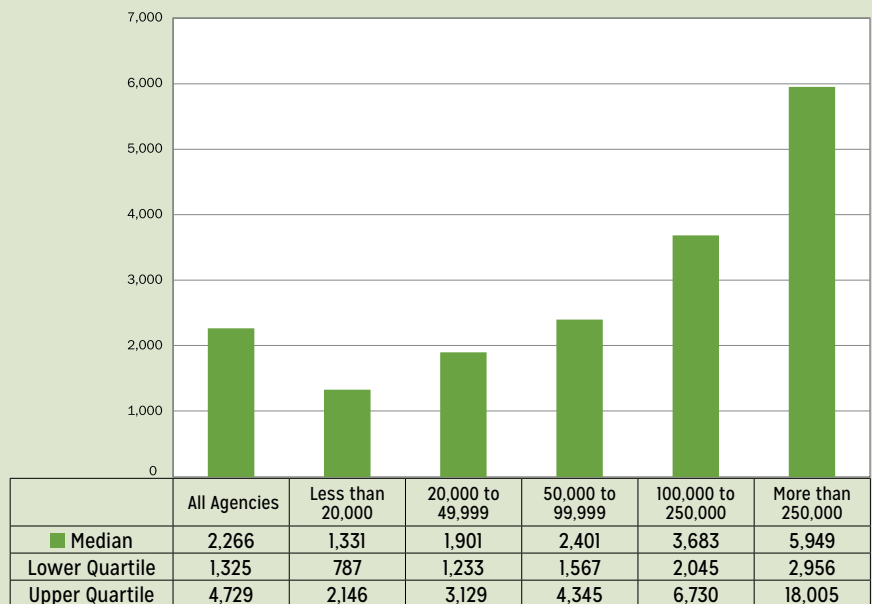


Figure 2

Acres of Park Land per 1,000 Residents
(by Jurisdiction Population)

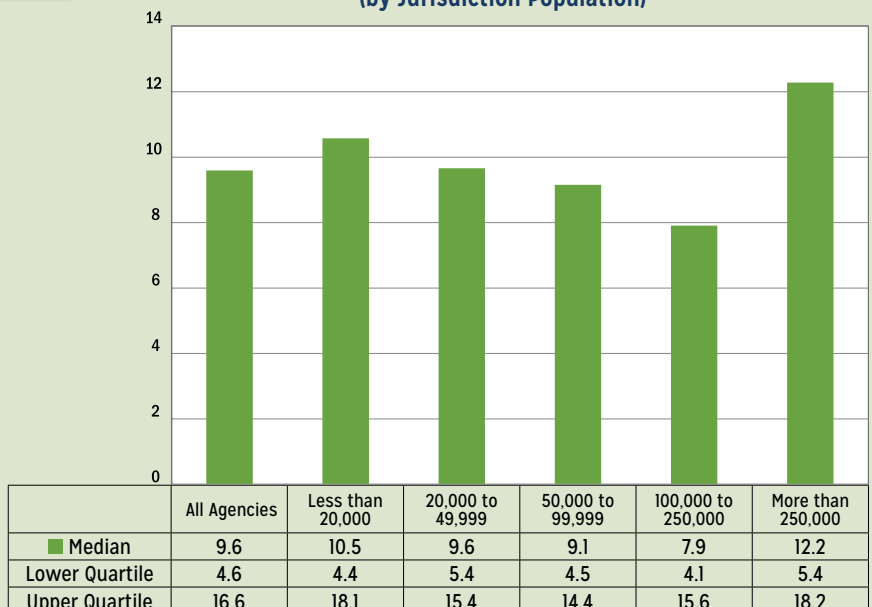


Figure 3

Outdoor Park and Recreation Facilities

Outdoor Facility	Agencies Offering this Facility	Median Number of Residents per Facility
Playgrounds	90.0%	3,633
Basketball courts	82.4%	7,080
Tennis courts (outdoor only)	71.5%	4,375
Diamond fields: baseball - youth	68.4%	6,453
Diamond fields: softball fields - adult	64.9%	12,468
Rectangular fields: multi-purpose	64.9%	12,468
Diamond fields: softball fields - youth	60.1%	8,500
Swimming pools (outdoor only)	52.7%	33,040
Dog park	52.1%	42,500
Diamond fields: baseball - adult	49.2%	19,226
Totlots	46.4%	12,195
Community gardens	44.8%	31,000
Rectangular fields: soccer field - youth	44.8%	6,199
Rectangular fields: soccer field - adult	41.0%	12,226
Rectangular fields: football field	37.0%	26,250
Diamond fields: tee-ball	34.5%	15,439
Multiuse courts -basketball, volleyball	32.5%	15,250
Ice rink (outdoor only)	17.1%	16,572
Multipurpose synthetic field	10.9%	34,242
Rectangular fields: lacrosse field	10.3%	27,332
Rectangular fields: cricket field	8.5%	147,500
Overlay field	5.1%	10,820
Rectangular fields: field hockey field	3.7%	20,340

Figure 4

Indoor Park and Recreation Facilities

Indoor Facility	Agencies Offering this Facility	Median Number of Residents per Facility
Recreation centers	58.2%	27,591
Gyms	56.2%	28,856
Community centers	50.7%	29,227
Senior centers	40.1%	48,822
Fitness center	37.0%	40,946
Performance amphitheater	27.0%	48,000
Nature centers	24.8%	105,000
Stadiums	15.3%	77,129
Ice rink	15.3%	30,642
Teen centers	10.5%	51,448
Indoor track	10.3%	50,667
Arena	7.6%	57,300

Note: Some of these facilities may be included as part of another facility; for example, a fitness center may be part of a recreation center.

In addition, the typical park and recreation agency that manages or maintains trails for walking, hiking, running and/or biking has 10.0 miles of trails in its network. Agencies serving more than 250,000 people in their area have a median of 69 miles of trails under their purview.

Park and recreation agencies also offer a number of indoor facilities for their residents. **A majority of agencies offer recreation centers, gyms and community centers, while approximately two in five agencies offer senior centers and fitness centers.**

Figure 4 provides median populations served by the following facility and/or activity area.

PROGRAMMING

Park and recreation agencies may have thousands, if not millions, of interactions with their residents and visitors each year. **The typical park and recreation agency has nearly 200,000 contacts per year**, while an agency at the 75th percentile has 700,000 annual contacts each year.

So what is a contact? These can be visits to a local park, running or biking on a local trail, visits to the local recreation center or any other interaction with any of the agency's park and recreation facilities. And, to be clear, a person can have more than one contact; for example, a person who visits his or her local aquatic center 10 times and runs on the local trail five times counts as 15 contacts.

Programming is a key outreach method that drives usage of park and recreation facilities and, when associated with registration fees, also happens to be the largest non-tax revenue source for most agencies. The typical agency offers 175 programs; more than 90 of those programs are fee-based events. Agencies serving a population less than 20,000 typically hold 35 fee-based programs, while large jurisdictions of 250,000+ residents can provide more than 350 fee-based programs.

Programming spans many different types of park and recreation activities, with many touching one or more of NRPA's Three Pillars: Conservation, Health & Wellness and Social Equity. **Key programming activities offered by at least 60 percent of park and recreation agencies include:**

- Team sports (86 percent)
- Fitness enhancement classes (80 percent)
- Health and wellness education (80 percent)
- Themed special events (72 percent)
- Social recreation events (70 percent)
- Safety training (69 percent)
- Aquatics (66 percent)
- Trips and tours (65 percent)
- Martial arts (62 percent)
- Performing arts (61 percent)
- Visual arts (61 percent)

Agencies serving larger populations are more likely than those serving smaller towns to present a number of programming offerings, including:

- Health and wellness education
- Golf
- Racquet sports
- Cultural crafts
- Performing arts
- Natural and cultural history activities
- Visual arts

Park and recreation agencies are leaders in providing services and programming for children, seniors and people with disabilities. Larger agencies are more likely to offer programming for children, whether in the form of a summer camp or before and afterschool care and full day care. **More than four in five agencies offer summer camps to their residents.** This increases to 90 percent at agencies serving jurisdictions with more than 250,000 people. Similarly, agencies serving jurisdictions with more than 250,000 residents are more likely to offer before school care and full day care.

In addition, 77 percent of park and recreation agencies in larger jurisdictions offer programming designed for people with disabilities versus one in three agencies serving less than 20,000 residents.



Figure 6

Targeted Programs for Children, Seniors and People with Disabilities
(Percent of Agencies, by Jurisdiction Population)

	All Agencies	Less than 20,000	20,000 to 49,999	50,000 to 99,999	100,000 to 250,000	Over 250,000
Summer camp	83.1%	70.9%	85.9%	87.3%	84.5%	90.1%
Before school programs	24.6%	16.2%	20.6%	34.5%	24.7%	35.7%
After school programs	52.4%	41.1%	38.6%	69.3%	61.7%	69.3%
Preschool	35.5%	26.7%	37.2%	43.9%	34.7%	36.6%
Full day care	9.3%	2.1%	7.1%	13.4%	9.5%	18.3%
Specific teen programs	62.1%	46.7%	58.9%	76.3%	73.4%	69.8%
Specific senior programs	76.3%	68.2%	77.5%	85.8%	80.3%	74.7%
Programs for people with disabilities	58.8%	33.8%	55.8%	75.0%	71.1%	77.3%

RESPONSIBILITIES OF PARK AND RECREATION AGENCIES

Park and recreation agencies take on many responsibilities for their communities, **beyond their “traditional” roles of operating parks and facilities and providing recreation programming and services.** In addition to those two functions, the top responsibilities for park and recreation agencies are as follows:

- Operate and maintain indoor facilities (90 percent)
- Have budgetary responsibility for their administrative staff (77 percent)
- Conduct major jurisdiction-wide special events (72 percent)
- Operate, maintain or manage trails, greenways and/or blueways (TGB) (64 percent)
- Operate, maintain or manage special purpose parks and open spaces (55 percent)
- Administer or manage tournament/event-quality outdoor sports complexes (53 percent)
- Manage major aquatic complex (41 percent)
- Administer community gardens (40 percent).

Figure 7

Key Responsibilities of Park and Recreation Agencies (Percent of Agencies)

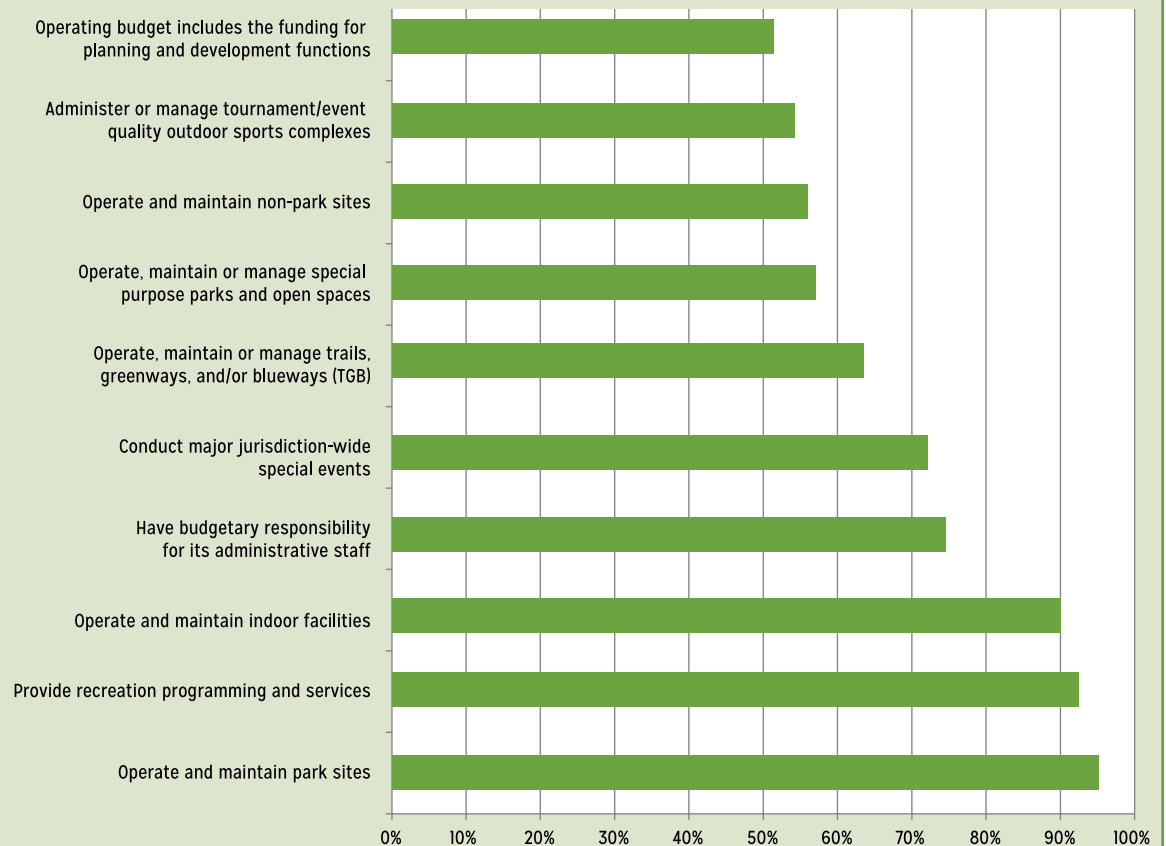


Figure 8

Other Responsibilities of Park and Recreation Agencies (Percent of Agencies)

Manage major aquatic complex	41%
Administer community gardens	40%
Operate, maintain or contract other attractions or facilities	38%
Operate, maintain or contract tennis center facilities	37%
Operate, maintain or contract waterparks	34%
Operate, maintain or contract golf courses	31%
Manage large performance outdoor amphitheaters	23%
Operate, maintain or contract tourism attractions	22%
Administer or manage tournament/event-quality indoor sports complexes	18%
Maintain, manage or lease indoor performing arts center	18%
Administer or manage farmer's markets	17%
Operate, maintain or contract indoor swim facility	17%
Operate, maintain or contract campgrounds	15%
Administer or manage professional or college-type stadium/arena/racetrack	9%
Manage or maintain fairgrounds	5%

STAFFING

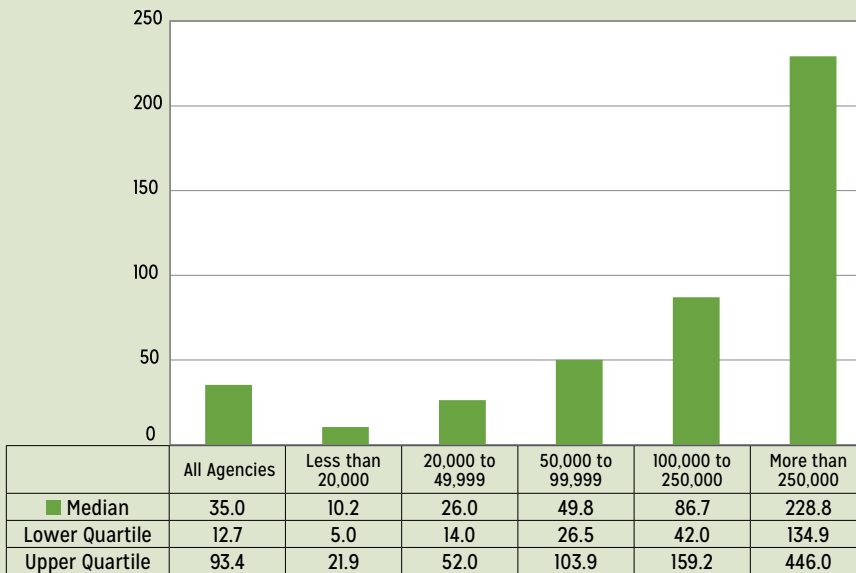
Staffing at the typical park and recreation agency includes **35 full-time equivalents (FTEs)** that include a mix of full-time and part-time staff. But, the size of the staff expands exponentially as the size of the jurisdiction served by the agency expands. Park and recreation agencies serving jurisdictions with less than 20,000 people have a median of 10.2 FTEs on staff. Agencies serving areas with 50,000 to 99,999 people have a median of 49.8 FTEs, while those serving areas with more than 250,000 have a staff with a median of 228.8 workers.

Median counts of FTEs on staff also positively correlates with:

- Number of acres maintained – 250 or less acres: 13.9 FTEs versus more than 3,500 acres: 251.4 FTEs.
- Number of parks maintained – Less than 10 parks: 12.7 FTEs versus 50 or more parks: 200.9 FTEs.
- Operating expenditures – Less than \$500,000: 4.0 FTEs versus more than \$10 million: 200.3 FTEs.
- Population served by agency – Less than 500 people per square mile: 15.8 FTEs versus more than 2,500 people per square mile: 54.4 FTEs.

Figure 9

Park and Recreation Agency Staffing: Full-Time Equivalents (by Jurisdiction Population)



One way to view agency staffing is to measure it relative to the population of the area that the agency serves. **The typical park and recreation agency has 7.3 FTEs on staff for each 10,000 residents living in the jurisdiction served by the agency.** Agencies tend to have fewer FTEs on staff when located in more populated areas. Agencies serving jurisdictions with less than 20,000 people have 10.5 FTEs for each 10,000 residents, with this measure falling to 4.3 FTEs for 10,000 residents in areas with more than 250,000 people.

Agencies also tend to have more FTEs per residents when they serve areas with greater population density. Agencies operating in areas with less than 500 people per square mile have 3.6 FTEs per 10,000 people served versus 9.8 FTEs per 10,000 residents in areas with more than 2,500 people per square mile.

There are many responsibilities covered by an agency's park and recreation professionals. **Park and recreation staff members have duties that span many functional areas:**

- Maintenance (31 percent)
- Operations (27 percent)
- Programming (21 percent)
- Administration (17 percent).

Just over a third of park and recreation agencies (34 percent) have workers that are covered by collective bargaining. Union members are more likely to be part of an agency's park and recreation staff at agencies that:

- Have larger staffs – 20 percent of agencies with staffs of less than 10 FTEs versus 47 percent of agencies with 100 or more FTEs.
- Serve larger populations – 21 percent of agencies in jurisdictions with less than 20,000 people versus 53 percent of agencies in jurisdictions with more than 250,000 people.
- Have more parks – 15 percent of agencies with less than 10 parks versus 59 percent of agencies with at least 50 parks.
- Maintain more park land – 25 percent of agencies that maintain 250 acres or less of parkland versus 56 percent of agencies that maintain more than 3,500 acres of parkland.

Figure 10

Park & Recreation FTEs per 10,000 Residents
(by Jurisdiction Population)

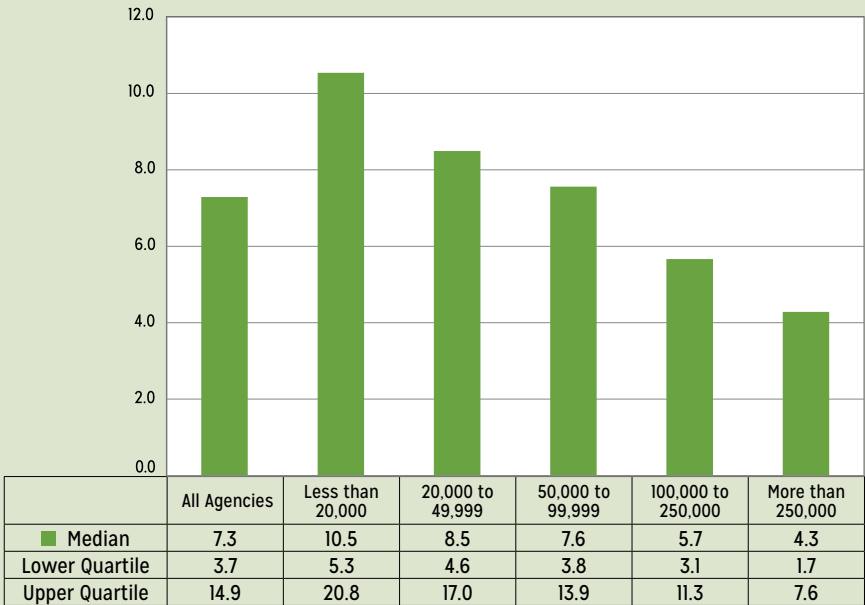
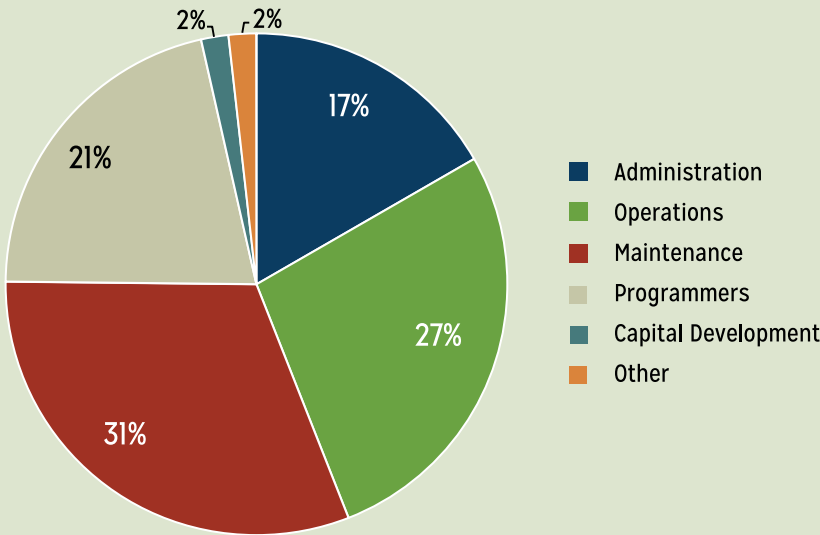


Figure 11

Responsibilities of Park and Recreation Workers
(Average Distribution of Agency FTEs)



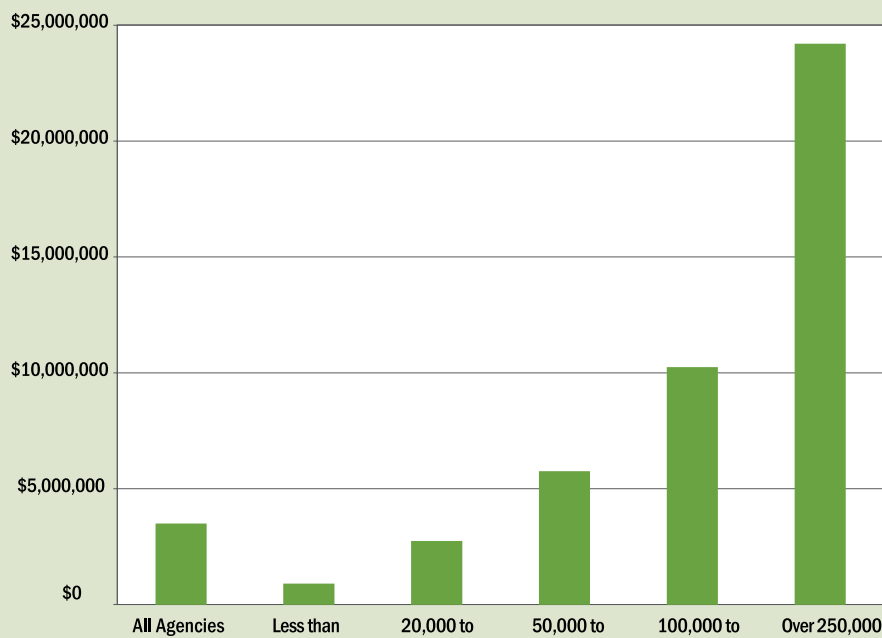
BUDGET

How does the funding at your park and recreation agency compare with funding levels at other agencies? Does your agency have access to the same level of funding as its peers? Per the U.S. Census Bureau, local and regional park agencies had operations expenditures of \$37.4 billion in 2014. This amount is split across the thousands of park and recreation agencies throughout the nation, with the **typical park agency having annual operating expenditures of \$3,500,694**.

But, the size of an agency's operating expenditures varies dramatically by the size of the agency (e.g., in terms of park and non-park acres managed and the population of the jurisdiction), the mission and responsibilities of the agency and so forth. One way to start the comparison is to normalize operation expenditure data by the size of the agency.

Figure 12

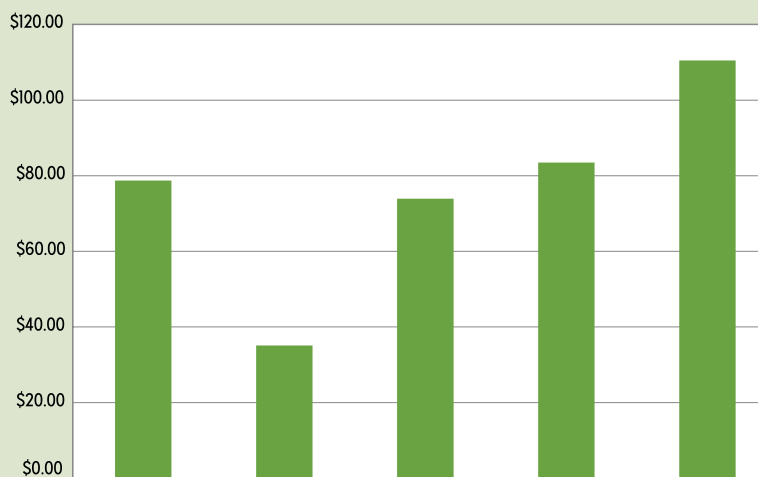
Annual Operating Expenditures (by Jurisdiction Population)



As shown in Figure 13, the **typical park and recreation agency has annual operating expenses of \$77.32 on a per capita basis**. The denser the population served by the agency, the higher the per capita operating expenses, with the typical agency serving a jurisdiction with less than 500 people per square mile having per capita operating expenses of \$34.46 and one serving an area with more than 2,500 people per square mile with median operating expenses rising to \$108.57 per resident. At the same time, per capita operations spending is inversely related to the population of the area served: agencies serving jurisdictions with less than 20,000 people have median operating spending of \$91.27, which drops to \$42.78 per resident for agencies serving jurisdictions with more than 250,000 people.

Figure 13

Operating Expenditures per Capita (by Population Density per Square Mile)



	All Agencies	Less than 500	500 to 1,000	1,501 to 2,500	More than 2,500
■ Median	\$77.32	\$34.46	\$72.63	\$82.02	\$108.57
Lower Quartile	\$39.84	\$14.38	\$41.23	\$50.53	\$61.91
Upper Quartile	\$141.89	\$82.11	\$126.70	\$140.70	\$202.42

Figure 14 shows that **the median-level operating expenditures is \$6,561 per acre of park and non-park sites managed by the agency**. Non-park sites are public spaces (such as lawns at a city hall) not designated as parks but are budgeted for maintenance and/or operation by the park and recreation agency. The typical operating expenditures rise with population density. For example, the typical agency serving a jurisdiction with fewer than 500 people per square mile spends \$3,657 per acre of park and non-park sites. The median rises to \$11,921 per acre at agencies serving a jurisdiction with a population density greater than 2,500 per square mile.

Park and recreation agencies serving larger populaces tend to have lower operations expenditures than agencies serving smaller and medium-sized jurisdictions. The typical park and recreation agency serving a jurisdiction with less than 20,000 people spends a median of \$8,073 per acre of park and non-park sites. The median slips slightly to \$7,141 per acre for agencies serving jurisdictions with between 50,000 and 99,999 people and then falls rapidly to \$3,995 per acre managed at agencies serving jurisdictions greater than 250,000 people.

The typical park and recreation agency has \$93,748 in annual operating expenditures for each employee (as measured by full-time equivalents or FTEs). The denser the jurisdiction served by the agency, the higher the operations expenditures for each FTE. Agencies serving jurisdictions with less than 500 residents per square mile have median operating expenditures of \$85,169 for each FTE. The median rises to \$103,730 per FTE for agencies serving areas with more than 2,500 residents per square mile. Similarly, the measure rises from \$86,667 for agencies with less than 10 parks to \$101,580 for agencies with 50 or more parks.

At the typical park and recreation agency, personnel services represent 55 percent of the operations budget. This includes expenditures for all salaries, wages and benefits for both full-time and non-full-time personnel, along with contracted individuals. Another 37 percent of operating expenditures fund operations of the agency, including operational support for force accounted employees where the capital fund repays the operating budget, all enterprise funds, interdepartmental transfers, and, in some cases, the capital debt service. Another 6 percent of the operations spending include capital expenses not included in the agency's capital improvement plan (CIP). This includes expenditures for capital equipment (e.g., computers, vehicles, large-area mowers, tractors, boats, etc.), some periodic cyclical maintenance (carpets, conference chairs, push mowers, etc.) and, perhaps, debt services paid from the agency's operating funds.

Figure 14

Operating Expenditures per Acre of Park and Non-Park Sites
(By Population Density per Square Mile)

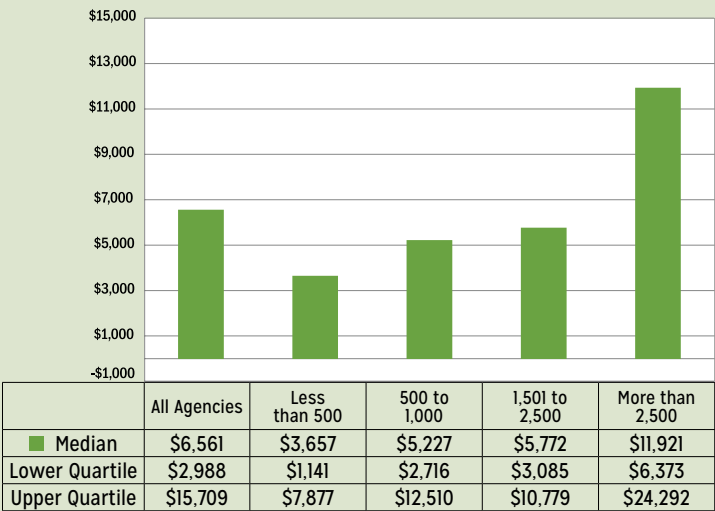
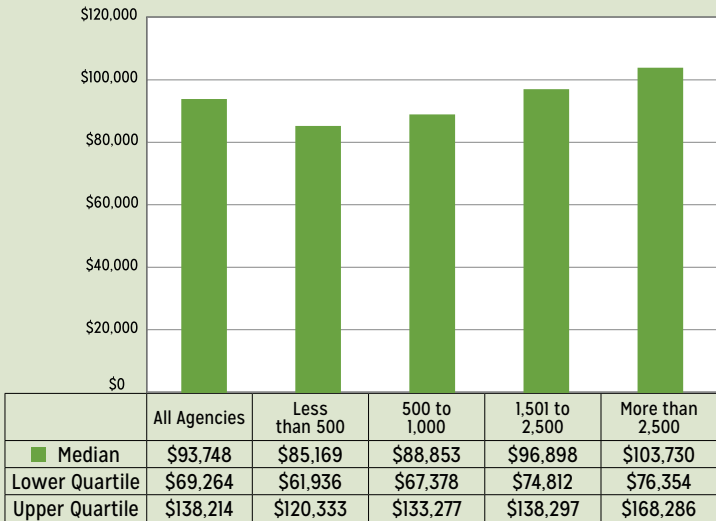


Figure 15

Operations Expenditures Per FTE
(by Population Density by Square Mile)



AGENCY FUNDING

On average, **park and recreation agencies derive three-fifths of their operating expenditures from general fund tax support**, although the percentage of funding from general fund tax support tends to be lower at agencies with larger operating budgets. The next biggest source of revenue for most agencies is earned/generated revenues, responsible for an average of 26 percent of operating expenditures. Many agencies depend on special dedicated taxes for part of their budget. Many park and recreation districts obtain the majority of their funding from tax levies approved by citizens by referendum for specified park and recreation purposes.

The typical park and recreation agency generates \$906,000 in non-tax revenues on an annual basis, although this can vary greatly based on agency size, services and facilities offered by the agency and the mandate from leadership and policymakers. Agencies with annual operating budgets under \$500,000 typically derive \$60,000 in non-tax revenues, while those with annual budgets greater than \$10 million generate a median of \$6.117 million from non-tax revenue sources.

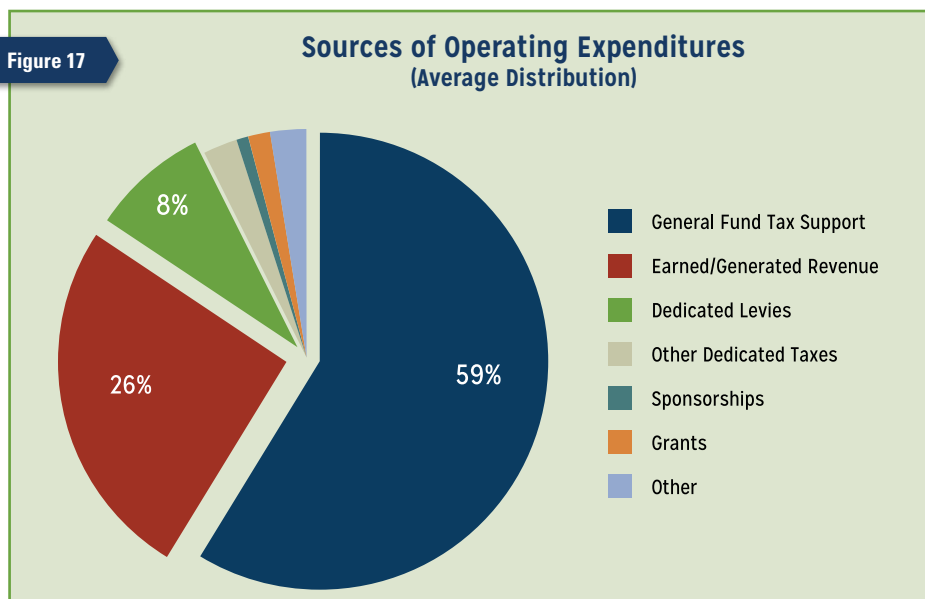
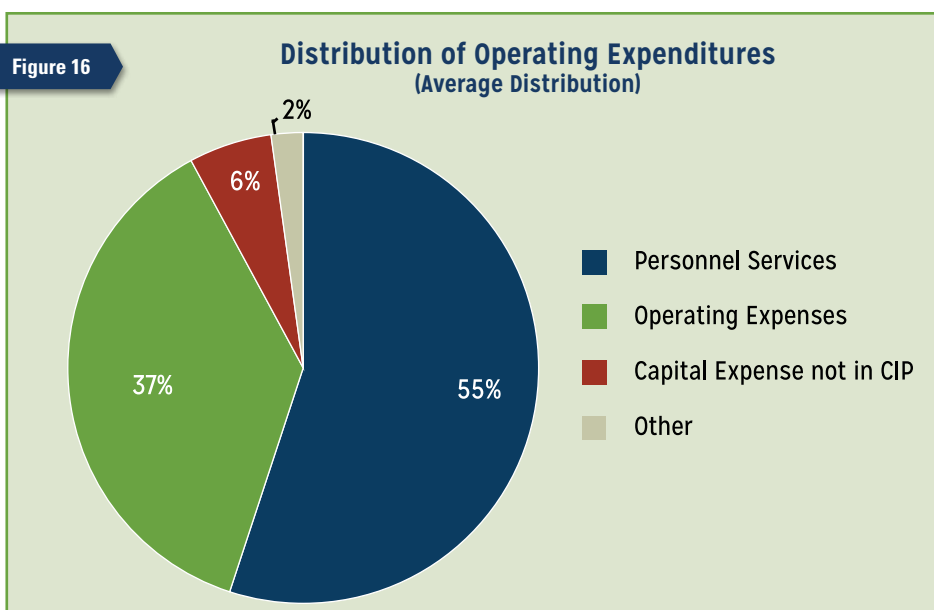


Figure 18 shows that **the typical park and recreation agency generates \$19.04 in revenue annually for each resident living in the jurisdiction it serves.** Agencies operating in less population-dense areas generate less revenue than those in areas with higher population density. The typical agency, operating in a jurisdiction with less than 500 people per square mile, generates \$6.96 in revenue on a per capita basis per year compared to a median of \$31.11 for agencies serving a jurisdiction with more than 2,500 people per square mile.

Medium-sized agencies generate more revenue on a per capita basis than small and large park and recreation agencies. Agencies serving jurisdictions with between 50,000 and 99,999 people generate a median of \$25.58 in revenue per resident each year versus agencies serving jurisdictions with less than 20,000 people that generate \$23.75 in per capita revenue per resident and agencies serving jurisdictions with more than 250,000 people that generate \$8.36 per capita.

Another way to look at the revenues is in the form of cost recovery as a percentage of operating expenditures. **The typical agency recovers 29.1 percent of its operating expenditures from non-tax revenues.** The amount of cost recovery differs greatly from agency to agency based on the agency’s portfolio of facilities and programming, the demographics of the populace served, agency mission and possible revenue mandates from the agency’s governing jurisdictions.

At the same time, agencies serving more population-dense jurisdictions tend to have higher percentages of cost recovery. Agencies serving an area with less than 500 people per square mile have a median percentage cost recovery of 22.7 percent. Cost recovery increases to 33.6 percent of operating expenditures for agencies serving jurisdictions with more than 2,500 people per square mile.

Figure 18

Park and Recreation Revenues per Capita
(by Population Density per Square Mile)

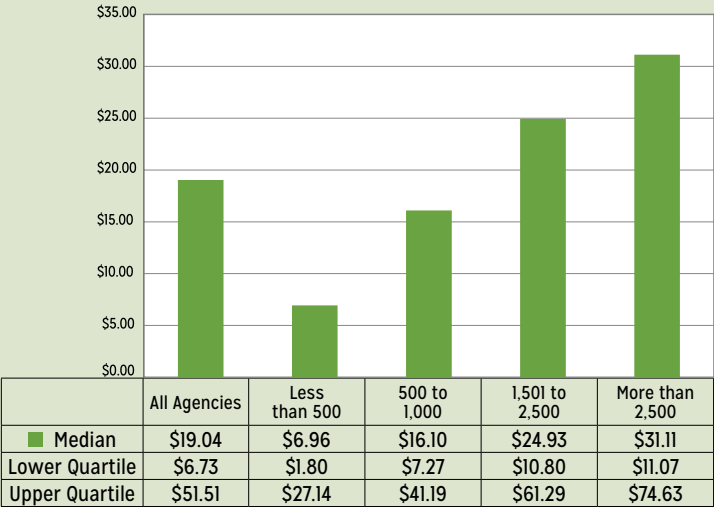
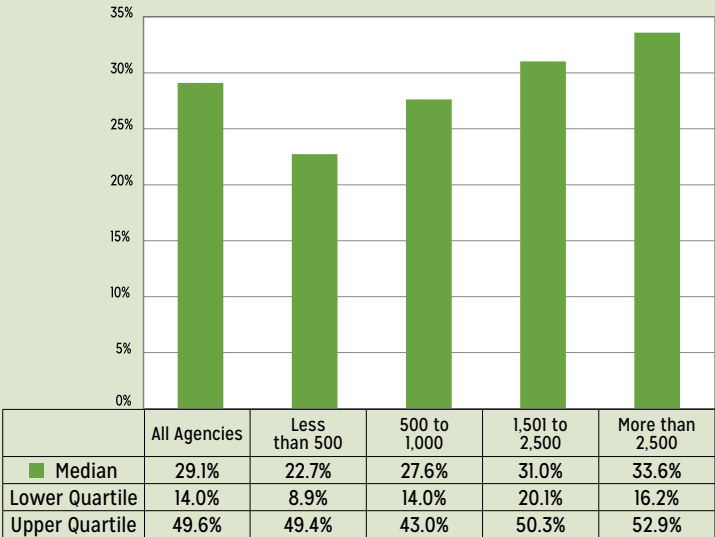


Figure 19

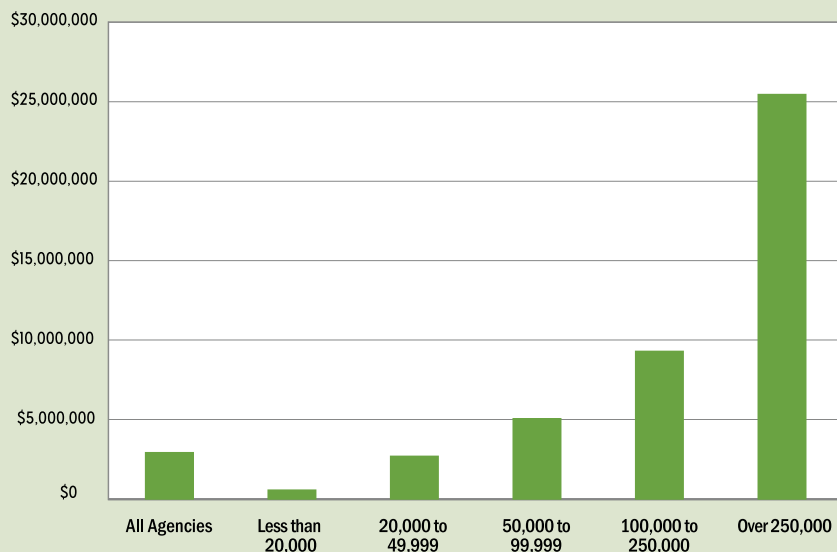
Revenue as a Percentage of Operating
Expenditures (Cost Recovery)
(by Population Density per Square Mile)



Beyond day-to-day operations, **park and recreation agencies have a median of \$3.000 million in capital expenditures budgeted over the next five years.** Not at all surprising is that the larger the agency, the larger the size of the five-year capital budget. The typical park and recreation agency serving a jurisdiction with less than 20,000 people has a median five-year capital budget of \$649,500. This five-year capital budget expands to \$5.1 million at agencies serving jurisdictions with 50,000 to 99,999 people and to \$25.440 million at agencies in areas with more than 250,000 residents.

Figure 20

5-Year Capital Budget Spending (by Jurisdiction Population)



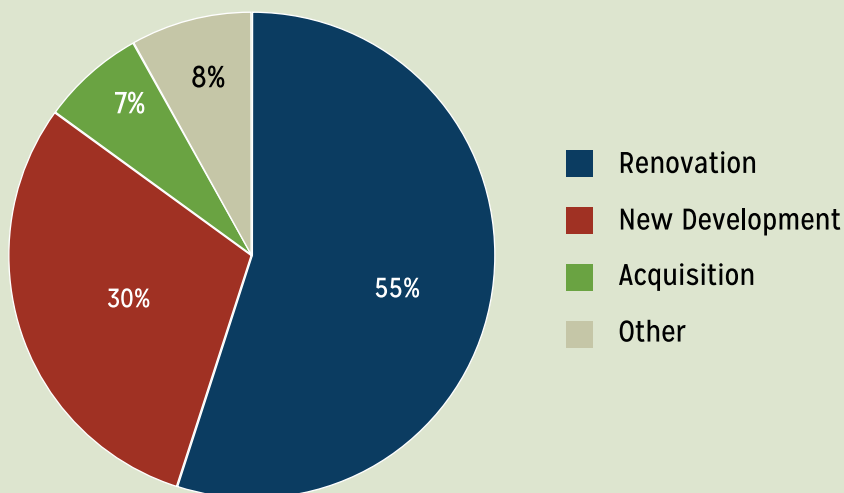
Also, the following are positively related to the size of five-year capital budgets:

- The number of parks maintained – Less than 10 parks: \$1.132 million versus 50 or more parks: \$20.544 million.
- Acreage of parks maintained – 250 or less acres: \$1 million versus more than 3,500 acres: \$30 million.
- Operating budgets – Annual operating budgets less than \$500,000: \$197,098 versus annual operating budgets greater than \$10 million: \$22.498 million.
- Population density – Less than 500 people per square mile: \$1.633 million versus more than 2,500 people per square mile: \$4.967 million.

So, where are park and recreation agencies designating these capital expenditures? **On average, just over half of the capital budget is designated for renovation, while 30 percent is geared toward new development.** At larger park and recreation agencies, new development is the focus of a greater percentage of capital budgets. At agencies serving jurisdictions with more than 250,000 residents, 35 percent of capital budgets are for new development, while 50 percent are for renovating current properties.

Figure 21

Targets for Capital Expenditures (Average Distribution)



NEW THREATS... BUT NEW OPPORTUNITIES

While the 2017 NRPA Agency Performance Review focuses on current performance benchmarks, a look at present-day uncertainties and future trends and prospects also should be part of park and recreation professionals' decision-making. We asked William Beckner, president of CEHP, Inc., for his insights:

Throughout the history of parks and recreation, when times of uncertainty have gripped the country and its people, the impact on the field has generally been positive: from the settlement houses and playground movement arising from the monetary crisis of the 1890s, the recreation programs that maintained morale amongst recruits in WWI mobilization camps and the federal programs introduced during the Great Depression, right up to the tax revolt of the late 70s and early 80s.

From 1980 to 2007, we experienced economic recessions, rapid changes in technology and communications, increased partisanship and political divisiveness; yet, we survived and often thrived during most of those years. In the last decade, reduced budgets, job loss, more invasive terrorism and similar events built an atmosphere of uncertainty that we face going into 2017.

Regardless of your political preferences, now is the time to develop strategies to meet the challenges or opportunities that may impact your department and jurisdiction. Both federal and state actions are likely to impact your goals and strategies. Below are issues/trends that may change how you plan and execute your capital projects, and the ways and means of your operations.

EMPLOYMENT

There are many potential factors that could affect your agency's ability to hire qualified labor:

- The American Society of Civil engineers (ASCE) reported in November that 200,000 entry labor jobs were unfilled.
- Even with inflated unemployment levels in some areas, many jobs go unfilled as the available workers lack the needed skill set and/or level of experience.
- Potentially more stringent immigration policies and labor rules may further reduce the labor pool that your agency has tapped previously to fill seasonal or entry-level permanent positions.

EMPLOYEE COSTS

Depending on potential legislative action at local, state and federal levels, employee costs could either increase or decrease. Factors to consider:

Potential Cost Reductions:

- Going into 2017, regulations requiring overtime for employees making less than about \$48,000 annually have been delayed. The future of these regulations, if any, is uncertain.
- Regulations requiring health benefits for employees working more than 90 days may change or go away.

Potential Cost Increases:

- The most immediate cost pressure is the efforts across the United States to increase the minimum wage.
- A tight supply of skilled labor could lead to bidding wars for the best job candidates, potentially increasing labor costs.

PRIVATIZED OPERATIONS

Because of increased employee costs, many agencies are seeking private individuals or companies to provide specified services instead of hiring permanent employees. Many functions of the agency are candidates for privatization. Factors include:

- The agency's knowledge of the cost and specifications required for the potentially privatized service. Not being aware of what it costs you to do the job and define its specific tasks can lead to unsatisfactory performance, unnecessarily high costs or both.
- The market factors that lead you to seek privatized service providers may also increase the private sector costs. This cost places additional cost pressures on your agency.
- Consider reviewing internal barriers and constraints to operations, equipment and organization to determine if changes in these areas can generate cost savings.

P3 DEVELOPMENT

Congress is considering several bills designed to create jobs and improve the condition of various infrastructures. Public Private Partnerships (P3s) are the focus of these and similar bills. They include:

- The White House has proposed a bill costing \$1.67 trillion to provide 50 percent matching funds with the remainder provided by private and non-federal investors. The proposal includes 50 projects, mostly transportation-related, and assumes that investors would have a revenue stream to recoup their investment.
- There are other bills focused on Corps of Engineer (USCOE) projects related to dams, lakes, hydropower, flood control, water transportation and ports.
- Still others focus on infrastructure such as sewer, water, electrical grids and similar investments.
- A new addition to the P3 menu is the social impact bonds (SIB), which provide funding for matching investor monies in social and economic development projects. Examples include affordable housing and public facilities intended to increase economic development. Some officials have suggested merging Community Development Block Grants (CBDG) grants into SIBs.
- Your agency needs to be involved early in the planning stage to realize the funding opportunities these projects represent.

SPORTS PROGRAMS, HEALTH AND SPECIALIZATION

The cliché, “the only constant is change,” is particularly true for the youth and adult sports programs. Consider that:

- Pay-for-play in schools and nonprofit leagues is increasing interest in club teams at both the recreational and elite levels.
- A four-year research study of 1,500 athletes released last fall by the National High School Sports Association showed there was a 70 percent greater risk of injury for athletes who specialized in one sport throughout the year versus athletes who participated in multiple sports.
- The concerns about concussions, particularly related to the pre-teen susceptibility, have led to a national reduction in tackle football of about 20 percent over the last two years. Only a few jurisdictions have discontinued tackle football entirely, but many other jurisdictions are switching to flag football, 7-on-7 football, smaller fields and modified tackle programs.
- Consider the inclusion of tough-mudder activities for youth and young adults that incorporate personal, physical “best” with a cooperative spirit.
- Individual sports and training competitions are on the rise. Consider organizing a track and field program by age groups for your community.

TRANSFER OF FEDERAL LANDS

Although quite controversial, Congress is considering several bills to transfer ownership or control of federal lands to states, regional and local governments. They, in turn, may be able to sell, lease or permit properties for private development, mining or other activities that might reduce available recreation land in your area. If this happens, consider the following:

- Transfers may include recreation areas currently managed by USCOE, USFS, BLM, Bureau of Outdoor Recreation (BOR) and related land management agencies.
- Land to be sold for development should be reviewed for park lands or open space needs.
- Federal recreation areas may have private commercial support. It would be advantageous to meet early with those entities to determine future strategies to save these open spaces.

Once again, 2017 looks to be more challenging than most recent years. It may also offer more opportunities. If your agency does not currently have an NRPA Park Metrics profile, now may be the time to ensure you have the operating numbers you need to be a credible player in your jurisdiction.

CONCLUSION

As shown in the *2017 NRPA Agency Performance Review*, park and recreation agencies are as diverse as the towns, cities and counties they serve. Agencies not only differ in size and service offerings, but also in what their core mission is when serving their communities. It is for that reason the data presented in this report are a valuable tool in the planning and operating of park and recreation agencies.

This report also reveals the wide breadth of service offerings that park and recreation agencies provide to their local community. Some residents may think of their local agency when they hike on a trail, take their children to the playground or enjoy a picnic at the community park. For others, their touchpoint with their local agency may be the out-of-school time offerings that care for the children of working parents, a sports league that teaches teamwork and sportsmanship or a class that teaches more healthy lifestyles. It is the diversity of offerings of local park and recreation agencies that demonstrates their vast impact on people of all stripes.

NRPA Research finds that Americans are passionate about their local park and recreation offerings. Per the *2016 NRPA Americans' Engagement with Parks Survey*, an overwhelming majority of people agree that parks and recreation is an important service delivered by their local government and support increased funding for their local agency. The success of bond ballot initiatives during the 2016 elections highlight the fact that Americans are willing to pay more to ensure high-quality park and recreation offerings in their community.

We challenge all park and recreation professionals to enter their agency's data in NRPA Park Metrics so they can gain a more detailed analysis of their agency's performance against its peers throughout the United States. Linking the insights contained in this report and NRPA Park Metrics with other NRPA reports and resources will arm all park and recreation professionals with the tools needed to tell their agency's story and to make the case for further investments in the future.

ABOUT NRPA

The National Recreation and Park Association (NRPA) is a national not-for-profit organization dedicated to advancing park, recreation and conservation efforts that enhance quality of life for all people. Through its network of more than 55,000 recreation and park professionals and advocates, NRPA encourages the promotion of healthy and active lifestyles, conservation initiatives and equitable access to parks and public space.

NRPA brings strength to our message by partnering with like-minded organizations including those in the federal government, non-profits and commercial enterprises. Funded through dues, grants, registrations and charitable contributions, NRPA produces research, education and policy initiatives for our members that ultimately enrich the communities they serve.

NRPA places great importance on research to understand and improve various aspects of the park and recreation field. Research is vital to ensure park and recreation professionals have the resources to make informed decisions. At NRPA, the development of current research via empirical studies and literature reviews for our members and the public is a key priority.

THE VALUE OF PARKS AND RECREATION

Conservation - Public parks are critical to preserving natural resources and wildlife habitats, which offer significant social and economic benefits. Local park and recreation agencies are leaders in protecting open space, connecting children to nature, and providing programs that engage communities in conservation.

Health and Wellness - Park and recreation departments lead the nation in improving the health and wellness of communities. From fitness programs, to well-maintained, accessible, walking paths and trails, to nutrition programs for underserved youth and adults, our work is at the forefront of providing solutions to these challenges.

Social Equity - We believe universal access to public parks and recreation is fundamental to all, not just a privilege for a few. Every day, our members work hard to ensure all people have access to quality parks and programs, and in turn, make our communities more livable and desirable.

NRPA PARK METRICS



NRPA Park Metrics is a suite of tools that help evaluate your agency's performance so you can more effectively manage and plan operating resources and capital facilities. You can use these tools to easily build customized reports and compare your agency to others to gain more funding support, improve operations and better serve your community.



AGENCY PERFORMANCE SURVEY

Enter your agency's data into NRPA's newly streamlined Agency Performance Survey to gain access to dashboards and custom reports that compare your agency to that of its peers. By entering your data, you ensure that your agency will be a part of NRPA's annual Agency Performance Review.

CUSTOMIZED AGENCY PERFORMANCE REPORTS

Create a custom report that will feature median values on budgets, staffing and facilities and highlight the responsibilities and activities of agencies that you identify as your peers.

INTERACTIVE TOOLS

Dig deeper into the data in the 2017 Agency Performance Review with interactive figures presenting detailed crosstabs of the data for every table and chart.

www.nrpa.org/Metrics



22377 BELMONT RIDGE RD
ASHBURN, VA 20148-4501
800.626.NRPA (2772)

WWW.NRPA.ORG



McKinleyville Community Services District

BOARD OF DIRECTORS

October 4, 2017

TYPE OF ITEM: **INFORMATIONAL**

ITEM: E.4 **Review Instructions for the “Reflection on Core Values” Worksheets to be Completed by Board of Directors in Preparation for the Board Retreat on November 3, 2017**

PRESENTED BY: **Lesley Frisbee, Recreation Director**

TYPE OF ACTION: **None**

Recommendation:

Staff recommends that the Board review the worksheets and instructions for the “Reflection on Core Values” exercise that each Director on the Board needs to complete prior to the Board Retreat to be held on November 3, 2017

Discussion:

In order to effectively and efficiently facilitate a process by which the Board of Directors and General Manager can identify and agree upon a set of shared values, beliefs and desired behaviors that serve the mission and vision of the District, an initial reflection on personal core values by each Director and the General Manager needs to be completed.

Attachment 1 includes two worksheets for the process of reflecting on personal core values. The first step in the reflection process is “A Life Values Exercise.” This worksheet is a tool to connect you to the underlying influences of your deeply ingrained beliefs and values. This worksheet will be returned to you the day of the retreat for use during the retreat activities.

The second step in the reflection process is the “Core Values Selection” worksheet. **The worksheets must be completed and returned to the Recreation Director by Friday, October 20, 2017.** The data collected from the core values selection exercise will be crucial to the collective work in identifying a set of shared values at the retreat. **Attachment 2** is an example of what a completed Core Values Selection worksheet should look like, excepting that each person’s selected values will vary.

Alternatives:

Take Action

Fiscal Analysis:

Not applicable

Environmental Requirements:

Not applicable

Exhibits/Attachments:

- Attachment 1 – Reflection on Core Values Worksheets
- Attachment 2 – Example of Completed Core Values Selection Worksheet

Reflection on Core Values

Who and what in your life have contributed to your current values and virtues? The following Exercises will help you focus on this.

I. A Life Values Exercise

- Identify three to five people who have had the deepest impact on your life (at least one outside your family). *What specific advice, philosophy, or value has stayed with you?*

Name	Value/Advice/Philosophy

- List three to five peak experiences that have profoundly shaped or influenced your life and the kind of person you have become. *What specific impact did the experience have on who you are now?*

Experience	Value/Impact

**Note: this information does not have to be shared with the group. It is merely a tool to help get you connected to the underlying influences of your deeply ingrained beliefs and values; the “Why” of you.*

II. CORE VALUES SELECTION

The purpose of this preparation exercise is to help you reach a better understanding of your own most significant core values.

What values do I truly and passionately hold?

Values are deeply held views of what we find worthwhile. They come from many sources: parents, religion, schools, peers, people we admire, and culture. Many go back to childhood. There are others we learn as adults. As with all mental models, there's a distinction between our "espoused" values, which we profess to believe in, and our "values in action" which actually guide our behaviors. These latter values are coded into our brains at such a fundamental level that we can't easily see them. We rarely bring them to the surface or question them. That's why they can create dissonance for us.

- **Step 1.** From the list of personal values, select and underline the ten that are most important to you - *as guides for how to behave, or as components of a valued way of life*. Feel free to add any values of your own to this list.
- **Step 2.** Now that you have identified ten, select five of those ten values. Circle them.
- **Step 3.** Select four of those five and mark with an X
- **Step 4.** Now select only three of those four and mark them with a box ☐.
- **Step 5.** Now select two of those three and mark them with two with a Star ★.
- **Step 6.** Finally, select the ONE value out of those two that you care MOST about. Mark it with a heart. ♥

List of Values: Feel free to add to the list if your preferred values are not already listed.

Accountability	Achievement	Adaptability	Balance	Being liked
Being the best	Caring	Caution	Clarity	Commitment
Community involvement	Compassion	Consensus	Continuous learning	Control
Cooperation	Courage	Creativity	Dialogue	Diversity
Efficiency	Empowerment	Enthusiasm	Environmental awareness	Equality
Ethics	Excellence	Experience	Fairness	Family
Financial stability	Forgiveness	Friendship	Future generations	Generosity
Goals focus	Health	Honesty	Human rights	Humility
Humor/fun	Image	Independence	Initiative	Innovation
Integrity	Interdependence	Information sharing	Listening	Logic
Loyalty	Making a difference	Mentoring	Mission focus	Open communication
Openness	Optimism	Organizational growth	Partnerships	Passion
Patience	Performance	Perseverance	Personal fulfillment	Philanthropy
Power	Pride	Quality	Reliability	Respect
Responsibility	Results focus	Reward	Risk-averse	Risk-taking
Shared values	Shared vision	Spirit	Success	
Support	Trust	Transparency	Vision	Wealth
Wisdom				

II. CORE VALUES SELECTION

The purpose of this preparation exercise is to help you reach a better understanding of your own most significant core values.

What values do I truly and passionately hold?

Values are deeply held views of what we find worthwhile. They come from many sources: parents, religion, schools, peers, people we admire, and culture. Many go back to childhood. There are others we learn as adults. As with all mental models, there's a distinction between our "espoused" values, which we profess to believe in, and our "values in action" which actually guide our behaviors. These latter values are coded into our brains at such a fundamental level that we can't easily see them. We rarely bring them to the surface or question them. That's why they can create dissonance for us.

- **Step 1.** From the list of personal values, select and underline the ten that are most important to you - *as guides for how to behave, or as components of a valued way of life*. Feel free to add any values of your own to this list.
- **Step 2.** Now that you have identified ten, select five of those ten values. Circle them.
- **Step 3.** Select four of those five and mark with an X
- **Step 4.** Now select only three of those four and mark them with a box ☐.
- **Step 5.** Now select two of those three and mark them with two with a Star ★.
- **Step 6.** Finally, select the ONE value out of those two that you care MOST about. Mark it with a heart. ♥

List of Values: Feel free to add to the list if your preferred values are not already listed.

<u>Accountability</u> X	Achievement	Adaptability	Balance	Being liked
Being the best	Caring	Caution	Clarity	Commitment
Community involvement	Compassion X4	Consensus	<u>Continuous learning</u>	Control
<u>Cooperation</u>	<u>Courage</u> X <input type="checkbox"/>	Creativity	Dialogue	Diversity
Efficiency	Empowerment	Enthusiasm	Environmental awareness	Equality
Ethics	Excellence	Experience	Fairness	<u>Family</u>
Financial stability	Forgiveness	Friendship	Future generations	<u>Generosity</u>
Goals focus	Health	Honesty	Human rights	Humility
<u>Humor/fun</u>	Image	Independence	Initiative	Innovation
<u>Integrity</u> X <input type="checkbox"/> ★	Interdependence	Information sharing	Listening	Logic
Loyalty	Making a difference	Mentoring	Mission focus	Open communication
Openness	Optimism	Organizational growth	Partnerships	Passion
Patience	Performance	Perseverance	Personal fulfillment	<u>Philanthropy</u>
Power	Pride	Quality	Reliability	Respect
Responsibility	Results focus	Reward	Risk-averse	<u>Risk-taking</u>
Shared values	Shared vision	Spirit	Success	
Support	Trust	Transparency	Vision	Wealth
Wisdom	<u>CONNECTEDNESS</u>			

McKinleyville Community Services District

BOARD OF DIRECTORS

October 4, 2017

TYPE OF ITEM: **INFORMATIONAL**

ITEM: E.5 **Review and Discuss Annual Board Self-Evaluation Policy, Procedure and Evaluation Form**

PRESENTED BY: **Greg Orsini, General Manager**

TYPE OF ACTION: **None - Information Only**

Recommendation:

Staff recommends that the Board review the information provided, take public comment, discuss, and make any desired modifications to the Board Self-evaluation policy, procedure and evaluation form. No action will be taken tonight, however the item will return to the Board via Resolution to make requested modifications.

Discussion:

In 2015, the Board of Directors requested staff add a Board Self-Evaluation process to the MCSD Strategic Plan. Staff researched many options and examples of special district self-evaluation policies related to this topic. After review, staff developed a policy, procedure and evaluation form using components from several different district policies and templates.

On December 9, 2015, this agenda topic was reviewed and discussed. After the meeting staff made the requested changes and modifications to language in the policy and procedure as well as requested additions to the evaluation form.

On March 2, 2016, the Directors approved the modification to the Board of Director's Policy Manual by adding Part 11, Annual Board Self Evaluation by Resolution 2016-04. The new policy provides the Directors with a tool to assess its own performance as a Board in order to help identify strengths and areas in which it may improve function.

On September 2, 2017, the Directors requested that the Board Self-Evaluation return as an item for discussion to potentially make modifications. Resolution 2016-04, **Attachment 1**, is attached for reference, along with Exhibits A and B.

Alternatives:

Take Action

Fiscal Analysis:

Not applicable

Environmental Requirements:

Not applicable

Exhibits/Attachments:

- Attachment 1 – Resolution 2016-04

RESOLUTION 2016 - 04**A RESOLUTION OF THE BOARD OF DIRECTORS OF THE MCKINLEYVILLE COMMUNITY SERVICES DISTRICT APPROVING THE ADDITION OF PART 11-ANNUAL BOARD SELF EVALUATION TO THE BOARD POLICY MANUAL**

WHEREAS, the Board of Directors of the McKinleyville Community Services District requested that staff add a Board Self-Evaluation Process to the Strategic Plan; and

WHEREAS, staff researched options and examples from other Special Districts throughout California; and

WHEREAS, on December 9, 2015 a draft policy and procedure were proposed to the Board of Directors; and

WHEREAS, requested changes and modifications have been made to the new section which meet the needs and desires of the Board.

NOW, THEREFORE, BE IT RESOLVED that the Board of Directors of the McKinleyville Community Services District does hereby approve the addition of Part 11- Annual Board Self-evaluation, **Exhibit A** of the Resolution and the associated worksheet, **Exhibit B** of the Resolution, to the Board Policy Manual.

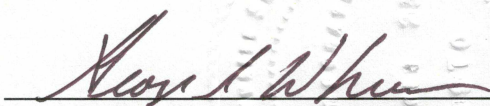
ADOPTED, SIGNED AND APPROVED at a duly called meeting of the Board of Directors of the McKinleyville Community Services District on March 2, 2016 by the following polled vote:

AYES: Corbett, Couch, Edwards, Mayo and Wheeler

NOES: None

ABSENT: None

ABSTAIN: None


George Wheeler, Board President

Attest:


Becky Schuette, Board Secretary

PART 11 – ANNUAL BOARD SELF-EVALUATION

Rule 11-1: Policy – The Board is committed to assessing its own performance as a board in order to identify the Board's strengths and areas in which it may improve the Board's functioning. The goals of the self-evaluation are to clarify roles, to enhance harmony and understanding among Board members, and to improve the efficiency and effectiveness of the Board meetings. The ultimate goal is to improve MCSD policies for the benefit of the McKinleyville community and employees of the District.

Rule 11-2: Procedure – The Board has established the following procedure for self-evaluation:

- Annually, the Board shall conduct a self-evaluation utilizing the approved assessment form.
- The Board Secretary will distribute the assessment form to all Board members at the first meeting in July each year.
- The completed assessment forms shall be returned to the Secretary of the Board at or before the August meeting.
- The Secretary of the Board shall compile a summary of the results of the assessment which will be distributed at the September meeting and included as an agenda item for review, discussion and appropriate action.

Rule 11-3: Evaluations – The evaluation instrument shall incorporate criteria contained in this Board Policy Manual regarding structure, ethics, policies and procedures. The Self-Evaluation Worksheet can be found as Attachment B in this document.

McKinleyville Community Services District Board of Directors Self - Evaluation Worksheet

Use the following scale, while thinking specifically about YOU

1 = Not Sure 2 = Not Satisfied 3 = Somewhat Satisfied 4 = Satisfied 5 = Very Satisfied

Circle the number that most accurately describes your perception for each item.

DO YOU or ARE YOU:

Understand the vision and mission of the McKinleyville Community Services District?	1	2	3	4	5
Support the vision and mission of MCSD?	1	2	3	4	5
Have a good working relationship with the other Board Members?	1	2	3	4	5
Have a good working relationship with the General Manager?	1	2	3	4	5
Knowledgeable about MCSD's major programs and services?	1	2	3	4	5
Follow trends and important developments in the industries and services that MCSD provides?	1	2	3	4	5
Read and understand MCSD's financial statements?	1	2	3	4	5
Act knowledgeably and prudently when making recommendations about MCSD finances and financial policies in consideration of the District as a whole?	1	2	3	4	5
While considering short-term administrative matters, are you also focusing on long-term and significant policy issues and impacts?	1	2	3	4	5
Recommend qualified individuals with relevant skills and experience as possible nominees for the Board and committees?	1	2	3	4	5
Prepare for and participate at Board and committee meetings, as well as other MCSD events?	1	2	3	4	5

Willingly volunteer and use your special skills to further the MCSD vision and mission?	1	2	3	4	5
---	---	---	---	---	---

Complete assignments and responsibilities in a responsible and timely manner?	1	2	3	4	5
---	---	---	---	---	---

Speak for the Board or MCSD only when authorized to do so?	1	2	3	4	5
--	---	---	---	---	---

Take advantage of opportunities to enhance the MCSD public image by periodically speaking to others about the work of the District?	1	2	3	4	5
---	---	---	---	---	---

Respectful to all while conducting District business?	1	2	3	4	5
---	---	---	---	---	---

ADDITIONAL COMMENTS:

McKinleyville Community Services District

BOARD OF DIRECTORS

October 4, 2017

TYPE OF ITEM: **INFORMATION**

ITEM: E.6 **Approve the Regular Board Meeting Dates, Time and Location for the 2018 Calendar Year**

PRESENTED BY: **Emily Abfalter, Board Secretary**

TYPE OF ACTION: **Roll Call – Consent Calendar**

Recommendation:

At the August 2, 2017 Board Meeting, the Board Secretary provided the Directors with the 2018 Board Meeting Dates, Time and Location Calendar. Staff recommends the Board review and approve the 2018 Regular Board Meeting Calendar, **Attachment 1**.

Discussion:

Both the MCSD Rules and Regulations (under Regulation 61, Board Meetings, Rule 61.0, Regular Meetings) and the Board of Directors Policy Manual (under Part 5, Board Meeting Procedures, Rule 5-1: Regular Meetings) address this topic – Regular meetings of the Board of Directors shall be held on the first Wednesday of each calendar month at 7:00 PM at either Azalea Hall 1620 Picket Road or the District Office 1656 Sutter Road as specified by the agenda. The date, time and place of the regular meetings shall be reconsidered annually.

Based on staff's recommendation, should an important item come to surface we have the option to hold a special meeting before or after July 4th.

Alternatives:

Staff's analysis includes the following potential alternative:

- Take no action
- Change the meeting dates

Fiscal Analysis:

Not applicable

Environmental Requirements:

Not applicable

Exhibits/Attachments:

- Attachment 1 – 2018 Proposed MCSD Regular Board Meeting Schedule

2018 MCSD Board Meetings

First Wednesday's of the month for year 2018 – In the event the first Wednesday fell on a Holiday the meeting was moved to the second Wednesday of the month.

DATE	LOCATION
January 3, 2018	Azalea Hall
February 7, 2018	Azalea Hall
March 7, 2018	Azalea Hall
April 4, 2018	Azalea Hall
May 2, 2018	Azalea Hall
June 6, 2018	Azalea Hall
July 4, 2018 - CANCELLED	Azalea Hall
August 1, 2018	Azalea Hall
September 5, 2018	Azalea Hall
October 3, 2018	Azalea Hall
November 7, 2018	Azalea Hall
December 5, 2018	Azalea Hall

McKinleyville Community Services District

BOARD OF DIRECTORS

October 4, 2017

TYPE OF ITEM: **ACTION**

ITEM: E.7 **Consider Attendance to the Association of California Water Agencies (ACWA) 2017 Fall Conference & Exhibition in Anaheim, CA November 28th – December 1st, 2017**

PRESENTED BY: **Emily Abfalter, Board Secretary**

TYPE OF ACTION: **Roll Call Vote**

Recommendation:

Staff recommends that the Board review the information provided for the ACWA 2017 Fall Conference and Exhibition in Anaheim, CA, take public comment and consider authorization for interested Board Members to attend.

Discussion:

This year's ACWA 2017 Fall Conference and Exhibition will be held in Anaheim, CA from November 28th – December 1st, 2017. Regular registration and cancellation deadline is November 1, 2017. **Attachments 1-3** are the preliminary agenda, pricing reference sheet and terms and conditions of the conference.

Alternatives:

Staff analysis consists of the following potential alternative

- Take No Action

Fiscal Analysis:

Regular registration deadline is November 1, 2016. The cost for full conference registration and meals package is \$695. Meals not provided by the conference for four days will be \$134 per person. Special hotel rate (based on availability) is \$195 per night. Three nights of lodging would be \$585 per attendee before taxes and fees. United airfare at today's rate is approximately \$660 per attendee. Transportation to and from the airport is around \$60. An approximate total cost for travel, meals and attendance to the conference is \$2134 per attendee. As Director Mayo would be required to attend committee meetings beginning November 27th, an approximate total cost is \$2776, with the additional days of meals and lodging.

Environmental Requirements:

Not applicable

Exhibits/Attachments:

- Attachment 1 – Preliminary Agenda
- Attachment 2 – Pricing Reference Sheet
- Attachment 3 – Terms and Conditions



ACWA 2017 Fall Conference & Exhibition

PRELIMINARY AGENDA

November 28–December 1, 2017 • Anaheim Marriott

ACWA JPIA - MONDAY, NOV. 27

8:30 – 10:00 AM

- ACWA JPIA Program Committee

10:15 – 11:15 AM

- ACWA JPIA Executive Committee

1:30 – 4:00 PM

- ACWA JPIA Board of Directors

4:00 – 5:00 PM

- ACWA JPIA Town Hall

5:00 – 6:00 PM

- ACWA JPIA Reception

TUESDAY, NOV. 28

8:00 AM – 6:00 PM

- Registration

8:30 AM – Noon

- ACWA/JPIA Seminars

9:00 AM – 4:00 PM

- Legal Affairs Committee CLE Workshop

10:00 – 11:45 AM

- Groundwater Committee
- Local Government Committee

11:00 AM – Noon

- Outreach Task Force

Noon – 2:00 PM

- ACWA 101 & Luncheon
- Committee Lunch Break

1:00 – 2:45 PM

- Energy Committee
- Finance Committee
- Scholarship & Awards Subcommittee
- Water Management Committee

1:30 – 3:30 PM

- ACWA JPIA: Sexual Harassment Prevention for Board Members & Managers (AB 1825)

3:00 – 4:45 PM

- Business Development Committee
- Communications Committee
- Federal Affairs Committee
- Membership Committee
- Water Quality Committee

5:00 – 6:30 PM

- Welcome Reception in the Exhibit Hall

WEDNESDAY, NOV. 29

7:30 AM – 5 PM

- Registration

8:00 – 9:45 AM

- Opening Breakfast (*Ticket Required*)

9:00 AM – Noon & 1:30 – 5:00 PM

- Exhibit Hall

10:00 – 11:30 AM

- Attorneys Program
- Energy Committee Program
- Exhibitor Case Studies
- Finance Program
- Region Issue Forum
- Statewide Issue Forum
- Water Industry Trends Program

11:30 – 11:45 AM

- Networking in the Exhibit Hall

11:45 AM – 2:00 PM

- General Session Luncheon (*Ticket Required*)

2:15 – 3:15 PM

- Attorneys Program
- Communications Committee Program
- Energy Committee Program
- Exhibitor Case Study
- Region Program
- Statewide Issue Forum
- Water Industry Trends Program

3:30 – 4:45 PM

- Aquatic Resources Subcommittee
- Exhibitor Demos
- Finance Program
- Local Government Committee Program
- Statewide Issue Forum
- Water Industry Trends Program

3:30 – 5:30 PM

- Legal Affairs Committee

5:00 – 6:00 PM

- Prize Drawing Fiesta Night in the Exhibit Hall

5:00 – 7:00 PM

- CalDesal Hosted Mixer
- CH2M Hosted Reception

THURSDAY, NOV. 30

7:30 AM – 4 PM

- Registration

8:00 AM – Noon

- Exhibit Hall

8:00 – 9:15 AM

- Networking Continental Breakfast, Exhibit Hall (*Ticket Required*)

8:30 AM – 9:15 AM

- Ag Initiative Meeting

9:30 – 11:00 AM

- Attorneys Program
- Exhibitor Case Studies
- Region Issue Forum
- Town Hall
- Water Industry Trends Program

9:30 – 11:45 AM

- Ethics Training (AB 1234) - *Limited Seating*

11:00 – 11:30 AM

- Prize Drawings in the Exhibit Hall

11:45 AM – 2:00 PM

- General Session Luncheon (*Ticket Required*)

2:15 – 3:15 PM

- Attorneys Program
- Exhibitor Demos
- Federal Issues Forum
- Finance Program
- Statewide Issue Forum
- Water Industry Trends Program

3:30 – 5 PM

- Regions 1 – 10 Membership Meetings

6:00 – 7:00 PM

- Outreach Reception

7:00 – 10:00 PM

- Dinner & Entertainment (*Ticket Required*)

FRIDAY, DEC. 1

8:00 – 9:30 AM

- Registration

8:30 – 10:00 AM

- ACWA's Hans Doe Past Presidents' Breakfast in Partnership with ACWA JPIA (*Ticket Required*)

OTHER EVENTS

TUESDAY, NOV. 28

7:00 AM – 4 PM

- ACWA Fall Conference Golf Tournament

THURSDAY, NOV. 30

6:45 – 8:30 AM

- San Joaquin Valley Agricultural Water Committee

All conference programs are subject to change.

PRICING REFERENCE SHEET



ACWA 2017 Fall Conference & Exhibition REGISTRATION, MEALS & HOTEL PRICING

November 28 – December 1, 2017 | Anaheim Marriott Hotel

Register online @ acwa.com

Regular registration and cancellation deadline is November 1, 2017 • 4:30 p.m. (PST)

NEED TO REGISTER ON SOMEONE ELSE'S BEHALF? YOU CAN NOW SIGN IN AS YOURSELF - After you've logged-in, you can select from a list of people affiliated with your company and proceed to register him/her for the event. If the registrant is not listed, you will have the opportunity to create a Portal profile for him/her before registering.

REGISTRATION FEES & OPTIONS	REGULAR	ONSITE
Advantage (For ACWA public agency members, affiliates & associates ONLY)	(ends 11/1/17)	
Full Conference Registration & Meals Package	\$699	Not Avail.
Full Conference Registration Only (meals sold separately)	\$555	\$575
One-Day Conference Registration (meals sold separately): Wednesday 11/29 -OR- Thursday 11/30 . <i>Wednesday registration includes Welcome Reception on Tuesday evening. Thursday registration includes ability to purchase a ticket for Friday breakfast.</i>	\$320	\$340
Standard (Applies to non-members of ACWA)		
Full Conference Registration Only (meals sold separately)	\$830	\$850
One-Day Conference Registration (meals sold separately): Wednesday 11/29 -OR- Thursday 11/30 . <i>Wednesday registration includes Welcome Reception on Tuesday evening. Thursday registration includes ability to purchase a ticket for Friday breakfast.</i>	\$470	\$490
Guest (Guest registration is not available to anyone with a professional reason to attend.)		
Guest Conference Registration (meals sold separately)	\$45	\$45

MEAL FUNCTIONS	REGULAR	ONSITE
Wednesday - November 29		
Opening Breakfast	\$45	\$50
Wednesday Luncheon	\$50	\$55
Thursday - November 30		
Networking Continental Breakfast	\$35	\$40
Thursday Luncheon	\$50	\$55
Thursday Dinner	\$65	\$70
Friday - December 1		
Friday Breakfast	\$45	\$50

HOTEL INFORMATION *Reservations will not be accepted until August 21, 2017.*

You must be registered for the ACWA conference in order to receive hotel reservation information and conference special room rate. Conference special rate is available August 21 - November 6, based on availability.

Special Hotel Rate

Anaheim Marriott Hotel

700 Convention Way, Anaheim, CA 92802

Single/Double \$195 per night (Additional people \$20)

Rate is subject to 15% Local Fees & Taxes and CA State Tourism Fee of \$0.25 per room and occupancy tax of \$0.04 per room and a 2% Anaheim Tourism Improvement District Assessment

Important Dates:

For those **registering for conference prior to August 21**, hotel information will be provided via e-mail on August 21.

For those **registering for conference from August 21 to November 6**, your confirmation e-mail will include hotel reservation information and an opportunity to receive a conference special hotel rate.

Hotel Reservation Questions?

After August 21, call hotel directly.

Questions? Contact us at 916.441.4545, toll free 888.666.2292. Conference terms and conditions available at acwa.com in the event section.



REGISTRATION TERMS & CONDITIONS

ACWA 2017 Fall Conference & Exhibition

November 28 – December 1, 2017 | Anaheim Marriott Hotel

Register online @ acwa.com

Regular registration and cancellation deadline is November 1, 2017 • 4:30 p.m. (PST)

WHO IS ELIGIBLE FOR "ACWA ADVANTAGE" PRICING?

ACWA Advantage pricing is available to the following registrants:

- An officer or director of an ACWA member agency.
- A person directly employed by an ACWA public agency member, affiliate or associate organization. This does not include independent contractors, service providers, or third-party vendors.
- Any ACWA board member whose fee is paid for by member agency.
- Any state or federal administrative or legislative personnel in elected, appointed or staff positions.
- Staff of ACWA/JPIA and Water Education Foundation.
- Any individual or honorary life member of ACWA.

MEMBERSHIP INFORMATION - *Become a Member & Save on ACWA Events*

If you are interested in learning more about becoming an Associate Friend of ACWA, contact Ashley Kravchuk at AshleyK@acwa.com. For public agency membership, please contact Tiffany Giammona at TiffanyG@acwa.com.

CANCELLATIONS & CHANGES

All registration changes and cancellations must be made in writing by the event registration deadline. Valid cancellation requests will receive a refund of any registration fees paid minus a \$75 processing charge. For payments originally made by credit card, refunds can be issued back onto the credit card within 60 days. Otherwise, a refund will be issued by check. No refunds or registration changes will be granted after the registration deadline. Submit request in writing to Teresa Taylor at TeresaT@acwa.com.

SUBSTITUTIONS

Event registrations are transferable from one participant to another within the same organization. Please submit your request in writing before the event registration deadline to Teresa Taylor at TeresaT@acwa.com. Include the original registrant's name, the new person's name, title and email address with your request. After the registration deadline, substitutions will be handled on-site. Only one substitution is permitted per original registrant. The individual submitting the substitution request is responsible for all financial obligations (including any balance due) associated with the original registration. There is no fee to transfer an eligible registration.

SPECIAL REQUESTS & ACCOMMODATIONS

Special requests must be submitted in writing to Teresa Taylor at TeresaT@acwa.com. Participants are encouraged to submit changes and special requests as soon as possible. If you have a disability that requires an accommodation, please contact Teresa Taylor at TeresaT@acwa.com or call toll free at (888) 666-2292 to discuss your needs.

REFUNDS

Except as otherwise provided in this document, all payments and fees are nonrefundable after the registration deadline.

MEAL TICKETS

After the registration deadline, meal tickets are not eligible for exchange, refund or credit after the event registration deadline.

NONATTENDANCE

Registrants who fail to attend the event, in part or in whole, are not eligible for a refund or credit and will be billed for any balance due.

GUEST REGISTRATION

Guest registration is available to a spouse, companion or guest of an ACWA event registrant. Guest registration is not available to any employees of a public agency, associate or affiliate/mutual water company. Guest registration is also not available to anyone with a professional reason to attend for purposes of learning or business. The guest registration includes admission to the receptions and the ability to purchase meal tickets and attend meal functions.

CONSENT TO USE OF PHOTOGRAPHIC IMAGES

Registration and attendance at, or participation in, this event constitutes an agreement by the registrant to ACWA's use and distribution (both now and in the future) of the registrant or attendee's image or voice in photographs, videotapes, electronic reproductions and audiotapes.

Questions? Contact us at 916.441.4545, toll free 888.666.2292.

McKinleyville Community Services District

BOARD OF DIRECTORS

October 4, 2017

TYPE OF ITEM: **ACTION**

ITEM: E.8 **Authorize the General Manager to Enter into an Agreement with Kennedy Jenks to Complete a Tittle 22 Engineer Report (Report)**

PRESENTED BY: **Greg Orsini, General Manager**

TYPE OF ACTION: **Roll Call Vote**

Recommendation:

Staff recommends that board review the information provided, air questions, take public comment and authorize the General Manager to enter into an agreement with Kennedy Jenks for the services to complete a Tittle 22 Engineer's Report with a not to exceed amount of \$36,065 and with a 10% contingency of \$3,606 for a total budget modification of \$39,671.

Discussion:

Prior to the issuance of McKinleyville Community Services District's (MCSD) next National Pollutant Discharge Elimination System (NPDES) Permit, the Regional Water Quality Control Board (RWQCB) will require the submission of the Report describing how MCSD's existing recycled water program complies with the Water Recycling Criteria contained in the California Code of Regulations, Title 22 (Sections 60301 through 60355).

The Report will be developed in accordance with the Guidelines for the Preparation of an Engineering Report for the Production, Distribution and Use of Recycled Water. The requirement for this Report has existed since 2001 but until lately was required exclusively for municipal reuse. Due to the change in the interpretation of Section 60301 through 60366 RWQCB now requires the Report for agricultural reclamation.

MCSD's NPDES Permit expired in April of 2016, six months prior to its expiration, MCSD filed a Report of Waste Discharge (RWD). At that time, RWQCB staff indicated we had satisfied the requirements for the RWD. Several weeks ago, we were informed that the Report would be necessary due to policy changes at the RWQCB.

MCSD staff have been scrambling to get a proposal for the work required.

Alternatives:

Staff analysis consists of the following potential alternative

- Take No Action

Fiscal Analysis:

The Board of Directors approved an amount of \$50,000 in the FY17-18 Wastewater Capitol Budget that was intended to carry out studies that will be required for the pending NPDES Permit. The request for a budget modification for this report is to preserve the budget line item for any studies that fall within the GM's spending guidelines, as originally intended.

Environmental Requirements:

Not applicable

Exhibits/Attachments:

- Attachment 1 – Task Order Authorization 3: Title 22 Engineers Report

McKinleyville Community Services District and Kennedy/Jenks Consultants, Inc.

Master Services Agreement - Task Order Work Authorization 3 Title 22 Report

In accordance with the Master Services Agreement dated October 19, 2015 by and between the McKinleyville Community Services District hereinafter referred to as the "CLIENT," and Kennedy/Jenks Consultants, Inc., hereinafter referred to as "CONSULTANT", CLIENT and CONSULTANT have agreed that CONSULTANT will perform Work identified in Task Order Work Authorizations. The Work covered by this Task Order Work Authorization will be performed in accordance with the Terms and Conditions of the Master Services Agreement.

SCOPE OF WORK

Title 22 Report

CONSULTANT will prepare a Title 22 Engineering Report (Report) for review and approval by the CLIENT. Upon approval, CLIENT will submit the Report to the North Coast Regional Water Quality Control Board (RWQCB) as part of the CLIENT's NPDES permit renewal process and pay all associated fees associated with submission and permit renewal.

Phase 1: Project Management

Provide coordination with the CLIENT, prepare monthly invoices and conduct internal Quality Control reviews of all deliverables. The Work is assumed to require no more than 4 months for completion as described below.

Phase 2: Title 22 Engineering Report

The RWQCB requires the submission of a Report describing how the CLIENT's existing recycled water program complies with the Water Recycling Criteria contained in the California Code of Regulations, Title 22 (Sections 60301 through 60355). The Report will be developed in accordance with the *Guidelines for the Preparation of an Engineering Report for the Production, Distribution and Use of Recycled Water (Guidelines)* and will consist of the chapters described below:

Chapter 1 Introduction: This chapter will provide a brief introductory description of the CLIENT's existing service area, recycled water facilities, and historic annual demand.

Chapter 2 Recycled Water Project: This chapter will address the following elements as described in the *Guidelines*:

- Describe all agencies involved with the production, distribution, and use of recycled water. It is the CONSULTANT's understanding and assumption that the CLIENT is the only agency involved with the existing recycled water system and represents the Producer, Distributor and User as described in the *Guidelines*.
- Describe CLIENT's service area, raw wastewater sources, and characteristics.
- Describe CLIENT's wastewater treatment plant, unit processes and reliability features (e.g., alarms, multiple units, etc.),
- Describe any use of supplemental water including frequency and amount,
- Describe monitoring requirements and contingency plan to prevent inadequately treated water from being delivered to Use Areas.

Chapter 3 Transmission and Distribution Systems: Map showing location and ownership of recycled water transmission and distribution pipelines between the wastewater treatment plant and all recycled water use areas. Map also to show all potable water and storm water pipelines and wells within close proximity.

Chapter 4 Use Areas: This chapter will describe each recycled water use area including type of land use, detailed use area maps illustrating potential access points by public and/or CLIENT's staff, and as applicable cross connection control procedures. Additional topics required by the *Guidelines* include the following:

- Irrigation. Description and map of use areas showing all piping networks; description of what is irrigated (e.g., crop type); method of irrigation (e.g., spray, flood, or drip); domestic water supply features (if any); direction of drainage, description of area to which drainage will flow to, and site/runoff containment measures; map and or description of how setback distances will be maintained; protection measures for

McKinleyville Community Services District and Kennedy/Jenks Consultants, Inc.

Master Services Agreement - Task Order Work Authorization 3 Title 22 Report

drinking water, fountains and designated outdoor eating areas (if applicable); public warning signs; and irrigation schedule and measures taken to minimize public contact and/or access to use areas.

- Impoundments, Cooling, Groundwater Recharge, Dual Plumbed and Industrial Uses: Not applicable to CLIENT's recycled water program.
- Use Area Design. Description of the CLIENT's best management practices to prevent cross connection with potable water systems and minimize the chance of recycled water from leaving use areas.
- Use Area Inspection and Monitoring. Describe CLIENT's inspection and monitoring program for use areas.
- Employee Training. Describe CLIENT's training programs related to its recycled water program.

Deliverables:

- Preliminary Draft and Draft Reports. A Preliminary Draft Report will be prepared in electronic format and submitted to the CLIENT for review and comment.
- CONSULTANT will address CLIENT review comments and prepare a Draft Report that the CLIENT will then submit to the RWQCB for review, comment, and/or approval.
- Final Report. CONSULTANT will address RWQCB comments and prepare and deliver a final Report to the CLIENT in electronic format.

Assumptions:

In preparing this scope of Work with associated estimated level of effort, CONSULTANT assumes CLIENT will provide the following information/services:

- Mapping and location information related to existing recycled water transmission and distribution pipelines, recycled water use areas and setbacks, drinking well locations, potable water pipelines, and other related infrastructure.
- Wastewater characterization data in electronic form (e.g., Excel) for 2014 and 2015. CONSULTANT already has 2016 data.
- Information related to wastewater treatment facility operations, reliability features (e.g., alarms, staffing, etc.) and contingency plan.
- Detailed irrigation system information for all use areas.
- Monitoring procedures and monitoring sheets.
- Information related to employee training.

SCHEDULE

CONSULTANT assumes that approximately 4 months will be required to complete Work associated with this Task Order Work Authorization. This estimate is based on the following:

- Preliminary Draft Report: CONSULTANT will deliver the Preliminary Draft Report to the CLIENT within 2 months of the effective date of this Task Order Work Authorization.
- Draft Report. Consultant will provide the revised Draft Report within 2 weeks of receiving CLIENT's review comments on the Preliminary Draft Report.
- Final Report. Consultant will provide the Final Report within 2 weeks of receiving RWQCB review comments on the Draft Report.

McKinleyville Community Services District and
Kennedy/Jenks Consultants, Inc.

**Master Services Agreement - Task Order Work Authorization 3
Title 22 Report**

COMPENSATION

The maximum compensation for the Work associated with this Task Order Work Authorization shall not exceed \$36,065 without prior written authorization from the CLIENT. Payment will be made to CONSULTANT based on itemized statements submitted monthly to CLIENT describing services and listing hours and costs of personnel services and other expenses incurred per the Schedule of Charges for Task Order 1 and dated 19 October 2015.

TASK ORDER WORK AUTHORIZATION 3 APPROVAL

MCKINLEYVILLE COMMUNITY SERVICES
DISTRICT "CLIENT"

By _____
Printed Name _____
Title _____
Date _____

KENNEDY/JENKS CONSULTANTS, INC.
"CONSULTANT"

By _____
Printed Name Charles L. Wright Jr. _____
Title Staff Supervisor _____
Date _____

ATTEST:

McKinleyville Community Services District

BOARD OF DIRECTORS

October 4, 2017

TYPE OF ITEM: **ACTION**

ITEM: E.9 **Consider Adoption of Resolution 2017-24 Approving Membership in the Humboldt Area Chapter of the California Special Districts Association (CSDA)**

PRESENTED BY: **Greg Orsini, General Manager**

TYPE OF ACTION: **Roll Call Vote**

Recommendation:

Staff recommends that the Board review the information provided, take public comment and adopt Resolution 2017-24 approving membership in the Humboldt Area Chapter of the CSDA.

Discussion:

McKinleyville Community Services District (MCSD) is currently a member of the California Special Districts Association (CSDA). CSDA is a 501c(6), not-for-profit association that was formed in 1969 to promote good governance and improved core local services through professional development, advocacy, and other services for all types of independent special districts.

For over 40 years, CSDA has been offering its members cost-efficient programs and representation at the State Capitol and boasts a membership of over 1,000 organizations throughout California. It is the only statewide association representing all types of independent special districts including irrigation, water, park and recreation, cemetery, fire, police protection, library, utility, harbor, healthcare and community services districts.

CSDA provides education and training, insurance programs, legal advice, industry-wide litigation and public relations support, legislative advocacy, capital improvement and equipment funding, collateral design services, and, most importantly, current information that is crucial to a special districts management and operational effectiveness.

There are currently in excess of 50 local CSDA members within Humboldt County. A group of these members are forming a Local Chapter (Humboldt Area Chapter) of the CSDA. The purpose of this Local Chapter is to propose and advocate constructive means for the improvement and functioning of Independent Special Districts within the Humboldt Area and to assist such Independent Special Districts and their governing bodies to provide an effective and efficient government that will result in benefits to the public and to cooperate with and support CSDA in fulfilling its mission.

Per the proposed bylaws, the objectives of the Humboldt Area Chapter (HAC) shall be:

- A. To provide a local forum for member districts to discuss and consider issues of importance to special districts.
- B. To establish a communication network among member districts, other chapters, and other local governmental agencies.
- C. To carry out workshops, educational seminars and programs of mutual interest and benefits to member districts.
- D. To make recommendations regarding policy, programs, services and legislation to the Board of Directors of the California Special Districts Association.
- E. To inform the public about the purpose and benefits of local special district government.
- F. To carry out joint studies which benefit the special districts in the Chapter.
- G. To serve as the forum for LAFCO Special District Selection Committee.

In accordance with the HAC bylaws Section 2.6 C:

- i. Each member district shall provide proof of insurance that covers the member district's employees while engaged in Chapter business. There shall be no liability assumed by the agency hosting any meetings.
- ii. Each Humboldt Area Chapter member shall name Humboldt Area Chapter as additionally insured.

It was determined by the HAC formation committee that securing and funding its own insurance was an unnecessary use of funds since all members would have their own district insurance.

Alternatives:

Staff analysis consists of the following potential alternative

- Take No Action

Fiscal Analysis:

HAC dues are anticipated to be nominal and will be determined once the Chapter is officially formed. It is anticipated that the annual dues will be approximately \$50.00.

Environmental Requirements:

Not applicable

Exhibits/Attachments:

- Attachment 1 – Resolution 2017-24
- Attachment 2 – CSDA Humboldt Area Chapter Bylaws
- Attachment 3 – CSDA Local Chapter Affiliation Agreement

RESOLUTION 2017-24

**A RESOLUTION APPROVING MEMBERSHIP IN THE HUMBOLDT AREA
CHAPTER OF THE CALIFORNIA SPECIAL DISTRICTS ASSOCIATION**

WHEREAS, McKinleyville Community Services District is a member of the California Special Districts Association (CSDA) in good standing; and

WHEREAS, the McKinleyville Community Services District obtains value and benefit from its membership in the CSDA; and

WHEREAS, a local chapter is being formed named Humboldt Area Chapter of CSDA; and

WHEREAS, the McKinleyville Community Services District meets the qualifications for membership in the Humboldt Area Chapter; and

WHEREAS, the McKinleyville Community Services District has the liability insurance to cover staff activity within the Humboldt Area Chapter of CSDA; and

WHEREAS, Gregory Orsini has served and completed two terms as Treasurer and is currently serving as Vice President on the Board of Directors for CSDA.

NOW, THEREFORE, BE IT RESOLVED that the Board of Directors of the McKinleyville Community Services District does hereby approve District membership, support participation by staff, and payment of annual dues in the local Humboldt Area Chapter of CSDA.

ADOPTED, SIGNED AND APPROVED at a duly called meeting of the Board of Directors of the McKinleyville Community Services District on October 4, 2017 by the following polled vote:

AYES:

NOES:

ABSENT:

ABSTAIN:

Dennis Mayo, Board President

Attest:

Emily Abfalter, Board Secretary


Chapter Bylaws

For The

Humboldt Area Chapter of CSDA

A Chapter of the

California Special Districts Association

Approved:  _____

Amended: _____

Amended: _____

Table of Contents

ARTICLE 1	NAME, PURPOSE AND OBJECTIVES
	Section 1.1 Name
	Section 1.2 Purpose
	Section 1.3 Objectives
	Section 1.4 Administrative Office
ARTICLE 2	MEMBERSHIP
	Section 2.1 Types of Membership
	Section 2.2 Qualifications for Membership
	Section 2.3 Application for Membership
	Section 2.4 Termination of Membership
	Section 2.5 Meetings of Membership
	Section 2.6 Rules Governing Membership Meetings
ARTICLE 3	VOTING RIGHTS
	Section 3.1 Quorum of Membership
	Section 3.2 Membership Voting Rights
	Section 3.3 Member in Good Standing
	Section 3.4 Written Ballots
ARTICLE 4	CHAPTER FINANCES
	Section 4.1 Annual Dues
	Section 4.2 Budget
	Section 4.3 Additional Funds
	Section 4.4 Chapter Liability
	Section 4.5 Annual Financial Report
ARTICLE 5	CHAPTER ADMINISTRATION
	Section 5.1 Officers
	Section 5.2 Term of Office
	Section 5.3 Qualification for Office
	Section 5.4 Nomination and Election of Officers
	Section 5.5 Vacancies
	Section 5.6 Removal of Officers
ARTICLE 6	DUTIES OF CHAPTER OFFICERS
	Section 6.1 Duties of the President
	Section 6.2 Duties of the Vice-President
	Section 6.3 Duties of the Secretary
	Section 6.4 Duties of the Treasurer
	Section 6.5 Duties of the Immediate Past President
	Section 6.6 Duties of the Executive Committee

ARTICLE 7	CHAPTER COMMITTEES
	Section 7.1 Standing Committees
	Section 7.2 Other Chapter Committees
ARTICLE 8	AFFILIATIONS
	Section 8.1 State Office of California Special Districts Association
ARTICLE 9	AMENDMENTS TO BY-LAWS
	Section 9.1 Notification of Change
	Section 9.2 Voting Requirements
	Section 9.3 Certificate of Chapter Secretary

Attached: Certificate of Chapter Secretary acknowledging approval of attached Bylaws.

ARTICLE 1: NAME, PURPOSE and OBJECTIVES

Section 1.1 Name

The name of this Chapter shall be the Humboldt Area Chapter of CSDA (HAC).

This Chapter is a member of the State office of the California Special Districts Association (CSDA) and hereinafter is referred to as the “Humboldt Area Chapter.”

These Chapter bylaws are intended to supplement and be consistent with the California Special Districts Association bylaws, and shall serve to guide the local activities of this Chapter.

Section 1.2 Purpose

It is the purpose of this Chapter to propose and advocate constructive means for the improvement and functioning of Independent Special Districts within the Humboldt Area and to assist such Independent Special Districts and their governing bodies to provide an effective and efficient government that will result in benefits to the public and to cooperate with and support CSDA in fulfilling its mission.

Section 1.3 Objectives

The objectives of the Humboldt Area Chapter shall be:

- A. To provide a local forum for member districts to discuss and consider issues of importance to special districts.
- B. To establish a communication network among member districts, other chapters, and other local governmental agencies.
- C. To carry out workshops, educational seminars and programs of mutual interest and benefits to member districts.
- D. To make recommendations regarding policy, programs, services and legislation to the Board of Directors of the California Special Districts Association.
- E. To inform the public about the purpose and benefits of local special district government.
- F. To carry out joint studies which benefit the special districts in the Chapter.
- G. To serve as the forum for LAFCO Special District Selection Committee.

Section 1.4 Administrative Office

The administrative office for the transaction of the business of the (name) Humboldt Area Chapter is to be the office of the President of the Chapter. The Chapter Executive Committee is granted full power and authority to change the administrative office from one location to another within Humboldt County and such change shall not require an amendment of these bylaws.

ARTICLE 2: MEMBERSHIP

Section 2.1 Types of Membership

The two types of memberships available in the Humboldt Area Chapter are Regular Memberships and Partner Memberships. Business Affiliates shall be eligible for Partner Membership.

Section 2.2 Qualifications for Membership

A. Regular Members:

Any independent special district whose boundaries, in whole or in part, are within Humboldt County and adjoining counties, may become a regular member of the Chapter upon a majority vote of the regular membership and upon payment of annual Chapter dues.

Independent special districts are defined to mean districts, exclusive of school districts, which are organized and exist under and by virtue of the laws of the State of California to perform authorized local government services. A special district does not include State, County, City or School District governmental entities.

A regular member may attend and participate in all meetings and activities of the Chapter. Regular members shall have voting rights and shall be eligible to hold office in the Chapter.

B. Partner Members:

Any dependent special district whose boundaries, in whole or in part, are within Humboldt County and adjoining counties may become a partner member upon majority vote of the regular membership and payment of Chapter dues.

In addition, any person, government agency or organization that has evidenced interest in the purposes and goals of the Chapter, but is not a special district as defined above, may also become a partner member upon approval of membership and payment of Chapter dues.

Partner members shall not have the right to vote, nor shall they serve as officers or members of the Chapter Executive Committee, except when appointed by a majority vote of the Chapter's regular members to serve in that capacity. Partner members may attend and participate in meetings and activities of the Chapter.

C. Business Affiliates:

“Business Affiliate members shall be those persons or organizations that provide services to special districts and/or have evidenced interest in the purposes and goals of CSDA. Business Affiliates have no voting privileges, except as approved members on a CSDA committee, and may not hold a seat on the Board of Directors.”

Section 2.3 Application for Membership

Application for membership in the Humboldt Area Chapter shall be by letter and payment of annual dues. The letter shall include:

- A. Type of membership requested.
- B. Name, address, telephone number, email, or fax of the applicant.
- C. Name of individual who will serve as representative and alternate from the applicant.
- D. Special districts must provide its primary functions and its enabling legislation under state law.
- E. Special districts must provide names of the current governing board members and manager.
- F. Special districts must provide a resolution by the governing board requesting membership.
- G. If applicant is from a non-special district, they must submit a statement of interests and purposes in common with the Chapter.

The application for membership and dues should be sent to the Administrative Office as stated in Article I, Section 4 of these bylaws. The Executive Committee of the Chapter may appoint a Membership Committee to review requests for membership. The Membership Committee may request additional information from the applicant. Upon completion of review, the Membership Committee shall make a recommendation to the general membership. A quorum of the regular membership will approve or disapprove the application upon a majority vote.

Section 2.4 Termination of Membership

Any member owing payment of dues for a period of three (3) months after due date shall be notified in writing by the Treasurer of delinquent dues. If such dues continue to be unpaid for an additional three (3) months, the member shall automatically cease to be a member of the Chapter. The member shall not be restored to Chapter membership without making written application for reinstatement and payment of delinquent dues to the Board of Directors.

A member district may withdraw membership in the Chapter at any time. A written notice should be sent to the Administrative Office. No refund of dues will be made.

Section 2.5 Meetings of Membership

The membership shall meet on an established basis at a time and place to be determined by the membership or the Chapter President, unless specified otherwise by the Executive Committee.

A. Regular Meetings

Regular meetings of Chapter members shall be Monthly on the first Monday at a place which has been designated by the members. Written notice of regular meetings providing the time, place and agenda shall be faxed, or emailed to each member of the Chapter no less than seven (7) days prior to the meeting.

B. Annual Meeting

The annual meeting of Chapter membership shall be held in December of each year at such place determined by the members for the purpose of electing Officers. Written notice of the annual meeting, providing the time, place and agenda, shall be, faxed or emailed to Chapter members no less than seven (7) days prior to the date of the meeting.

C. Special Meetings

Special meetings of the Chapter membership may be called at any time by the President upon request of 40% of the Chapter members. Written notice of a special meeting, providing the time, place and agenda, shall be, faxed or emailed to each member of the Chapter at least 48 hours before the time set for the meeting.

Section 2.6 Rules Governing Membership Meetings

A. Rules of Order

The Chapter may adopt Rules of Order to govern the meetings of the members insofar as such rules are not inconsistent or in conflict with these Bylaws or the Articles of Incorporation for the State office of the California Special Districts Association.

B. Agenda Items

Any active member of the Chapter may place an item on the agenda for future meetings. The item must be submitted in writing to the President at least two weeks prior to the meeting. Emergency items may be added to the agenda with less notice when approved by the President prior to the meeting.

C. Insurance Liability

- i. Each member district shall provide proof of insurance that covers the member district's employees while engaged in Chapter business. There shall be no liability assumed by the agency hosting any meetings.
- ii. Each Humboldt Area Chapter member shall name Humboldt Area Chapter as additionally insured.

ARTICLE 3: VOTING RIGHTS

Section 3.1 Quorum of Membership

A quorum for all meetings of the membership shall consist of fifty (50) percent plus one (1) of the Chapter's regular membership who are in good standing present at any meeting.

- a. A quorum for all policy changes shall consist of fifty (50) percent plus one (1) of the Chapter's regular membership who are in good standing.

Section 3.2 Regular Membership Voting Rights

A. One Vote Per Member District

Each regular member district shall be entitled to one (1) vote on all matters brought before the Chapter membership.

B. Official Voting Representative

The governing body of each regular member district shall designate, in writing, to the Chapter Secretary, one representative who shall exercise the district's right to vote, and one alternate who shall have the right to vote in the absence of the assigned voting representative. The vote of the district shall be cast by the designated representative of the district or the alternate member of the district.

If several members of a special district are in attendance, and no designated voting representative has been selected, they shall select one representative for voting purposes which may include a member of a Board of Directors or an administrator from a member district.

C. Proxy Votes

Proxy votes shall not be permitted.

D. Business Affiliates

Business Affiliates shall not have the right to vote on any matter before the Humboldt Area Chapter.

Section 3.3 Member in Good Standing

Any independent special district member that has paid their annual dues to the Chapter and statewide CSDA shall be entitled to vote as a regular member in good standing. Likewise, any member district that has not paid their annual dues shall not be in good standing and shall not be entitled to vote on matters before the Humboldt Area Chapter.

Business Affiliates that have paid their annual dues to the Chapter are in good standing and, while not allowed to vote on any issues, are able to participate the activities of the Chapter.

Section 3.4 Written Ballots

The Chapter Executive Committee may, in its discretion, authorize the voting upon any item by written ballot. The ballot must be emailed to each regular member fifteen (15) days in advance of the voting deadline. The ballot must specify the item, the time and the date when such written ballot must be returned to the President of the Chapter.

ARTICLE 4: CHAPTER FINANCES

Section 4.1 Annual Dues

Annual dues shall be established following a recommendation from the Executive Committee at any regular meeting by a majority vote of eligible regular members present and shall become effective January of the following year.

All members shall pay dues established annually by the membership.

The annual dues shall be due and payable on the first day of July of each calendar year.

New members shall pay their annual dues at the same time they are approved for membership into the Chapter.

Section 4.2 Budget

The Executive Committee shall determine and recommend the annual budget, upon which the annual dues shall be based.

Section 4.3 Additional Funds

Any additional funds required by the Chapter in the conduct of its routine business shall be raised on a vote by a majority of regular members at a regular and properly noticed meeting.

Assessments for specified and approved purposes may be levied on the members, and members shall be subject to or liable for the payment of any assessment or levy, in addition to the payment of regular dues, upon approval of such assessment by 2/3 of the Regular Membership at a regular and properly noticed meeting.

Section 4.4 Chapter Liability

Neither CSDA nor a member of the Humboldt Area Chapter is not individually or personally liable for the debt, liabilities or obligations of the Humboldt Area Chapter.

Section 4.5 Annual Financial Report

An annual summary of all receipts and disbursements during the previous year showing the opening and closing balances shall be prepared by the Treasurer or a designee. Copies of the review shall be available to all Chapter members and filed with the President of the Chapter.

ARTICLE 5: CHAPTER ADMINISTRATION

Section 5.1 Officers

The officers of the Chapter shall be: President; Vice President; Treasurer; Secretary; Immediate Past President.

Section 5.2 Term of Office

Each officer shall serve for a term of one (1) year.

Any officer may be re-elected.

Each officer can hold only one office at a time but may rotate from office to office if elected by the regular membership.

Each officer shall hold office until resignation, disqualification, or until successor shall be elected or appointed.

Section 5.3 Qualification for Office

Each officer shall, at the time of elections, at the time of office and throughout the term of office, be a representative of a member district.

Each officer must represent a district deemed to be in good standing.

No member district shall have more than one representative from the district serve as an officer of the Chapter at the same time.

Section 5.4 Nomination and Election of Officers

The Executive Committee shall present their nominations at the December meeting. The Executive Committee shall also accept nominations from the floor at that time.

At the November membership meeting, any member district through its designated representative may nominate a qualified member from the floor for office to be filled at the election. If such a nominee is elected, the individual shall be eligible to take office only after filing with the Chapter a copy of a motion or resolution adopted by the Board of Directors of the individual's district supporting such an election.

After accepting any further nominations from the floor, the Executive Committee will conduct the election. The candidates receiving a majority of votes shall be considered elected.

The newly elected officers shall take office on January 1st.

Section 5.5 Vacancies

In the event that any officer at the time of taking office, or during the term of office, is no longer qualified to serve as an officer of the Chapter, the office shall become vacant

and said vacancy shall be filled in a manner provided in Section 5.4 or at the point in time when a vacancy occurs.

In the event of a vacancy in the office of President, the Vice President shall assume all presidential duties.

The assumption of the office of President by the Vice President shall constitute a vacancy in the office of the Vice President. The new vacancy shall in turn be filled by a nomination and vote of the membership present at the next regular Chapter meeting.

The Vice President moving into the office of President or elected to complete an unexpired term of Vice President may be elected by the membership to a subsequent full term.

A vacancy in the office of Secretary or Treasurer shall be filled by nomination and election at the next regular meeting.

Section 5.6 Removal of Officers

Officers of the Humboldt Area Chapter may be removed, with or without cause, at any meeting of the general membership by the affirmative vote of a majority of the membership.

ARTICLE 6: DUTIES OF CHAPTER OFFICERS

Section 6.1 President

The President shall preside at all Chapter and Executive Committee meetings. The President shall have the power to appoint any Committee and Committee Chairman deemed advisable or authorized by a vote of the Executive Committee or the membership. The President shall provide a meeting agenda to the Secretary or their designee for mailing to the membership and shall perform any other duties as may be required of the office. The President shall be an ex-officio member of all Chapter committees. The President shall be the official spokesperson for the Chapter and the official Chapter representative to all California Special Districts Association meetings.

Section 6.2 Vice President

The Vice President shall perform all the duties of President in the absence of the President. It shall be the Vice President's responsibility to assist the President in every way possible to further the goals of the Chapter. The Vice President shall be elevated to the office of President at the end of their term and shall also be an ex-officio member of all Chapter Committees.

Section 6.3 Secretary

The Secretary shall keep or caused to be kept at the principal office of the Chapter a complete record of all membership and all meetings. The Secretary will prepare or

caused to be prepared and mail, email or fax an agenda to the membership prior to the next meeting and the minutes of the previous meetings

Section 6.4 Treasurer

The Treasurer shall collect and keep an accurate accounting of all Chapter funds and financial transactions. The Treasurer shall disburse funds as directed by the Executive Committee. The Treasurer will prepare a financial report for every Chapter meeting.

Two (2) signatures shall be required from any member of the Executive Committee to disburse Chapter funds. It shall be the responsibility of the Treasurer to obtain and maintain the authorized signatories' cards required on the Chapter bank account(s) whenever there is a change in Chapter officers.

Prior to leaving office, all financial records and a complete statement of receipts and disbursements shall be submitted to the President.

Section 6.5 Immediate Past President

The Immediate Past President shall serve as the Parliamentarian of the Chapter and shall make final decision on all matters of parliamentary procedure when called upon to do so by the President.

Section 6.6 Executive Committee

The Executive Committee shall consist of the President, Vice President, Secretary, Treasurer and Immediate Past President.

It is the purpose of the Executive Committee to meet and provide leadership to the Chapter on issues requiring policy decisions. The Executive Committee may take positions on behalf of Humboldt Area Chapter under certain emergency circumstances such as a request from the State office of the California Special Districts Association or if five (5) Chapter members make a recommendation for a Chapter position and time is of the essence. If the Executive Committee takes a position on behalf of the Chapter, a notice of said position will be distributed to Chapter members within 72 hours and be presented for ratification at the next regularly scheduled Chapter meeting.

Each member of the Executive Committee shall have one vote.

The Executive Committee shall conduct and oversee the Chapter elections.

At the annual meeting of each year, the Executive Committee shall present a summary of fund expenditures. The Executive Committee shall also recommend the annual budget and Chapter goals and objectives. The President may convene the Executive Committee as Committee as necessary. Minutes of any Executive Committee meeting will be presented to the Chapter membership at the next regular meeting.

ARTICLE 7: CHAPTER COMMITTEES

Section 7.1 Standing Committees

The following committees are established as permanent standing committees of the Humboldt Area Chapter. The chairperson and members shall hold office until replaced or changed by the Chapter President.

A. Legislation Committee

The Legislation Committee shall receive, review and make recommendations on all legislation of interest to the Chapter membership that is presented for enactment during the state legislative sessions.

The Humboldt Area Chapter shall not publish a legislative position that is in opposition to one taken by the State office of the California Special Districts Association, but may approve such a position at the Chapter level and recommend the position to the Statewide Association.

B. Local Government Committee

The Local Government Committee shall maintain liaison with city governments, county government and other organizations by tracking and reporting to the Chapter related issues and activities. This committee shall further be responsible to facilitate the special district selection process for the purpose of LAFCo.

Section 7.2 Other Chapter Committees

The Chapter President shall appoint other committees and committee chairmen as determined necessary to carry out the work of the Chapter.

Committees shall not commit Chapter funds without prior approval from the Executive Committee.

ARTICLE 8: AFFILIATIONS

Section 8.1 State Office of California Special Districts Association

The Humboldt Area Chapter of CSDA shall be a separate legal entity in Humboldt County and /or adjoining counties in support of the purposes and in cooperation with the activities of the State office of the California Special Districts Association.

The Chapter will encourage each of its members to become a member of the California Special Districts Association.

ARTICLE 9: AMENDMENTS TO CHAPTER BYLAWS

Section 9.1 Notification of Change

The Humboldt Area Chapter shall have the power at any time to alter, amend or revise these Bylaws.

The requested change must be submitted in writing to the Secretary who shall notify all members of the proposed amendment change not less than sixty (60) days before the next regular membership meeting at which the proposed amendment will be voted upon.

Chapter bylaws and amendments to Chapter bylaws are subject to approval by the board of directors of the State office of the California Special Districts Association.

Section 9.2 Voting Requirements

Voting by the general membership is required for changes to the bylaws.

Any alteration, amendment or revision to the bylaws require a two thirds (2/3) vote of the Chapter membership at a duly noticed meeting to implement any proposed bylaw change.

Unless otherwise stipulated, all amendments to the bylaws shall become effective immediately following approval by the State office of the California Special Districts Association Chapter and the Chapter membership.

Section 9.3 Certificate of Chapter Secretary

I, the undersigned, do hereby certify:

(1) That I am the duly elected Secretary of the Humboldt Area Chapter of CSDA,
and

(2) That the foregoing Bylaws, comprising of (number) _____
pages, constitute the Bylaws of said Chapter as duly adopted at a
meeting of its membership.

In Witness whereof, I hereunto subscribe my name this (date) _____ of
(month) _____, (year) _____.

(Signature of Secretary) _____
(Typed Name of Chapter Secretary)

Therefore, any conflict between Chapter bylaws and California Special District Association bylaws shall be resolved in favor of the CSDA bylaws. Any article or section not expressly cited herein shall be read as the CSDA articles or section without modification.

CHAPTER AFFILIATION AGREEMENT

THIS AGREEMENT (the "Agreement") is made this _____ day of _____, 2017, by and between **California Special Districts Association**, a 501(c)(6) California nonprofit corporation, with its principal place of business at 1112 I Street, Suite 200, Sacramento, CA 95814 ("CSDA"), and _____, an unincorporated business association, with its principal place of business at _____, CA (hereinafter "Chapter").

RECITALS

A. CSDA is a California nonprofit public benefit corporation representing different types of special districts which provide a wide variety of public services to California communities. The purposes and objectives of the CSDA are to advance the vital public interest in effective, efficient and responsive local government, specifically by providing educational, legislative advocacy, financing, and insurance services to California special districts;

B. Chapter desires to obtain the right to use CSDA's name, logo, membership mailing list, endorsement, technical assistance and staff support and other CSDA Intellectual Property in connection with Chapter's activities including conducting programs for the continuing education of special district officials and employees, research projects on local special district issues of concern to Chapter's member special districts, legislative outreach on legislative issues of importance to individual chapters and their members, and supporting chapter outreach programs to educate the public about the operations of special districts within the jurisdictional boundaries of the Chapter (hereinafter the "Chapter Program");

C. CSDA is willing to provide its endorsement and technical support services to Chapter and permit Chapter to use its name, logo, membership list and other Intellectual Property in connection with the operation of the Chapter Program, on the terms and conditions specified in this Agreement.

D. The Boards of Directors of CSDA and Chapter hereby reaffirm that the relationship of CSDA and Chapter to each other is that of Licensee and Licensor. This agreement is not intended by the parties to create any association, joint venture, partnership, or agency relationship of any kind between CSDA and Chapter. Neither CSDA nor Chapter is authorized to incur any liability, obligation or expense on behalf of the other, to use the other's monetary credit in conducting any activities under this Agreement, or to represent that CSDA is in the business of providing services comprising the Chapter Program, other than CSDA's endorsement and technical support of the Chapter Program. It is the intent of both CSDA and Chapter that the terms and conditions of this Agreement be interpreted to advance the stated intent of the parties to remain autonomous organizations, each seeking to fulfill its respective stated mission and offer programs that accomplish each party's business goals and objectives.

AGREEMENT

NOW THEREFORE, in consideration of the foregoing and the mutual covenants and agreements set forth herein, the parties hereby agree as follows:

I. License of Intellectual Property.

A. Definition of Intellectual Property.

1. "Intellectual Property" of CSDA includes, but is not limited to use of its name (to include both "California Special Districts Association" and the "CSDA" acronym), logo, and membership mailing and electronic mail list with respect to past, current or prospective members of CSDA located within Chapter's

geographic area; copyrighted, trademarked or proprietary information and materials prepared by CSDA and provided by CSDA to Chapter pursuant to the provisions of this Agreement; and all other Intellectual Property rights including the know-how, licenses, trade secrets, proprietary programs and processes of CSDA.

B. Limited License of Name, Logo, Membership Mailing List and Intellectual Property.

1. CSDA hereby grants a conditional, revocable, nonexclusive license to Chapter to use its name, acronym, logo, membership mailing list, and other Intellectual Property in connection with Chapter's operation of the Chapter Program. In addition, CSDA hereby agrees to provide its public endorsement of the Chapter Program. Chapter hereby accepts the grant of such license and the endorsement of its Chapter Program.

2. Chapter agrees that the license granted hereunder, the promotion and endorsement of the Chapter Program, and the usage of CSDA's name, logo, membership mailing list, and other Intellectual Property shall be restricted to the operation and promotion of the Chapter Program to existing and potential members of the Chapter. Chapter further agrees to protect the name and goodwill of CSDA throughout the term of this agreement.

3. Chapter agrees that it shall not use, or permit any person or entity other than Chapter members to use, CSDA's name, logo, membership mailing list, and other Intellectual Property, for any purpose without the prior written consent of CSDA. Chapter further agrees to keep CSDA's membership mailing list in strict confidence and to not sell or disclose such mailing list or its contents to any third party in any manner, except with the prior written consent of CSDA.

4. Upon termination or expiration of this Agreement, Chapter shall: (i) immediately cease utilization of CSDA's name, logo, membership mailing list, and other Intellectual Property in connection with the Chapter Program or for any other purpose; (ii) immediately return to CSDA all originals and copies of CSDA's name, logo, membership mailing list, and other Intellectual Property (whether in printed, electronic, recorded, or other tangible form); and (iii) discard or destroy all copies thereof.

C. Review and Approval. In order to protect the reputation and goodwill of CSDA, Chapter shall provide CSDA with the right to review and pre-approve all uses of CSDA's name, logo, membership mailing list, and other Intellectual Property or any portion thereof, by chapter and its member districts and agents. Chapter shall submit to CSDA a copy of the intended use of CSDA's name, logo, membership mailing list, and other Intellectual Property or proposed endorsement materials to CSDA. CSDA shall have ten (10) days to approve or disapprove such use by the Chapter of the proposed materials. If CSDA fails to respond within ten (10) days of receipt of such materials, their silence shall be deemed approval of the Chapter's proposed use.

D. Conditions to Limited License of Intellectual Property.

This Limited License of Intellectual Property is granted by CSDA to Chapter subject to satisfaction of each and all of the following conditions.

1. Chapter must provide copies of its bylaws to CSDA for review and approval for consistency with the Articles of Incorporation and bylaws of CSDA. Receipt and approval of the Chapter's bylaws CSDA is confirmed by execution of this Agreement. Chapter agrees to provide copies of all amendments to the bylaws of the Chapter to CSDA during the term of this Agreement.

2. Chapter agrees to comply with those requirements specified in CSDA bylaws regarding Chapters.

3. Chapter shall comply with all federal, state and local laws, regulations and ordinances.

4. Chapter will establish membership requirements that are based on guidelines established by the CSDA bylaws. (Exhibit A)

5. Chapter agrees to appoint a Communications Liaison to facilitate communication between Chapter and CSDA. The Communications Liaison shall be a member district of both the Chapter and CSDA.

II. Description of Services.

CSDA shall provide the following services to Chapter pursuant to the terms and conditions of this Agreement: (1) provide training and assistance in issues regarding governance and operations of the Chapter and its member districts including but not limited to leadership training, district training certification, and legislative updates. In addition, CSDA shall provide the Chapter access to services of its endorsed business affiliates for supplemental services which may be of value to individual special district Chapter members; (2) CSDA agrees to promote Chapter activities in its regular communications to all CSDA members.

Chapter agrees to provide the following services pursuant to the terms and conditions of this Agreement: (1) conduct educational, outreach and other programs and activities the purposes of which do not conflict with the stated purposes of CSDA; (2) agrees to periodically inform its members of CSDA programs, activities, services and legislative alerts; (3) Chapter agrees to maintain regular communication with CSDA and share general information of interest to both parties; and (4) Chapter agrees that it will not, during the term of this Agreement, represent itself as a Chapter of CSDA and publish a legislative position or a position on a valid initiative that is in opposition to one taken by CSDA. This representation does not preclude individual special district members of the Chapter from taking their own respective positions on pending legislation and/or ballot initiatives affecting special districts.

III. Confidential Information.

A. Both CSDA and Chapter may disclose certain confidential information and trade secrets ("Confidential Information") concerning the operations of their respective businesses in connection with entering into this Agreement and performing their obligations herein. Such Confidential Information includes, but is not limited to the manner and terms under which services are provided or will be provided to their respective members. Each party agrees, on behalf of itself and its members, and other persons to whom disclosure of the Confidential Information is permitted hereunder, to keep confidential, and not use, disclose or publish the Confidential Information other than as permitted under the terms of this Agreement.

B. Each party acknowledges and agrees that the Confidential Information of the other parties is confidential and proprietary, and that any and all Confidential Information shall remain strictly confidential among the parties, and shall not be disclosed, used or published except as specifically permitted under the terms of this Agreement

C. The parties' obligations under this Article shall survive the termination of this Agreement. In addition, upon termination or revocation of the license contemplated hereunder, or upon expiration or earlier termination of this Agreement, all Confidential Information transmitted to the receiving party by the disclosing party and any copies thereof made by the receiving party will be destroyed or, at the disclosing party's written request, promptly returned to the disclosing party.

IV Term and Termination. This Agreement shall be effective as of the date and year first above written and shall remain in full force and effect until terminated at any time by either party, without cause, upon giving to the other party not less than sixty (60) working days' prior written notice of an election to terminate this Agreement. Failure by Chapter to comply with the conditions for issuance of the limited license specified in

Sections 1B, 1C and 1D hereof may lead to suspension or revocation of this license by CSDA. Upon termination of this Agreement, the license granted hereby shall be deemed to have been revoked by CSDA.

V. Indemnification and Insurance.

A. Indemnification.

1. Except as otherwise provided in this Agreement, each party shall indemnify, defend, and hold harmless the other party, and its governing board, officers, employees, agents and representatives, from and against any and all liabilities, obligations, losses, damages, penalties, fines, claims, actions, suits, costs and expenses, (including legal fees and expenses) of any kind whatsoever, asserted against, incurred or suffered by the other party, or its governing board, officers, employees, agents or representatives, by reason of personal injury or property damage resulting in any way from: (a) any negligent or intentional act by it or any of its officers, employees, agents or representatives in the performance of services or obligations hereunder; or (b) any negligent omission or failure to act when under a duty to act on its part or the part of any of its officers, employees, agents or representatives in the performance of services or obligations hereunder.

B. Insurance. In order to assure the indemnity described in this Section both CSDA and Chapter shall, at its sole expense, carry and keep in full force and effect at all times during the Term of this Agreement a liability insurance policy with a single limit of at least 1 million dollars (\$1,000,000) to cover potential liability to third parties arising from the operation of the Chapter Program. Each party shall name the other party as an additional insured on such insurance policy, and such insurance policy shall contain a provision by which the insurer agrees that such policy shall not be cancelled except after thirty (30) days written notice to Association. Each party shall provide to the other, within thirty (30) days of the commencement of the initial Term of this Agreement, a copy of the certificate evidencing such insurance policy. The indemnification under this Agreement shall in no way be limited by the extent of insurance coverage. The provisions of this Section shall survive any termination or expiration of this Agreement.

1. As an alternative to providing an insurance policy pursuant to Section V.B., Chapter may assure the indemnity obligations specified in Section V.A. by providing a written certificate from each member district of Chapter certifying that all employees of such Chapter member district participating in Chapter activities as part of the Chapter Program, are acting within the course and scope of their duties for the individual Chapter member, and that the individual Chapter member's insurance policies provide general liability coverage for all such member district employees participating in Chapter activities. (Exhibit B)

VI. MEDIATION.

(a). The Parties agree to mediate any dispute or claim arising between them out of this Agreement, or any resulting transaction, before resorting to arbitration or court action. Mediation fees, if any, shall be divided equally among the parties involved. If, for any dispute or claim to which this paragraph applies, any party commences an action without first attempting to resolve the matter through mediation, or refuses to mediate after a request has been made, then that party shall not be entitled to recover attorney fees, even if they would otherwise be available to the party in any such action.

VII. Warranties. Each party covenants, warrants and represents that it shall comply with all laws and regulations applicable to this Agreement, and that it shall exercise due care and act in good faith at all times in performance of its obligations under this Agreement. The provisions of this Section shall survive any termination or expiration of this Agreement.

VIII. Waiver. Either party's waiver of, or failure to exercise, any right provided for in this Agreement shall not be deemed a waiver of any further or future right under this Agreement.

IX. Governing Law. All questions with respect to the construction, performance and enforcement of this Agreement, and the rights and liabilities of the parties hereunder, shall be determined in accordance with the laws of the State of California. Any legal action taken or to be taken by either party regarding this Agreement or the rights and liabilities of parties hereunder shall be brought only before a federal, state or local court of competent jurisdiction located within the State of California. Each party hereby consents to, and agrees not to contest, the jurisdiction of the federal, state and local courts located within the State of California.

X. Headings. The headings of the various paragraphs hereof are intended solely for the convenience of reference and are not intended for any purpose whatsoever to explain, modify or place any construction upon any of the provisions of this Agreement.

XI. Assignment. This Agreement may not be assigned, or the rights granted hereunder transferred or sub-licensed, by either party without the express prior written consent of the other party.

XII. Heirs, Successors and Assigns. This Agreement shall be binding upon and inure to the benefit of each party, its subsidiaries, affiliates, related entities, partners, agents, officers, directors, employees, heirs, successors, and assigns, without regard to whether it is expressly acknowledged in any instrument of succession or assignment.

XIII. Counterparts. This Agreement may be executed in one (1) or more counterparts, each of which shall be deemed an original and all of which taken together shall constitute one (1) and the same instrument.

XIV. Entire Agreement. This Agreement: (i) constitutes the entire agreement between the parties hereto with respect to the subject matter hereof; (ii) supersedes and replaces all prior agreements, oral and written, between the parties relating to the subject matter hereof; and (iii) may be amended only by a written instrument clearly setting forth the amendment(s) and executed by both parties.

XV. Independent Agreement. This Agreement is an independent agreement which is not in any way contingent upon or related to any other contractual obligations of the parties. The royalties and price discounts provided by Company herein are solely in consideration for the license of Association's name, logo and membership mailing list.

XVI. Severability. All provisions of this Agreement are severable. If any provision or portion hereof is determined to be unenforceable in arbitration or by a court of competent jurisdiction, then the remaining portion of the Agreement shall remain in full effect.

XVII. Notice. All notices and demands of any kind or nature that either party to this Agreement may be required or may desire to serve upon the other in connection with this Agreement shall be in writing and may be served personally, by certified mail, or by commercial overnight courier (e.g., Federal Express), with constructive receipt deemed to have occurred 3 calendar days after the mailing or sending of such notice, to the following addresses:

If to CSDA: California Special Districts Association
 1112 I Street, Suite 200
 Sacramento, CA 95814
 Attn.: Neil McCormick, Executive Director

If to Chapter:

* * * * *

IN WITNESS WHEREOF, the parties hereto have caused duplicate originals of this Agreement to be executed by their respective duly authorized representatives as of the date and year first above written.

California Special Districts Association
Contact: Neil McCormick, Executive Director
1112 I Street, Suite 200
Sacramento, CA 95814
T – 916.442.7887

By: _____
Neil McCormick
Executive Director
Date: _____

By: _____
Date: _____

Exhibit A

ARTICLE VIII – LOCAL CHAPTERS

Section 1. Purpose:

The purpose of local chapters is to provide a local forum of members for the discussion, consideration and interchange of ideas concerning matters relating to the purposes and powers of special districts and the CSDA.

The local chapters may meet to discuss issues bearing upon special districts and the CSDA. The chapters may make recommendations to the CSDA's Board of Directors.

Section 2. Organization:

The regular voting members of the CSDA are encouraged to create and establish local chapters. Each of the following existing chapters must have at least one (1) CSDA member in their membership at all times: Alameda, Butte, Contra Costa, Kern, Marin, Monterey, Orange (ISDOC), Placer, Sacramento, San Bernardino, San Diego, San Luis Obispo, San Mateo, Santa Barbara, Santa Clara and Ventura. These existing chapters are strongly encouraged to have all district members as CSDA members, however the existing local chapter may include members of local organizations, districts and professionals who are not members of the CSDA.

New chapters formed after August 1, 2011 are required to have 100 percent of their district members as CSDA members in order to be a chapter affiliate of CSDA. The existing local chapter may include members of local organizations and professionals who are not members of CSDA.

Local chapters shall be determined to be affiliates of the CSDA upon approval and ratification by the Board of Directors of the CSDA. The chapters shall be required to provide updated membership lists to the CSDA at least annually.

CSDA and its local chapters shall not become or deem to be partners or joint ventures with each other by reason of the provisions of these Bylaws.

Section 3. Rules, Regulations and Meetings:

Each local chapter shall adopt such rules and regulations, meeting place and times as the membership of such local chapter may decide by majority vote. Rules and regulations of the local chapter shall not be inconsistent with the Articles of Incorporation or Bylaws of the CSDA.

Section 4. Financing of Local Chapters:

No part of the CSDA's funds shall be used for the operation of the local chapter affiliates. The CSDA is not responsible for the debts, obligations, acts or omissions of its local chapters.

Section 5. Legislative Program Participation:

Local chapters may function as a forum in regard to federal, state and local legislative issues. The chapters may assist the CSDA in the distribution of information to their members.

Exhibit B

Sample Certificate for Liability Coverage

The undersigned, being duly authorized to execute this Certificate on behalf of the Board of Directors of _____ (name of special district) (hereinafter the "District") hereby affirm the following:

1. That the participation by employees and members of the Board of Directors of District in the meetings and activities conducted by the _____ Chapter of the California Special Districts Association have been authorized by the District's Board of Directors; and that the Board of Directors has found such activities constitute activities in the course and scope of such individual's employment with or position of director with the District.

McKinleyville Community Services District

BOARD OF DIRECTORS

October 4, 2017

TYPE OF ITEM: **INFORMATION**

ITEM: F.2.A **Support Services - September 2017 Report**

PRESENTED BY: **Colleen M. R. Trask, Finance Director**

TYPE OF ACTION: **None**

FINANCIAL, AUDIT, & BUDGET INFORMATION

The District has deposited \$937,318.68 to date into the Trust Account for reserves recovery as of August 31, 2017. This represents 86.2% of the \$1,087,684.00 total reserve that need to be recovered.

The District has \$326,876.59 to date in the Trust Account for the next Biosolids Disposal project.

Customer adjustments at month-end total \$3,662.25, which represents 25.2% of the annual \$14,500 budget for this sub-item. (GL# 501-62120)

Total Board Travel as of August 31, 2017 is \$1,082.75 which is 6% of the approved \$18,000 budget for this item. (GL# 001/005/501/551 62090-888)

Audit Update: Additional information and the initial draft year-end closing trial balance has been sent to the auditors from Fedak and Brown. The next deadline for information comes in early October. There will be one final onsite visit for a final review of source documents and processes before compiling the financial statements.

Treasurer's Report Highlights: Water Fund capacity fees collected during July bring total fees collected to \$7,123.00. No Wastewater Fund capacity fees were collected in August. Capital Contributions and Capacity fees are included in the income vs. expenses graphs of the Treasurer's Report, but they are called out separately on the Budget to Actuals report.

The Balance Sheet

The Balance Sheet shows the assets and liabilities for each major Fund. Assets are listed first, in the order of liquidity. Subtotal lines are provided for the major categories of assets: cash and cash equivalents, accounts receivable, and prepaid expenses. Capital asset totals are listed last. Liabilities are shown in the next section. Current liabilities consist of Accounts Payable and Payroll Payables. Long-term debt and other non-current liabilities are listed for the Water and Wastewater Funds.

Of note is the fact that the governmental funds do not show either non-current assets or non-current liabilities. Generally Accepted Accounting Principles and the Government Accounting Standards Board both require a modified accrual basis of accounting for governmental funds. That means current financial resources are set against current financial requirements, and long-term assets or debt are listed separately. In this case, a net total value for General Capital Assets is shown at the bottom of the Balance Sheet report. General Long-term Liabilities are also shown there.

OTHER UPDATES

Disbursement #10 from the State Revolving Fund loan for construction costs related to the new Wastewater Management Facility was received at the beginning of August. Disbursement request #11 was approved by the SRF and received during September. It will appear in the September financial reports. Disbursement request #12 is being compiled. On the Debt page of the Treasurer's Report, the loan principal amounts will be accumulated until the SRF provides a final loan amount after construction is finished in FY2017-18.

McKinleyville Community Services District

BOARD OF DIRECTORS

October 4, 2017

TYPE OF ITEM: **INFORMATION**

ITEM: F.2.B **Operations Department – August 2017 Report**

PRESENTED BY: **James Henry, Operations Director**

TYPE OF ACTION: **None**

Water Department:

Water Statistics:

The district pumped 47.9 million gallons of water in August.
Nine water quality complaints were investigated and rectified.
Daily, weekly and monthly inspections of all water facilities were conducted.

Double Check Valve Testing:

Annual routine testing was conducted on Route 15 along with a minimal number of retests. Customers with failed DCV's were notified to make repairs and call the office to schedule a retest.

Average and Maximum Water Usage:

The maximum water usage day was 2.3 million gallons and the average usage per day was 1.5 million gallons.

Water Distribution Maintenance:

Weekly Bacteria Samples were collected on Schedules 1, 2,5 and 6 which represent different locations in the water distribution system. The schedules are made up of a sample taken in each pressure zone. The meter replacement program is in process and is on schedule to finish this year. The entire system is approximately 85% completed. Four water service leaks were repaired due to a bad crimp in the line or bad bedding. Saw cutting and prepping water leak trenches took place and are scheduled for permanent paving. Staff raised several valve cans that were paved over by County. County will be billed for time and material.

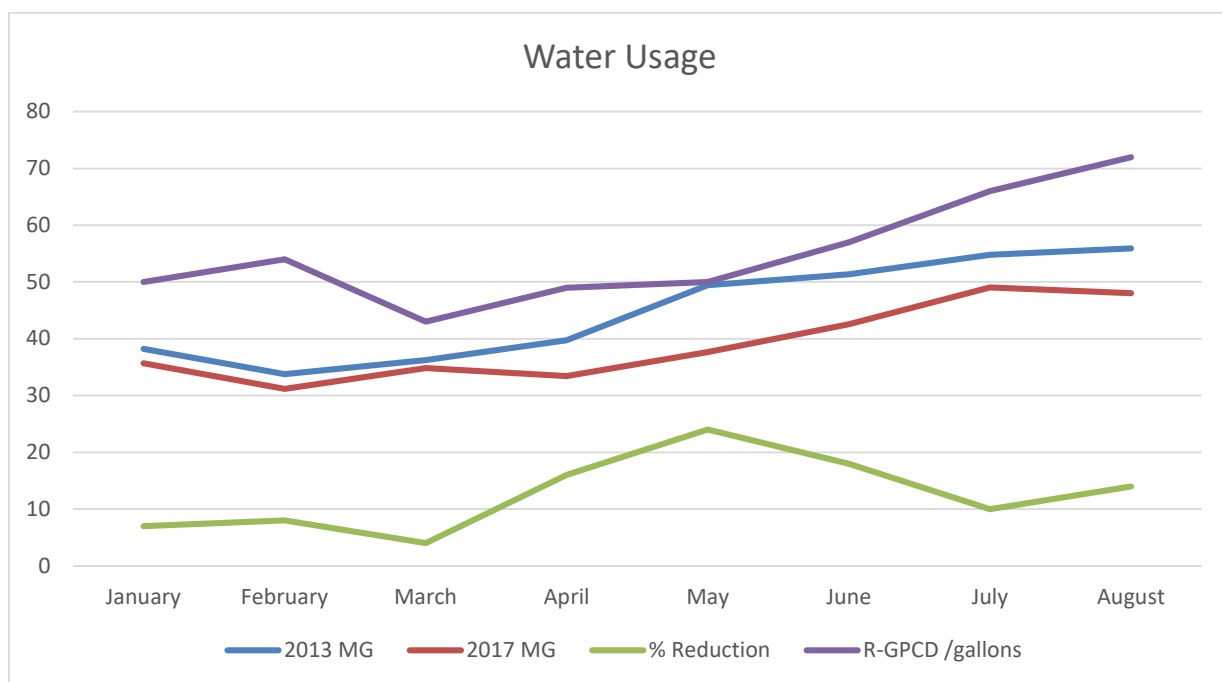
Water Station Maintenance:

Monthly inspections and daily routines were conducted at the water stations. Site mowing and clearing took place at several water R.O.W.'s and stations.

As of July 2014, the District is required to submit a Public Water Monthly Monitoring Report to compare water usage to last year's usage in the same month. I will keep the Board updated each month using the Table below.

	2013	2017	% Reduction	2017 Recycled	R-GPCD
January	38.241	35.670	7	0	50
February	33.751	31.146	8	0	54
March	36.244	34.828	4	0	43
April	39.755	33.414	16	0	49
May	49.407	37.628	24	8.7	50
June	51.337	42.539	18	19.2	57
July	54.757	49.038	10	17.8	66
August	55.908	47.995	14	14.7	72

*Recycled water is reclaimed water that is used for irrigating crops.



R-GPCD = Residential Gallons Per Capita Day

New Construction Inspections:

Grocery Outlet; The water main crossing Central Avenue was completed along with the hydrant install at the property line. No testing has been conducted yet. Fawn Meadows; Water main and services have been installed on Dogwood. The sewer laterals were connected to the existing Sewer Main on Dogwood.

Sewer Department:**Waste Water Statistics:**

26.0 million gallons of wastewater were collected and pumped to the W.W.M.F. 21.7 million gallons of wastewater were treated and discharged to land disposal or reclamation in August.

Daily, weekly and monthly inspections of all sewer facilities were conducted.

Sewer Station Maintenance:

Monthly inspections and daily routines were conducted on all sewer stations. Staff has spent numerous hours prepping and painting the Fischer Ranch house along with replacing windows and trim rot. Mowing was conducted at several locations around the Fischer Ranch. Mowing and string trimming was completed at the B Street Stations and R.O.W. along with several other sewer R.O.W.'s. The Hiller lift station electrical panel was upgraded to be able to have generator power back up from the new generator that was installed for the treatment plant upgrade. A manhole was grouted and repaired to eliminate infiltration during the winter months. This manhole was postponed for repairs to allow the groundwater to drop so that the repair would cure and hold.

Sewer Collection System:

Grease traps were inspected at required facilities. Customers that are out of compliance were notified to have their traps pumped and possibly shorten their pumping schedule.

Wastewater Management Facility:

Mowing, string trimming and penny wart removal was performed at the treatment plant around the ponds. A concrete pad that served the prior PG&E service box was removed. The monthly Chlorine Contact Chamber wash down was completed using high pressured water through fire hoses. The foot valve was replaced on the drain pump while the chamber was empty for cleaning.

Daily Irrigation and Observation of Reclamation Sites:

Weekly well monitoring was conducted along with the Fischer Ranch tree farm as part of the tree farm pilot study. Wells will be used to monitor the uptake of each tree species. Several sprinkler heads and valves were replaced due to not operating properly.

Street Light Department:

One streetlight complaint was reported in August due to a faulty photo cell.

Promote Staff Training and Advancement:

Weekly tailgate meetings and training associated with job requirements. Staff received several days of WWMF training as new equipment was installed and tested.

Special Notes:

Tractors, Dump Truck and Vac-con received their monthly service.

Monthly river samples were completed.

Monthly Self Monitoring Reports (DMR/SMR) were submitted.

Public Water Monthly Monitoring report was submitted.

Monthly Water Quality report was sent to the Dept. of Health.

Monthly Pesticide applicator report was submitted to Department of Agriculture.

A meeting was held with GHD to discuss Grant project scopes.

A meeting was held with Willdan to discuss the Pipe Rehabilitation Project.

A meeting was conducted to discuss Succession Planning.

WWMF upgrade status:

AQUALITY has been hired by Auburn to start the new plant process. Seed sludge was hauled in to provide bug growth in the aeration basins. At this time, AQUALITY is trying to dial in the process to complete the 30-day acceptance testing. The main tie-ins that redirect the clarifier flow to the Chlorine contact chamber was installed along with the Contact Chamber tie-in and valving. System integration is in process and will develop as equipment is installed and tested. Staff has been attending training on running the new plant and will continue to train as progress takes place. The time lapse camera footage is still being collected and will continue through the construction phase. Weekly meetings have been held to discuss progress and scheduling.

Water and Sewer Mainline Rehabilitation Master Plan:

GHD has completed the needs assessment for both the water distribution and wastewater collections systems. They have developed detailed engineering cost estimates for the replacement of the entire water distribution and wastewater collection systems, as well as discrete portions of the wastewater system. The detailed engineering cost estimates were provided to Willdan Financial Services, along with District financial data. We had one telephone conference with the GHD and Willdan to regarding the rate analysis, and at the end of that call, Willdan requested some additional financial information from the District to refine their rate model. The District provided that information to Willdan, and Willdan is updating their model. Staff then had another phone conference with GHD to present the revised model results, before they are finalized in the Master Plan write-up. We walked through the impacts of the water and wastewater rates if each of these systems were replaced in its entirety in a 50-, 75- or 100-year time frame, with the replacement beginning in approximately 2027. District staff requested a few additional scenarios to be run, including if financing is sought under the approved District financing plan or if projects over several years are allowed to be bundled for financing. Willdan is currently finalizing the model and their technical memo write up of the results.

GHD has also finished the write-ups of the Master Plan documents, and are simply waiting for the results from the Willdan rate study. As soon as GHD gets the results from

the Willdan analysis, they will incorporate this into their document and submit a Draft copy for review

Parks:

Several open space zones received mowing, hedging and maintenance as part of the Open Space Maintenance Zone agreements. The Facilities were mowed and cleaned as part of the weekly schedule along with rental events. Rubber chips were added to the Hiller Park playground surface to maintain the safety code depth. Brad took the Playground Safety renewal exam and passed. Signs were hung at the Hiller Dog Park to notify people of the park rules. The Teen Center 11-month inspection was conducted, a punch list was developed and forwarded to the contractor to schedule repairs. Fencing was installed on the teen center to prevent people from climbing onto the roof. Staff has been conducting interviews for the Parks Maintenance Worker opening.

GIS:

MCSD Plans and Programs

Updated MCSD Emergency Hazard Control Plan (Lock Out Tag Out): Reviewed regulations set by Fed/Cal OSHA, reviewed MCSD plan and requirements, met with Northern California Safety Consortium to discuss regulation requirements, inserted current list of affected equipment and employees, helped to schedule dates for required trainings with Safety Officer.

Continued updates on Hearing Conservation Plan: Reviewed regulations set by Fed/Cal OSHA, reviewed MCSD plan and requirements, met with Northern California Safety Consortium to discuss regulation requirements.

Updated Plans and Programs binder, log, table of contents.

Updated Plans and Programs (PP) binder to reflect added plans to binder and recent safety meeting trainings.

Continued developing Outlook calendar to track necessary reviews, audits, and trainings for MCSD programs/plans.

Maps Completed/General GIS

Collected data points at the WWMF. Having issues with GPS unit and am currently working with Topcon technical support to remedy issue.

Attended an ESRI webinar on how Metropolitan Water Reclamation District (MWRD) of Greater Chicago uses story maps to display water quality data.

Created multiple maps for USAN.

Misc. Work Completed

Weekly Safety meetings.

Vehicle inspections.

Continued researching grants for water, sewer, and/or streetlights.

Service Orders/Lock list.

McKinleyville Community Services District

BOARD OF DIRECTORS

October 4, 2017

TYPE OF ITEM: **INFORMATION**

ITEM: F.2.C **Parks & Recreation Director's Report for September 2017**

PRESENTED BY: **Lesley Frisbee, Recreation Director**

TYPE OF ACTION: **None**

TEEN & COMMUNITY CENTER:

To date, the following funding has been secured for the Teen & Community Center:

Organization	Amount	Purpose
Mad River Rotary-Donation	\$25,000	Commercial Kitchen
Mad River Rotary-Grant (2015)	\$2,000	Commercial Kitchen
Mad River Rotary-Grant (2016)	\$3,000	Music equipment
McKinleyville Area Fund (2014)	\$3,000	Audio-Sound System
McKinleyville Area Fund (2016)	\$2,500	TV's and Blue Ray player
McKinleyville Area Fund (2017)	\$3,075	Kitchen Equipment
McKinleyville Lions Club	\$1,000	Kitchen Equipment
Humboldt Area Foundation	\$10,000	Tables & Chairs for Classrooms
McKinleyville Kiwanis Club	\$2,000	Computer equipment
Legacy Path & Giving Tree donations	\$22,595	Unrestricted
Karaoke Night event	\$593	Unrestricted
Pints for Non-Profits	\$743	Unrestricted
Umpqua Bank	\$1,200	Landscaping
TOTAL:	\$76,706	

Staff continues to seek out funding sources to equip and furnish the music and recording studio.

Boys & Girls Club of the Redwoods Teen Club in McKinleyville is serving an average of 41 youth each day. Total membership for the year has reached 212 members, growing by 21 members in just the last month.

Staff continue to meet with the BGCR Teen Club Site members regularly to ensure adequate information sharing and exchange in regard to programs as well as shared facility use. Staff of both organizations also continue to explore collaborative event offerings as well as fundraising opportunities to support teen programs and activities.

Staff from both organizations are planning a Family Laser Tag night which will take place on Saturday, November 11, 2017 from 6:00pm-9:00pm at the McKinleyville Activity Center and Teen & Community Center. This is the first of three collaborative fundraising events to be hosted in partnership with BGCR.

The McKinleyville Middle School Art students have hung a variety of art works in the Teen & Community Center. The McKinleyville Middle School Art teacher, Lizzy Dostal, has had a busy start to the school year and has not yet been able to coordinate an Art reception at the Teen Center, but it will happen in the near future. The donor recognition tree created by a 7th grade ceramics class last year is currently being prepped to hang in the Teen & Community Center. There was an issue last spring during the firing of the piece and the Art teacher has been working to fix it. It will be installed when it is ready.

RECREATION ADVISORY COMMITTEE:

The Recreation Advisory Committee met on Thursday, September 21, 2017. The notes from that meeting are attached as Attachment 1.

RECREATION PROGRAM UPDATES:

- Playgroup—Serving 15-20 families each day it is offered. Playgroup was recently accepted into First 5 Humboldt's IMPACT program, providing professional development opportunities for playgroup staff and a small amount of additional funding for the program.
- Kids Club After School Program—serving approximately 90 kids per day.
- Jr. High Dance—sold 355 tickets, 250 were sold at \$12 each, 105 sold at \$15 each. Next Dance is November 17th
- Jiu Jitsu—Current session enrollment has dipped to 8 participants.
- Tot-Letics—Current session is basketball and is serving 29 three to five year olds
- Drop in Pickleball—averaging 11 participants per day each week.
- Drop in Basketball—Averaging 18-20 participants each week.
- Youth Basketball League—We are currently accepting Registration for the 2018 Youth Basketball League. \$65 per participant. Serves youth in 3rd-12th grades. Runs January through March.
- Adult Futsal League—began Wednesday, September 27th. There are 6 teams for this fall season. The league is offered twice per year in both the Spring and the Fall.
- World Wide Day of Play—Took place on Saturday, September 23, 2017. McKinleyville Kiwanis Club ran the info table and gave out lots of prizes and swag. It was a beautiful day of play enjoyed by lots of families and children. Approximately 75-100 people participated in games and activities throughout the day. Photos from the event are below.





OTHER UPDATES:

- Staff continues to work on collecting data to inform the Parks & Recreation Master Plan update. Community Workshops for gathering input as well as stakeholder meetings will be scheduled over the next 5 months.
- Staff Completed the Fall/Winter Newsletter and Activity Guide. It will be in the mail October 9, 2017.
- Staff have been working to create Dog Park awareness by rewarding dog park patrons for following Dog Park rules with a Caught Being Good campaign. So far 3 dog owners have been entered into a drawing for a gift certificate to A&L Feed. Other patrons have been “caught” but have declined entry into the drawing, not wanting to provide contact information to staff.

Attachments:

- Attachment 1 – RAC Meeting Notes 9-21-17

Thursday, September 21, 2017

6:30pm

Recreation Advisory Committee Meeting

NOTES

Members Present: Bill Prescott, David Coelho, Johnny Calkins, Charlie Caldwell, John Kulstad, Chad Sefcik, David Couch,

Members Absent: Jeff Dunk, Addison O'Hanen,

Guests: Rachelle Saso, Tim Watson, Dave Hooven, Dave Wilson, Kendra Belton, Patrick Green, Eric Agliolo

Meeting Notes:

Communications:

- Staff reported that as of yet no one has submitted a letter of interest for the RAC vacancies

Public Comment:

- none

McKinleyville Little League

- Rachelle Saso announced that she is stepping down from her position of League President at the end of this season. New officers will be elected at the next MLL Board meeting.
- Rachelle stated that the reason McK. Little League wishes to be proactive in planning for next year and wants to discuss what worked and didn't work under the new agreement this past year.
 - McK. Little League was not happy with the limit put on the amount of field maintenance they were allowed to do nor were they happy with the limit put on what kinds of work and contributions were eligible for credit towards field use fees.
 - Staff agreed to schedule time to meet with the Little League President and treasurer to discuss possible credits for this year based on work and materials that were provided by Little League that benefit the HSS.
 - Rachelle brought up what other local Little League Organizations are charged for field use in the county. It varies based on the ownership of the fields, but McKinleyville Little League is being charged significantly more than any other Little League in the region.
- Tim Watson & Dave Hooven spoke to the differing opinions between District Staff and MLL in terms of maintenance and field standards.
 - Staff agreed that further conversation regarding the standards for field maintenance and playability would be useful.
- Eric Agliolo asked the RAC members what they thought about Little League not paying for field use at all.
 - Johnny Calkins stated that even for the fields that are not charging Little League to use them, maintenance costs money and the money comes from somewhere.
- Staff stated that meetings to discuss field use rates and agreement will be scheduled with Little League reps and District Staff.

Hillier Dog Park Rule Awareness Strategy:

- Staff reported that several people have been "Caught Being Good". There will be a drawing at the end of the month.

Master Plan Update Process:

- Staff share the list of stakeholder groups that had been compiled and RAC members offered additional groups:
 - Youth Sport Organizations
 - Business Community
 - Senior Citizens
 - Teens/Young Adults
 - Agriculture Community
 - 4-H groups
 - Service Clubs
 - Local Artist groups
 - School Districts
- Staff discussed conducting a combination of stakeholder interviews and open community workshops concentrating on 4-6 primary input objectives which could include:
 - Identify strengths of existing Park & Recreation services and opportunities
 - Identify community expectations for Park & Recreation services and opportunities
 - Identify gaps in services and opportunities and areas for improvement
 - Identify underserved groups/regions of the community
 - Identify Parks & Recreation priorities for the next 5 years and next 10 years.

Recreation Program Updates:

- Playgroup—Serving 15-20 families each day it is offered.
- Kids Club After School Program—serving approximately 90 kids per day.
- Jr. High Dance—sold 355 tickets, 250 were sold at \$12 each, 105 sold at \$15 each. Next Dance is November 17th
- Jiu Jitsu—Current session enrollment has dipped to 8 participants.
- Tot-Letics—Current session is basketball and is serving 29 three to five year olds
- Drop in Pickleball—averaging 11 participants per day each week.
- Drop in Basketball—Averaging 18-20 participants each week.
- Youth Basketball League—We are currently accepting Registration for the 2018 Youth Basketball League. \$65 per participant. Serves youth in 3rd-12th grades. Runs January through March.
- World Wide Day of Play—Took place on Saturday, September 23, 2017. McKinleyville Kiwanis Club ran the info table and gave out lots of prizes and shwag. It was a beautiful day of play enjoyed by lots of families and children.

Review of Actions at Last MCSD Board mtg.:

- None to review

AdHoc Committee Reports:

- Hewitt Ranch—no report
- Skate Park—ROEA is moving forward. A recent request from the county Sheriff Dept. regarding the need to expand the LEF will require some shifting and redesigning of the park in order to accommodate the space needed for the LEF expansion
 - Charlie shared a letter he recently received from Senator McGuire commending his efforts for the community in getting a skate park built in McKinleyville.
- School and Washington Property—Chad Sefcik reported that it looks good
- River Property—no report
- Fischer Ranch Estuary project—nothing new to report
- BMX—Charlie indicated that a BMX track at the Washington and School Rd. property might be a project that the HSPC may consider taking on in the future.

Agenda Items for October Meeting:

- McKinleyville Little League
- Parks & Recreation Master Plan Update process
- Quimby fund review
- Rules and Regulations changes to Park Rules

Adjournment:

- Moved by J. Calkins, 2nd C. Caldwell
- Adjourned at 8:02pm

McKinleyville Community Services District

BOARD OF DIRECTORS

October 4, 2017

TYPE OF ITEM: **INFORMATION**

ITEM: F.2.D **General Manager's Report for the October 2017 Meeting**

PRESENTED BY: **Gregory Orsini, General Manager**

TYPE OF ACTION: **Information Only**

A summary of activity for the month of September 2017

Cost Savings Related to District Activities – The following is a review of some of the recent cost savings opportunities District staff identified for the previous month:

• Office Supply Savings	\$140
• Chlorine Contact Basin Repairs and Replace	\$1,040
• In house Transformer Pad and Bollard Removal for WWMF Upgrade	\$640
• Hiller Lift Station Electrical Service Upgrade	\$1,920
• Hiller Electrical Service Upgrade Savings by Using Repurposed Equipment	\$5,000
• SWAP	\$4,176
• Community Service Workers	\$736
• Northern Humboldt Employment Services	\$3,289
Total cost savings for September are \$16,941	

The cumulative cost savings for the District to date from July 1, 2017 is \$48,374

District staff are recognized and commended for their continued efforts in looking for cost savings, the use of internal labor and grant opportunities that result in real savings for the District, ratepayers, and the community.

Water and Wastewater Mainline Upgrade, Replacement and Rehabilitation Facility Plan – Staff reviewed the financial analysis and suggested modifications to better represent the capital requirements for the planning period. Following that conference, the consultants revised the analysis and represented to staff. The analysis now represents the long term planning and demonstrates the revenues necessary using multiple scenarios. The board should expect to see formal presentation in November. The presentation will allow the board to make informed decisions on the funding to replace aging infrastructure.

WWMF Improvements – A weekly meeting is attended by staff to discuss the three-week rolling schedule, submittals for materials, requests for information and progress to that point. Dredging of biosolids will be completed by the end of September, the volume of sludge is expected to meet the quantity in the original bid, no change order will be necessary for this task. With the tie in to the Chlorine Contact Basin, potable water and utility water completed, all major piping work is now finished. The biological start-up is meeting all parameters at the time of this report except for the reduction of Nitrates. Nitrates continue to trend down but are not within acceptable limits.

NPDES Permit Renewal – A scope of work was negotiated for the Title22 Engineers Report. MCSD staff will be responsible for a significant portion of the work necessary with the remainder being completed by Kennedy Jenks. The professional services agreement for the work necessary to complete this report is an action item on the October agenda.

Digital Control, SCADA and Telemetry Upgrade Project – The field work directive was accepted by the contractor and a change order was negotiated and signed by staff. The change order is to conduct a radio survey to determine the best type and frequency of radio for our application. Our weather and terrain present unique problems for the transmission of data by radio.

CSDA Chapter Planning Meeting – We are still waiting on a response from CSDA on the Humboldt Area Chapter by-laws. Our next planning meeting is scheduled for October 2nd.

Off Channel Coho Habitat Project – The bluff at the end of School Road offers a unique location for the community to visit and connect with the beauty of our northern coastal areas and historically has been utilized for river access. The Off Channel Habitat Project presented an opportunity to leverage the public access elements of the amenity including an improved ADA accessible bluff trail with informational kiosk and interpretive panels as well as overlooks and a hand-carry boat launch. The elevation of the bluff above the river and dunes offers an ideal location for a viewing platform. As the trail descends to the river level there are additional opportunities for river overlooks and the boat launch. All the features that are near the bluff and edge of the river will have to be reviewed by the County for geological stability related to the County Building Department's Geologic Hazards Areas. The overlook and boat launch features are being drafted and will be presented to the County to initiate their review. The trail design elements are expected to be able to reach final designs in early 2018. When there are designs beyond a conceptual level they will be brought to the board for review and comment.

Succession Planning – The GM, Department Heads, Managers and interested staff recently completed a survey to start the Succession Planning process. The information garnered from the survey was then coalited to assess areas to concentrate our effort in creating the plan. The plan will involve identifying and then creating procedures for critical tasks and cross training.

Law Enforcement Facility (LEF) – Staff met with LT. Miller, Humboldt County Sheriff's Department to discuss future staffing projections for the Sheriff's Department in northern Humboldt and how the LEF fits into those plans. The Sheriff's Department intends to increase the staffing that will work out of the LEF and will require increasing the square footage of the LEF. Considerations for the increased area and what an addition will look like will be part of continuing discussions. Staff will keep the board updated as developments occur.

Meetings – The General Manager attended various meetings the month of September including the CSDA Annual Conference in Monterey. The conference provides an opportunity for training on relevant matters specific to special districts and networking. Phone conference and in person work session with the consultant engaged in the Succession Plan effort. The GM also planned and attended the monthly CSDA Chapter Planning meeting in September.

Exhibits/Attachments

- Attachment 1 – WWMF Monthly Self Monitoring Report

PHYSICAL ADDRESS:

1656 SUTTER ROAD
McKINLEYVILLE, CA 95519

MAILING ADDRESS:

P.O. BOX 2037
McKINLEYVILLE, CA 95519



mckinleyvillecsd.com

MAIN OFFICE:

PHONE: (707) 839-3251
FAX: (707) 839-8456

PARKS & RECREATION OFFICE:

PHONE: (707) 839-9003
FAX: (707) 839-5964

R.W.Q.C.B. NORTH COAST REGION
5550 SKYLANE BLVD., SUITE A
SANTA ROSA, CA 95403

September 21, 2017

RE: MONTHLY MONITORING REPORT

Dear Justin:

Enclosed is the Monthly Monitoring Report for August 2017 for McKinleyville Community Services District Wastewater Management Facilities WDID NO. 1B82084OHUM, operating under Order Number WQ 2011-0008-DWQ.

The normal discharge of effluent was 31 days to Discharge Points 002, 003, 004, 005, and 006. The required monitoring and water quality constituents that were tested and reported were in compliance in August other than one exceedance on the Weekly Total Coliform.

The requirement for BOD is 45 mg/L monthly average, and 65% removal for the weekly average with four weekly tests in August that represent five criteria. The BOD results for August are in compliance.

The requirement for TSS is 83 mg/L, for the monthly average with four weekly tests in August which represent one criteria. The TSS results for August are in compliance.

The requirement for Nitrate as Nitrogen in the effluent is a monthly average of 10 mg/L. One test was conducted in August and was in compliance.

Total Coliform Organisms MPN/100 ml. The Monthly Median not to exceed MPN of 23 and the daily maximum not to exceed MPN of 230. The reported results for the month of August are as follows. Median was <1.8 and a Maximum of 540. Four samples were collected in the month of August and were in compliance other than one weekly exceedance with a result of 540. Justin was notified by Greg Orsini of the exceedance. The exceedance was due to either collection or lab error. All other samples for the month were in compliance.

Monthly River Monitoring was conducted in August.

WWMF Upgrade Status: Clarifier "A" and "B" mechanical equipment is installed and running. The headworks and maintenance building are 98% completed. Piping from Mixed liquor to Aeration basin is installed along with running wire. Aquality is establishing aeration basin #1 and #2 while dialing in the plant. The 30-day acceptance test is in process. Staff training on new equipment is in process. Grading and paving is taking place. Weekly meetings have been conducted with District staff, contractors, engineers and the project manager. Contractors have 521 days to complete the project. They will be running over on the completion date and now have projected to be completed by October 2017.

**McKINLEYVILLE COMMUNITY SERVICES DISTRICT
WASTEWATER MANAGEMENT FACILITY
EFFLUENT DISCHARGE DISPOSAL**

AUGUST 2017

Discharge				002	002	004	003	006	005			001
Monitoring	M-INF	M-001		M-003	M-003	M-005	M-004	M-007	M-006			M-002
DATE	INFLUENT	EFFLUENT	MAXIMUM	N.POND	S.POND	FISCHER	FISCHER	PIALORSI	HILLER	IRRGATE	RIVER	
	MGD	MGD	GPM	MGD	MGD	MGD	MGD	MGD	MGD	TOTAL	MGD	MGD
						UPPER	LOWER			MGD		
1	0.850	0.728	871			0.391	0.088	0.249		0.728	0.000	
2	0.860	0.770	861			0.437	0.082	0.251		0.770	0.000	
3	0.838	0.919	869			0.434	0.086	0.243	0.156	0.919	0.000	
4	0.838	0.602	1150		0.330	0.115	0.024	0.133		0.272	0.000	
5	0.838	0.593	423		0.593					0.000	0.000	
6	0.834	0.696	418		0.696					0.000	0.000	
7	0.837	0.833	897		0.213	0.390	0.096	0.134		0.620	0.000	
8	0.838	0.959	852			0.583	0.108	0.268		0.959	0.000	
9	0.816	0.963	962			0.600	0.101	0.262		0.963	0.000	
10	0.830	1.191	871			0.829	0.095	0.267		1.191	0.000	
11	0.830	0.919	1184		0.680	0.119	0.035	0.085		0.239	0.000	
12	0.830	0.777	872		0.777					0.000	0.000	
13	0.847	0.646	550		0.646					0.000	0.000	
14	0.838	0.895	1176		0.264	0.491		0.140		0.631	0.000	
15	0.858	0.748	1050			0.366	0.112	0.270		0.748	0.000	
16	0.807	0.772	937			0.283	0.104	0.265	0.120	0.772	0.000	
17	0.825	0.570	1078			0.095	0.096	0.261	0.118	0.570	0.000	
18	0.825	0.301	929		0.191	0.033	0.032	0.045		0.110	0.000	
19	0.825	0.333	244		0.333					0.000	0.000	
20	0.920	0.577	243		0.577					0.000	0.000	
21	0.774	0.881	837		0.153	0.556	0.048	0.124		0.728	0.000	
22	0.864	0.736	1137			0.498	0.098	0.140		0.736	0.000	
23	0.834	0.766	788			0.663	0.103			0.766	0.000	
24	0.859	0.766	1104			0.425	0.091	0.250		0.766	0.000	
25	0.859	0.450	780		0.235	0.113	0.054	0.048		0.215	0.000	
26	0.859	0.382	280		0.382					0.000	0.000	
27	0.854	0.380	349		0.380					0.000	0.000	
28	0.836	0.801	1070		0.801					0.000	0.000	
29	0.838	0.955	1068		0.410	0.308	0.107	0.130		0.545	0.000	
30	0.825	0.808	938			0.379	0.090	0.272	0.067	0.808	0.000	
31	0.830	0.901	942			0.388	0.111	0.268	0.134	0.901	0.000	
TOTAL	26.016	21.717		0.000	7.661	8.496	1.761	4.105	0.595	14.957	0.000	
AVERAGE	0.840	0.724	826	0.000	0.451	0.386	0.084	0.195	0.000	0.482	0.000	
MAXIMUM	0.920	1.191	1184	0.000	0.801	0.829	0.112	0.272	0.156	1.191	0.000	
MINIMUM	0.774	0.301	243	0.000	0.153	0.033	0.024	0.045	0.067	0.000	0.000	
DAYS	31	31		0	17	22	21	21	5	22	0	
DAYS WITH NO DISCHARGE = 0												

