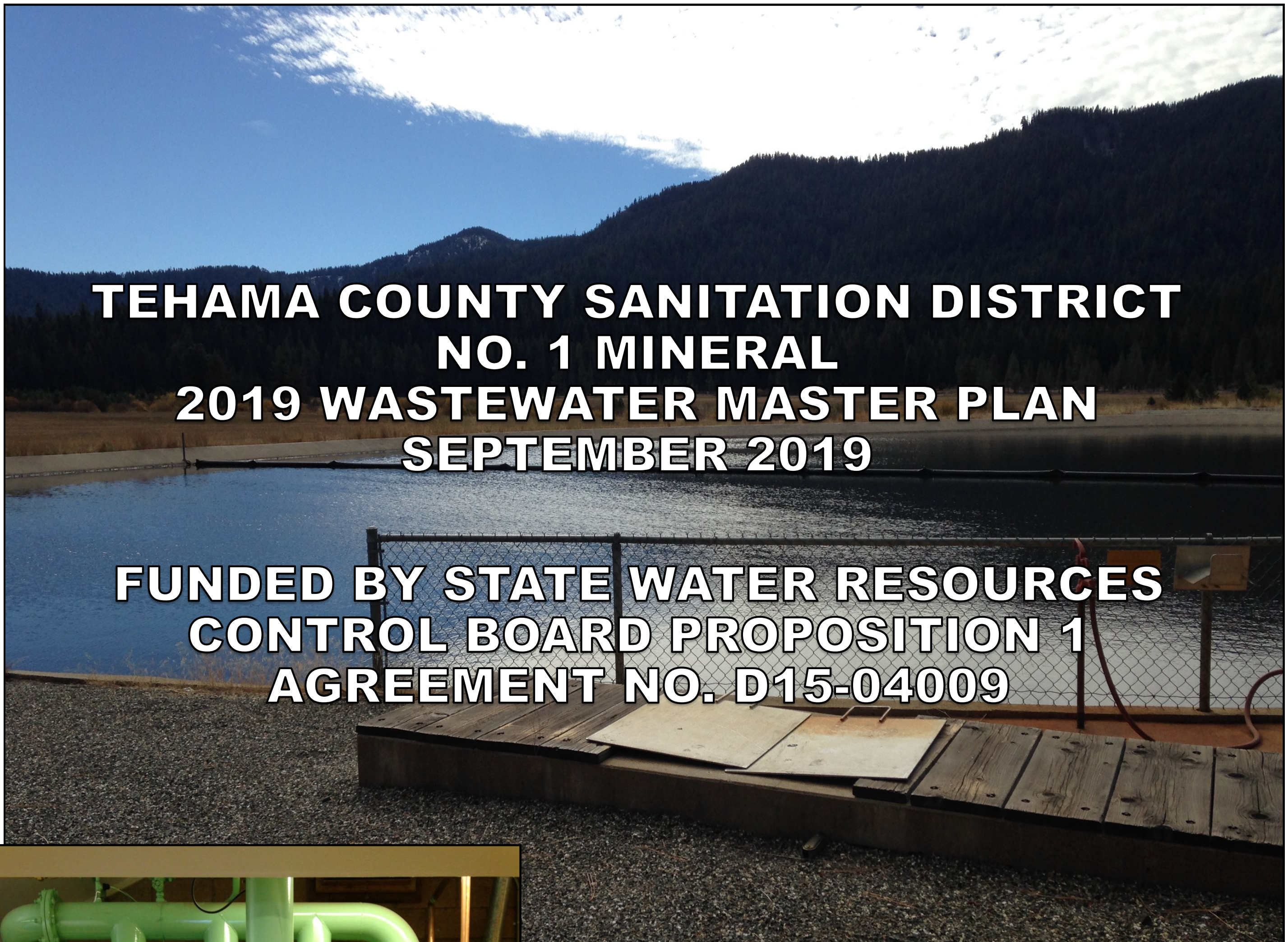

TEHAMA COUNTY SANITATION DISTRICT NO. 1 MINERAL 2019 WASTEWATER MASTER PLAN

SEPTEMBER 2019

FUNDED BY STATE WATER RESOURCES CONTROL BOARD PROPOSITION 1 AGREEMENT NO. D15-04009

PACE ENGINEERING
REDDING, CALIFORNIA

TEHAMA COUNTY CALIFORNIA

PACE ENGINEERING

September 13, 2019

288.36.200

SENT BY EMAIL AND MAIL

tmcsorley@tcpw.ca.gov

Timothy J. McSorley, Director of Public Works
Tehama County
9380 San Benito Avenue
Gerber, CA 96035

We are pleased to present the final engineering report entitled:

TEHAMA COUNTY SANITATION DISTRICT. NO 1 MINERAL
2019 WASTEWATER MASTER PLAN

This report contains the results of our investigation of the Tehama County Sanitation District No. 1 Mineral wastewater system, including collection system and wastewater treatment facilities. The report includes preliminary plans and cost estimates for major capital improvements recommended over the next 20 years. Emphasis has been placed on planning and staging of improvements necessary to correct existing deficiencies. An executive summary of the report, including our recommendations, follows the Table of Contents.

Funding for this 2019 Wastewater Master Plan has been provided in full through Agreement No. D15-04009 with the State Water Resources Control Board (SWRCB). The contents of this document do not necessarily reflect the views and policies of the SWRCB nor does mention of trade names or commercial products constitute endorsement or recommendation for use (Government Code, § 7550; 40 CFR § 31.20).

PACE Engineering is very pleased to have participated in this project. We thank your staff for their able assistance in its preparation. We are available to meet at your convenience to discuss the 2019 Wastewater Master Plan in detail and answer any questions or concerns prior to finalizing the report.

Sincerely,

Laurie McCollum, P.E.
Senior Engineer

Enclosures
c: w/enc: Ted Janowitz, WWTP Operator, tjanowitz@tcpw.ca.gov
M:\Jobs\0288\0288.36 Mineral Wastewater Collection And Treatment Improvement Project\Phase 200 Fiscal Sustainability Plan\Word\Final Cover Letter.Docx

TEHAMA COUNTY SANITATION DISTRICT NO. 1 MINERAL

2019 WASTEWATER MASTER PLAN

Funded by State Water Resources Control Board Proposition 1
Agreement No. D15-04009

9/13/19

REGISTERED PROFESSIONAL ENGINEER
LAURIE E. McCOLLUM
No. 77274
CIVIL
STATE OF CALIFORNIA

SEPTEMBER 2019

JOB NO. 288.36.200

PACE ENGINEERING
REDDING, CALIFORNIA

TEHAMA COUNTY CALIFORNIA

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ABBREVIATIONS

Certain terms and abbreviations have been used in this report for convenience as follows:

ABM	Air Blown Mortar
AC	Asbestos Cement
ACS	American Community Survey
ADWF	Average Dry Weather Flow (The average rate of wastewater flow during summer months.)
AWWA	American Water Works Association
CCTV	Closed Circuit Television
CDP	Census Designated Place
CFM	Cubic Feet per Minute
CFS	Cubic Feet per Second
CIMIS	California Irrigation Management Information System
CIP	Capital Improvement Plan
County	Tehama County
CP	Control Panel
CRWQCB	California Regional Water Quality Control Board
CWSRF	Clean Water State Revolving Fund
DCBM	Dichlorobromomethane
District	Tehama County Sanitation District No. 1 Mineral
DO	Dissolved Oxygen
DOC	Dissolved Organic Carbon
DWR	Department of Water Resources
ENR CCI	Engineering News Record Construction Cost Index
EPA	Environmental Protection Agency
GPAD	Gallons per Acre per Day
GPD	Gallons per Day
GPM	Gallons per Minute
HE	Household Equivalent
HP	Horsepower
I&I	Infiltration and Inflow
IRWM	Integrated Regional Water Management

LF	Length of Feet
MACP	Manhole Assessment and Certification Program
MCC	Motor Control Center
MCWD	Mineral County Water District
MG	Million Gallon
MGD	Million Gallons per Day
mg/L	milligram per liter
MHI	Median Household Income
MZDS	Mixing Zone Dilution Study
O&M	Operations and Maintenance
NASSCO	National Association of Sewer Service Companies
NEMA	National Electrical Manufacturers Association
NPDES	National Pollutant Discharge Elimination System
PACE	PACE Engineering, Inc.
PACP	Pipeline Assessment and Certification Program
Park Service	Lassen National Park Service Headquarters
PER	Preliminary Engineering Report
PSI	Pounds per Square Inch
PVC	Polyvinyl Chloride
PWWF	Peak Wet Weather Flow
RD	Rural Development
SF	Square Feet
SFBC	South Fork Battle Creek
ug/L	microgram per liter
UPS	Uninterruptable Power Supply
USDA RD	United States Department of Agriculture Rural Development
USGS	United States Geological Survey
WDRs	Waste Discharge Requirements
WWMP	Wastewater Master Plan
WWTP	Wastewater Treatment Plant

TEHAMA COUNTY SANITATION DISTRICT NO. 1 MINERAL
2019 WASTEWATER MASTER PLAN
SEPTEMBER 2019

EXECUTIVE SUMMARY

A. SUMMARY

Development of this 2019 Wastewater Master Plan (WWMP) consisted of an engineering analysis of the Tehama County (County) Sanitation District No. 1 (District or Mineral) wastewater collection system and wastewater treatment plant (WWTP) and what effects current and future wastewater flow conditions have on each of these components. The wastewater collection system was analyzed using the Innovyze® InfoSewer computer program for wastewater flow determination and pipeline sizing. Analysis of the collection system and WWTP was accomplished with the assistance and review of District staff.

The District service area boundary is approximately 85 acres (0.13 square miles). However, the District provides wastewater service to areas outside the District boundary, including Lassen National Park Service Headquarters (Park Service), Caltrans Maintenance Station, U.S. Forest Service Campground at Battle Creek, and an adjacent church campground.

Wastewater Collection System

The existing Mineral wastewater collection system currently consists of about 14,600 feet of 6-inch, 5,400 feet of 8-inch, and 100 feet of 10-inch collector sewer mains. The entire collection system consists of gravity pipelines, with no lift stations required to convey influent wastewater to the WWTP.

Portions of the District wastewater collection system are more than 65 years old and consist of asbestos cement pipe. The District has an extremely high peak wet weather flow (PWWF) to average dry weather flow (ADWF) ratio of 15.4 as measured during the highest inflow event. However, it is important to note it was discovered in the summer of 2019 that the influent flow meter was reading on average about 40% too high of what actual influent flows were. Future monitoring will need to verify accuracy of historic flows, which are the basis of many components of this 2019 WWMP. Historically high infiltration and inflow (I&I) indicates deficient sewers in need of replacement. However, closed circuit television (CCTV) inspection of all collection system mains completed in 2017 revealed a relatively tight system. Only about 1,300 feet of pipeline was recommended for replacement, and 10 locations were found to have a mechanical deficiency of some kind including holes, offset joints, pipe deformities, etc. Given that the majority of collection system mains are not in bad condition, CCTV of about 45% of system laterals was completed from July through September 2019.

Wastewater Treatment Plant

The Mineral WWTP has an existing design ADWF capacity of approximately 0.07 million gallons per day (MGD) and a PWWF capacity of 0.75 MGD. The July through September, 2015 through 2017, ADWF was estimated to be about 0.037 MGD, or 52% of the current permitted ADWF capacity. PWWF at the WWTP was recorded at 0.57 MGD on March 22, 2018, or 81% of the peak design capacity. Existing WWTP capacity is more than adequate to meet projected 20-year PWWF, assuming an annual growth rate of 0.3%. WWTP improvements recommended herein are due to existing defects and deficiencies rather than to accommodate growth.

B. FUTURE WASTEWATER FLOWS

A household equivalent (HE) is defined as the average dry weather wastewater flow generated from a single-family residential dwelling. At the request of the District, HEs utilized in this WWMP were determined by fixture counts from various past reports and studies, including past rate ordinances, assessment districts, work plans, and other miscellaneous correspondence between the District, PACE Engineering, Inc. (PACE), and property owners. As such, it was determined the WWTP currently serves a total of about 250 HEs.

Utilizing the summer ADWF of 0.037 MGD, together with about 250 HEs currently served by the WWTP, equates to one HE contributing about 148 gallons of wastewater per day. Given the relatively static trend in services in Mineral over the last 10 years, the District is more in a preventive repair and/or replace operations and maintenance (O&M) mode rather than one of system expansion to accommodate new development.

According to the District, growth in the last 10 years within Mineral has only consisted of the addition of six Park Service RV campsites, which results in an HE-equivalent annual growth rate of about 0.1%. On May 1, 2017, the Department of Finance released Tehama County population growth data that indicated the County had a 0.2% annual growth rate from 2010 to 2017. Additionally, the Department of Finance released County population growth projections prepared by the Demographic Research Unit in January 2018. It was projected therein that Tehama County would see an annual population growth between the 20-year period of 2017 and 2037 of about 0.6%. The Tehama County General Plan indicates Mineral will have limited growth opportunities due to limited availability of services. As such, an average annual growth rate of 0.3% was utilized herein.

At current flows, if all future connections were single-family residences, the ADWF capacity needed by year 2037 would equate to approximately 0.039 MGD, and there would be more than enough treatment capacity to accommodate planned estimated growth.

This WWMP has been developed assuming an additional annual fill-in growth rate of 0.3%. If there is no development in the future, improvements designed to accommodate growth for the next 20 years will be satisfactory for a longer period of time than indicated herein. If there is growth and development greater than that anticipated herein, improvements will reach their design capacity sooner than projected. Even a 2% annual growth rate would not result in the WWTP ADWF being met until the year 2049.

Since the District should update this 2019 WWMP within 20 years, and full build-out is not likely to occur during that time, future flow predictions for ultimate development were beyond the scope of this 2019 WWMP. If significant growth or development above and beyond that predicted herein occurs, this 2019 WWMP should be updated sooner.

Existing and future I&I allowances were calculated from analysis of historical system ADWF and PWWF WWTP flow records, as well as some I&I flow monitoring. Although every effort has been made to assign reasonable I&I allowances within the wastewater system, flow monitoring completed as part of this 2019 WWMP was done mainly to identify the Park Service I&I contribution to the WWTP, as it has been historically significant. It is recommended the District continue the flow monitoring program at various locations throughout the collection system during future wet weather flows to confirm I&I allowances applied herein are accurate.

C. ANALYSIS AND RECOMMENDED IMPROVEMENTS

After reviewing existing wastewater system deficiencies under current conditions, the wastewater collection system was analyzed under future 2037 conditions assuming a 0.3% annual growth rate. The primary improvements defined by this analysis are as follows:

1. Complete subsequent investigations of I&I and develop a comprehensive ongoing multi-stage I&I reduction program. The I&I reduction program should aggressively pursue reduction of high I&I as it is identified during monitoring. The first stage of the program would involve installation of cleanouts and further CCTV of private connections and laterals that have not yet been reviewed. The second stage would involve rehabilitation and repair. A flow monitoring program should be continued in subsequent years to provide reliable data for verification of estimated flows, as well as provide flow information needed for evaluating the level of I&I reduction that occurs as part of the ongoing I&I reduction program.

2. Parallel or replace existing sewers to relieve current or impending surcharging and possible blockages and to provide sufficient sewer capacity for existing and projected future conditions. In some areas where sewers are in bad condition on the northeast side of Mineral, as shown in the CCTV inspection, it will be necessary to replace existing sections of sewer instead of adding a parallel relief sewer.

3. Complete WWTP improvements needed, to include install of battery backup and remote monitoring; upgrade of alarm auto dialers; replacement of filter supply pumps; install a manual transfer switch; install fall protection on the aeration basin outlet structure; install percolation pond steps and railings; service or replace the motor control center; and remove aeration basin sludge.

Infiltration & Inflow Control

This 2019 WWMP determined both the Park Service and remaining collection system as a whole to have I&I greater than 30,000 gallons per acre per day (GPAD). These values increased to four times this rate when extrapolated to PWWF. While these values may be exaggerated due to a recently discovered inaccurate WWTP influent flow meter, they still require attention. An I&I rate in excess of 2,500 GPAD is considered high and indicates sewers that have defects. It is important to note the Park Service completed an improvement project over the summer of 2019 that reportedly replaced all water and wastewater mains. As such, future Park Service flow contributions are expected to be much lower than they have historically been. However, it is still recommended future subsequent investigation of I&I be completed and a phased comprehensive I&I reduction program be implemented. Phase 1 of this reduction program should include requiring installation of cleanouts where needed to enable continued CCTV inspection of private laterals and additional flow monitoring during PWWFs. The following repair and rehabilitation stage would correct collection system defects identified in Phase 1 that are contributing I&I into the system. The repair and rehabilitation stage would involve such things as grout sealing, lining, and replacement of leaking sewers, laterals, and manhole repair or replacement.

Sewer System Improvements

Analysis of the existing sewer system indicated that approximately 2,800 feet of 8-inch pipelines along Highway 36 are currently beyond capacity given the significant I&I flow measured. However, CCTV inspection of the collection system revealed these pipelines to be in good condition. Therefore, it is recommended these pipelines be paralleled. CCTV inspection also revealed a few pipelines on the northeast side of Mineral to be in poor condition with multiple offset joints, cracks, and holes. Specific pipelines recommended for improvement herein are of inadequate size and/or slope to handle current flows. These pipelines are shown on Figure ES-1.

It is recommended the District construct relief sewers and/or replace existing deficient sewers at locations shown on Figure ES-1 as bold red lines between circled numbered points to eliminate potential bottlenecks during current and future flows. As shown therein, all improvements are needed at current PWWF. In addition to pipelines at capacity, it is recommended aging sewer mains, shown by CCTV to be in bad condition, be replaced.

Approximately 63 laterals (71% of those identified) were found to have deficiencies that could contribute to system infiltration and, as such, are recommended to be repaired, replaced, or further investigated. This ranges from large collapses and significant roots to cleanouts below grade or sags. Note that only 89 of the 197 service connections (45%) were inspected. Remaining laterals either could not be located, do not have a cleanout to allow for CCTV of the lateral, or had not yet been investigated at the time of this report. It is recommended cleanouts be installed at all property lines if they are not already and either leakage testing be completed to verify flows are within maximum allowances or CCTV be completed after cleanout installation to determine if the lateral has deficiencies. Letters should be sent to property owners requiring additional attention of those building sewers with noted deficiencies.

Wastewater Treatment Plant

WWTP design criteria outlines the process units and loading under the original 1996 design, existing 2017 flow conditions, and future 2037 flows. Future 2037 design criteria were determined to meet anticipated 20-year PWWF conditions assuming a 0.3% growth rate.

Only minor miscellaneous WWTP upgrades are recommended herein primarily for maintenance or safety reasons. Due to seasonal inadequate groundwater separation at the WWTP ponds, the California Regional Water Quality Control Board (CRWQCB) is concerned about groundwater contamination due to connectivity. However, they have indicated continued non-detect fecal coliform sampling will likely preclude a compliance schedule at this time. If the CRWQCB requires improvements to address this issue sooner rather than later, costs and recommendations herein will need to be updated at that time, as they are not currently included.

WWTP processes will not require any expansion if a 0.3% annual growth rate occurs in the next 20 years. This 2019 WWMP should be updated if significant growth beyond this occurs.

Master Plan Key Elements and Costs

A summary of costs and recommended staging of collection system and WWTP improvements is shown in Table ES-1. As shown therein, the total cost for all sewer system general improvements (i.e., upgrading existing collection system and WWTP improvements) is approximately $1,817,000, of which about $489,000 is recommended for the next five years. The 2019 WWMP improvements needed to correct existing sewer system deficiencies and to provide anticipated future capacity for 20-year development shown on Table ES-1 and Figure ES-1 are in essence the 2019 WWMP. These are labeled as Table 10 and Plate 2 in the 2019 WWMP report.

Sewer improvements recommended in this WWMP and associated proposed construction periods are based on a computer model developed for the sewer collection system and observed sewer deficiencies. As indicated hereinbefore, I&I rates used in this model are based on inaccurate historical flow records and minimal PWWF monitoring. Consequently, it is recommended the District continue to pursue wet weather I&I monitoring. Future improvement design processes should include additional wet weather studies to confirm I&I rates. Since the computer model only flags sewers that are inadequately sized by normal standards with moderate surcharge considered, it is quite possible that some of the proposed sewer construction can be postponed by allowing greater surcharges to occur. Such sewers require more constant monitoring during wet weather periods. Also, it is possible that confirming flow measurements during very wet weather periods will show some of the sewers flagged for construction to be unnecessary, i.e., if I&I rates are actually lower than assumed or can be reduced by rehabilitation or replacement of existing sewers. Potential postponement of some relief sewer construction and elimination of others will likely be offset by other unforeseen replacement projects; therefore, construction costs in the long-term will likely be similar to the expenditure forecast.

Estimates of Costs

A detailed cost breakdown of the recommended immediate, near-term, intermediate, and long-term improvements is shown in Table ES-1. Additional improvements involving wastewater treatment and disposal may be required to meet future, yet to be determined, regulatory requirements at the WWTP.

Projected improvement costs for the 2019 WWMP are as follows:

Time Period	General Collection System Improvements	WWTP Improvements	Total
2019 - 2022 Immediate Term	$329,000	$160,000	$489,000
2023 - 2027 Near-Term	$144,000	$160,000	$304,000
2028 - 2032 Intermediate Term	$832,000	$0	$832,000
2033 - 2037 Long-Term	$32,000	$160,000	$192,000
TOTAL	**$1,337,000**	**$480,000**	**$1,817,000**

Costs include a 30% adder for construction contingencies and another 30% adder for indirect costs including planning and engineering. Figures are based on September 2019 dollars and do not include any allowance for inflation or financing costs.

Financial Considerations

The District does not currently have a capacity charge. A capacity charge for customers should be based upon the size of service requested by the customer and approved by the District. As part of this plan, a determination was made of an appropriate capacity charge based on past actual costs spent for general improvements updated to September 2019 dollars. The computed fee is $11,200 as shown in Table ES-1. It is also recommended this fee be adjusted annually by the increase in the Engineering News Record Construction Cost Index (ENR CCI), which currently stands at 11,311 for September 2019.

PACE is completing a Wastewater Rate Study for the District subsequent to this 2019 WWMP as a separate document. Refer to the Rate Study for further details on recommended wastewater rates over the next five years to fund improvements recommended herein, in addition to system O&M and other budgetary components.

It is recommended the District review this 2019 WWMP report carefully, and, if in agreement, it be adopted as the Tehama County Sanitation District No. 1 Mineral 2019 Wastewater Master Plan, with any corrections or supplements as may be applicable.

TABLE ES-1

Tehama County Sanitation District No. 1 Mineral

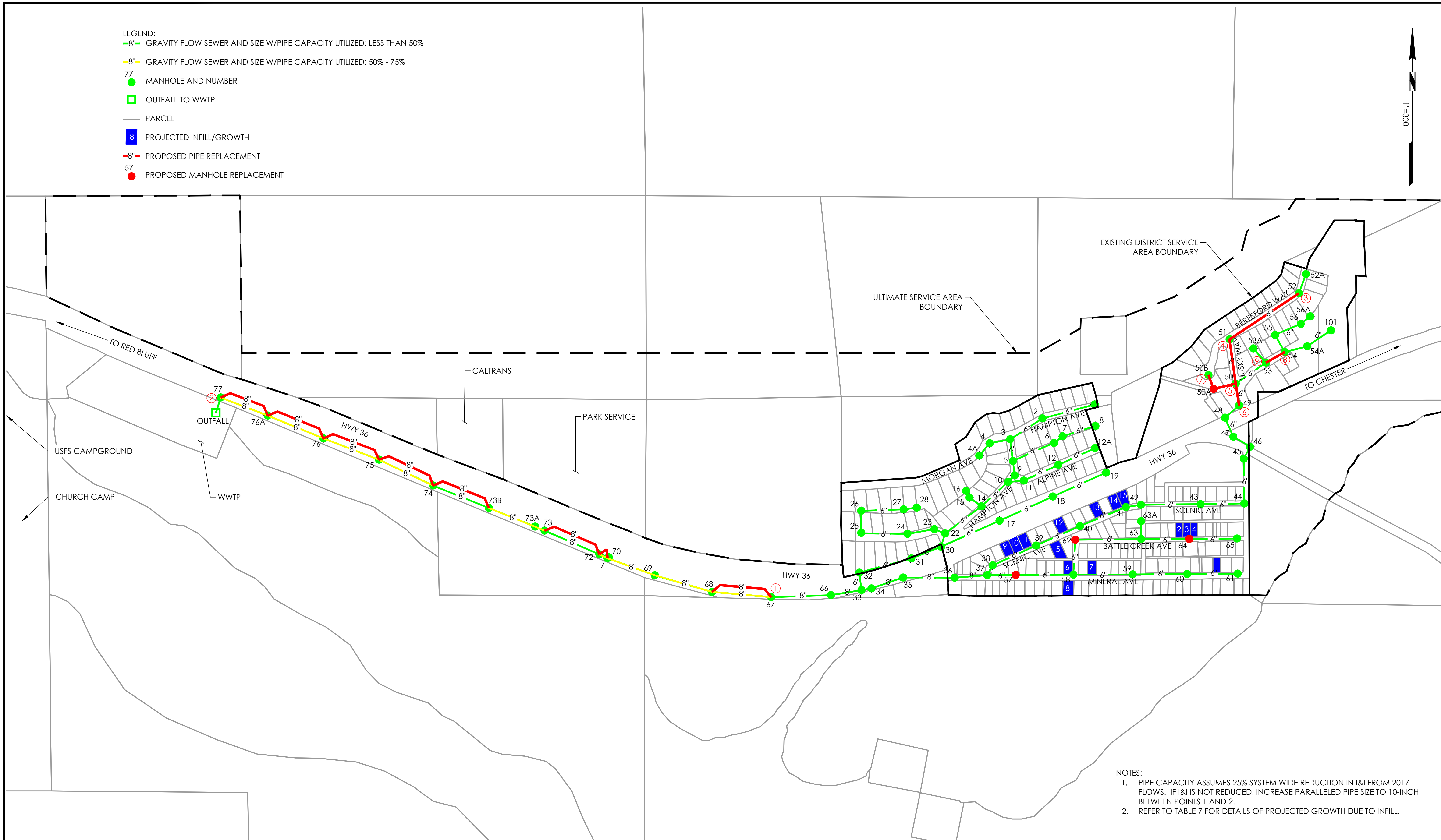
2019 Wastewater Master Plan

RECOMMENDED IMPROVEMENTS & CAPACITY CHARGE BASIS [1]

Item No.	DESCRIPTION	ESTIMATED COST [2] Immediate Term (2019-2022)	Near-Term (2023-2027)	Intermediate Term (2028-2032)	Long-Term (2033-2037)	% Attributed to Growth	Cost Attributed to Growth
GENERAL COLLECTION SYSTEM IMPROVEMENTS							
1	Replace 485' of 6" Beresford Sewer with 6" (Pts. 3 to 4)	$75,000				0%	$0
2	Replace 450' of 6" Husky Sewer with 6" (Pts. 4 to 6)	$70,000				0%	$0
3	Replace 250' of 6" Easement Sewer with 6" (Pts. 7 to 5)	$40,000				0%	$0
4	Replace 150' of 6" Amanda Sewer with 6" (Pts. 8 to 9)		$30,000			0%	$0
5	Replace 4 Aging Manholes		$40,000			0%	$0
6	Parallel 2,800' of 8" HWY 36 Sewer with 8" (Pts. 1 to 2) [3]			$500,000		0%	$0
7	I&I Flow Monitoring	$20,000	$20,000	$20,000	$20,000	0%	$0
	GENERAL COLLECTION SYSTEM IMPROVEMENTS SUBTOTAL:	**$205,000**	**$90,000**	**$520,000**	**$20,000**		**$0**
	Planning, Engineering, and Other Indirect Costs (30%):	$62,000	$27,000	$156,000	$6,000		$0
	Construction Contingency (30%):	$62,000	$27,000	$156,000	$6,000		$0
	TOTAL ESTIMATED COLLECTION SYSTEM PROJECT COSTS:	**$329,000**	**$144,000**	**$832,000**	**$32,000**		**$0**
WWTP IMPROVEMENTS							
8	UPS and Remote Monitoring	$10,000				0%	$0
9	Alarm Auto Dialer Upgrades	$15,000				0%	$0
10	Replace Filter Supply Pumps	$30,000				0%	$0
11	Manual Transfer Switch	$15,000				0%	$0
12	Fall Prevention System for Aeration Basin Outlet Structure	$10,000				0%	$0
13	Percolation Pond Steps and Railing	$20,000				0%	$0
14	MCC		$100,000			0%	$0
15	Aeration Basin Sludge Removal				$100,000	0%	$0
	WWTP IMPROVEMENTS SUBTOTAL:	**$100,000**	**$100,000**	**$0**	**$100,000**		**$0**
	Planning, Engineering, and Other Indirect Costs (30%):	$30,000	$30,000	$0	$30,000		$0
	Construction Contingency (30%):	$30,000	$30,000	$0	$30,000		$0
	TOTAL ESTIMATED WWTP PROJECT COSTS:	**$160,000**	**$160,000**	**$0**	**$160,000**		**$0**
	TOTAL ESTIMATED PROJECT COSTS:	**$489,000**	**$304,000**	**$832,000**	**$192,000**		**$0**
	Cumulative Project Costs:	$489,000	$793,000	$1,625,000	$1,817,000		
				Total Cumulative Project Costs w/o Growth Components:	$1,817,000		
				Average Yearly Cost for 20 Years:	$90,850		
				Number of Existing HEs:	250		
				Average Yearly Cost per HE:	**$363.40**		
						Additional HEs Over Next 20 Years:	15
						Additional Future Capacity Charge per HE:	$0.00
						Recommended Capacity Charge:	$11,200
						Total Future Recommended Capacity Charge:	**$11,200**

Notes:

1. Based on a 0.3% annual growth rate.
2. All costs in September 2019 dollars at an ENR index of 11311.
3. Will need to parallel with 10-inch if 25% I&I reduction not completed first.



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PACE ENGINEERING
REDDING, CALIFORNIA

SIGNED

DES NH	CKD LM	JOB NO.
DRN NH	DATE 09/05/19	288.36

TEHAMA COUNTY SANITATION DISTRICT NO.1 MINERAL
2019 WASTEWATER MASTER PLAN

FUTURE 2037 GROWTH, PIPE CAPACITY, AND RECOMMENDED IMPROVEMENTS

FIGURE
ES-1

TEHAMA COUNTY SANITATION DISTRICT NO. 1 MINERAL
2019 WASTEWATER MASTER PLAN
SEPTEMBER 2019

I. INTRODUCTION

A. HISTORY

Tehama County Sanitation District No 1. (District) is owned and operated by Tehama County (County) Department of Public Works. The District provides sewer service to the rural unincorporated community of Mineral, located approximately 40 miles to the northeast of Red Bluff, adjacent to Lassen Volcanic National Park. The District's current service area boundary consists of approximately 85 acres (0.13 square miles). However, the District's ultimate service area boundary, mentioned in the 1965 Feasibility Report completed by Clair A. Hill and Associates, is approximately 280 acres (0.4 square miles) and includes areas outside the District's boundary, including Lassen Volcanic National Park Service Headquarters (Park Service) and the Caltrans Maintenance Station. However, the U.S. Forest Service Campground at Battle Creek and adjacent church campground were not included in the ultimate boundary. See Figure 1.

Mineral is located in a rural setting surrounded by forest land. The Tehama County General Plan indicates the unincorporated community falls under the East County Planning Area, which is "typically characterized by large tracts of public land, land under timber preserve contracts, and large holdings utilized primarily for grazing." As such, there is limited availability of services and limited growth opportunities. Due to harsh winters and limited services, Mineral has many dwellings that are only occupied six months out of the year. As such, population counts for the community are difficult to estimate.

The District was originally formed in 1955; however, construction of the original wastewater collection system was completed circa 1920, while a new outfall and stabilization ponds were constructed in 1967. The two Mineral Wastewater Treatment Plant (WWTP) 2.5-acre stabilization ponds were originally designed on the basis that a direct discharge to South Fork Battle Creek (SFBC) was acceptable. In 1977, the

California Regional Water Quality Control Board (CRWQCB) adopted Waste Discharge Requirements (WDRs) Order No. 77-280 that prohibited direct discharge of raw sewage or stabilization pond effluent to surface waters or surface water drainage courses.

Due to excessive infiltration and inflow (I&I) in November and December of 1981, full stabilization ponds required pond effluent discharge directly into SFBC. As such, the District retained PACE Engineering, Inc. (PACE) to perform a sewer system evaluation survey in which PACE recommended a project to reduce I&I within the District. In 1986, the Sewer Rehabilitation/Replacement Project was completed, which, with the combination of project completion and drought years, lowered flows to the stabilization ponds. However, heavy rain and snowfall in March 1993 caused Stabilization Pond 2 to fill once again, and discharge into SFBC was required. PACE completed an addendum to the 1989 Preliminary Engineering Report (PER) for the Meadowview Area Sewer Project in June 1993, which recommended a project to further reduce I&I as well as to expand the stabilization pond system. In 1996, the Sewer Improvement Project was completed, which replaced about 9,220 feet of pipelines; 2,550 feet of laterals; and 37 manholes, which contributed the most I&I to the system. The project also included upgrades to the WWTP and added the Meadowview Area to the collection system. As a result of that project, the WWTP now includes a headworks with bar screen and Parshall flume, aerated lagoon, two evaporation/percolation ponds, pressure filter, chlorination and de-chlorination facilities, and a new outfall into SFBC.

Photo 1 – Mineral WWTP

The 1996 design criteria estimated a WWTP capacity of 350 household equivalents (HEs), or an average dry weather flow (ADWF) of 0.07 million gallons per day (MGD), (49 gallons per minute (GPM)). This equates to 200 gallons per day (GPD) per HE. The 1996 design peak wet weather flow (PWWF) was estimated at 0.75 MGD (520 GPM), for an estimated PWWF to ADWF ratio of about 10.7. Based on July through September, 2015 through 2017, summer WWTP influent flows, the ADWF is approximately 0.037 MGD (25.7 GPM). Flow charts reflected an instantaneous peak of 0.713 MGD (495 GPM) on March 22, 2018, which resulted in a daily PWWF of 0.57 MGD. The maximum recorded PWWF to ADWF ratio of 15.4 is extremely high compared to similar communities where typical ratios range from 3 to 6. However, given the WWTP design PWWF to ADWF ratio of 10.7, the District has had excessive I&I in the system for more than 20 years.

In April 2017, the District had 197 service connections, which equates to about 250 HEs. HEs were assigned based on Sewer Ordinance No. 1911 and previous assessment district reports completed by PACE in 1984 and 1996. An ADWF of 0.037 MGD and 250 HEs results in a current 148 GPD per HE.

B. PREVIOUS STUDIES

Some key previous studies referenced in this 2019 Wastewater Master Plan (WWMP) include:

- Feasibility Report on Tehama County Sanitation District No. 1 Mineral, California, Clair A. Hill and Associates, August 1965.
- Engineering Report for the Tehama County Sanitation District No. 1, Sewer System Infiltration/Inflow Analysis, PACE Engineering, Inc., June 1982.
- Engineering Report for the Tehama County Sanitation District No.1, Sewer System Evaluation Survey, PACE Engineering, Inc., August 1983.
- Project Report for the Tehama County Sanitation District No. 1, Sewer Rehabilitation/Replacement Project, PACE Engineering, Inc., January 1984.
- Preliminary Engineering Report for the Tehama County Sanitation District No. 1, Meadowview Area Sewer Project, November 1989 Report and July 1993 Addendum, PACE Engineering, Inc., July 1993.

- Operations and Maintenance Manual for Mineral Sewage Treatment Facility, PACE Engineering, Inc., January 1997.
- Tehama County General Plan Update 2009-2029, PMC, March 2009.

C. NEED AND SCOPE OF CURRENT STUDY

Portions of the District wastewater collection system are more than 65 years old and consist of asbestos cement (AC) pipe. The system also has an excessive amount of I&I, which has impacted capacity of sewer mains and the WWTP. Flows from 2015 through 2017 indicate the WWTP is currently operating at an ADWF of 0.037 MGD, or about 52% of permitted ADWF capacity. A PWWF of 0.57 MGD was recorded on March 22, 2018, which is approximately 81% of permitted PWWF capacity. An original sewer master plan does not exist for the District. As such, the District desired to develop a comprehensive master plan to identify current and future recommended improvements. A wastewater rate study will follow development of the master plan to ensure wastewater rates can pay for recommended improvements.

In 2016, the District authorized PACE to work jointly with District staff to prepare a master plan. The emphasis of this planning effort was to review and analyze the existing wastewater collection and treatment systems and develop a computer model that could be used to determine the need for future improvements. Projection of future peak wet weather wastewater flows was made and a master plan of improvements was developed to meet wastewater collection, treatment, and disposal needs at current and future flows.

This study, referred to as the Tehama County Sanitation District No. 1 Mineral 2019 WWMP, relies in large part on previous studies completed and information provided by District staff. Much of the records search, pipeline inventory and review, and data gathering was provided by District staff, so we are indebted to their service in making this a useful WWMP.
Data gathered and evaluated included the following:

- Determination of historical and future wastewater flows
- Development of a collection system computer model

- CCTV inspection results of mains, manholes, and laterals
- Evaluation of the existing collection, treatment, and disposal system
- Development of a staged 20-year plan of improvements
- Estimation of the current cost of proposed improvements

Funding for this WWMP was made possible through State Water Resources Control Board Proposition 1 Project No. C-06-8140-110, Agreement No. D15-04009.

II. SEWER SYSTEM REVIEW

A plan of the District's existing wastewater system and pipe capacities is shown on Plate 1. Tables, figures, and plates are located at the end of the text.

A. WASTEWATER COLLECTION SYSTEM

The original Mineral residential collection system was constructed circa 1920s. Portions of the collection system were replaced between 1952 and 1981. In 1982, the District retained PACE to make a field review of the collection system, analyze flow monitoring data collected, and prepare recommendations. The findings of this initial study were documented in the Sewer System Infiltration/Inflow Analysis report, dated June 1982. As a result of the above-mentioned report, the District authorized PACE to conduct a more comprehensive investigation of the sewer system to locate sources of I&I and prepare the subsequent Sewer System Evaluation Survey, dated August 1983. In 1986, as part of the Sewer Rehabilitation/Replacement Project, the District replaced approximately 3,000 feet of the remaining vitrified clay sewer pipe installed circa 1920 with approximately 4,200 feet of new 6-inch polyvinyl chloride (PVC) sewer pipe. The project also included rehabilitation of the remaining AC and PVC sewer that was installed between 1952 and 1981.

In November 1989, PACE completed the PER for the Meadowview Area Sewer Project; however, due to lack of funding, the proposed project was never completed. In July 1993, as a result of the District receiving a violation for direct discharge of stabilization pond effluent into SFBC, PACE completed an addendum to the November 1989 PER for the Meadowview Area Project that recommended the District also replace sewer sections that contributed the most I&I. Therefore, as part of the 1996 Meadowview Area Sewer Project, the District not only installed the 6-inch PVC sewer collection system in the Meadowview Area but also replaced portions of sewer in Scenic Avenue, the west end of Mineral Avenue, and Amanda Way with 6-inch PVC sewer pipe.

The Mineral collection system currently consists of approximately 14,600 feet of 6-inch, 5,400 feet of 8-inch, and 100 feet of 10-inch collector sewer mains. Approximately 70% of the collection system consists of PVC pipelines, while the remainder is mostly AC pipe. The entire collection system consists of gravity pipelines with no lift stations required to convey influent wastewater to the WWTP.

B. WASTEWATER TREATMENT PLANT

The District's original extended stabilization ponds were constructed in 1967. In 1996, as a result of the District receiving a violation for direct discharge of stabilization pond effluent directly into SFBC and growth within the District, the WWTP was upgraded to include a headworks with bar screen and flow measurement, aerated lagoon, two evaporation/percolation ponds, pressure filter, chlorine disinfection, de-chlorination, and a new outfall into SFBC.

Current CRWQCB WDRs Order No. R5-2015-0073 (NPDES No. CA0084069) for the WWTP indicates a maximum permitted ADWF of 0.07 MGD and PWWF of 0.75 MGD can be discharged seasonally to SFBC between November 15 and April 15 of each year as long as the flow in SFBC is at least 35 cubic feet per second (CFS) (22.6 MGD). Refer to Appendix A for current WDRs. This ensures a minimum 30 to 1 dilution of receiving water to effluent flow at all times. During the remainder of the year, effluent is discharged to the evaporation/percolation ponds. In recent years, however, the District has not had to discharge to SFBC as I&I has been decreased due to drought conditions and collection system improvements. Discharge to SFBC has reportedly only occurred one time since 2002 and that was in December 2005.

Prior to 2018, SFBC flow measurements were based on the depth of flow above and below the top of the concrete ford immediately downstream of the point of discharge.

Photo 2 – USGS Staff Gage

However, as requested by the County, on January 8, 2018, United States Geological Survey (USGS) staff installed a staff gage on the downstream right bank of the creek at the Highway 36 crossing. USGS staff took subsequent measurements between installation and April 12, 2018. Results are shown in Table 1. USGS also provided a provisional rating curve from the seven discharge measurements as shown in Figure 2.

Additionally, the County installed a second staff gage just downstream of the concrete ford on July 17, 2018. This will allow correlation between USGS staff gage readings and flows measured at the WWTP concrete ford, which is more easily accessible from the WWTP. Future verification of SFBC flows prior to effluent discharge will ensure a minimum 35 CFS always occurs as required in current WDRs. This results in a minimum receiving water to effluent flow ratio of 30:1. Refer to Table 14 for staff gage measurements taken by the District to date.

Headworks

Raw sewage enters the headworks from the gravity collection system through a 10-inch sewer main. Under normal conditions, influent flows through the 2-foot-wide bar screen, through the Parshall flume, to the aeration basin. The bar screen is cleaned weekly. Approximately two pounds of screened material is collected, washed, and deposited in a plastic-lined garbage can monthly for eventual disposal at the Tehama County Landfill in Red Bluff, California. During high flows, or if the bar screen becomes plugged, sewage will automatically overflow and pass through the auxiliary bar screen. When this happens, flow is diverted to Pond 1 following the headworks.

Photo 3 – WWTP Headworks

Parshall Flume

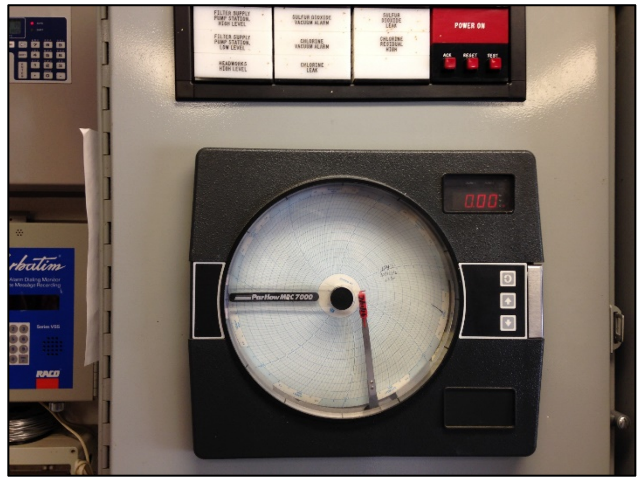

Photo 4 – Influent Chart Recorder

WWTP influent flow is measured and recorded via an ultrasonic level transducer, which measures water level in the upstream portion of the Parshall flume. The influent meter was recently replaced in June 2019 after it was discovered to be reading an average of about 40% higher than actual influent flows. A 4-20 mA signal is transmitted to the Operations Building where, prior to August 2019, a seven-day circular chart recorder kept a continuous record and totalized influent flows. Plant flows were historically read once a week and reported as a seven-day average for the daily flow. In August 2019, the chart recorder was replaced with a continuous paperless recorder to identify influent flow trends more accurately.

Photo 5 – Aeration Basin

Aeration Basin

The aeration basin is clay-lined with air blown mortar (ABM) slope protection at the normal water level depth of 11.5 feet. The 1.52 million-gallon (MG) basin is divided into two equally sized cells by a vinyl-coated polyester baffle curtain. The hydraulic detention time in each cell at design ADWF is approximately 10 days.

Under normal flow conditions, flow enters at the bottom of Aeration Cell No. 1 from the headworks and is discharged from Aeration Cell No. 2 through the outlet structure. Effluent from Aeration Cell No. 2 can be discharged to either Pond 1 or Pond 2.

Aeration Cell No. 1 is equipped with nine submerged tube aerators. Aeration Cell No. 2 is equipped with three submerged tube aerators. Two 10-horsepower (HP) aeration blowers located in the Operations Building, one primary and one backup, supply air to the submerged tube aerators. Each 10 HP aeration blower is designed to provide about 150 cubic feet per minute (CFM) of air to the 12 submerged tube aerators, which equates to an output of about 12 CFM per aerator. 24-hour cycle timers with 15-minute multiple intervals program aeration blower run times to maintain the desired level of dissolved oxygen (DO) in the aeration cells with the least amount of power consumption.

A constant liquid level is maintained in the basin by the fixed outlet structure. A scum baffle prevents excessive scum carryover into the effluent ponds; however, scum has never been observed in the basin.

Per the WWTP Sludge Disposal Plan completed in 2016, the aeration basin was last sludge judged in 2015 and found to have an average of 1.9 feet of accumulated sludge at an estimated 10% solids. This equates to about 65 dry tons of sludge that will eventually need to be dredged, dewatered, sampled, and hauled to the landfill.

Evaporation/Percolation Ponds

Two 2.5-acre evaporation and percolation ponds are provided to receive effluent from the aeration basin. The ponds serve as settling basins for solids from the aeration process, as effluent disposal through evaporation and percolation, and as regulating storage for filtered discharge to SFBC. At least 2 feet of freeboard is maintained in both ponds at all times. Pond 1 will overflow into Pond 2 at the 2-foot freeboard level. In recent years, operations have been to send effluent from the aeration basin into Pond 2 as it has a faster percolation rate than Pond 1. As Pond 2 begins to get full, effluent is diverted to Pond 1. Both ponds have been dried in the past, but the bottoms have never been cleaned. As indicated in the Sludge Disposal Plan, it is estimated that both ponds have less than six inches of sludge buildup based on the bottom readings of the pond staff gages over the years.

Photo 6 – Evaporation/Percolation Pond 1

Per WDRs, treated effluent is disposed of via evaporation and percolation or stored in Ponds 1 and 2 from April 16 to November 14. No discharge to SFBC is allowed during this time. During seasonal discharge to SFBC, withdrawal from each pond is controlled by valves on the suction piping at the Filter Supply Pump Station.

Filter Supply Pump Station

The Filter Supply Pump Station is located on the dike between Ponds 1 and 2. It consists of a 6-foot-diameter pump wet well containing two 4-inch non-clog submersible pumps. The pump station includes one intake from Pond 1 and two intakes from Pond 2 at different elevations. Each 10 HP Flygt (now Xylem) pump is rated at 400 GPM (0.576 MGD) at a total dynamic head of 52 feet. The pumps are reportedly more than 20 years old and have never been pulled for maintenance. Normally, only one pump is required during filtration and both pumps are required during filter backwash. When PWWF is greater than 0.576 MGD, WDRs indicate that as long as the filter is utilized to the maximum extent practicable, additional flow that bypasses the filter will not be considered a violation.

Photo 7 – Filter Supply Pump Station

Pressure Filter

Pond effluent is pumped to the four-cell, horizontal, 8-foot-diameter pressure filter via the Filter Supply Pump Station. These facilities are operated during the allowable discharge period to control the volume of effluent in the effluent ponds and to prevent uncontrolled discharges to SFBC. Operation of the filtration system is activated by pushing the start button on the Filter Control Panel in the Filter Room. The maximum filter rate is controlled by manually throttling the effluent rate control valve.

Photo 8 – Pressure Filter

The filter surface area is 192 SF, for a maximum loading rate of 2.0 GPM/SF. The filter is comprised of anthracite, filter sand, and multiple gravel sizes. The filter rate decreases from the maximum as the headloss builds up across the filter and as the pond level decreases. If/when discharge is required more frequently, the minimum filter rate will be determined by experience and will be limited by how much throttling is practical across the effluent valve.

The filter is designed for a maximum of 15 feet of headloss across the bed prior to backwashing. The higher the headloss, the more difficult the backwash and the more backwash water required. Experience will better determine what the terminal headloss before backwash will be to produce the longest filter run with the least amount of backwash water recycle and backwash difficulty. Based on experience at other filter systems, backwash is typically triggered at a filter headloss of about 12 feet.

Headloss across the filter is indicated on the indicator dial at the filter control panel. The filters can be set to automatically backwash at any preset headloss, or the backwash cycle can be initiated manually. It is recommended the filters normally be backwashed while the operator is on duty, so it can be verified the backwash sequence was completed properly. Normally, backwash is accomplished while the operator is on duty to minimize difficulties if a controller or automatic valve should malfunction.

The length of service cycle prior to backwash depends on the quality of pond effluent. The higher the quality of the effluent, the fewer suspended solids to be removed by the filter. Normally, the filter should be backwashed after about 24 hours in service. Chlorine should be added to the filter supply pipeline to limit biological growth in the filter and minimize clogging of the filter media.

Whether the backwash cycle is initiated automatically by differential headloss or initiated manually, the sequence is the same. Each of the four cells within the filter is sequentially backwashed with effluent from the remaining three filter cells for a preset time period, typically around 8 minutes per cell.

The surface wash valve and inlet backwash valves for the remaining three cells automatically open and close until all four filter cells are backwashed in sequence. The surface wash pump remains on and the filter effluent valve remains closed until all four cells have been backwashed. When the backwash cycle is completed, the surface wash pump turns off and the filter effluent valve opens. Backwash water is discharged to Pond 1.

The filter backwash rate is indicated on the flow rate indicator mounted on the backwash header. A maximum filter backwash rate of 15 GPM/SF/cell equates to a 720 GPM maximum backwash rate. A desirable backwash rate is the minimum rate to adequately clean the bed in a reasonable time period. A backwash rate of 12 GPM/SF is typical, which would equate to a flow rate of 580 GPM. The proper backwash rate should be worked up to gradually so as not to wash the media out of the bed.

Only one 80 GPM surface wash pump is installed and has never been replaced, although it is rarely used. If the surface wash pump should fail, it is better to backwash the filter without the surface wash rather than not at all. Although surface wash is desired, the filter can operate for a period of days without surface wash. A 6-inch Water Specialties propeller meter is provided in the filter effluent piping to measure the quantity of water pumped through the filter and into SFBC. Filter media was last inspected in April 2013 and was found to be in good condition.

Chlorination

Chlorination equipment is installed in the Operations Building. All gas chlorine and sulfur dioxide equipment was removed in June 2013 in favor of liquid sodium hypochlorite and sodium bisulfite for safety reasons.

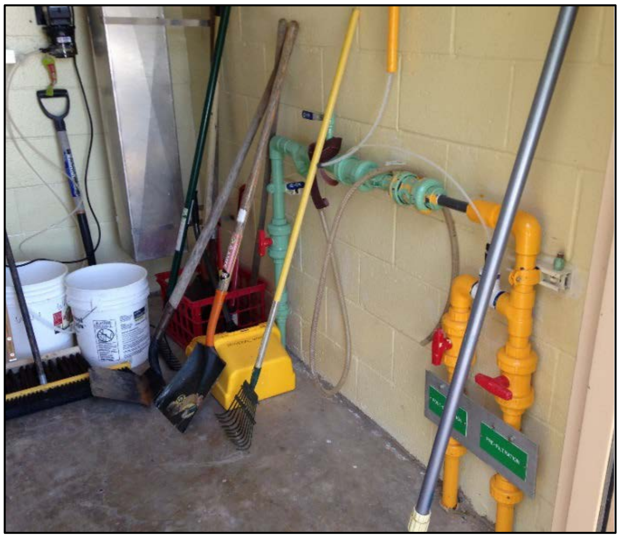

Photo 9 – Chlorination Piping

Chlorine injection points are located on filter influent piping for disinfection and to reduce excessive biological growth buildup inside the filter, as well as on the filter effluent standpipe in front of the chlorine contact pipeline for disinfection. The filter effluent is normally chlorinated at the filter standpipe just prior to being discharged to the 420-foot-long, 27-inch chlorine contact pipeline. Approximately 30 minutes of contact time is provided at 400 GPM to disinfect the effluent prior to dechlorination and discharge to SFBC. A chlorine dose of between 10 mg/L and 15 mg/L is typically sufficient to result in a residual of 2 mg/L to 3 mg/L.

Dechlorination

Photo 10 – Dechlorination Box

Filtered effluent is dechlorinated after the chlorine contact pipe prior to effluent entering SFBC. Originally, the system was equipped with one 150-pound sulfur dioxide cylinder and sulfonator located in the sulfur dioxide room. A residual analyzer can still provide continuous chlorine residual monitoring and is located in the office. A Myers 1½ HP submersible feed water centrifugal pump and dechlorinated water sample pump are both located in the dechlorination box at the end of the chlorine contact pipeline. The feed water pump must be running for at least five minutes prior to initiating the filtration system to avoid a high chlorine residual alarm.

“Potable” Water System

Photo 11 – Hydropneumatic Tank

Water is supplied from a 247-foot-deep, on-site well with a 6-inch-diameter casing in the top 140 feet. Static water level is about 10 feet below grade. The 1 HP Fairbanks Morse well pump is rated at about 10 GPM at 60 PSI when pumping from a water level of about 100 feet below grade. Pressure within the water system is controlled by a pressure switch in conjunction with a 158-gallon Well-X-Trol hydropneumatic bladder tank. The water system was originally intended to supply the WWTP with drinking water. However, the groundwater contains such a high amount of iron that it is not suitable for drinking at the WWTP and is instead only used for hand washing and flushing the WWTP restroom toilet.

C. CONTROL SYSTEMS

Photo 12 – Control Panel CP-1

The WWTP motor control center (MCC) is located in the Operations Building and is equipped with a service meter, main disconnect, circuit breakers, and controls for the associated equipment. The MCC indicates the status of the aeration blowers, chlorinator feed water pump, filter supply pumps, surface wash pumps, sulfur dioxide feedwater pump, and well pump. An annunciator mounted in Control Panel CP-1 indicates the status of plant alarms that are currently connected to an auto dialer. Originally, the following alarms were connected to the auto dialer: loss of power to auto dialer; headworks high level; pond high level; chlorine leak; sulfur dioxide leak; and filter system shutdown caused by chlorinator high/low vacuum, sulfonator high/low vacuum, chlorine residual effluent high, and filter pumps low level shutdown. However, the change to sodium hypochlorite and sodium bisulfite, together with the lack of use of the chemicals, has resulted in the chlorine gas and sulfur dioxide-related alarms routinely being bypassed.

III. WASTEWATER FLOWS

A. SERVICE AREA

The future 20-year service area for Tehama County Sanitation District No. 1 used in this WWMP was limited to the current service area boundary, as growth is not anticipated to occur beyond this within the study period.

This WWMP outlines staged sewer improvements needed to service existing deficiencies and estimated 20-year growth, as shown on Plate 2. To determine District collection system needs, HE wastewater loadings were estimated based on 20-year estimated growth.

B. EXISTING WASTEWATER FLOWS

HE Determination

An HE is defined as the average dry weather wastewater flow generated from a single-family residential dwelling. Wintertime household water consumption is typically assumed to be a gauge of dry weather household wastewater flow based on the assumption that the majority of winter water usage is discharged into the wastewater collection system. Customers in the District are supplied water from Mineral County Water District (MCWD). However, the vacancy rate in Mineral is greater than 50% during winter months. Battle Creek Campground, Church Camp, Lodge Complex, RV Park, and Lassen Volcanic National Park are all closed and many residences are vacant due to harsh winter conditions. Additionally, Battle Creek Campground, Church Camp, and Lassen Volcanic Park are not supplied water from the MCWD. Therefore, to determine applicable HEs and wastewater flows, summer dry weather flow into the treatment plant of 0.037 MGD was utilized.

Sewer Rate Ordinance No. 1911 established HEs based upon single-family dwellings and the number of fixtures (i.e., toilets, sinks, bath/showers, etc.,) a commercial connection has as shown in Appendix B. The District currently has 179 single-family dwellings, two institutional, and ten commercial connections within its service area according to billing records provided by the District in April 2017. The District also provides wastewater services to six non-residential users outside the service area boundary, for a total of 197 connections. Out-of-District users are as follows: Caltrans District 2 facility, Citizen Telecommunications Company of California, Lassen Volcanic National Park, MCWD, Mt. Lassen Assemblies of God Church Camp, and a USDA office. Refer to Appendix B for current charges to in-District and out-of-District users.

At the request of the District, HE equivalents utilized in this WWMP were determined by fixture counts from various past reports and studies including past rate ordinances, assessment districts, work plans, and other miscellaneous correspondence between the District, PACE, and property owners. As such, it was determined the WWTP currently serves a total of about 250 HEs. It is recommended the basis for HE determinations be verified during a rate study, particularly for top users in the District.

Utilizing the summer ADWF of 0.037 MGD, together with 250 HEs currently served by the WWTP, equates to one HE contributing about 148 gallons of wastewater per day. See Table 2. While a little low, this compares reasonably well with similar communities in the region. For example, the City of Colusa has a rate of 210 GPD per HE, while Burney Water District has a rate of 220 GPD per HE. Therefore, for the purpose of this study, a flow factor of 148 GPD per HE was used for existing and future development.

Infiltration & Inflow

Based on review of the 2015 to 2017 WWTP flow records, the three-year ADWF is approximately 0.037 MGD. A review of historical wet weather flows at the WWTP indicated an instantaneous PWWF of 0.713 MGD was recorded on March 22, 2018. This day also resulted in a 4-hour sustained peak of 0.70 MGD and average daily PWWF of 0.57 MGD. Thus, during wet weather conditions, the current peaking factor is about 15. This is much higher than is typically acceptable and is a significant component of the system flow. It is important to note, inaccuracy of the influent flow measurements was recently discovered in the summer of 2019. Therefore, the peak flows utilized herein should be re-evaluated when the next significant winter occurs to verify accuracy of historic peak measurements.

Infiltration refers to groundwater that leaks into cracks and breaks in sewers and manholes. Inflow refers to stormwater that enters the sewer system directly from such sources as illicit roof drain connections, cross connections to storm drains, surface drainage that directly enters cleanouts without lids or leaky manhole covers, etc. Infiltration tends to be prolonged leakage until the groundwater table subsides, and inflow tends to be more noticeable during a storm event when surface water is present. Since the two are often very hard to separate, it is common practice to simply refer to the entire leakage problem as I&I.

A review of WWTP records (ADWF of 0.037 MGD and PWWF of 0.57 MGD) suggests that, at PWWF, an extremely large portion (94%) of the wastewater flows are due to I&I, and it is believed most of this may be from infiltration. This is based on the observation that it takes a prolonged period of rain to significantly increase I&I flows at the WWTP. Furthermore, plant flows appear to drop off relatively slowly following a period of intense rainfall.

I&I has significant impact on sizing of sewers in a collection system and can increase costs significantly. The total I&I rate that occurs at the worst condition is referred to as peak I&I, and although this may last for only a short time, such as minutes in a small system or an hour or so in larger systems, wastewater facilities must be sized to handle peak I&I. Thus, the size of wastewater collection and interceptor facilities are governed mainly by the combination of peak I&I and peak wastewater flow components, with I&I often being the largest component. The second type of I&I that affects the cost of a wastewater system is simply the total amount of I&I, usually referred to as annual I&I. This affects annual operating costs including pumping, treating, and disposal of I&I.

It should be noted that sewers that leak in (infiltration) can also leak out (exfiltration). Although leaks flowing out tend to become plugged, significant outflow leakage can occur in leaky sewer systems. This partially defeats the purpose of a sewer system, which is to collect and convey wastewater in a manner that is not harmful to humans or the environment.

Infiltration & Inflow Field Investigations

Since 1982, numerous I&I studies have been performed in the District as well as a few projects to fix deficiencies identified during those I&I monitoring efforts. It has been known for many years the Park Service has been a large contributor of system I&I. Instantaneous flow measurements completed in April and May of 1982 indicated the Park Service contributed an average of 47% of the total WWTP flow in three monitoring events. One additional measurement completed on January 24, 1983, indicated the Park Service contributed about 24% of the total WWTP flow. Six additional instantaneous flow measurements were taken between January 8, 1986, and March 10, 1989, all following wet weather events. The average flow contribution from the Park Service to the WWTP during these measurements was 42%.

Photo 13 – I&I Flow Monitor

As part of this master planning effort, an I&I flow monitoring unit was installed in the Park Service manhole from January 18 through March 5, 2018. A summary of the I&I data gathered during this time is presented in Table 3. As shown therein, the measured Park Service manhole contributed approximately 18.5% of the total I&I to the WWTP. However, from the I&I monitoring effort, the ADWF measured from the Park Service was 10,728 GPD, or about 73 HEs. This is more than twice of what the Park Service is currently billed for, which is 4,810 GPD, or about 33 HEs. As such, the difference of 40 HEs in ADWF was attributed to I&I, increasing the Park Service I&I contribution to 21% of the total I&I flow entering the WWTP. While this contribution is far less than it has been in past measurements, it is still a significant portion that should be reduced.

Numerous other measurements of the Park Service flow contribution were taken in 2018 and 2019, the result of which are shown in Table 15. As shown therein, only one additional monitoring event was completed when flow monitors were installed in both the 6-inch Park Service pipeline and the 8-inch upstream pipeline. From May 10 through May 27, 2019, the flow monitors indicated the Park Service was still contributing 46% of the total influent flow compared to 54% from the rest of the system upstream of the Park Service. The remaining measurements and flows included in Table 15 were calculated from depths measured by the District in each of the respective pipelines.

It should be noted that construction at the Park Service was ongoing during most of this data collection. Complete water and sewer system replacement was finished by late summer 2019, which should significantly reduce the contribution historically observed there. Additionally, it was also discovered early in the summer of 2019 that the aging inefficient flow meter was reading on average about 40% too high of what actual influent flows were. As such, a new influent flow meter was installed in June 2019 and recalibrated on August 13, 2019, which now accurately reflects true influent flows. The old circular chart recorder was also updated at this time with a new continuous paperless recorder. It has been initially set up to record influent flows every ten minutes, which will allow for much greater accuracy in determining peaks, averages, and totals compared to a 7-day chart recorder.

Photo 14 – I&I from Park Service during ADWF

Typically, sewered areas with I&I rates at or below 1,500 gallons per acre per day (GPAD) are considered to be within acceptable limits. I&I rates in excess of 2,500 GPAD are considered high and indicate sewers that have defects and are sources of I&I. As shown in Table 4, adjusting I&I up to PWWF during historical peak events, the District collection system has extremely excessive I&I. Subsequent I&I monitoring should be completed throughout the service area to identify which areas are sources of greater I&I.

To better identify problem areas and obvious sources of I&I in collection system mains, the District most recently completed closed circuit television (CCTV) inspection of the entire collection system from August to October 2017. Inspection was performed in accordance with the National Association of Sewer Service Companies (NASSCO) Pipeline Assessment and Certification Program (PACP) and Manhole Assessment and Certification Program (MACP) standards and procedures. Per NASSCO standards, each pipeline inspected received a condition grade ranging from 1 to 5, with 5 being the most significant defect and 1 being a minor defect. Grades were assigned based on the significance of the defect, extent of damage, percentage of restriction to flow capacity, or amount of wall loss due to deterioration. Each pipe segment received a separate segment grade score for both structural and operations and maintenance (O&M) defects depending on the condition grade number and the number of occurrences in the segment.

Refer to Table 5 for pipeline CCTV results sorted by overall pipe rating index. Of the nearly 19,800 feet of pipeline inspected, the pipelines included in Table 5 were determined to have defects of some kind that require attention. Results of the CCTV inspection identified 10 locations in which there were mechanical deficiencies in the existing pipelines including holes, significant root intrusion, offset joints, broken lateral connections, pipe deformities, etc. There were also several pipelines identified with multiple significant defects including many offset joints, root intrusion, and infiltration resulting in recommendation of replacing the entire pipeline segment. The rating score should be viewed with caution since a high overall score may indicate a high number of low-severity defects, a low number of high-severity defects, or a balance of high- and low-severity defect grades. Refer to Table 6 for manhole CCTV results. Of the 87 manholes inspected, the manholes included in Table 6 were determined to have defects that require attention.

Photo 15 – CCTV Showing Root Intrusion

CCTV inspection of the mains revealed a relatively tight system with only about 1,300 length of feet recommended for replacement. As such, it was suspected the source of I&I could be from laterals and private house connections. The District Board of Directors passed Ordinance No. 15 on May 22, 2001. Refer to Appendix C. Per this ordinance, the District owns and maintains the lateral from the main line to the property line, and the property owner must maintain the building sewer from the property line into the building. The 1989 PER for the Meadowview Area Sewer Project indicated that smoke testing and subsequent leak testing of sewer laterals was completed in the early to mid-1980s. At that time, letters were mailed to property owners with problems identified on private property and all noted problems were reportedly corrected. However, this effort was completed more than 30 years ago.

In an attempt to determine if laterals are contributing to system infiltration, CCTV of as many laterals as possible was completed from July through September 2019. During this time, CCTV of 89 laterals was completed. Of these, 63 (71%) were found to have deficiencies that could contribute to system infiltration and, as such, are recommended to be repaired, replaced, or further investigated. Note that only 45% of service connections were inspected. Remaining laterals either could not be located, do not have a cleanout to allow for CCTV of the lateral, or had not yet been investigated at the time of this report. Refer to Table 17 for lateral CCTV results and associated recommendations.

C. GROWTH PROJECTIONS

According to the District, growth in the last 10 years within Mineral has only consisted of the addition of six Park Service RV campsites, which results in an HE-equivalent annual growth rate of about 0.1%. On May 1, 2017, the Department of Finance released the County's population growth data that indicated the County had a 0.2% annual growth rate from 2010 to 2017. Additionally, the Department of Finance released County population growth projections prepared by the Demographic Research Unit in January 2018. It was projected therein that the County would see an annual population growth between the 20-year period of 2017 and 2037 of about 0.6%. The Tehama County General Plan indicates Mineral will have limited growth opportunities due to limited availability of services. As such, an average annual growth rate of 0.3% was utilized herein.

At current flows, if all future connections were single-family residences, the ADWF capacity needed by year 2037 would equate to approximately 0.039 MGD, and there would be more than enough treatment capacity to accommodate planned future development.

Given the relatively static trend in services in Mineral over the last 10 years, the District is more in a preventive repair and/or replace O&M mode rather than one of system expansion to accommodate new development.

This WWMP has been developed assuming an additional annual fill-in growth rate of 0.3%. If there is no development in the future, improvements designed to accommodate growth for the next 20 years will be satisfactory for a longer period of time than indicated herein. If there is growth and development greater than that anticipated herein, improvements will reach their design capacity sooner than projected and this 2019 WWMP should be updated.

For example, it is reported that the closed Mineral Elementary School property will likely be sold in the near future. A search of DataTree reveals five parcels totaling about 0.75 acres that could be re-developed in this area. According to the General Plan, the land use designation is currently public facility but is surrounded by suburban land use and has the possibility to be changed in the future. If a development of a significant size is proposed, growth projections herein may need to be re-evaluated.

20-Year Growth Projections

For this study, the proposed 0.3% growth rate results in approximately 15 additional HEs over the course of 20 years, for a total of 266 HEs. Due to the terrain in Mineral, some parcels in outlying areas may not be buildable; therefore, new development will likely be limited to areas that have surrounding development. As such, it is assumed the additional 15 HEs will be in the area of Scenic Avenue and Mineral Avenue. Table 7 lists and describes the single-family developments, and Plate 2 shows their location.

Figure 3 represents future WWTP ADWF based on varying growth rates. As shown therein, projected WWTP flows will not exceed the current 0.07 MGD ADWF capacity of the plant anytime soon if the assumed 0.3% annual growth rate is realized. Even a 2% annual growth rate would not result in the WWTP ADWF being met until year 2049. If I&I is not reduced, PWWF capacity will be reached prior to this but is still not likely to occur within a 20-year period.

Ultimate Growth Projections

Since the District should update this 2019 WWMP within 20 years, and full build-out is not likely to occur in the next 20 years, future flow predictions for ultimate development were beyond the scope of this 2019 WWMP.

D. FUTURE WASTEWATER AND INFILTRATION AND INFLOW

To obtain meaningful flow projections to use in developing a plan to meet year 2037 sewer needs, it is important to predict how much growth is expected to occur in the next 20 years and where growth will likely occur in the District.

After estimating the expected growth within Mineral and determining the number of HEs associated with that growth, existing 2017 and future 2037 wastewater and I&I flow contributions were estimated. The estimated 2037 flows were used to determine the required sewer size needed to serve the area.

The existing Mineral collection system has calculated I&I values much greater than 2,500 GPAD, with the Park Service contributing approximately 37,500 GPAD, or 21% of the estimated system I&I during the January 18 through March 5, 2018, monitoring event. Subsequent measurements have indicated a much higher contribution of flow from the Park Service. However, an improvement project was completed over the summer of 2019, which reportedly replaced all water and wastewater mains at the Park Service site. Winter 2019 WWTP flows will be a good indication of effects from this project, although the WWTP operator has already reported a drop in influent flows as a result. It is recommended the District install a permanent flow meter at the Park Service manhole and charge for the number of HEs that actually contribute to the WWTP if flows are not significantly reduced this next winter.

If the District is diligent in completing collection system improvement projects, future I&I flows should decrease. It is again emphasized, as time passes and additional I&I flow monitoring data is obtained, the values and assumptions used in the development of this 2019 WWMP should be re-evaluated to ensure accuracy. Furthermore, if significant growth or development occurs beyond that projected herein, this 2019 WWMP should be updated.

E. DESIGN CRITERIA SUMMARY

Sewer sizing was based on handling PWWF, which equals the sum of the peak dry weather wastewater flow rate and peak I&I allowance.

The typical diurnal curve shown on Figure 4 was developed based on pump station records of several north state utilities similar to Mineral. This diurnal curve was used in the hydraulic model to simulate effects of daily flows into the District collection system.

WWTP design criteria for all major WWTP processes are included in Table 8.

F. HYDRAULIC COMPUTER MODELING

InfoSewer by Innovyze® was used to model the District's collection system. Two computer models were created for this 2019 WWMP: an existing 2017 PWWF model and a 20-year 2037 PWWF model. The existing PWWF model was created using existing District collection system mapping, surveying, and field measurements. CCTV inspection and District mapping of the existing collection system were used to confirm collection system pipe size, length, and material for input into the modeling software. Manhole lid elevations were surveyed, and invert depths were measured in the field by the CCTV contractor and PACE surveyors.

According to the Tehama County General Plan, the average annual precipitation in Mineral is 55.1 inches, while the average annual snowfall is 151.9 inches. This equates to a ratio of snowfall to rainfall of 2.75. On March 22, 2018, 2.32 inches of rainfall was reported in Mineral at the Department of Water Resources (DWR) monitoring station, which already had snow on the ground. Applying the average snowfall to rainfall ratio of 2.75 equates to a total precipitation of approximately 8.7 inches for that day. This is approximately equivalent to a 50-year storm according to DWR Bulletin 195, which indicates a historic 1-day, 50-year rainfall amount of 8.89 inches. This rainfall event resulted in a PWWF of 0.57 MGD at the WWTP. As such, this peak day flow and rainfall data was modeled to analyze the collection system for both the existing and 20-year models.

As previously indicated, model I&I allowances were estimated by analysis of the WWTP historical wet weather flow. Subsequent I&I monitoring of the Park Service flow allowed for better identification of the I&I contribution from there. Review of CCTV inspection results also helped to identify District sewer mains and laterals that have deficiencies including holes, offset joints, and other problems.

WWTP circular charts were utilized to determine the instantaneous PWWF at the WWTP, which was 0.713 MGD. The historical PWWF I&I component observed at the WWTP (PWWF minus ADWF and I&I from the Park Service) was evenly distributed throughout the wastewater collection system during computer modeling of the sewer system. This equal distribution is likely not an accurate representation of what occurs in the system but is currently the most appropriate estimate using available data. Additionally, as previously noted, improvements to the influent WWTP flow meter and at the Park Service will likely change historic values utilized herein. As such, all assumptions should be confirmed via additional I&I flow monitoring within the District.

The 2017 PWWF model was then used as the basis for the 20-year model. The 2037 model includes estimated growth projections and locations assumed based on the surrounding terrain of Mineral. It was assumed the District would complete an I&I reduction program that will reduce I&I by 25% within 20 years. Results of the existing and 20-year models are shown in Plate 1 and Plate 2, respectively. As shown therein, reducing the existing I&I by 25% reduces the capacity problems seen in both the current and future models. As such, growth is not a significant factor in limiting pipeline capacity, but rather, existing I&I is the largest factor, and an I&I reduction program is needed.

Once the hydraulic models were created, they were analyzed, and collection system limitations were addressed. Where modeled sewer capacities were limited, parallel or larger replacement sewers or increased slopes were calculated to resolve limitations in the model. Table 9 summarizes hydraulic model results and also shows sewer capacities needed to reduce the potential of existing or future sewer surcharges. Associated recommended improvements are shown on Plate 2.

IV. ANALYSIS AND RECOMMENDED IMPROVEMENTS

A. GENERAL

The first step in analysis of the wastewater system was to compare the capacity of existing gravity trunk sewer lines with calculated 2017 and year 2037 PWWF using the hydraulic models. Plate 1 shows capacity of existing sewer collection system pipes 6 inches and larger at existing PWWF.

Projected future growth was limited to the current service area boundary; therefore, future sewers in areas not presently served by the District were not considered. Once critical slopes and pipe diameters were determined, the computer program was used to verify size requirements. New sewers needed to parallel or replace existing sewers anticipated to be inadequate in the future are shown in red on Plate 2.

All areas proposed for future development within the 20-year study period are already sewered, so no as-developed sewers are anticipated to be constructed. Any sewers constructed as the area develops will typically be funded by development projects or by assessment districts. On the other hand, new sewers designated as General Improvements will be paid for by the District.

To effectively utilize this 2019 WWMP, it is recommended growth assumptions shown in Table 7 and Plate 2 of this report be reviewed prior to construction of major trunk sewers. If actual development is significantly more or less dense than anticipated, appropriate adjustments in proposed sewer sizes and downstream sewer sizes should be made.

Where existing sewers are not large enough to convey existing or year 2037 flows, a new parallel or replacement sewer is indicated on Plate 2 and Table 9. Parallel sewers were sized based on handling the differential flow between future demands and existing capacity. This assumes the existing sewer will remain in service and can be restored to acceptable standards utilizing currently available rehabilitation techniques, if necessary.

Prior to paralleling or replacing any existing sewer, a detailed review of previously completed CCTV inspection should be made of the existing sewer to determine whether it is desirable to keep it in service. The capital cost of a total sewer replacement, which would require a larger new sewer and lateral re-connections, is considerably greater than installing a parallel relief sewer.

In many cases for the District, it is recommended herein that the existing sewer be paralleled as shown in Plate 2. This recommendation is based on CCTV inspection revealing the AC pipeline along Highway 36 to be in good condition with just a few spot repairs needed to repair minor cracks. The collection system on the northeast side of the District has sufficient capacity for proposed 20-year growth, but several AC pipelines have multiple offset joints that would be costlier to repair than to completely replace.

B. INFILTRATION AND INFLOW REDUCTION PROGRAM

Sizing of parallel relief sewers and replacement sewers and future expansion of the treatment plant are often dependent on estimated existing and future I&I rates. As previously mentioned, these estimates represent the largest contingency in the development of this 2019 WWMP. In view of future large expenditures required to install parallel relief sewers and upgrade the WWTP, it is imperative the District invest in I&I monitoring and measurement and an I&I reduction program.

Accurately identifying and reducing I&I will result in long-term savings to the District by reducing the volume of wastewater treated at the WWTP and could delay or possibly eliminate the need for parallel or replacement sewers. Industry experience has shown that installing relief sewers without correcting major sources of I&I relieves existing bottlenecks but will eventually result in even higher PWWF downstream. Sewer systems in poor condition continue to deteriorate, and, if not corrected, the volume of I&I only increases with time.

The I&I rate monitored for all sewers within the District, with the Park Service removed, is about 30,300 GPAD, which is still extremely high. When extrapolated to account for PWWF, peak I&I is more than three times this number. I&I for a system considered to be tight is usually about 1,500 GPAD. Additionally, monitoring was primarily only conducted at the Park Service manhole; therefore, the remaining collection system I&I was based on peak flows seen at the WWTP, which have since been identified as inaccurate. Therefore, it is recommended the District complete I&I flow monitoring at various areas of the collection system in the future to obtain a more accurate representation of system I&I and better identify high I&I subareas.

As with most I&I reduction programs, the initial I&I reduction tasks will be relatively easy to identify and relatively cost effective to correct (e.g., broken sewer mains and leaking manholes). However, successive I&I reduction efforts tend to be much more difficult and expensive in terms of dollars per gallon of I&I removed. The existing collection system was inspected via CCTV in 2017, which revealed a relatively tight system. To further investigate, locate, and reduce I&I, it is recommended the District continue to CCTV all connections and private laterals in the collection system once cleanouts are installed and require residents to replace them as needed.

Laterals and House Connection I&I

For any I&I reduction program to be effective, improvements to leaky laterals and building sewers are necessary in addition to improvements to collection sewer mains. This is particularly evident in Mineral, where 2017 CCTV videos of existing sewer mains revealed pipelines in relatively good shape, with a few exceptions. As such, while additional I&I monitoring is recommended to narrow down the source of I&I, continued CCTV inspection of laterals is also recommended. There have been several studies that point to sewer laterals and building connections as contributors of up to half of all I&I entering a collection system.

In a study for the U.S. Environmental Protection Agency (EPA), Conklin (1981) noted that many sewer rehabilitation programs that did not address sewer laterals had a maximum I&I removal rate of about 30%. Furthermore, the EPA study also concluded that building connections and private sewer laterals contribute 50% of total I&I into the system.

This is likely the case in Mineral, given that CCTV revealed more than 71% of the initial 89 laterals inspected have deficiencies that require additional attention, whether that be complete replacement, repair, or cleaning and subsequent CCTV. This ranges from large collapses and significant roots to cleanouts below grade or sags. Most deficiencies identified were minor roots, offset joints, or sags rather than large holes or significant roots at every joint. However, this was the case in some laterals, and even minor deficiencies will contribute to system I&I. Many cleanouts were found to be at or in some cases even below grade. It is recommended these be raised above grade or placed in an enclosed utility box as applicable.

Some cleanouts were also found to have significant grease buildup. In most of these cases, adequate CCTV was not possible as the pipeline was not visible for inspection. It is recommended these be cleaned out and CCTV completed again to determine if any deficiencies are present.

Without a committed effort by the District to correct I&I from laterals and house connections, the best that can be hoped for in any I&I reduction program is about a 30% reduction.

Although District Ordinance No. 15 discusses lateral cleanouts multiple times and indicates they shall conform to the Building and Plumbing Code, it also references that materials and procedures shall follow the Water Pollution Control Federation Manual of Practice No. 9 in absence of code provisions. This manual is no longer in print. As such, it is recommended Ordinance No. 15 be revised to instead reference the Tehama County Land Development and Engineering Design Standards (County Standards) or applicable portions thereof. Chapter 7 of the County Standards requires property line cleanouts to be installed on all sewer systems.

The sewer connection from the house to the District sewer main is separated into two parts. Typically, the sewer pipe from the house to the property line and/or cleanout is called the "house connection" or "building sewer," and the sewer pipe from the property line and/or cleanout to the sewer main is called the sewer "lateral." Per District Ordinance No. 15, the County owns and maintains the lateral, while the property owner must maintain the building sewer. Per Sections 4.2i and 4.2j in Ordinance No. 15:

> "The connection of the building sewer into the public sewer shall conform to the requirements of the Building and Plumbing Code or other applicable rules and regulations of the District and the County. All such connections shall be made gastight and watertight and verified by proper testing. Any deviation from the prescribed procedures and materials must be approved by the District before installation. The applicant for the building sewer connection permit shall notify the District when the building sewer is ready for inspection and connection to the public sewer. The connection and testing shall be made under the supervision of the District or their representative. The building sewer shall be inspected prior to backfilling."

County Standards require property line cleanouts shall be installed on laterals on all sewer systems. For the District to address I&I originating from private laterals and house connections, the following is included in Section 2.4 of Ordinance No. 15:

> "Lateral cleanouts provide the District the opportunity to check for excessive flow into the collection system. Infiltration leakage of 500 gallons per day per inch in building sewer diameter per mile of building sewer will be allowed. Infiltration leakage above these limits is considered excessive, and users shall be penalized with a higher user fee. Therefore, based on leakage tests performed in conformance with District Standards, the user fee shall be increased at the rate of one HE. For up to 200 GPD, two HEs for up to 400 GPD, and so on, of building sewer infiltration leakage in excess of the allowed limits, with a maximum user fee of five times the normal rate based on the number of HEs connected. The excess flow fees shall apply for a full year. At the end of one year, and upon correction of the excessive flow, the District

will, if appropriate, adjust the rate back to the regular fee. If no corrections are made, the higher user fee will continue for an additional year."

It is recommended cleanouts be installed at all property lines, if they are not already, and either leakage testing be completed to verify flows are within maximum allowances (contributing less than 0.38 GPD/FT in a 4-inch lateral) or CCTV be completed after cleanout installation to determine if the lateral has deficiencies. Letters should be sent to property owners requiring repair or replacement of those building sewers with noted deficiencies. Ordinance No. 15 requires connections be in accordance with the ordinance within 90 days after official notice to do so, or a predetermined fine can be applied.

Ordinance No. 15 does not currently indicate how often leakage tests should be conducted. Since I&I is a significant problem in the system, it is recommended Ordinance No. 15 be revised to state what events shall result in lateral testing and cleaning. Such events could include:

- Remodel building permit including installation of additional facilities in the house, building, or property served,
- Change of the use of the house, building, or property serviced from residential to business or commercial or from non-restaurant commercial to restaurant commercial,
- Repair or replacement of all or part of the building sewer,
- Addition to structures of living quarters, such as guest cabins on the property served or plumbing of garages into living quarters,
- Determination that cleaning and testing is required for the protection of public health, safety, and welfare, or;
- Sale of property where the sale of the house would be contingent upon repair of the lateral if it does not meet the leakage rate standard. At a minimum, the District should consider having the private lateral video inspected to determine any defects in the pipe that need to be corrected prior to sale.

It is suggested the District implement an I&I reduction program to repair and replace leaking sewer infrastructure. This would include grouting of sewers and lateral joints, lining, pipe bursting, or replacing main line sewers and manholes, and addressing laterals by installing cleanouts as needed so specific laterals can be evaluated and repaired if necessary.

Table 10 includes a preliminary cost estimate for a comprehensive I&I reduction program within the District over the next 20 years. All costs include 30% for planning and engineering and 30% for construction contingency. Estimated quantities within this table should be considered as an order of magnitude estimate for planning purposes. Costs are based upon results of the CCTV inspection of mainlines and initial I&I monitoring previously described herein. Costs do not currently include replacement of identified deficient laterals or installation of cleanouts and subsequent CCTV inspection, as it is expected these will be paid for by individual homeowners.

Finally, any I&I reduction program that is performed should be verified by subsequent flow monitoring. Using the flow monitoring data generated for this 2019 WWMP as a basis, subsequent flow monitoring data in those areas that have been rehabilitated should be gathered and compared to verify reductions in I&I. It is strongly recommended the District perform such flow monitoring of the existing system at least every five years during PWWF. Costs for this have been included in Table 10.

C. WASTEWATER COLLECTION SYSTEM IMPROVEMENTS

Recommended sewer improvements are shown on Plate 2. Sewer main design flows and required sewer sizes were determined for 2017 and 2037 flow conditions as described below. Specific improvements recommended below are primarily based on repairing existing system deficiencies and reducing collection system I&I.

PWWF for each reach of sewer main was determined using the Innovyze® InfoSewer computer hydraulic modeling program. Summary of the InfoSewer program outputs, assuming a future District-wide I&I rate reduction of approximately 25%, is shown in Table 9. If future I&I reductions are greater than 25%, less capacity issues may be present. The table indicates analysis year, model pipe number, sewer length, diameter, slope, capacity, model PWWF, surcharge depth, and recommended replacement or parallel sewer. Using an input sewer slope and diameter of the existing sewer main, together with compiled PWWF, the program computes existing sewer capacity. Table 9 indicates a recommended size of a parallel sewer if the existing sewer is inadequate. A replacement sewer size is also shown in the event the existing sewer is to be abandoned due to poor condition.

The following are brief descriptions of sewer improvements (General Improvements) projected to be needed where existing sewers are of inadequate size and/or slope, now or in the future. Slopes of all existing sewers noted as needing improvements should be verified prior to design. As shown in Plate 1, all capacity-related improvements are needed at current PWWF due to I&I and are not a function of future growth.

Highway 36 Pipeline

According to the computer model, the existing 8-inch main from town to the WWTP is where the District experiences most of its capacity problems (see Points 1 to 2 on Plate 2). Table 9 shows moderate to severe surcharging could occur in the main along Highway 36 due to existing PWWF. If the District can reduce I&I systemwide by 25% by year 2037, analysis indicates 2037 PWWF conditions will require the existing main be paralleled with an 8-inch main or replaced with a 10-inch main. In the event the District does not reduce I&I by 25%, all pipe sizes indicated in Table 9 need to be increased one diameter pipe size (i.e. 8-inch to 10-inch, and 10-inch to 12-inch) to handle current and anticipated 20-year flows. CCTV inspection results of this pipeline revealed relatively good pipe with the exception of a few minor spot repairs. Therefore, it is recommended the existing pipeline be paralleled rather than replaced to effectively handle I&I. If the Park Service reduces their I&I by 99% while the District reduces their I&I by 55% (both of which are highly unlikely to occur although possible given the inconsistencies in historical data), the District would no longer need to parallel the sewer main along Highway 36.

Husky & Beresford Way Sewer

CCTV indicates several offset joints, sags, attached deposits, and cracks in approximately 1,300 feet of existing 6-inch sewer along Husky Way, Beresford Way, and Amanda Way (see Points 3 to 4, 4 to 6, 7 to 5, and 8 to 9 on Plate 2). Computer model analysis indicates these pipe segments do not surcharge; however, they have relatively flat slopes in some segments. To reduce the possibility of sewer blockages due to solids deposition and inadequate slopes, it is recommended the existing 6-inch sewers be replaced with new 6-inch sewers at increased slopes.

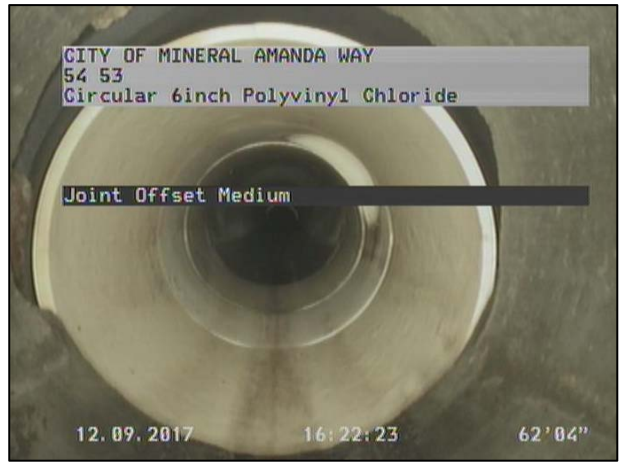

Photo 16 – CCTV Showing Offset Joint

D. WASTEWATER TREATMENT PLANT IMPROVEMENTS

The existing WWTP was designed for an ADWF of 0.07 MGD and a PWWF of 0.75 MGD. The year 2017 ADWF was estimated to be about 0.037 MGD, which is approximately 52% of the current plant ADWF capacity. The PWWF was estimated at 0.57 MGD, or 81% of the design PWWF capacity. Given a 0.3% annual growth rate due to anticipated possible development, the current capacity of the existing WWTP is more than adequate beyond the 2037 anticipated ADWF flow of 0.039 MGD.

WWTP design criteria shown in Table 8 outlines the process units and loading under the 1996 design, existing 2017 flow conditions, and future 2037 flows. Given that the WWTP capacity is more than adequate to meet projected 20-year PWWF of 0.61 MGD, assuming a 0.3% annual growth rate, WWTP improvements recommended herein are due to existing defects and deficiencies rather than to accommodate growth.

Headworks

The District has historically had problems with power outages affecting measurements and other various issues with accurate influent reporting on occasion. The District recently replaced the influent flow meter and upgraded to continuous paperless flow monitoring; however, installation of an uninterruptible power supply (UPS) is also recommended to provide battery backup during power outages. It is also preferred and would be more efficient if the Mineral WWTP influent data could be viewed remotely at the County office rather than the part-time operator having to download it at the WWTP on a regular basis. As such, costs for these improvements have been included in Table 10 and are estimated to cost approximately $10,000 in September 2019 dollars.

Aeration Basin

The District currently samples WWTP effluent from the aeration basin outlet structure. During winter months when snow is on the ground, accessing the concrete pad can be dangerous for the lone operator as ice forms on top of the concrete. As such, it is recommended a fall prevention system be installed for approximately $10,000 in September 2019 dollars.

It is also recommended the District save for eventual dredging, drying, and hauling of the 1.9 feet of sludge estimated to currently be in the aeration basin. At an estimated 10% solids, this would equate to about 65 dry tons of sludge. Recent sludge removal projects in the area have cost approximately $700 per dry ton for a contractor to do this work. Assuming 65 dry tons would result in a sludge removal cost of about $50,000 in September 2019 dollars to dispose of it at a nearby landfill. This work is not currently projected to take place until the long-term timeframe, during which time additional sludge buildup will occur. Therefore, $100,000 has been included in Table 10 to account for future sludge removal.

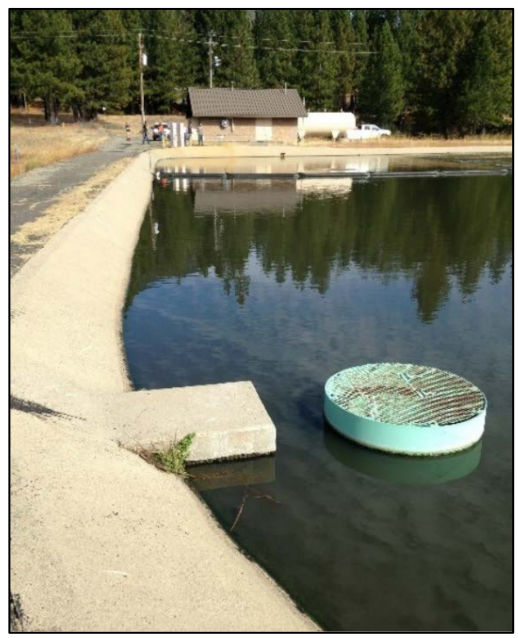

Photo 17 – Aeration Basin Outlet Structure

Percolation and Evaporation Pond Improvements

In 2008, sampling was initiated to determine if the existing percolation ponds have the potential to impact groundwater and to determine the water quality of tertiary-treated effluent. Lawrence and Associates constructed three piezometers for groundwater sampling. The monitoring wells have been used to determine depth to groundwater over time and groundwater quality to determine the influence of percolated effluent from Ponds 1 and 2. Groundwater level measurements from May 2013 through May 2018 show the inadequate groundwater separation that occurs. The CRWQCB requires that groundwater be at least five feet below the bottom elevation of a pond. Monitoring Well 2, located between the two ponds and the level of which is shown in red in Figure 5, confirms that seasonal groundwater mounding, i.e., less than five feet of separation, does occur. This could provide a direct path for pathogens to transport from Ponds 1 and 2 into the groundwater, although all fecal coliform samples have been negative to date. Total coliform has been measured in the wells; however, the WWTP is surrounded by agricultural cattle grazing land, so this finding is not surprising.

To mitigate impacts to groundwater due to inadequate separation, proposed improvements to the ponds could include lining Pond 1. Pond 1 would receive effluent from the aeration basin as normal, and when full, effluent from Pond 1 would be pumped through the multi-media filter and chlorinated prior to discharging into an unlined Pond 2. This process would provide protection against groundwater contamination by ensuring disinfection of the effluent prior to percolation.

Lining Pond 1 would reduce the percolation capacity of the plant by approximately 50% or more and would require more frequent discharge to SFBC. A water balance was developed using the 100-year annual rainfall distributed monthly based on local average monthly precipitation data from DWR, monthly sewer flow data, evaporation estimates from California Irrigation Management Information System (CIMIS), and a maximum design percolation of 10^{-6} cm/sec. Given the current estimated percolation rate is as high as 4.4×10^{-5} cm/sec, this is a worst-case scenario as the CRWQCB has and will likely continue to allow for Pond 2 to have a faster percolation rate than this. Based on this water balance, if the percolation capacity is reduced by lining Pond 1, the 100-year annual rainfall will require multiple discharges to SFBC throughout the winter to maintain the required 2 feet of freeboard within the ponds. See Table 11. Given that there is about 27.5 Ac-Ft of total storage available, Table 11 indicates the first discharge would be required by December if a 100-year event were to occur.

An increase in discharges to SFBC will likely result in future additional discharge limits. Existing limits are defined in Table 4 of the current WDRs, included in Appendix A. Samples taken at the WWTP from 2008 through 2013 indicate effluent could have reasonable potential to exceed water quality objectives for copper, dichlorobromomethane (DCBM), chloroform, and zinc. However, current WDRs reflect that the CRWQCB did not consider sample results during this time to be representative of water quality since they were taken during simulated discharge events without a large amount of I&I induced water in the ponds. In anticipation of future effluent limits if/when discharge occurs more frequently for constituents showing reasonable potential, PACE completed a draft compliance schedule application in 2014. However, given that discharge did not occur at any time during the previous permitting period, effluent limits were not issued in the current WDRs that were adopted June 5, 2015; therefore, the compliance schedule application was never finalized or submitted.


Photo 18 – SFBC During MZDS

In the event the CRWQCB does require Pond 1 be lined and/or more stringent effluent limits are included in the future, the District will need to have a plan to comply. As such, PACE and the District completed a mixing zone and dilution study (MZDS) on February 14, 2017. The CRWQCB was also present as effluent from Pond 1 was pumped through the WWTP, filtered, chlorinated, and dechlorinated prior to rhodamine dye being added and followed by discharge to SFBC. The effluent flow rate measured during the study was 0.41 CFS as measured at the rectangular weir in the dechlorination box. The flow in SFBC at the time of the study was approximately 39.1 CFS as measured with a Model F584 Water Current Meter. This equated to a creek to effluent ratio of about 95 to 1. Two transects were set up at 28 feet and 75 feet downstream of the discharge, and the effluent rhodamine dye was measured with a fluorometer. Resulting dilution ratios were 32 and 97 at the 28-foot and 75-foot transects, respectively. Another discharge event was done on April 9, 2019, to gather additional data during conditions representative of when future discharges may occur (i.e., full ponds and high flows in SFBC).

Effluent and receiving water samples taken during the two representative discharge events are shown in Table 12 and Table 16, respectively. As shown therein, all constituents that have shown possible reasonable potential in the past were well below water quality objectives with the exception of copper. Utilizing a minimum downstream hardness of 15 mg/L, the water quality objective of 2.34 ug/L for total copper was exceeded during the February 14, 2017 discharge event with a total copper concentration of 2.6 ug/L. However, dissolved copper at this time was lower than water quality objectives Lab results are included in Appendix D.

Upstream receiving water samples taken from SFBC since 2008 indicate SFBC has assimilative capacity for all constituents with reasonable potential with the exception of copper. One sample taken June 28, 2011, resulted in an upstream total copper concentration of 4.5 ug/L. However, on this date, Mineral received 0.65 inches of precipitation, which is a significant amount. It is likely that a large portion of the copper concentration adhered to particulates due to the rain event rather than dissolved in the groundwater. Also, as previously noted, the CRWQCB did not consider this data as representative of what might actually occur during discharge. Receiving water total and dissolved copper concentrations sampled during recent representative discharge events indicate there is available assimilative capacity in the SFBC should future dilution credits be required for copper. Refer to Table 16 for recent upstream receiving water sample results.

The February 14, 2017 effluent aluminum concentration of 388 ug/L also exceeded the secondary MCL of 200 ug/L. Upstream receiving water concentrations were also above this concentration. As such, additional receiving water data will need to be taken to ensure assimilative capacity is available for all constituents possibly having reasonable potential. It is recommended this be done for both total and dissolved copper and zinc at times when SFBC is flowing high enough such that samples are representative of when discharge might occur.

Limited historical SFBC flow data is available near Mineral from a gaging station just downstream of the WWTP in operation from 1959 to 1967. Measurements taken January to April 2018 by USGS at the recently installed gaging station correlate well with the historical high flow SFBC data. This data yielded an average number of 36 days per year between November 15 and April 15 with flows between 50 CFS and 100 CFS as shown in Figure 6. At 50 CFS, the WWTP could discharge at a rate of 0.5 CFS at a minimum to achieve a 100 to 1 dilution at all times. At 0.5 CFS, 35 acre-feet could be discharged from the WWTP during the allowable time operating 24 hours per day. This analysis is conservative because it does not account for the range of flows between 50 CFS and 100 CFS that would allow for a higher discharge rate between the minimum of 0.5 CFS and the maximum of 1.0 CFS.

Additionally, SFBC flow data yielded an average number of 29 days per year between November 15 and April 15 when flows exceeded 100 CFS as shown in Figure 6. These days would allow for the maximum discharge rate of 1.0 CFS while still maintaining at least a 100 to 1 dilution providing an additional 57 acre-feet of discharge capacity. The combined estimated discharge capacity of the WWTP into SFBC at or above a dilution ratio of 100 to 1 is approximately 92 acre-feet assuming operation of the WWTP 24 hours per day.

Now that the USGS Gaging Station has been installed, SFBC flows can be accurately recorded to ensure receiving water flows are high enough to be representative of when a discharge might occur. It will also ensure required dilution is maintained at all times when discharging in the future as required per WDRs.

Costs for modification of the ponds have not been included in the Capital Improvement Plan (CIP) herein, as it is presently unknown if/when the District will be required to do so. PACE and District staff met with CRWQCB staff July 10, 2019, in anticipation of the upcoming permit renewal. The intent was to gain insight into possible changes to existing permit requirements so planning documents can adequately address these changes. CRWQCB staff indicated they do not foresee significant changes nor a compliance schedule component as part of this next permit renewal. They did recommend the District complete chronic toxicity testing during the next discharge event to ensure no issues with toxicity. They also recommended the District sample pH, temperature, dissolved organic carbon (DOC), hardness, and aluminum monthly from upstream receiving water to ensure reasonable potential exists if future dilution credits for aluminum are needed. These constituents should also all be sampled for in the effluent during the next discharge event as well.

CRWQCB staff also recommended continued groundwater sampling to include fecal coliform and total and dissolved iron and manganese to ensure operations continue to be protective of groundwater beneficial uses.

It is recommended that steps with railing be installed into Ponds 1 and 2 sooner rather than later for safety and sampling. Cost for this improvement is estimated at $20,000 in September 2019 dollars and has been included in the CIP in Table 10.

Filter Supply Pump Station

It is recommended both 10 HP pumps in the Filter Supply Pump Station be replaced as they are more than 20 years old, have never been serviced, and have met their useful service life. Installation of new pumps is estimated to cost about $30,000 in September 2019 dollars.

E. CONTROL SYSTEM IMPROVEMENTS

The WWTP MCC located in the Operations Building provides a central location for control of most plant equipment and annunciation of abnormal conditions. The MCC was originally installed in 1996 and is therefore now more than 20 years old. USEPA estimates electrical equipment to have a useful service life of 7 to 10 years. As such, it is recommended the MCC be replaced if/when significant work is done to the electrical control system. In the meantime, it is recommended an electrician service the MCC (i.e., dust cabinets, tighten connections, etc.).

It is also recommended the auto dialer be replaced, as it reportedly only alerts the operator on-call when power has been restored but not when a power outage first occurs. Additionally, the operator on-call often gets false alarm notifications from the prior chlorination gas system. As such, the chlorine gas and sulfur dioxide-related alarms have since been bypassed. It is recommended this problem be remedied and alarms correctly wired to reflect current chlorination system operations.

It is also recommended a manual transfer switch be installed such that a portable generator can be connected in the event of a power outage. If/when discharge to SFBC occurs on a more frequent basis, it is recommended a dedicated emergency generator be installed for standby power. Costs for a dedicated generator have not yet been included in the CIP herein, as it is unknown if/when this will occur.

F. SUSTAINABILITY CONSIDERATIONS

Improvements to the wastewater collection system recommended herein will reduce I&I and therefore reduce the associated pump horsepower necessary to treat PWWFs. This will lead to an increase in both water and energy efficiency. For example, if systemwide I&I can be reduced by 30%, this will result in 0.16 MGD less effluent having to be treated and discharged. Assuming an energy cost of $0.20 per kilowatt-hour for pumping, this could equate to a savings of more than $1,000 per year if discharging occurs more frequently in the future.

Recommended improvements now and in the future should integrate energy efficiency goals by requiring the use of National Electrical Manufacturers Association (NEMA) Premium motors and generators. NEMA Premium motors and optimized systems reduce electrical consumption, thereby reducing pollution associated with electrical power generation. This results in annual energy cost savings, as well. These combined measures will reduce the net capital and operations cost of future improvements and are consistent with state climate change goals, thus increasing the chance for future improvement funding needs.

V. ESTIMATES OF COST AND FINANCIAL CONSIDERATIONS

A. BASIS OF COST ESTIMATES

Collection system and WWTP costs have been prepared using information from comparable projects in the area where construction contracts were competitively bid. Gravity sewer construction costs from these previous projects, projected to September 2019 costs and an Engineering News Record Construction Cost Index (ENR CCI) of 11,311, are illustrated on the curves in Figure 7. The figure accounts for varying depths and types of backfill required. Values from these curves and recent projects were used as a guide in preparing the estimate of pipeline costs herein.

Note that these estimates are based, in many instances, on preliminary information. Even in developed areas, at the preliminary report stage it is often difficult to determine underground conditions relative to the amount of groundwater, rock excavation, and conflicts with existing utilities that would be encountered. These cost elements cannot be properly evaluated until final design. Consequently, estimates in this report should be considered as "order-of-magnitude" estimates, which may vary considerably from actual construction costs for a particular project element. However, overall 2019 WWMP costs should be reasonably close and satisfactory for the basis of planning a financial program.

To obtain total project costs, construction contingencies and indirect costs were added to construction costs. Construction contingencies at this stage are usually estimated to be 30% of construction costs. Indirect costs include planning, engineering, administration, and legal costs and typically amount to about 30% of construction cost. The total of the above two categories was taken at 60% for total project costs indicated herein. This figure may vary considerably depending upon the complexity of the work and the uncertainties of construction costs and raw materials.

All costs indicated in this report are based upon September 2019 dollars. For future or delayed work, an allowance for construction cost increases must be considered. During the last 10 years, per the ENR CCI, general construction costs have increased at an average rate of about 2.8% per year. The average rate of increase for the last 3 years has been about the same according to the ENR CCI. However, contractors in the local area are extremely busy right now, particularly following the destructive forest fires in the immediate vicinity. As such, local construction inflation has greatly increased. In projecting future costs, one should consider both short-term and long-term inflationary trends.

Note that costs presented in this report are capital improvement costs only, which do not include any O&M costs of the wastewater system.

Time Periods

Immediate Term (2019 to 2022): Improvements where existing capacity is clearly less than the calculated theoretical and are thus needed as soon as possible, or are needed to improve safety or performance of existing facilities (preferably completed within 5 years).

Near-Term (2023 to 2027): Other improvements that are marginal in capacity, or will be over the theoretical capacity in the next 5 to 10 years, or are needed to improve performance or efficiency.

Intermediate Term (2028 to 2032): Improvements that are marginal in capacity, or will be over the theoretical capacity in the next 10 to 15 years, or are needed to improve performance or efficiency.

Long-Term (2033 to 2037): Remaining improvements that are theoretically needed to have adequate capacity to meet proposed 20-year development. Scheduling of these sewer facilities will likely be more definite in future Master Plan updates.

A preliminary cost estimate for WWTP and general sewer system improvements is shown in Table 10. Table 10, together with the recommended improvements shown on Plate 2 are, in essence, the 2019 WWMP. As shown in Table 10, approximately $1,817,000 (September 2019 dollars) worth of general sewer collection improvements and treatment plant improvements are anticipated to be needed in the next 20 years. Costs include a 30% adder for construction contingencies and a 30% adder for indirect costs including planning and engineering. The cost estimate in Table 10 includes staged improvements needed to correct existing system deficiencies, which are primarily due to high I&I problems.

Additional improvements are scheduled for subsequent time periods. Project costs scheduled in these time periods are based upon the projected growth of 0.3% and estimated future I&I reduction of 25% systemwide. Final timing of the individual projects will be dependent upon actual growth experienced. It is recommended this 2019 WWMP be updated every 5 to 10 years and subsequent flow monitoring be completed to verify I&I flow measurements discussed previously herein.

B. FINANCIAL CONSIDERATIONS

As a part of this WWMP, a recommendation for a Capacity Charge for the District sewer system has been prepared. Upon review of current District ordinances, it does not appear the District currently charges a Capacity Charge; however, it is recommended they do so. This charge should be strictly a Capacity Charge, and the cost for the actual sewer lateral would include an additional Service Connection Fee to inspect the connection and administer the account.

Capacity Charges are often referred to as Connection Fees, but this is a misleading term applied to a charge that is intended to be a revenue producer for capital improvements. Such fees are also often called Capital Improvement Fees. In the American Water Works Association (AWWA) Manual M1, "Principles of Water Rates, Fees, and Related Charges," these fees are referred to as System Development Costs.

Herein, such fees will be referred to as Capacity Charges, which are intended as a fair share payment towards capital improvements, specifically referred to herein as General Improvements. Although the purpose of this engineering analysis is to develop a recommended Capacity Charge, other common charges will first be discussed, termed herein as the Service Connection Costs and Local Improvement Costs.

Service Connection Costs

The District should charge a Service Connection Cost unique to each installation based upon cost incurred including:

1. Lateral and cleanout
2. Sewer extensions

Refer to Appendix B for current Sewer Service Charges. According to Section 2.3 of Ordinance No. 15, included in Appendix C, the District currently charges a Connection Fee of $200, which includes the connection permit and inspection fee of up to one inspection. Additional inspections are at actual cost. For most sewer services currently being installed, the subdivision developer has already installed the lateral and cleanout (Item 1). However, if no lateral and cleanout exist, the new customer should pay for both. It is recommended the Connection Fee be updated annually based upon the ENR CCI, which stands at 11,311 as of September 2019.

In some cases, it is necessary to have a sewer main extension (Item 2) to serve a new property. In this case, per Section 1.8 of Ordinance No. 15, the customer must also pay for the main extension, including possible manholes and/or rod holes. Each sewer main extension is different, so the District charges on a time-and-expense basis. The portion of any sewer extension that is in front of a given parcel being served is called a local improvement as discussed herein. The portion of a sewer extension that is off-site (necessary to get to the property being served) is referred to herein as off-site improvements. The costs for such off-site improvements are usually borne by the developer, although the District does share in these costs if it benefits. The District should issue the Sewer Service Charges to new customers so that a potential customer is not surprised by additional costs that they were not fully aware of.

Local Improvement Costs

When it is necessary to distribute costs of a sewer system to the ones it serves (or will serve), it is customary to require each property owner to pay for their fair share of the sewer collection system that is needed to serve their property. In the simple case of a property that is on one side of the street, the cost of the sewer in the street in front of that parcel should be shared 50/50 with the properties on the other side of the street. Per Tehama County Land Division Standards, the minimum sewer main size shall be 6 inches, except mains serving commercial or industrial connections shall be 8 inches. In addition, each property owner pays for their share of the cost of manholes and rod holes that generally serve it and several other parcels.

These costs are commonly referred to as Local Improvement Costs. Local Improvement Costs for sewer facilities are typically paid for through the developer or the District if it is interested in completely serving an area. The main principle to establish in trying to have an equitable system of finance is that Local Improvement Costs should be paid for by property owners that benefit. Local Improvement Costs can also include sewage lift stations if such facilities are needed for specific properties over and above the typical General Improvement Costs.

General Improvement Costs (Used to Determine Capacity Charge)

General Improvement Costs are defined as those improvements needed for a total sewer collection, treatment, and disposal system that are not funded by Local Improvement Costs and Sewer Connection Fees. These costs include the following:

1. Wastewater treatment facilities.
2. Sewer collection systems.
3. Sewage lift stations benefiting large areas of a District, as needed.
4. Over-sizing of sewers, usually greater than 8-inch diameter, to provide benefit to properties other than the property being served.
5. Interconnections of piping that are not necessary for service to existing properties (e.g., pipelines across government land).
6. Other improvements that a District decides are of benefit to the entire District. For example, an office building, monitoring facilities, etc.

Capacity Charge

The purpose of the Sewer Capacity Charge is to generate capital from new customers to pay their fair share of General Improvements. Following are three possible ways this charge can be determined:

<u>Method 1</u>: Determine all capital costs of General Improvements that have been paid in the past and divide by the number of present users being served. This is a buy-in cost, or a proportionate cost share of the current system. AWWA Manual M1 refers to this approach as the “equity” method, as the goal of the method is to achieve an equity position between new and existing customers of the system. AWWA Manual M1 states

this approach “is the most appropriate where current system facilities adequately serve existing and future customers, where no new significant system investment is anticipated, and where existing facilities are not scheduled for replacement in the near future.”

Method 2: Determine all capital costs of General Improvements that have been paid in the past and those that are planned for the future and divide this total cost by the total of both the present and future users. This is a combination of Methods 1 and 3.

Method 3: Determine all capital costs of General Improvements needed to serve future users and divide that amount by the number of future users that will benefit. This method often uses a defined planning period, such as a 10- to 20-year period, or a specific growth amount, such as the number of new connections. AWWA Manual M1 refers to this approach as the “incremental cost” method. However, under the incremental cost method, the capacity charge is determined by dividing a project cost by the number of users benefiting. In this case, the project may or may not have already been built, but it is reflective of the costs needed to serve future users. AWWA Manual M1 states “this method is considered most appropriate when a significant portion of the capacity required to serve new customers must be provided by the construction of new facilities.”

Each method has its application. Each also has advantages and disadvantages. Capacity Charges have become the norm (especially since Proposition 13, Jarvis-Gann Initiative), and its purpose is to raise revenue for capital improvements and to bring about equity – so new customers pay a fair share of the capital cost of General Improvements.

For the District, Method 1 (cost of past general improvements) is believed to be the most applicable for several reasons. Methods 2 and 3 factor in the cost of improvements needed in the future to accommodate projected growth. However, in the case of the District, future growth does not affect any improvements currently needed or needed in the next 20 years. Additionally, the majority of the collection system and WWTP components were upgraded via relatively recent improvement projects for which the cost is known. As such, the cost to reconstruct existing collection system and WWTP components was determined based on original installation costs, adjusted by the ENR CCI to September 2019 dollars.

As shown in Table 13, the total costs of the existing facilities, if constructed today, is estimated at $6,308,000. This amount is a testimony to the value of the existing system that needs to be recognized by existing and future customers. If depreciated, the value of the existing system stands at approximately $2,212,000. The current total number of service connections is 197. Thus, the current depreciated value of the facilities stands at $11,200 per connection. This Capacity Charge is recommended as a reasonable estimate of the value of buying into the existing system.

In adopting a Capacity Charge, the District should be aware of similar charges by other districts or utilities. The State Water Resources Control Board publishes a biyearly report entitled *Wastewater User Charge Survey Report* (User Charge Report). The fiscal year 2016-2017 report surveyed 591 California service areas, seven of which were in Tehama County. It is important to keep in mind there are a number of factors affecting an entity's capacity charges, such as:

- Age and condition of the existing collection system, as well as the number of lift stations in the system.
- Wastewater treatment processes and method of effluent disposal.
- Method used to finance latest system expansion and the capacity remaining.
- Date of latest master plan or rate study.

Per the fiscal year 2016-2017 User Charge Report, the average Capacity Charge, not including debt service, for 100 agencies with a population under 1,000 was $2,658, with a high of $22,600. Average Capacity Charges not including debt service for 40 agencies with tertiary treatment was $4,062, with a high of $16,799. This, together with Table 10 and Table 13, suggests that a fee of $11,200 appears to be a reasonable Wastewater Capacity Charge for new customers to the Tehama County Sanitation District No. 1.

Refer to Table 10, Recommended Improvements & Capacity Charge Basis. The General Improvement Costs were developed based on the in-depth study of the sewer collection and treatment system discussed herein. Following the cost for each item in Table 10 is a percentage assigned for new development. As shown, all recommended improvements benefit existing users and are needed to resolve existing deficiencies.

Therefore, the entire CIP cost of $1,817,000 should be paid by existing customers through the monthly user fee. This cost spread over the existing 250 HEs for the next 20 years amounts to $363.40 per year per HE, or $30.28 per month per HE. Given that no additional improvements are currently required for anticipated growth, the Capacity Charge would remain unchanged for the next 20 years aside from increases each year due to inflation. Customers that represent more than one HE, such as commercial development, should pay a proportionately larger fee based upon the estimated number of HEs as determined by the District Engineer.

It is highly recommended the District adjust these fees annually based on the ENR CCI (currently at 11,311 as of September 2019) to account for inflation. It is also appropriate to recalculate the fee every 5 to 10 years, especially at the time of preparation of an updated master plan. Before adopting a new Capacity Charge and increasing the monthly fee to pay for the proposed CIP, an attorney should be consulted and shown this report to ensure the process is done correctly pursuant to government code.

In 2015, the District qualified for Clean Water State Revolving Fund (CWSRF) Proposition 1 Small Community Grant funding for completion of this WWMP. However, since that time, it has become questionable if Mineral meets the CWSRF requirement that at least 50% of the dwellings must be the primary dwelling of permanent residents who reside in the community at least six months of the year to be eligible for construction grant or loan funds. This will be determined prior to completion of a subsequent Rate Study. The current median household income (MHI) of Mineral as a Census Designated Place (CDP) is $49,766, or just 74% of that of the state according to the American Community Survey (ACS) 2013 to 2017 5-Year Estimate. As such, if they are found to be eligible, the District would be considered a disadvantaged community and qualify for up to 75% construction grant funding if wastewater rates were at least 1.5% of the MHI (an annual single-family residential rate of $746.49).

USDA Rural Development (RD) currently utilizes the ACS 2006 to 2010 5-Year Estimate to determine eligibility for grant funding. The corresponding District MHI for this time period is $64,583, or even more than that of the state. Furthermore, USDA RD typically requires wastewater rates to be upwards of 2% of the MHI to be considered for grant funding. As such, USDA RD would not currently have any grant funding available for construction projects. Low-interest loan funding would be available at a market rate currently at 3.5% for a maximum 40-year loan term. USDA RD does not have a permanent residency requirement to be eligible for loan funding like CWSRF does.

DWR provides grant funding through the Integrated Regional Water Management (IRWM) program. This program does not require an agency to be disadvantaged or have a minimum number of permanent residents to receive grant funding; however, recommended projects have already been selected for the next round of construction funding. Additionally, past IRWM solicitations typically require projects to have either water conservation drought-related improvements or water quality improvements in some way. The IRWM program is a competitive grant process with applications being scored on a regional basis. To receive a higher scoring, IRWM typically wants to fund shovel-ready projects where design, environmental, etc., have already been completed. It is unknown if the IRWM program will continued to be funded after next year.

Given the questionable status of permanent District residents, it is likely future improvements recommended herein will need to be funded via low-interest loans. Repayment of these loans will likely need to be funded via wastewater rates.

It is important to note that the reference to cost per HE herein is specific to future recommended improvements only. PACE is completing a Wastewater Rate Study for the District subsequent to this 2019 WWMP as a separate document. The Rate Study will include further details on recommended wastewater rates over the next five years to not only fund improvements recommended herein but also to consider system O&M, including adequate wastewater system staffing and other considered budgetary components. Determination of permanent residency status will be made prior to completion of the Rate Study, as will grant eligibility options to arrive at an adequate recommended rate over the next five years.

TABLES

TABLE 1

Tehama County Sanitation District No. 1 Mineral
2019 Wastewater Master Plan

SOUTH FORK BATTLE CREEK USGS GAGING STATION MEASUREMENTS[1]

Measurement No.	Date	Staff Gage Reading (FT)	Discharge (CFS)
1	1/8/2018	14.02	46.6
2	1/19/2018	14.24	88.0
3	2/6/2018	14.05	55.7
4	3/7/2018	13.85	26.0
5	3/14/2018	14.48	128.1
6	4/2/2018	14.38	122.4
7	4/12/2018	14.49	157.6

1. Refer to Figure 2 herein for the provisional rating curve USGS developed from these measurements.

TABLE 2

Tehama County Sanitation District No. 1 Mineral
2019 Wastewater Master Plan

HOUSEHOLD EQUIVALENT DETERMINATION

Top User	Equivalent HEs[1]
Lassen Volcanic National Park Service	32.5
Church Camp	10.2
Volcano Country RV Park and Laundromat - 3 connections	6.5
Lassen Mineral Lodge - 4 connections	6.4
USDA	4.5
Caltrans	4.0
Mineral Elementary School - 2 connections	3.3
Restaurant	1.4
MCWD	1.0
Citizens Telecommunications Company of California	1.0
Volcano Country Store and Post Office - 2 connections	0.7
TOTAL	**71.5**

Total Connections[1]	197	
Top User Total Connections	18	
Remaining Active Service Connections = HEs	179	
Total Estimated HEs	250.5	HEs
Average Dry Weather Flow[2]	0.037	MGD
Estimated HE Dry Weather Flow[3]	**148**	**GPD**

Notes:

1. Number of connections and HEs per current District User Fees and Charges.
2. Average Wastewater Treatment Plant Dry Weather Flow from July to September 2015 to 2017.
3. Estimated HE Dry Weather Flow is the WWTP Average Dry Weather Flow divided by the Total Estimated HEs.

TABLE 3

Tehama County Sanitation District No. 1 Mineral
2019 Wastewater Master Plan

PARK SERVICE 2018 I&I MONITORING DATA RESULTS

	Park Service (GPD)	Remaining Collection System (GPD)
Storm I&I	26,342	107,408
Base Infiltration [1]	5,495	32,505
Total I&I (Gal/Day) [3]	31,838	139,912
Total I&I/Net Total I&I	18.5%	81.5%
Area (Sq Ft) [2]	37,000	200,964
Area (Acres)	0.8	4.6
I&I (Gal/Ac/Day)	37,483	30,327
Linear Feet of Pipe	-	20,096
I&I (Gal/LF/Day)	-	7.0
In-Mi of Pipe	-	25
I&I (Gal/Day/In-Mi)	-	5,605
ADWF [4]	10,728	37,000
ADWF HEs [5,6]	72.5	250.5
Total I&I HEs [5,6]	215	945

Notes:

1. Flows from 3 a.m. to 5a.m. from January 18, 2018 through March 5, 2018.
2. Assumes length of roadway within Lassen Volcanic National Park multiplied by 5 feet on both sides of pipe. For the remaining collection system, assumes total length of pipe multiplied by 5 feet on both sides of pipe.
3. Total I&I calculated only looking at I&I monitoring data using maximum flow at each location.
4. ADWF calculated based on smallest flow observed in I&I monitoring period minus base infiltration.
5. One HE = 148 GPD.
6. Lassen Volcanic National Park allocated 32.5 HEs for ADWF. Remaining 40 HEs (72.5 - 32.5 = 40) attributed to I&I.

TABLE 4

Tehama County Sanitation District No. 1 Mineral
2019 Wastewater Master Plan

PARK SERVICE HISTORICAL PEAK I&I MONITORING DATA RESULTS

	Park Service (GPD)	Remaining Collection System (GPD)
Storm I&I	118,859	408,670
Base Infiltration [1]	24,795	123,675
Total I&I (Gal/Day) [3]	143,655	532,345
Total I&I/Net Total I&I	21%	79%
Area (Sq Ft) [2]	37,000	200,964
Area (Acres)	0.8	4.6
I&I (Gal/Ac/Day)	169,125	115,389
Linear Feet of Pipe	-	20,096
I&I (Gal/LF/Day)	-	26
In-Mi of Pipe	-	25
I&I (Gal/Day/In-Mi)	-	21,326
ADWF [4]	4,810	37,000
ADWF HEs [5,6]	33	251
Total I&I HEs [5,6]	971	3,597

Notes:

1. Flows from 3 a.m. to 5 a.m. increased to PWWF.
2. Assumes length of roadway within Lassen Volcanic National Park multiplied by 5 feet on both sides of pipe. For the remaining collection system, assumes total length of pipe multiplied by 5 feet on both sides of pipe.
3. Total I&I calculated based on maximum flow at each location.
4. ADWF allocated = 32.5 HE * 148 GPD/HE.
5. One HE = 148 GPD.
6. Lassen Volcanic National Park allocated 32.5 HEs for ADWF. Remaining 40 HEs (72.5 - 32.5 = 40) attributed to I&I.

TABLE 5
Tehama County Sanitation District No. 1 Mineral
2019 Wastewater Master Plan
2017 PIPELINE CCTV RESULTS

Street	Upstream MH	Downstream MH	Pipe Material	CCTV Length (Ft)	Diameter (In)	Pipe Slope (Ft/Ft)	Overall Rate Index (ORI)	Laterals	Spot Repair	Notes
MORGAN AVE	4A	4	PVC	112	6	0.004	5	2		Survey abandoned due to tap factory near cleanout, no improvements necessary
HUSKY WAY	50	49	Asbestos Cement	148	6	0.042	4	1		Multiple offset joints, infiltration at 114'
AMANDA WAY	55	54	PVC	130	6	0.033	4	0		5% deformed pipe at joint 3:00 to 6:00 - survey abandoned, no repair needed
EASEMENT	75	76	Asbestos Cement	394	8	0.007	4	0	1	Hole with soil visible at 300', spot repair
EASEMENT	73B	74	Asbestos Cement	396	8	0.007	3	1	1	Fine roots and fracture at 249' - debris attached to roots in top of pipe
MINERAL AVE	36	35	Asbestos Cement	343	8	0.014	2	1		No issues - lateral has been capped
SCENIC AVE	42	41	PVC	100	6	0.010	2	1		Minor attached deposits, no improvements necessary
SCENIC AVE	43	42	PVC	396	6	0.023	2	13	1	Gasket obstruction at joint 10'
BATTLE CREEK AVE	63A	63	PVC	109	6	0.043	2	2	1	Root and holes in pipe at 104'
EASEMENT	71	72	Asbestos Cement	62	8	0.007	2	1		No issues - lateral has been capped
EASEMENT	74	75	Asbestos Cement	396	8	0.007	2	0	1	Spiral fracture with minor roots at 353', spot repair
EASEMENT	76A	77	Asbestos Cement	333	8	0.007	2	0	1	Root ball at joint 86', spot repair
EASEMENT	15	14	PVC	100	6	0.187	1	0		Alignment down, no repairs necessary
EASEMENT	27	26	PVC	282	6	0.083	1	4	1	Fine roots at 112'
MT. LASSEN AVE	46	45	PVC	91	6	0.018	1	0		Minor attached deposits, no improvements necessary
EASEMENT	49	48	PVC	125	6	0.050	1	2		Alignment left, no improvements necessary
EASEMENT	50A	50	Asbestos Cement	150	6	0.009	1	1		Attached deposits 5%, offset joint 103' repair patch 114' PVC to AC 103'
EASEMENT	50B	50A	PVC	96	6	0.006	1	1		Multiple offset joints
BERESFORD WAY	51	50	Asbestos Cement	300	6	0.090	1	3		Cracked pipe at 26', multiple joint offsets
BERESFORD WAY	52	51	Asbestos Cement	482	6	0.007	1	8		Multiple offset joints with infiltration
AMANDA WAY	53A	53	PVC	132	6	0.043	1	2	1	Fine roots in 8" at cleanout end
AMANDA WAY	54	53	PVC	140	6	0.031	1	4		Multiple offset joints and minor root intrusion
BATTLE CREEK AVE	65	64	PVC	315	6	0.016	1	11	1	Fine roots at joint 110'
EASEMENT	76	76A	Asbestos Cement	396	8	0.007	1	0	1	Roots at 3'
AMANDA WAY	101	54A	PVC	199	6	0.006	0	0		Sag 40% 170 Ft to 178 Ft
BERESFORD WAY	52	51	PVC	5	6	0.007	0	8		Pipe changes from PVC to AC 4 different times
AMANDA WAY	53	50	PVC	245	6	0.015	0	2		Multiple sags 10%-30% full, PVC to AC 237'
EASEMENT	56A	56	PVC	80	6	0.043	0	1		Soil exposed in cleanout - clean out and replace cap
EASEMENT	66	67	Asbestos Cement	397	8	0.007	0	0		Multiple sags 30% full
EASEMENT	68	69	Asbestos Cement	392	8	0.007	0	0		Offset joint leaving manhole 68, sags 30% full, debris 330'
EASEMENT	72	73	Asbestos Cement	396	8	0.007	0	0		Multiple sags 30% full

TABLE 6

Tehama County Sanitation District No. 1 Mineral
2019 Wastewater Master Plan
2017 MANHOLE CCTV RESULTS

MH No.	MH Component	MACP Code	Depth (Ft)	Observation	Replace?	Notes
48	WI	RFJ	7.3	Roots Fine Joint from 7:00 to 3:00, within 8 inches	N	County provide root killer and seal joint
50A	WE	ID	4.9	Infiltration Dripper from 2:00 to 8:00, within 8 inches	Y	Multiple infiltration stains
57	WI	RFJ	3.2	Roots Fine Joint from 10:00 to 4:00, within 8 inches and intruding seal	Y	Multiple infiltration stains and fine roots
62	WI	IS	1.4	Infiltration Stain from 12:00 to 12:00, within 8 inches	Y	Multiple infiltration stains
64	COI	RMJ	2.0	Roots Medium Joint at 3 o'clock, 5% lost, within 8 inches	Y	Fine roots, hole, infiltration stains
				Total Manholes to Replace:	4	

Notes:
COI = Cone Interior
ID = Infiltration Dripper
IS = Infiltration Stain
RFJ = Roots Fine Joint
RMJ = Roots Medium Joint
WI = Wall Interior
WE = Wall Exterior

TABLE 7

Tehama County Sanitation District No. 1 Mineral
2019 Wastewater Master Plan
PROJECTED GROWTH AREAS

Development No.[1]	Land Use Designation	Description	Acres	I&I (GPD)[3]	I&I Equivalent HEs[3]	Estimated ADWF HEs[2]	ADWF (GPD)	PWWF (GPD)
1	Suburban	Single Family Dwelling	0.11			1	148	2,279
2	Suburban	Single Family Dwelling	0.11			1	148	2,279
3	Suburban	Single Family Dwelling	0.11			1	148	2,279
4	Suburban	Single Family Dwelling	0.11			1	148	2,279
5	Suburban	Single Family Dwelling	0.20			1	148	2,279
6	Suburban	Single Family Dwelling	0.13			1	148	2,279
7	Suburban	Single Family Dwelling	0.14			1	148	2,279
8	Suburban	Single Family Dwelling	0.17			1	148	2,279
9	Suburban	Single Family Dwelling	0.15			1	148	2,279
10	Suburban	Single Family Dwelling	0.15			1	148	2,279
11	Suburban	Single Family Dwelling	0.15			1	148	2,279
12	Suburban	Single Family Dwelling	0.16			1	148	2,279
13	Suburban	Single Family Dwelling	0.15			1	148	2,279
14	Suburban	Single Family Dwelling	0.16			1	148	2,279
15	Suburban	Single Family Dwelling	0.15			1	148	2,279
		TOTALS	**2.16**	**0**	**0**	**15**	**2,220**	**34,188**

Notes:

1. See Plate 2 for development locations.
2. One HE = 148 GPD.
3. I&I contribution within existing neighborhoods already accounted for in existing conditions.

	ADWF	PWWF
Current WWTP MGD	0.037	0.57
Future WWTP MGD	0.039	0.60

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TABLE 8

Tehama County Sanitation District No. 1 Mineral
2019 Wastewater Master Plan
WWTP DESIGN CRITERIA

	Description	1996 Design[1]	Current 2017 Flows	2037 Design
1	**Population**		123	131
2	**Household Equivalents**	350 @ 175 GPD/HE	250 @ 148 GPD/HE	266 @ 148 GPD/HE
3	**Flows**			
4	Average Dry Weather Flow, ADWF (MGD)	0.07	0.037	0.039
5	Peak Wet Weather Flow, PWWF (MGD)	0.75	0.57	0.60
6	PWWF : ADWF	10.7	15.4	15.3
7	**Sewage Loadings**			
8	Biochemical Oxygen Demand (BOD_5)			
9	ADWF BOD_5 (Mg/L)[2]	250	197	209
10	ADWF BOD_5 (Lbs/Day)	146	61	69
11	Total Suspended Solids (TSS)			
12	ADWF TSS (Mg/L)[2]	250	162	172
13	ADWF TSS (Lbs/Day)	146	50	56
14	**Headworks**			
15	Bar Screen			
16	Number of Units	1	1	1
17	Width (Ft)	2	2	2
18	Number of Bars	18	18	18
19	Method of Cleaning	Manual	Manual	Manual
20	**Aeration Basin**			
21	Number of Cells	2	2	2
22	Cell Surface Area (SF)	12,197	12,197	12,197
23	Cell Water Depth (Ft)	11.5	11.5	11.5
24	Cell Side Slope (H:V)	2:1	2:1	2:1
25	Cell Volume (CF)	94,251	94,251	94,251
26	Cell Volume (MG)	0.71	0.71	0.71
27	Freeboard (Ft)	2	2	2
28	Organic Loading Overall (Lbs BOD_5/1000 CF/Day)	1.5	0.6	0.7
29	Detention Time @ ADWF per Cell (Day)	10	19	18
30	Number Submerged Tube Aerators			
31	Cell No. 1	9	9	9
32	Cell No. 2	3	3	3
33	Aerator Oxygen Transfer Efficiency (Lbs O^2/Aerator-Hr)	1.15	1.15	1.15
34	Standard Oxygenation Rate (Lbs O^2/Hr)[3]			
35	Cell No. 1	11.0	11.0	11.0
36	Cell No. 2	3.63	3.63	3.63
37	Aeration Capacity Required (Lbs O^2/Lbs BOD_5 applied)	1.8	4.3	3.9
38	Air Supply per Aerator (CFM)	12	12	12
39	Blower Horsepower (Hp)	10	10	10
40	**Evaporation/Percolation Ponds**			
41	Number	2	2	2
42	Side Water Depth (Ft)	5	5	5
43	Average Surface Area (SF)	217,800	217,800	217,800
44	Average Surface Area (AC)	5.0	5.0	5.0
45	Total Capacity (Ac-Ft)	25	25	25
46	Total Capacity (MG)	8.1	8.1	8.1
47	Freeboard (Ft)	2	2	2
48	**Filter Supply Pump Station**			
49	Wet Well Diameter (Ft)	6	6	6
50	Wet Well Water Depth (Ft)	8.5	8.5	8.5
51	Number of Pumps	2	2	2
52	Pump Capacity (GPM)	400	400	400
53	Total Dynamic Head (Ft)	52	52	52
54	Pump Horsepower (Hp)	10	10	10
55	**Pressure Filter**			
56	Number of Filters	1	1	1
57	Filter Diameter (Ft)	8	8	8
58	Surface Area (SF)	192	192	192
59	Maximum Capacity (MGD)	0.55	0.55	0.55
60	Maximum Loading Rate (GPM/SF)	2	2	2
61	Maximum Backwash Rate (GPM/SF/Cell)	15	15	15
62	Maximum Headloss to Backwash (Ft)	20	20	20
63	Net Positive Suction Head (Ft)	7	7	7
64	**Filter Surface Wash Pump**			
65	Number of Pumps	1	1	1
66	Pump Capacity (GPM)	80	80	80
67	**Chlorination**			
68	Contact Pipeline Diameter (In)	27	27	27
69	Contact Pipeline Length (Ft)	410	410	410
70	Contact Pipeline Volume (Gal)	11,746	11,746	11,746
71	Contact Time @ Maximum Filter Loading Rate (Min)	29	29	29
72	Number of Gas Chlorinators	2	0	0
73	Maximum Dosage per Chlorinator (Lbs/Day)	100	-	-
74	Chlorination Supply Pump			
75	Number	2*	2*	2*
76	Capacity (GPM)	12	12	12
77	**Dechlorination**			
78	Number of Gas Sulfonators	2	0	0
79	Maximum Dosage per Sulfonator (Lbs/Day)	100	-	-
80	Sulfonation Supply Pump			
81	Number	2*	2*	2*
82	Capacity (GPM)	10	10	10
83	**Potable Water System**			
84	Well Depth (Ft)	247	247	247
85	Well Diameter (In)	6	6	6
86	Static Water Level Below Grade (Ft)	10	10	10
87	Potable Water System Pump			
88	Number	1	1	1
89	Capacity (GPM)	10	10	10
90	Discharge Pressure (PSI)	60	60	60

Notes:
1. Design criteria as indicated in the Operations and Maintenance Manual completed by PACE Engineering, Inc., dated January 1997.
2. BOD and TSS data from influent samples taken July through September for years 2015 through 2017.
3. Assumptions: T=20°C; Elev = 4815 FT; Alpha = 0.85; Beta = 0.95.
* One spare

TABLE 9

Tehama County Sanitation District No. 1 Mineral

2019 Wastewater Master Plan

HYDRAULIC MODEL SEWER CAPACITY AND FLOW SUMMARY

								2017			2037			RECOMMENDED IMPROVEMENTS				
														REPLACEMENT SEWER		PARALLEL SEWER		
Model Pipe ID No.	From Model Manhole	To Model Manhole	Sewer Diameter (In)	Existing or Future	Length (Ft)	Sewer Slope (Ft/Ft)	Pipe Capacity (MGD)	Pipe Flow (GPM)	Model PWWF (MGD)	PWWF Surcharge (Ft)	Pipe Flow (GPM)	Model PWWF (MGD)	Estimated PWWF Surcharge (Ft)	Size (In)	Capacity (MGD)	Size (In)	Capacity (MGD)	Comments
1	52	51	6	E	557	0.007	0.30	23.6	0.034		18.3	0.026						
101	32	33	6	E	118	0.014	0.43	336.3	0.484	0.399	260.0	0.374						
103	28	27	6	E	89	0.034	0.67	10.7	0.015		7.5	0.011						
105	27	26	6	E	284	0.083	1.04	21.5	0.031		16.1	0.023						
107	26	25	6	E	151	0.157	1.43	32.2	0.046		24.7	0.036						
109	25	24	6	E	310	0.004	0.23	43.0	0.062		33.3	0.048						
11	53	50	6	E	246	0.015	0.44	88.1	0.127		67.7	0.097						
111	24	23	6	E	183	0.026	0.58	54.8	0.079		41.9	0.060						
113	23	22	6	E	77	0.099	1.14	65.5	0.094		50.5	0.073						
115	22	30	6	E	92	0.056	0.86	266.5	0.384		206.3	0.297						
121	54A	54	6	E	154	0.056	0.86	20.4	0.029		15.0	0.022						
125	50A	50	6	E	152	0.009	0.34	22.6	0.032		17.2	0.025						
13	50	49	6	E	148	0.042	0.74	160.1	0.231		125.7	0.181						
135	15	14	6	E	99	0.187	1.57	21.5	0.031		16.1	0.023						
145	101	54A	6	E	193	0.006	0.27	10.7	0.015		7.5	0.011						
147	50B	50A	6	E	99	0.006	0.27	11.8	0.017		8.6	0.012						
149	16	15	6	E	50	0.239	1.77	10.7	0.015		8.6	0.012						
15	49	48	6	E	125	0.050	0.81	170.9	0.246		133.2	0.192						
151	33	66	8	E	208	0.013	0.90	841.4	1.212	2.179	669.4	0.964	0.360					
153	66	67	8	E	399	0.014	0.92	852.1	1.227	4.199	678.0	0.976	0.619					
155	67	68	8	E	395	0.003	0.41	861.8	1.241	8.801	685.6	0.987	5.169	10	0.74	8	0.82	CCTV inspection shows (E) sewer in good condition, recommend parallel with 8-inch
159	68	69	8	E	402	0.004	0.48	872.5	1.256	8.777	693.1	0.998	4.969					
161	69	71	8	E	335	0.004	0.49	882.2	1.270	7.473	700.6	1.009	4.226					
163	70	71	6	E	9	0.008	0.32	256.8	0.370	0.023	197.7	0.285						
165	71	72	8	E	57	0.005	0.53	1146.5	1.651	2.265	903.7	1.301	1.309	10	0.95	8	1.05	CCTV inspection shows (E) sewer in good condition, recommend parallel with 8-inch
167	72	73	8	E	404	0.005	0.58	1157.3	1.666	16.021	911.2	1.312	9.092	10	1.05	8	1.15	CCTV inspection shows (E) sewer in good condition, recommend parallel with 8-inch
169	73	73A	8	E	69	0.012	0.87	1168.0	1.682	2.314	918.7	1.323	1.107					
17	48	47	6	E	139	0.024	0.56	189.1	0.272		149.4	0.215						
171	74	75	8	E	402	0.003	0.39	1200.3	1.728	18.467	944.5	1.360	11.044	10	0.72	8	0.79	CCTV inspection shows (E) sewer in good condition, recommend parallel with 8-inch
173	75	76	8	E	398	0.003	0.45	1211.0	1.744	18.320	952.0	1.371	10.807	10	0.82	8	0.91	CCTV inspection shows (E) sewer in good condition, recommend parallel with 8-inch
175	76	76A	8	E	400	0.003	0.41	1220.7	1.758	18.964	959.6	1.382	11.290	10	0.75	8	0.83	CCTV inspection shows (E) sewer in good condition, recommend parallel with 8-inch
177	62	58	6	E	234	0.043	0.75	65.5	0.094		54.8	0.079						
179	63A	63	6	E	120	0.043	0.75	10.7	0.015		7.5	0.011						
181	56A	56	6	E	81	0.043	0.75	10.7	0.015		7.5	0.011						
183	52A	52	6	E	136	0.043	0.75	11.8	0.017		8.6	0.012						
185	53A	53	6	E	128	0.043	0.75	11.8	0.017		8.6	0.012						
187	12A	12	6	E	270	0.020	0.51	10.7	0.015		8.6	0.012						
189	4A	4	6	E	108	0.004	0.23	10.7	0.015		8.6	0.012						
19	47	46	6	E	130	0.010	0.36	199.9	0.288		156.9	0.226						
197	77	OF1	10	E	107	0.035	2.65	1247.5	1.796		981.0	1.413						
199	76A	77	8	E	339	0.003	0.40	1231.4	1.773	16.436	967.1	1.393	9.800	10	0.72	8	0.79	CCTV inspection shows (E) sewer in good condition, recommend parallel with 8-inch

TABLE 9

Tehama County Sanitation District No. 1 Mineral

2019 Wastewater Master Plan

HYDRAULIC MODEL SEWER CAPACITY AND FLOW SUMMARY

								2017			2037			RECOMMENDED IMPROVEMENTS				
														REPLACEMENT SEWER		PARALLEL SEWER		
Model Pipe ID No.	From Model Manhole	To Model Manhole	Sewer Diameter (In)	Existing or Future	Length (Ft)	Sewer Slope (Ft/Ft)	Pipe Capacity (MGD)	Pipe Flow (GPM)	Model PWWF (MGD)	PWWF Surcharge (Ft)	Pipe Flow (GPM)	Model PWWF (MGD)	Estimated PWWF Surcharge (Ft)	Size (In)	Capacity (MGD)	Size (In)	Capacity (MGD)	Comments
201	73B	74	8	E	402	0.006	0.60	1188.4	1.711	16.695	934.8	1.346	9.412	10	1.10	8	1.21	CCTV inspection shows (E) sewer in good condition, recommend parallel with 8-inch
203	73A	73B	8	E	331	0.014	0.92	1177.7	1.696	10.828	927.3	1.335	4.947					
21	46	45	6	E	92	0.018	0.49	210.6	0.303		165.5	0.238						
23	45	44	6	E	300	0.008	0.31	221.4	0.319	0.037	173.0	0.249						
25	44	43	6	E	292	0.016	0.46	231.0	0.333		180.5	0.260						
27	43	42	6	E	400	0.023	0.54	246.1	0.354		193.4	0.279						
29	42	41	6	E	102	0.010	0.35	262.2	0.378	0.127	206.3	0.297						
3	51	50	6	E	300	0.090	1.09	38.7	0.056		30.1	0.043						
31	41	40	6	E	332	0.027	0.59	272.9	0.393		214.9	0.309						
33	40	39	6	E	320	0.019	0.50	284.8	0.410		225.7	0.325						
35	39	38	6	E	319	0.019	0.50	297.6	0.429		237.5	0.342						
37	38	37	6	E	75	0.009	0.34	309.5	0.446	0.466	248.2	0.357	0.065					
39	65	64	6	E	318	0.016	0.46	11.8	0.017		8.6	0.012						
41	64	63	6	E	322	0.023	0.55	24.7	0.036		20.4	0.029						
45	63	62	6	E	441	0.002	0.15	51.6	0.074		43.0	0.062						
47	61	60	6	E	338	0.017	0.47	10.7	0.015		8.6	0.012						
49	60	59	6	E	365	0.016	0.46	25.8	0.037		21.5	0.031						
5	56	55	6	E	187	0.026	0.58	21.5	0.031		16.1	0.023						
51	59	58	6	E	397	0.019	0.50	41.9	0.060		34.4	0.050						
53	58	57	6	E	386	0.009	0.34	124.6	0.179		105.3	0.152						
55	57	37	6	E	190	0.038	0.71	140.8	0.203		119.3	0.172						
57	37	36	8	E	218	0.013	0.89	463.1	0.667		378.2	0.545						
59	36	35	8	E	346	0.014	0.91	474.9	0.684		386.8	0.557						
61	35	34	8	E	223	0.014	0.92	484.6	0.698		394.4	0.568						
63	34	33	8	E	67	0.017	1.00	495.4	0.713		401.9	0.579						
65	1	2	6	E	362	0.006	0.27	10.7	0.015		8.6	0.012						
67	2	3	6	E	257	0.063	0.91	22.6	0.032		18.3	0.026						
69	4	3	6	E	139	0.071	0.97	21.5	0.031		17.2	0.025						
7	55	54	6	E	133	0.033	0.66	34.4	0.050		26.9	0.039						
71	3	5	6	E	145	0.146	1.38	58.0	0.084		45.1	0.065						
73	5	9	6	E	99	0.122	1.27	102.1	0.147		79.5	0.115						
75	9	10	6	E	63	0.080	1.02	112.8	0.162		87.0	0.125						
77	8	7	6	E	231	0.004	0.23	10.7	0.015		7.5	0.011						
79	7	6	6	E	73	0.003	0.21	21.5	0.031		17.2	0.025						
81	6	5	6	E	299	0.041	0.74	32.2	0.046		24.7	0.036						
83	12	11	6	E	253	0.042	0.74	21.5	0.031		17.2	0.025						
85	11	10	6	E	107	0.013	0.41	34.4	0.050		26.9	0.039						
87	10	14	6	E	240	0.046	0.78	156.9	0.226		121.4	0.175						
89	14	22	6	E	305	0.031	0.64	190.2	0.274		147.2	0.212						
9	54	53	6	E	144	0.031	0.63	65.5	0.094		50.5	0.073						
91	19	18	6	E	388	0.019	0.50	10.7	0.015		7.5	0.011						
93	18	17	6	E	392	0.024	0.56	22.6	0.032		18.3	0.026						
95	17	30	6	E	428	0.020	0.52	34.4	0.050		26.9	0.039						
97	30	31	6	E	220	0.020	0.51	311.6	0.449		240.7	0.347						
99	31	32	6	E	355	0.021	0.52	323.4	0.466		249.3	0.359						

Note: Minimum sewer size to be 6-inch.

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TABLE 10

Tehama County Sanitation District No. 1 Mineral

2019 Wastewater Master Plan

RECOMMENDED IMPROVEMENTS & CAPACITY CHARGE BASIS[1]

Item No.	DESCRIPTION	ESTIMATED COST[2] Immediate Term (2019-2022)	Near-Term (2023-2027)	Intermediate Term (2028-2032)	Long-Term (2033-2037)	% Attributed to Growth	Cost Attributed to Growth
GENERAL COLLECTION SYSTEM IMPROVEMENTS							
1	Replace 485' of 6" Beresford Sewer with 6" (Pts. 3 to 4)	$75,000				0%	$0
2	Replace 450' of 6" Husky Sewer with 6" (Pts. 4 to 6)	$70,000				0%	$0
3	Replace 250' of 6" Easement Sewer with 6" (Pts. 7 to 5)	$40,000				0%	$0
4	Replace 150' of 6" Amanda Sewer with 6" (Pts. 8 to 9)		$30,000			0%	$0
5	Replace 4 Aging Manholes		$40,000			0%	$0
6	Parallel 2,800' of 8" HWY 36 Sewer with 8" (Pts. 1 to 2)[3]			$500,000		0%	$0
7	I&I Flow Monitoring	$20,000	$20,000	$20,000	$20,000	0%	$0
	GENERAL COLLECTION SYSTEM IMPROVEMENTS SUBTOTAL:	**$205,000**	**$90,000**	**$520,000**	**$20,000**		**$0**
	Planning, Engineering, and Other Indirect Costs (30%):	$62,000	$27,000	$156,000	$6,000		$0
	Construction Contingency (30%):	$62,000	$27,000	$156,000	$6,000		$0
	TOTAL ESTIMATED COLLECTION SYSTEM PROJECT COSTS:	**$329,000**	**$144,000**	**$832,000**	**$32,000**		**$0**
WWTP IMPROVEMENTS							
8	UPS and Remote Monitoring	$10,000				0%	$0
9	Alarm Auto Dialer Upgrades	$15,000				0%	$0
10	Replace Filter Supply Pumps	$30,000				0%	$0
11	Manual Transfer Switch	$15,000				0%	$0
12	Fall Prevention System for Aeration Basin Outlet Structure	$10,000				0%	$0
13	Percolation Pond Steps and Railing	$20,000				0%	$0
14	MCC		$100,000			0%	$0
15	Aeration Basin Sludge Removal				$100,000	0%	$0
	WWTP IMPROVEMENTS SUBTOTAL:	**$100,000**	**$100,000**	**$0**	**$100,000**		**$0**
	Planning, Engineering, and Other Indirect Costs (30%):	$30,000	$30,000	$0	$30,000		$0
	Construction Contingency (30%):	$30,000	$30,000	$0	$30,000		$0
	TOTAL ESTIMATED WWTP PROJECT COSTS:	**$160,000**	**$160,000**	**$0**	**$160,000**		**$0**
	TOTAL ESTIMATED PROJECT COSTS:	**$489,000**	**$304,000**	**$832,000**	**$192,000**		**$0**
	Cumulative Project Costs:	$489,000	$793,000	$1,625,000	$1,817,000		
				Total Cumulative Project Costs w/o Growth Components:	$1,817,000		
				Average Yearly Cost for 20 Years:	$90,850		
				Number of Existing HEs:	250		
				Average Yearly Cost per HE:	**$363.40**		
						Additional HEs Over Next 20 Years:	15
						Additional Future Capacity Charge per HE:	$0.00
						Recommended Capacity Charge:	$11,200
						Total Future Recommended Capacity Charge:	**$11,200**

Notes:

1. Based on a 0.3% annual growth rate.
2. All costs in September 2019 dollars at an ENR index of 11311.
3. Will need to parallel with 10-inch if 25% I&I reduction not completed first.

TABLE 11

Tehama County Sanitation District No. 1 Mineral

2019 Wastewater Master Plan

100-YEAR RAINFALL EVENT PERCOLATION PONDS WATER BALANCE - POND 1 LINED

EXISTING WWTP ADWF = 0.037 MGD

Month	Average Rainfall[1] (Inch/Month)	100-YR Rainfall[2] (Inch/Month)	ET_o Rate[3] (Inch/Month)	Sewage			Pond				Percolation (Ac-Ft/Month)[6]	Change in Storage (Ac-Ft)	Estimated Total in Storage (Ac-Ft)
				Q_{month}/ ADWF[4] Design Ratio	To Storage (MG/Month)	To Storage (Ac-Ft/Month)	Rainfall (Ac-Ft/Month)	Evaporation[6]					
								Pan to Pond Coefficient[5]	Inch/Month	Ac-Ft/Month			
													6
OCT	3.78	6.65	3.72	0.94	1.05	3.2	2.8	0.881	3.3	0.3	1.4	4.2	10.2
NOV	6.38	11.22	1.80	2.11	2.35	7.2	4.7	0.801	1.4	0.1	1.4	10.3	20.6
DEC	9.05	15.92	0.93	2.75	3.07	9.4	6.6	0.801	0.7	0.1	1.4	14.6	35.1
JAN	8.81	15.50	1.24	3.63	4.05	12.4	6.5	0.801	1.0	0.1	1.4	17.4	52.5
FEB	7.99	14.05	1.96	3.58	4.00	12.3	5.9	0.801	1.6	0.2	1.4	16.5	69.0
MAR	6.94	12.21	3.10	3.94	4.40	13.5	5.1	0.801	2.5	0.2	1.4	16.9	85.9
APR	4.07	7.16	4.80	2.63	2.93	9.0	3.0	0.744	3.6	0.3	1.4	10.2	96.1
MAY	2.61	4.59	6.51	1.75	1.96	6.0	1.9	0.744	4.8	0.5	1.4	6.0	102.1
JUN	1.41	2.48	7.80	1.34	1.50	4.6	1.0	0.744	5.8	0.6	1.4	3.6	105.8
JUL	0.17	0.30	8.99	0.93	1.03	3.2	0.1	0.744	6.7	0.6	1.4	1.2	107.0
AUG	0.37	0.65	7.75	1.08	1.21	3.7	0.3	0.744	5.8	0.6	1.4	2.0	109.0
SEP	1.03	1.81	5.70	0.99	1.11	3.4	0.8	0.744	4.2	0.4	1.4	2.3	111.3
TOTAL	52.6	92.54	54.3		28.7	88.0	38.6		41.4	4.0	17.3	105.3	

CONSTANTS

Area of two ponds in service to collect rainfall and give off Evapo-Transpiration area (acres): 5

Area of one pond for percolation: 2.5

Percolation rate (Inch/Day): 0.23 1.0E-06 cm/sec

Design ADWF (MGD): 0.036 3.4 Ac-Ft/Month

Total available storage = 27.5 Ac-Ft

Discharge required by December

Notes:

1. Normal rainfall 1997-2012 for Mineral from DWR Station MNR @ 40.35 N, -121.6 W
2. 100-year rainfall based on Coleman Fish Hatchery Precipitation Long-Duration-Frequency Table from DWR Bulletin 195, October 1976
3. Evapotranspiration rates from CIMIS Reference Eto Zone map, Zone 13
4. Average monthly from weekly sewage flow data from years 2015-2017
5. Pan to reservoir evaporation ratios from "Penman-Monteith Estimates of Reservoir Evaporation"; Marvin E. Jensen, Hon. M.ASCE; Avry Dotan; and Roland Sanford
6. Percolation and evaporation rates taken into account the surface area inundated.

TABLE 12 Tehama County Sanitation District No. 1 Mineral 2019 Wastewater Master Plan EFFLUENT SAMPLING RESULTS										
		Results[1,4]				Water Quality Objective				
Analyte	Units	02/14/17 (1)	02/14/17 (2)[5]	04/09/19 (3)	04/09/19 (4)[5]	Basin Plan	WDR MCL	Primary MCL	Secondary MCL	CTR
Alkalinity as CaCO3	mg/l	22	-	17	-	-	-	-	-	-
Aluminum	ug/l	-	388	-	126	-	-	1,000	200	-
Antimony	ug/l	-	ND	-	ND	-	-	-	-	-
Arsenic	ug/l	-	ND	-	ND	-	-	-	-	-
Barium	ug/l	-	3.4	-	-	-	-	1,000	-	-
Beryllium	ug/l	-	ND	-	ND	-	-	-	-	-
Bicarbonate	mg/l	27	-	21	-	-	-	-	-	-
Boron	ug/l	5.2	-	4.1	-	-	-	-	-	-
Bromodichloromethane	ug/l	-	0.23	-	0.39	-	80	80	-	0.56
Cadmium	ug/l	-	ND		ND	-	-	-	-	-
Calcium	mg/l	4.1	-	4.3	-	-	-	-	-	-
Chloride	mg/l	0.72	-	4.54	-	-	-	-	250	-
Chloroform	ug/l	-	11.0	-	7.45	-	-	80	-	-
Chromium	ug/l	-	0.5	-	0.23	-	-	50	-	-
Chromium, Hexavalent (CrVI)	ug/l	-	0.053	-	0.033	-	-	10	-	10.54[2]
Chromium, Trivalent	ug/l	-	0.483	-	0.197	-	-	-	-	37.6[2]
Copper, Dissolved	ug/l	1.9	-	1.5	-	2.31[2]	-	-	-	2.25[2]
Copper, Total	ug/l	-	2.6	-	1.97	-	1,000	1,300	1,000	2.34[2]
Cyanide, Total	ug/l	-	ND	-	ND	-	-	-	-	-
Di-n-butyl phthalate	ug/l	-	2.5	-	-	-	-	-	-	-
Fecal Coliforms	MPN/100 ml	-	-	<2	-	-	-	-	-	-
Fluoride	mg/l	-	0.03	-	-	-	-	-	2	-
Hardness	mg/l	13	13	17	17	-	-	-	-	-
Iron	ug/l	217	-	99.3	-	-	-	-	300	-
Lead	ug/l	-	0.3	-	0.13	-	15	15	-	0.4[2]
Magnesium	mg/l	1.1	-	1.3	-	-	-	-	-	-
Manganese	ug/l	3.8	-	3.47	-	-	-	-	50	-
Mercury	ug/l	-	ND	-	ND	-	-	-	-	-
Nickel	ug/l	-	0.5	-	0.29	-	100	100	-	10.48[2]
Nitrate as N	mg/l	0.12	-	-	-	-	10	-	-	-
Nitrite as N	mg/l	0.004	-	-	-	-	-	1	-	-
pH	pH units	7.01	7.06	8.75	8.48	-	6.5-8.4	-	6.5-8.4	-
Potassium	mg/l	0.8	-	0.7	-	-	-	-	-	-
Selenium	ug/l	-	ND	-	ND	-	-	-	-	-
Silver	ug/l	-	ND	-	ND	-	-	-	-	-
Sodium	mg/l	9.6	-	5.3	-	-	-	-	-	-
Specific Conductance	umhos/cm	71	-	58	-	-	-	-	900	-
Sulfate as SO4	mg/l	1.5	-	-	-	-	-	-	250	-
Sulfide	mg/l	-	0.018	-	-	-	-	-	-	-
Sulfur	ug/l	-	506	-	-	-	-	-	-	-
Thallium	ug/l	-	ND	-	ND	-	-	-	-	-
Total Coliforms	MPN/100 ml	<2	-	<2	-	-	23[3]	-	-	-
Total Dissolved Solids	mg/l	45	-	43	-	-	-	-	500	-
Total Phosphorus as P	mg/l	0.17	-	0.124	-	-	-	-	-	-
Zinc, Total	ug/l	-	5.1	-	5.9	7.09[2]	5000	-	5000	24[2]
Zinc, Dissolved	ug/l	3.7	-	1.9	-	-	-	-	-	-

Notes:

1. More than one test was done for some of the analytes.
2. Based on a minimum downstream ambient hardness of 15 mg/L.
3. As a 7-day median.
4. Refer to Appendix D for all sampling results.
5. Regional Water Quality Control Board Sampling Results

Result is above the most stringent water quality objective.

TABLE 13

Tehama County Sanitation District No. 1 Mineral

2019 Wastewater Master Plan

EXISTING WASTEWATER FACILITIES INVENTORY FOR CAPACITY CHARGE BASIS

Item No.	Item	Amount	Units	Unit Cost[1]	Total Cost	Indirect Costs @ 30%[2]	Total Current Project Cost	Installation Date[3]	Service Life[4]	Depreciated Value[5]
1	**PIPE (INCHES)**									
	6	14,600	FT	$125	$1,825,000	$547,500	$2,372,500	1990	50	$996,450
	8	5,400	FT	$150	$810,000	$243,000	$1,053,000	1955	50	$0
	10	100	FT	$175	$17,500	$5,250	$22,750	1955	50	$0
2	**WASTEWATER TREATMENT PLANT**									
	1996 WWTP Project	1	LS	$2,200,000	$2,200,000	$660,000	$2,860,000	1996	40	$1,215,500
3	**TOTAL CURRENT & DEPRECIATED COST FOR EXISTING FACILITIES**						$6,308,000			$2,212,000
4	**TOTAL CURRENT SERVICE CONNECTIONS**						197			197
5	**CURRENT & DEPRECIATED COST PER CONNECTION**						$32,000			**$11,200**

Notes:

1. Unit costs are approximate based upon public works projects bid in northern California in 2019. Original installation costs were adjusted based upon ENR values at that time to the September 2019 ENR CCI of 11311.
2. Indirect costs include engineering and project administration costs.
3. Installation dates are approximate based upon District records.
4. Service life is approximate based upon industry standards.
5. Depreciation is straight line.

TABLE 14 Tehama County Sanitation District No. 1 Mineral 2019 Wastewater Master Plan **SOUTH FORK BATTLE CREEK STAFF GAGE MEASUREMENTS**			
Date	**WWTP Gage Depth (FT)**	**USGS Gage Depth (FT)**	**Flow (CFS)[1]**
7/17/2018	0.88	dry	
7/24/2018	0.90	dry	
8/2/2018	1.08	dry	
8/7/2018	1.08	dry	
8/14/2018	1.07	dry	
8/21/2018	1.04	dry	
8/28/2018	1.04	dry	
9/4/2018	1.02	dry	
9/11/2018	1.02	dry	
9/18/2018	1.02	dry	
9/25/2018	1.00	dry	
10/2/2018	1.08	dry	
10/9/2018	1.06	dry	
10/16/2018	1.04	dry	
10/23/2018	1.06	dry	
10/30/2018	1.08	dry	
11/6/2018	1.07	dry	
11/13/2018	1.08	dry	
11/20/2018	1.08	dry	
11/27/2018	1.24	13.8	20
12/4/2018	1.12	dry	
12/11/2018	1.11	dry	
12/18/2018	1.28	13.86	26
12/27/2018	1.19	13.73	below curve
1/3/2019	1.08	dry	
1/8/2019	1.09	dry	
4/9/2019	2.36	15.9	above curve

1. Minimum 35 CFS required for effluent discharge equates to a USGS gage depth of 13.93 feet.

TABLE 15

Tehama County Sanitation District No. 1 Mineral
2019 Wastewater Master Plan

PARK SERVICE FLOW MEASUREMENTS[3]

Date	Park Service 6" Pipe Depth (FT)	Park Service Flow (GPM)	Park Service Flow % of Total	Upstream 8" Pipe Depth (FT)	Upstream Flow (GPM)	Remainder of System Flow % of Total	Total (GPM)
9/3/19[1]	0.05	5	34	-	9	66	14
8/6/2019[1]	0.11	24	75	0.07	8	25	32
Flow monitor avg from 5/10/19-5/27/19:	-	97	46	-	114	54	211
4/18/2019[1]	0.46	233	71	0.27	93	29	326
1/31/2019[1]	0.33	152	75	0.20	51	25	203
1/8/2019[1]	0.16	48	81	0.08	11	19	59
Flow monitor avg from 1/18/18-3/5/18[2]:	-	22	19	-	97	81	119
1/29/2018[1]	0.33	152	76	0.17	47	24	199

Notes:

1. Flows calculated from depth of flow measurements.
2. The 97 GPM upstream flow is suspect as it was based on average WWTP flows taken from circular charts. Only the Park Service had a monitor on it at this time.
3. Construction of wastewater and water improvements at the Park Service were ongoing during January through May 2019 measurements taken above.

TABLE 16

Tehama County Sanitation District No. 1 Mineral
2019 Wastewater Master Plan
RECEIVING WATER SAMPLING RESULTS

Constituent	Units	Results						MCL[1]	Qualifier	MDL	RL
		February 14, 2017			April 9, 2019						
		RSW-001	RSW-001[2]	RSW-002	RSW-001	RSW-001[2]	RSW-002				
Alkalinity as CaCO3	mg/l	18		21	17		17	-		1	5
Aluminum	ug/l		288			364		200		1.6	5.0
Ammonia as N	mg/l	0.02		ND	ND		ND	-	J, -	0.01	0.05
Antimony	ug/l		ND			ND				0.17	0.50
Arsenic	ug/l		ND			ND				0.19	0.50
Barium	ug/l		5.8							0.1	0.5
Beryllium	ug/l		ND			ND				0.08	0.50
Bicarbonate	mg/l	22		26	20		20	-		1	5
Boron	ug/l	2.2		2.4	2.9		3.0	-	J, J	2	10
Bromodichloromethane	ug/l		ND			ND				0.09	0.50
Cadmium	ug/l		ND			ND				0.08	0.20
Calcium	mg/l	4.0		4.0	4.2		4.1	-		0.2	1
Carbonate	mg/l	ND		ND	ND		ND	-		1	5
Chloride	mg/l	0.69		0.70	0.44		0.44	250		0.1	0.5
Chloroform	ug/l		ND			ND				0.12	0.50
Chromium	ug/l		0.6			0.71				0.13	0.50
Chromium, Hexavalent (CrVI)	ug/l		0.138			0.096			J	0.010	0.100
Chromium, Trivalent	ug/l		0.444			0.609				0.130	0.500
Copper, Total	ug/l		0.5			0.50		1,000	J, J	0.17	0.50
Copper, Dissolved	ug/l	0.30		0.30	0.28		0.24	1,000	J, J	0.1	0.5
Cyanide, Total	ug/l		ND			ND				1.0	3.0
Di-n-butyl phthalate	ug/l		3.2						J	1.4	5.0
Electrical Conductivity	umhos/cm	40		40	42		43				
Fluoride	mg/l		0.04						J	0.02	0.10
Hardness	mg/l	15	17	15	18	18	17	-		3	5
Hydroxide	mg/l	ND		ND	ND		ND	-		1	5
Iron	ug/l	149		183	242		200	300		7	15
Lead	ug/l		ND			0.18			J	0.07	0.50
Magnesium	mg/l	1.6		1.6	1.7		1.8	-		0.2	1
Manganese	ug/l	3.8		4.3	8.02		7.78	50		0.1	0.5
Mercury	ug/l		ND			ND				0.07	0.20
Nickel	ug/l		0.6			0.67				0.16	0.50
pH	pH units	7.31	7.32	7.25	7.23	7.27	7.30	6.5-8.4			
Potassium	mg/l	0.8		0.8	1.6		ND	-	J, J	0.2	1
Selenium	ug/l		ND			ND				0.3	2.0
Silver	ug/l		ND			ND				0.04	0.20
Sodium	mg/l	2.2		2.2	2.8		2.5	-		0.2	1
Specific Conductance	umhos/cm	40		40	42		43	900		2	10
Sulfide	mg/l		ND							0.010	0.020
Sulfur	ug/l		474							20	100
Thallium	ug/l		ND			ND				0.06	0.50
Total Coliforms	MPN/100 ml	-		-	300		240				
Total Dissolved Solids	mg/l	32		50	37		42	500		3	6
Total Phosphorus as P	mg/l	ND		ND	ND		ND	-		0.02	0.05
Turbidity	NTU	2.8		3.0	4.2		3.6	5		0.1	0.5
Zinc, Total	ug/l		0.6			0.9		7.8	J	0.5	2.0
Zinc, Dissolved	ug/l	ND		ND	ND		ND	7.8		0.6	2

Notes:

1. Most stringent applicable MCL
2. Regional Water Quality Control Board Sample Results

J = Detected but below the Reporting Limit; therefore, result is an estimated concentration (CLP J-Flag). The J-flag is equivalent to the DNQ Estimated Concentration flag.

ND = Non-detect

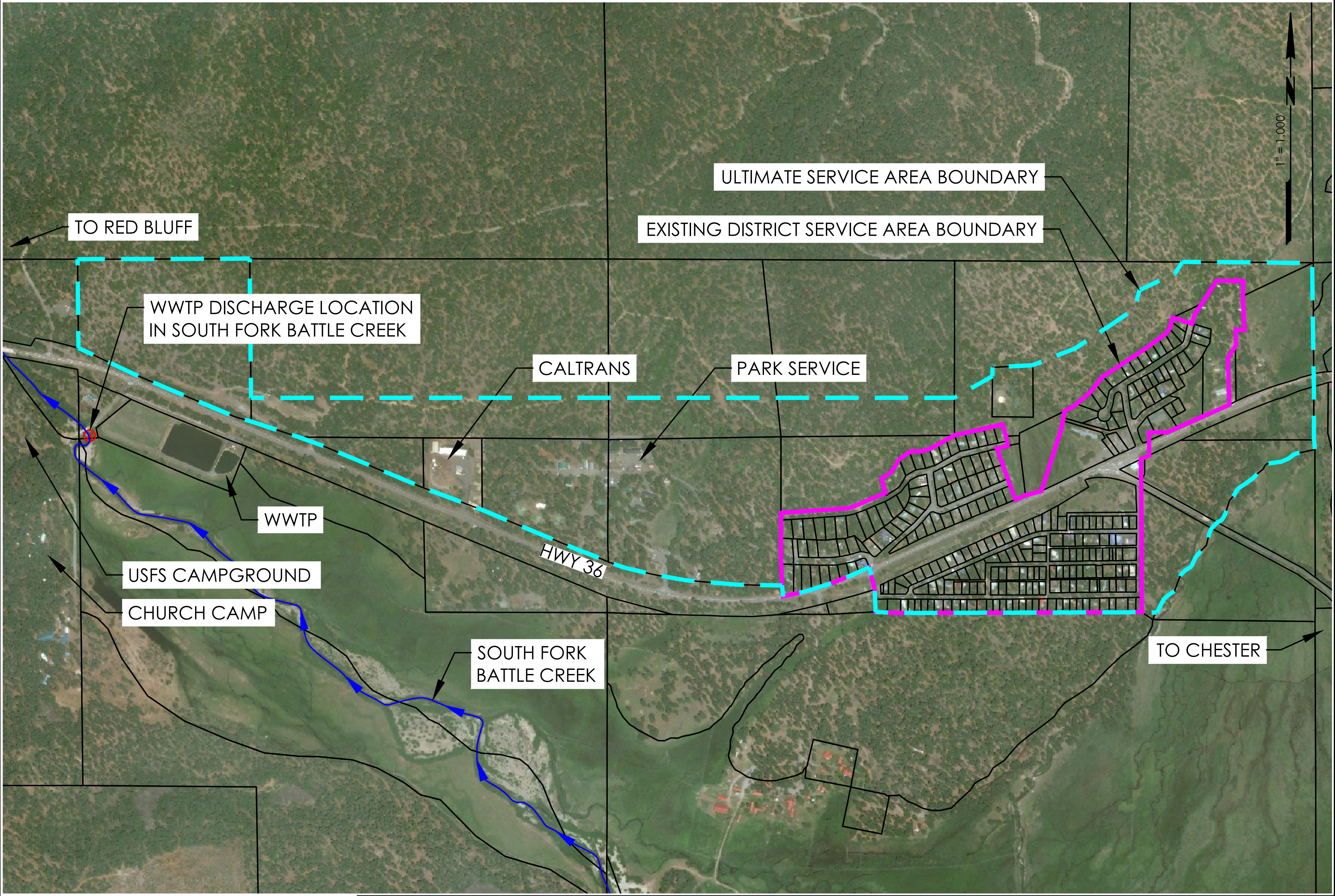
Result is above the most stringent water quality objective.

TABLE 17
Tehama County Sanitation District No. 1 Mineral
2019 Wastewater Master Plan
2019 LATERAL CCTV RESULTS

Inspection Date	Street	Address	Contractor Comments	PACE Comments	PACE Recommendations
8/13/2019	Mineral Avenue	38193	right side by tree, low spot at 106'	significant buildup (grease?), sag at 106', roots at 42', needs a grease trap, raise cleanout above grade and cap	snake and redo CCTV
8/13/2019	Mineral Avenue	38207	added clean out in front, ran from toilet	roots at 35' and 42', broken pipe at 42'	repair or replace
8/17/2019	Mineral Avenue	38213	front, line looks low, a lot of standing water	sag from 6' to 38', only went to 39' and stopped, not all the way to connection and most all underwater	snake and redo CCTV
7/13/2019	Mineral Avenue	38219	right front of garage	roots at 35' joint camera cannot pass, repair and redo CCTV	repair
8/13/2019	Mineral Avenue	38223	left front-reflector, collapse at 71'	collapse at 71', repair and redo CCTV	repair
8/13/2019	Mineral Avenue	38224	left front-reflector		ok
8/13/2019	Mineral Avenue	38231	front buried	cleanout below grade, raise	repair
8/13/2019	Mineral Avenue	38232	roots found at 14' and 24'	roots at every joint, raise new cleanout above grade and cap	replace
8/13/2019	Mineral Avenue	38236	front	crack at first joint at 7', offset joint at transition to PVC at 36' with multiple elbows, offset joint at 38' to different PVC, raise new cleanout above grade and cap	replace
8/13/2019	Mineral Avenue	38237	in house, brown house under porch	sag at 20', difficult to see from debris and water at transition at 28' (looks like roots)	snake and redo CCTV
	Mineral Avenue	38293	potentially too small, can't find cleanout		cannot CCTV - install new cleanout
8/13/2019	Mineral Avenue	38241	front of house-left of steps		ok
8/13/2019	Mineral Avenue	38242	right side		ok
8/17/2019	Mineral Avenue	38261	right side, line has some low spots	standing water first 15', small offset joints, couple of sags	snake and redo CCTV
	Mineral Avenue	38275	back right side into house, brass clean out needs drilled out to access.		cannot CCTV - install new cleanout
8/17/2019	Mineral Avenue	38279	right side, line looks good		ok
8/20/2019	Mineral Avenue	38283	under porch, roots at 3', 8', and 16'	roots at every joint, raise new cleanout above grade and cap	replace
	Mineral Avenue	38284	left side-2" into house, too small for camera head		cannot CCTV - install new cleanout
	Mineral Avenue	38287	left rear-2" vent, too small for camera head		cannot CCTV - install new cleanout
8/20/2019	Mineral Avenue	38288	connects to old city sewer	tee 7' in, raise new cleanout above grade and cap	replace
9/5/2019	Mineral Avenue	38301			ok
8/20/2019	Mineral Avenue	38311	front of porch-2nd post from right, roots at 13'	pipe deformity at 10', broken pipe and roots at 13'	repair or replace
8/20/2019	Mineral Avenue	38324	rear - ran 83', line looks good. Connection at 43'.	sag at 30' to 40', stopped at 83' due to bend	snake and redo CCTV
8/20/2019	Mineral Avenue	38329	in house, roots in line, obstruction at 40'	camera submerged and roots at 24', obstruction cannot pass at 40'	replace
8/17/2019	Mineral Avenue	38330	front buried	verify if cleanout buried per Contractor notes, raise if so	repair
8/30/2019	Mineral Avenue	38350	Goes right to the county sewer	cleanout cap looks broken or taped over, replace cap	repair
8/20/2019	Battle Creek	38262	rear, bad spot at 86', runs uphill	32' another connection or?, adverse slope	replace
8/20/2019	Battle Creek	38293	west side of house-white arrow	roots at all joints, raise new cleanout above grade and cap	replace
8/20/2019	Battle Creek	38305	west side of house-stake with flag (7/2/19)		ok
9/5/2019	Battle Creek	38310			ok
8/20/2019	Battle Creek	38311			ok
8/30/2019	brown house, red door east of 38331		right side	sag 20' to 38'	repair or replace
8/20/2019	Battle Creek	38314	rear left	multiple connections first 10', tee at 18', stuck at elb at 38', did not TV to County connection	snake and redo CCTV
9/5/2019	Battle Creek	38321	left side	Roots at joint 17', 32', 53', 60'	replace
8/30/2019	Battle Creek	38321	green shack west of 38325, right side		ok
7/25/2019	Battle Creek	38334			ok
9/5/2019	Battle Creek	38335	beneath green paver	raise cleanout above grade and cap	repair
8/30/2019	Battle Creek	38338	rear left	large sag at 74' to 91', did not TV to County connection, or is sag in County line??	repair
8/30/2019	Battle Creek	38353	rear	significant buildup (grease?), needs grease trap	snake and redo CCTV
8/30/2019	Battle Creek	38357	right side	buildup (grease?), needs grease trap	snake and redo CCTV
	Scenic Ave	38207	right front-in garage, can't get past T in line		cannot CCTV - install new cleanout
8/13/2019	Scenic Ave	38215	in garage under house-photo 7/16/19, line is flat at 16', 26', and 36'. Ran camera out 60'	multiple sags, roots at joint, raise new cleanout above grade and cap	replace
8/20/2019	Scenic Ave	38221	under front deck-accessible-2"		ok
8/17/2019	Scenic Ave	38227	rear of house-vented	replace broken cap	repair
8/20/2019	Scenic Ave	38228	rear-under crawl space(west side), clear line, lip catches at county joint.		ok
8/17/2019	Scenic Ave	38234	front of house-white arrow		ok
8/20/2019	Scenic Ave	38235	front of house-left of porch-flag on pipe	offset joint at 37' at county connection (soil visible?)	repair
	Scenic Ave	38240	under house-front, could not locate, no one home		cannot CCTV - install new cleanout
8/17/2019	Scenic Ave	38248	front		ok
8/17/2019	Scenic Ave	38254	left side of house		ok
	Scenic Ave	38255	left side behind porch-2" line into house, too small for camera head		cannot CCTV - install new cleanout
8/17/2019	Scenic Ave	38269	front-north side, line is off-center at 26', could not pass.	offset joint with roots at 26', repair and redo CCTV	repair or replace
8/17/2019	Scenic Ave	38270	west side of house	possible offset joint at 42' debris on camera entire time	snake and redo CCTV
8/17/2019	Scenic Ave	38281	front of house, could not get past 106'	roots at 95'	repair
8/17/2019	Scenic Ave	38289	left side of house-south side, line very greasy, could not pass obstruction at 64'	needs grease trap	snake and redo CCTV
8/17/2019	Scenic Ave	38296	behind house	rocks in line at entrance, hole at 4' (another cleanout?), significant offset joint at 25', deformed pipe at 48'?, roots or collapse at joint at 54', raise new cleanout above grade and cap	replace
8/20/2019	Scenic Ave	38300	west side of house	camera until 71', not all the way to County connection	snake and redo CCTV
8/17/2019	Scenic Ave	38305	behind house-south side, too much wastewater in line, could not see anything past 60'	18' infiltration from hole (lateral?) above, hole at 20'	replace
8/17/2019	Scenic Ave	38308	front		ok
9/5/2019	Scenic Ave	38313	SW corner-by crawl space vent in box(7/30/19)	significant buildup (grease?), possible roots at 6', sag 10' to 40', needs grease trap	snake and redo CCTV
	Scenic Ave	38318	inside garage, line has T that camera can't pass		cannot CCTV - install new cleanout
8/20/2019	Scenic Ave	38319	behind house-south side	multiple turns, sag at 60' to 70', stopped at 70', not all the way to County connection	snake and redo CCTV
9/5/2019	Scenic Ave	38328	line is blocked, marked bad spots, no District cleanout	camera under water first 32' then large drop in pipe and full of roots, offset joints, raise new cleanout above grade and cap	replace
8/20/2019	Scenic Ave	38334	front-carport		ok
8/17/2019	Scenic Ave	38348	front of house, small roots at 13', 17', and 22'	roots at all joints	replace
8/20/2019	Mt Lassen Ave	18775	rear(west), a lot of roots every 3' due to clay pipe joints	roots at all joints	replace
	Kirk Michaels		rear left, cleanout installed backwards		cannot CCTV - install new cleanout
8/20/2019	Mt Turner Ave	18729	rear of house, a lot of gravel in line	cleanout on ground, soil visit at offset joint at 5', another lateral connection at 16'?, rocks and gravel at another connection at 22', deformed pipe at 54', broken pipe at 37'	replace
8/20/2019	Mt Turner Ave	18757	left side of house(south side)	sag from 15' to 35', lateral connection at 37'?	repair
8/30/2019	Hampton Ave	38222	east side-front		ok
9/7/2019	Hampton Ave	38226	southwest corner-front	adverse slope 9-10', possible roots at joint 23'	repair
8/30/2019	Hampton Ave	38234	east side		ok
8/30/2019	Hampton Ave	38242	east side		ok
8/30/2019	Hampton Ave	38248	east side		ok
9/7/2019	Hampton Ave	38256	northwest corner		ok
8/30/2019	Hampton Ave	38270	(most easterly house)front of house	sag 32' to District line	ok
8/30/2019	Morgan Ave	38212	front		ok
8/30/2019	Beresford Way	38385	left side	roots at all joints, deformed pipe	replace
	Beresford Way	3841	2" horizontal vent-right side too small for camera head		cannot CCTV - install new cleanout
9/7/2019	Beresford Way	38412	west side		ok
9/7/2019	Beresford Way	38424	2" back vent	roots and deformed pipe with possible hole in top at 14', deformed at 23' and offset joint, deformed at 43', significant roots at multiple joints	replace
8/30/2019	Beresford Way	38430	Ran from pulled toilet	offset joints and broken pipe at 8' to 10', offset joint and roots at 27'	repair or replace
9/7/2019	Beresford Way	38431	southwest of patio in hole	cleanout below grade, two sags	repair or replace
8/30/2019	Beresford Way	38444	front	offset joint at 33', 41', cracked joint at 37'	repair or replace
9/7/2019	motel		right rear	not adequately above grade, cap?, multiple sags under water most of video, roots 2' joint	repair or replace
	laundry		right side, 2" clean out		cannot CCTV - install new cleanout
8/30/2019	campground office		west side		ok
	Amanda Way	38384	2" white-back left side too small for camera head		cannot CCTV - install new cleanout
9/7/2019	Amanda way	38398	left side	full of silt/dirt, possible roots at 17' joint, old pipe to 50' questionable at joints, raise cleanout above grade	snake and redo CCTV

Total	89
Count of "OK"	26
Count of "Repair or Replace"	37
Count of "New cleanout needed"	12
Count of "Snake and redo CCTV"	14
Laterals reviewed with issues that require attention	71%

FIGURES



PACE ENGINEERING
REDDING, CALIFORNIA

TEHAMA COUNTY SANITATION DISTRICT NO. 1 MINERAL
2019 WASTEWATER MASTER PLAN

SERVICE AREA BOUNDARY

FIGURE 1

DATE: 9/19

JOB # 288.36

Plot Date: September 04, 2019 – 1:00 pm Login Name: lmccollum
File Name: M:\Land Projects\0288.36 Mineral WW Collection & Treatment System Improvement Project\DWG\Service Area Boundary.dwg, Layout: BDRY

FIGURE 2
Tehama County Sanitation District No. 1 Mineral
2019 Wastewater Master Plan
South Fork Battle Creek USGS Gaging Station
Provisional Rating Curve

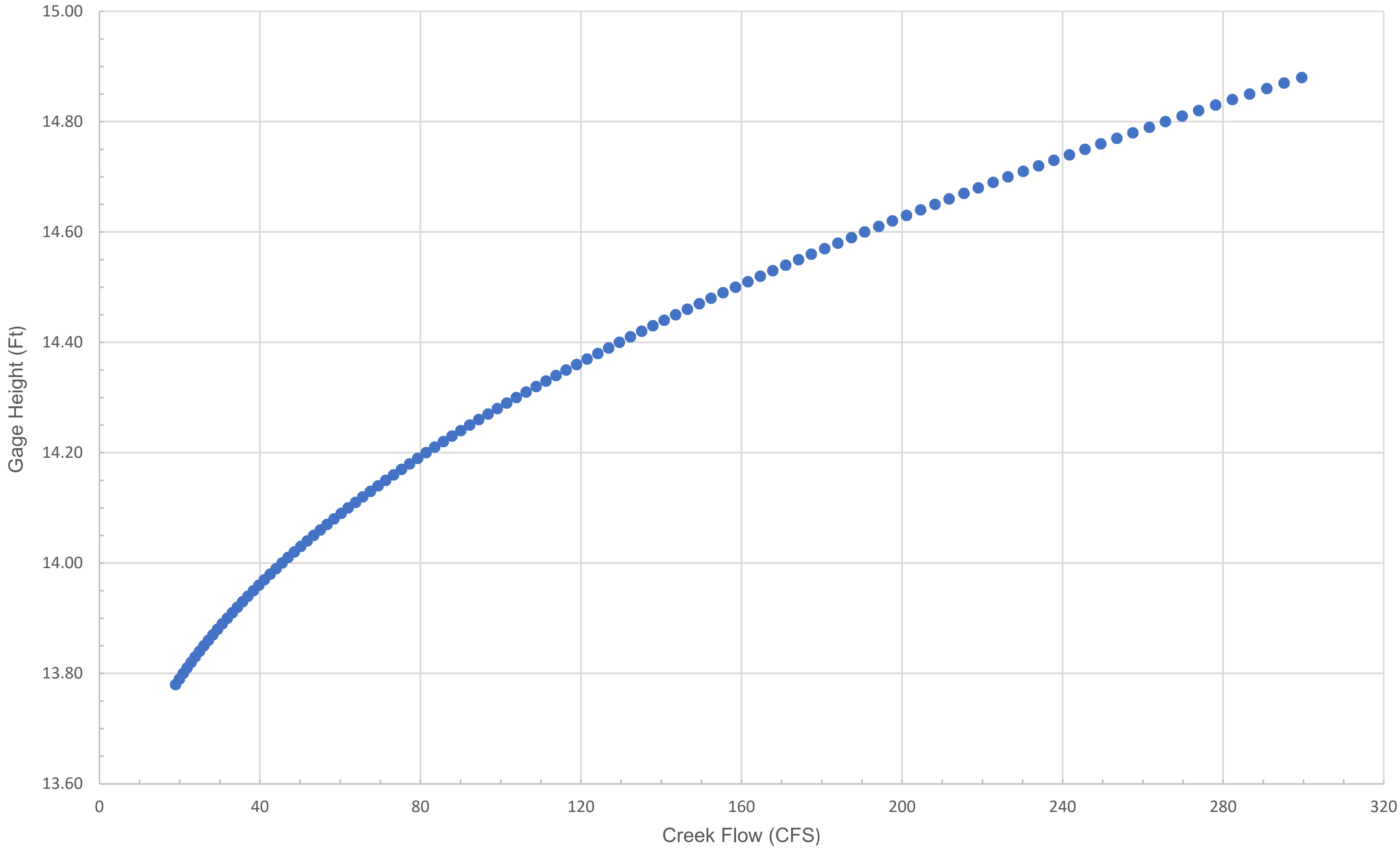


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FIGURE 3
Tehama County Sanitation District No. 1 Mineral
2019 Wastewater Master Plan
PROJECTED WWTP ADWF

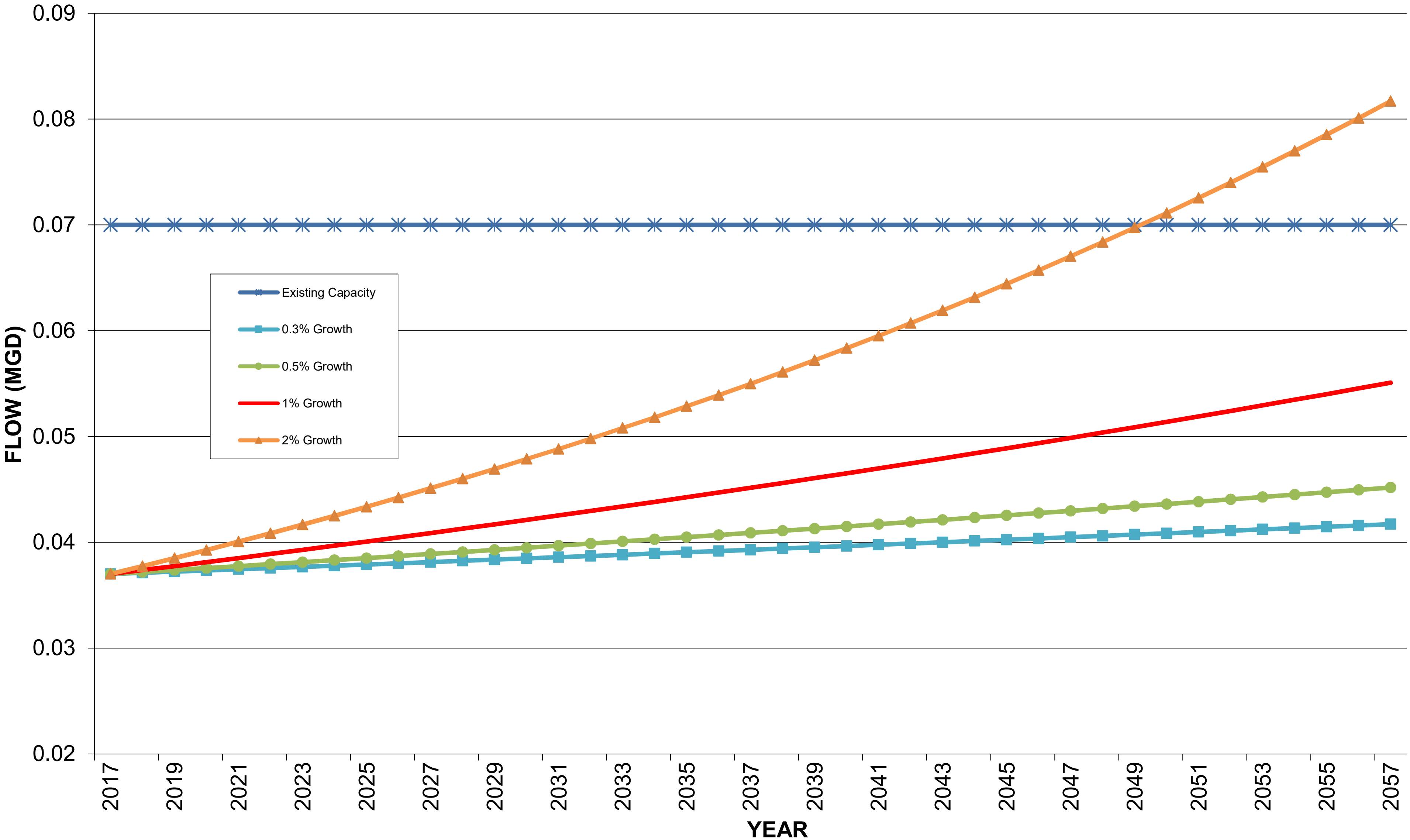

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FIGURE 4
Tehama County Sanitation District No. 1 Mineral
2019 Wastewater Master Plan
COLLECTION SYSTEM DIURNAL CURVE

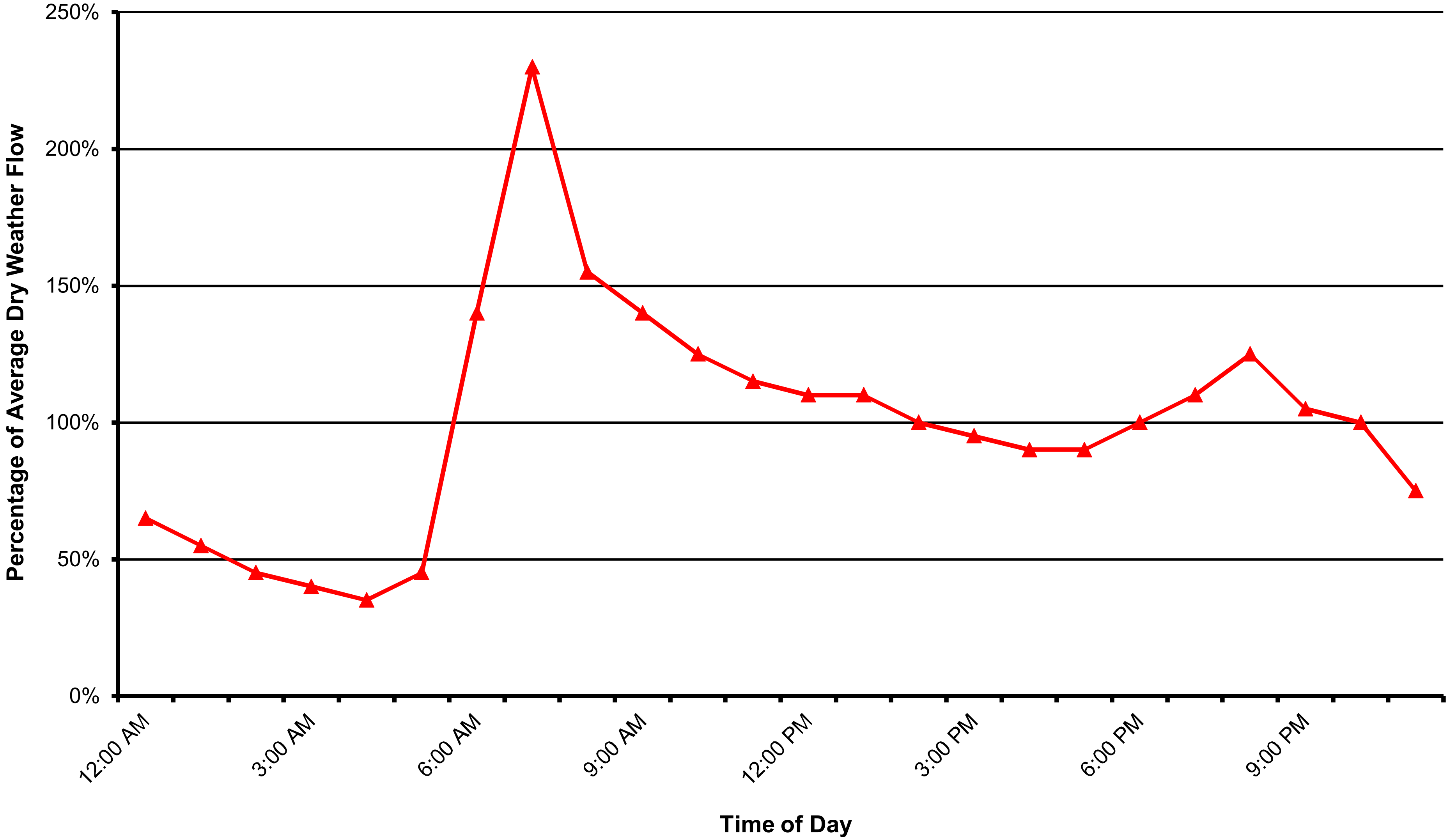

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FIGURE 5

Tehama County Sanitation District No. 1 Mineral

2019 Wastewater Master Plan

MINERAL WWTP POND MONITORING WELL ELEVATIONS

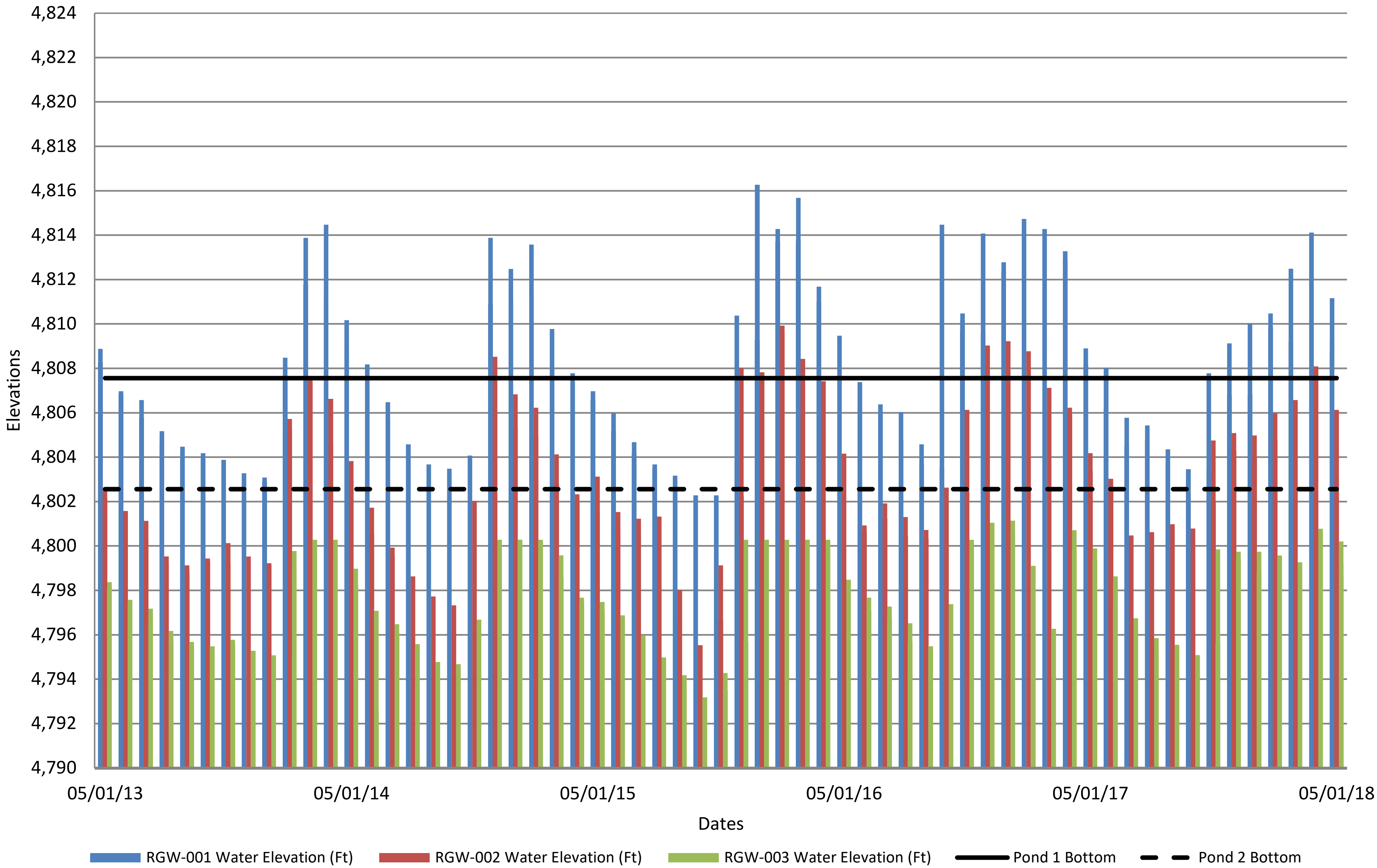

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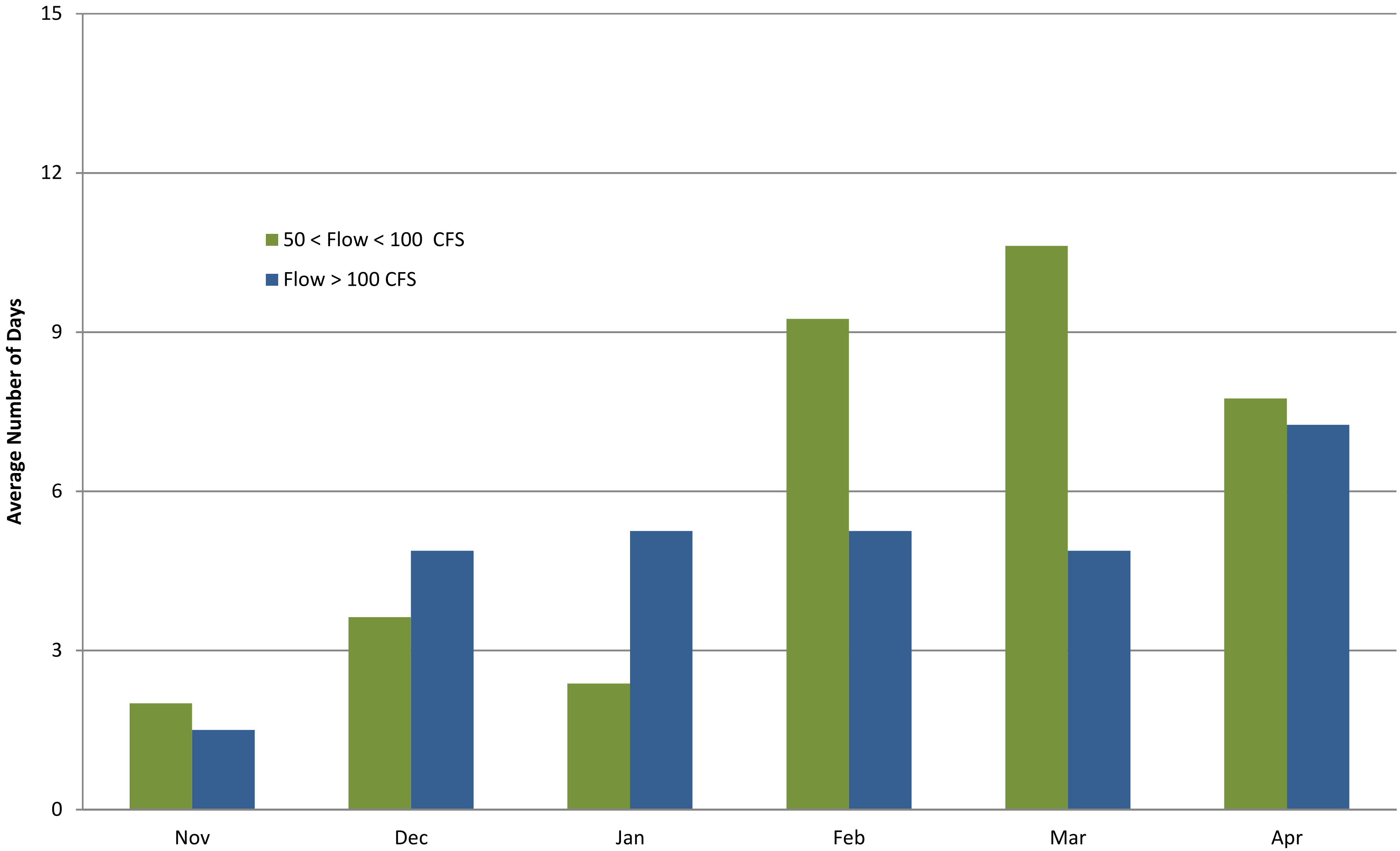
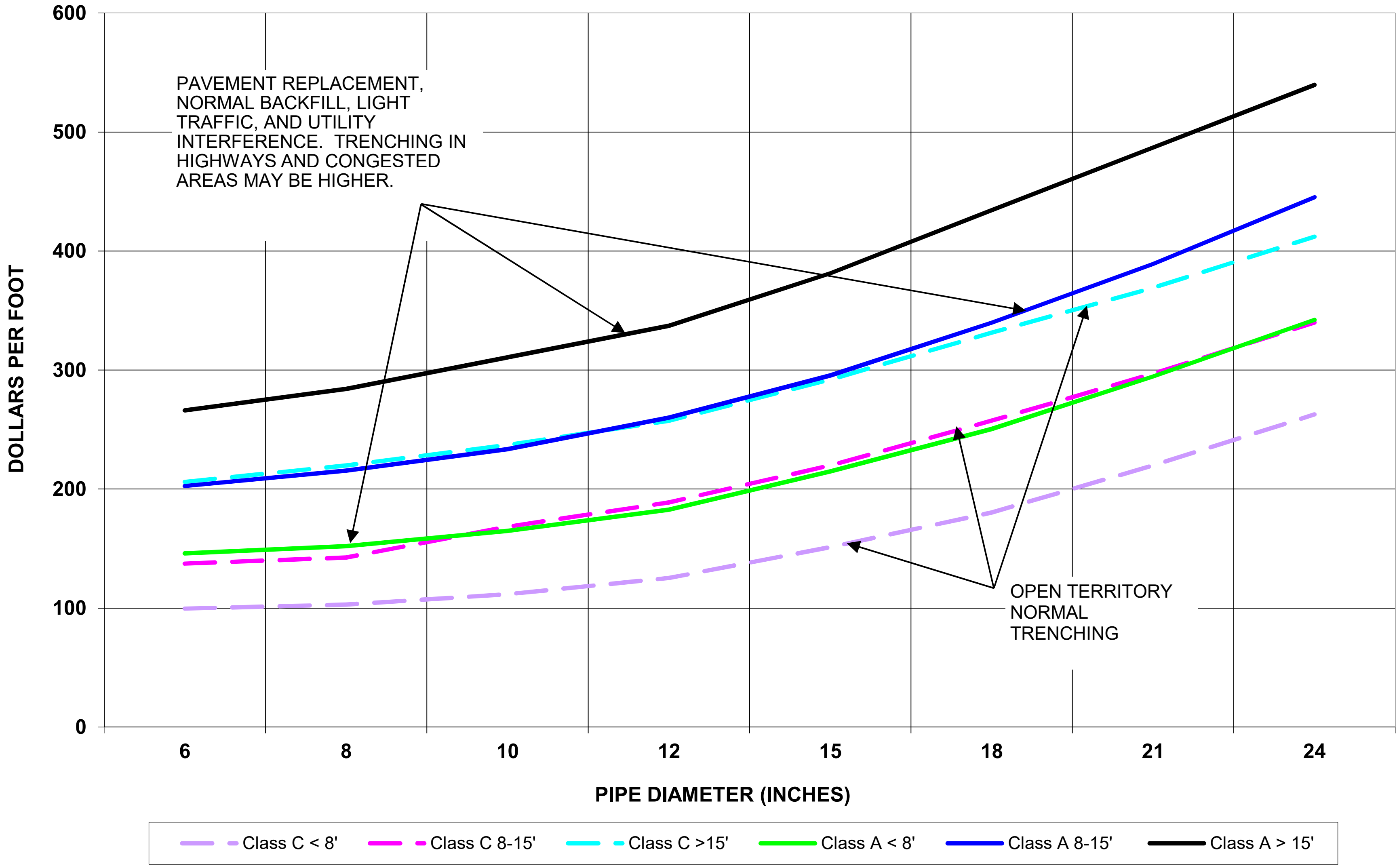
FIGURE 6
Tehama County Sanitation District No. 1 Mineral
2019 Wastewater Master Plan
SFBC HISTORICAL FLOW DATA



M:\Jobs\0288\0288.36 Mineral Wastewater Collection and Treatment Improvement Project\Phase 200 Fiscal Sustainability Plan\Spreadsheets\1959-1967 BATTLE CREEK FLOW Updated 9-5-19.xlsx

FIGURE 7
Tehama County Sanitation District No. 1 Mineral
2019 Wastewater Master Plan
GRAVITY SEWER CONSTRUCTION COST



NOTE: COSTS ARE FOR OPEN TRENCHING AND INCLUDE ALLOWANCES FOR MANHOLES AND OTHER NORMAL APPURTENANCES. THIS COST FIGURE DOES NOT INCLUDE ENGINEERING OR CONTINGENCIES, BORING AND JACKING, ROCK EXCAVATION, SEVERE GROUNDWATER, EASEMENTS, OR OTHER SITE SPECIFIC FACTORS.

APPENDICES

APPENDIX A

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
CENTRAL VALLEY REGION

364 Knollcrest Drive, Suite 205, Redding, California 96002
Phone (530) 224-4845 • Fax (530) 224-4857
http://www.waterboards.ca.gov/centralvalley

ORDER R5-2015-0073

NPDES NO. CA0084069

WASTE DISCHARGE REQUIREMENTS FOR THE TEHAMA COUNTY SANITATION DISTRICT NO. 1 MINERAL WASTEWATER TREATMENT PLANT TEHAMA COUNTY

The following Discharger is subject to waste discharge requirements (WDR's) set forth in this Order:

Table 1. Discharger Information

Discharger	Tehama County Sanitation District No. 1
Name of Facility	Mineral Wastewater Treatment Plant
Facility Address	37735 Highway 36E
	Mineral, CA 96063
	Tehama County

Table 2. Discharge Location

Discharge Point	Effluent Description	Discharge Point Latitude (North)	Discharge Point Longitude (West)	Receiving Water
EFF-001	Treated Wastewater	40º 20' 54" N	121º 37' 25" W	South Fork Battle Creek

Table 3. Administrative Information

This Order was adopted on:	**5 June 2015**
This Order shall become effective on:	**1 August 2015**
This Order shall expire on:	**31 July 2020**
The Discharger shall file a Report of Waste Discharge as an application for reissuance of WDR's in accordance with title 23, California Code of Regulations, and an application for reissuance of a National Pollutant Discharge Elimination System (NPDES) permit no later than:	**2 February 2020**
The U.S. Environmental Protection Agency (U.S. EPA) and the California Regional Water Quality Control Board, Central Valley Region have classified this discharge as follows:	Minor

I, Pamela Creedon, Executive Officer, do hereby certify that this Order with all attachments is a full, true, and correct copy of the Order adopted by the California Regional Water Quality Control Board, Central Valley Region, on **5 June 2015.**

Original signed by
PAMELA C. CREEDON, Executive Officer

CONTENTS

TABLES

ATTACHMENTS

I. FACILITY INFORMATION

Information describing the Mineral Wastewater Treatment Plant (Facility) is summarized in Table 1 and in sections I and II of the Fact Sheet (Attachment F). Section I of the Fact Sheet also includes information regarding the Facility's permit application.

II. FINDINGS

The California Regional Water Quality Control Board, Central Valley Region (hereinafter Central Valley Water Board), finds:

A. Legal Authorities. This Order serves as WDR's pursuant to article 4, chapter 4, division 7 of the California Water Code (commencing with section 13260).This Order is also issued pursuant to section 402 of the federal Clean Water Act (CWA) and implementing regulations adopted by the U.S. EPA and chapter 5.5, division 7 of the Water Code (commencing with section 13370). It shall serve as an NPDES permit for point source discharges from this facility to surface waters.

B. Background and Rationale for Requirements. The Central Valley Water Board developed the requirements in this Order based on information submitted as part of the application, through monitoring and reporting programs, and other available information. The Fact Sheet (Attachment F), which contains background information and rationale for the requirements in this Order, is hereby incorporated into and constitutes Findings for this Order. Attachments A through E and G through H are also incorporated into this Order.

C. Provisions and Requirements Implementing State Law. The provisions/requirements in subsections IV.B, IV.C, and V.B and VI.C of this Order are included to implement state law only. These provisions/requirements are not required or authorized under the federal CWA; consequently, violations of these provisions/requirements are not subject to the enforcement remedies that are available for NPDES violations.

D. Monitoring and Reporting. 40 CFR 122.48 requires that all NPDES permits specify requirements for recording and reporting monitoring results. Water Code sections 13267 and 13383 authorize the Central Valley Water Board to require technical and monitoring reports. The Monitoring and Reporting Program establishes monitoring and reporting requirements to implement federal and State requirements. The Monitoring and Reporting Program is provided in Attachment E.

The technical and monitoring reports in this Order are required in accordance with Water Code section 13267, which states the following in subsection (b)(1), *"In conducting an investigation specified in subdivision (a), the regional board may require that any person who has discharged, discharges, or is suspected of having discharged discharging, or who proposes to discharge waste within its region, or any citizen or domiciliary, or political agency or entity of this state who has discharged, discharges, or is suspected of having discharged or discharging, or who proposes to discharge, waste outside of its region could affect the quality of waters within its region shall furnish, under penalty of perjury, technical or monitoring program reports which the regional board requires. The burden, including costs, of these reports shall bear a reasonable relationship to the need for the report and the benefits to be obtained from the reports. In requiring those reports, the regional board shall provide the person with a written explanation with regard to the need for the reports, and shall identify the evidence that supports requiring that person to provide the reports."*

The Discharger owns and operates the Facility subject to this Order. The monitoring reports required by this Order are necessary to determine compliance with this Order. The need for the monitoring reports is discussed in the Fact Sheet.

E. Notification of Interested Parties. The Central Valley Water Board has notified the Discharger and interested agencies and persons of its intent to prescribe WDR's for the discharge and has provided them with an opportunity to submit their written comments and recommendations. Details of the notification are provided in the Fact Sheet.

F. Consideration of Public Comment. The Central Valley Water Board, in a public meeting, heard and considered all comments pertaining to the discharge. Details of the Public Hearing are provided in the Fact Sheet.

THEREFORE, IT IS HEREBY ORDERED that this Order supersedes Order R5-2007-0098 except for enforcement purposes, and, in order to meet the provisions contained in division 7 of the Water Code (commencing with section 13000) and regulations adopted thereunder, and the provisions of the CWA and regulations and guidelines adopted thereunder, the Discharger shall comply with the requirements in this Order. This action in no way prevents the Central Valley Water Board from taking enforcement action for past violations of the previous Order.

III. DISCHARGE PROHIBITIONS

A. Discharge of wastewater from the Facility, as the Facility is specifically described in the Fact Sheet in section II.B, at a location or in a manner different from that described in this Order is prohibited.

B. The by-pass or overflow of wastes to surface waters is prohibited, except as allowed by Federal Standard Provisions I.G. and I.H. (Attachment D).

C. Neither the discharge nor its treatment shall create a nuisance as defined in section 13050 of the Water Code.

D. The Discharger shall not allow pollutant-free wastewater to be discharged into the treatment or disposal system in amounts that significantly diminish the system's capability to comply with this Order. Pollutant-free wastewater means rainfall, groundwater, cooling waters, and condensates that are essentially free of pollutants.

E. The Discharge of effluent to surface waters from April 16 to November 14 and during periods when flow in South Fork Battle Creek, adjacent to the facility, is less than 35 cfs, is prohibited, unless approved by the Executive Officer in accordance with Standard Provisions VI.C.6.b.

F. The discharge of waste classified as hazardous as defined in Section 2521(a) of Title 23, CCR, Section 2510, et seq. (hereafter Chapter 15) or designated as defined in Section 13173 of the California Water Code, is prohibited.

IV. EFFLUENT LIMITATIONS AND DISCHARGE SPECIFICATIONS

A. Effluent Limitations – Discharge Point No. D-001

1. Final Effluent Limitations – Discharge Point No. D-001

The Discharger shall maintain compliance with the following effluent limitations at Discharge Point D-001, with compliance measured at Monitoring Location EFF-001 as described in the Monitoring and Reporting Program, Attachment E:

a. The Discharger shall maintain compliance with the effluent limitations specified in Table 4:

Table 4. Effluent Limitations

Parameter	Units	Effluent Limitations				
		Average Monthly	**Average Weekly**	**Maximum Daily**	**Instantaneous Minimum**	**Instantaneous Maximum**
Average Dry Weather Effluent Flow	mgd	.070				
Daily Peak Wet Weather Effluent Flow	mgd			0.75		
Conventional Pollutants						
pH	standard units				6.0	9.0
Biochemical Oxygen Demand 5-day @ 20°C	mg/L	10	15	30		
	lbs/day[1]	63	94	188		
Total Suspended Solids	mg/L	30	45	90		
	lbs/day[1]	188	281	563		

[1] Based on the daily peak wet weather flow of 0.75 mgd

b. **Percent Removal:** The average monthly percent removal of BOD 5-day 20°C (BOD_5) and total suspended solids (TSS) shall not be less than 85 percent.

c. **Acute Whole Effluent Toxicity.** Survival of aquatic organisms in 96-hour bioassays of undiluted waste shall be no less than:

i. 70%, minimum for any one bioassay; and
ii. 90%, median for any three consecutive bioassays.

d. **Total Residual Chlorine.** Effluent total residual chlorine shall not exceed:

i. 0.011 mg/L, as a 4-day average; and
ii. 0.019 mg/L, as a 1-hour average.

e. **Total Coliform Organisms.** Effluent total coliform organisms shall not exceed:

i. 23 most probably number (MPN) per 100 mL, as a 7-day median; and
ii. 240 MPN/10 mL, more than once in any 30-day period.

f. **Chlorpyrifos and Diazinon.** Effluent chlorpyrifos and diazinon concentrations shall not exceed the sum of one (1.0) as defined below:

i. Average Monthly Effluent Limitation

$$S_{AMEL} = \frac{C_{D-avg}}{0.079} + \frac{C_{C-avg}}{0.012} \leq 1.0$$

CD-avg = average monthly diazinon effluent concentration in µg/L
CC-avg = average monthly chlorpyrifos effluent concentration in µg/L

ii. Maximum Daily Effluent Limitation

$$S_{MDEL} = \frac{C_{D-max}}{0.16} + \frac{C_{C-max}}{0.025} \leq 1.0$$

CD-max = maximum daily diazinon effluent concentration in µg/L
CC-max = maximum daily chlorpyrifos effluent concentration in µg/L

2. Interim Effluent Limitations – Not Applicable

B. Land Discharge Specifications

a. No waste constituent shall be released, discharged, or placed where it will be released or discharged, in a concentration or in a mass that causes violation of the Groundwater Limitations of this Order.

b. Wastewater treatment, storage, and disposal shall not cause pollution or a nuisance as defined by Water Code section 13050.

c. The discharge shall remain within the permitted waste treatment/containment structures at all times.

C. Recycling Specifications – Not Applicable

V. RECEIVING WATER LIMITATIONS

A. Surface Water Limitations

The discharge shall not cause the following in South Fork Battle Creek:

1. **Bacteria.** The fecal coliform concentration, based on a minimum of not less than five samples for any 30-day period, to exceed a geometric mean of 200 MPN/100 mL, nor more than 10 percent of the total number of fecal coliform samples taken during any 30-day period to exceed 400 MPN/100 mL.
2. **Biostimulatory Substances.** Water to contain biostimulatory substances which promote aquatic growths in concentrations that cause nuisance or adversely affect beneficial uses.
3. **Chemical Constituents.** Chemical constituents to be present in concentrations that adversely affect beneficial uses.
4. **Color.** Discoloration that causes nuisance or adversely affects beneficial uses.
5. **Dissolved Oxygen:**

   a. The monthly median of the mean daily dissolved oxygen concentration to fall below 85 percent of saturation in the main water mass;

   b. The 95 percentile dissolved oxygen concentration to fall below 75 percent of saturation; nor

   c. The dissolved oxygen concentration to be reduced below 7.0 mg/L at any time.
6. **Floating Material.** Floating material to be present in amounts that cause nuisance or adversely affect beneficial uses.
7. **Oil and Grease.** Oils, greases, waxes, or other materials to be present in concentrations that cause nuisance, result in a visible film or coating on the surface of the water or on objects in the water, or otherwise adversely affect beneficial uses.
8. **pH.** The pH to be depressed below 6.5 nor raised above 8.5**.**
9. **Pesticides:**

   a. Pesticides to be present, individually or in combination, in concentrations that adversely affect beneficial uses;

   b. Pesticides to be present in bottom sediments or aquatic life in concentrations that adversely affect beneficial uses;

c. Total identifiable persistent chlorinated hydrocarbon pesticides to be present in the water column at concentrations detectable within the accuracy of analytical methods approved by USEPA or the Executive Officer;

d. Pesticide concentrations to exceed those allowable by applicable antidegradation policies (see State Water Board Resolution No. 68-16 and 40 CFR 131.12.);

e. Pesticide concentrations to exceed the lowest levels technically and economically achievable;

f. Pesticides to be present in concentration in excess of the maximum contaminant levels set forth in CCR, Title 22, division 4, chapter 15; nor

g. Thiobencarb to be present in excess of 1.0 µg/L.

10. **Radioactivity:**

a. Radionuclides to be present in concentrations that are harmful to human, plant, animal, or aquatic life nor that result in the accumulation of radionuclides in the food web to an extent that presents a hazard to human, plant, animal, or aquatic life.

b. Radionuclides to be present in excess of the maximum contaminant levels (MCLs) specified in Table 64442 of section 64442 and Table 64443 of section 64443 of Title 22 of the California Code of Regulations.

11. **Suspended Sediments.** The suspended sediment load and suspended sediment discharge rate of surface waters to be altered in such a manner as to cause nuisance or adversely affect beneficial uses.

12. **Settleable Substances.** Substances to be present in concentrations that result in the deposition of material that causes nuisance or adversely affects beneficial uses.

13. **Suspended Material.** Suspended material to be present in concentrations that cause nuisance or adversely affect beneficial uses.

14. **Taste and Odors.** Taste- or odor-producing substances to be present in concentrations that impart undesirable tastes or odors to fish flesh or other edible products of aquatic origin, or that cause nuisance, or otherwise adversely affect beneficial uses.

15. **Temperature.** The natural temperature to be increased by more than 5°F. Compliance to be determined based on the difference in temperature at RSW-001 and RSW-002.

16. **Toxicity.** Toxic substances to be present, individually or in combination, in concentrations that produce detrimental physiological responses in human, plant, animal, or aquatic life.

17. **Turbidity.**

a. Shall not exceed 2 Nephelometric Turbidity Units (NTU) where natural turbidity is less than 1 NTU;

b. Shall not increase more than 1 NTU where natural turbidity is between 1 and 5 NTUs;

c. Shall not increase more than 20 percent where natural turbidity is between 5 and 50 NTUs;

d. Shall not increase more than 10 NTU where natural turbidity is between 50 and 100 NTUs; nor

e. Shall not increase more than 10 percent where natural turbidity is greater than 100 NTUs.

B. Groundwater Limitations

Release of waste constituents from any portion of the Facility shall not cause groundwater to:

1. Contain any of the following constituents in concentrations greater than listed or greater than natural background quality, whichever is greater.

Table 5. Groundwater Limitations

Constituent	Units	Limitation
Total Coliform Organisms	MPN/100 mL	<2.2[1]

[1] Over any seven-day period

2. Except as specified in 1 above, contains constituents in concentrations that exceed either the Primary or Secondary MCL established in Title 22 of the California Code of Regulations. For TDS, the upper level Secondary MCL of 1,000 mg/L is applicable.

3. Exhibit a pH of less than 6.5 or greater than 8.4 pH units.

4. Impart taste, odor, chemical constituents, toxicity, or color that creates nuisance or impairs any beneficial use.

VI. PROVISIONS

A. Standard Provisions

1. The Discharger shall comply with all Standard Provisions included in Attachment D.
2. The Discharger shall comply with the following provisions. In the event that there is any conflict, duplication, or overlap between provisions specified by this Order, the more stringent provision shall apply:
   a. If the Discharger's wastewater treatment plant is publicly owned or subject to regulation by California Public Utilities Commission, it shall be supervised and operated by persons possessing certificates of appropriate grade according to Title 23, CCR, division 3, chapter 26.

   b. After notice and opportunity for a hearing, this Order may be terminated or modified for cause, including, but not limited to:

      i. violation of any term or condition contained in this Order;

      ii. obtaining this Order by misrepresentation or by failing to disclose fully all relevant facts;

      iii. a change in any condition that requires either a temporary or permanent reduction or elimination of the authorized discharge; and

      iv. a material change in the character, location, or volume of discharge.

      The causes for modification include:

      i. *New regulations.* New regulations have been promulgated under section 405(d) of the CWA, or the standards or regulations on which the permit was based have been changed by promulgation of amended standards or regulations or by judicial decision after the permit was issued.

      ii. *Land application plans.* When required by a permit condition to incorporate a land application plan for beneficial reuse of sewage sludge, to revise an existing land application plan, or to add a land application plan.

      iii. *Change in sludge use or disposal practice.* Under 40 CFR 122.62(a)(1), a change in the Discharger's sludge use or disposal practice is a cause for modification of the permit. It is cause for revocation and reissuance if the Discharger requests or agrees.

      The Central Valley Water Board may review and revise this Order at any time upon application of any affected person or the Central Valley Water Board's own motion.

   c. If a toxic effluent standard or prohibition (including any scheduled compliance specified in such effluent standard or prohibition) is established under section 307(a) of the CWA, or amendments thereto, for a toxic pollutant that is present in the discharge authorized herein, and such standard or prohibition is more stringent than any limitation upon such pollutant in this Order, the Central Valley Water Board will revise or modify this Order in accordance with such toxic effluent standard or prohibition.

      The Discharger shall comply with effluent standards and prohibitions within the time provided in the regulations that establish those standards or prohibitions, even if this Order has not yet been modified.

d. This Order shall be modified, or alternately revoked and reissued, to comply with any applicable effluent standard or limitation issued or approved under sections 301(b)(2)(C) and (D), 304(b)(2), and 307(a)(2) of the CWA, if the effluent standard or limitation so issued or approved:

   i. Contains different conditions or is otherwise more stringent than any effluent limitation in the Order; or

   ii. Controls any pollutant limited in the Order.

   The Order, as modified or reissued under this paragraph, shall also contain any other requirements of the CWA then applicable.

e. The provisions of this Order are severable. If any provision of this Order is found invalid, the remainder of this Order shall not be affected.

f. The Discharger shall take all reasonable steps to minimize any adverse effects to waters of the State or users of those waters resulting from any discharge or sludge use or disposal in violation of this Order. Reasonable steps shall include such accelerated or additional monitoring as necessary to determine the nature and impact of the non-complying discharge or sludge use or disposal.

g. The Discharger shall ensure compliance with any existing or future pretreatment standard promulgated by USEPA under section 307 of the CWA, or amendment thereto, for any discharge to the municipal system.

h. A copy of this Order shall be maintained at the discharge facility and be available at all times to operating personnel. Key operating personnel shall be familiar with its content.

i. Safeguard to electric power failure:

   i. The Discharger shall provide safeguards to assure that, should there be reduction, loss, or failure of electric power, the discharge shall comply with the terms and conditions of this Order.

   ii. Upon written request by the Central Valley Water Board, the Discharger shall submit a written description of safeguards. Such safeguards may include alternate power sources, standby generators, retention capacity, operating procedures, or other means. A description of the safeguards provided shall include an analysis of the frequency, duration, and impact of power failures experienced over the past 5 years on effluent quality and on the capability of the Discharger to comply with the terms and conditions of the Order. The adequacy of the safeguards is subject to the approval of the Central Valley Water Board.

   iii. Should the treatment works not include safeguards against reduction, loss, or failure of electric power, or should the Central Valley Water Board not approve the existing safeguards, the Discharger shall, within 90 days of having been advised in writing by the Central Valley Water Board that the existing safeguards are inadequate, provide to the Central Valley Water Board and USEPA a schedule of compliance for providing safeguards such that in the event of reduction, loss, or failure of electric power, the Discharger shall comply with the terms and conditions of this Order. The schedule of compliance shall, upon approval of the Central Valley Water Board, become a condition of this Order.

j. The Discharger, upon written request of the Central Valley Water Board, shall file with the Board a technical report on its preventive (failsafe) and contingency (cleanup) plans for controlling accidental discharges, and for minimizing the effect of such events. This report may be combined with that required under the Central Valley Water Board Standard Provision contained in section VI.A.2.i of this Order.

The technical report shall:

i. Identify the possible sources of spills, leaks, untreated waste by-pass, and contaminated drainage. Loading and storage areas, power outage, waste treatment unit outage, and failure of process equipment, tanks and pipes should be considered.

ii. Evaluate the effectiveness of present facilities and procedures and state when they became operational.

iii. Predict the effectiveness of the proposed facilities and procedures and provide an implementation schedule containing interim and final dates when they will be constructed, implemented, or operational.

The Central Valley Water Board, after review of the technical report, may establish conditions which it deems necessary to control accidental discharges and to minimize the effects of such events. Such conditions shall be incorporated as part of this Order, upon notice to the Discharger.

k. A publicly owned treatment works whose waste flow has been increasing, or is projected to increase, shall estimate when flows will reach hydraulic and treatment capacities of its treatment and disposal facilities. The projections shall be made in January, based on the last 3 years' average dry weather flows, peak wet weather flows and total annual flows, as appropriate. When any projection shows that capacity of any part of the facilities may be exceeded in 4 years, the Discharger shall notify the Central Valley Water Board by 31 January. A copy of the notification shall be sent to appropriate local elected officials, local permitting agencies and the press. Within 120 days of the notification, the Discharger shall submit a technical report showing how it will prevent flow volumes from exceeding capacity or how it will increase capacity to handle the larger flows. The Central Valley Water Board may extend the time for submitting the report.

l. The Discharger shall submit technical reports as directed by the Executive Officer. All technical reports required herein that involve planning, investigation, evaluation, or design, or other work requiring interpretation and proper application of engineering or geologic sciences, shall be prepared by or under the direction of persons registered to practice in California pursuant to California Business and Professions Code, sections 6735, 7835, and 7835.1. To demonstrate compliance with Title 16, CCR, sections 415 and 3065, all technical reports must contain a statement of the qualifications of the responsible registered professional(s). As required by these laws, completed technical reports must bear the signature(s) and seal(s) of the registered professional(s) in a manner such that all work can be clearly attributed to the professional responsible for the work.

m. The Central Valley Water Board is authorized to enforce the terms of this permit under several provisions of the Water Code, including, but not limited to, sections 13385, 13386, and 13387.

n. For any wastewater treatment plant, prior to making any change in the point of discharge, place of use, or purpose of use of treated wastewater that results in a permanent decrease of flow in any portion of a watercourse, the Discharger must file a petition with the State Water Board, Division of Water Rights, and receive approval for such a change. (Water Code section 1211).

o. In the event of any change in control or ownership of land or waste discharge facilities presently owned or controlled by the Discharger, the Discharger shall notify the succeeding owner or operator of the existence of this Order by letter, a copy of which shall be immediately forwarded to the Central Valley Water Board.

To assume operation under this Order, the succeeding owner or operator must apply in writing to the Executive Officer requesting transfer of the Order. The request must contain the requesting entity's full legal name, the state of incorporation if a corporation, address and telephone number of the persons responsible for contact with the Central Valley Water Board and a statement. The statement shall comply with the signatory and certification requirements in the federal Standard Provisions (Attachment D, section V.B) and state that the new owner or operator assumes full responsibility for compliance with this Order. Failure to submit the request shall be considered a discharge without requirements, a violation of the Water Code. Transfer shall be approved or disapproved in writing by the Executive Officer.

p. Failure to comply with provisions or requirements of this Order, or violation of other applicable laws or regulations governing discharges from this facility, may subject the Discharger to administrative or civil liabilities, criminal penalties, and/or other enforcement remedies to ensure compliance. Additionally, certain violations may subject the Discharger to civil or criminal enforcement from appropriate local, state, or federal law enforcement entities.

q. In the event the Discharger does not comply or will be unable to comply for any reason, with any prohibition, maximum daily effluent limitation, 1-hour average effluent limitation, or receiving water limitation of this Order, **the Discharger shall notify the Central Valley Water Board by telephone (530) 224-4845 within 24 hours of having knowledge of such noncompliance, and shall confirm this notification in writing within five days, unless the Central Valley Water Board waives confirmation.** The written notification shall state the nature, time, duration, and cause of noncompliance, and shall describe the measures being taken to remedy the current noncompliance and prevent recurrence including, where applicable, a schedule of implementation. Other noncompliance requires written notification as above at the time of the normal monitoring report.

B. Monitoring and Reporting Program (MRP) Requirements

The Discharger shall comply with the MRP, and future revisions thereto, in Attachment E.

C. Special Provisions

1. Reopener Provisions

a. Conditions that necessitate a major modification of a permit are described in 40 CFR 122.62, including, but not limited to:

   i. If new or amended applicable water quality standards are promulgated or approved pursuant to section 303 of the CWA, or amendments thereto, this permit may be reopened and modified in accordance with the new or amended standards.

   ii. When new information, that was not available at the time of permit issuance, would have justified different permit conditions at the time of issuance.

b. **Priority Pollutants.** This Order may be reopened for modification, or revocation and reissuance, as a result of the detection of a reportable priority pollutant generated by special conditions included in this Order. These special conditions may be, but are not limited to, fish tissue sampling, whole effluent toxicity, monitoring requirements on internal waste stream(s), and monitoring for surrogate parameters. Additional requirements may be included in this Order as a result of the special condition monitoring data.

c. **Mercury.** If mercury is found to be causing toxicity based on acute or chronic toxicity test results, or if a TMDL program is adopted, this Order shall be reopened and the interim mass effluent limitation modified (higher or lower) or an effluent concentration limitation imposed. If the Central Valley Water Board determines that a mercury offset program is feasible for Dischargers subject to a NPDES permit, then this Order may be reopened to reevaluate the interim mercury mass loading limitation(s) and the need for a mercury offset program for the Discharger.

d. **Whole Effluent Toxicity.** As a result of a Toxicity Reduction Evaluation (TRE), this Order may be reopened to include a numeric chronic toxicity limitation, a new acute toxicity limitation, and/or a limitation for a specific toxicant identified in the TRE. Additionally, if the State Water Board revises the SIP's toxicity control provisions that would require the establishment of numeric chronic toxicity effluent limitations, this Order may be reopened to include a numeric chronic toxicity effluent limitation based on the new provisions.

e. **Water Effects Ratios (WER) and Metal Translators.** A default WER of 1.0 has been used in this Order for calculating CTR criteria for applicable priority pollutant inorganic constituents. If the Discharger performs studies to determine site-specific WERs and/or site-specific dissolved-to-total metal translators, this Order may be reopened to modify the effluent limitations for the applicable inorganic constituents.

f. **Drinking Water Policy.** On 26 July 2013 the Central Valley Water Board adopted Resolution No. R5-2013-0098 amending the Basin Plan and establishing a Drinking Water Policy. The State Water Board approved the Drinking Water Policy on 3 December 2013. This Order may be reopened to incorporate monitoring of drinking water constituents to implement the Drinking Water Policy.

g. **Diazinon and Chlorpyrifos Basin Plan Amendment.** Central Valley Water Board staff is developing a Basin Plan Amendment to provide an implementation plan for NPDES-permitted domestic wastewater dischargers. This Order may be reopened to modify diazinon and chlorpyrifos effluent limitations, as appropriate, in accordance with an amendment to the Basin Plan.

h. **Title 27 Exemption Analysis Update.** Upon submittal of the Title 27 Exemption Analysis Update required by this Order, this Order may be reopened to add or modify Findings, limits, or other conditions as appropriate.

2. Special Studies, Technical Reports and Additional Monitoring Requirements

a. **Toxicity Reduction Evaluation Requirements.** For compliance with the Basin Plan's narrative toxicity objective, this Order requires the Discharger to conduct chronic whole effluent toxicity (WET) testing, as specified in MRP section V. Furthermore, this Provision requires the Discharger to investigate the causes of, and identify corrective actions to reduce or eliminate effluent toxicity. If the discharge exceeds the numeric toxicity monitoring trigger during accelerated monitoring established in this Provision, the Discharger is required to initiate a Toxicity Reduction Evaluation (TRE) in accordance with an approved TRE Work Plan, and take actions to mitigate the impact of the discharge and prevent recurrence of toxicity. A TRE is a site-specific study conducted in a stepwise process to identify the source(s) of toxicity and the effective control measures for effluent toxicity. TREs are designed to identify the causative agents and sources of whole effluent toxicity, evaluate the effectiveness of the toxicity control options, and confirm the reduction in effluent toxicity. This Provision includes requirements for the Discharger to develop and submit a TRE Workplan and includes procedures for accelerated chronic toxicity monitoring and TRE initiation.

i. **Initial Investigative TRE Work Plan. Within 90 days of the effective date of this Order**, the Discharger shall submit to the Central Valley Water Board an Initial Investigative TRE Work Plan for approval by the Executive Officer. This should be a one to two page document including, at a minimum:

(a) A description of the investigation and evaluation techniques that will be used to identify potential causes and sources of effluent toxicity, effluent variability, and treatment system efficiency;

(b) A description of the facility's methods of maximizing in-house treatment efficiency and good housekeeping practices, and a list of all chemicals used in operation of the facility; and

(c) A discussion of who will conduct the Toxicity Identification Evaluation (TIE), if necessary (e.g., an in-house expert or outside contractor).

ii. **Accelerated Monitoring and TRE Initiation.** When the numeric toxicity monitoring trigger is exceeded during regular chronic toxicity monitoring, and the testing meets all test acceptability criteria, the Discharger shall initiate accelerated monitoring as required in the Accelerated Monitoring Specifications. The Discharger shall initiate a TRE to address effluent toxicity if any WET testing results exceed the numeric toxicity monitoring trigger during accelerated monitoring.

iii. **Numeric Toxicity Monitoring Trigger.** The numeric toxicity monitoring trigger to initiate a TRE is > 1 TUc (where TUc = 100/NOEC). The monitoring trigger is not an effluent limitation; it is the toxicity threshold at which the Discharger is required to begin accelerated monitoring and initiate a TRE.

iv. **Accelerated Monitoring Specifications.** If the numeric toxicity monitoring trigger is exceeded during regular chronic toxicity testing, the Discharger shall initiate accelerated monitoring within 14-days of notification by the laboratory of the exceedance. Accelerated monitoring shall consist of four chronic toxicity tests conducted once every two weeks using the species that exhibited toxicity. The following protocol shall be used for accelerated monitoring and TRE initiation:

(a) If the results of four consecutive accelerated monitoring tests do not exceed the monitoring trigger, the Discharger may cease accelerated monitoring and resume regular chronic toxicity monitoring. However, notwithstanding the accelerated monitoring results, if there is adequate evidence of a pattern of effluent toxicity, the Executive Officer may require that the Discharger initiate a TRE.

(b) If the source(s) of the toxicity is easily identified (e.g., temporary plant upset), the Discharger shall make necessary corrections to the facility and shall continue accelerated monitoring until four consecutive accelerated tests do not exceed the monitoring trigger. Upon confirmation that the effluent toxicity has been removed, the Discharger may cease accelerated monitoring and resume regular chronic toxicity monitoring.

(c) If the result of any accelerated toxicity test exceeds the monitoring trigger, the Discharger shall cease accelerated monitoring and begin a TRE to investigate the cause(s) of, and identify corrective actions to reduce or eliminate effluent toxicity. Within thirty (30) days of notification by the laboratory of any test result exceeding the monitoring trigger during accelerated monitoring, the Discharger shall submit a TRE Action Plan to the Central Valley Water Board including, at minimum:

(1) Specific actions the Discharger will take to investigate and identify the cause(s) of toxicity, including a TRE WET monitoring schedule;

(2) Specific actions the Discharger will take to mitigate the impact of the discharge and prevent the recurrence of toxicity; and

(3) A schedule for these actions.

Within sixty (60) days of notification by the laboratory of the test results, the Discharger shall submit to the Central Valley Water Board a TRE Workplan for approval by the Executive Officer. The TRE Workplan shall outline the procedures for identifying the source(s) of, and reducing or eliminating effluent toxicity. The TRE Workplan must be developed in accordance with USEPA guidance[1].

b. **Title 27 Exemption Analysis Update. Within 36 months of the effective date of this Order**, the Discharger shall submit a Title 27 Exemption Analysis Update (Title 27 Analysis Update). The Title 27 Analysis Update shall present the results of the land discharge and groundwater monitoring to date, and an evaluation of whether the discharge to the evaporation/percolation ponds is in compliance with the Basin Plan, including the Basin Plan water quality objectives.

c. **Best Practical Treatment or Control (BPTC) Update.** If the groundwater monitoring results show that the discharge of waste is threatening to cause or has caused groundwater to contain waste constituents in concentrations statistically greater than background water quality, the Discharger shall submit, **within 36 months following adoption of this Order**, a BPTC Evaluation Work Plan that sets

[1] See the Fact Sheet (Attachment F section VII.B.2.a.) for a list of USEPA guidance documents that must be considered in development of the TRE Workplan.

forth a scope and schedule for a systematic and comprehensive technical evaluation of each component of the facilities' waste management system to determine best practicable treatment or control for each the waste constituents of concern. The work plan shall include a preliminary evaluation of each component of the waste management system and propose a time schedule for completing the comprehensive technical evaluation. The schedule to complete the evaluation shall be as short as practicable, and shall not exceed 1 year.

In accordance with California Business and Professions Code Sections 6735, 7835, and 7835.1, engineering and geologic evaluations and judgments shall be performed by or under the direction of registered professionals competent and proficient in the fields pertinent to the required activities. The technical report shall be prepared by or under the direction of appropriately qualified professional(s) and shall bear the professional's signature and stamp.

3. Best Management Practices and Pollution Prevention

a. **Pollutant Minimization Program**

The Discharger shall develop and conduct a Pollutant Minimization Program (PMP) as further described below when there is evidence (e.g., sample results reported as DNQ when the effluent limitation is less than the MDL, sample results from analytical methods more sensitive than those methods required by this Order, presence of whole effluent toxicity, health advisories for fish consumption, results of benthic or aquatic organism tissue sampling) that a priority pollutant is present in the effluent above an effluent limitation and either:

i. A sample result is reported as DNQ and the effluent limitation is less than the RL; or

ii. A sample result is reported as ND and the effluent limitation is less than the MDL, using definitions described in Attachment A and reporting protocols described in MRP section X.B.4.

The PMP shall include, but not be limited to, the following actions and submittals acceptable to the Central Valley Water Board:

i. An annual review and semi-annual monitoring of potential sources of the reportable priority pollutant(s), which may include fish tissue monitoring and other bio-uptake sampling;

ii. Quarterly monitoring for the reportable priority pollutant(s) in the influent to the wastewater treatment system;

iii. Submittal of a control strategy designed to proceed toward the goal of maintaining concentrations of the reportable priority pollutant(s) in the effluent at or below the effluent limitation;

iv. Implementation of appropriate cost-effective control measures for the reportable priority pollutant(s), consistent with the control strategy; and

v. An annual status report that shall be sent to the Central Valley Water Board including:

(a) All PMP monitoring results for the previous year;

(b) A list of potential sources of the reportable priority pollutant(s);

(c) A summary of all actions undertaken pursuant to the control strategy; and

(d) A description of actions to be taken in the following year.

b. **Salinity Evaluation and Minimization Plan.** A Salinity Evaluation and Minimization Plan is required in this Order only if surface water discharge data or groundwater monitoring data become available that indicates receiving water quality objectives for salinity are threatened to be exceeded.

4. Construction, Operation and Maintenance Specifications

a. **Treatment Pond Operating Requirements.**

i. The treatment facilities shall be designed, constructed, operated, and maintained to prevent inundation or washout due to floods with a 100-year return frequency.

ii. Public contact with wastewater shall be precluded through such means as fences, signs, and other acceptable alternatives.

iii. Ponds shall be managed to prevent breeding of mosquitoes. In particular,

(a) An erosion control program should assure that small coves and irregularities are not created around the perimeter of the water surface.

(b) Weeds shall be minimized.

(c) Dead algae, vegetation, and debris shall not accumulate on the water surface.

iv. Freeboard shall never be less than 2 feet (measured vertically to the lowest point of overflow.

v. Ponds shall have sufficient capacity to accommodate allowable wastewater flow and design seasonal precipitation and ancillary inflow and infiltration during the non-irrigation season. Design seasonal precipitation shall be based on total annual precipitation using a return period of 100 years, distributed monthly in accordance with historical rainfall patterns. Freeboard shall never be less than 2 feet (measured vertically to the lowest point of overflow).

vi. Prior to the onset of the rainy season of each year, available pond storage capacity shall at least equal the volume necessary to comply with the Land Discharge Specification at section IV.C.4.a.v., above.

vii. The discharge of waste classified as “hazardous” as defined in section 2521(a) of Title 23, California Code of Regulations (CCR), or “designated”, as defined in section 13173 of the Water Code, to the treatment ponds is prohibited.

viii. Objectionable odors originating at this Facility shall not be perceivable beyond the limits of the wastewater treatment and disposal areas (or property owned by the Discharger).

ix. As a means of discerning compliance with requirement viii. the dissolved oxygen content in the upper zone (1 foot) of wastewater in ponds shall not be less than 1.0 mg/L.

x. Ponds shall not have a pH less than 6.5 or greater than 8.5.

b. **Effluent Filtration.** During periods of discharge to the receiving water, the filtration system shall be operated to the maximum extent practicable.

5. Special Provisions for Municipal Facilities (POTWs Only)

a. **Pretreatment Requirements**

i. The Discharger shall be responsible and liable for the performance of all Control Authority pretreatment requirements contained in 40 CFR Part 403, including any subsequent regulatory revisions to 40 CFR Part 403. Where 40 CFR Part 403 or subsequent revision places mandatory actions upon the Discharger as Control Authority but does not specify a timetable for completion of the actions, the Discharger shall complete the required actions within 6 months from the issuance date of this permit or the effective date of the 40 CFR Part 403 revisions, whichever comes later. For violations of pretreatment requirements, the Discharger shall be subject to enforcement actions, penalties, fines, and other remedies by USEPA or other appropriate parties, as provided in the CWA. USEPA may initiate enforcement action against a nondomestic user for noncompliance with applicable standards and requirements as provided in the CWA.

ii. The Discharger shall enforce the requirements promulgated under sections 307(b), 307(c), 307(d), and 402(b) of the CWA with timely, appropriate and effective enforcement actions. The Discharger shall cause all nondomestic users subject to federal categorical standards to achieve compliance no later than the date specified in those requirements or, in the case of a new nondomestic user, upon commencement of the discharge.

iii. The Discharger shall perform the pretreatment functions as required in 40 CFR Part 403 including, but not limited to:

(a) Implement the necessary legal authorities as provided in 40 CFR 403.8(f)(1);

(b) Enforce the pretreatment requirements under 40 CFR 403.5 and 403.6;

(c) Implement the programmatic functions as provided in 40 CFR 403.8(f)(2); and

(d) Provide the requisite funding and personnel to implement the pretreatment program as provided in 40 CFR 403.8(f)(3).

b. **Sludge/Biosolids Treatment or Discharge Specifications.** Sludge in this document means the solid, semisolid, and liquid residues removed during primary, secondary, or advanced wastewater treatment processes. Solid waste refers to grit and screening material generated during preliminary treatment. Residual sludge means sludge that will not be subject to further treatment at the wastewater treatment plant. Biosolids refer to sludge that has been treated and tested and shown to be capable of being beneficially and legally used pursuant to federal and state regulations as a soil amendment for agricultural, silvicultural, horticultural, and land reclamation activities as specified under 40 CFR Part 503.

i. Collected screenings, residual sludge, biosolids, and other solids removed from liquid wastes shall be disposed of in a manner approved by the Executive Officer, and consistent with Consolidated Regulations for Treatment, Storage, Processing, or Disposal of Solid Waste, as set forth in Title 27, CCR, division 2, subdivision 1, section 20005, et seq. Removal for further treatment, storage, disposal, or reuse at sites (e.g., landfill, composting sites, soil amendment sites) that are operated in accordance with valid waste discharge requirements issued by a Regional Water Board will satisfy these specifications.

Sludge and solid waste shall be removed from screens, sumps, ponds, clarifiers, etc. as needed to ensure optimal plant performance.

The treatment of sludge generated at the Facility shall be confined to the Facility property and conducted in a manner that precludes infiltration of waste constituents into soils in a mass or concentration that will violate groundwater limitations in section V.B. of this Order. In addition, the storage of residual sludge, solid waste, and biosolids on Facility property shall be temporary and controlled, and contained in a manner that minimizes leachate formation and precludes infiltration of waste constituents into soils in a mass or concentration that will violate groundwater limitations included in section V.B. of this Order.

ii. The use, disposal, storage, and transportation of biosolids shall comply with existing federal and state laws and regulations, including permitting requirements and technical standards included in 40 CFR Part 503. If the State Water Board and the Central Valley Water Board are given the authority to implement regulations contained in 40 CFR Part 503, this Order may be reopened to incorporate appropriate time schedules and technical standards. The Discharger must comply with the standards and time schedules contained in 40 CFR Part 503 whether or not they have been incorporated into this Order.

iii. The Discharger shall comply with Section IX.A. Biosolids of the Monitoring and Reporting Program, Attachment E.

iv. Any proposed change in biosolids use or disposal practice from a previously approved practice shall be reported to the Executive Officer and USEPA Regional Administrator at least **90 days** in advance of the change.

v. **Within 180 days of the permit effective date,** the Discharger shall submit a biosolids use or disposal plan to the Central Valley Water Board. The plan shall describe at a minimum:

(a) Sources and amounts of biosolids generated annually.

(b) Location(s) of on-site storage and description of the containment area.

(c) Plans for ultimate disposal. For landfill disposal, include the present classification of the landfill; and the name and location of the landfill.

c. **Collection System.** On 2 May 2006, the State Water Board adopted State Water Resources Control Board Order No. 2006-0003-DWQ, Statewide General WDRs for Sanitary Sewer Systems. The Discharger shall be subject to the requirements of Order No. 2006-0003-DWQ and any future revisions thereto. Order No. 2006-0003-DWQ requires that all public agencies that currently own or operate sanitary sewer systems apply for coverage under the general WDRs. The Discharger has applied for and has been approved for coverage under Order 2006-0003-DWQ for operation and maintenance of its wastewater collection system.

d. **Electronic Notification.** This Order, and the Monitoring and Reporting Program which is a part of this Order, requires that certain parameters be monitored on a continuous basis. The wastewater treatment plant is not staffed on a full time basis. Permit violations or system upsets can go undetected during this period. The Discharger shall establish an electronic system for operator notification for continuous recording device alarms. For existing continuous monitoring systems, the electronic notification system shall be installed **within 6 months of adoption of this Order**. For systems installed following Order adoption, the notification system shall be installed simultaneously.

6. Other Special Provisions

a. **Annual Operation of the Filter System.** The filter and chlorination/dechlorination system **must be operated annually** prior to the wet season to assure that the filter system, as well as the chlorination/dechlorination system is operating properly in the event discharge from the Facility to South Fork Battle Creek is necessary.

b. **Prohibition III.E Exception.** Exceptions to Prohibition III.E, which prohibits discharge of effluent to South Fork Battle Creek from April 16 to November 14, may be granted by the Executive Officer provided all of the following conditions are satisfied:

   i. The discharge is necessary due to circumstances that could not have reasonably been foreseen, such as an extended wet weather season;

   ii. The Discharger demonstrates that the potential impacts of non-discharge would be greater than discharge, including any potential property damage, or interference with the wastewater treatment process. Impact of non-discharge to be analyzed must include as a minimum, damage to treatment processes or structures, and potential damage to nearby property, e.g. should a breach in any pond structure occur;

   iii. The Discharger has previously taken all reasonable steps to prevent the discharge and all required maintenance has been performed in accordance with the manufacturer's recommendations and the Facility Operations and Maintenance Manual. Proof that all reasonable steps have been taken to prevent the discharge shall include a schedule for operation of the ponds that has been accepted by Central Valley Water Board staff;

   iv. The discharge will not result in the exceedance of any water quality objective in South Fork Battle Creek.

7. Compliance Schedules – Not Applicable

VII. COMPLIANCE DETERMINATION

a. **BOD_5 and TSS Effluent Limitations (Section IV.A.1.a).** Compliance with the final effluent limitations for BOD_5 and TSS required in Limitations and Discharge Requirements section IV.A.1.a shall be ascertained by 8-hour composite samples. Compliance with effluent limitations required in Limitations and Discharge Requirements section IV.A.1.b for percent removal shall be calculated using the arithmetic mean of BOD_5 and TSS in effluent samples collected over a monthly period as a percentage of the arithmetic mean of the values for influent samples collected at approximately the same times during the same period.

b. **Daily Peak Wet Weather Flow Effluent Limitation (Section IV.A.1.a).** The daily peak wet weather flow represents the maximum daily effluent flow permitted during the discharge season (e.g. November 15 – April 15).

c. **Total Coliform Organisms Effluent Limitations (Section IV.A.1.e).** For each day that an effluent sample is collected and analyzed for total coliform organisms, the 7-day median shall be determined by calculating the median concentration of total coliform bacteria in the effluent utilizing the bacteriological results of the last 7 days. For example, if a sample is collected on a Wednesday, the result from that sampling event and all results from the previous 6 days (i.e., Tuesday, Monday, Sunday, Saturday, Friday, and Thursday) are used to calculate the 7-day median. If the 7-day median of total coliform organisms exceeds a most probable number (MPN) of 23 per 100 milliliters, the Discharger will be considered out of compliance.

d. **Total Residual Chlorine Effluent Limitations (Section IV.A.1.d).** Continuous monitoring analyzers for chlorine residual or for dechlorination agent residual in the effluent are appropriate methods for compliance determination. A positive residual dechlorination agent in the effluent indicates that chlorine is not present in the discharge, which demonstrates compliance with the effluent limitations. This type of monitoring can also be used to prove that some chlorine residual exceedances are false positives. Continuous monitoring data showing either a positive dechlorination agent residual or a chlorine residual at or below the prescribed limit are sufficient to show compliance with the total residual chlorine effluent limitations, as long as the instruments are maintained and calibrated in accordance with the manufacturer's recommendations.

Any excursion above the 1-hour average or 4-day average total residual chlorine effluent limitations is a violation. If the Discharger conducts continuous monitoring and the Discharger can demonstrate, through data collected from a back-up monitoring system, that a chlorine spike recorded by the continuous monitor was not actually due to chlorine, then any excursion resulting from the recorded spike will not be considered an exceedance, but rather reported as a false positive. Records supporting validation of false positives shall be maintained in accordance with Section IV Standard Provisions (Attachment D).

e. **Mass Effluent Limitations.** The mass effluent limitations contained in the Final Effluent Limitations (section IV.A.1.a) are based on the daily peak wet weather flow rate and calculated as follows:

Mass (lbs/day) = Flow (MGD) x Concentration (mg/L) x 8.34 (conversion factor)

f. **Priority Pollutant Effluent Limitations.** Compliance with effluent limitations for priority pollutants shall be determined in accordance with Section 2.4.5 of the SIP, as follows:

i. Dischargers shall be deemed out of compliance with an effluent limitation, if the concentration of the priority pollutant in the monitoring sample is greater than the effluent limitation and greater than or equal to the reporting level (RL).

ii. Dischargers shall be required to conduct a Pollutant Minimization Program (PMP) in accordance with section 2.4.5.1 of the SIP when there is evidence that the priority pollutant is present in the effluent above an effluent limitation and either:

(a) A sample result is reported as detected, but not quantified (DNQ) and the effluent limitation is less than the RL; or

(b) A sample result is reported as non-detect (ND) and the effluent limitation is less than the method detection limit (MDL).

iii. When determining compliance with an average monthly effluent limitation (AMEL) and more than one sample result is available in a month, the discharger shall compute the arithmetic mean unless the data set contains one or more reported determinations of DNQ or ND. In those cases, the discharger shall compute the median in place of the arithmetic mean in accordance with the following procedure:

(a) The data set shall be ranked from low to high, reported ND determinations lowest, DNQ determinations next, followed by quantified values (if any). The order of the individual ND or DNQ determinations is unimportant.

(b) The median value of the data set shall be determined. If the data set has an odd number of data points, then the median is the middle value. If the data set has an even number of data points, then the median is the average of the two values around the middle unless one or both of the points are ND or DNQ, in which case the median value shall be the lower of the two data points where DNQ is lower than a value and ND is lower than DNQ.

iv. If a sample result, or the arithmetic mean or median of multiple sample results, is below the RL, and there is evidence that the priority pollutant is present in the effluent above an effluent limitation and the discharger conducts a PMP (as described in section 2.4.5.1), the discharger shall not be deemed out of compliance.

ATTACHMENT A – DEFINITIONS

Arithmetic Mean (μ)
Also called the average, is the sum of measured values divided by the number of samples. For ambient water concentrations, the arithmetic mean is calculated as follows:

Arithmetic mean = $\mu = \Sigma x / n$ where: Σx is the sum of the measured ambient water concentrations, and n is the number of samples.

Average Monthly Effluent Limitation (AMEL)
The highest allowable average of daily discharges over a calendar month, calculated as the sum of all daily discharges measured during a calendar month divided by the number of daily discharges measured during that month.

Average Weekly Effluent Limitation (AWEL)
The highest allowable average of daily discharges over a calendar week (Sunday through Saturday), calculated as the sum of all daily discharges measured during a calendar week divided by the number of daily discharges measured during that week.

Bioaccumulative
Those substances taken up by an organism from its surrounding medium through gill membranes, epithelial tissue, or from food and subsequently concentrated and retained in the body of the organism.

Carcinogenic
Pollutants are substances that are known to cause cancer in living organisms.

Coefficient of Variation (CV)
CV is a measure of the data variability and is calculated as the estimated standard deviation divided by the arithmetic mean of the observed values.

Daily Discharge
Daily Discharge is defined as either: (1) the total mass of the constituent discharged over the calendar day (12:00 am through 11:59 pm) or any 24-hour period that reasonably represents a calendar day for purposes of sampling (as specified in the permit), for a constituent with limitations expressed in units of mass or; (2) the unweighted arithmetic mean measurement of the constituent over the day for a constituent with limitations expressed in other units of measurement (e.g., concentration).

The daily discharge may be determined by the analytical results of a composite sample taken over the course of one day (a calendar day or other 24-hour period defined as a day) or by the arithmetic mean of analytical results from one or more grab samples taken over the course of the day.

For composite sampling, if 1 day is defined as a 24-hour period other than a calendar day, the analytical result for the 24-hour period will be considered as the result for the calendar day in which the 24-hour period ends.

Detected, but Not Quantified (DNQ)
DNQ are those sample results less than the RL, but greater than or equal to the laboratory's MDL. Sample results reported as DNQ are estimated concentrations.

Dilution Credit
Dilution Credit is the amount of dilution granted to a discharge in the calculation of a water quality-based effluent limitation, based on the allowance of a specified mixing zone. It is calculated from the dilution ratio or determined through conducting a mixing zone study or modeling of the discharge and receiving water.

Effluent Concentration Allowance (ECA)
ECA is a value derived from the water quality criterion/objective, dilution credit, and ambient background concentration that is used, in conjunction with the coefficient of variation for the effluent monitoring data, to calculate a long-term average (LTA) discharge concentration. The ECA has the same meaning as waste load allocation (WLA) as used in U.S. EPA guidance (Technical Support Document For Water Quality-based Toxics Control, March 1991, second printing, EPA/505/2-90-001).

Enclosed Bays
Enclosed Bays means indentations along the coast that enclose an area of oceanic water within distinct headlands or harbor works. Enclosed bays include all bays where the narrowest distance between the headlands or outermost harbor works is less than 75 percent of the greatest dimension of the enclosed portion of the bay. Enclosed bays include, but are not limited to, Humboldt Bay, Bodega Harbor, Tomales Bay, Drake’s Estero, San Francisco Bay, Morro Bay, Los Angeles-Long Beach Harbor, Upper and Lower Newport Bay, Mission Bay, and San Diego Bay. Enclosed bays do not include inland surface waters or ocean waters.

Estimated Chemical Concentration
The estimated chemical concentration that results from the confirmed detection of the substance by the analytical method below the ML value.

Estuaries
Estuaries means waters, including coastal lagoons, located at the mouths of streams that serve as areas of mixing for fresh and ocean waters. Coastal lagoons and mouths of streams that are temporarily separated from the ocean by sandbars shall be considered estuaries. Estuarine waters shall be considered to extend from a bay or the open ocean to a point upstream where there is no significant mixing of fresh water and seawater. Estuarine waters included, but are not limited to, the Sacramento-San Joaquin Delta, as defined in Water Code section 12220, Suisun Bay, Carquinez Strait downstream to the Carquinez Bridge, and appropriate areas of the Smith, Mad, Eel, Noyo, Russian, Klamath, San Diego, and Otay rivers. Estuaries do not include inland surface waters or ocean waters.

Inland Surface Waters
All surface waters of the state that do not include the ocean, enclosed bays, or estuaries.

Instantaneous Maximum Effluent Limitation
The highest allowable value for any single grab sample or aliquot (i.e., each grab sample or aliquot is independently compared to the instantaneous maximum limitation).

Instantaneous Minimum Effluent Limitation
The lowest allowable value for any single grab sample or aliquot (i.e., each grab sample or aliquot is independently compared to the instantaneous minimum limitation).

Maximum Daily Effluent Limitation (MDEL)
The highest allowable daily discharge of a pollutant, over a calendar day (or 24-hour period). For pollutants with limitations expressed in units of mass, the daily discharge is calculated as the total mass of the pollutant discharged over the day. For pollutants with limitations expressed in other units of measurement, the daily discharge is calculated as the arithmetic mean measurement of the pollutant over the day.

Median
The middle measurement in a set of data. The median of a set of data is found by first arranging the measurements in order of magnitude (either increasing or decreasing order). If the number of

measurements (n) is odd, then the median = $X_{(n+1)/2}$. If n is even, then the median = $(X_{n/2} + X_{(n/2)+1})/2$ (i.e., the midpoint between the n/2 and n/2+1).

Method Detection Limit (MDL)
MDL is the minimum concentration of a substance that can be measured and reported with 99 percent confidence that the analyte concentration is greater than zero, as defined in in 40 C.F.R. part 136, Attachment B, revised as of July 3, 1999.

Minimum Level (ML)
ML is the concentration at which the entire analytical system must give a recognizable signal and acceptable calibration point. The ML is the concentration in a sample that is equivalent to the concentration of the lowest calibration standard analyzed by a specific analytical procedure, assuming that all the method specified sample weights, volumes, and processing steps have been followed.

Mixing Zone
Mixing Zone is a limited volume of receiving water that is allocated for mixing with a wastewater discharge where water quality criteria can be exceeded without causing adverse effects to the overall water body.

Not Detected (ND)
Sample results which are less than the laboratory's MDL.

Ocean Waters
The territorial marine waters of the State as defined by California law to the extent these waters are outside of enclosed bays, estuaries, and coastal lagoons. Discharges to ocean waters are regulated in accordance with the State Water Board's California Ocean Plan.

Persistent Pollutants
Persistent pollutants are substances for which degradation or decomposition in the environment is nonexistent or very slow.

Pollutant Minimization Program (PMP)
PMP means waste minimization and pollution prevention actions that include, but are not limited to, product substitution, waste stream recycling, alternative waste management methods, and education of the public and businesses. The goal of the PMP shall be to reduce all potential sources of a priority pollutant(s) through pollutant minimization (control) strategies, including pollution prevention measures as appropriate, to maintain the effluent concentration at or below the water quality-based effluent limitation. Pollution prevention measures may be particularly appropriate for persistent bioaccumulative priority pollutants where there is evidence that beneficial uses are being impacted. The Central Valley Water Board may consider cost effectiveness when establishing the requirements of a PMP. The completion and implementation of a Pollution Prevention Plan, if required pursuant to Water Code section 13263.3(d), shall be considered to fulfill the PMP requirements.

Pollution Prevention
Pollution Prevention means any action that causes a net reduction in the use or generation of a hazardous substance or other pollutant that is discharged into water and includes, but is not limited to, input change, operational improvement, production process change, and product reformulation (as defined in Water Code section 13263.3). Pollution prevention does not include actions that merely shift a pollutant in wastewater from one environmental medium to another environmental medium, unless clear environmental benefits of such an approach are identified to the satisfaction of the State Water Resources Control Board (State Water Board) or Central Valley Water Board.

Satellite Collection System
The portion, if any, of a sanitary sewer system owned or operated by a different public agency than the agency that owns and operates the wastewater treatment facility that a sanitary sewer system is tributary to.

Source of Drinking Water
Any water designated as municipal or domestic supply (MUN) in a Central Valley Water Board Basin Plan.

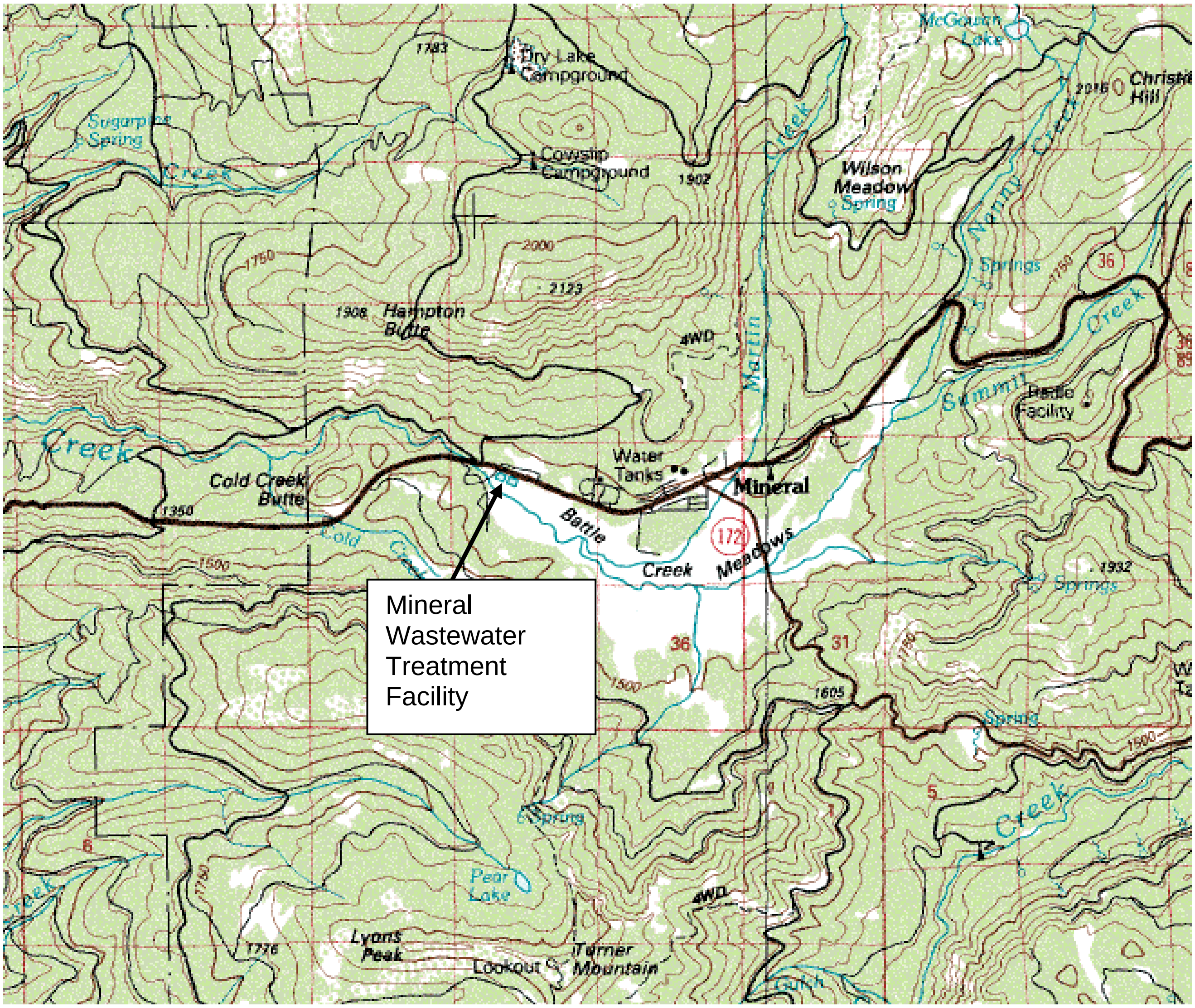
Standard Deviation (σ)
Standard Deviation is a measure of variability that is calculated as follows:

$$\sigma = (\sum[(x - \mu)^2]/(n - 1))^{0.5}$$

where:
- x is the observed value;
- μ is the arithmetic mean of the observed values; and
- n is the number of samples.

Toxicity Reduction Evaluation (TRE)
TRE is a study conducted in a step-wise process designed to identify the causative agents of effluent or ambient toxicity, isolate the sources of toxicity, evaluate the effectiveness of toxicity control options, and then confirm the reduction in toxicity. The first steps of the TRE consist of the collection of data relevant to the toxicity, including additional toxicity testing, and an evaluation of facility operations and maintenance practices, and best management practices. A Toxicity Identification Evaluation (TIE) may be required as part of the TRE, if appropriate. (A TIE is a set of procedures to identify the specific chemical(s) responsible for toxicity. These procedures are performed in three phases (characterization, identification, and confirmation) using aquatic organism toxicity tests.)

ATTACHMENT B – MAP

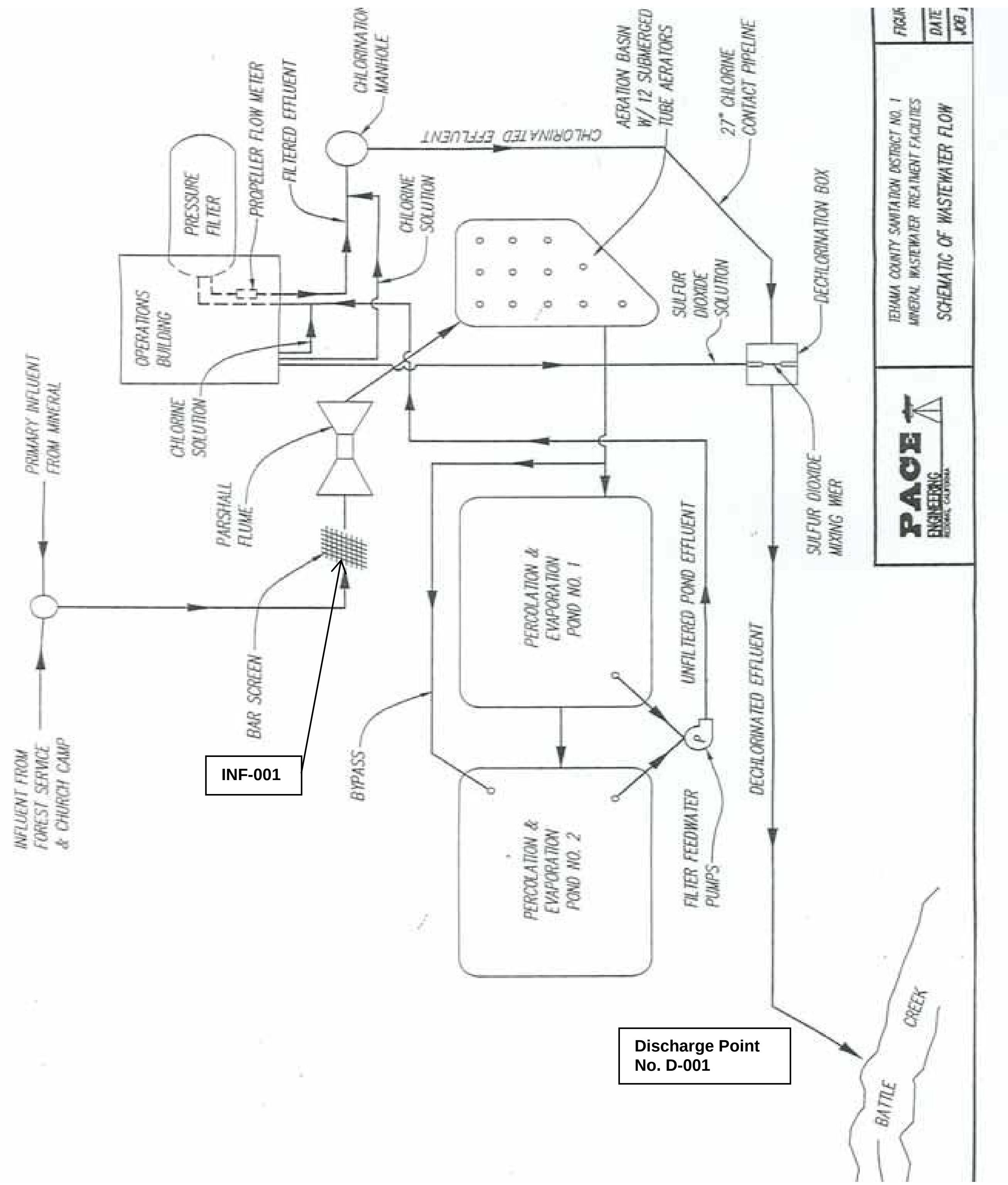


SITE LOCATION MAP

TEHAMA COUNTY SANITATION DISCTICT NO. 1
MINERAL WASTEWATER TREATMENT PLANT
TEHAMA COUNTY

Drawing Reference:
USGS TOPOGRAPHIC MAP
Mineral 7.5 Minute Quadrangle

ATTACHMENT C – FLOW SCHEMATIC



ATTACHMENT D – STANDARD PROVISIONS

I. STANDARD PROVISIONS – PERMIT COMPLIANCE

A. Duty to Comply

1. The Discharger must comply with all of the conditions of this Order. Any noncompliance constitutes a violation of the Clean Water Act (CWA) and the California Water Code and is grounds for enforcement action, for permit termination, revocation and reissuance, or modification; or denial of a permit renewal application (40 C.F.R. § 122.41(a); Wat. Code, §§ 13261, 13263, 13265, 13268, 13000, 13001, 13304, 13350, 13385).

2. The Discharger shall comply with effluent standards or prohibitions established under Section 307(a) of the CWA for toxic pollutants and with standards for sewage sludge use or disposal established under Section 405(d) of the CWA within the time provided in the regulations that establish these standards or prohibitions, even if this Order has not yet been modified to incorporate the requirement. (40 C.F.R. § 122.41(a)(1).)

B. Need to Halt or Reduce Activity Not a Defense

It shall not be a defense for a Discharger in an enforcement action that it would have been necessary to halt or reduce the permitted activity in order to maintain compliance with the conditions of this Order. (40 C.F.R. § 122.41(c).)

C. Duty to Mitigate

The Discharger shall take all reasonable steps to minimize or prevent any discharge or sludge use or disposal in violation of this Order that has a reasonable likelihood of adversely affecting human health or the environment. (40 C.F.R. § 122.41(d).)

D. Proper Operation and Maintenance

The Discharger shall at all times properly operate and maintain all facilities and systems of treatment and control (and related appurtenances) which are installed or used by the Discharger to achieve compliance with the conditions of this Order. Proper operation and maintenance also includes adequate laboratory controls and appropriate quality assurance procedures. This provision requires the operation of backup or auxiliary facilities or similar systems that are installed by a Discharger only when necessary to achieve compliance with the conditions of this Order. (40 C.F.R. § 122.41(e).)

E. Property Rights

1. This Order does not convey any property rights of any sort or any exclusive privileges. (40 C.F.R. § 122.41(g).)

2. The issuance of this Order does not authorize any injury to persons or property or invasion of other private rights, or any infringement of state or local law or regulations. (40 C.F.R. § 122.5(c).)

F. Inspection and Entry

The Discharger shall allow the Central Valley Water Board, State Water Board, U.S. EPA, and/or their authorized representatives (including an authorized contractor acting as their representative), upon the presentation of credentials and other documents, as may be required by law, to (33 U.S.C. § 1318(a)(4)(B); 40 C.F.R. § 122.41(i); Wat. Code, § 13383):

1. Enter upon the Discharger's premises where a regulated facility or activity is located or conducted, or where records are kept under the conditions of this Order (33 U.S.C § 1318(a)(4)(B)(ii); 40 C.F.R. § 122.41(i)(1); Wat. Code, §§ 13267, 13383);

2. Have access to and copy, at reasonable times, any records that must be kept under the conditions of this Order (33 U.S.C. § 1318(a)(4)(B)(ii); 40 C.F.R. § 122.41(i)(2); Wat. Code, §§ 13267, 13383);

3. Inspect and photograph, at reasonable times, any facilities, equipment (including monitoring and control equipment), practices, or operations regulated or required under this Order (33 U.S.C § 1318(a)(4)(B)(ii); 40 C.F.R. § 122.41(i)(3); Wat. Code, § 13267, 13383); and

4. Sample or monitor, at reasonable times, for the purposes of assuring Order compliance or as otherwise authorized by the CWA or the Water Code, any substances or parameters at any location (33 U.S.C § 1318(a)(4)(B); 40 C.F.R. § 122.41(i)(4); Wat. Code, §§ 13267, 13383).

G. Bypass

1. Definitions

   a. "Bypass" means the intentional diversion of waste streams from any portion of a treatment facility. (40 C.F.R. § 122.41(m)(1)(i).)

   b. "Severe property damage" means substantial physical damage to property, damage to the treatment facilities, which causes them to become inoperable, or substantial and permanent loss of natural resources that can reasonably be expected to occur in the absence of a bypass. Severe property damage does not mean economic loss caused by delays in production. (40 C.F.R. § 122.41(m)(1)(ii).)

2. Bypass not exceeding limitations. The Discharger may allow any bypass to occur which does not cause exceedances of effluent limitations, but only if it is for essential maintenance to assure efficient operation. These bypasses are not subject to the provisions listed in Standard Provisions – Permit Compliance I.G.3, I.G.4, and I.G.5 below. (40 C.F.R. § 122.41(m)(2).)

3. Prohibition of bypass. Bypass is prohibited, and the Central Valley Water Board may take enforcement action against a Discharger for bypass, unless (40 C.F.R. § 122.41(m)(4)(i)):

   a. Bypass was unavoidable to prevent loss of life, personal injury, or severe property damage (40 C.F.R. § 122.41(m)(4)(i)(A));

   b. There were no feasible alternatives to the bypass, such as the use of auxiliary treatment facilities, retention of untreated wastes, or maintenance during normal periods of equipment downtime. This condition is not satisfied if adequate back-up equipment should have been installed in the exercise of reasonable engineering judgment to prevent a bypass that occurred during normal periods of equipment downtime or preventive maintenance (40 C.F.R. § 122.41(m)(4)(i)(B)); and

   c. The Discharger submitted notice to the Central Valley Water Boardas required under Standard Provisions – Permit Compliance I.G.5 below. (40 C.F.R. § 122.41(m)(4)(i)(C).)

4. The Central Valley Water Board may approve an anticipated bypass, after considering its adverse effects, if the Central Valley Water Board determines that it will meet the three conditions listed in Standard Provisions – Permit Compliance I.G.3 above. (40 C.F.R. § 122.41(m)(4)(ii).)

5. Notice

a. Anticipated bypass. If the Discharger knows in advance of the need for a bypass, it shall submit a notice, if possible at least 10 days before the date of the bypass. (40 C.F.R. § 122.41(m)(3)(i).)

b. Unanticipated bypass. The Discharger shall submit notice of an unanticipated bypass as required in Standard Provisions - Reporting V.E below (24-hour notice). (40 C.F.R. § 122.41(m)(3)(ii).)

H. Upset

Upset means an exceptional incident in which there is unintentional and temporary noncompliance with technology based permit effluent limitations because of factors beyond the reasonable control of the Discharger. An upset does not include noncompliance to the extent caused by operational error, improperly designed treatment facilities, inadequate treatment facilities, lack of preventive maintenance, or careless or improper operation. (40 C.F.R. § 122.41(n)(1).)

1. Effect of an upset. An upset constitutes an affirmative defense to an action brought for noncompliance with such technology based permit effluent limitations if the requirements of Standard Provisions – Permit Compliance I.H.2 below are met. No determination made during administrative review of claims that noncompliance was caused by upset, and before an action for noncompliance, is final administrative action subject to judicial review. (40 C.F.R. § 122.41(n)(2).)

2. Conditions necessary for a demonstration of upset. A Discharger who wishes to establish the affirmative defense of upset shall demonstrate, through properly signed, contemporaneous operating logs or other relevant evidence that (40 C.F.R. § 122.41(n)(3)):

   a. An upset occurred and that the Discharger can identify the cause(s) of the upset (40 C.F.R. § 122.41(n)(3)(i));

   b. The permitted facility was, at the time, being properly operated (40 C.F.R. § 122.41(n)(3)(ii));

   c. The Discharger submitted notice of the upset as required in Standard Provisions – Reporting V.E.2.b below (24-hour notice) (40 C.F.R. § 122.41(n)(3)(iii)); and

   d. The Discharger complied with any remedial measures required under Standard Provisions – Permit Compliance I.C above. (40 C.F.R. § 122.41(n)(3)(iv).)

3. Burden of proof. In any enforcement proceeding, the Discharger seeking to establish the occurrence of an upset has the burden of proof. (40 C.F.R. § 122.41(n)(4).)

II. STANDARD PROVISIONS – PERMIT ACTION

A. General

This Order may be modified, revoked and reissued, or terminated for cause. The filing of a request by the Discharger for modification, revocation and reissuance, or termination, or a notification of planned changes or anticipated noncompliance does not stay any Order condition. (40 C.F.R. § 122.41(f).)

B. Duty to Reapply

If the Discharger wishes to continue an activity regulated by this Order after the expiration date of this Order, the Discharger must apply for and obtain a new permit. (40 C.F.R. § 122.41(b).)

C. Transfers

This Order is not transferable to any person except after notice to the Central Valley Water Board. The Central Valley Water Board may require modification or revocation and reissuance of the Order to change the name of the Discharger and incorporate such other requirements as may be necessary under the CWA and the Water Code. (40 C.F.R. § 122.41(l)(3); 122.61.)

III. STANDARD PROVISIONS – MONITORING

A. Samples and measurements taken for the purpose of monitoring shall be representative of the monitored activity. (40 C.F.R. § 122.41(j)(1).)

B. Monitoring results must be conducted according to test procedures approved under 40 C.F.R. part 136 for the analyses of pollutants unless another method is required under 40 C.F.R. subchapters N or O. In the case of pollutants for which there are no approved methods under 40 C.F.R. part 136 or otherwise required under 40 C.F.R. subchapters N or O, monitoring must be conducted according to a test procedure~~-~~specified in this Order for such pollutants. (40 C.F.R. § 122.41(j)(4); ~~§~~ 122.44(i)(1)(iv).)

IV. STANDARD PROVISIONS – RECORDS

A. Except for records of monitoring information required by this Order related to the Discharger's sewage sludge use and disposal activities, which shall be retained for a period of at least five years (or longer as required by 40 C.F.R. part 503), the Discharger shall retain records of all monitoring information, including all calibration and maintenance records and all original strip chart recordings for continuous monitoring instrumentation, copies of all reports required by this Order, and records of all data used to complete the application for this Order, for a period of at least three (3) years from the date of the sample, measurement, report or application. This period may be extended by request of the Central Valley Water Board Executive Officer at any time. (40 C.F.R. § 122.41(j)(2).)

B. Records of monitoring information shall include:

4. The date, exact place, and time of sampling or measurements (40 C.F.R. § 122.41(j)(3)(i));
5. The individual(s) who performed the sampling or measurements (40 C.F.R. § 122.41(j)(3)(ii));
6. The date(s) analyses were performed (40 C.F.R. § 122.41(j)(3)(iii));
7. The individual(s) who performed the analyses (40 C.F.R. § 122.41(j)(3)(iv));
8. The analytical techniques or methods used (40 C.F.R. § 122.41(j)(3)(v)); and
9. The results of such analyses. (40 C.F.R. § 122.41(j)(3)(vi).)

C. Claims of confidentiality for the following information will be denied (40 C.F.R. § 122.7(b)):

1. The name and address of any permit applicant or Discharger (40 C.F.R. § 122.7(b)(1)); and
2. Permit applications and attachments, permits and effluent data. (40 C.F.R. § 122.7(b)(2).)

V. STANDARD PROVISIONS – REPORTING

A. Duty to Provide Information

The Discharger shall furnish to the Central Valley Water Board, State Water Board, or U.S. EPA within a reasonable time, any information which the Central Valley Water Board, State Water Board, or U.S. EPA may request to determine whether cause exists for modifying, revoking and reissuing, or terminating this Order or to determine compliance with this Order. Upon request, the Discharger shall also furnish to the Central Valley Water Board, State Water Board, or U.S. EPA copies of records required to be kept by this Order. (40 C.F.R. § 122.41(h); Wat. Code, § 13267, 13383.)

B. Signatory and Certification Requirements

1. All applications, reports, or information submitted to the Central Valley Water Board, State Water Board, and/or U.S. EPA shall be signed and certified in accordance with Standard Provisions – Reporting V.B.2, V.B.3, V.B.4, and V.B.5 below. (40 C.F.R. § 122.41(k).)
2. All permit applications shall be signed by either a principal executive officer or ranking elected official. For purposes of this provision, a principal executive officer of a federal agency includes: (i) the chief executive officer of the agency, or (ii) a senior executive officer having responsibility for the overall operations of a principal geographic unit of the agency (e.g., Regional Administrators of U.S. EPA). (40 C.F.R. § 122.22(a)(3).).
3. All reports required by this Order and other information requested by the Central Valley Water Board, State Water Board, or U.S. EPA shall be signed by a person described in Standard Provisions – Reporting V.B.2 above, or by a duly authorized representative of that person. A person is a duly authorized representative only if:
   a. The authorization is made in writing by a person described in Standard Provisions – Reporting V.B.2 above (40 C.F.R. § 122.22(b)(1));
   b. The authorization specifies either an individual or a position having responsibility for the overall operation of the regulated facility or activity such as the position of plant manager, operator of a well or a well field, superintendent, position of equivalent responsibility, or an individual or position having overall responsibility for environmental matters for the company. (A duly authorized representative may thus be either a named individual or any individual occupying a named position.) (40 C.F.R. § 122.22(b)(2)); and
   c. The written authorization is submitted to the Central Valley Water Board and State Water Board. (40 C.F.R. § 122.22(b)(3).)
4. If an authorization under Standard Provisions – Reporting V.B.3 above is no longer accurate because a different individual or position has responsibility for the overall operation of the facility, a new authorization satisfying the requirements of Standard Provisions – Reporting V.B.3 above must be submitted to the Central Valley Water Board and State Water Board prior to or together with any reports, information, or applications, to be signed by an authorized representative. (40 C.F.R. § 122.22(c).)
5. Any person signing a document under Standard Provisions – Reporting V.B.2 or V.B.3 above shall make the following certification:

   "I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations." (40 C.F.R. § 122.22(d).)

C. Monitoring Reports

1. Monitoring results shall be reported at the intervals specified in the Monitoring and Reporting Program (Attachment E) in this Order. (40 C.F.R. § 122.41(l)(4).)
2. Monitoring results must be reported on a Discharge Monitoring Report (DMR) form or forms provided or specified by the Central Valley Water Board or State Water Board for reporting results of monitoring of sludge use or disposal practices. (40 C.F.R. § 122.41(l)(4)(i).)
3. If the Discharger monitors any pollutant more frequently than required by this Order using test procedures approved under 40 C.F.R. part 136, or another method required for an industry-specific waste stream under 40 C.F.R. subchapters N or O, the results of such monitoring shall be included in the calculation and reporting of the data submitted in the DMR or sludge reporting form specified by the Central Valley Water Board. (40 C.F.R. § 122.41(l)(4)(ii).)
4. Calculations for all limitations, which require averaging of measurements, shall utilize an arithmetic mean unless otherwise specified in this Order. (40 C.F.R. § 122.41(l)(4)(iii).)

D. Compliance Schedules

Reports of compliance or noncompliance with, or any progress reports on, interim and final requirements contained in any compliance schedule of this Order, shall be submitted no later than 14 days following each schedule date. (40 C.F.R. § 122.41(l)(5).)

E. Twenty-Four Hour Reporting

1. The Discharger shall report any noncompliance that may endanger health or the environment. Any information shall be provided orally within 24 hours from the time the Discharger becomes aware of the circumstances. A written submission shall also be provided within five (5) days of the time the Discharger becomes aware of the circumstances. The written submission shall contain a description of the noncompliance and its cause; the period of noncompliance, including exact dates and times, and if the noncompliance has not been corrected, the anticipated time it is expected to continue; and steps taken or planned to reduce, eliminate, and prevent reoccurrence of the noncompliance. (40 C.F.R. § 122.41(l)(6)(i).)
2. The following shall be included as information that must be reported within 24 hours under this paragraph (40 C.F.R. § 122.41(l)(6)(ii)):
   a. Any unanticipated bypass that exceeds any effluent limitation in this Order. (40 C.F.R. § 122.41(l)(6)(ii)(A).)
   b. Any upset that exceeds any effluent limitation in this Order. (40 C.F.R. § 122.41(l)(6)(ii)(B).)
3. The Central Valley Water Board may waive the above-required written report under this provision on a case-by-case basis if an oral report has been received within 24 hours. (40 C.F.R. § 122.41(l)(6)(iii).)

F. Planned Changes

The Discharger shall give notice to the Central Valley Water Board as soon as possible of any planned physical alterations or additions to the permitted facility. Notice is required under this provision only when (40 C.F.R. § 122.41(l)(1)):

1. The alteration or addition to a permitted facility may meet one of the criteria for determining whether a facility is a new source in section 122.29(b) (40 C.F.R. § 122.41(l)(1)(i)); or

2. The alteration or addition could significantly change the nature or increase the quantity of pollutants discharged. This notification applies to pollutants that are not subject to effluent limitations in this Order. (40 C.F.R. § 122.41(l)(1)(ii).)

3. The alteration or addition results in a significant change in the Discharger's sludge use or disposal practices, and such alteration, addition, or change may justify the application of permit conditions that are different from or absent in the existing permit, including notification of additional use or disposal sites not reported during the permit application process or not reported pursuant to an approved land application plan. (40 C.F.R.§ 122.41(l)(1)(iii).)

G. Anticipated Noncompliance

The Discharger shall give advance notice to the Central Valley Water Board or State Water Board of any planned changes in the permitted facility or activity that may result in noncompliance with this Order's requirements. (40 C.F.R. § 122.41(l)(2).)

H. Other Noncompliance

The Discharger shall report all instances of noncompliance not reported under Standard Provisions – Reporting V.C, V.D, and V.E above at the time monitoring reports are submitted. The reports shall contain the information listed in Standard Provision – Reporting V.E above. (40 C.F.R. § 122.41(l)(7).)

I. Other Information

When the Discharger becomes aware that it failed to submit any relevant facts in a permit application, or submitted incorrect information in a permit application or in any report to the Central Valley Water Board**,** State Water Board, or U.S. EPA, the Discharger shall promptly submit such facts or information. (40 C.F.R. § 122.41(l)(8).)

VI. STANDARD PROVISIONS – ENFORCEMENT

A. The Central Valley Water Board is authorized to enforce the terms of this permit under several provisions of the Water Code, including, but not limited to, sections 13385, 13386, and 13387.

VII. ADDITIONAL PROVISIONS – NOTIFICATION LEVELS

J. Publicly-Owned Treatment Works (POTWs)

All POTWs shall provide adequate notice to the Central Valley Water Board of the following (40 C.F.R. § 122.42(b)):

1. Any new introduction of pollutants into the POTW from an indirect discharger that would be subject to sections 301 or 306 of the CWA if it were directly discharging those pollutants (40 C.F.R. § 122.42(b)(1)); and

2. Any substantial change in the volume or character of pollutants being introduced into that POTW by a source introducing pollutants into the POTW at the time of adoption of the Order. (40 C.F.R. § 122.42(b)(2).)

3. Adequate notice shall include information on the quality and quantity of effluent introduced into the POTW as well as any anticipated impact of the change on the quantity or quality of effluent to be discharged from the POTW. (40 C.F.R. § 122.42(b)(3).)

ATTACHMENT E – MONITORING AND REPORTING PROGRAM

Contents

Tables

ATTACHMENT E – MONITORING AND REPORTING PROGRAM (MRP)

The Code of Federal Regulations (40 C.F.R. § 122.48) requires that all NPDES permits specify monitoring and reporting requirements. Water Code sections 13267 and 13383 also authorize the Central Valley Water Board to require technical and monitoring reports. This MRP establishes monitoring and reporting requirements that implement federal and California regulations.

I. GENERAL MONITORING PROVISIONS

A. Samples and measurements taken as required herein shall be representative of the volume and nature of the monitored discharge. All samples shall be taken at the monitoring locations specified below and, unless otherwise specified, before the monitored flow joins or is diluted by any other waste stream, body of water, or substance. Monitoring locations shall not be changed without notification to and the approval of the Central Valley Water Board.

B. Effluent samples shall be taken downstream of the last addition of wastes to the treatment or discharge works where a representative sample may be obtained prior to mixing with the receiving waters. Samples shall be collected at such a point and in such a manner to ensure a representative sample of the discharge.

C. Chemical, bacteriological, and bioassay analyses of any material required by this Order shall be conducted by a laboratory certified for such analyses by the Department of Public Health (DPH). Laboratories that perform sample analyses must be identified in all monitoring reports submitted to the Central Valley Water Board. In the event a certified laboratory is not available to the Discharger for any onsite field measurements such as pH, DO, turbidity, temperature, and residual chlorine, such analyses performed by a noncertified laboratory will be accepted provided a Quality Assurance-Quality Control Program is instituted by the laboratory. A manual containing the steps followed in this program for any onsite field measurements such as pH, DO, turbidity, temperature, and residual chlorine must be kept onsite in the treatment facility laboratory and shall be available for inspection by Central Valley Water Board staff. The Discharger must demonstrate sufficient capability (qualified and trained employees, properly calibrated and maintained field instruments, etc.) to adequately perform these field measurements. The Quality Assurance-Quality Control Program must conform to USEPA guidelines or to procedures approved by the Central Valley Water Board.

D. Appropriate flow measurement devices and methods consistent with accepted scientific practices shall be selected and used to ensure the accuracy and reliability of measurements of the volume of monitored discharges. All monitoring instruments and devices used by the Discharger to fulfill the prescribed monitoring program shall be properly maintained and calibrated as necessary, at least yearly, to ensure their continued accuracy. All flow measurement devices shall be calibrated at least once per year to ensure continued accuracy of the devices.

E. Monitoring results, including noncompliance, shall be reported at intervals and in a manner specified in this Monitoring and Reporting Program.

F. Laboratories analyzing monitoring samples shall be certified by the Department of Public Health (DPH), in accordance with the provision of Water Code section 13176, and must include quality assurance/quality control data with their reports.

G. The Discharger shall ensure that the results of the Discharge Monitoring Report-Quality Assurance (DMR-QA) Study or the most recent Water Pollution Performance Evaluation Study are submitted annually to the State Water Resources Control Board at the following address:

State Water Resources Control Board Quality Assurance Program Officer

Office of Information Management and Analysis
State Water Resources Control Board
1001 I Street, Sacramento, CA 95814

H. The Discharger shall file with the Central Valley Water Board technical reports on self-monitoring performed according to the detailed specifications contained in this Monitoring and Reporting Program.

I. The results of all monitoring required by this Order shall be reported to the Central Valley Water Board, and shall be submitted in such a format as to allow direct comparison with the limitations and requirements of this Order. Unless otherwise specified, discharge flows shall be reported in terms of the monthly average and the daily maximum discharge flows.

II. MONITORING LOCATIONS

The Discharger shall establish the following monitoring locations to demonstrate compliance with the effluent limitations, discharge specifications, and other requirements in this Order:

Table E-1. Monitoring Station Locations

Discharge Point Name	Monitoring Location Name	Monitoring Location Description
--	INF-001	Influent to Facility Latitude: 40.34791° Longitude: -121.62079°
D-001	EFF-001	Effluent discharged through outfall to South Battle Creek Latitude: 40.3482° Longitude: -121.6245°
--	RSW-001	South Fork Battle Creek, approximately 50 feet upstream of Discharge Point D-001 Latitude: 40.3478° Longitude: -121.6249°
--	RSW-002	South Fork Battle Creek, Highway 36 bridge downstream of Discharge Point D-001 Latitude: 40.3483° Longitude: -121.6247°
--	PND-001	Evaporation/percolation Pond 1 (Eastern Pond) Latitude: 40.3480° Longitude: -121.6217°
--	PND-002	Evaporation/percolation Pond 2 (Western Pond) Latitude: 40.3484° Longitude: -121.6231°
--	BIO-001	Biosolids removed from the Facility
--	RGW-001	Up-gradient Monitoring Well
--	RGW-002	Monitoring Well between Evaporation Ponds 1 and 2
--	RGW-003	Down-gradient Monitoring Well
--	SPL-001	Municipal water supply

The North latitude and West longitude information in Table 1 are approximate for administrative purposes.

III. INFLUENT MONITORING REQUIREMENTS

A. Monitoring Location INF-001

1. The Discharger shall monitor influent to the Facility at Monitoring Location INF-001 as follows:

Table E-2. Influent Monitoring

Parameter	Units	Sample Type	Minimum Sampling Frequency	Required Analytical Test Method
Flow	MGD	Meter	Continuous	[1]
pH	Standard Units	Grab [2]	1/Week	[1]
BOD 5-day @ 20°C	mg/L	8-hr Composite [3]	[4]	[1]
Total Suspended Solids	mg/L	8-hr Composite [3]	[4]	[1]

[1] Pollutants shall be analyzed using the analytical methods described in 40 CFR Part 136; or by methods approved by the Central Valley Water Board or the State Water Board.

[2] Grab samples shall not be collected at the same time each day to get a complete representation of variations in the influent.

[3] 8-hour flow proportional or time weighted composite.

[4] Samples shall be collected weekly concurrent with effluent samples during periods of discharge to South Fork Battle Creek or annual filter test. During periods of discharge to the evaporation/percolation ponds samples shall be collected once per month.

IV. EFFLUENT MONITORING REQUIREMENTS

A. Monitoring Location EFF-001

1. The Discharger shall monitor treated wastewater discharged to South Fork Battle Creek at Monitoring Location EFF-001 as follows. If more than one analytical test method is listed for a given parameter, the Discharger must select from the listed methods and corresponding Minimum Level:

Table E-3. Effluent Monitoring

Parameter	Units	Sample Type	Minimum Sampling Frequency[1]	Required Analytical Test Method
Flow	mgd	Meter	Continuous	[2]
Chlorine, Total Residual	mg/L	Grab	4/day or Continuous	[2, 3]
Biochemical Oxygen Demand (BOD) (5-day @ 20 Deg. C)	mg/L	8-hr Composite [4]	1/Week	[2]
	lbs/day	Calculate	1/Week	[2]
Total Suspended Solids	mg/L	8-hr Composite [4]	1/Week	[2]
	lbs/day	Calculate	1/Week	[2]
pH	Standard Units	Grab	1/Week [5, 6]	[2]
Temperature	˚C	Grab	1/Week [5, 6]	[2]
Total Coliform Organisms	MPN/100 mL	Grab	1/Week	[2]
Electrical Conductivity @ 25˚C	µmhos/cm	Grab	1/Month	[2]
Chloride	mg/L	Grab	1/Month	[2]
Sulfate	mg/L	Grab	1/Month	[2]
Total Dissolved Solids	mg/L	Grab	1/Month	[2]
Hardness (as $CaCO_3$)	mg/L	Grab	1/Month [7]	[2]
Ammonia Nitrogen, Total (as N)		Grab	1/Month [5, 6, 8]	[2]
Nitrate Nitrogen, Total (as N)	mg/L	Grab	1/Month [9]	[2]
Nitrite Nitrogen, Total (as N)	mg/L	Grab	1/Month [9]	[2]
Chlorpyrifos	µg/L	Grab	1/Year	[14]
Diazinon	µg/L	Grab	1/Year	[14]
Priority Pollutant Metals	µg/L	Grab	1/Year	[2]

Standard Minerals [11]	mg/L	Grab	1/Year	[2]
Priority Pollutants and Other Constituents of Concern (see Attachment E)[15]	µg/L	8-hr Composite [4]	[12]	[2, 10, 13]
Acute Toxicity (see Section V. below)	% Survival	Grab	1/Discharge Season	--
Whole Effluent Toxicity (see Section V. below)	TU_c	Grab	1/Permit Term	--

1 **Monitoring frequencies shall only apply during discharge to South Fork Battle Creek.**

2 Pollutants shall be analyzed using the analytical methods described in 40 CFR Part 136 or by methods approved by the Central Valley Water Board or the State Water Board.

3 Total chlorine residual must be monitored with a method sensitive to and accurate at the permitted level of 0.01 mg/L.

4 8-hour flow or time proportional composite.

5 pH and temperature shall be recorded at the time of ammonia sample collection.

6 A hand-held field meter may be used, provided the meter utilizes a USEPA-approved algorithm/method and is calibrated and maintained in accordance with the manufacturer's instructions. A calibration and maintenance log for each meter used for monitoring required by this Monitoring and Reporting Program shall be maintained at the Facility.

7 Hardness samples shall be collected concurrently with metals samples.

8 Concurrent with whole effluent toxicity monitoring.

9 Monitoring for nitrite and nitrate shall be conducted concurrently.

10 For priority pollutant constituents with effluent limitations, detection limits shall be below the effluent limitations. If the lowest minimum level (ML) published in Appendix 4 of the Policy for Implementation of Toxics Standards for Inland Surface Waters, Enclosed Bays, and Estuaries of California (State Implementation Plan or SIP) is not below the effluent limitation, the detection limit shall be the lowest ML. For priority pollutant constituents without effluent limitations, the detection limits shall be equal to or less than the lowest ML published in Appendix 4 of the SIP.

11 Standard minerals shall include the following: boron, calcium, iron, magnesium, potassium, sodium, chloride, manganese, phosphorus, total alkalinity (including alkalinity series), and hardness, and include verification that the analysis is complete (i.e., cation/anion balance).

12 Priority pollutants shall be sampled three times during the permit term and shall be conducted concurrently with upstream receiving water monitoring for hardness (as $CaCO_3$) and pH. See *Effluent and Receiving Water Characterization Study,* Attachment E, Section IX.D for more detailed requirements related to performing the priority pollutant monitoring

13 Volatile constituents shall be sampled in accordance with 40 CFR Part 136 or by methods approved by the Central Valley Water Board or the State Water Board.

14 USEPA Method 625M, Method 8141, or equivalent. Minimum reporting limits: <100 ng/L diazinon; <15 ng/L chlorpyrifos.

15 The maximum required Reporting Level is specified in Attachment E, Table E-11, Priority Pollutants and Other Constituents of Concern

V. WHOLE EFFLUENT TOXICITY TESTING REQUIREMENTS

A. Acute Toxicity Testing. The Discharger shall conduct acute toxicity testing to determine whether the effluent is contributing acute toxicity to the receiving water. The Discharger shall meet the following acute toxicity testing requirements:

1. *Monitoring Frequency* – If there has been a discharge to the receiving water, the Discharger shall perform acute toxicity testing once during the discharge season concurrent with effluent ammonia sampling.
2. *Sample Types* – The Discharger may use flow-through or static renewal testing. For static renewal testing, the samples shall be grab samples and shall be representative of the volume and quality of the discharge. The effluent samples shall be taken at the effluent monitoring location Monitoring Location EFF-001.
3. *Test Species* – Test species shall be rainbow trout (Oncorhynchus mykiss)
4. *Methods* – The acute toxicity testing samples shall be analyzed using EPA-821-R-02-012, Fifth Edition. Temperature, total residual chlorine, and pH shall be recorded at the time of sample collection. No pH adjustment may be made unless approved by the Executive Officer.
5. *Test Failure* – If an acute toxicity test does not meet all test acceptability criteria, as specified in the test method, the Discharger must re-sample and re-test as soon as possible, not to exceed 7 days following notification of test failure.

B. Chronic Toxicity Testing. The Discharger shall conduct three species chronic toxicity testing to determine whether the effluent is contributing chronic toxicity to the receiving water. The Discharger shall meet the following chronic toxicity testing requirements:

1. *Monitoring Frequency* – If there has been a discharge to the receiving water, the Discharger shall perform three species chronic toxicity testing; once during the term of this Order and no later than 6 months prior to permit expiration.
2. *Sample Types* – Effluent samples shall be grab samples and shall be representative of the volume and quality of the discharge. The effluent samples shall be taken at the effluent monitoring location EFF-001. The receiving water control shall be a grab sample obtained Monitoring Location RSW-001, as identified in this Monitoring and Reporting Program.
3. *Sample Volumes* – Adequate sample volumes shall be collected to provide renewal water to complete the test in the event that the discharge is intermittent.
4. *Test Species* – Chronic toxicity testing measures sublethal (e.g., reduced growth, reproduction) and/or lethal effects to test organisms exposed to an effluent compared to that of the control organisms. The Discharger shall conduct chronic toxicity tests with:
   a. The cladoceran, water flea, *Ceriodaphnia dubia* (survival and reproduction test);
   b. The fathead minnow, *Pimephales promelas* (larval survival and growth test); and
   c. The green alga, *Selenastrum capricornutum* (growth test).
5. Methods – The presence of chronic toxicity shall be estimated as specified in Short-term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Freshwater Organisms, Fourth Edition, EPA/821-R-02-013, October 2002.
6. Reference Toxicant – As required by the SIP, all chronic toxicity tests shall be conducted with concurrent testing with a reference toxicant and shall be reported with the chronic toxicity test results.

7. *Dilutions* – For routine and accelerated chronic toxicity monitoring, it is not necessary to perform the test using a dilution series. The test may be performed using 100% effluent and one control. For TRE monitoring, the chronic toxicity testing shall be performed using the dilution series identified in Table E-4, below, unless an alternative dilution series is detailed in the submitted TRE Action Plan. A receiving water control or laboratory water control may be used as the diluent.

Table E-4. Chronic Toxicity Testing Dilution Series

Sample	Dilutions (%)					Control	
	100	75	50	25	12.5	Receiving Water	Laboratory Water
% Effluent	100	75	50	25	12.5	0	0
% Receiving Water	0	25	50	75	87.5	100	0
% Laboratory Water	0	0	0	0	0	0	100

8. *Test Failure* – The Discharger must re-sample and re-test as soon as possible, but no later than fourteen (14) days after receiving notification of a test failure. A test failure is defined as follows:

   a. The reference toxicant test or the effluent test does not meet all test acceptability criteria as specified in the Short-term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Freshwater Organisms, Fourth Edition, EPA/821-R-02-013, October 2002 (Method Manual), and its subsequent amendments or revisions; or

   b. The percent minimum significant difference (PMSD) measured for the test exceeds the upper PMSD bound variability criterion in Table 6 on page 52 of the Method Manual. (A retest is only required in this case if the test results do not exceed the monitoring trigger specified in the Special Provision at section VI. 2.a.iii. of the Order.)

C. WET Testing Notification Requirements. The Discharger shall notify the Central Valley Water Board within 24-hours after the receipt of test results exceeding the monitoring trigger during regular or accelerated monitoring, or an exceedance of the acute toxicity effluent limitation.

D. WET Testing Reporting Requirements. All toxicity test reports shall include the contracting laboratory's complete report provided to the Discharger and shall be in accordance with the appropriate "Report Preparation and Test Review" sections of the method manuals. At a minimum, whole effluent toxicity monitoring shall be reported as follows:

1. **Chronic WET Reporting.** Regular chronic toxicity monitoring results shall be reported to the Central Valley Water Board within 30 days following completion of the test, and shall contain, at minimum:

   a. The results expressed in TUc, measured as 100/NOEC, and also measured as 100/LC50, 100/EC25, 100/IC25, and 100/IC50, as appropriate.

   b. The statistical methods used to calculate endpoints;

   c. The statistical output page, which includes the calculation of the percent minimum significant difference (PMSD);

   d. The dates of sample collection and initiation of each toxicity test; and

e. The results compared to the numeric toxicity monitoring trigger.

Additionally, the monthly discharger self-monitoring reports shall contain an updated chronology of chronic toxicity test results expressed in TUc, and organized by test species, type of test (survival, growth or reproduction), and monitoring frequency, i.e., either quarterly, monthly, accelerated, or Toxicity Reduction Evaluation (TRE).

2. **Acute WET Reporting.** Acute toxicity test results shall be submitted with the monthly discharger self-monitoring reports and reported as percent survival.

3. **TRE Reporting.** Reports for TREs shall be submitted in accordance with the schedule contained in the Discharger's approved TRE Workplan, or as amended by the Discharger's TRE Action Plan.

4. **Quality Assurance (QA).** The Discharger must provide the following information for QA purposes:

   a. Results of the applicable reference toxicant data with the statistical output page giving the species, NOEC, LOEC, type of toxicant, dilution water used, concentrations used, PMSD, and dates tested.

   b. The reference toxicant control charts for each endpoint, which include summaries of reference toxicant tests performed by the contracting laboratory.

   c. Any information on deviations or problems encountered and how they were dealt with.

VI. LAND DISCHARGE MONITORING REQUIREMENTS – NOT APPLICABLE

VII. RECYCLING MONITORING REQUIREMENTS – NOT APPLICABLE

VIII. RECEIVING WATER MONITORING REQUIREMENTS – SURFACE WATER AND GROUNDWATER

A. Monitoring Locations RSW-001 and RSW-002

1. The Discharger shall monitor South Fork Battle Creek at Monitoring Locations RSW-001 and RSW-002 as follows:

Table E-5. Receiving Water Monitoring Requirements

Parameter	Units	Sample Type	Minimum Sampling Frequency[1]	Required Analytical Test Method
South Fork Battle Creek Flow[2]	cfs	Staff Gauge	1/Day	
Dissolved Oxygen	mg/L	Grab	1/Week	[3]
pH	Standard Units	Grab	1/Week [4, 5]	[3]
Temperature	˚C	Grab	1/Week [4, 5]	[3]
Turbidity	NTU	Grab	1/Week	[3]
Electrical Conductivity @ 25˚C	µmhos/cm	Grab	1/Month	[3]
Total Dissolved Solids	mg/L	Grab	1/Month	[3]
Hardness (as $CaCO_3$)	mg/L	Grab	1/Month	[3]
Ammonia Nitrogen, Total (as N)		Grab	1/Month [6]	[3]
Standard Minerals [7]	mg/L	Grab	1/Year	[3]
Priority Pollutants and Other Constituents of Concern (see Attachment E, Table E-9) [2]	µg/L	Grab	[8]	[3, 9, 10]

[1] **Monitoring frequencies shall apply during discharge to South Fork Battle Creek.**
[2] Monitoring required at RSW-001 only.
[3] Pollutants shall be analyzed using the analytical methods described in 40 CFR Part 136 or by methods approved by the Central Valley Water Board or the State Water Board.
[4] pH and temperature shall be recorded at the time of ammonia sample collection.
[5] A hand-held field meter may be used, provided the meter utilizes a USEPA-approved algorithm/method and is calibrated and maintained in accordance with the manufacturer's instructions. A calibration and maintenance log for each meter used for monitoring required by this Monitoring and Reporting Program shall be maintained at the Facility.
[6] Concurrent with whole effluent toxicity monitoring.
[7] Standard minerals shall include the following: boron, calcium, iron, magnesium, potassium, sodium, chloride, manganese, phosphorus, total alkalinity (including alkalinity series), and hardness, and include verification that the analysis is complete (i.e., cation/anion balance).
[8] Priority pollutants shall be sampled three times during the permit term and shall be conducted concurrently with upstream receiving water monitoring for hardness (as $CaCO_3$) and pH. See the *Effluent and Receiving Water Characterization Study,* Attachment E, Section IX.D, Table E-9 for more detailed requirements related to performing the priority pollutant monitoring.
[9] Volatile constituents shall be sampled in accordance with 40 CFR Part 136 or by methods approved by the Central Valley Water Board or the State Water Board.
[10] The maximum required Reporting Level is specified in Attachment E, Table E-9, Effluent and Receiving Water Characterization Study.

2. In conducting the receiving water sampling, a log shall be kept of the receiving water conditions throughout the reach bounded by Monitoring Locations RSW-001 and RSW-002. Attention shall be given to the presence or absence of:

   a. Floating or suspended matter;
   b. Discoloration;
   c. Bottom deposits, if visible;
   d. Aquatic life;
   e. Visible films, sheens, or coatings;
   f. Fungi, slimes, or objectionable growths; and
   g. Potential nuisance conditions.

   Notes on receiving water conditions shall be summarized in the monitoring report.

B. Monitoring Locations RGW-001, RGW-002, RGW-003

1. Prior to construction and/or beginning a sampling program of any new groundwater monitoring wells, the Discharger shall submit plans and specifications to the Central Valley Water Board for approval. Once installed, all new wells shall be added to the monitoring network (which currently consists of Monitoring Well Nos. RGW-001, RGW-002, and RGW-003) and shall be sampled and analyzed according to the schedule below. All samples shall be collected using approved EPA methods. Water table elevations shall be calculated to determine groundwater gradient and direction of flow.

2. Prior to sampling, the groundwater elevations shall be measured and the wells shall be purged of at least three well volumes until temperature, pH, and electrical conductivity have stabilized. Depth to groundwater shall be measured to the nearest 0.01 feet. Groundwater monitoring at RGW-001, RGW-002, RGW-003, and any new groundwater monitoring wells shall include, at a minimum, the following:

Table E-6. Groundwater Monitoring Requirements

Parameter	Units	Sample Type	Minimum Sampling Frequency	Required Analytical Test Method
Depth to Groundwater	±0.01 feet	Measurement	1/Quarter[4]	--
Groundwater Elevation[1]	±0.01 feet	Calculated	1/Quarter[4]	--

Parameter	Units	Sample Type	Minimum Sampling Frequency	Required Analytical Test Method
Gradient	feet/feet	Calculated	1/Quarter	--
Gradient Direction	degrees	Calculated	1/Quarter	--
Electrical Conductivity @ 25°C	µmhos/cm	Grab	1/Quarter	2
Total Dissolved Solids	mg/L	Grab	1/Quarter	2
pH	standard units	Grab	1/Quarter	2
Total Coliform Organisms	MPN/100 mL	Grab	1/Quarter	2
Ammonia (as NH_4)	mg/L	Grab	1/Quarter	
Total Nitrogen	mg/L	Grab	1/Quarter	2
Nitrate Nitrogen, Total (as N)	mg/L	Grab	1/Quarter	
Total Kjeldahl Nitrogen	mg/L	Grab	1/Quarter	2
Standard Minerals [3]	µg/L	Grab	1/Quarter	2

1 Groundwater elevation shall be determined based on depth-to-water measurements from a surveyed measuring point elevation on the well. The groundwater elevation shall be used to calculate the direction and gradient of groundwater flow, which must be reported.

2 Pollutants shall be analyzed using the analytical methods described in 40 CFR Part 136 or by methods approved by the Central Valley Water Board or the State Water Board.

3 Standard minerals shall include the following: boron, calcium, iron, magnesium, potassium, sodium, chloride, manganese, phosphorus, total alkalinity (including alkalinity series), and hardness, and include verification that the analysis is complete (i.e., cation/anion balance).

IX. OTHER MONITORING REQUIREMENTS

A. Monitoring Location PND-001 and PND-002

1. The Discharger shall monitor the evaporation/percolation ponds at Monitoring Locations PND-001 and PND-002 as follows:

Table E-7. Pond Monitoring Requirements

Parameter	Units	Sample Type	Minimum Sampling Frequency
Freeboard and Liquid Depth	Feet[1]	Visual	1/Month
Dissolved Oxygen	mg/L	Grab	1/Week
pH	Standard Units	Grab	1/Week
Observations[2]	--	--	1/Month
Biochemical Oxygen Demand (5-day @ 20°C)[3]	mg/L	Grab	1/Month[4]
Total Suspended Solids[3]	mg/L	Grab	1/Month[4]
Electrical Conductivity @ 25°C	µmhos/cm	Grab	1/Month[4]
Nitrate (as N)	mg/L	Grab	1/Month[4]
Iron	mg/L	Grab	1/Year
Manganese	mg/L	Grab	1/Year

1 Freeboard shall be monitored to the nearest tenth of a foot.

2 Observations include: a) seepage through the dikes; b) excessive odors or other nuisances; and c) excessive weed growth in ponds.

[3] Sample shall be collected at the discharge to PND-001 only.
[4] During the first year of the permit term only.

B. Biosolids

1. Monitoring Location BIO-001

   a. A composite sample of sludge shall be collected at Monitoring Location BIO-001 prior to sludge removal from the ponds in accordance with EPA's *POTW Sludge Sampling and Analysis Guidance Document*, August 1989, and tested for priority pollutants listed in 40 CFR Part 122, Appendix D, Tables II and III (excluding total phenols).

   b. Biosolids monitoring shall be conducted using the methods in Test Methods for Evaluating Solid Waste, Physical/Chemical methods (EPA publication SW-846), as required in 40 CFR 503.8(b)(4). All results must be reported on a 100% dry weight basis. Records of all analyses must state on each page of the laboratory report whether the results are expressed in "100% dry weight" or "as is."

   c. Sampling records shall be retained for a minimum of **5 years**. A log shall be maintained of sludge quantities generated and of handling and disposal activities. The frequency of entries is discretionary; however, the log must be complete enough to serve as a basis for part of the annual report.

C. Municipal Water Supply

1. Monitoring Location SPL-001

   a. The Discharger shall monitor the municipal water supply at SPL-001 as follows. A sampling station shall be established where a representative sample of the municipal water supply can be obtained. Municipal water supply samples shall be collected at approximately the same time as effluent samples.

Table E-8. Municipal Water Supply Monitoring Requirements

Parameter	Units	Sample Type	Minimum Sampling Frequency
Total Dissolved Solids[1]	mg/L	Grab	1/year
Electrical Conductivity @ 25°C[1]	µmhos/cm	Grab	1/year
Standard Minerals[2]	mg/L	Grab	1/year

[1] If the water supply is from more than one source, the total dissolved solids and electrical conductivity shall be reported as a weighted average and include copies of supporting calculations.
[2] Standard minerals shall include all major cations and anions and include verification that the analysis is complete (i.e., cation/anion balance).

D. Effluent and Receiving Water Characterization

1. **Monitoring.** Priority pollutant samples shall be collected from the effluent and upstream receiving water (EFF-001 and RSW-001) during periods of discharge and analyzed for the constituents listed in Table E-9, below. Monitoring shall be conducted **three times during the permit term**, including at least one monitoring event during the first discharge of the permit term. The results of such monitoring shall be submitted to the Central Valley Water Board with the self-monitoring reports. The monitoring event shall provide representative sample results for the effluent and upstream receiving water. (Note: Duplicative monitoring for priority pollutants is not required. If monitoring and

reporting for a priority pollutant listed in Table E-3 or Table E-5 is already required in this Order, the Discharger is not required to perform additional, duplicative monitoring and reporting as specified in this section.)

2. **Concurrent Sampling.** Effluent and receiving water sampling shall be performed at approximately the same time, on the same date.

3. **Sample type.** All receiving water samples shall be taken as grab samples. Effluent samples shall be taken as described in **Table E-9**, below.

Table E-9. Effluent and Receiving Water Characterization Monitoring

Parameter	Units	Effluent Sample Type	Maximum Reporting Level[1]
2- Chloroethyl vinyl ether	µg/L	Grab	1
Acrolein	µg/L	Grab	2
Acrylonitrile	µg/L	Grab	2
Benzene	µg/L	Grab	0.5
Bromoform	µg/L	Grab	0.5
Carbon Tetrachloride	µg/L	Grab	0.5
Chlorobenzene	µg/L	Grab	0.5
Chloroethane	µg/L	Grab	0.5
Chloroform	µg/L	Grab	2
Chloromethane	µg/L	Grab	2
Dibromochloromethane	µg/L	Grab	0.5
Dichlorobromomethane	µg/L	Grab	0.5
Dichloromethane	µg/L	Grab	2
Ethylbenzene	µg/L	Grab	2
Hexachlorobenzene	µg/L	Grab	1
Hexachlorobutadiene	µg/L	Grab	1
Hexachloroethane	µg/L	Grab	1
Methyl bromide (Bromomethane)	µg/L	Grab	1
Naphthalene	µg/L	Grab	10
Parachlorometa cresol	µg/L	Grab	
Tetrachloroethene	µg/L	Grab	0.5
Toluene	µg/L	Grab	2
trans-1,2-Dichloroethylene	µg/L	Grab	1
Trichloroethene	µg/L	Grab	2
Vinyl chloride	µg/L	Grab	0.5
Methyl-tert-butyl ether (MTBE)	µg/L	Grab	
Trichlorofluoromethane	µg/L	Grab	
1,1,1-Trichloroethane	µg/L	Grab	0.5
1,1-dichloroethane	µg/L	Grab	0.5
1,1-dichloroethylene	µg/L	Grab	0.5
1,2-dichloropropane	µg/L	Grab	0.5
1,3-dichloropropylene	µg/L	Grab	0.5
1,1,2,2-tetrachloroethane	µg/L	Grab	0.5
1,1,2-Trichloro-1,2,2-Trifluoroethane	µg/L	Grab	0.5
1,2,4-trichlorobenzene	µg/L	Grab	1
1,2-dichoroethane	µg/L	Grab	0.5
1,2-dichlorobenzene	µg/L	Grab	0.5
1,3-dichlorobenzene	µg/L	Grab	0.5
1,4-dichlorobenzene	µg/L	Grab	0.5
Styrene	µg/L	Grab	
Xylenes	µg/L	Grab	
1,2-Benzanthracene	µg/L	Grab	5

Parameter	Units	Effluent Sample Type	Maximum Reporting Level[1]
1,2-Diphenylhydrazine	µg/L	Grab	1
2-Chlorophenol	µg/L	Grab	5
2,4-Dichlorophenol	µg/L	Grab	5
2,4-Dimethylphenol	µg/L	Grab	2
2,4-Dinitrophenol	µg/L	Grab	5
2,4-Dinitrotoluene	µg/L	Grab	5
2,4,6-Trichlorophenol	µg/L	Grab	10
2,6-Dinitrotoluene	µg/L	Grab	5
2-Nitrophenol	µg/L	Grab	10
2-Chloronaphthalene	µg/L	Grab	10
3,3'-Dichlorobenzidine	µg/L	Grab	5
3,4-Benzofluoranthene	µg/L	Grab	10
4-Chloro-3-methylphenol	µg/L	Grab	5
4,6-Dinitro-2-methylphenol	µg/L	Grab	10
4-Nitrophenol	µg/L	Grab	10
4-Bromophenyl phenyl ether	µg/L	Grab	10
4-Chlorophenyl phenyl ether	µg/L	Grab	5
Acenaphthene	µg/L	Grab	1
Acenaphthylene	µg/L	Grab	10
Anthracene	µg/L	Grab	10
Benzidine	µg/L	Grab	5
Benzo(a)pyrene (3,4-Benzopyrene)	µg/L	Grab	2
Benzo(g,h,i)perylene	µg/L	Grab	5
Benzo(k)fluoranthene	µg/L	Grab	2
Bis(2-chloroethoxy) methane	µg/L	Grab	5
Bis(2-chloroethyl) ether	µg/L	Grab	1
Bis(2-chloroisopropyl) ether	µg/L	Grab	10
Bis(2-ethylhexyl) phthalate	µg/L	Grab	5
Butyl benzyl phthalate	µg/L	Grab	10
Chrysene	µg/L	Grab	5
Di-n-butylphthalate	µg/L	Grab	10
Di-n-octylphthalate	µg/L	Grab	10
Dibenzo(a,h)-anthracene	µg/L	Grab	0.1
Diethyl phthalate	µg/L	Grab	10
Dimethyl phthalate	µg/L	Grab	10
Fluoranthene	µg/L	Grab	10
Fluorene	µg/L	Grab	10
Hexachlorocyclopentadiene	µg/L	Grab	5
Indeno(1,2,3-c,d)pyrene	µg/L	Grab	0.05
Isophorone	µg/L	Grab	1
N-Nitrosodiphenylamine	µg/L	Grab	1
N-Nitrosodimethylamine	µg/L	Grab	5
N-Nitrosodi-n-propylamine	µg/L	Grab	5
Nitrobenzene	µg/L	Grab	10
Pentachlorophenol	µg/L	Grab	1
Phenanthrene	µg/L	Grab	5
Phenol	µg/L	Grab	1
Pyrene	µg/L	Grab	10
Aluminum	µg/L	Grab	
Antimony	µg/L	Grab	5
Arsenic	µg/L	Grab	10
Asbestos	µg/L	Grab	

Parameter	Units	Effluent Sample Type	Maximum Reporting Level[1]
Barium	µg/L	Grab	
Beryllium	µg/L	Grab	2
Cadmium	µg/L	Grab	0.5
Chromium (III)	µg/L	Grab	50
Chromium (VI)	µg/L	Grab	10
Copper	µg/L	Grab	0.5
Cyanide	µg/L	Grab	5
Fluoride	µg/L	Grab	
Iron	µg/L	Grab	
Lead	µg/L	Grab	0.5
Mercury	µg/L	Grab	0.5
Manganese	µg/L	Grab	
Molybdenum	µg/L	Grab	
Nickel	µg/L	Grab	20
Selenium	µg/L	Grab	5
Silver	µg/L	Grab	0.25
Thallium	µg/L	Grab	1
Tributyltin	µg/L	Grab	
Zinc	µg/L	Grab	20
4,4'-DDD	µg/L	Grab	0.05
4,4'-DDE	µg/L	Grab	0.05
4,4'-DDT	µg/L	Grab	0.01
alpha-Endosulfan	µg/L	Grab	0.02
alpha-Hexachlorocyclohexane (BHC)	µg/L	Grab	0.01
Alachlor	µg/L	Grab	
Aldrin	µg/L	Grab	0.005
beta-Endosulfan	µg/L	Grab	0.01
beta-Hexachlorocyclohexane	µg/L	Grab	0.005
Chlordane	µg/L	Grab	0.1
delta-Hexachlorocyclohexane	µg/L	Grab	0.005
Dieldrin	µg/L	Grab	0.01
Endosulfan sulfate	µg/L	Grab	0.01
Endrin	µg/L	Grab	0.01
Endrin Aldehyde	µg/L	Grab	0.01
Heptachlor	µg/L	Grab	0.01
Heptachlor Epoxide	µg/L	Grab	0.02
Lindane (gamma-Hexachlorocyclohexane)	µg/L	Grab	0.5
PCB-1016	µg/L	Grab	0.5
PCB-1221	µg/L	Grab	0.5
PCB-1232	µg/L	Grab	0.5
PCB-1242	µg/L	Grab	0.5
PCB-1248	µg/L	Grab	0.5
PCB-1254	µg/L	Grab	0.5
PCB-1260	µg/L	Grab	0.5
Toxaphene	µg/L	Grab	
Atrazine	µg/L	Grab	
Bentazon	µg/L	Grab	
Carbofuran	µg/L	Grab	
2,4-D	µg/L	Grab	
Dalapon	µg/L	Grab	

Parameter	Units	Effluent Sample Type	Maximum Reporting Level[1]
1,2-Dibromo-3-chloropropane (DBCP)	µg/L	Grab	
Di(2-ethylhexyl)adipate	µg/L	Grab	
Dinoseb	µg/L	Grab	
Diquat	µg/L	Grab	
Endothal	µg/L	Grab	
Ethylene Dibromide	µg/L	Grab	
Methoxychlor	µg/L	Grab	
Molinate (Ordram)	µg/L	Grab	
Oxamyl	µg/L	Grab	
Picloram	µg/L	Grab	
Simazine (Princep)	µg/L	Grab	
Thiobencarb	µg/L	Grab	
2,3,7,8-TCDD (Dioxin)	µg/L	Grab	
2,4,5-TP (Silvex)	µg/L	Grab	
Diazinon	µg/L	Grab	
Chlorpyrifos	µg/L	Grab	
Ammonia (as N)	mg/L	Grab	
Boron	µg/L	Grab	
Chloride	mg/L	Grab	
Flow	MGD	Meter	
Hardness (as $CaCO_3$)	mg/L	Grab	
Foaming Agents (MBAS)	µg/L	Grab	
Mercury, Methyl	ng/L	Grab	
Nitrate (as N)	mg/L	Grab	
Nitrite (as N)	mg/L	Grab	
pH	Std Units	Grab	
Phosphorus, Total (as P)	mg/L	Grab	
Specific conductance (EC)	µmhos/cm	Grab	
Sulfate	mg/L	Grab	
Sulfide (as S)	mg/L	Grab	
Sulfite (as SO_3)	mg/L	Grab	
Temperature	^{o}C	Grab	
Total Dissolved Solids (TDS)	mg/L	Grab	

[1] The reporting levels required in this table for priority pollutant constituents are established based on Section 2.4.2 and Appendix 4 of the SIP.

X. REPORTING REQUIREMENTS

A. General Monitoring and Reporting Requirements

1. The Discharger shall comply with all Standard Provisions (Attachment D) related to monitoring, reporting, and recordkeeping.
2. Upon written request of the Central Valley Water Board, the Discharger shall submit a summary monitoring report. The report shall contain both tabular and graphical summaries of the monitoring data obtained during the previous year(s).
3. **Compliance Time Schedules.** For compliance time schedules included in the Order, the Discharger shall submit to the Central Valley Water Board, on or before each compliance due date, the specified document or a written report detailing compliance or noncompliance with the specific date and task. If noncompliance is reported, the Discharger shall state the reasons for noncompliance and include an estimate of the date when the Discharger will be in compliance. The Discharger shall notify the Central Valley Water Board by letter when it returns to compliance with the compliance time schedule.
4. The Discharger shall report to the Central Valley Water Board any toxic chemical release data it reports to the State Emergency Response Commission within 15 days of reporting the data to the Commission pursuant to section 313 of the "*Emergency Planning and Community Right to Know Act*" of 1986.

B. Self-Monitoring Reports (SMRs)

1. The Discharger shall continue to electronically submit SMRs using the State Water Board's California Integrated Water Quality System (CIWQS) Program Web site (http://www.waterboards.ca.gov/ciwqs/index.html). The CIWQS Web site will provide additional information for SMR submittal in the event there will be a planned service interruption for electronic submittal.
2. The Discharger shall report in the SMR the results for all monitoring specified in this MRP under sections III through IX. The Discharger shall submit monthly, quarterly, semiannual, and annual SMRs including the results of all required monitoring using U.S. EPA-approved test methods or other test methods specified in this Order. SMRs are to include all new monitoring results obtained since the last SMR was submitted. If the Discharger monitors any pollutant more frequently than required by this Order, the results of this monitoring shall be included in the calculations and reporting of the data submitted in the SMR.
3. Monitoring periods and reporting for all required monitoring shall be completed according to the following schedule:

Table E-10. Monitoring Periods and Reporting Schedule

Sampling Frequency	Monitoring Period Begins On…	Monitoring Period	SMR Due Date
Continuous	**Permit effective date**	Continuous	Submit with monthly SMR
1/Day	**Permit effective date**	(Midnight through 11:59 PM) or any 24-hour period that reasonably represents a calendar day for purposes of sampling.	Submit with **monthly** SMR
1/Week	**Permit effective date**	Sunday through Saturday	Submit with **monthly** SMR
1/Month	**Permit effective date**	First day of calendar month through last day of calendar month	First day of second calendar

			month following month of sampling
1/Quarter	**Permit effective date**	1 January through 31 March 1 April through 30 June 1 July through 30 September 1 October through 31 December	1 May 1 August 1 November 1 February of following year
2/Year	**Permit effective date**	1 January through 30 June 1 July through 31 December	1 August 1 February of following year
1/Year	**Permit effective date**	1 January through 31 December	1 February of following year

4. **Reporting Protocols.** The Discharger shall report with each sample result the applicable Reporting Level (RL) and the current laboratory's Method Detection Limit (MDL), as determined by the procedure in 40 C.F.R. part 136.

   The Discharger shall report the results of analytical determinations for the presence of chemical constituents in a sample using the following reporting protocols:

   a. Sample results greater than or equal to the RL shall be reported as measured by the laboratory (i.e., the measured chemical concentration in the sample).

   b. Sample results less than the RL, but greater than or equal to the laboratory's MDL, shall be reported as "Detected, but Not Quantified," or DNQ. The estimated chemical concentration of the sample shall also be reported.

      For the purposes of data collection, the laboratory shall write the estimated chemical concentration next to DNQ. The laboratory may, if such information is available, include numerical estimates of the data quality for the reported result. Numerical estimates of data quality may be percent accuracy (± a percentage of the reported value), numerical ranges (low to high), or any other means considered appropriate by the laboratory.

   c. Sample results less than the laboratory's MDL shall be reported as "Not Detected," or ND.

   d. Dischargers are to instruct laboratories to establish calibration standards so that the Minimum Level (ML) value (or its equivalent if there is differential treatment of samples relative to calibration standards) is the lowest calibration standard. At no time is the Discharger to use analytical data derived from extrapolation beyond the lowest point of the calibration curve.

5. **Multiple Sample Data.** When determining compliance with an AMEL, AWEL, or MDEL for priority pollutants and more than one sample result is available, the Discharger shall compute the arithmetic mean unless the data set contains one or more reported determinations of "Detected, but Not Quantified" (DNQ) or "Not Detected" (ND). In those cases, the Discharger shall compute the median in place of the arithmetic mean in accordance with the following procedure:

   a. The data set shall be ranked from low to high, ranking the reported ND determinations lowest, DNQ determinations next, followed by quantified values (if any). The order of the individual ND or DNQ determinations is unimportant.

   b. The median value of the data set shall be determined. If the data set has an odd number of data points, then the median is the middle value. If the data set has an even number of data points, then the median is the average of the two values around the middle unless one or both of the points are ND or DNQ, in which case the median value shall be the lower of the two data points where DNQ is lower than a value and ND is lower than DNQ.

6. The Discharger shall submit SMRs in accordance with the following requirements:

   a. The Discharger shall arrange all reported data in a tabular format. The data shall be summarized to clearly illustrate whether the facility is operating in compliance with interim and/or final effluent limitations. The Discharger is not required to duplicate the submittal of data that is entered in a tabular format within CIWQS. When electronic submittal of data is required and CIWQS does not provide for entry into a tabular format within the system, the Discharger shall electronically submit the data in a tabular format as an attachment.

   b. The Discharger shall attach a cover letter to the SMR. The information contained in the cover letter shall clearly identify violations of the WDR's; discuss corrective actions taken or planned; and the proposed time schedule for corrective actions. Identified violations must include a description of the requirement that was violated and a description of the violation.

   c. The Discharger shall attach all laboratory analysis sheets, including quality assurance/quality control information, with all its SMRs for which sample analyses were performed.

7. The Discharger shall submit in the SMRs calculations and reports in accordance with the following requirements:

   a. **Calendar Annual Average Limitations**. For constituents with effluent limitations specified as "calendar annual average" (aluminum, electrical conductivity, iron, and manganese) the Discharger shall report the calendar annual average in the December SMR. The annual average shall be calculated as the average of the samples gathered for the calendar year.

   b. **Mass Loading Limitations**. For BOD5, TSS, and ammonia, the Discharger shall calculate and report the mass loading (lbs/day) in the SMRs. The mass loading shall be calculated as follows:

      Mass Loading (lbs/day) = Flow (MGD) x Concentration (mg/L) x 8.34

      When calculating daily mass loading, the daily average flow and constituent concentration shall be used. For weekly average mass loading, the weekly average flow and constituent concentration shall be used. For monthly average mass loading, the monthly average flow and constituent concentration shall be used.

   c. **Removal Efficiency (BOD_5 and TSS).** The Discharger shall calculate and report the percent removal of BOD5 and TSS in the SMRs. The percent removal shall be calculated as specified in Section VII.A. of the Limitations and Discharge Requirements.

   d. **Total Coliform Organisms Effluent Limitations**. The Discharger shall calculate and report the 7-day median of total coliform organisms for the effluent. The 7 day median of total coliform organisms shall be calculated as specified in the Limitations and Discharge Requirements.

   e. **Dissolved Oxygen Receiving Water Limitations**. The Discharger shall calculate and report monthly in the self-monitoring report: i) the dissolved oxygen concentration, ii) the percent of saturation in the main water mass, and iii) the 95th percentile dissolved oxygen concentration.

f. **Turbidity Receiving Water Limitations**. The Discharger shall calculate and report the turbidity increase in the receiving water applicable to the natural turbidity condition specified in Section V.A.17.a-e. of the Limitations and Discharge Requirements.

g. **Temperature Receiving Water Limitations**. The Discharger shall calculate and report the temperature increase in the receiving water based on the difference in temperature at RSW-001 and RSW-002.

C. Discharge Monitoring Reports (DMRs)

1. As described in section X.B.1 above, at any time during the term of this permit, the State Water Board or Central Valley Water Board may notify the Discharger to electronically submit SMRs that will satisfy federal requirements for submittal of Discharge Monitoring Reports (DMRs).

D. Other Reports

1. The Discharger shall report the results of any special studies, acute and chronic toxicity testing, TRE/TIE, or PMP required by Special Provisions – VI.C. The Discharger shall submit reports with the first monthly SMR scheduled to be submitted on or immediately following the report due date.

2. **Within 60 days of permit adoption**, the Discharger shall submit a report outlining reporting levels (RLs), method detection limits, and analytical methods for approval. The Discharger shall comply with the monitoring and reporting requirements for CTR constituents as outlined in section 2.3 and 2.4 of the SIP. The maximum required reporting levels for priority pollutant constituents shall be based on the Minimum Levels (MLs) contained in Appendix 4 of the SIP, determined in accordance with Section 2.4.2 and Section 2.4.3 of the SIP. In accordance with Section 2.4.2 of the SIP, when there is more than one ML value for a given substance, the Central Valley Water Board shall include as RLs, in the permit, all ML values, and their associated analytical methods, listed in Appendix 4 that are below the calculated effluent limitation. The Discharger may select any one of those cited analytical methods for compliance determination. If no ML value is below the effluent limitation, then the Central Valley Water Board shall select as the RL, the lowest ML value, and its associated analytical method, listed in Appendix 4 for inclusion in the permit. Table E-9 (Attachment E) provides required maximum reporting levels in accordance with the SIP.

3. **Annual Operations Report.** By 1 February of each year, the Discharger shall submit a written report to the Executive Officer containing the following:

   a. The names, certificate grades, and general responsibilities of all persons employed at the Facility.

   b. The names and telephone numbers of persons to contact regarding the plant for emergency and routine situations.

   c. A statement certifying when the flow meter(s) and other monitoring instruments and devices were last calibrated, including identification of who performed the calibration.

   d. A statement certifying whether the current operation and maintenance manual, and contingency plan, reflect the wastewater treatment plant as currently constructed and operated, and the dates when these documents were last revised and last reviewed for adequacy.

   e. The Discharger may also be requested to submit an annual report to the Central Valley Water Board with both tabular and graphical summaries of the monitoring data obtained during the previous year. Any such request shall be made in writing. The report shall discuss the compliance record. If violations have occurred, the report shall also discuss the corrective actions taken and planned to bring the discharge into full compliance with the waste discharge requirements.

ATTACHMENT F – FACT SHEET

Contents

Tables

ATTACHMENT F – FACT SHEET

As described in section II.B of this Order, the Central Valley Water Board incorporates this Fact Sheet as findings of the Central Valley Water Board supporting the issuance of this Order. This Fact Sheet includes the legal requirements and technical rationale that serve as the basis for the requirements of this Order.

This Order has been prepared under a standardized format to accommodate a broad range of discharge requirements for Dischargers in California. Only those sections or subsections of this Order that are specifically identified as "not applicable" have been determined not to apply to this Discharger. Sections or subsections of this Order not specifically identified as "not applicable" are fully applicable to this Discharger.

I. PERMIT INFORMATION

The following table summarizes administrative information related to the facility.

Table F-1. Facility Information

WDID	5A520102001
Discharger	Tehama County Sanitation District No. 1
Name of Facility	Mineral Wastewater Treatment Plant
Facility Address	37735 Highway 36E
	Mineral, CA 96063
	Tehama County
Facility Contact, Title and Phone	Gary Antone, Executive Director, (530) 385-1462
Authorized Person to Sign and Submit Reports	Gary Antone, Executive Director, (530) 385-1462
Mailing Address	9380 San Benito Avenue, Gerber, CA 96035
Billing Address	SAME
Type of Facility	POTW
Major or Minor Facility	Minor
Threat to Water Quality	2
Complexity	B
Pretreatment Program	N
Recycling Requirements	NA
Facility Permitted Flow	0.070 mgd (ADWF), 0.75 mgd (PWWF)
Facility Design Flow	0.070 mgd (ADWF), 0.75 mgd (PWWF)
Watershed	Battle Creek
Receiving Water	South Fork Battle Creek
Receiving Water Type	Inland surface water

A. Tehama County Sanitation District No. 1 (hereinafter Discharger) is the owner and operator of the Mineral Wastewater Treatment Plant (hereinafter Facility), a secondary wastewater treatment plant.

For the purposes of this Order, references to the "discharger" or "permittee" in applicable federal and state laws, regulations, plans, or policy are held to be equivalent to references to the Discharger herein.

B. The Facility discharges wastewater to South Fork Battle Creek, a water of the United States, and was regulated by Order R5-2007-0098 which was adopted on 2 August 2007 and expired on 1 September 2012. The terms and conditions of Order No. R5-2007-0098 were automatically continued and remained in effect until new Waste Discharge Requirements (WDRs) and National Pollutant Discharge Elimination System (NPDES) permit were adopted pursuant to this Order. Attachment B provides a map of the area around the Facility.

Attachment C provides a flow schematic of the Facility.

Prior to making any change in the point of discharge, place of use, or purpose of use of treated wastewater that results in a decrease of flow in any portion of a watercourse, the Discharger must file a petition with the State Water Board, Division of Water Rights, and receive approval for such a change. The State Water Board retains the jurisdictional authority to enforce such requirements under Water Code section 1211.

C. The Discharger filed a report of waste discharge and submitted an application for reissuance of its WDR's and NPDES permit on 15 August 2012. A site visit was conducted on 1 May 2012 to observe operations and collect additional data to develop permit limitations and conditions.

II. FACILITY DESCRIPTION

The Discharger provides sewerage service for the community of Mineral, State of California Department of Transportation Mineral Maintenance Facility, the Lassen National Park Service (NPS) Headquarters, and seasonal campgrounds. The estimated population of the community of Mineral is 123; however, the summer cabin, campground, and second home use increase the population seasonally. According to the Discharger's records, the Facility currently has 199 paying connections and is designed for a total of 350 connections. There are 17 commercial connections, all discharging domestic wastewater. The design average dry weather flow capacity of the Facility is 0.070 million gallons per day (mgd).

A. Description of Wastewater and Biosolids Treatment and Controls

The treatment system at the Facility consists of a preliminary influent bar screen, aeration basin, two evaporation/percolation ponds, pressure filter, chlorine disinfection and dechlorination unit. The design average dry weather flow capacity is 0.070 mgd and the wet weather hydraulic design treatment capacity is 0.75 mgd. During periods of discharge to South Fork of Battle Creek, wastewater is additionally treated by filtration (multi-media pressure filter), disinfected (chlorine disinfection unit), and de-chlorinated (sulfur dioxide gas) prior to discharge to surface waters. The design filter loading rate is 0.576 mgd (400 gallons per minute). No chemicals are added to aid filtration. The multi-media filtration, chlorination, and dechlorination units only operate during periods of discharge to the South Fork of Battle Creek.

Inflow to the Facility follows the precipitation signature of the hydrologic basin as a result of inflow and infiltration (I&I) into the collection system. A significant portion of the I&I to the Facility occurs during the spring months as a result of snowmelt. Average annual precipitation is approximately 50 inches. The annual average daily influent flow to the Facility in 2011 was 0.059 mgd, with a minimum daily influent flow of 0.016 mgd and a maximum of 0.19 mgd. The peak flow for 2011 was 0.33 mgd on March 15, 2011. The Discharger expects inflow volumes to Facility to remain constant due to little or no proposed growth in the service area. Inflow and infiltration is expected to decrease as a result of the proposed collection system replacement/rehabilitation of the entire NPS Headquarters collection system (50 acre area), scheduled for 2016.

Discharge to the South Fork Battle Creek has been infrequent. Typically, large snowmelt runoff in the spring is associated with discharge events. Discharge events occur at the same time the flow in South Fork Battle Creek is high from snowmelt in the hydrologic basin. Between 1997 and 2006, the Facility has only discharged a total of 11 days (10 days between 1997 and 2002, and only one day (December 30, 2005) between 2002 and 2006). Based on information submitted by the Discharger dilution was approximately 131:1 for the December 30, 2005 discharge. The Facility has not discharged to South Fork Battle Creek during the term of the previous Order No. R5 2007-0098.

The Discharger constructed a concrete lined storm water interceptor channel around the Facility in 1998 which intercepts offsite storm water from Highway 36 and contributing areas. The channel directs storm water around the Facility and has been effective in reducing discharge events by preventing storm water runoff from entering the evaporation/percolation ponds.

The Discharger measured the depth of sludge in the evaporation/percolation ponds in 2010 and reported that the measurement indicated an insignificant buildup of sludge. The Discharger intended to assess the sludge buildup in the aeration basin in 2013 but as of the date of this Order has yet to do so. There has not been a need for sludge removal at the Facility to date.

B. Discharge Points and Receiving Waters

1. The Facility is located in Section 26, T28N R3E, MDB&M, as shown in Attachment B, a part of this Order.
2. Treated municipal wastewater is discharged at Discharge Point No. D-001 to South Fork Battle Creek, a water of the United States, a tributary to Battle Creek at a point latitude 40° 20' 54" N and longitude 121° 37' 25" W. Between November 15 and April 15, treated wastewater may be discharged to South Fork Battle Creek. Additionally, discharge to South Fork Battle Creek is prohibited from April 16 to November 14, unless approved by the Executive Officer in accordance with Standard Provisions VI.C.6.b.

C. Summary of Existing Requirements and Self-Monitoring Report (SMR) Data

Effluent limitations contained in Order No. R5-2007-0098 for discharges from Discharge Point No. D-001 and representative monitoring data from the term of Order No. R5-2007-0098 are presented in Table F-2 below. The Facility did not discharge during the term of Order No. R5-2007-0098.

Table F-2. Historic Effluent Limitations and Monitoring Data

Parameter	Units	Effluent Limitation			Monitoring Data (From 6/1/2011 – To 8/1/2014)		
		Average Monthly	Average Weekly	Maximum Daily	Highest Average Monthly Discharge	Highest Average Weekly Discharge	Highest Daily Discharge
Average Dry Weather Influent Flow	mgd	0.070	--	--	0.080[1]	--	0.28[2]
Daily Peak Wet Weather Flow	mgd	0.75	--	--	No Discharge		
BOD 5-day @20˚C	mg/L	10	15	30	No Discharge		
Total Suspended Solids	mg/L	30	45	90	No Discharge		
Total Residual Chlorine	mg/L	--	0.01[3]	0.02[4]	No Discharge		
Total Coliform Organisms	MPN/100 mL	--	23[5]	240[6]	No Discharge		

Parameter	Units	Effluent Limitation			Monitoring Data (From 6/1/2011 – To 8/1/2014)		
		Average Monthly	**Average Weekly**	**Maximum Daily**	**Highest Average Monthly Discharge**	**Highest Average Weekly Discharge**	**Highest Daily Discharge**
Electrical Conductivity	µmhos/cm	900	--	--	No Discharge		
pH	Standard Units	--	--	6.0-9.0	No Discharge		

[1] Annual Average (2012).
[2] Maximum daily influent flow (2012).
[3] Applied as a 1-hour-day average effluent limitation.
[4] Applied as a 4-day average effluent limitation.
[5] Applied as a 7-day median effluent limitation.
[6] Total coliform organisms shall not exceed 240 more than once in any 30-day period.

D. Compliance Summary

Facility did not discharge to surface water during the term of the previous Order No. R5-2007-0098.

E. Planned Changes – Not Applicable

III. APPLICABLE PLANS, POLICIES, AND REGULATIONS

The requirements contained in this Order are based on the requirements and authorities described in this section.

A. Legal Authorities

This Order serves as WDR's pursuant to article 4, chapter 4, division 7 of the California Water Code (commencing with section 13260). This Order is also issued pursuant to section 402 of the federal Clean Water Act (CWA) and implementing regulations adopted by the U.S. EPA and chapter 5.5, division 7 of the Water Code (commencing with section 13370). It shall serve as an NPDES permit for point source discharges from this facility to surface waters.

B. California Environmental Quality Act (CEQA)

Under Water Code section 13389, this action to adopt an NPDES permit is exempt from the provisions of Chapter 3 of CEQA, (commencing with section 21100) of Division 13 of the Public Resources Code.

C. State and Federal Laws, Regulations, Policies, and Plans

1. **Water Quality Control Plan.** Requirements of this Order specifically implement the applicable Water Quality Control Plans.

   a. Basin Plan. The Central Valley Water Board adopted the Water Quality Control Plan, Fourth Edition (Revised October 2011), for the Sacramento and San Joaquin River Basins (hereinafter Basin Plan) on 22 April 2010 that designates beneficial uses, establishes water quality objectives, and contains implementation programs and policies to achieve those objectives for all waters addressed through the plan. Requirements in this Order implement the Basin Plan. In addition, the Basin Plan implements State Water Board Resolution 88-63, which established state policy that all waters, with certain exceptions, should be considered suitable or potentially suitable for municipal or domestic supply. Beneficial uses applicable to South Fork Battle Creek are as follows:

Table F-3. Basin Plan Beneficial Uses

Discharge Point	Receiving Water Name	Beneficial Use(s)
EFF-001	South Fork Battle Creek	Municipal and domestic supply (MUN); Agricultural supply, including irrigation and stock watering (AGR); Hydropower generation (POW); Water contact recreation, including canoeing and rafting (REC-1); Non-contact water recreation (REC-2); Warm freshwater habitat (WARM); Cold freshwater habitat (COLD); Migration of aquatic organisms, cold (MIGR); Spawning, reproduction, and/or early development, warm and cold (SPWN); Wildlife habitat (WILD); and <u>Groundwater:</u> Municipal and domestic water supply (MUN), Industrial service supply (IND), Industrial process supply (PRO), and Agricultural supply (AGR)

2. **National Toxics Rule (NTR) and California Toxics Rule (CTR).** U.S. EPA adopted the NTR on 22 December 1992, and later amended it on 4 May 1995 and 9 November 1999. About forty criteria in the NTR applied in California. On 18 May 2000, U.S. EPA adopted the CTR. The CTR promulgated new toxics criteria for California and, in addition, incorporated the previously adopted NTR criteria that were applicable in the state. The CTR was amended on 13 February 2001. These rules contain federal water quality criteria for priority pollutants.

3. **State Implementation Policy.** On 2 March 2000, the State Water Board adopted the Policy for Implementation of Toxics Standards for Inland Surface Waters, Enclosed Bays, and Estuaries of California (State Implementation Policy or SIP). The SIP became effective on 28 April 2000, with respect to the priority pollutant criteria promulgated for California by the U.S. EPA through the NTR and to the priority pollutant objectives established by the Central Valley Water Board in the Basin Plan. The SIP became effective on 18 May 2000, with respect to the priority pollutant criteria promulgated by the U.S. EPA through the CTR. The State Water Board adopted amendments to the SIP on

24 February 2005, that became effective on 13 July 2005. The SIP establishes implementation provisions for priority pollutant criteria and objectives and provisions for chronic toxicity control. Requirements of this Order implement the SIP.

4. **Antidegradation Policy.** Federal regulation 40 C.F.R. section 131.12 requires that the state water quality standards include an antidegradation policy consistent with the federal policy. The State Water Board established California's antidegradation policy in State Water Board Resolution 68-16 ("Statement of Policy with Respect to Maintaining High Quality of Waters in California"). Resolution 68-16 is deemed to incorporate the federal antidegradation policy where the federal policy applies under federal law. Resolution 68-16 requires that existing water quality be maintained unless degradation is justified based on specific findings. The Central Valley Water Board's Basin Plan implements, and incorporates by reference, both the State and federal antidegradation policies. The permitted discharge must be consistent with the antidegradation provision of 40 C.F.R. section 131.12 and State Water Board Resolution 68-16.

5. **Anti-Backsliding Requirements.** Sections 402(o) and 303(d)(4) of the CWA and federal regulations at 40 C.F.R. section 122.44(l) restrict backsliding in NPDES permits. These anti-backsliding provisions require that effluent limitations in a reissued permit must be as stringent as those in the previous permit, with some exceptions in which limitations may be relaxed.

6. **Domestic Water Quality.** In compliance with Water Code section 106.3, it is the policy of the State of California that every human being has the right to safe, clean, affordable, and accessible water adequate for human consumption, cooking, and sanitary purposes. This Order promotes that policy by requiring discharges to meet maximum contaminant levels designed to protect human health and ensure that water is safe for domestic use.

7. **Endangered Species Act Requirements.** This Order does not authorize any act that results in the taking of a threatened or endangered species or any act that is now prohibited, or becomes prohibited in the future, under either the California Endangered Species Act (Fish and Game Code, §§ 2050 to 2097) or the Federal Endangered Species Act (16 U.S.C.A. §§ 1531 to 1544). This Order requires compliance with effluent limits, receiving water limits, and other requirements to protect the beneficial uses of waters of the state. The discharger is responsible for meeting all requirements of the applicable Endangered Species Act.

8. **Emergency Planning and Community Right to Know Act.** Section 13263.6(a) of the Water Code, requires that *"the Regional Water Board shall prescribe effluent limitations as part of the waste discharge requirements of a POTW for all substances that the most recent toxic chemical release data reported to the state emergency response commission pursuant to Section 313 of the Emergency Planning and Community Right to Know Act of 1986 (42 U.S.C. Sec. 11023) (EPCRA) indicate as discharged into the POTW, for which the State Water Board or the Regional Water Board has established numeric water quality objectives, and has determined that the discharge is or may be discharged at a level which will cause, have the reasonable potential to cause, or contribute to, an excursion above any numeric water quality objective"*.

   The most recent toxic chemical data report does not indicate any reportable off-site releases or discharges to the collection system for this Facility. Therefore, a reasonable potential analysis based on information from EPCRA cannot be conducted. Based on information from EPCRA, there is no reasonable potential to cause or contribute to an excursion above any numeric water quality objectives included within the Basin Plan or in any State Water Board plan, so no effluent limitations are included in this permit pursuant to Water Code section 13263.6(a).

However, as detailed elsewhere in this Order, available effluent data indicate that there are constituents present in the effluent that have a reasonable potential to cause or contribute to exceedances of water quality standards and require inclusion of effluent limitations based on federal and state laws and regulations.

9. **Storm Water Requirements.** USEPA promulgated federal regulations for storm water on 16 November 1990 in 40 CFR Parts 122, 123, and 124. The NPDES Industrial Storm Water Program regulates storm water discharges from wastewater treatment facilities. Wastewater treatment plants are applicable industries under the storm water program and are obligated to comply with the federal regulations. The State Water Board does not require wastewater treatment facilities with design flows less than 1 MGD to obtain coverage under the Industrial Storm water General Order. Therefore, this Order does not regulate storm water.

D. Impaired Water Bodies on CWA 303(d) List

1. Under section 303(d) of the 1972 CWA, states, territories and authorized tribes are required to develop lists of water quality limited segments. The waters on these lists do not meet water quality standards, even after point sources of pollution have installed the minimum required levels of pollution control technology. On 11 October 2011 USEPA gave final approval to California's 2008-2010 section 303(d) List of Water Quality Limited Segments. The Basin Plan references this list of Water Quality Limited Segments (WQLSs), which are defined as "…*those sections of lakes, streams, rivers or other fresh water bodies where water quality does not meet (or is not expected to meet) water quality standards even after the application of appropriate limitations for point sources* (40 CFR Part 130, et seq.)." The Basin Plan also states, "*Additional treatment beyond minimum federal standards will be imposed on dischargers to [WQLSs]. Dischargers will be assigned or allocated a maximum allowable load of critical pollutants so that water quality objectives can be met in the segment*." Battle Creek or South Fork Battle Creek is not listed on a 303(d) list of impaired water bodies.

2. **Total Maximum Daily Loads (TMDLs).** USEPA requires the Central Valley Water Board to develop TMDLs for each 303(d) listed pollutant and water body combination. The South Fork of Battle Creek is not listed as a WQLS in the 303(d) list of impaired water bodies, therefore no TMDLs are scheduled for development on this water body.

E. Other Plans, Polices and Regulations

1. **Title 27.** Title 27 of the California Code of Regulations (hereafter Title 27) contains regulatory requirements for the treatment, storage, processing, and disposal of solid waste. However, Title 27 exempts certain activities from its provisions. Discharges regulated by this Order are exempt from Title 27 pursuant to provisions that exempt domestic sewage, wastewater, and reuse. Title 27, section 20090 states in part:

   > The following activities shall be exempt from the SWRCB-promulgated provisions of this subdivision, so long as the activity meets, and continues to meet, all preconditions listed:
   >
   > b. Wastewater – Discharges of wastewater to land, including but not limited to evaporation ponds, percolation ponds, or subsurface leachfields if the following conditions are met:
   >
   > **i.** the applicable RWQCB has issued WDRs, reclamation requirements, or waived such issuance;
   >
   > **ii.** the discharge is in compliance with the applicable water quality control plan; and;

iii. the wastewater does not need to be managed according to Chapter 11, Division 4.5, Title 22 of this code as a hazardous waste.

IV. RATIONALE FOR EFFLUENT LIMITATIONS AND DISCHARGE SPECIFICATIONS

Effluent limitations and toxic and pretreatment effluent standards established pursuant to sections 301 (Effluent Limitations), 302 (Water Quality Related Effluent Limitations), 304 (Information and Guidelines), and 307 (Toxic and Pretreatment Effluent Standards) of the CWA and amendments thereto are applicable to the discharge.

The CWA mandates the implementation of effluent limitations that are as stringent as necessary to meet water quality standards established pursuant to state or federal law [33 U.S.C., §1311(b)(1)(C); 40 CFR 122.44(d)(1)]. NPDES permits must incorporate discharge limits necessary to ensure that water quality standards are met. This requirement applies to narrative criteria as well as to criteria specifying maximum amounts of particular pollutants. Pursuant to federal regulations, 40 CFR 122.44(d)(1)(i), NPDES permits must contain limits that control all pollutants that "are or may be discharged at a level which will cause, have the reasonable potential to cause, or contribute to an excursion above any state water quality standard, including state narrative criteria for water quality." Federal regulations, 40 CFR 122.44(d)(1)(vi), further provide that "[w]here a state has not established a water quality criterion for a specific chemical pollutant that is present in an effluent at a concentration that causes, has the reasonable potential to cause, or contributes to an excursion above a narrative criterion within an applicable State water quality standard, the permitting authority must establish effluent limits."

The CWA requires point source dischargers to control the amount of conventional, non-conventional, and toxic pollutants that are discharged into the waters of the United States. The control of pollutants discharged is established through effluent limitations and other requirements in NPDES permits. There are two principal bases for effluent limitations in the Code of Federal Regulations: 40 CFR 122.44(a) requires that permits include applicable technology-based limitations and standards; and 40 CFR 122.44(d) requires that permits include WQBELs to attain and maintain applicable numeric and narrative water quality criteria to protect the beneficial uses of the receiving water where numeric water quality objectives have not been established. The Basin Plan at page IV-17.00, contains an implementation policy, "Policy for Application of Water Quality Objectives," that specifies that the Central Valley Water Board "will, on a case-by-case basis, adopt numerical limitations in orders which will implement the narrative objectives." This Policy complies with 40 CFR 122.44(d)(1). With respect to narrative objectives, the Central Valley Water Board must establish effluent limitations using one or more of three specified sources, including: (1) USEPA's published water quality criteria, (2) a proposed state criterion (i.e., water quality objective) or an explicit state policy interpreting its narrative water quality criteria (i.e., the Central Valley Water Board's "Policy for Application of Water Quality Objectives")(40 CFR 122.44(d)(1)(vi)(A), (B) or (C)), or (3) an indicator parameter.

The Basin Plan includes numeric site-specific water quality objectives and narrative objectives for toxicity, chemical constituents, discoloration, radionuclides, and tastes and odors. The narrative toxicity objective states: "All waters shall be maintained free of toxic substances in concentrations that produce detrimental physiological responses in human, plant, animal, or aquatic life." (Basin Plan at III-8.00) The Basin Plan states that material and relevant information, including numeric criteria, and recommendations from other agencies and scientific literature will be utilized in evaluating compliance with the narrative toxicity objective. The narrative chemical constituents objective states that waters shall not contain chemical constituents in concentrations that adversely affect beneficial uses. At minimum, "…water designated for use as domestic or municipal supply (MUN) shall not contain concentrations of chemical constituents in excess of the maximum contaminant levels (MCLs)" in Title 22 of CCR. The Basin Plan further states that, to protect all beneficial uses, the Central Valley Water Board may apply limits more stringent than MCLs. The narrative tastes and odors objective states: "Water shall not contain taste- or odor-producing substances in concentrations that impart undesirable tastes or odors to domestic or municipal water supplies or to fish flesh or other edible products of aquatic origin, or that cause nuisance, or otherwise adversely affect beneficial uses."

A. Discharge Prohibitions

1. **Prohibition III.A (No discharge or application of waste other than that described in this Order).** This prohibition is based on Water Code section 13260 that requires filing of a report of waste discharge (ROWD) before discharges can occur. The Discharger submitted a ROWD for the discharges described in this Order; therefore, discharges not described in this Order are prohibited.

2. **Prohibition III.B (No bypasses or overflow of untreated wastewater, except under the conditions at CFR Part 122.41(m)(4)).** As stated in section I.G of Attachment D, Standard Provisions, this Order prohibits bypass from any portion of the treatment facility. Federal regulations, 40 CFR 122.41(m), define "bypass" as the intentional diversion of waste streams from any portion of a treatment facility. This section of the federal regulations, 40 CFR 122.41(m)(4), prohibits bypass unless it is unavoidable to prevent loss of life, personal injury, or severe property damage. In considering the Regional Water Board's prohibition of bypasses, the State Water Board adopted a precedential decision, Order No. WQO 2002-0015, which cites the federal regulations, 40 CFR 122.41(m), as allowing bypass only for essential maintenance to assure efficient operation.

3. **Prohibition III.C (No controllable condition shall create a nuisance).** This prohibition is based on Water Code section 13050 that requires water quality objectives established for the prevention of nuisance within a specific area. The Basin Plan prohibits conditions that create a nuisance

4. **Prohibition III.D (No inclusion of pollutant free wastewater shall cause improper operation of the Facility's systems).** This prohibition is based on CFR Part 122.41 et seq. that requires the proper design and operation of treatment facilities

5. **Prohibition III.E (No discharge of wastewater to South Fork Battle Creek from April 16 through November 14 nor during periods when flow in South Fork Battle Creek, adjacent to the facility, is less than 35 cfs).** Order No. R5-2007-0098 included the discharge prohibition of no discharge during the recreation season (April 16 through November 14) and when flow in South Fork Battle Creek is less than 35 cfs. The minimum receiving water flow requirement ensures a minimum receiving water to effluent flow ratio of 30:1.

B. Technology-Based Effluent Limitations

1. Scope and Authority

Section 301(b) of the CWA and implementing U.S. EPA permit regulations at 40 C.F.R. section 122.44 require that permits include conditions meeting applicable technology-based requirements at a minimum, and any more stringent effluent limitations necessary to meet applicable water quality standards. The discharge authorized by this Order must meet minimum federal technology-based requirements based on Secondary Treatment Standards at 40 C.F.R. part 133.

Regulations promulgated in 40 C.F.R. section 125.3(a)(1) require technology-based effluent limitations for municipal Dischargers to be placed in NPDES permits based on Secondary Treatment Standards or Equivalent to Secondary Treatment Standards.

The Federal Water Pollution Control Act Amendments of 1972 (PL 92-500) established the minimum performance requirements for POTWs [defined in section 304(d)(1)]. Section 301(b)(1)(B) of that Act requires that such treatment works must, as a minimum, meet effluent limitations based on secondary treatment as defined by the U.S. EPA Administrator.

Based on this statutory requirement, U.S. EPA developed secondary treatment regulations, which are specified in 40 C.F.R. part 133. These technology-based regulations apply to all municipal wastewater treatment plants and identify the minimum level of effluent quality attainable by secondary treatment in terms of biochemical oxygen demand (BOD_5), total suspended solids (TSS), and pH.

2. Applicable Technology-Based Effluent Limitations

a. **BOD_5 and TSS.** Federal regulations, 40 CFR Part 133, establish the minimum weekly and monthly average level of effluent quality attainable by secondary treatment for BOD_5 and TSS. This Order requires Water Quality Based Effluent Limitations (WQBELs) that are equal to or more stringent than the secondary technology-based treatment described in 40 CFR Part 133. (See section IV.C.3.d of this Attachment for the discussion on Pathogens which includes WQBELs for BOD_5 and TSS.) In addition, 40 CFR 133.102, in describing the minimum level of effluent quality attainable by secondary treatment, states that the 30-day average percent removal shall not be less than 85 percent. This Order contains a limitation requiring an average of 85 percent removal of BOD_5 and TSS over each calendar month.

b. **Flow.** The Facility was designed to provide a secondary level of treatment for up to a design influent flow of 0.07 mgd. The filter system is designed for a maximum filter loading rate of 400 gpm (0.576 mgd) whereas the total daily peak wet weather design flow of the Facility is 0.75 mgd. Therefore, this Order contains an average dry weather influent flow limit of 0.070 mgd and a daily peak wet weather discharge flow limit of 0.75 mgd for Discharge Point No. D-001.

c. **pH.** The secondary treatment regulations at 40 CFR Part 133 also require that pH be maintained between 6.0 and 9.0 standard units.

Summary of Technology-based Effluent Limitations
Discharge Point No. D-001

Table F-4. Summary of Technology-Based Effluent Limitations

Parameter	Units	Effluent Limitations				
		Average Monthly	Average Weekly	Maximum Daily	Instantaneous Minimum	Instantaneous Maximum
pH	standard units	--	--	--	6.0	9.0
Biochemical Oxygen Demand 5-day @ 20°C	mg/L	30	45	--	--	--
	lbs/day[2]	188	281	--	--	--
	% Removal	85	--	--	--	--
Total Suspended Solids	mg/L	30	45	--	--	--
	lbs/day[2]	188	281	--	--	--
	% Removal	85	--	--	--	--
Flow[1]	mgd	--	--	0.75	--	--

1 Daily peak wet weather design flow.
2 Based on a daily peak wet weather design flow of 0.75 mgd.

C. Water Quality-Based Effluent Limitations (WQBELs)

1. Scope and Authority

CWA Section 301(b) and 40 C.F.R. section 122.44(d) require that permits include limitations more stringent than applicable federal technology-based requirements where necessary to achieve applicable water quality standards. This Order contains requirements, expressed as a technology equivalence requirement, more stringent than secondary treatment requirements that are necessary to meet applicable water quality standards. The rationale for these requirements, which consist of tertiary treatment or equivalent requirements or other provisions, is discussed in the following sections of this Fact Sheet.

Section 122.44(d)(1)(i) of 40 C.F.R. requires that permits include effluent limitations for all pollutants that are or may be discharged at levels that have the reasonable potential to cause or contribute to an exceedance of a water quality standard, including numeric and narrative objectives within a standard. Where reasonable potential has been established for a pollutant, but there is no numeric criterion or objective for the pollutant, water quality-based effluent limitations (WQBELs) must be established using: (1) U.S. EPA criteria guidance under CWA section 304(a), supplemented where necessary by other relevant information; (2) an indicator parameter for the pollutant of concern; or (3) a calculated numeric water quality criterion, such as a proposed state criterion or policy interpreting the state's narrative criterion, supplemented with other relevant information, as provided in section 122.44(d)(1)(vi).

The process for determining reasonable potential and calculating WQBELs when necessary is intended to protect the designated uses of the receiving water as specified in the Basin Plan, and achieve applicable water quality objectives and criteria that are contained in other state plans and policies, or any applicable water quality criteria contained in the CTR and NTR.

2. Applicable Beneficial Uses and Water Quality Criteria and Objectives

The Basin Plan designates beneficial uses, establishes water quality objectives, and contains implementation programs and policies to achieve those objectives for all waters addressed through the plan. In addition, the Basin Plan implements State Water Board Resolution No. 88-63, which established state policy that all waters, with certain exceptions, should be considered suitable or potentially suitable for municipal or domestic supply.

The Basin Plan on page II-1.00 states: "*Protection and enhancement of existing and potential beneficial uses are primary goals of water quality planning…*" and with respect to disposal of wastewaters states that "...*disposal of wastewaters is [not] a prohibited use of waters of the State; it is merely a use which cannot be satisfied to the detriment of beneficial uses.*"

The federal CWA section 101(a)(2), states: "it is the national goal that wherever attainable, an interim goal of water quality which provides for the protection and propagation of fish, shellfish, and wildlife, and for recreation in and on the water be achieved by July 1, 1983." Federal Regulations, developed to implement the requirements of the CWA, create a rebuttable presumption that all waters be designated as fishable and swimmable. Federal Regulations, 40 CFR sections 131.2 and 131.10, require that all waters of the State regulated to protect the beneficial uses of public water supply, protection and propagation of fish, shell fish and wildlife, recreation in and on the water, agricultural, industrial and other purposes including navigation. Section 131.3(e), 40 CFR, defines existing beneficial uses as those uses actually attained after 28 November 1975, whether or not they are included in the water quality standards. Federal Regulation, 40 CFR section 131.10 requires that uses be obtained by implementing effluent limitations, requires that all downstream uses be protected and states that in no case shall a state adopt waste transport or waste assimilation as a beneficial use for any waters of the United States.

a. **Receiving Water and Beneficial Uses.** Refer to III.C.1. above for a complete description of the receiving water and beneficial uses.

b. **Effluent and Ambient Background Data.** Data was collected as described in section IV.C.3 of this Fact Sheet, and was based on sampling events from June 2011 through May 2013, which includes effluent and ambient background data submitted in SMRs and the Report of Waste Discharge (ROWD). The Discharger did not discharge to surface waters during the term of the previous Order (Order No. R5-2007-0098); however, the Discharger made modifications to the plant and conducted a simulated discharge that allowed wastewater to be routed through the entire process (filtration, chlorination, dechlorination) without discharging to the receiving waters by returning the treated wastewater to the ponds. The Discharger operated the filtration and disinfection system for a short period each year from 2008 through 2011 and also in 2013, and collected priority pollutant samples (effluent and receiving water) each year. The data is not representative of the effluent quality that would exist under a real (not simulated) discharge event. Therefore, the data was not appropriate to use for a Reasonable Potential Analysis.

c. **Assimilative Capacity/Mixing Zone.** The CWA directs the states to adopt water quality standards to protect the quality of its waters. USEPA's current water quality standards regulation authorizes states to adopt general policies, such as mixing zones, to implement state water quality standards (40 CFR 122.44 and 122.45). The USEPA allows states to have broad flexibility in designing its mixing zone policies. Primary policy and guidance on determining mixing zone and dilution credits is provided by the SIP and the Basin Plan. If no procedure applies in the SIP or the Basin Plan, then the Central Valley Water Board may use the USEPA *Technical Support Document for Water Quality-Based Toxics Control* (EPA/505/2-90-001)(TSD).

   For non-Priority Pollutant constituents the allowance of mixing zones by the Central Valley Water Board is discussed in the Basin Plan, *Policy for Application of Water Quality Objectives*, which states in part, "*In conjunction with the issuance of NPDES and storm water permits, the Regional Board may designate mixing zones within which water quality objectives will not apply provided the discharger has demonstrated to the satisfaction of the Regional Board that the mixing zone will not adversely impact beneficial uses. If allowed, different mixing zones may be designated for different types of objectives, including, but not limited to, acute aquatic life objectives, chronic aquatic life objectives, human health objectives, and acute and chronic whole effluent toxicity objectives, depending in part on the averaging period over which the objectives apply. In determining the size of such mixing zones, the Regional Board will consider the applicable procedures and guidelines in the EPA's Water Quality Standards Handbook and the [TSD]. Pursuant to EPA guidelines, mixing zones designated for acute aquatic life objectives will generally be limited to a small zone of initial dilution in the immediate vicinity of the discharge.*"

   For Priority Pollutants, the SIP supersedes the Basin Plan mixing zone provisions. Section 1.4.2 of the SIP states, in part, "…*with the exception of effluent limitations derived from TMDLs, in establishing and determining compliance with effluent limitations for applicable human health, acute aquatic life, or chronic aquatic life priority pollutant criteria/objectives or the toxicity objective for aquatic life protection in a basin plan, the Regional Board may grant mixing zones and dilution credits to dischargers…The applicable priority pollutant criteria and objectives are to be met through a water body except within any mixing zone granted by the Regional Board.* ***<u>The allowance of mixing zones is discretionary and shall be determined on a discharge-by-discharge basis.</u>*** *The Regional Board may* *consider allowing mixing zones and dilution credits only for discharges with a physically identifiable point of discharge that is regulated through an NPDES permit issued by the Regional Board*." [emphasis added]

For incompletely-mixed discharges, the Discharger must complete an independent mixing zone study to demonstrate to the Central Valley Water Board that a dilution credit is appropriate. In granting a mixing zone, Section 1.4.2.2 of the SIP requires the following to be met:

"***A mixing zone shall be as small as practicable****. The following conditions must be met in allowing a mixing zone:* [emphasis added]

A: A mixing zone shall not:

1. compromise the integrity of the entire water body;

2. cause acutely toxic conditions to aquatic life passing through the mixing zone;

3. restrict the passage of aquatic life;

4. adversely impact biologically sensitive or critical habitats, including, but not limited to, habitat of species listed under federal or State endangered species laws;

5. produce undesirable or nuisance aquatic life;

6. result in floating debris, oil, or scum;

7. produce objectionable color, odor, taste, or turbidity;

8. cause objectionable bottom deposits;

9. cause nuisance;

10. dominate the receiving water body or overlap a mixing zone from different outfalls; or

11. be allowed at or near any drinking water intake. A mixing zone is not a source of drinking water. To the extent of any conflict between this determination and the Sources of Drinking Water Policy (Resolution No. 88-63), this SIP supersedes the provisions of that policy."

Section 1.4.2.1 of the SIP establishes the authority for the Central Valley Water Board to consider dilution credits based on the mixing zone conditions in a receiving water. Section 1.4.2.1 in part states:

"The dilution credit, D, is a numerical value associated with the mixing zone that accounts for the receiving water entrained into the discharge. The dilution credit is a value used in the calculation of effluent limitations (described in Section 1.4). ***Dilution credits may be limited or denied on a pollutant-by-pollutant basis, which may result in a dilution credit for all, some, or no priority pollutants in the discharge.****"* [emphasis added]

The previous Order No. R5-2007-0098 contained a prohibition for discharge when receiving water flow was less than 35 cfs. Therefore, at the minimum flow of 35 cfs and effluent discharge at the maximum wet weather design discharge flow of 0.75 mgd (flow limit in Order No. R5-2007-0098), a minimum dilution of 30:1 would be expected in the South Fork of Battle Creek. Order No. R5-2007-0098 provided the Discharger with the option of conducting a Mixing Zone/Dilution Study, which could be used by the Central Valley Water Board in calculating effluent limitations based on priority pollutant sample results. The Discharger has not discharged to South Fork Battle Creek since 2005. If a discharge becomes necessary it will most likely occur during a period of significant rainfall or snow melt, at which time the flow in

South Fork Battle Creek would provide for dilution, although, site-specific mixing conditions are unknown.

There was not sufficient data to determine reasonable potential or to establish numerical effluent limitations for SIP constituents for the previous Order No. R5-2007-0098. The Discharger has not provided an approved Dilution/Mixing Zone Study during the term of the previous Order which meets the requirements of Section 1.4.2.2 of the SIP. Therefore, based on the available information, the worst-case dilution in this Order is assumed to be zero to provide protection for receiving water beneficial uses. The impact of assuming zero assimilative capacity within the receiving water is that discharge limitations are end-of-pipe limits with no allowance for dilution within the receiving water.

d. **Conversion Factors.** The CTR contains aquatic life criteria for arsenic, cadmium, chromium III, chromium VI, copper, lead, nickel, silver, and zinc which are presented in dissolved concentrations. USEPA recommends conversion factors to translate dissolved concentrations to total concentrations. The default USEPA conversion factors contained in Appendix 3 of the SIP were used to convert the applicable dissolved criteria to total recoverable criteria.

e. **Hardness-Dependent CTR Metals Criteria.** The *California Toxics Rule* and the *National Toxics Rule* contain water quality criteria for seven metals that vary as a function of hardness. The lower the hardness the lower the water quality criteria. The metals with hardness-dependent criteria include cadmium, copper, chromium III, lead, nickel, silver, and zinc.

This Order has established the criteria for hardness-dependent metals based on the reasonable worst-case ambient hardness as required by the SIP[1] and the CTR[2]. The SIP and the CTR require the use of “receiving water” or “actual ambient” hardness, respectively, to determine effluent limitations for these metals. (SIP, § 1.2; 40 CFR § 131.38(c)(4)) The CTR requires that the hardness values used shall be consistent with the design discharge conditions for design flows and mixing zones.[3] Where design flows for aquatic life criteria include the lowest one-day flow with an average reoccurrence frequency of once in ten years (1Q10) and the lowest average seven consecutive day flow with an average reoccurrence frequency of once in ten years (7Q10).[4] The CTR also requires that when mixing zones are allowed the CTR criteria apply at the edge of the mixing zone, otherwise the criteria apply throughout the water body including at the point of discharge.[5] The CTR does not define whether the term “ambient,” as applied in the regulations, necessarily requires the consideration of upstream as opposed to downstream hardness conditions.

The State Water Board provided direction regarding the selection of hardness in two precedential water quality orders; WQO 2008-0008 for the City of Davis Wastewater Treatment Plant and WQO 2004-0013 for the Yuba City Wastewater Treatment Plant. The State Water Board recognized that the SIP and the CTR do not discuss

[1] The SIP does not address how to determine the hardness for application to the equations for the protection of aquatic life when using hardness-dependent metals criteria. It simply states, in Section 1.2, that the criteria shall be properly adjusted for hardness using the hardness of the receiving water.

[2] The CTR requires that, for waters with a hardness of 400 mg/L (as $CaCO_3$), or less, the actual ambient hardness of the surface water must be used.

[3] 40 C.F.R. 131.38 § (c)(4)(ii)

[4] 40 C.F.R. 131.38 § (c)(4)(iii) Table 4

[5] 40 C.F.R. 131.38 § (c)(2)(i)

the manner in which hardness is to be ascertained, thus regional water boards have considerable discretion in determining ambient hardness. (Davis Order, p.10). The State Water Board explained that it is necessary that, "The [hardness] value selected should provide protection for all times of discharge under varying hardness conditions." (Yuba City Order, p. 8). The Davis Order also provides that, "Regardless of the hardness used, the resulting limits must always be protective of water quality criteria under all flow conditions." (Davis Order, p. 11)

i. Conducting the Reasonable Potential Analysis (RPA). The SIP in Section 1.3 states, "The RWQCB shall…determine whether a discharge may: (1) cause, (2) have a reasonable potential to cause, or (3) contribute to an excursion above any applicable priority pollutant criterion or objective." Section 1.3 provides a step-by-step procedure for conducting the RPA. The procedure requires the comparison of the Maximum Effluent Concentration (MEC) and Maximum Ambient Background Concentration to the applicable criterion that has been properly adjusted for hardness. Unless otherwise noted, for the hardness-dependent CTR metals criteria the following procedures were followed for properly adjusting the criterion for hardness when conducting the RPA.

(a) The SIP requires water quality-based effluent limitations (WQBELs) if the MEC is equal to or exceeds the applicable criterion, adjusted for hardness. For comparing the MEC to the applicable criterion, the "fully mixed" reasonable worst-case downstream ambient hardness was used to adjust the criterion. In this evaluation the portion of the receiving water affected by the discharge is analyzed. For hardness-dependent criteria, the hardness of the effluent has an impact on the determination of the applicable criterion in areas of the receiving water affected by the discharge. Therefore, for comparing the MEC to the applicable criterion, the reasonable worst-case downstream ambient hardness was used to adjust the criterion. For this situation it is necessary to consider the hardness of the effluent in determining the applicable hardness to adjust the criterion. The procedures for determining the applicable criterion after proper adjustment using the reasonable worst-case downstream ambient hardness is outlined in subsection ii, below.

(b) The SIP requires WQBELs if the receiving water is impaired upstream (outside the influence) of the discharge, i.e., if the Maximum Ambient Background Concentration of a pollutant exceeds the applicable criterion, adjusted for hardness[1]. For comparing the Maximum Ambient Background Concentration to the applicable criterion, the reasonable worst-case upstream ambient hardness was used to adjust the criteria. This is appropriate, because this area is outside the influence of the discharge. Since the discharge does not impact the upstream hardness, the effect of the effluent hardness was not included in this evaluation.

ii. Calculating Water Quality-Based Effluent Limitations. The remaining discussion in this section relates to the development of WQBELs when it has been determined that the discharge has reasonable potential to cause or contribute to an exceedance of the CTR hardness-dependent metals criteria in the receiving water.

[1] The pollutant must also be detected in the effluent.

The equation describing the total recoverable regulatory criterion, as established in the CTR[1], is as follows:

CTR Criterion = WER x ($e^{m[\ln(H)]+b}$) (Equation 1)

Where:

H = hardness (as $CaCO_3$)[2]

WER = water-effect ratio

m, b = metal- and criterion-specific constants

In accordance with the CTR, the default value for the WER is 1. A WER study must be conducted to use a value other than 1. The constants "m" and "b" are specific to both the metal under consideration, and the type of total recoverable criterion (i.e., acute or chronic). The metal-specific values for these constants are provided in the CTR at paragraph (b)(2), Table 1.

The upstream receiving water hardness was measured as 15 mg/L and 18 mg/L for two samples collected in June 2011 and May 2013, respectively. No downstream receiving water data was available. For calculating the CTR criteria, the downstream ambient hardness has been used. The SIP, CTR, and State Water Board do not require use of the minimum observed ambient hardness in the CTR equations. The hardness used must be consistent with design conditions and protective of water quality criteria under all flow conditions.

South Fork Battle Creek is not effluent dominated and there is not sufficient data available to determine whether the receiving water hardness demonstrates a clear relationship between flow and hardness. Additionally, because there is no downstream receiving water hardness data available, the average upstream receiving water hardness was considered for use in the CTR equations. Using the upstream receiving water hardness is reasonable considering that discharge to South Fork Battle Creek is very infrequent, and when discharge is occurring, receiving water flows are very high, hydraulic dilution ratio is correspondingly high, and most likely upstream and downstream receiving water hardness is more or less equivalent. Therefore, the average upstream receiving water hardness, which represents typical conditions in the receiving water, was considered for use in the CTR equations. In this Order a design ambient hardness of 16.5 mg/L has been selected to calculate the CTR criteria.

The Facility discharges both hardness and metals, which must be considered in the downstream ambient receiving water to ensure the criteria are protective under all flow conditions. The tables below examine how the downstream ambient conditions change with varying mixtures of effluent and upstream receiving water. The calculations determine whether or not toxicity could result from one or more metals using the selected design ambient hardness to calculate the CTR criteria.

A simple mass balance (Equation 2) is used to model the ambient concentrations of hardness and metals in the receiving water downstream of

[1] 40 CFR § 131.38(b)(2).
[2] For this discussion, all hardness values are in mg/L as $CaCO_3$.

the discharge for all possible mixtures of effluent and upstream receiving water under all flow conditions.

$$C_{downstream} = C_{upstream} \times (1\text{-}MIX) + C_{effluent} \times (MIX) \qquad \text{(Equation 2)}$$

Where:

$C_{downstream}$ = Downstream receiving water concentration

$C_{upstream}$ = Upstream receiving water concentration

$C_{effluent}$ = Effluent concentration

MIX = Fraction of effluent in downstream ambient receiving water

For each of several downstream ambient mixtures of upstream receiving water and effluent, the potential for toxicity is examined. The hardness of the mixture is calculated, and the resultant water quality criterion is calculated from the CTR equation. The metals concentration is also calculated for the mixture of upstream receiving water and effluent. If the metals concentration complies with the CTR criterion for that mixture, the ambient mixture is not toxic, and "Yes" is indicated in the far right column. If the metals concentration exceeds the CTR criterion for that mixture, the ambient concentration is toxic, and "No" is indicated in the far right column. The results of these evaluations are summarized in Table F-12.

For this evaluation the following conservative assumptions have been made:

- Upstream receiving water at the lowest observed upstream receiving water hardness (i.e., 15 mg/L)
- No assimilative capacity for each metal in the upstream receiving water (i.e., metals concentration equal to CTR criteria calculated using a hardness of 15 mg/L).
- Effluent hardness at the lowest observed effluent hardness of 28 mg/L

Table F-5. Cadmium Evaluation (Design Ambient Hardness = 16.5 mg/L)

Assumed Upstream Receiving Water Cadmium Concentration[1]					**0.56**
Cadmium Chronic Criterion[2]					**0.60**
Mix[6]		**Mixed Downstream Ambient Concentration**			**Complies with CTR Criteria**
		Hardness [3] (mg/L)	**CTR Criteria [4] (µg/L)**	**Cadmium [5] (µg/L)**	
High Flow	1%	15	0.56	0.56	**Yes**
	5%	16	0.57	0.56	**Yes**
	15%	17	0.61	0.56	**Yes**
	25%	18	0.65	0.57	**Yes**
	50%	22	0.74	0.58	**Yes**
	75%	25	0.82	0.59	**Yes**
Low Flow	100%	28	0.91	0.60	**Yes**

Table F-6. Copper Evaluation (Design Ambient Hardness = 16.5 mg/L)

Assumed Upstream Receiving Water Copper Concentration[1]					1.8
Copper Chronic Criterion[2]					**2.0**
Mix[6]		Mixed Downstream Ambient Concentration			Complies with CTR Criteria
		Hardness [3] (mg/L)	CTR Criteria [4] (µg/L)	Copper [5] (µg/L)	
High Flow	1%	15	1.9	1.8	Yes
	5%	16	1.9	1.9	Yes
	15%	17	2.0	1.9	Yes
	25%	18	2.2	1.9	Yes
	50%	22	2.5	1.9	Yes
	75%	25	2.8	2.0	Yes
Low Flow	100%	28	3.1	2.0	Yes

Table F-7. Chromium III Evaluation (Design Ambient Hardness = 16.5 mg/L)

Assumed Upstream Receiving Water Chromium III Concentration[1]					43.8
Chromium III Chronic Criterion[2]					**47.3**
Mix[6]		Mixed Downstream Ambient Concentration			Complies with CTR Criteria
		Hardness [3] (mg/L)	CTR Criteria [4] (µg/L)	Chromium III [5] (µg/L)	
High Flow	1%	15	44.1	43.8	Yes
	5%	16	45.3	43.9	Yes
	15%	17	48.4	44.3	Yes
	25%	18	51.4	44.7	Yes
	50%	22	58.8	45.5	Yes
	75%	25	66.0	46.4	Yes
Low Flow	100%	28	73.0	47.3	Yes

Table F-8. Lead Evaluation (Design Ambient Hardness = 16.5 mg/L)

Assumed Upstream Receiving Water Lead Concentration[1]					0.28
Lead Chronic Criterion[2]					**0.32**
Mix[6]		Mixed Downstream Ambient Concentration			Complies with CTR Criteria
		Hardness [3] (mg/L)	CTR Criteria [4] (µg/L)	Lead[5] (µg/L)	
High Flow	1%	15	0.29	0.3	Yes
	5%	16	0.30	0.3	Yes
	15%	17	0.33	0.3	Yes

	25%	18	0.36	0.3	**Yes**
	50%	22	0.45	0.3	**Yes**
	75%	25	0.54	0.3	**Yes**
Low Flow	100%	28	0.63	0.3	**Yes**

Table F-9. Nickel Evaluation (Design Ambient Hardness = 16.5 mg/L)

Assumed Upstream Receiving Water Nickel Concentration[1]					**10.48**
Nickel Chronic Criterion[2]					**11.36**
Mix[6]		**Mixed Downstream Ambient Concentration**			**Complies with CTR Criteria**
		Hardness [3] (mg/L)	**CTR Criteria [4] (µg/L)**	**Nickel [5] (µg/L)**	
High Flow	1%	15	10.56	10.5	**Yes**
	5%	16	10.86	10.5	**Yes**
	15%	17	11.62	10.6	**Yes**
	25%	18	12.37	10.7	**Yes**
	50%	22	14.21	10.9	**Yes**
	75%	25	16.01	11.1	**Yes**
Low Flow	100%	28	17.77	11.4	**Yes**

Table F-10. Silver Evaluation (Design Ambient Hardness = 16.5 mg/L)

Assumed Upstream Receiving Water Silver Concentration[1]					**0.16**
Silver Acute Criterion[2]					**0.18**
Mix[6]		**Mixed Downstream Ambient Concentration**			**Complies with CTR Criteria**
		Hardness [3] (mg/L)	**CTR Criteria [4] (µg/L)**	**Silver [5] (µg/L)**	
High Flow	1%	15	0.16	0.2	**Yes**
	5%	16	0.17	0.2	**Yes**
	15%	17	0.19	0.2	**Yes**
	25%	18	0.22	0.2	**Yes**
	50%	22	0.29	0.2	**Yes**
	75%	25	0.37	0.2	**Yes**
Low Flow	100%	28	0.45	0.2	**Yes**

Table F-11. Zinc Evaluation (Design Ambient Hardness = 16.5 mg/L)

Assumed Upstream Receiving Water Zinc Concentration[1]				**24.01**
Zinc Chronic Criterion[2]				**26.03**
Mix[6]	**Mixed Downstream Ambient Concentration**			**Complies with CTR Criteria**
	Hardness [3]	**CTR Criteria [4]**	**Zinc [5]**	

		(mg/L)	(µg/L)	(µg/L)	
High Flow	1%	15	24.19	24.0	**Yes**
	5%	16	24.89	24.1	**Yes**
↓	15%	17	26.63	24.3	**Yes**
	25%	18	28.35	24.5	**Yes**
	50%	22	32.58	25.0	**Yes**
	75%	25	36.70	25.5	**Yes**
Low Flow	100%	28	40.75	26.0	**Yes**

Footnotes for CTR Hardness-dependent Metals Tables (F-1 through F-9)

1. Highest assumed upstream receiving water metals concentration calculated using CTR equation (Equation 1) for chronic/ acute criterion at a hardness of **15 mg/L**.
2. CTR Criteria calculated using CTR equation (Equation 1) for chronic/acute criterion at the design ambient hardness for the particular metal.
3. Mixed downstream ambient hardness is the mixture of the receiving water and effluent hardness at the applicable mixture using Equation 2.
4. Mixed downstream ambient criteria are the chronic/acute criteria calculated using the CTR equation (Equation 1) at the mixed hardness.
5. Mixed downstream ambient metals concentration is the mixture of the receiving water and effluent metals concentrations at the applicable mixture using Equation 2.
6. The mixture percentage represents the fraction of effluent in the downstream ambient receiving water. The mixture ranges from 1% at the high receiving water flow condition, to 100% at the lowest receiving water flow condition (i.e., effluent dominated).

Table F-12. Summary of Design Ambient Hardness and CTR Criteria for Hardness-dependent Metals

CTR Metals	Design Ambient Hardness (mg/L)	ECA (µg/L, total recoverable)[1]	
		acute	chronic
Cadmium	16.5	[2]	0.6
Copper	16.5	[2]	2.0
Chromium III	16.5	397.0	47.3
Lead	16.5	8.2	0.3
Nickel	16.5	102.2	11.4
Acute Silver	16.5	0.2	--
Zinc	16.5	[2]	26.0

[1] Metal criteria rounded to two significant figures in accordance with the CTR.
[2] Per Footnote x for the acute criterion for cadmium, copper, and zinc in the CTR at 40 CFR 131.38(b)(1), the site-specific objectives for the Sacramento River above Hamilton City in Table III-1 of the Basin Plan applies in lieu of the acute CTR criterion.

3. WQBELs Calculations

a. The Central Valley Water Board conducted the RPA in accordance with section 1.3 of the SIP. Although the SIP applies directly to the control of CTR priority pollutants, the State Water Board has held that the Regional Water Boards may use the SIP as guidance for water quality-based toxics control.[1] The SIP states in the introduction "*The goal of this Policy is to establish a standardized approach for permitting discharges of toxic pollutants to non-ocean surface waters in a manner that promotes statewide consistency*." Therefore, in this Order the RPA procedures from the SIP were used to evaluate reasonable potential for both CTR and non-CTR constituents based on information submitted as part of the application, in studies, and as directed by monitoring and reporting programs.

b. **Constituents with No Reasonable Potential.** As was discussed previously in the Fact Sheet, section IV.C.2.b, priority pollutant sampling was conducted during "simulated discharge" events. The samples were collected during the period when wastewater was routed through the entire process (filtration, chlorination/dechlorination) without discharging to the receiving waters. The simulated discharge was not representative of the expected effluent quality during an actual discharge event and therefore reasonable potential is not being established based on these sampling results. Due to more dilute influent concentrations, effluent (not simulated) concentrations would be less than the simulated concentrations. The sampling results for constituents that were detected, however, are summarized below for reference.

i. Lead

(a) **WQO.** The CTR includes hardness dependent criteria for the protection of freshwater aquatic life for lead. Using the default conversion factors and reasonable worst-case measured hardness, as described in section IV.C.2.e of this Fact Sheet, the applicable CTR acute (1-hour average) criterion is 12.0 µg/L and the applicable CTR chronic (4-day average) criterion is 0.46 µg/L, as total recoverable.

(b) **RPA Results.** The maximum effluent concentration (MEC) for lead was non-detect (<1.4 µg/L) (as total recoverable) while the maximum observed upstream receiving water concentration was also non-detect (<1.4 µg/L) (as total recoverable) as shown in the table below. During these sampling events the MDL was 1.4 µg/L, which is above the chronic aquatic life criteria.

Lead Effluent and Receiving Water Data (2011-2013):

Date	Effluent (ug/L)	Receiving Water (µg/L)	SIP Minimum Level (µg/L)	Acute Criteria (µg/L)	Chronic Criteria (µg/L)
6/28/2011	<1.4	<1.4	0.5	12.0	0.46
5/01/2013	<1.4	<1.4	0.5	12.0	0.46

The samples were collected during the period when wastewater was routed through the entire process (filtration, chlorination/dechlorination) without discharging to the receiving waters. The simulated discharge was not representative of the expected effluent quality during an actual discharge event and therefore reasonable potential is not being established for lead.

ii. Mercury

[1] See Order WQO 2001-16 (Napa) and Order WQO 2004-0013 (Yuba City).

(a) **WQO.** The CTR includes hardness dependent criteria for the protection of freshwater aquatic life for mercury. Using the default conversion factors and reasonable worst-case measured hardness, as described in section IV.C.2.e of this Fact Sheet, the applicable CTR acute (1-hour average) criterion is1.4 µg/L and the applicable CTR chronic (4-day average) criterion is 0.77µg/L., as total recoverable. The 30-day average human health protection criteria is 0.05 µg/L.

(b) **RPA Results.** On 28 June 2011, Mercury was detected at a concentration below the laboratory reporting limit, and was therefore estimated at a concentration of 0.14 µg/L, which is above the human health criteria of 0.05 µg/L. Estimated concentrations are also reported with a note as detected but not quantified. On 1 May 2013 Mercury was reported as non-detect (<.062). The MDL for samples collected on 28 June 2011 and 1 May 2013 is lower than the SIP ML, less than the CTR acute and chronic criteria, but greater than the human health criteria.

Mercury Effluent and Receiving Water Data (2011-2013):

Date	Effluent (ug/L)	Receiving Water (µg/L)	SIP Minimum Level (µg/L)	Acute Criteria (µg/L)	Chronic Criteria (µg/L)	Human Health Criteria (µg/L)
6/28/2011	0.14 J	0.08 J	0.5	1.4	0.77	0.05
5/01/2013	<.062	<.062	0.5	1.4	0.77	0.05

The samples were collected during the period when wastewater was routed through the entire process (filtration, chlorination/dechlorination) without discharging to the receiving waters. The simulated discharge was not representative of the expected effluent quality during an actual discharge event and therefore reasonable potential is not being established for mercury.

iii. Silver

(a) **WQO.** The CTR includes hardness dependent criteria for the protection of freshwater aquatic life for silver. Using the default conversion factors and reasonable worst-case measured hardness, as described in section IV.C.2.e of this Fact Sheet, the applicable CTR acute (1-hour average) criterion is 0.3 µg/L.

(b) **RPA Results.** The maximum effluent concentration (MEC) for silver was non-detect (<1.1 µg/L) while the maximum observed upstream receiving water concentration was also non-detect (<1.1 µg/L) (as total recoverable), as shown in the table below.

Silver Effluent and Receiving Water Data (2011-2013):

Date	Effluent (ug/L)	Receiving Water (µg/L)	SIP Minimum Level (µg/L)	Acute Criteria (µg/L)
6/28/2011	<1.1	<1.1	0.25	0.3
5/01/2013	<1.1	<1.1	0.25	0.3

The samples were collected during the period when wastewater was routed through the entire process (filtration, chlorination/dechlorination) without discharging to the receiving waters. The simulated discharge was not representative of the expected effluent quality during an actual discharge event and therefore reasonable potential is not being established for silver.

iv. Ammonia

(a) **WQO.** The 1999 USEPA National Ambient Water Quality Criteria (NAWQC) for the protection of freshwater aquatic life for total ammonia (the "1999 Criteria"), recommends acute (1-hour average; criteria maximum concentration or CMC) standards based on pH and chronic (30-day average; criteria continuous concentration or CCC) standards based on pH and temperature. USEPA also recommends that no 4-day average concentration should exceed 2.5 times the 30-day CCC. USEPA found that as pH increased, both the acute and chronic toxicity of ammonia increased. Salmonids were more sensitive to acute toxicity effects than other species. However, while the acute toxicity of ammonia was not influenced by temperature, it was found that invertebrates and young fish experienced increasing chronic toxicity effects with increasing temperature.

The USEPA recently published national recommended water quality criteria for the protection of aquatic life from the toxic effects of ammonia in freshwater (the "2013 Criteria")[1] The 2013 criteria is an update to USEPA's 1999 Criteria, and varies based on pH and temperature. Although the 2013 Criteria reflects the latest scientific knowledge on the toxicity of ammonia to certain freshwater aquatic life, including new toxicity data on sensitive freshwater mussels in the Family Unionidae, the species tested for development of the 2013 Criteria may not be present in some Central Valley waterways. The 2013 Criteria document therefore states that, "unionid mussel species are not prevalent in some waters, such as the arid west …" and provides that, "In the case of ammonia, where a state demonstrates that mussels are not present on a site-specific basis, the recalculation procedure may be used to remove the mussel species from the national criteria dataset to better represent the species present at the site.

The Central Valley Water Board issued a 3 April 2014 *California Water Code Section 13267 Order for Information: 2013 Final Ammonia Criteria for Protection of Freshwater Aquatic Life* (13267 Order) requiring the Discharger to either participate in an individual or group study to determine the presence of mussels or submit a method of compliance for complying with effluent limitations calculated assuming mussels present using the 2013 Criteria. The Discharger has chosen to participate in the Central Valley Clean Water Association (CVCWA) Freshwater Collaborative Mussel Study. Studies are currently underway to determine how the latest scientific knowledge on the toxicity of ammonia reflected in the 2013 Criteria can be implemented in the Central Valley Region as part of a Basin Planning effort to adopt nutrient and ammonia objectives. Until the Basin Planning process is completed, the Central Valley Water Board will continue to implement the 1999 Criteria to interpret the Basin Plan's narrative toxicity objective.

[1] Aquatic Life Ambient Water Quality Criteria for Ammonia – Freshwater, published August 2013 [EPA 822-R-13-001]

The maximum permitted effluent pH is 9.0, in order to protect against the worst-case short-term exposure of an organism, a pH value of 9.0 was used to derive the acute criterion. The resulting acute criterion is 0.88 mg/L.

(b) **RPA Results.** The maximum effluent concentration (MEC) for ammonia was 1.38 mg/L while the maximum observed upstream receiving water concentration was 0.40 mg/L as shown in the table below.

Ammonia Effluent and Receiving Water Data (2011-2013):

Date	Effluent (mg/L)	Receiving Water (mg/L)	Acute Criteria (mg/L)
6/28/2011	<0.48	<0.48	0.88
5/01/2013	1.38	0.40	0.88

The samples were collected during the period when wastewater was routed through the entire process (filtration, chlorination/dechlorination) without discharging to the receiving waters. The simulated discharge was not representative of the expected effluent quality during an actual discharge event and therefore reasonable potential is not being established for ammonia.

v. Nitrate and Nitrite

(a) **WQO.** DPH has adopted Primary MCLs for the protection of human health for nitrite and nitrate that are equal to 1 mg/L and 10 mg/L (measured as nitrogen), respectively. DPH has also adopted a primary MCL of 10 mg/L for the sum of nitrate and nitrite, measured as nitrogen.

USEPA has developed a primary MCL and an MCL goal of 1 mg/L for nitrite (as nitrogen). For nitrate, USEPA has developed Drinking Water Standards (10 mg/L as Primary MCL) and NAWQC for protection of human health (10 mg/L for non-cancer health effects).

(b) **RPA Results.** One sample was collected and analyzed for nitrite and nitrate on 1 May 2013. Nitrite was measured as non-detect (<0.15 mg/L) and nitrate was measured as 0.16 mg/L.

The samples were collected during the period when wastewater was routed through the entire process (filtration, chlorination/dechlorination) without discharging to the receiving waters. The simulated discharge was not representative of the expected effluent quality during an actual discharge event and therefore reasonable potential is not being established for nitrate and nitrite.

vi. Thallium

(a) **WQO.** The most stringent criterion for thallium is the current CTR Inland Surface Waters Criteria for the Protection of Human Health for the consumption of Aquatic Organisms, 30-day Average of 1.7 µg/L.

(b) **RPA Results.** In one of two samples of the effluent and receiving water, the MEC for thallium was detected at 2.4 µg/L and the receiving water concentration was detected at 3.0 µg/L; however, the MDL was reported as 2.4 µg/L and the results were not quantifiable by the laboratory that performed the analysis and are considered an estimated concentration (i.e., j-flagged). In one other sample at the same MDL of 2.4 µg/L, thallium was not detected in the effluent or upstream receiving water.

Effluent and receiving water thallium data is summarized in the table below:

Table F-13. Effluent and Receiving Water Thallium Data

Date	Thallium Concentrations				
	Effluent (µg/L)	Receiving Water (µg/L)	SIP Minimum Level	Reported MDL	Criteria
6/28/2011	2.4J	3.0J	1	2.4	1.7
5/01/2013	<2.4	<2.4	1	2.4	1.7

The samples were collected during the period when wastewater was routed through the entire process (filtration, chlorination/dechlorination) without discharging to the receiving waters. The simulated discharge was not representative of the expected effluent quality during an actual discharge event and therefore reasonable potential is not being established for thallium.

vii. Copper

(a) **WQO.** The CTR includes hardness dependent criteria for the protection of freshwater aquatic life for copper. The Basin Plan (Table III-1) also includes a hardness dependent water quality objective for copper in the Sacramento River and its tributaries above the State Hwy 32 bridge at Hamilton City, which is applicable to this discharge. Using the default conversion factors and a design ambient hardness of 16.5 mg/L, the applicable CTR acute (1-hour average) criterion is 2.56 µg/L and the applicable CTR chronic (4-day average) criterion is 2.0 µg/L. The Basin Plan instantaneous maximum objective for copper is 2.62 ug/L. Pursuant to Footnote x in the California Toxics Rule, this WQO applies in lieu of the acute CTR criterion; however, the chronic CTR criterion is still applicable.

(b) **RPA Results.** Copper was sampled in June 2011 and May 2013. The MEC for copper was 57.3 µg/L. The maximum concentration in upstream samples collected in South Fork Battle Creek concurrently with the effluent samples was an estimated value of 4.5 µg/L.

Effluent and receiving water copper data is summarized in the table below:

Table F-14. Effluent and Receiving Water Copper Data

Date	Copper Concentrations			
	Effluent (µg/L)	Receiving Water (µg/L)	SIP Minimum Level	Reported MDL
6/28/2011	8.5	4.5J	0.5	0.95
5/01/2013	57.3	<.95	0.5	0.95

The samples were collected during the period when wastewater was routed through the entire process (filtration, chlorination/dechlorination) without discharging to the receiving waters. The simulated discharge was not representative of the expected effluent quality during an actual discharge event and therefore reasonable potential is not being established for copper.

viii. Zinc

(a) **WQO.** The CTR includes hardness dependent criteria for the protection of freshwater aquatic life for zinc. The Basin Plan (Table III-1) also includes a hardness dependent water quality objective for zinc in the Sacramento River and its tributaries above the State Hwy 32 bridge at Hamilton City, which is applicable to this discharge. Using the default conversion factors and a design ambient hardness of 16.5 mg/L, the applicable CTR acute (1-hour average) criterion is 26 µg/L and the applicable CTR chronic (4-day average) criterion is 26 µg/L. The Basin Plan instantaneous maximum objective for zinc is 7.85 ug/L. Pursuant to Footnote x in the California Toxics Rule, this WQO applies in lieu of the acute CTR criterion; however, the chronic CTR criterion is still applicable.

RPA Results. Priority pollutant sampling was performed in June 2011 and May 2013. The MEC for zinc was 11.6 µg/L.

Effluent and receiving water zinc data is summarized in the table below:

Table F-15. Effluent and Receiving Water Zinc Data

Date	Zinc Concentrations			
	Effluent (µg/L)	Receiving Water (µg/L)	SIP Minimum Level	Reported MDL
6/11/2011	6.8	<0.8	0.5	0.8
5/01/2013	11.6	<0.8	0.5	0.8

The samples were collected during the period when wastewater was routed through the entire process (filtration, chlorination/dechlorination) without discharging to the receiving waters. The simulated discharge was not representative of the expected effluent quality during an actual discharge event and therefore reasonable potential is not being established for zinc.

ix. Dichlorobromomethane

(a) **WQO.** The CTR includes a criterion of 0.56 µg/L for dichlorobromomethane for the protection of human health for waters for both water and organisms are consumed.

(b) **RPA Results.** Priority pollutant sampling was performed in June 2011 and May 2013. The MEC for dichlorobromomethane was 1.5 µg/L.

Effluent and receiving water chloroform data is summarized in the table below:

Table F-16. Effluent and Receiving Water Dichlorobromomethane Data

Date	Dichlorobromomethane Concentrations			
	Effluent (µg/L)	Receiving Water (µg/L)	SIP Minimum Level	Reported MDL
6/11/2011	1.5	<0.13	0.5	0.13
5/01/2013	<0.13	<0.13	0.5	0.13

The samples were collected during the period when wastewater was routed through the entire process (filtration, chlorination/dechlorination) without discharging to the receiving waters. The simulated discharge was not representative of the expected effluent quality during an actual discharge event and therefore reasonable potential is not being established for dichlorobromomethane.

x. **Salinity**

(a) **WQO.** The Basin Plan contains a chemical constituent objective that incorporates state MCLs, contains a narrative objective, and contains numeric water quality objectives for certain specified water bodies for electrical conductivity, total dissolved solids, sulfate, and chloride. The USEPA Ambient Water Quality Criteria for Chloride recommends acute and chronic criteria for the protection of aquatic life. There are no USEPA water quality criteria for the protection of aquatic life for electrical conductivity, total dissolved solids, and sulfate. Additionally, there are no USEPA numeric water quality criteria for the protection of agricultural, livestock, and industrial uses. Numeric values for the protection of these uses are typically based on site specific conditions and evaluations to determine the appropriate constituent threshold necessary to interpret the narrative chemical constituent Basin Plan objective. The Central Valley Water Board must determine the applicable numeric limit to implement the narrative objective for the protection of agricultural supply. The Central Valley Water Board is currently implementing the CV-SALTS initiative to develop a Basin Plan Amendment that will establish a salt and nitrate Management Plan for the Central Valley. Through this effort the Basin Plan will be amended to define how the narrative water quality objective is to be interpreted for the protection of agricultural use. All studies conducted through this Order to establish an agricultural limit to implement the narrative objective will be reviewed by and consistent with the efforts currently underway by CV-SALTS.

Table F-17. Salinity Water Quality Criteria/Objectives

Parameter	Agricultural WQ Objective[1]	Secondary MCL[3]	USEPA NAWQC	Effluent	
				Average	Maximum
EC (µmhos/cm)	Varies[2]	900, 1600, 2200	N/A	--	88
TDS (mg/L)	Varies	500, 1000, 1500	N/A	N/A	N/A
Sulfate (mg/L)	Varies	250, 500, 600	N/A	N/A	N/A
Chloride (mg/L)	Varies	250, 500, 600	860 1-hr 230 4-day	N/A	N/A

[1] Narrative chemical constituent objective of the Basin Plan. Procedures for establishing the applicable numeric limitation to implement the narrative objective can be found in the Policy for Application of Water Quality, Chapter IV, Section 8 of the Basin Plan., However, the Basin Plan does not require improvement over naturally occurring background concentrations. In cases where the natural background concentration of a particular constituent exceeds an applicable water quality objective, the natural background concentration will be considered to comply with the objective.

[2] Maximum calendar annual average.

[3] The secondary MCLs are stated as a recommended level, upper level, and a short-term maximum level.

(1) **Chloride.** The Secondary MCL for chloride is 250 mg/L, as a recommended level, 500 mg/L as an upper level, and 600 mg/L as a short-term maximum.

The Central Valley Water Board is currently implementing the CV-SALTS initiative to develop a Basin Plan Amendment that will establish a salt and nitrate Management Plan for the Central Valley. Through this effort the Basin Plan will be amended to define how the narrative water quality objective is to be interpreted for the protection of agricultural use. All studies conducted through this Order to establish an agricultural limit to implement the narrative objective will be reviewed by and consistent with the efforts currently underway by CV-SALTS.

(2) **Electrical Conductivity.** The Secondary MCL for EC is 900 µmhos/cm as a recommended level, 1600 µmhos/cm as an upper level, and 2200 µmhos/cm as a short-term maximum.

The Central Valley Water Board is currently implementing the CV-SALTS initiative to develop a Basin Plan Amendment that will establish a salt and nitrate Management Plan for the Central Valley. Through this effort the Basin Plan will be amended to define how the narrative water quality objective is to be interpreted for the protection of agricultural use. All studies conducted through this Order to establish an agricultural limit to implement the narrative objective will be reviewed by and consistent with the efforts currently underway by CV-SALTS.

(3) **Sulfate.** The secondary MCL for sulfate is 250 mg/L as a recommended level, 500 mg/L as an upper level, and 600 mg/L as a short-term maximum.

(4) **Total Dissolved Solids.** The Secondary MCL for TDS is 500 mg/L as a recommended level, 1000 mg/L as an upper level, and 1500 mg/L as a short-term maximum.

The Central Valley Water Board is currently implementing the CV-SALTS initiative to develop a Basin Plan Amendment that will establish a salt and nitrate Management Plan for the Central Valley. Through this effort the Basin Plan will be amended to define how the narrative water quality objective is to be interpreted for the protection of agricultural use. All studies conducted through this Order to establish an agricultural limit to implement the narrative objective will be reviewed by and consistent with the efforts currently underway by CV-SALTS.

(b) **RPA Results.**

(1) **Chloride.** Effluent and receiving water data for chloride is not available.

(2) **Electrical Conductivity.** Effluent and receiving water data for electrical conductivity was collected during the period when wastewater was routed through the entire process (filtration, chlorination/dechlorination) without discharging to the receiving waters. The simulated discharge was not representative of the expected effluent quality during an actual discharge event and therefore reasonable potential is not being established for electrical conductivity.

(3) **Sulfate.** Effluent and receiving water data for sulfate is not available.

(4) **Total Dissolved Solids.** Effluent and receiving water data for total dissolved solids is not available.

c. **Constituents with Reasonable Potential.** The Central Valley Water Board finds that the discharge has a reasonable potential to cause or contribute to an in-stream excursion above a water quality standard for pH, total residual chlorine, diazinon, chlorpyrifos, and total coliform organisms. WQBELs for these constituents are included in this Order. A summary of the RPA is provided in Attachment G, and a detailed discussion of the RPA for each constituent is provided below.

i. Chlorine Residual

(a) **WQO.** USEPA developed NAWQC for protection of freshwater aquatic life for chlorine residual. The recommended 4-day average (chronic) and 1-hour average (acute) criteria for chlorine residual are 0.011 mg/L and 0.019 mg/L, respectively. These criteria are protective of the Basin Plan's narrative toxicity objective.

(b) **RPA Results.** The concentrations of chlorine used to disinfect wastewater are high enough to harm aquatic life and violate the Basin Plan narrative toxicity objective if discharged to the receiving water. Reasonable potential therefore does exist and effluent limits are required.

Federal regulations at 40 C.F.R. §122.44(d)(1)(i) requires that, "Limitations must control all pollutants or pollutant parameters (either conventional, nonconventional, or toxic pollutants) which the Director determines are or may be discharged at a level which will cause, have the reasonable potential to cause, or contribute to an excursion above any State water quality standard, including State narrative criteria for water quality." For priority pollutants, the SIP dictates the procedures for conducting the RPA. Chlorine is not a priority pollutant. Therefore, the Central Valley Water Board is not restricted to one particular RPA method. Due to the site-specific conditions of the discharge, the Central Valley Water Board has used its judgment in determining the appropriate method for conducting the RPA for this non-priority pollutant constituent.

USEPA's September 2010 NPDES Permit Writer's Manual, page 6-30, states, "State implementation procedures might allow, or even require, a permit writer to determine reasonable potential through a qualitative assessment process without using available facility-specific effluent monitoring data or when such data are not available…A permitting authority might also determine that WQBELs are required for specific pollutants for all facilities that exhibit certain operational or discharge characteristics (e.g., WQBELs for pathogens in all permits for POTWs discharging to contact recreational waters).” USEPA’s TSD also recommends that factors other than effluent data should be considered in the RPA, “When determining whether or not a discharge causes, has the reasonable potential to cause, or contributes to an excursion of a numeric or narrative water quality criterion for individual toxicants or for toxicity, the regulatory authority can use a variety of factors and information where facility-specific effluent monitoring data are unavailable. These factors also should be considered with available effluent monitoring data.” With regard to POTWs, USEPA recommends that, “POTWs should also be characterized for the possibility of chlorine and ammonia problems.” (TSD, p. 50)

The Discharger uses chlorine for disinfection, which is extremely toxic to aquatic organisms. Although the Discharger uses a sulfur dioxide process to de-chlorinate the effluent prior to discharge to Old River, the existing chlorine use and the potential for chlorine to be discharged provides the basis for the discharge to have a reasonable potential to cause or contribute to an in-stream excursion above the NAWQC.

(c) **WQBELs.** The USEPA *Technical Support Document for Water Quality-Based Toxics Control* [EPA/505/2-90-001] contains statistical methods for converting chronic (4-day) and acute (1-hour) aquatic life criteria to average monthly and maximum daily effluent limitations based on the variability of the existing data and the expected frequency of monitoring. However, because chlorine is an acutely toxic constituent that can and will be monitored continuously, an average 1-hour limitation is considered more appropriate than an average daily limitation. This Order contains a 4-day average effluent limitation and 1-hour average effluent limitation for chlorine residual of 0.011 mg/L and 0.019 mg/L, respectively, based on USEPA’s NAWQC, which implements the Basin Plan’s narrative toxicity objective for protection of aquatic life.

(d) **Plant Performance and Attainability.** The Discharger has not discharged to the South Fork of Battle Creek during the term on the previous permit. The chlorination/dechlorination system is only operated during discharge to surface waters and no monitoring data exists to determine a history of compliance. However, the Central Valley Water Board believes immediate compliance with these effluent limitations is feasible.

ii. Pathogens

(a) **WQO.** In a letter to the Central Valley Water Board dated 8 April 1999, DPH indicated it would consider wastewater discharged to water bodies with identified beneficial uses of irrigation or contact recreation and where the wastewater receives dilution of more than 20:1 to be adequately disinfected if the effluent coliform concentration does not exceed 23 MPN/100 mL as a 7-day median and if the effluent coliform concentration does not exceed 240 MPN/100 mL more than once in any 30 day period.

(b) **RPA Results.** Municipal and domestic supply, agricultural irrigation, and body contact water recreation are beneficial uses of South Fork Battle Creek. Discharge to South Fork Battle Creek is prohibited during the recreation season (April 16 to November 14). Discharge during the wet season would only be necessary during periods of prolonged heavy rainfall or snow melt when the corresponding receiving water flow would also be high. The Facility did not discharge during the term of the previous Order No. R5-2007-0098. Prior to the adoption of Order No. R5-2007-0098 discharge from the Facility occurred only once, December 30, 2005 during the prior five years (2002 to 2006). Based on information submitted by the Discharger a review of the flow data for the USGS flow monitoring of the South Fork of Battle Creek, the minimum dilution was approximately 131:1.

(c) **WQBELs.** Pursuant to guidance from DPH, this Order includes effluent limitations for total coliform organisms of 23 MPN/100 mL as a 7-day median and 240 MPN/100 mL, not to be exceeded more than once in a 30-day period. These coliform limits are imposed to protect the beneficial uses of the receiving water, including public health through contact recreation and drinking water pathways.

The tertiary treatment standards for BOD_5 and TSS are indicators of the effectiveness of the tertiary treatment process. One of the principal design parameters for wastewater treatment plants is the daily BOD_5 and TSS loading rate and the corresponding removal rate of the system. The application of tertiary treatment processes results in the ability to achieve lower levels for BOD_5 and TSS than the secondary standards currently prescribed. Final WQBELs for BOD_5 are based on the technical capability of the tertiary treatment process, which is necessary to protect the beneficial uses of the receiving water. However, because the Facility is a pond system and higher concentrations of TSS are expected in the effluent, final WQBELs for maximum daily TSS are based on best professional judgment and interpretation of the secondary treatment standards found in 40 CFR 133.102.

Therefore, this Order requires an AMEL for BOD_5 10 mg/L, which is technically based on the capability of a tertiary system. In addition to the average weekly and average monthly effluent limitations, a daily maximum effluent limitation for BOD_5 is included in the Order to ensure that the treatment works are not organically overloaded and operate in accordance with design capabilities.

(d) **Plant Performance and Attainability.** As discussed in this Fact Sheet, the Discharger has not discharged to South Fork Battle Creek since 2005, and is not expected to discharge in the future. If discharge is necessary it would occur during periods when runoff and flow in South Fork Battle Creek would provide for greater than 20:1 dilution.

iii. pH

(a) **WQO.** The Basin Plan includes a water quality objective for surface waters (except for Goose Lake) that the *"…pH shall not be depressed below 6.5 nor raised above 8.5."*

(b) **RPA Results.** Raw domestic wastewater inherently has variable pH. Additionally, some wastewater treatment processes can increase or decrease wastewater pH which if not properly controlled, would violate the Basin Plan's numeric objective for pH in the receiving water. Therefore, reasonable potential exists for pH and WQBELs are required.

Federal regulations at 40 C.F.R. §122.44(d)(1)(i) requires that, "Limitations must control all pollutants or pollutant parameters (either conventional, nonconventional, or toxic pollutants) which the Director determines are or may be discharged at a level which will cause, have the reasonable potential to cause, or contribute to an excursion above any State water quality standard, including State narrative criteria for water quality." For priority pollutants, the SIP dictates the procedures for conducting the RPA. pH is not a priority pollutant. Therefore, the Central Valley Water Board is not restricted to one particular RPA method. Due to the site-specific conditions of the discharge, the Central Valley Water Board has used professional judgment in determining the appropriate method for conducting the RPA for this non-priority pollutant constituent.

USEPA's September 2010 NPDES Permit Writer's Manual, page 6-30, states, "State implementation procedures might allow, or even require, a permit writer to determine reasonable potential through a qualitative assessment process without using available facility-specific effluent monitoring data or when such data are not available…A permitting authority might also determine that WQBELs are required for specific pollutants for all facilities that exhibit certain operational or discharge characteristics (e.g., WQBELs for pathogens in all permits for POTWs discharging to contact recreational waters)." USEPA's TSD also recommends that factors other than effluent data should be considered in the RPA, "When determining whether or not a discharge causes, has the reasonable potential to cause, or contributes to an excursion of a numeric or narrative water quality criterion for individual toxicants or for toxicity, the regulatory authority can use a variety of factors and information where facility-specific effluent monitoring data are unavailable. These factors also should be considered with available effluent monitoring data." (TSD, p. 50)

The Facility is a POTW that treats domestic wastewater. Because the Facility did not discharge during the previous permit term, no effluent pH data is available. The pH for the Facility's influent varies due to the nature of municipal sewage, which provides the basis for the discharge to have a reasonable potential to cause or contribute to an in-stream excursion above the Basin Plan's numeric objective for pH in the receiving water. Therefore, WQBELs for pH are required in this Order.

(c) **WQBELs.** Effluent limitations for pH of 6.0 as an instantaneous minimum and 9.0 as an instantaneous maximum are included in this Order, as significant dilution is available in the receiving water as a result of Discharge Prohibition III.E, which results in protection of the Basin Plan objectives for pH.

(d) **Plant Performance and Attainability.** Based upon typical plant performances, the treatment plant is likely capable of meeting effluent limitations for pH.

iv. Diazinon and Chlorpyrifos

(a) **WQO.** The Central Valley Water Board recently completed a TMDL for diazinon and chlorpyrifos in the Sacramento and Feather Rivers and amended the Basin Plan to include diazinon and chlorpyrifos waste load allocations and water quality objectives. The Basin Plan Amendment for the Control of Diazinon and Chlorpyrifos was adopted by the Central Valley Water Board on 21 October 2005 and was approved by the State Water Board on 2 May 2006. The Basin Plan amendment was approved by the Office of Administrative Law on 30 June 2006 and is now State law.

The amendment was approved by USEPA and went into effect on 20 December 2006.

The amendment modifies the Basin Plan Chapter III (Water Quality Objectives) to establish site specific numeric objectives for chlorpyrifos and diazinon in the Sacramento and Feather Rivers. The amendment also "…identifies the requirements to meet the additive formula already in Basin Plan Chapter IV (implementation), for the additive toxicity of diazinon and chlorpyrifos."

The amendment provides that: *"The Waste Load Allocations (WLA) for all NPDES-permitted dischargers… shall not exceed the sum (S) of one (1) ad defined below.*

$$S = \frac{CD}{WQOD} + \frac{Cc}{WQOc} \leq 1.0$$

where:

CD = diazinon concentration in µg/L of the point source discharge…
CC = chlorpyrifos concentration in µg/L of the point source discharge…
WQOD = acute or chronic diazinon water quality objective in µg/L.
WQOC = acute or chronic chlorpyrifos water quality objective in µg/L.

Available samples collected within the applicable averaging period for the water quality objective will be used to determine compliance with the allocations and loading capacity. For purposes of calculating the sum (S) above, analytical results that are reported as 'non detectable' concentrations are considered to be zero."

(b) **RPA Results.** Effluent and receiving water data for the Facility is not available. However, the waste load allocation applies to all NPDES discharges. As stated above, chlorpyrifos and diazinon have been identified as constituents of concern in the Sacramento River, to which the discharge is hydraulically connected.

(c) **WQBELs.** An AMEL and MDEL have been calculated using the procedures in Section 1.4 of the SIP and consistent with the TMDL waste load allocation resulting in the following effluent limits for chlorpyrifos and Diazinon.

Average Monthly Effluent Limitation

$$S_{AMEL} = \frac{\text{CD}-\text{avg}}{0.079} + \frac{\text{Cc}-\text{avg}}{0.012} \leq 1.0$$

CD-avg = average monthly diazinon effluent concentration in µg/L
CC-avg = average monthly chlorpyrifos effluent concentration in µg/L

Maximum Daily Effluent Limitation

$$S_{MDEL} = \frac{\text{CD}-\text{max}}{0.079} + \frac{\text{Cc}-\text{max}}{0.012} \leq 1.0$$

CD-max = maximum daily diazinon effluent concentration in µg/L
CC-max = maximum daily chlorpyrifos effluent concentration in µg/L

(d) **Plant Performance and Attainability.** No data is available from the Facility to indicate the presence or absence of chlorpyrifos and diazinon. It is unlikely that chlorpyrifos and diazinon will be detected at concentrations exceeding applicable water quality objectives as sales of all non-agricultural uses of diazinon were banned on 31 December 2004 and sales of the majority of non-agricultural uses of chlorpyrifos were banned in December 2001. The Discharger does not add chlorpyrifos or diazinon to the treatment process. The Central Valley Water Board concludes, therefore, that immediate compliance with these effluent limitations is feasible.

4. WQBEL Calculations

a. The general methodology for calculating WQBELs based on the different criteria/objectives is described in subsections IV.C.5.b through e, below.

b. **Effluent Concentration Allowance.** For each water quality criterion/objective, the ECA is calculated using the following steady-state mass balance equation from Section 1.4 of the SIP:

$$ECA = C + D(C - B) \qquad \text{where } C>B \text{, and}$$
$$ECA = C \qquad \text{where } C \leq B$$

where:

ECA	= effluent concentration allowance
D	= dilution credit
C	= the priority pollutant criterion/objective
B	= the ambient background concentration.

According to the SIP, the ambient background concentration (B) in the equation above shall be the observed maximum with the exception that an ECA calculated from a priority pollutant criterion/objective that is intended to protect human health from carcinogenic effects shall use the arithmetic mean concentration of the ambient background samples. For ECAs based on MCLs, which implement the Basin Plan's chemical constituents objective and are applied as annual averages, an arithmetic mean is also used for B due to the long-term basis of the criteria.

c. **Basin Plan Objectives and MCLs.** For WQBELs based on site-specific numeric Basin Plan objectives or MCLs, the effluent limitations are applied directly as the ECA as either an MDEL, AMEL, or average annual effluent limitations, depending on the averaging period of the objective.

d. **Aquatic Toxicity Criteria.** WQBELs based on acute and chronic aquatic toxicity criteria are calculated in accordance with Section 1.4 of the SIP. The ECAs are converted to equivalent long-term averages (i.e. LTA_{acute} and $LTA_{chronic}$) using statistical multipliers and the lowest LTA is used to calculate the AMEL and MDEL using additional statistical multipliers.

e. **Human Health Criteria.** WQBELs based on human health criteria, are also calculated in accordance with Section 1.4 of the SIP. The ECAs are set equal to the AMEL and a statistical multiplier was used to calculate the MDEL.

$$AMEL = mult_{AMEL}\left[\min\left(\overbrace{M_A ECA_{acute}}^{LTA_{acute}}, M_C ECA_{chronic}\right)\right]$$

$$MDEL = mult_{MDEL}\left[\min\left(M_A ECA_{acute}, \underbrace{M_C ECA_{chronic}}_{LTA_{chronic}}\right)\right]$$

$$MDEL_{HH} = \left(\frac{mult_{MDEL}}{mult_{AMEL}} \right) AMEL_{HH}$$

where:
$mult_{AMEL}$ = statistical multiplier converting minimum LTA to AMEL
$mult_{MDEL}$ = statistical multiplier converting minimum LTA to MDEL
M_A = statistical multiplier converting acute ECA to LTA_{acute}
M_C = statistical multiplier converting chronic ECA to $LTA_{chronic}$

Summary of Water Quality-Based Effluent Limitations
Discharge Point No. D-001

Table F-18. Summary of Water Quality-Based Effluent Limitations

Parameter	Units	Effluent Limitations				
		Average Monthly	Average Weekly	Maximum Daily	Instantaneous Minimum	Instantaneous Maximum
Conventional Pollutants						
pH	standard units	--	--	--	6.0	9.0
Electrical Conductivity (25˚C)	µmhos/cm	900[1]				
Chlorine, Total Residual	mg/L		0.011[2]	0.019[3]		
Biochemical Oxygen Demand (5-day @ 20°C)	mg/L	10	15	30	--	--
	lbs/day[4]	63	94	188	--	--
	mg/L	--	--	90	--	--
	lbs/day[4]	--	--	563	--	--
Priority Pollutants						
Diazinon	µg/L	WLA calculation[7]		WLA calculation[7]		
Chlorpyrifos	µg/L	WLA calculation[7]		WLA calculation[7]		
Non-Conventional Pollutants						
Total Coliform Organisms	MPN/100 mL	--	23[5]	240[6]	--	--

1 Applied as an annual average effluent limitation.
2 Applied as a 4-day average effluent limitation.
3 Applied as a 1-hour average effluent limitation.
4 Based on the daily peak wet weather flow of 0.75mgd.
5 Applied as a 7-day median effluent limitation.
6 Total coliform organisms shall not exceed 240 more than once in any 30-day period.
7 See Equation 6, Fact Sheet, Section IV.C.3.e.i.a.

5. Whole Effluent Toxicity (WET)

For compliance with the Basin Plan's narrative toxicity objective, this Order requires the Discharger to conduct whole effluent toxicity testing for acute and chronic toxicity, as specified in the Monitoring and Reporting Program (Attachment E section V.). This Order also contains effluent limitations for acute toxicity and requires the Discharger to implement best management practices to investigate the causes of, and identify corrective actions to reduce or eliminate effluent toxicity.

a. **Acute Aquatic Toxicity.** The Basin Plan contains a narrative toxicity objective that states, "All waters shall be maintained free of toxic substances in concentrations that produce detrimental physiological responses in human, plant, animal, or aquatic life." (Basin Plan at page III-8.00) The Basin Plan also states that, "…effluent limits based upon acute biotoxicity tests of effluents will be prescribed where appropriate…".

For priority pollutants, the SIP dictates the procedures for conducting the RPA. Acute toxicity is not a priority pollutant. Therefore, the Central Valley Water Board is not restricted to one particular RPA method. Acute whole effluent toxicity is not a priority pollutant. Therefore, due to the site-specific conditions of the discharge, the Central Valley Water Board has used professional judgment in determining the appropriate method for conducting the RPA . USEPA's September 2010 NPDES Permit Writer's Manual, page 6-30, states, "State implementation procedures might allow, or even require, a permit writer to determine reasonable potential through a qualitative assessment process without using available facility-specific effluent monitoring data or when such data are not available…A permitting authority might also determine that WQBELs are required for specific pollutants for all facilities that exhibit certain operational or discharge characteristics (e.g., WQBELs for pathogens in all permits for POTWs discharging to contact recreational waters)." Although the discharge has been consistently in compliance with the acute effluent limitations, the Facility is a POTW that treats domestic wastewater containing ammonia and other acutely toxic pollutants. Acute toxicity effluent limits are required to ensure compliance with the Basin Plan's narrative toxicity objective.

USEPA Region 9 provided guidance for the development of acute toxicity effluent limitations in the absence of numeric water quality objectives for toxicity in its document titled "Guidance for NPDES Permit Issuance", dated February 1994. In section B.2. "Toxicity Requirements" (pgs. 14-15) it states that, "In the absence of specific numeric water quality objectives for acute and chronic toxicity, the narrative criterion 'no toxics in toxic amounts' applies. Achievement of the narrative criterion, as applied herein, means that ambient waters shall not demonstrate for acute toxicity: 1) less than 90% survival, 50% of the time, based on the monthly median, or 2) less than 70% survival, 10% of the time, based on any monthly median. For chronic toxicity, ambient waters shall not demonstrate a test result of greater than 1 TUc." Accordingly, effluent limitations for acute toxicity have been included in this Order as follows:

Acute Toxicity. Survival of aquatic organisms in 96-hour bioassays of undiluted waste shall be no less than:

Minimum for any one bioassay --- 70%
Median for any three consecutive bioassays--------------------------- 90%

b. **Chronic Aquatic Toxicity.** The Basin Plan contains a narrative toxicity objective that states, "All waters shall be maintained free of toxic substances in concentrations that produce detrimental physiological responses in human, plant, animal, or aquatic life." (Basin Plan at page III-8.00**)** Adequate chronic WET data is not available to determine if the discharge has reasonable potential to cause or contribute to an in-stream excursion above the Basin Plan's narrative toxicity objective. As discussed in this Fact Sheet, the Discharger did not discharge to South Fork Battle Creek during the term of the previous permit and did not conduct chronic toxicity testing.

The Monitoring and Reporting Program of this Order requires annual chronic WET monitoring for demonstration of compliance with the narrative toxicity objective. In addition to WET monitoring, the Special Provision in section VI.C.2.a of the Order requires the Discharger to submit to the Central Valley Water Board an Initial Investigative TRE Workplan for approval by the Executive Officer, to ensure the Discharger has a plan to immediately move forward with the initial tiers of a TRE, in the event effluent toxicity is encountered in the future. The provision also includes a numeric toxicity monitoring trigger, requirements for accelerated monitoring, and requirements for TRE initiation if toxicity is demonstrated.

Numeric chronic WET effluent limitations have not been included in this Order. The SIP contains implementation gaps regarding the appropriate form and implementation of chronic toxicity limits. This has resulted in the petitioning of a NPDES permit in the Los Angeles Region[1] that contained numeric chronic toxicity effluent limitations. To address the petition, the State Water Board adopted WQO 2003-012 directing its staff to revise the toxicity control provisions in the SIP. The State Water Board states the following in WQO 2003-012, "*In reviewing this petition and receiving comments from numerous interested persons on the propriety of including numeric effluent limitations for chronic toxicity in NPDES permits for publicly-owned treatment works that discharge to inland waters, we have determined that this issue should be considered in a regulatory setting, in order to allow for full public discussion and deliberation. We intend to modify the SIP to specifically address the issue. We anticipate that review will occur within the next year. We therefore decline to make a determination here regarding the propriety of the final numeric effluent limitations for chronic toxicity contained in these permits."* The process to revise the SIP is currently underway. Proposed changes include clarifying the appropriate form of effluent toxicity limits in NPDES permits and general expansion and standardization of toxicity control implementation related to the NPDES permitting process. Since the toxicity control provisions in the SIP are under revision it is infeasible to develop numeric effluent limitations for chronic toxicity. Therefore, this Order requires that the Discharger meet best management practices for compliance with the Basin Plan's narrative toxicity objective, as allowed under 40 CFR 122.44(k).

To ensure compliance with the Basin Plan's narrative toxicity objective, the Discharger is required to conduct chronic WET testing, as specified in the Monitoring and Reporting Program (Attachment E section V.). Furthermore, the Special Provision contained at VI.C.2.a. of this Order requires the Discharger to investigate the causes of, and identify and implement corrective actions to reduce or eliminate effluent toxicity. If the discharge demonstrates toxicity exceeding the numeric toxicity monitoring trigger, the Discharger is required to initiate a Toxicity Reduction Evaluation (TRE) in accordance with an approved TRE workplan. The numeric toxicity monitoring trigger is not an effluent limitation; it is the toxicity threshold at which the Discharger is required to perform accelerated chronic toxicity monitoring, as well as, the threshold to initiate a TRE if effluent toxicity has been demonstrated.

D. Final Effluent Limitation Considerations

1. Mass-based Effluent Limitations

[1] In the Matter of the Review of Own Motion of Waste Discharge Requirements Order Nos. R4-2002-0121 [NPDES No. CA0054011] and R4-2002-0123 [NPDES NO. CA0055119] and Time Schedule Order Nos. R4-2002-0122 and R4-2002-0124 for Los Coyotes and Long Beach Wastewater Reclamation Plants Issued by the California Regional Water Quality Control Board, Los Angeles Region SWRCB/OCC FILES A-1496 AND 1496(a)

40 CFR 122.45(f)(1) requires effluent limitations be expressed in terms of mass, with some exceptions, and 40 CFR 122.45(f)(2) allows pollutants that are limited in terms of mass to additionally be limited in terms of other units of measurement. This Order includes effluent limitations expressed in terms of mass and concentration. In addition, pursuant to the exceptions to mass limitations provided in 40 CFR 122.45(f)(1), some effluent limitations are not expressed in terms of mass, such as pH, and when the applicable standards are expressed in terms of concentration (e.g., CTR criteria and MCLs) and mass limitations are not necessary to protect the beneficial uses of the receiving water.

Mass-based effluent limitations were calculated based upon the design flow (peak wet weather design flow) permitted in section IV.A.1. of this Order.

2. Averaging Periods for Effluent Limitations

40 CFR 122.45 (d) requires average weekly and average monthly discharge limitations for publicly owned treatment works (POTWs) unless impracticable. However, for toxic pollutants and pollutant parameters in water quality permitting, USEPA recommends the use of a maximum daily effluent limitation in lieu of average weekly effluent limitations for two reasons. "*First, the basis for the 7-day average for POTWs derives from the secondary treatment requirements. This basis is not related to the need for assuring achievement of water quality standards. Second, a 7-day average, which could comprise up to seven or more daily samples, could average out peak toxic concentrations and therefore the discharge's potential for causing acute toxic effects would be missed.*" (TSD, pg. 96) BOD_5, total chlorine residual, pH, total coliform organisms, and TSS, weekly average effluent limitations have been replaced or supplemented with effluent limitations utilizing shorter averaging periods. The rationale for using shorter averaging periods for these constituents is discussed in section IV.C.3 of this Fact Sheet.

For effluent limitations based on Primary and Secondary MCLs, except nitrate and nitrite, this Order includes annual average effluent limitations. The Primary and Secondary MCLs are drinking water standards contained in Title 22 of the California Code of Regulations. Title 22 requires compliance with these standards on an annual average basis (except for nitrate and nitrite), when sampling at least quarterly. Since it is necessary to determine compliance on an annual average basis, it is impracticable to calculate average weekly and average monthly effluent limitations.

3. Satisfaction of Anti-Backsliding Requirements

The Clean Water Act specifies that a revised permit may not include effluent limitations that are less stringent than the previous permit unless a less stringent limitation is justified based on exceptions to the anti-backsliding provisions contained in Clean Water Act sections 402(o) or 303(d)(4), or, where applicable, 40 CFR 122.44(l).

The effluent limitations in this Order are at least as stringent as the effluent limitations in the previous Order R5-2007-0098, with the exception of effluent limitations for temperature and electrical conductivity; these effluent limitations have been removed and are not included in this Order. This elimination of effluent limitations is consistent with the anti-backsliding requirements of the CWA and federal regulations.

a. **CWA section 402(o)(1) and 303(d)(4).** CWA section 402(o)(1) prohibits the establishment of less stringent water quality-based effluent limits "except in compliance with Section 303(d)(4)." CWA section 303(d)(4) has two parts:

paragraph (A) which applies to nonattainment waters and paragraph (B) which applies to attainment waters.

i. For waters where standards are not attained, CWA section 304(d)(4)(A) specifies that any effluent limit based on a TMDL or other WLA may be revised only if the cumulative effect of all such revised effluent limits based on such TMDL's or WLAs will assure the attainment of such water quality standards.

ii. For attainment waters, CWA section 303(d)(4)(B) specifies that a limitation based on a water quality standard may be relaxed where the action is consistent with the antidegradation policy.

The South Fork of Battle Creek is considered an attainment water for temperature and electrical conductivity because the receiving water is not listed as impaired on the 303(d) list for these constituents.[1] As discussed in section IV.D.4, below, removal of the effluent limits complies with federal and state antidegradation requirements. Thus, removal of the effluent limitations for temperature and electrical conductivity from Order R5-2007-0098 meets the exception in CWA section 303(d)(4)(B).

b. **CWA section 402(o)(2).** CWA section 402(o)(2) provides several exceptions to the anti-backsliding regulations. CWA 402(o)(2)(B)(i) allows a renewed, reissued, or modified permit to contain a less stringent effluent limitation for a pollutant if information is available which was not available at the time of permit issuance (other than revised regulations, guidance, or test methods) and which would have justified the application of a less stringent effluent limitation at the time of permit issuance.

As described further in section IV.C.3.b of this Fact Sheet, updated information that was not available at the time Order R5-2007-009 was issued indicates that temperature and electrical conductivity do not exhibit reasonable potential to cause or contribute to an exceedance of water quality objectives in the receiving water. The updated information that supports the relaxation of effluent limitations for these constituents includes the following:

i. Temperature. Order R5-2007-0098 contained an effluent limitation for temperature. This limitation has been removed as it is not necessary because receiving water limitations are included in this Order to prevent the discharge from altering the receiving water temperature by more than 5°F. Monitoring is required at RSW-001 and RSW-002 in this order to ensure compliance with the receiving water temperature limitation.

ii. Electrical Conductivity. Order R5-2007-0098 contained an effluent limitation for electrical conductivity even though there was not reasonable potential for electrical conductivity as discussed in the Fact Sheet of Order R5-2007-0098. Sampling for electrical conductivity during the term of Order R5-2007-0098 was collected during the period when wastewater was routed through the entire process (filtration, chlorination/dechlorination) without discharging to the receiving waters. The simulated discharge was not representative of the expected effluent quality during an actual discharge event and therefore reasonable potential is not being established for electrical conductivity in this Order. Accordingly, the effluent limitation for electrical conductivity is being removed in this Order, however monitoring for electrical conductivity in the

[1] "The exceptions in Section 303(d)(4) address both waters in attainment with water quality standards and those not in attainment, i.e. waters on the section 303(d) impaired waters list." State Water Board Order WQ 2008-0006, Berry Petroleum Company, Poso Creek/McVan Facility.

receiving water and the effluent is included in this Order for the purposes of determining reasonable potential in future permits.

4. Antidegradation Policies

This Order does not allow for an increase in flow or mass of pollutants to the receiving water. Therefore, a complete antidegradation analysis is not necessary. The Order requires compliance with applicable federal technology-based standards and with WQBELs where the discharge could have the reasonable potential to cause or contribute to an exceedance of water quality standards. The permitted discharge is consistent with the antidegradation provisions of 40 CFR 131.12 and State Water Board Resolution No. 68-16. Compliance with these requirements will result in the use of best practicable treatment or control of the discharge. The impact on existing water quality will be insignificant.

This Order contains a Provision that requires the Discharger to operate the sand filter system during periods of discharge to the maximum extent practicable. The Provision is necessary to satisfy the antidegradation provisions of 40 CFR 131.12 and State Water Board Resolution No. 68-16 and ensure the use of best practicable treatment or control of the discharge.

a. **Surface Water.** The permitted surface water discharge is consistent with the antidegradation provisions of 40 CFR 131.12 and State Water Board Resolution No. 68-16. Compliance with these requirements will result in the use of best practicable treatment or control of the discharge. The impact on existing water quality will be insignificant.

b. **Groundwater.** The Discharger utilizes aeration lagoons and oxidation ponds. Domestic wastewater contains constituents such as total dissolved solids (TDS), specific conductivity, pathogens, nitrates, organics, metals and oxygen demanding substances (BOD). Percolation from the lagoons and ponds may result in an increase in the concentration of these constituents in groundwater. The increase in the concentration of these constituents in groundwater must be consistent with Resolution No. 68-16. Any increase in pollutant concentrations in groundwater must be shown to be necessary to allow wastewater utility service necessary to accommodate housing and economic expansion in the area and must be consistent with maximum benefit to the people of the State of California. Some degradation of groundwater by the Discharger is consistent with Resolution No. 68-16 provided that:

   i. the degradation is limited in extent;

   ii. the degradation after effective source control, treatment, and control is limited to waste constituents typically encountered in municipal wastewater as specified in the groundwater limitations in this Order;

   iii. the Discharger minimizes the degradation by fully implementing, regularly maintaining, and optimally operating best practicable treatment and control (BPTC) measures; and

   iv. the degradation does not result in water quality less than that prescribed in the Basin Plan.

   Groundwater limitations for total coliform organisms, nitrate (as N) and pH has been included in this Order for protection of the MUN beneficial use of groundwater.

5. Stringency of Requirements for Individual Pollutants

This Order contains both technology-based and water quality-based effluent limitations for individual pollutants. The technology-based effluent limitations consist of restrictions on flow and TSS. The WQBELs consist of restrictions on pH, BOD, TSS (maximum daily), total residual chlorine, diazinon, chlorpyrifos, and total coliform organisms. This Order's technology-based pollutant restrictions implement the minimum, applicable federal technology-based requirements.

WQBELs have been scientifically derived to implement water quality objectives that protect beneficial uses. Both the beneficial uses and the water quality objectives have been approved pursuant to federal law and are the applicable federal water quality standards. To the extent that toxic pollutant WQBELs were derived from the CTR, the CTR is the applicable standard pursuant to 40 CFR 131.38. The scientific procedures for calculating the individual WQBELs for priority pollutants are based on the CTR-SIP, which was approved by USEPA on 18 May 2000. All beneficial uses and water quality objectives contained in the Basin Plan were approved under state law and submitted to and approved by USEPA prior to 30 May 2000. Any water quality objectives and beneficial uses submitted to USEPA prior to 30 May 2000, but not approved by USEPA before that date, are nonetheless "applicable water quality standards for purposes of the CWA" pursuant to 40 CFR 131.21(c)(1). Collectively, this Order's restrictions on individual pollutants are no more stringent than required to implement the requirements of the CWA.

Summary of Final Effluent Limitations
Discharge Point No. D-001

Table F-19. Summary of Final Effluent Limitations

Parameter	Units	Effluent Limitations					Basis[1]
		Average Monthly	Average Weekly	Maximum Daily	Instantaneous Minimum	Instantaneous Maximum	
Peak Wet Weather Discharge Flow	mgd	--	--	0.75	--	--	DC
pH	Standard Units	--	--	--	6.0	9.0	BP
Electrical Conductivity (20˚C)	--	900 Annual Average	--	--	--	--	SEC MCL
Total Chlorine Residual	mg/L	--	0.011[2]	0.019[3]	--	--	NAWQC
Biochemical Oxygen Demand 5-day @20˚C	mg/L	10	15	30	--	--	TTC
	lbs/day[4]	63	94	188	--	--	
	% Removal	85%	--	--	--	--	CFR
Total Suspended Solids	mg/L	30	45	90	--	--	CFR
	lbs/day[4]	188	281	563	--	--	
	% Removal	85%	--	--	--	--	CFR
Total Coliform Organisms	MPN/100 mL	--	23[5]	240[6]	--	--	DPH
Diazinon	µg/L	WLA calculation[7]	--	WLA calculation[7]	--	--	BP
Chlorpyrifos	µg/L	WLA calculation[7]	--	WLA calculation[7]	--	--	BP

[1] DC – Based on the design capacity of the Facility.
TTC – Based on treatment capability.
CFR – Based on secondary treatment standards contained in 40 CFR Part 133.
BP – Based on water quality objectives contained in the Basin Plan.
CTR – Based on water quality criteria contained in the California Toxics Rule and applied as specified in the SIP.
NAWQC – Based on USEPA's National Ambient Water Quality Criteria for the protection of freshwater aquatic life.
SEC MCL – Based on the Secondary Maximum Contaminant Level.
MCL – Based on the Primary Maximum Containment Level.
DPH- Department of Public Health

[2] Applied as a 4-day average effluent limitation.

[3] Applied as a 1-hour average effluent limitation.

[4] Mass-based effluent limitations are based on a permitted peak daily wet weather flow of 0.75 mgd.

[5] Applied as a 7-day median effluent limitation.

[6] Not to be exceeded more than once in any 30-day period.

[7] See Equation 6, Fact Sheet, Section IV.C.3.e.i.a.

a. **Acute Whole Effluent Toxicity.** Survival of aquatic organisms in 96-hour bioassays of undiluted waste shall be no less than:

i. 70%, minimum for any one bioassay; and
ii. 90%, median for any three consecutive bioassays.

E. Interim Effluent Limitations – Not Applicable

F. Land Discharge Specifications

1. The Land Discharge Specifications are necessary to protect the beneficial uses of the groundwater.

V. RATIONALE FOR RECEIVING WATER LIMITATIONS

A. Surface Water

1. CWA section 303(a-c), requires states to adopt water quality standards, including criteria where they are necessary to protect beneficial uses. The Central Valley Water Board adopted water quality criteria as water quality objectives in the Basin Plan. The Basin Plan states that "[t]*he numerical and narrative water quality objectives define the least stringent standards that the Regional Water Board will apply to regional waters in order to protect the beneficial uses.*" The Basin Plan includes numeric and narrative water quality objectives for various beneficial uses and water bodies. This Order contains receiving surface water limitations based on the Basin Plan numerical and narrative water quality objectives for bacteria, biostimulatory substances, color, chemical constituents, dissolved oxygen, floating material, oil and grease, pH, pesticides, radioactivity, suspended sediment, settleable substances, suspended material, tastes and odors, temperature, toxicity, and turbidity.

   a. **Turbidity.** Order No. R5-2007-0098 established a receiving water limitation for turbidity specifying that discharges from the Facility shall not cause the turbidity to increase more than 1 NTU where natural turbidity is between 0 and 5 NTU based on the water quality objective for turbidity in the Basin Plan. The Central Valley Water Board adopted Resolution R5-2007-0136 on 25 October 2007, amending the Basin Plan to limit turbidity to 2 NTU when the natural turbidity is less than 1 NTU. The Basin Plan amendment has been approved by the State Water Board, the Office of Administrative Law, and USEPA. Consistent with the revised water quality objective in the Basin Plan, this Order limits turbidity to 2 NTU when the natural turbidity is less than 1 NTU.

In Finding No. 14 of Resolution R5-2007-0136 the Central Valley Water Board found that the change in the turbidity receiving water objective is consistent with the State Water Board Resolution No. 68-16, in that the changes to water quality objectives (i) consider maximum benefit to the people of the State, (ii) will not unreasonably affect present and anticipated beneficial use of waters, and (iii) will not result in water quality less than that prescribed in policies, and is consistent with the federal Antidegradation Policy (40 CFR 131.12).

The revised receiving water limitation for turbidity, which is based on the amendment to the Basin Plan's turbidity water quality objective, reflects current scientifically supported turbidity requirements for the protection of aquatic life and other beneficial uses and, therefore, will be fully protective of aquatic life and the other beneficial uses listed in the Basin Plan. Changes in turbidity allowed by the revised receiving water limitation, when ambient turbidity is below 1 NTU, would not adversely affect beneficial uses and would maintain water quality at a level higher than necessary to protect beneficial uses. Restricting low-level turbidity changes further may require costly upgrades, which would not provide any additional protection of beneficial uses. Thus, any changes in turbidity that would occur under the amended turbidity receiving water limitation would not only be protective of beneficial uses, but also would be consistent with maximum benefit to people of the State. Therefore, the relaxed receiving water limitations for turbidity will not violate antidegradation policies.

a. **pH.** Order No. R5-2007-0098 established a receiving water limitation for pH specifying that discharges from the Facility shall not cause the ambient pH to change by more than 0.5 units based on the water quality objective for pH in the Basin Plan, and allowed a 1-month averaging period for calculating pH change. The Central Valley Water Board adopted Resolution R5-2007-0136 on 25 October 2007, amending the Basin Plan to delete the portion of the pH water quality objective that limits the change in pH to 0.5 units and the allowance of averaging periods for pH. The Basin Plan amendment has been approved by the State Water Board, the Office of Administrative Law, and USEPA. Consistent with the revised water quality objective in the Basin Plan, this Order does not require a receiving water limitation for pH change.

In Finding No. 14 of Resolution R5-2007-0136 the Central Valley Water Board found that the change in the pH receiving water objective is consistent with the State Water Board Resolution No. 68-16, in that the changes to water quality objectives (i) consider maximum benefit to the people of the State, (ii) will not unreasonably affect present and anticipated beneficial use of waters, and (iii) will not result in water quality less than that prescribed in policies, and is consistent with the federal Antidegradation Policy (40 CFR 131.12).

The revised receiving water limitation for pH, which is based on the amendment to the Basin Plan's pH water quality objective, reflects current scientifically supported pH requirements for the protection of aquatic life and other beneficial uses. The revised receiving water limitation for pH is more consistent with the current USEPA recommended criteria and is fully protective of aquatic life and the other beneficial uses listed in the Basin Plan. Changes in pH when pH is maintained within the range of 6.5 to 8.5 are neither beneficial nor adverse and, therefore, are not considered to be degradation in water quality. Attempting to restrict pH changes to 0.5 pH units would incur substantial costs without demonstrable benefits to beneficial uses. Thus, any changes in pH that would occur under the revised pH limitation would not only be protective of beneficial uses, but also would be consistent with maximum benefit to people of the State. Therefore the proposed amendment will not violate antidegradation policies.

B. Groundwater

1. The beneficial uses of the underlying groundwater are municipal and domestic supply, industrial service supply, industrial process supply, and agricultural supply.
2. Basin Plan water quality objectives include narrative objectives for chemical constituents, tastes and odors, and toxicity of groundwater. The toxicity objective requires that groundwater be maintained free of toxic substances in concentrations that produce detrimental physiological responses in humans, plants, animals, or aquatic life. The chemical constituent objective states groundwater shall not contain chemical constituents in concentrations that adversely affect any beneficial use. The tastes and odors objective prohibits taste- or odor-producing substances in concentrations that cause nuisance or adversely affect beneficial uses. The Basin Plan also establishes numerical water quality objectives for chemical constituents and radioactivity in groundwater designated as municipal supply. These include, at a minimum, compliance with MCLs in Title 22 of the CCR. The bacteria objective prohibits coliform organisms at or above 2.2 MPN/100 mL. The Basin Plan requires the application of the most stringent objective necessary to ensure that waters do not contain chemical constituents, toxic substances, radionuclides, taste- or odor-producing substances, or bacteria in concentrations that adversely affect municipal or domestic supply, agricultural supply, industrial supply or some other beneficial use.
3. Groundwater limitations are required to protect the beneficial uses of the underlying groundwater.

VI. RATIONALE FOR PROVISIONS

A. Standard Provisions

Standard Provisions, which apply to all NPDES permits in accordance with 40 C.F.R. section 122.41, and additional conditions applicable to specified categories of permits in accordance with 40 C.F.R. section 122.42, are provided in Attachment D. The discharger must comply with all standard provisions and with those additional conditions that are applicable under section 122.42.

Sections 122.41(a)(1) and (b) through (n) of 40 C.F.R. establish conditions that apply to all state-issued NPDES permits. These conditions must be incorporated into the permits either expressly or by reference. If incorporated by reference, a specific citation to the regulations must be included in the Order. Section 123.25(a)(12) of 40 C.F.R. allows the state to omit or modify conditions to impose more stringent requirements. In accordance with 40 C.F.R. section 123.25, this Order omits federal conditions that address enforcement authority specified in 40 C.F.R. sections 122.41(j)(5) and (k)(2) because the enforcement authority under the Water Code is more stringent. In lieu of these conditions, this Order incorporates by reference Water Code section 13387(e).

B. Special Provisions

1. Reopener Provisions

a. **Mercury.** This provision allows the Central Valley Water Board to reopen this Order in the event mercury is found to be causing toxicity based on acute or chronic toxicity test results, or if a TMDL program is adopted. In addition, this Order may be reopened if the Central Valley Water Board determines that a mercury offset program is feasible for dischargers subject to NPDES permits.

b. **Whole Effluent Toxicity.** This Order requires the Discharger to investigate the causes of, and identify corrective actions to reduce or eliminate effluent toxicity through a Toxicity Reduction Evaluation (TRE). This Order may be reopened to include a numeric chronic toxicity limitation, a new acute toxicity limitation, and/or a limitation for a specific toxicant identified in the TRE. Additionally, if a numeric chronic toxicity water quality objective is adopted by the State Water Board, this Order may be reopened to include a numeric chronic toxicity limitation based on that objective.

c. **Water Effects Ratio (WER) and Metal Translators.** A default WER of 1.0 has been used in this Order for calculating CTR criteria for applicable priority pollutant inorganic constituents. In addition, default dissolved-to-total metal translators have been used to convert water quality objectives from dissolved to total recoverable when developing effluent limitations. If the Discharger performs studies to determine site-specific WERs and/or site-specific dissolved-to-total metal translators, this Order may be reopened to modify the effluent limitations for the applicable inorganic constituents.

d. **Title 27 Exemption Analysis Update.** Upon submittal of the Title 27 Exemption Analysis Update required by this Order, this Order may be reopened to add or modify Findings, limits, or other conditions as appropriate.

2. Special Studies and Additional Monitoring Requirements

a. **Chronic Whole Effluent Toxicity Requirements.** The Basin Plan contains a narrative toxicity objective that states, “All waters shall be maintained free of toxic substances in concentrations that produce detrimental physiological responses in human, plant, animal, or aquatic life.” (Basin Plan at page III-8.00).

The Monitoring and Reporting Program of this Order requires chronic WET monitoring for demonstration of compliance with the narrative toxicity objective. In addition to WET monitoring, this provision requires the Discharger to submit to the Central Valley Water Board an Initial Investigative TRE Workplan for approval by the Executive Officer, to ensure the Discharger has a plan to immediately move forward with the initial tiers of a TRE, in the event effluent toxicity is encountered in the future. The provision also includes a numeric toxicity monitoring trigger, requirements for accelerated monitoring, and requirements for TRE initiation if toxicity is demonstrated.

Monitoring Trigger. A numeric toxicity monitoring trigger of > 1 TUc (where TUc = 100/NOEC) is applied in the provision, because this Order does not allow any dilution for the chronic condition. Therefore, a TRE is triggered when the effluent exhibits toxicity at 100% effluent.

Accelerated Monitoring. The provision requires accelerated WET testing when a regular WET test result exceeds the monitoring trigger. The purpose of accelerated monitoring is to determine, in an expedient manner, whether there is toxicity before requiring the implementation of a TRE. Due to possible seasonality of the toxicity, the accelerated monitoring should be performed in a timely manner, preferably taking no more than 2 to 3 months to complete.

The provision requires accelerated monitoring consisting of four chronic toxicity tests in a six-week period (i.e., one test every two weeks) using the species that exhibited toxicity. Guidance regarding accelerated monitoring and TRE initiation is provided in the *Technical Support Document for Water Quality-based Toxics Control,* EPA/505/2-90-001, March 1991 (TSD). The TSD at page 118 states, “*EPA* *recommends if toxicity is repeatedly or periodically present at levels above effluent limits more than 20 percent of the time, a TRE should be required.*" Therefore, four accelerated monitoring tests are required in this provision. If no toxicity is demonstrated in the four accelerated tests, then it demonstrates that toxicity is not present at levels above the monitoring trigger more than 20 percent of the time (only 1 of 5 tests are toxic, including the initial test). However, notwithstanding the accelerated monitoring results, if there is adequate evidence of effluent toxicity (i.e. toxicity present exceeding the monitoring trigger more than 20 percent of the time), the Executive Officer may require that the Discharger initiate a TRE.

See the WET Accelerated Monitoring Flow Chart (Figure F-1), below, for further clarification of the accelerated monitoring requirements and for the decision points for determining the need for TRE initiation.

TRE Guidance. The Discharger is required to prepare a TRE Workplan in accordance with USEPA guidance. Numerous guidance documents are available, as identified below:

i. Toxicity Reduction Evaluation Guidance for Municipal Wastewater Treatment Plants, EPA/833-B-99/002, August 1999.

ii. Generalized Methodology for Conducting Industrial Toxicity Reduction Evaluations (TREs), EPA/600/2-88/070, April 1989.

iii. Methods for Aquatic Toxicity Identification Evaluations: Phase I Toxicity Characterization Procedures, Second Edition, EPA 600/6-91/003, February 1991.

iv. Toxicity Identification Evaluation: Characterization of Chronically Toxic Effluents, Phase I, EPA/600/6-91/005F, May 1992.

v. Methods for Aquatic Toxicity Identification Evaluations: Phase II Toxicity Identification Procedures for Samples Exhibiting Acute and Chronic Toxicity, Second Edition, EPA/600/R-92/080, September 1993.

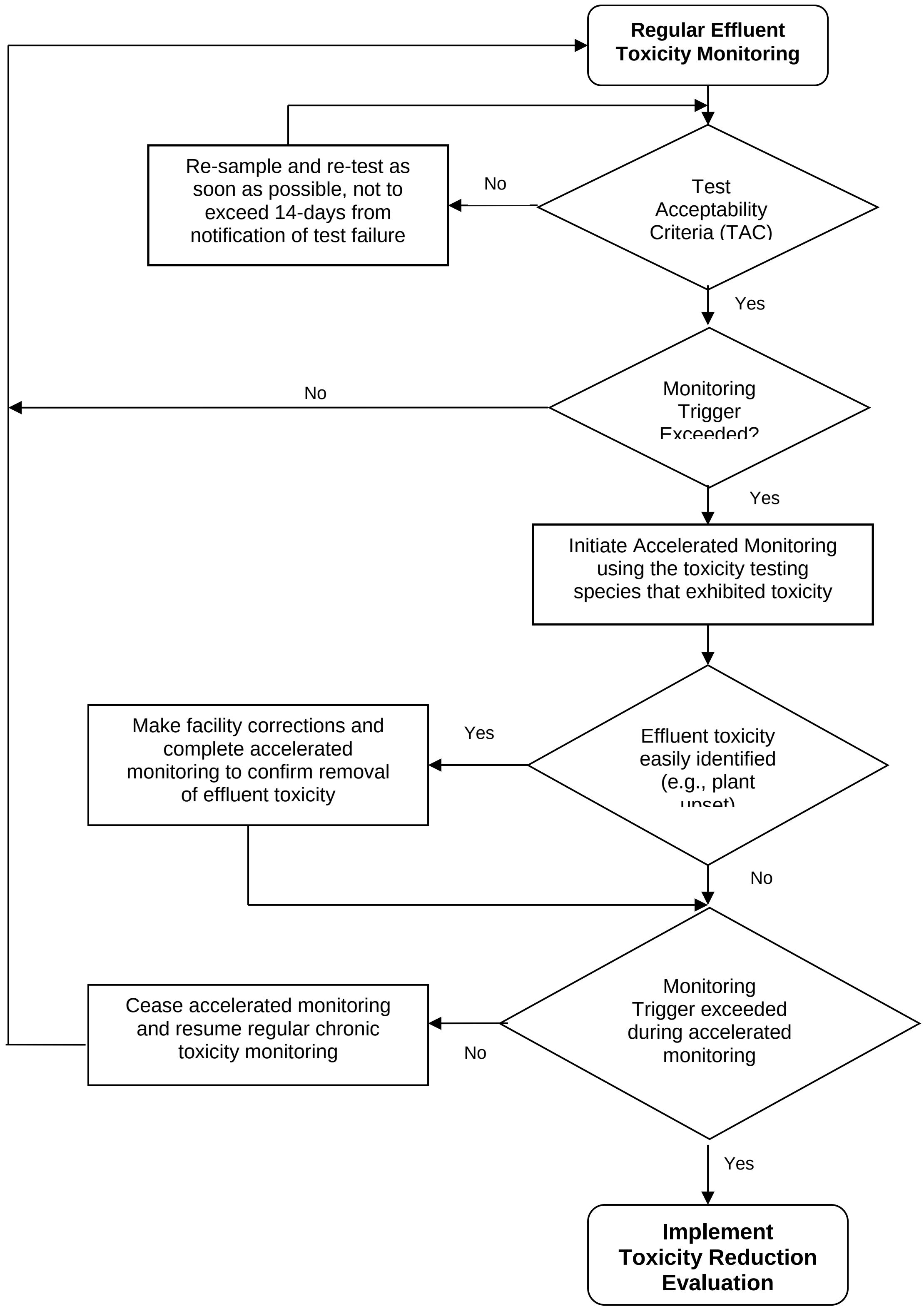
vi. Methods for Aquatic Toxicity Identification Evaluations: Phase III Toxicity Confirmation Procedures for Samples Exhibiting Acute and Chronic Toxicity, Second Edition, EPA 600/R-92/081, September 1993.

vii. Methods for Measuring the Acute Toxicity of Effluents and Receiving Waters to Freshwater and Marine Organisms, Fifth Edition, EPA-821-R-02-012, October 2002.

viii. Short-term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Freshwater Organisms, Fourth Edition, EPA-821-R-02-013, October 2002.

ix. Technical Support Document for Water Quality-based Toxics Control, EPA/505/2-90-001, March 1991.

WET Accelerated Monitoring Flow Chart


Regular Effluent Toxicity Monitoring
Test Acceptability Criteria (TAC)
No
Re-sample and re-test as soon as possible, not to exceed 14-days from notification of test failure
Yes
Monitoring Trigger Exceeded?
No
Yes
Initiate Accelerated Monitoring using the toxicity testing species that exhibited toxicity
Effluent toxicity easily identified (e.g., plant upset)
Yes
Make facility corrections and complete accelerated monitoring to confirm removal of effluent toxicity
No
Monitoring Trigger exceeded during accelerated monitoring
No
Cease accelerated monitoring and resume regular chronic toxicity monitoring
Yes
Implement Toxicity Reduction Evaluation

b. **Title 27 Exemption Analysis Update.** To evaluate potential groundwater impacts from the discharge to the evaporation/percolation ponds and to evaluate compliance with the Basin Plan, the Discharger is required to submit, within 36 months of the effective date of this Order, a Title 27 Exemption Analysis Update (Title 27 Analysis Update). The Title 27 Analysis Update shall present the results of the land discharge and groundwater monitoring to date, and an evaluation of whether the discharge to the evaporation/percolation ponds is in compliance with the Basin Plan, including the Basin Plan water quality objectives. Having the discharge to the evaporation/percolation ponds maintain compliance with the Basin Plan water quality objectives is necessary for the Discharger to maintain the Title 27 exemption per Title 27 20090(b); see Section III.E of this Fact Sheet.

c. **Best Practical Treatment or Control (BPTC) Update.** If the groundwater monitoring results show that the discharge of waste is threatening to cause or has caused groundwater to contain waste constituents in concentrations statistically greater than background water quality, the Discharger shall submit, **within 36 months following adoption of this Order**, a BPTC Evaluation Work Plan that sets forth a scope and schedule for a systematic and comprehensive technical evaluation of each component of the facilities' waste management system to determine best practicable treatment or control for each the waste constituents of concern. The work plan shall include a preliminary evaluation of each component of the waste management system and propose a time schedule for completing the comprehensive technical evaluation. The schedule to complete the evaluation shall be as short as practicable, and shall not exceed 1 year.

In accordance with California Business and Professions Code Sections 6735, 7835, and 7835.1, engineering and geologic evaluations and judgments shall be performed by or under the direction of registered professionals competent and proficient in the fields pertinent to the required activities. The technical report shall be prepared by or under the direction of appropriately qualified professional(s) and shall bear the professional's signature and stamp.

3. Best Management Practices and Pollution Prevention

a. **Water Code Section 13263.3(d)(3) Pollution Prevention Plans.** Pollution prevention plans, shall, at a minimum, meet the requirements outlined in Water Code section 13263.3(d)(3). The minimum requirements for the pollution prevention plans include the following:

i. An estimate of all of the sources of a pollutant contributing, or potentially contributing, to the loadings of a pollutant in the treatment plant influent.

ii. An analysis of the methods that could be used to prevent the discharge of the pollutants into the Facility, including application of local limits to industrial or commercial dischargers regarding pollution prevention techniques, public education and outreach, or other innovative and alternative approaches to reduce discharges of the pollutant to the Facility. The analysis also shall identify sources, or potential sources, not within the ability or authority of the Discharger to control, such as pollutants in the potable water supply, airborne pollutants, pharmaceuticals, or pesticides, and estimate the magnitude of those sources, to the extent feasible.

iii. An estimate of load reductions that may be attained through the methods identified in subparagraph ii.

iv. A plan for monitoring the results of the pollution prevention program.

v. A description of the tasks, cost, and time required to investigate and implement various elements in the pollution prevention plan.

vi. A statement of the Discharger's pollution prevention goals and strategies, including priorities for short-term and long-term action, and a description of the Discharger's intended pollution prevention activities for the immediate future.

vii. A description of the Discharger's existing pollution prevention programs.

viii. An analysis, to the extent feasible, of any adverse environmental impacts, including cross-media impacts or substitute chemicals that may result from the implementation of the pollution prevention program.

ix. An analysis, to the extent feasible, of the costs and benefits that may be incurred to implement the pollution prevention program.

b. **Salinity Evaluation and Minimization Plan.** An Evaluation and Minimization Plan for salinity is required in this Order only if surface water discharge data or groundwater monitoring data become available that indicates receiving water quality objectives for salinity are threatened to be exceeded. The Salinity Evaluation and Minimization Plan is not required at this time because the Discharger is a small, economically-disadvantaged community with infrequent discharges to surface water. Existing groundwater data for salinity is limited, but will be further investigated as required by the Monitoring and Reporting Program contained in this Order.

4. Construction, Operation, and Maintenance Specifications

a. **Pond Operating Requirements.** The operation and maintenance specifications for the treatment pond and evaporation/percolation ponds are necessary to protect the beneficial uses of the groundwater. The specifications included in this Order are retained from Order No. R5-2007-0098. In addition, reporting requirements related to use of the evaporation/percolation ponds are required to monitor their use and the potential impact on groundwater.

b. **Effluent Filtration.** The pressure sand filters have a hydraulic capacity of 400 gpm (0.576 mgd) whereas the hydraulic design flow of the Facility is 0.75 mgd. Therefore, when the pressure sand filters are being used to the maximum extent practicable, additional flow which bypasses the sand filters (to increase total flow to 0.75 mgd) will not be considered a violation of prohibition III.B. Additionally, in order to allow for complete effluent filtration of solids and to minimize solids loading to the receiving water and to satisfy antidegradation policies (as discussed in Section IV.D.4), the effluent filtration system shall be operated during periods of discharge to the maximum extent practicable.

5. **Special Provisions for Municipal Facilities (POTWs Only)**

a. Pretreatment Requirements – Not Applicable

b. The State Water Board issued General Waste Discharge Requirements for Sanitary Sewer Systems, Water Quality Order 2006-0003-DWQ (General Order) on May 2, 2006. The Monitoring and Reporting Requirements for the General Order were amended by Water Quality Order WQ 2008-0002-EXEC on February 20, 2008. The General Order requires public agencies that own or operate sanitary sewer systems with greater than one mile of pipes or sewer lines to enroll for coverage under the General Order. The General Order requires agencies to develop sanitary sewer management plans (SSMPs) and report all sanitary sewer overflows (SSOs), among other requirements and prohibitions.

Furthermore, the General Order contains requirements for operation and maintenance of collection systems and for reporting and mitigating sanitary sewer overflows. The Discharger is enrolled under the General Order.

6. **Other Special Provisions**

a. **Annual Operation of the Filter System.** Due to the historic infrequency of effluent discharge to surface water the filter and chlorination/dechlorination systems are rarely utilized. The filter and chlorination/dechlorination system must be operated annually prior to the wet season to assure that the filter system, as well as the chlorination/dechlorination system is operating properly in the event discharge from the Facility to South Fork Battle Creek is necessary. The operation of the filter and chlorination/dechlorination shall recycle the discharge back to the ponds and not result in a discharge to the receiving water.

b. **Prohibition Exception.** Prohibition III.E prohibits discharge of effluent to South Fork Battle Creek from April 16 to November 14. Exceptions may be granted by the Executive Officer provided (a) the discharge is necessary due to circumstances that could not have reasonably been foreseen; (b) the Discharger demonstrates that the potential impacts of non-discharge would be greater than discharge; (c) the Discharger has previously taken all reasonable steps to prevent the discharge and all required maintenance has been performed; and (d) the discharge will not result in the exceedance of any water quality objective in South Fork Battle Creek.

7. **Compliance Schedules – Not Applicable**

VII. RATIONALE FOR MONITORING AND REPORTING REQUIREMENTS

CWA section 308 and 40 C.F.R. sections 122.41(h), (j)-(l), 122.44(i), and 122.48 require~~s~~ that all NPDES permits specify monitoring and reporting requirements. Water Code sections 13267 and 13383 also authorize the Central Valley Water Board to establish monitoring, inspection, entry, reporting, and recordkeeping requirements. The Monitoring and Reporting Program (MRP), Attachment E of this Order~~,~~ establishes monitoring, reporting, and recordkeeping requirements that implement federal and state requirements. The following provides the rationale for the monitoring and reporting requirements contained in the MRP for this facility.

A. Influent Monitoring

1. Influent monitoring is required to collect data on the characteristics of the wastewater and to assess compliance with effluent limitations (e.g. flow, BOD_5 and TSS reduction requirements). The monitoring frequencies for BOD and TSS of once per week have been retained from Order No. R5-2007-0098 during discharge to South Fork Battle Creek. Since effluent monitoring at EFF-001 are not required during periods of no

discharge, the influent monitoring frequency for BOD_5 and TSS has been reduced to once per month during periods when the filter is not operated and no discharge to surface water is occurring.

B. Effluent Monitoring

1. Pursuant to the requirements of 40 CFR 122.44(i)(2) effluent monitoring is required for all constituents with effluent limitations. Effluent monitoring is necessary to assess compliance with effluent limitations, assess the effectiveness of the treatment process, and to assess the impacts of the discharge on the receiving stream and groundwater.

2. Effluent monitoring frequencies and sample types for flow, chlorine residual, BOD, TSS, electrical conductivity, total coliform organisms, ammonia, and chronic toxicity have been retained from Order No. R5-2007-0098 to determine compliance with effluent limitations for these parameters and/or to ensure that adequate data is available to determine RP for future permit renewals.

3. This Order establishes monthly monitoring for hardness to ensure that adequate data is available to properly adjust water quality criteria for hardness-based metals.

4. This Order establishes monthly monitoring for, chloride, sulfate, and TDS, to ensure that adequate data is available to determine RP for salinity.

5. In accordance with Section 1.3 of the SIP, effluent monitoring for priority pollutants for which criteria or objectives apply and for which no effluent limitations have been established has been changed from annually to once during the term of this Order. See Attachment E for more detailed requirements related to performing priority pollutant monitoring.

6. California Water Code section 13176, subdivision (a), states: "The analysis of any material required by [Water Code sections 13000-16104] shall be performed by a laboratory that has accreditation or certification pursuant to Article 3 (commencing with Section 100825) of Chapter 4 of Part 1 of Division 101 of the Health and Safety Code." The Department of Public Health certifies laboratories through its Environmental Laboratory Accreditation Program (ELAP).

   Section 13176 cannot be interpreted in a manner that would violate federal holding time requirements that apply to NPDES permits pursuant to the Clean Water Act. (Wat. Code §§ 13370, subd. (c), 13372, 13377.) Section 13176 is inapplicable to NPDES permits to the extent it is inconsistent with Clean Water Act requirements. (Wat. Code § 13372, subd. (a).) The holding time requirements are 15 minutes for chlorine residual, dissolved oxygen, and pH, and immediate analysis is required for temperature. (40 C.F.R. § 136.3(e), Table II).

C. Whole Effluent Toxicity Testing Requirements

1. **Acute Toxicity.** Annual 96-hour bioassay testing is required to demonstrate compliance with the effluent limitation for acute toxicity.

2. **Chronic Toxicity.** Chronic whole effluent toxicity testing is required once during the term of this Order to demonstrate compliance with the Basin Plan's narrative toxicity objective.

D. Receiving Water Monitoring

1. Surface Water

a. Receiving water monitoring is necessary to assess compliance with receiving water limitations and to assess the impacts of the discharge on the receiving stream.

2. Groundwater

a. Water Code section 13267 states, in part, "(a) A Regional Water Board, in establishing…waste discharge requirements… may investigate the quality of any waters of the state within its region" and "(b) (1) In conducting an investigation…, the Regional Water Board may require that any person who… discharges… waste…that could affect the quality of waters within its region shall furnish, under penalty of perjury, technical or monitoring program reports which the Regional Water Board requires. The burden, including costs, of these reports shall bear a reasonable relationship to the need for the report and the benefits to be obtained from the reports." The burden, including costs, of these reports shall bear a reasonable relationship to the need for the report and the benefits to be obtained from the reports. In requiring those reports, a Regional Water Board shall provide the person with a written explanation with regard to the need for the reports, and shall identify the evidence that supports requiring that person to provide the reports. The Monitoring and Reporting Program is issued pursuant to Water Code section 13267. The groundwater monitoring and reporting program required by this Order and the Monitoring and Reporting Program are necessary to assure compliance with these waste discharge requirements. The Discharger is responsible for the discharges of waste at the facility subject to this Order.

b. Monitoring of the groundwater must be conducted to determine if the discharge has caused an increase in constituent concentrations, when compared to background. The monitoring must, at a minimum, require a complete assessment of groundwater impacts including the vertical and lateral extent of degradation, an assessment of all wastewater-related constituents which may have migrated to groundwater, an analysis of whether additional or different methods of treatment or control of the discharge are necessary to provide best practicable treatment or control to comply with Resolution No. 68-16. Economic analysis is only one of many factors considered in determining best practicable treatment or control. If monitoring indicates that the discharge has incrementally increased constituent concentrations in groundwater above background, this permit may be reopened and modified. Until groundwater monitoring is sufficient, this Order contains Groundwater Limitations that allow groundwater quality to be degraded for certain constituents when compared to background groundwater quality, but not to exceed water quality objectives. If groundwater quality has been degraded by the discharge, the incremental change in pollutant concentration (when compared with background) may not be increased. If groundwater quality has been or may be degraded by the discharge, this Order may be reopened and specific numeric limitations established consistent with Resolution No. 68-16 and the Basin Plan.

c. This Order requires the Discharger to continue groundwater monitoring and includes a regular schedule of groundwater monitoring in the attached Monitoring and Reporting Program. The groundwater monitoring reports are necessary to evaluate impacts to waters of the State to assure protection of beneficial uses and compliance with Central Valley Water Board plans and policies, including Resolution No. 68-16. Evidence in the record includes effluent monitoring data that indicates the presence of constituents that may degrade groundwater and surface water.

E. Other Monitoring Requirements

1. Biosolids Monitoring

Biosolids monitoring is required to ensure compliance with the biosolids disposal requirements contained in the Special Provision contained in section VI.C.6.a. of this Order. Biosolids disposal requirements are imposed pursuant to 40 CFR Part 503 to protect public health and prevent groundwater degradation.

2. **Water Supply Monitoring**

Water supply monitoring is required to evaluate the source of constituents in the wastewater.

3. **Evaporation/Percolation Pond Monitoring**

Treatment pond monitoring is required to characterize the quality of the wastewater that will percolate to groundwater and to ensure no nuisance conditions.

4. **Effluent and Receiving Water Characterization Study**

An effluent and receiving water monitoring study is required to ensure adequate information is available for the next permit renewal. During the permit term, the Discharger is required to conduct three monitoring events of the effluent at Monitoring Location EFF-001 and of the receiving water at Monitoring Location RSW-001 for all priority pollutants and other constituents of concern as described in Attachment E.

VIII. PUBLIC PARTICIPATION

The Central Valley Water Board has considered the issuance of WDR's that will serve as an NPDES permit for the Facility. As a step in the WDR adoption process, the Central Valley Water Board staff has developed tentative WDR's and has encouraged public participation in the WDR adoption process.

A. Notification of Interested Parties

The Central Valley Water Board notified the Discharger and interested agencies and persons of its intent to prescribe WDR's for the discharge and provided an opportunity to submit written comments and recommendations. Notification was provided through physical posting, mailing, and internet posting.

B. Written Comments

The staff determinations are tentative. Interested persons were invited to submit written comments concerning tentative WDR's as provided through the notification process. Comments must be submitted either in person or by mail to the Executive Office at the Central Valley Water Board at the address above on the cover page of this Order.

To be fully responded to by staff and considered by the Central Valley Water Board, the written comments were due at the Central Valley Water Board office by 5:00 p.m. on **20 April 2015**.

C. Public Hearing

The Central Valley Water Board will hold a public hearing on the tentative WDR's during its regular Board meeting on the following date and time and at the following location:

Date:	4,5 June 2015
Time:	8:30 a.m.
Location:	Regional Water Quality Control Board, Central Valley Region 11020 Sun Center Dr., Suite #200 Rancho Cordova, CA 95670

Interested persons were invited to attend. At the public hearing, the Central Valley Water Board heard testimony pertinent to the discharge, WDR's, and permit. For accuracy of the record, important testimony was requested in writing.

D. Reconsideration of Waste Discharge Requirements

Any aggrieved person may petition the State Water Board to review the decision of the Central Valley Water Board regarding the final WDR's. The petition must be received by the State Water Board at the following address within 30 calendar days of the Central Valley Water Board's action:

State Water Resources Control Board
Office of Chief Counsel
P.O. Box 100, 1001 I Street
Sacramento, CA 95812-0100

For instructions on how to file a petition for review, see http://www.waterboards.ca.gov/public_notices/petitions/water_quality/wqpetition_instr.shtml

E. Information and Copying

The Report of Waste Discharge, other supporting documents, and comments received are on file and may be inspected at the address above at any time between 8:30 a.m. and 4:45 p.m., Monday through Friday. Copying of documents may be arranged through the Central Valley Water Board by calling (530) 224-4845.

F. Register of Interested Persons

Any person interested in being placed on the mailing list for information regarding the WDR's and NPDES permit should contact the Central Valley Water Board, reference this facility, and provide a name, address, and phone number.

G. Additional Information

Requests for additional information or questions regarding this order should be directed to Jeremy Pagan at (530) 224-4850.

ATTACHMENT G – SUMMARY OF REASONABLE POTENTIAL ANALYSIS FOR CONSTITUENTS OF CONCERN

Constituent	Units	MEC	B	C	CMC	CCC	Water & Org	Org. Only	Basin Plan	MCL	Reasonable Potential
Ammonia Nitrogen Total (as N)	mg/L	1.38	<0.48	2.14	2.14	4.81	--	--	--	--	No
Copper, Total Recoverable	µg/L	57.3	4.5	2.0	2.56[4]	2.0[4]	1300	NA	2.62[4]	1000[2]	No[5]
Dichlorobromomethane	µg/L	1.5	<0.1	0.56	--	--	0.56	46	--	80[1]	No[5]
Nitrate (as N)	mg/L	0.16	<0.11	--	--	--	--	--	--	10[1]	No
Thallium, Total Recoverable	µg/L	2.4	3	1.7	--	--	1.7	6.3	--	2[1]	No
Zinc, Total Recoverable	µg/L	11.6	<0.8	7.8	26[4]	26[4]	--	--	7.8[4]	5000[2]	No[5]
Lead	µg/L	0.2 J	<1.4	0.45	11.5	0.45	--	--	--	15[1]	No
Silver	µg/L	<1.1	<1.1	0.27	0.27	--	--	--	10.0	100[2]	No
Nickel	µg/L	1.6	1.2 J	14	130	14	610	4,600	--	100[1]	No
Mercury	µg/L	0.0114	0.00129	0.05	1.4	0.77	0.05	0.051	--	2[1]	No

General Note: All inorganic concentrations are given as a total recoverable.
MEC = Maximum Effluent Concentration
B = Maximum Receiving Water Concentration or lowest detection level, if non-detect
C = Criterion used for Reasonable Potential Analysis
CMC = Criterion Maximum Concentration (CTR or NTR)
CCC = Criterion Continuous Concentration (CTR or NTR)
Water & Org = Human Health Criterion for Consumption of Water & Organisms (CTR or NTR)
Org. Only = Human Health Criterion for Consumption of Organisms Only (CTR or NTR)
Basin Plan = Numeric Site-specific Basin Plan Water Quality Objective
MCL = Drinking Water Standards Maximum Contaminant Level
NA = Not Available
ND = Non-detect

Footnotes:
(1) Primary MCL
(2) Secondary MCL
(3) NAWQC-Most stringent, potentially applicable chronic aquatic life objective
(4) Based on downstream ambient receiving water hardness of 16.5 mg/L.
(5) While the MEC does exceed the applicable criteria, sampling results from the simulated discharge events are not representative and therefore reasonable potential cannot be established. See Fact Sheet IV.C.3.b.

ATTACHMENT H – CALCULATION OF WQBELS – NOT APPLICABLE

APPENDIX B

ORDINANCE NO. 1911

AN ORDINANCE AMENDING SECTION 2.1 OF TEHAMA COUNTY SANITATION DISTRICT No. 1 ORDINANCE No. 15 RELATING TO THE ANNUAL SERVICE CHARGE SCHEDULE.

THE BOARD OF DIRECTORS OF THE TEHAMA COUNTY SANITATION DISTRICT No. 1 ORDAINS AS FOLLOWS:

SECTION 1. Section 2.1 of the Tehama County Sanitation District No. 1 Ordinance 15 is hereby amended to read as follows:

SECTION 2.1: FEE SCHEDULE. Pursuant to Health and Safety Code Section 5471, annual fees and charges shall be collected from users inside and outside of the District for services and facilities furnished by it. Service charges shall be as shown on the Service Charge Schedule below.

ANNUAL SERVICE CHARGE SCHEDULE

TYPE OF USES	HOUSEHOLD EQUIVALENT	ANNUAL SERVICE CHARGE
Single Family Dwelling (including Trailers)	1	$516.00
Motels, Lodging, Each Room:		
*Toilet with sink	0.3	$154.80
*Bath/Shower	0.1	$51.60
Service Stations, Garages:		
*Each Public toilet with sink	0.4	$206.40
*Each wash rack	0.2	$103.20
*Each additional sink	0.3	$154.80
RV-Trailer Parks:		
*Each site with sewer hookup	0.4	$206.40
*Bathhouse:		
-each toilet with sink	0.3	$154.80
-each bath/shower	0.2	$103.20
*Laundry	1	$516.00
*Sanitary Dump Station	1.3	$670.80
Tavern, Restaurant:		
*Each toilet with sink	0.4	$206.40
*Each private toilet with sink	1	$516.00
*Each additional sink	0.3	$154.80

Stores and Shops:		
*Each public toilet with sink	0.4	$206.40
*Each private toilet with sink	0.3	$154.80
*Each additional sink	0.3	$154.80
Schools, Each toilet (includes sink)	1	$516.00
Out of District Users:		
*Battle Creek Campground (USFS)	4.5	$2,322.00
*CalTrans Maintenance Station	4	$2,064.00
*Church Camp (Assemblies of God)	10.2	$5,263.20
*Lassen Volcanic National Park	32.5	$16,770.00

SECTION 2. Section 1 of this Ordinance shall become operative on and after January 1, 2009.

SECTION 3. This Ordinance shall take effect thirty (30) days from the date of its adoption, and prior to the expiration of fifteen (15) days from the adoption thereof shall be published at least one time in the Red Bluff Daily News, a newspaper of general circulation in Tehama County.

The above and foregoing Ordinance was duly passed and adopted by the Board of Directors of Tehama County Sanitation District No. 1; County of Tehama, State of California, at a regular session of said Board on the 9th day of Sept., 2008, by the following vote:

AYES: Supervisor Avilla, Warner, Willard, Russell and Williams

NOES: None

ABSENT OF NOT VOTING: None

STATE OF CALIFORNIA)
)ss
COUNTY OF TEHAMA)

Chairman

ATTEST: September 11, 2008

BEVERLY ROSS, County Clerk and ex-officio Clerk of the Board of Directors of the County of Tehama, State of California.

By
Deputy

APPENDIX C

TEHAMA COUNTY SANITATION DISTRICT #1
ORDINANCE #15

AN ORDINANCE SUPERSEDING ALL PREVIOUS ORDINANCES AND PRESCRIBING REGULATIONS, USER FEES, AND INSTALLATION FEES

The Board of Directors of the Tehama County Sanitation District #1 ordains as follows:

ARTICLE 1: Tehama County Sanitation District #1 Ordinances #1 through #14 are hereby superseded and repealed.

ARTICLE 2: An ordinance prescribing regulations, user fees, and installation fees for Tehama County Sanitation District #1 is hereby enacted and shall read as follows:

CHAPTER 1
GENERAL RULES AND REGULATIONS

Section 1.1: DEFINITIONS. Unless the context specifically indicates otherwise, the meaning of terms used in this ordinance shall be as follows:

"District Board of Directors" - shall mean the Tehama County Board of Supervisors acting on behalf of the District.

"Building sewer" - shall mean the extension from the building to the clean-out at the property line and is maintained by the property owner.

"Easement" - shall mean an acquired legal right for the specific use of land owned by others.

"Floatable oil" - is oil, fat, or grease in a physical state such that it will separate by gravity from wastewater by treatment in an approved pretreatment facility. A wastewater shall be considered free of floatable fat if it is properly pretreated and the wastewater does not interfere with the collection system.

"Garbage" - shall mean the animal and vegetable waste resulting from the handling, preparation, cooking and serving of foods.

"Household Equivalent (H.E.)" - Term of measurement used to quantify water discharged to the system by each user. One H.E. equals 200 gallons per day, the amount of water discharged by the design household (single-family residential dwelling).

"Industrial wastes" - shall mean the wastewater from industrial processes, trade, or business as distinct from domestic or sanitary wastes.

"Lateral" - that segment of the sewer service pipe from the main line to the clean out at the property line.

"May" - is permissive (see "Shall").

"Natural outlet" - shall mean any outlet, including storm sewers and combined sewer overflows, into a watercourse, pond, ditch, lake or other body of surface or groundwater.

"May" - is permissive (see "Shall").

"Person" - shall mean any individual, firm, company, association, society, corporation, or group.

"PH" - shall mean the logarithm (base 10) of the reciprocal of the hydrogen-ion activity. The concentration is the weight of hydrogen-ions, in grams, per liter of solution. Neutral water, for example, has a pH value of 7 and a hydrogen-ion concentration of 10 (to the -7 power).

"Properly shredded garbage" - shall mean the wastes from the preparation, cooking, and dispensing of food that have been shredded to such a degree that all particles will be carried freely under the flow conditions normally prevailing in public sewers, with no particle greater than ½ inch (1.27 centimeters) in any dimension.

"Public sewer" - shall mean a common sewer controlled by a governmental agency or public utility.

"Sanitary sewer" - shall mean a sewer that carried liquid and water-carried wastes from residences, commercial buildings, industrial plants, and institutions together with minor quantities of ground, storm and surface waters that are not admitted intentionally.

"Sewage" - is the spent water of a community. The preferred term is "wastewater".

"Sewer" - shall mean a pipe or conduit that carries wastewater.

"Shall" - is mandatory (see "May").

"Slug" - shall mean any discharge of water or wastewater which in concentration of any given constituent or in quantity of flow exceeds for any period of duration longer than fifteen (15) minutes more than five (5) times the average twenty-four (24) hour concentration or flows during normal operation and shall adversely affect the collection system and/or performance of the wastewater treatment works.

"Storm drain" - shall mean a drain or pipeline for conveying water, groundwater, subsurface water, or unpolluted water from any source.

"Suspended solids" - shall mean total suspended matter that either floats on the surface of, or is in suspension in, water, wastewater, or other liquids, and that is removable by laboratory filtering as prescribed in "Standard Methods for the Examination of Water and Wastewater" and referred to as nonfilterable residue.

"Unpolluted water" - is water of quality equal to or better than the effluent criteria in effect or water that would not cause violation of receiving water quality standards and would not be benefitted by discharge to the sanitary sewers and wastewater treatment facilities provided.

"Wastewater" - shall mean the spent water of a community. From the standpoint of source, it may be a combination of the liquid and water-carried wastes from residences, commercial buildings, industrial plants, and institutions, together with any ground-water, surface water, and storm water that may be present.

"Wastewater facilities" - shall mean the structures, equipment, and processes required to collect, carry away, and treat domestic and industrial wastes and dispose of the effluent.

"Wastewater treatment works" - shall mean an arrangement of devices and structures for treating wastewater, industrial wastes, and sludge. Sometimes used as synonymous with "waste treatment plant' or "wastewater treatment plant" or "water pollution control plant".

"Watercourse" - shall mean a natural or artificial channel for the passage of water, either continuously or intermittently.

Section 1.2: GENERAL. Unless otherwise determined by the Board of Directors, all wastewater disposal services provided by Tehama County Sanitation District #1 shall be made in accordance with these rules and regulations. Fees and charges noted herein shall be fixed and collected by the District to recover, in whole or in part, the cost of rendering a wastewater disposal service. The revenue obtained thereby is in addition to revenue obtained by the levy of taxes assessed for debt incurred to improve the wastewater facilities. Failure to comply with any provision of this ordinance may result in penalties or liens, as provided herein.

Section 1.3: BOUNDARIES. The boundaries of the Tehama County Sanitation District are as follows:

All that real property situate in the County of Tehama, State of California, being a portion of Section 25, Township 29 North, Range 3 East, M.D.M., and more particularly shown on that certain map entitled "Proposed Boundaries of Tehama County Sanitation District No. 1, Assessment District No. 1995-1, Tehama County, California". Said Map was filed August 8, 1995 in Book 1 of Maps of Assessment Districts at Page 46 in the office of the County Recorder of the County of Tehama, State of California.

Section 1.4: APPLICATION FOR SERVICE. Application for a building sewer connection permit and wastewater disposal service shall be made in writing on a form available at the District Office. The application shall include required application fees. No applicant will be denied service on the grounds of race, color, national origin or sex.

Section 1.6: TENANTS. Upon the written request of the property owner, bills may be addressed to tenants for payment. The property owner remains responsible for payment of the bill.

Section 1.7: DAMAGE TO DISTRICT - OWNED EQUIPMENT. The cost to repair any damage occurring to pipes or other District equipment or property caused by a tenant or property owner, shall be charged to the property owner and is due and payable upon presentation by the District to the property owner or tenant of a bill therefor.

Section 1.8: EXTENSION OF SERVICE. Extensions of service to individuals, subdivisions, groups, or a community of users, shall be constructed at the sole expense of the person or entity applying for the extension, and shall meet or exceed minimum standards of design and construction of facilities, as outlined in the Tehama County Land Division Standards, and as required by the District Board of Directors. Plans and specifications shall be submitted to and approved by the District before any construction commences. Construction shall be done by a licensed contractor and construction shall be inspected and approved by the District. Upon completion of the installation, appropriate easements or rights of way shall be conveyed to the District. An agreement shall be executed by the applicant, guaranteeing to the District all the construction for a period of one (1) year after the construction is accepted by the District, against defective design, defective material and faulty workmanship. The agreement shall require a bond in the amount of one-hundred percent (100%) of the estimated construction cost of the work done. The bond requirement may be waived by the District for minor extensions as defined by the District.

CHAPTER 2
USER FEES AND CHARGES

Section 2.1: FEE SCHEDULE. Pursuant to Health and Safety Code Section 5471, annual fees and charges shall be collected from users inside and outside of the District for services and facilities furnished by it. Service charges shall be as shown on the Service Charge Schedule below.

ANNUAL SERVICE CHARGE SCHEDULE

TYPE OF USE	HOUSEHOLD EQUIVALENT	ANNUAL SERVICE CHARGE
Single Family Dwelling (including Trailers)	1	$260.00
Motels, Lodging, each Room:		
*Toilet with sink	0.3	$78.00
*Bath/Shower	0.1	$26.00
Service Stations, Garages:		
*Each public toilet with sink	0.4	$104.00
*Each wash rack	0.2	$52.00
*Each additional sink	0.3	$78.00
RV-Trailer Parks:		
*Each site with sewer hookup	0.4	$104.00
*Bathhouse:		
-each toilet with sink	0.3	$78.00
-each bath/shower	0.2	$52.00
*Laundry	1	$260.00
*Sanitary Dump Station	1.3	$338.00
Tavern, Restaurant:		
*Each toilet with sink	0.4	$104.00
*Kitchen sink	1	$260.00
*Each additional sink	0.3	$78.00
Stores and Shops:		
*Each public toilet with sink	0.4	$104.00
*Each private toilet with sink	0.3	$78.00
*Each additional sink	0.3	$78.00
Schools, each toilet (includes sink)	1	$260.00
Out of District Users:		
*Battle Creek Campground (USFS)	4.5	$1,170.00
*CalTrans Maintenance Station	4	$1,040.00
*Church Camp (Assemblies of God)	10.2	$2,652.00
*Lassen Volcanic National Park	32.5	$8,450.00

Section 2:2: BILLING. All service charges for wastewater disposal services shall be based upon Household Equivalents (H.E.) and shall be collected in advance, per Government Code Section 54347, not less than twice a year, by the District or its authorized representative on the bills provided therefore, along with any other applicable fees or penalties.

Bills are due and payable within thirty (30) days after the billing date. An initial penalty of ten percent (10%) plus twelve percent (12%) per annum may be charged if the bill is not paid within the due date. Unpaid fees for wastewater disposal service will be collected in accordance with the provisions of Government Code Section 25210.77f except that where reference is made to the Board of Supervisors it shall mean the Board of Directors of Tehama County Sanitation District #1.

Section 2.2.1: WAIVER OF USER FEES. Any request by users to waive the annual fee or portion thereof will be considered by the Board on a case-by-case basis.

Section 2.3: CONNECTION FEE. Pursuant to Health and Safety Code Section 5474, the original building sewer connection permit and inspection fee for any type of facility shall have a fee of Two Hundred Dollars ($200.00) and includes one inspection. Such fee shall be collected prior to establishing a hookup with the District System. The fee is used to cover the inspection of the connection and other administrative expenses in setting up the new account. Additional inspections will be at actual cost. The term of the installation and the permit will be void two years after issuance. The connection fee will be returned less a Twenty-five Dollar ($25.00) fee for handling and processing should the permit be voided. Installation permits will be issued to only One (1) party for One (1) property on which a building permit or mobile home permit has been applied for with the Tehama County Building Department.

Section 2.4: EXCESS FLOW FEES. Any User who causes or allows discharges in excess of normal flows, as determined by the District, typical for the type of use served shall bear the costs for such excess flows. The costs for such excess flow shall be based on the number of H.E. and the User shall pay the current established H.E. rate per year per H.E. in addition to the user fee described in the Service Charge Schedule.

Lateral cleanouts provide the District the opportunity to check for excessive flow into the collection system. Infiltration leakage of 500 gallons per day, per inch in building sewer diameter, per mile of building sewer will be allowed. Infiltration leakage above these limits is considered excessive and users shall be penalized with a higher user fee. Therefore, based on leakage tests performed in conformance with District Standards, the user fee shall be increased at the rate of one H.E. For up to 200 g.p.d., two H.E. for up to 400 g.p.d., and so on, of building sewer infiltration leakage in excess of the allowed limits, with a maximum user fee of five times the normal rate based on the number of H.E. connected. The excess flow fees shall apply for a full year. At the end of one year, and upon correction of the excessive flow, the District will, if appropriate, adjust the rate back to the regular fee. If no corrections are made the higher user fee will continue for an additional year.

Section 2.5: ASSESSMENT # 1984-1. Upon application for connection, multiple lots that received one assessment from the Central Mineral Project Assessment District # 1984-1 shall pay, in cash, an amount equal to the additional assessment which was not previously imposed as a special connection charge for each additional lateral connection.

Section 2.6: ASSESSMENT # 1995-1. Upon application for connection, multiple lots that received one assessment from the Mineral Sewer Improvement Project Assessment District # 1995-1 shall pay, in cash, an amount equal to the additional assessment which was not previously imposed, as a special connection charge for each additional lateral connection.

Section 2.7: OUT OF DISTRICT FEES. New connections or increased H.E. made by out of district users will be considered by the Board on a case-by-case basis and all out of district usage will be reviewed periodically. The annual service charge will be based on H.E. in the same manner as District residents. If the District experiences capacity problems, new out of district users or increased H.E. of current out or district users may be prohibited. Additional capacity charges may be assessed to these users.

CHAPTER 3

DISTRICT SEWAGE DISPOSAL SYSTEMS

Section 3.1: INDIVIDUAL SEWAGE DISPOSAL SYSTEMS. The District collection System and Treatment Works are the only approved sewage disposal systems. Septic Tanks and Leach Fields are not allowed to exist within the District Boundaries. It shall be unlawful to construct or maintain any privy, privy vault, septic tank, cesspool, or other facility intended or used for the disposal of wastewater within the District boundaries. All land uses that generate sewage shall connect to the Tehama County Sanitation District #1 Sewerage System, and all septic tank and leach field systems shall be properly abandoned.

CHAPTER 4

WASTEWATER SEWAGE DISPOSAL SERVICE

Section 4.1: MANDATORY USE OF PUBLIC SEWERS.

a. It shall be unlawful for any person to place, deposit, or permit to be deposited in any insanitary manner on public or private property within the District or in any area under the jurisdiction of the District, any human or animal excrement, garbage or objectionable waste.

b. It shall be unlawful to discharge to any natural outlet within the District which provides sewage disposal services or in any area under the jurisdiction of said District, any wastewater or other polluted waters.

c. The owner(s) of all houses, buildings, or properties used for human occupancy, employment, recreation, or other purposes situated within the District which provides sewage disposal services and abutting on any street, alley or right of way in which there is now located or may in the future be located a public sanitary sewer of the District, is hereby required at the owner's expense to connect such buildings directly to the proper public sewer in accordance with the provisions of this Ordinance, within ninety (90) days after the date of official notice to do so. The District may authorize an extension of this deadline where justified.

d. No statement contained in this article shall be construed to interfere with any additional requirements that may be imposed by the health officer.

Section 4.2: BUILDING SEWERS AND CONNECTIONS.

a. No unauthorized person(s) shall uncover, make any connections with or opening into, use, alter, or disturb any public sewer or appurtenance thereof in the District without first obtaining a written permit from the District.

b. To obtain a building sewer connection permit, the owner(s) or owner's agent shall make application on a special form furnished by the District. The permit application shall be supplemented by any plans, specifications, or other information considered pertinent in the judgment of the District. A connection fee, as set by Section 2.3, for building sewer connection permit shall be paid to the District at the time the application is filed.

c. All costs and expenses incidental to the installation and connection of the building sewer shall be borne by the owner(s). The owner(s) shall indemnify the District from any loss or damage that may directly or indirectly be occasioned by the installation of the building sewer.

d. A separate and independent building sewer shall be provided for every facility to be served; except where otherwise permitted by the District.

e. Old building sewers may be used in connection with new buildings only when they are found, on examination and test by the District, to meet all requirements of this Ordinance.

f. The size, slope, alignment, materials of construction of a building sewer, and the methods to be used in excavating, placing of the pipe, jointing, testing, and backfilling the trench, shall all conform to the requirements of the Building and Plumbing Code or other applicable rules and regulations of the District and the County. In the absence of code provisions or in amplification thereof, the materials and procedures set forth in appropriate specifications of the ASTM and WPCF Manual of Practice #9, shall apply.

g. Whenever possible, the building sewer shall be brought to the building at an elevation below the basement floor. In all buildings in which any building drain is too low to permit gravity flow to the public sewer, sanitary sewage carried by such building drain shall be lifted by an approved means and discharged to the building sewer.

h. No person(s) shall make connection of roof downspouts, foundation drains, areaway drains, or other sources of surface runoff or groundwater to a building sewer which in turn is connected directly or indirectly to a public sanitary sewer unless such connection is approved by the District for purposes of disposal of polluted surface drainage.

i. The connection of the building sewer into the public sewer shall conform to the requirements of the Building and Plumbing Code or other applicable rules and regulations of the District and the County. All such connections shall be made gastight and watertight and verified by proper testing. Any deviation from the prescribed procedures and materials must be approved by the District before installation.

j. The applicant for the building sewer connection permit shall notify the District when the building sewer is ready for inspection and connection to the public sewer. The connection and testing shall be made under the supervision of the District or their representative. The building sewer shall be inspected prior to backfilling.

k. All excavations for building sewer installation shall be adequately guarded with reflective barricades so as to protect the public from hazard. Streets, sidewalks, parkways, and other public property disturbed in the course of the work shall be restored in a manner satisfactory to the District.

Section 4.3: LIMITATION ON USE OF THE PUBLIC SEWERS.

a. No person(s) shall discharge or cause to be discharged any of the following described waters or wastes to any sewers provided by the District:

(1) Any gasoline, benzene, naptha, fuel oil or other flammable or explosive liquid, solid or gas.

(2) Any waters containing toxic or poisonous solids, liquids, or gasses in sufficient quantity, either single or by interaction with other wastes, to injure or interfere with any waste treatment process, constitute a hazard to humans or animals, create a public nuisance, or create any hazard in the receiving waters of the wastewater treatment plant.

(3) Any waters or wastes having a pH lower than (5.5), or having any other corrosive property capable of causing damage or hazard to structures, equipment, and personnel of the wastewater works.

(4) Solid or viscous substances in quantities or of such size capable of causing obstruction to the flow in sewers, or other interference with the proper operation of the

wastewater facilities such as, but not limited to, ashes, bones, cinders, sand, mud, straw, shavings, metal, glass, rags, feathers, tar, plastics, wood, unground garbage, whole blood, paunch manure, hair, fleshings, entrails, paper dishes, cups, milk containers, etc., either whole or ground by garbage grinders.

(b) The following described substances, materials, waters, or waste shall be limited in discharges to sanitary sewer systems to concentrations or quantities which will not harm either the sewers, wastewater treatment process or equipment, will not have an adverse effect on the receiving stream, or will not otherwise endanger lives, limb, public property, or constitute a nuisance. The District may set limitations lower than the limitations established in the regulations below if in their opinion such more severe limitations are necessary to meet the above objectives. In forming their opinion as to the acceptability, the District will give consideration to such factors as the quantity of subject waste in relation to flows and velocities in the sewers, materials of construction of the sewers, the wastewater treatment process employed, capacity of the wastewater treatment plant, degree of treatability of the waste in the wastewater treatment plant, and other pertinent factors. The limitations or restrictions on materials or characteristics of waste or wastewaters discharged to the sanitary sewer which shall not be violated without approval of the District are as follows:

(1) Wastewater having a temperature higher than 150 degrees Fahrenheit (65 degrees Celsius).

(2) Wastewater containing more than 25 milligrams per liter of petroleum oil, non-biodegradable cutting oils, or product of mineral oil origin.

(3) Any garbage that has not been properly shredded. Garbage grinders may be connected to sanitary sewers from homes, motels, restaurants, catering establishments, or similar places where garbage originates from the preparation of food in kitchens for the purpose of consumption on the premises or when served by caterers.

(4) Any waters or wastes containing iron, chromium, copper, zinc, and similar objectionable or toxic substances to such degree that any such material received in the composite wastewater at the wastewater treatment works exceeds the limits established by the District for such materials.

(5) Any waters or wastes containing odor-producing substances exceeding limits which may be established by the District.

(6) Any radioactive wastes or isotopes of such half-life or concentration as may exceed limits established by the District in compliance with applicable state or federal regulations.

(7) Quantities of flow, concentrations, or both which constitute a "slug" as defined herein.

(8) Waters or wastes containing substances which are not amenable to treatment or reduction by the wastewater treatment processes employed, or are amenable to treatment only to such degree that the wastewater treatment plan effluent cannot meet the requirements of other agencies having jurisdiction over such discharge.

(9) Any water or wastes which, by interaction with other waters or wastes in the public sewer system, releases toxic gases, form suspended solids which interfere with the collection system, or create a condition deleterious to structures and treatment processes.

c. If any waters or wastes are discharged or are proposed to be discharged to the public sewers in the District, which waters contain the substances or possess the characteristics enumerated in Section 4.3, and which in the judgment of the District, may have a deleterious effect upon the wastewater facilities, processes, equipment, or receiving waters, or which otherwise create a hazard to life or constitute a public nuisance, the District may:

(1) Reject the wastes,

(2) Require pretreatment to an acceptable condition for discharge to the public sewers,

(3) Require control over the quantities and rates of discharge, and/or

(4) Require payment to cover added costs of handling and treating the wastes not covered by existing sewer charges.

When considering the above alternatives, the District shall give consideration to the economic impact of each alternative on the discharger. If the District permits the pretreatment or equalization of waste flows, the design and installation of the plants and equipment shall be subject to the review and approval of the District.

d. Grease, oil, and sand interceptors shall be provided when, in the opinion of the District, they are necessary for the proper handling of liquid wastes containing floatable grease in excessive amounts, or any flammable wastes, sand, or other harmful ingredients; except that such interceptors shall not be required for private living quarters or dwelling units. All interceptors shall be of a type and capacity approved by the District, and shall be located so as to be readily and easily accessible for cleaning and inspection. In the maintaining of these interceptors the owner(s) shall be responsible for the proper removal and disposal by appropriate means of the captured material and shall maintain records of the dates and means of disposal for review by the District. Any removal and hauling of the collected materials not performed by owner(s) personnel, must be performed by currently licensed waste disposal firms.

e. Where pretreatment or flow-equalizing facilities are provided or required for any waters or wastes, they shall be maintained continuously in satisfactory and effective operation by the owner(s) at his expense.

f. The District may require a user of sewer services to provide information needed to determine compliance with this Ordinance. These requirements may include:

(1) Wastewaters discharge peak rate and volume over a specified time period.

(2) Chemical analyses of wastewaters.

(3) Information on raw materials, processes, and products affecting wastewater volume and quality.

(4) Quantity and disposition of specific liquid, sludge, oil, solvent, or other materials important to sewer use control.

(5) A plot plan of sewers on the user's property showing sewer and pretreatment facility location.

(6) Details of wastewater pretreatment facilities.

(7) Details of systems to prevent and control the losses of materials through spills to the District's sewer.

g. All measurements, tests and analyses of the characteristics of waters and wastes to which reference is made in this Ordinance shall be determined in accordance with the latest edition of "Standard Methods of the Examination of Water and Wastewater", published by the American Public Health Association. Sampling methods, location, times, durations, and frequencies are to be determined on an individual basis subject to approval by the District.

Section 4.4: DAMAGE TO WASTEWATER FACILITIES. No person(s) shall maliciously, willfully, or negligently break, damage, destroy, uncover, deface or tamper with any structure, appurtenance or equipment which is a part of the wastewater facilities. Any person(s) violating this provision shall be subject to immediate arrest under charge of disorderly conduct.

Section 4.5: POWERS AND AUTHORITY OF INSPECTORS.

a. Upon prior notification to the occupant the District's duly authorized representatives shall be permitted to enter all properties for the purposes of inspection, observation, measurement, sampling and testing pertinent to discharge to the District sewer system in accordance with the provisions of this Ordinance.

b. While performing the necessary work on private properties referred to in Subsection a, above, the District's duly authorized representatives shall observe all safety rules applicable to the premises established by the owner, and the owner shall be held harmless for injury or death to the District's employees or County employees, and the District shall indemnify the owner against loss or damage to its property by District's employees or County employees and against liability claims and demands for personal injury or property damage asserted against the owner and growing out of the gauging and sampling operation, except as such may be caused by negligence or failure of the owner to maintain safe conditions.

c. The District's duly authorized representatives shall be permitted to enter all private properties through which the District holds a duly negotiated easement for the purpose of, but not limited to, inspection, observation, measurement, sampling, repair, and maintenance of any portion of the wastewater facilities lying within said easement. All entry and subsequent work, if any, on said easement, shall be done in full accordance with the terms of the duly negotiated easement pertaining to the private property involved.

Section 4.6: PENALTIES.

a. Any person found to be violating any provision of this Ordinance shall be served by the District with written notice stating the nature of the violation and providing a reasonable time limit for the satisfactory correction thereof. The offender shall, within the period of time stated in such notice, permanently cease all violations.

b. Any person who shall continue any violation beyond the time limit provided for in this Ordinance, shall be guilty of a misdemeanor, and on conviction thereof shall be fined in the amount not exceeding Five Hundred ($500.00) Dollars for each violation. Each day in which any such violation shall continue shall be deemed a separate offense.

c. Any person violating any of the provisions of this Ordinance shall become liable to the District for any expense, loss, or damage incurred by the District by reason of such violation.

Section 4.7: VALIDITY.

a. The invalidity of any section, clause, sentence, or provision of this Ordinance shall not affect the validity of any other part of this Ordinance which can be given effect without such invalid part or parts.

ARTICLE 3: This ordinance shall become operative on and after July 1, 2001.

ARTICLE 4 This Ordinance shall take effect at the expiration of Thirty (30) days from and after its passing and, before taking effect, shall be published one (1) time in a newspaper of general circulation printed and published in said County of Tehama.

Passed and approved by the Board of Directors of the Tehama County Sanitation District #1, State of California, at their meeting of May 22, 2001, by the following vote:

AYES: Directors Willard, Borror, Russell, Turner and McIver

NOES: None

ABSENT OR NOT VOTING: None

Barbara G McIver

Chairman of the Board of Directors
Tehama County Sanitation District No. 1

ATTEST: May 22, 2001

MARY ALICE GEORGE, County Clerk and ex-officio Clerk of the Board of Directors of the County of Tehama, State of California.

By: Jennifer E. Burnett
Deputy

APPENDIX D

basic laboratory

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Report To: CALIF WATER RESOURCES CONTROL BOARD
364 KNOLLCREST DRIVE SUITE 205
REDDING, CA 96002

Attention: STACY GOTHAM

Project: GENERAL TESTING MINERAL WWTP

Lab No: 17B0676
Reported: 03/16/17
Phone: (530) 224-4993
P.O. #

General Chemistry

Analyte	Units	Results	Qualifier	MDL	RL	Method	Analyzed	Prepared	Batch
EFF-001 Water (17B0676-01)	**Sampled:02/14/17 13:15**		**Received:02/14/17 16:59 Temp (C): 5.1**						
Hardness	mg/l	**13**		3	5	SM 2340C	02/17/17	02/17/17	B7B1127
pH (see note 2)	pH Units	**7.06**				SM 4500-H+ B	02/15/17	02/15/17	B7B1028
Fluoride	mg/l	**0.03**	J	0.02	0.10	EPA 300.0	02/16/17	02/16/17	B7B1079
Sulfide	"	**0.018**	J	0.010	0.020	SM 4500-S2- D	02/21/17	02/21/17	B7B1209
Cyanide - Total	ug/l	ND		1.0	3.0	EPA 335.4	02/20/17	02/20/17	B7B1169
RSW-001 Water (17B0676-02)	**Sampled:02/14/17 14:30**		**Received:02/14/17 16:59 Temp (C): 7.2**						
Hardness	mg/l	**17**		3	5	SM 2340C	02/17/17	02/17/17	B7B1127
pH (see note 2)	pH Units	**7.32**				SM 4500-H+ B	02/15/17	02/15/17	B7B1028
Fluoride	mg/l	**0.04**	J	0.02	0.10	EPA 300.0	02/16/17	02/16/17	B7B1079
Sulfide	"	ND		0.010	0.020	SM 4500-S2- D	02/21/17	02/21/17	B7B1209
Cyanide - Total	ug/l	ND		1.0	3.0	EPA 335.4	02/20/17	02/20/17	B7B1169

Approved By

Basic Laboratory, Inc.
California ELAP Cert #1677 and #2718

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Report To: CALIF WATER RESOURCES CONTROL BOARD
364 KNOLLCREST DRIVE SUITE 205
REDDING, CA 96002

Attention: STACY GOTHAM
Project: GENERAL TESTING MINERAL WWTP

Metals - Total

Analyte	Units	Results	Qualifier	MDL	RL	Method	Analyzed	Prepared	Batch
EFF-001 Water (17B0676-01)	**Sampled:02/14/17 13:15**		**Received:02/14/17 16:59 Temp (C): 5.1**						
Aluminum	ug/l	388		1.5	5.0	EPA 200.8	02/17/17	02/16/17	B7B1101
Antimony	"	ND		0.2	0.5	"	"	"	"
Arsenic	"	ND		0.2	0.5	"	"	"	"
Barium	"	3.4		0.1	0.5	"	"	"	"
Beryllium	"	ND		0.1	0.5	"	"	"	"
Cadmium	"	ND		0.05	0.20	"	"	"	"
Chromium	"	0.5		0.1	0.5	"	"	"	"
Chromium, Hexavalent (CrVI)	"	0.053	J	0.020	0.100	EPA 218.6	02/17/17	02/17/17	B7B1137
Chromium, Trivalent	"	0.483	J	0.100	0.500	(CALC)	"	"	[CALC]
Copper	"	2.6		0.1	0.5	EPA 200.8	02/17/17	02/16/17	B7B1101
Lead	"	0.3	J	0.1	0.5	"	"	"	"
Mercury	"	ND		0.05	0.20	EPA 245.1	02/21/17	02/21/17	B7B1190
Molybdenum	"	ND		0.1	0.5	EPA 200.8	02/17/17	02/16/17	B7B1101
Nickel	"	0.5		0.2	0.5	"	"	"	"
Selenium	"	ND		0.4	2.0	"	"	"	"
Silver	"	ND		0.05	0.20	"	02/24/17	02/23/17	B7B1097
Sulfur	"	506		20	100	EPA 6010B	02/22/17	02/21/17	B7B1219
Thallium	"	ND		0.2	0.5	EPA 200.8	02/17/17	02/16/17	B7B1101
Zinc	"	5.1		0.6	2.0	"	"	"	"
RSW-001 Water (17B0676-02)	**Sampled:02/14/17 14:30**		**Received:02/14/17 16:59 Temp (C): 7.2**						
Aluminum	ug/l	288		1.5	5.0	EPA 200.8	02/17/17	02/16/17	B7B1101
Antimony	"	ND		0.2	0.5	"	"	"	"
Arsenic	"	ND		0.2	0.5	"	"	"	"
Barium	"	5.8		0.1	0.5	"	"	"	"
Beryllium	"	ND		0.1	0.5	"	"	"	"
Cadmium	"	ND		0.05	0.20	"	"	"	"
Chromium	"	0.6		0.1	0.5	"	"	"	"
Chromium, Hexavalent (CrVI)	"	0.138		0.020	0.100	EPA 218.6	02/17/17	02/17/17	B7B1137
Chromium, Trivalent	"	0.444	J	0.100	0.500	(CALC)	"	"	[CALC]
Copper	"	0.5		0.1	0.5	EPA 200.8	02/17/17	02/16/17	B7B1101
Lead	"	ND		0.1	0.5	"	"	"	"
Mercury	"	ND		0.05	0.20	EPA 245.1	02/21/17	02/21/17	B7B1190
Molybdenum	"	ND		0.1	0.5	EPA 200.8	02/17/17	02/16/17	B7B1101
Nickel	"	0.6		0.2	0.5	"	"	"	"
Selenium	"	ND		0.4	2.0	"	"	"	"
Silver	"	ND		0.05	0.20	"	02/24/17	02/23/17	B7B1097
Sulfur	"	474		20	100	EPA 6010B	02/22/17	02/21/17	B7B1219
Thallium	"	ND		0.2	0.5	EPA 200.8	02/17/17	02/16/17	B7B1101
Zinc	"	0.6	J	0.6	2.0	"	"	"	"

Approved By

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Report To: CALIF WATER RESOURCES CONTROL BOARD
364 KNOLLCREST DRIVE SUITE 205
REDDING, CA 96002
Attention: STACY GOTHAM
Project: GENERAL TESTING MINERAL WWTP

Lab No: 17B0676
Reported: 03/16/17
Phone: (530) 224-4993
P.O. #

Volatile Organic Compounds

Analyte	Units	Results	Qualifier	MDL	RL	Method	Analyzed	Prepared	Batch
EFF-001 Water (17B0676-01)	**Sampled:02/14/17 13:15**		**Received:02/14/17 16:59 Temp (C): 5.1**						
Acrolein	ug/l	ND		2.00	2.00	EPA 624	02/21/17	02/21/17	B7B1221
Acrylonitrile	"	ND		0.15	0.50	"	"	"	"
Benzene	"	ND		0.07	0.50	"	"	"	"
Bromodichloromethane	"	**0.23**	J	0.08	0.50	"	"	"	"
Bromoform	"	ND		0.05	0.50	"	"	"	"
Bromomethane	"	ND		0.10	0.50	"	"	"	"
Carbon tetrachloride	"	ND		0.05	0.50	"	"	"	"
Chlorobenzene	"	ND		0.06	0.50	"	"	"	"
Chloroethane	"	ND		0.09	0.50	"	"	"	"
2-Chloroethylvinyl ether	"	ND		0.11	0.50	"	"	"	"
Chloroform	"	**11.0**		0.07	0.50	"	"	"	"
Chloromethane	"	ND		0.12	0.50	"	"	"	"
Dibromochloromethane	"	ND		0.06	0.50	"	"	"	"
1,2-Dichlorobenzene (o-DCB)	"	ND		0.09	0.50	"	"	"	"
1,3-Dichlorobenzene (m-DCB)	"	ND		0.07	0.50	"	"	"	"
1,4-Dichlorobenzene (p-DCB)	"	ND		0.05	0.50	"	"	"	"
1,1-Dichloroethane (1,1-DCA)	"	ND		0.08	0.50	"	"	"	"
1,2-Dichloroethane (1,2-DCA)	"	ND		0.08	0.50	"	"	"	"
1,1-Dichloroethene (1,1-DCE)	"	ND		0.06	0.50	"	"	"	"
cis-1,2-Dichloroethene (c-1,2-DCE)	"	ND		0.06	0.50	"	"	"	"
trans-1,2-Dichloroethene (t-1,2-DCE)	"	ND		0.05	0.50	"	"	"	"
1,3-Dichloropropane	"	ND		0.07	0.50	"	"	"	"
1,1-Dichloropropene	"	ND		0.08	0.50	"	"	"	"
cis-1,3-Dichloropropene	"	ND		0.08	0.50	"	"	"	"
trans-1,3-Dichloropropene	"	ND		0.08	0.50	"	"	"	"
1,3-Dichloropropene (total)	"	ND		0.08	0.50	"	"	"	"
Dichloromethane (Methylene Chloride)	"	ND		0.29	0.50	"	"	"	"
1,2-Dichloropropane	"	ND		0.06	0.50	"	"	"	"
Ethylbenzene	"	ND		0.06	0.50	"	"	"	"
Methyl tert-Butyl Ether (MTBE)	"	ND		0.08	0.50	"	"	"	"
1,2-Dibromo-3-chloropropane (DBCP)	"	ND		0.07	0.50	"	"	"	"
1,2-Dibromoethane (EDB)	"	ND		0.05	0.50	"	"	"	"
Styrene	"	ND		0.05	0.50	"	"	"	"
1,1,2,2-Tetrachloroethane	"	ND		0.07	0.50	"	"	"	"
Tetrachloroethene (PCE)	"	ND		0.08	0.50	"	"	"	"
Toluene	"	ND		0.07	0.50	"	"	"	"
1,2,4-Trichlorobenzene	"	ND		0.07	0.50	"	"	"	"
1,1,1-Trichloroethane (1,1,1-TCA)	"	ND		0.09	0.50	"	"	"	"
1,1,2-Trichloroethane (1,1,2-TCA)	"	ND		0.07	0.50	"	"	"	"
Trichloroethene (TCE)	"	ND		0.09	0.50	"	"	"	"
Trichlorofluoromethane (Freon 11)	"	ND		0.06	0.50	"	"	"	"
Trichlorotrifluoroethane (Freon 113)	"	ND		0.11	0.50	"	"	"	"
Vinyl chloride	"	ND		0.10	0.50	"	"	"	"
m,p-Xylene	"	ND		0.11	1.00	"	"	"	"
o-Xylene	"	ND		0.05	0.50	"	"	"	"
Xylenes (total)	"	ND		0.11	1.00	"	"	"	"
Surrogate: 1,2-Dichloroethane-d4		*98.4 %*			*70-130*	"	"	"	"
Surrogate: Toluene-d8		*92.7 %*			*70-130*	"	"	"	"
Surrogate: 4-Bromofluorobenzene		*92.9 %*			*70-130*	"	"	"	"
RSW-001 Water (17B0676-02)	**Sampled:02/14/17 14:30**		**Received:02/14/17 16:59 Temp (C): 7.2**						
Acrolein	ug/l	ND		2.00	2.00	EPA 624	02/21/17	02/21/17	B7B1221
Acrylonitrile	"	ND		0.15	0.50	"	"	"	"

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Lab No: 17B0676
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Volatile Organic Compounds

Analyte	Units	Results	Qualifier	MDL	RL	Method	Analyzed	Prepared	Batch
RSW-001 Water (17B0676-02)	**Sampled:02/14/17 14:30**		**Received:02/14/17 16:59 Temp (C): 7.2**						
Benzene	"	ND		0.07	0.50	"	"	02/21/17	"
Bromodichloromethane	"	ND		0.08	0.50	"	"	"	"
Bromoform	"	ND		0.05	0.50	"	"	"	"
Bromomethane	"	ND		0.10	0.50	"	"	"	"
Carbon tetrachloride	"	ND		0.05	0.50	"	"	"	"
Chlorobenzene	"	ND		0.06	0.50	"	"	"	"
Chloroethane	"	ND		0.09	0.50	"	"	"	"
2-Chloroethylvinyl ether	"	ND		0.11	0.50	"	"	"	"
Chloroform	"	ND		0.07	0.50	"	"	"	"
Chloromethane	"	ND		0.12	0.50	"	"	"	"
Dibromochloromethane	"	ND		0.06	0.50	"	"	"	"
1,2-Dichlorobenzene (o-DCB)	"	ND		0.09	0.50	"	"	"	"
1,3-Dichlorobenzene (m-DCB)	"	ND		0.07	0.50	"	"	"	"
1,4-Dichlorobenzene (p-DCB)	"	ND		0.05	0.50	"	"	"	"
1,1-Dichloroethane (1,1-DCA)	"	ND		0.08	0.50	"	"	"	"
1,2-Dichloroethane (1,2-DCA)	"	ND		0.08	0.50	"	"	"	"
1,1-Dichloroethene (1,1-DCE)	"	ND		0.06	0.50	"	"	"	"
cis-1,2-Dichloroethene (c-1,2-DCE)	"	ND		0.06	0.50	"	"	"	"
trans-1,2-Dichloroethene (t-1,2-DCE)	"	ND		0.05	0.50	"	"	"	"
1,3-Dichloropropane	"	ND		0.07	0.50	"	"	"	"
1,1-Dichloropropene	"	ND		0.08	0.50	"	"	"	"
cis-1,3-Dichloropropene	"	ND		0.08	0.50	"	"	"	"
trans-1,3-Dichloropropene	"	ND		0.08	0.50	"	"	"	"
1,3-Dichloropropene (total)	"	ND		0.08	0.50	"	"	"	"
Dichloromethane (Methylene Chloride)	"	ND		0.29	0.50	"	"	"	"
1,2-Dichloropropane	"	ND		0.06	0.50	"	"	"	"
Ethylbenzene	"	ND		0.06	0.50	"	"	"	"
Methyl tert-Butyl Ether (MTBE)	"	ND		0.08	0.50	"	"	"	"
1,2-Dibromo-3-chloropropane (DBCP)	"	ND		0.07	0.50	"	"	"	"
1,2-Dibromoethane (EDB)	"	ND		0.05	0.50	"	"	"	"
Styrene	"	ND		0.05	0.50	"	"	"	"
1,1,2,2-Tetrachloroethane	"	ND		0.07	0.50	"	"	"	"
Tetrachloroethene (PCE)	"	ND		0.08	0.50	"	"	"	"
Toluene	"	ND		0.07	0.50	"	"	"	"
1,2,4-Trichlorobenzene	"	ND		0.07	0.50	"	"	"	"
1,1,1-Trichloroethane (1,1,1-TCA)	"	ND		0.09	0.50	"	"	"	"
1,1,2-Trichloroethane (1,1,2-TCA)	"	ND		0.07	0.50	"	"	"	"
Trichloroethene (TCE)	"	ND		0.09	0.50	"	"	"	"
Trichlorofluoromethane (Freon 11)	"	ND		0.06	0.50	"	"	"	"
Trichlorotrifluoroethane (Freon 113)	"	ND		0.11	0.50	"	"	"	"
Vinyl chloride	"	ND		0.10	0.50	"	"	"	"
m,p-Xylene	"	ND		0.11	1.00	"	"	"	"
o-Xylene	"	ND		0.05	0.50	"	"	"	"
Xylenes (total)	"	ND		0.11	1.00	"	"	"	"
Surrogate: 1,2-Dichloroethane-d4		*99.0 %*			*70-130*	"	"	"	"
Surrogate: Toluene-d8		*98.9 %*			*70-130*	"	"	"	"
Surrogate: 4-Bromofluorobenzene		*92.4 %*			*70-130*	"	"	"	"
TRIP BLANK Blank (17B0676-03)	**Sampled:02/14/17 00:00**		**Received:02/14/17 16:59 Temp (C): 17.9**						
Acetone	ug/l	**1.79**	J	0.57	2.50	EPA 624	02/21/17	02/21/17	B7B1221
Acrolein	"	ND		2.00	2.00	"	"	"	"
Acrylonitrile	"	ND		0.15	0.50	"	"	"	"
tert-Amyl Methyl Ether (TAME)	"	ND		0.07	0.50	"	"	"	"

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Report To: CALIF WATER RESOURCES CONTROL BOARD
364 KNOLLCREST DRIVE SUITE 205
REDDING, CA 96002

Attention: STACY GOTHAM

Project: GENERAL TESTING MINERAL WWTP

Lab No: 17B0676
Reported: 03/16/17
Phone: (530) 224-4993
P.O. #

Volatile Organic Compounds

Analyte	Units	Results	Qualifier	MDL	RL	Method	Analyzed	Prepared	Batch
TRIP BLANK Blank (17B0676-03)	**Sampled:02/14/17 00:00**		**Received:02/14/17 16:59 Temp (C): 17.9**						
Benzene	"	ND		0.07	0.50	"	"	02/21/17	"
Bromochloromethane	"	ND		0.11	0.50	"	"	"	"
Bromodichloromethane	"	ND		0.08	0.50	"	"	"	"
Bromoform	"	ND		0.05	0.50	"	"	"	"
Bromomethane	"	ND		0.10	0.50	"	"	"	"
2-Butanone (MEK)	"	ND		0.40	2.50	"	"	"	"
tert-Butyl Alcohol (TBA)	"	ND		0.72	5.00	"	"	"	"
Carbon disulfide	"	ND		0.06	0.50	"	"	"	"
Carbon tetrachloride	"	ND		0.05	0.50	"	"	"	"
Chlorobenzene	"	ND		0.06	0.50	"	"	"	"
Chloroethane	"	ND		0.09	0.50	"	"	"	"
2-Chloroethylvinyl ether	"	ND		0.11	0.50	"	"	"	"
Chloroform	"	ND		0.07	0.50	"	"	"	"
Chloromethane	"	ND		0.12	0.50	"	"	"	"
Dibromochloromethane	"	ND		0.06	0.50	"	"	"	"
1,2-Dibromo-3-chloropropane (DBCP)	"	ND		0.14	0.50	"	"	"	"
1,2-Dibromoethane (EDB)	"	ND		0.07	0.50	"	"	"	"
Dibromomethane	"	ND		0.09	0.50	"	"	"	"
1,2-Dichlorobenzene (o-DCB)	"	ND		0.09	0.50	"	"	"	"
1,3-Dichlorobenzene (m-DCB)	"	ND		0.07	0.50	"	"	"	"
1,4-Dichlorobenzene (p-DCB)	"	ND		0.05	0.50	"	"	"	"
1,3-Dichloropropene (total)	"	ND		0.16	1.00	"	"	"	"
Dichlorodifluoromethane (CFC 12)	"	ND		0.09	0.50	"	"	"	"
1,1-Dichloroethane (1,1-DCA)	"	ND		0.08	0.50	"	"	"	"
1,2-Dichloroethane (1,2-DCA)	"	ND		0.08	0.50	"	"	"	"
1,1-Dichloroethene (1,1-DCE)	"	ND		0.06	0.50	"	"	"	"
cis-1,2-Dichloroethene (c-1,2-DCE)	"	ND		0.06	0.50	"	"	"	"
trans-1,2-Dichloroethene (t-1,2-DCE)	"	ND		0.05	0.50	"	"	"	"
Dichloromethane (Methylene Chloride)	"	ND		0.29	0.50	"	"	"	"
1,2-Dichloropropane	"	ND		0.06	0.50	"	"	"	"
1,3-Dichloropropane	"	ND		0.07	0.50	"	"	"	"
2,2-Dichloropropane	"	ND		0.10	0.50	"	"	"	"
1,1-Dichloropropene	"	ND		0.08	0.50	"	"	"	"
cis-1,3-Dichloropropene	"	ND		0.08	0.50	"	"	"	"
trans-1,3-Dichloropropene	"	ND		0.08	0.50	"	"	"	"
Di-Isopropyl Ether (DIPE)	"	ND		0.06	0.50	"	"	"	"
Ethylbenzene	"	ND		0.06	0.50	"	"	"	"
Ethyl tert-Butyl Ether (ETBE)	"	ND		0.06	0.50	"	"	"	"
2-Hexanone	"	ND		0.26	2.00	"	"	"	"
4-Methyl-2-pentanone (MIBK)	"	ND		0.14	1.00	"	"	"	"
Methyl tert-Butyl Ether (MTBE)	"	ND		0.08	0.50	"	"	"	"
Styrene	"	ND		0.05	0.50	"	"	"	"
1,1,1,2-Tetrachloroethane	"	ND		0.11	0.50	"	"	"	"
1,1,2,2-Tetrachloroethane	"	ND		0.07	0.50	"	"	"	"
Tetrachloroethene (PCE)	"	ND		0.08	0.50	"	"	"	"
Toluene	"	ND		0.07	0.50	"	"	"	"
1,2,4-Trichlorobenzene	"	ND		0.07	0.50	"	"	"	"
1,1,1-Trichloroethane (1,1,1-TCA)	"	ND		0.09	0.50	"	"	"	"
1,1,2-Trichloroethane (1,1,2-TCA)	"	ND		0.07	0.50	"	"	"	"
Trichloroethene (TCE)	"	ND		0.09	0.50	"	"	"	"
Trichlorofluoromethane (Freon 11)	"	ND		0.06	0.50	"	"	"	"
1,2,3-Trichloropropane	"	ND		0.09	0.50	"	"	"	"

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Report To: CALIF WATER RESOURCES CONTROL BOARD
364 KNOLLCREST DRIVE SUITE 205
REDDING, CA 96002
Attention: STACY GOTHAM
Project: GENERAL TESTING MINERAL WWTP

Lab No: 17B0676
Reported: 03/16/17
Phone: (530) 224-4993
P.O. #

Volatile Organic Compounds

Analyte	Units	Results	Qualifier	MDL	RL	Method	Analyzed	Prepared	Batch
TRIP BLANK Blank (17B0676-03)	**Sampled:02/14/17 00:00**		**Received:02/14/17 16:59 Temp (C): 17.9**						
Trichlorotrifluoroethane (Freon 113)	"	ND		0.11	0.50	"	"	02/21/17	"
1,2,4-Trimethylbenzene	"	ND		0.07	0.50	"	"	"	"
Vinyl chloride	"	ND		0.10	0.50	"	"	"	"
Xylenes (total)	"	ND		0.11	1.00	"	"	"	"
Surrogate: 1,2-Dichloroethane-d4		*97.9 %*		*70-130*		"	"	"	"
Surrogate: Toluene-d8		*99.8 %*		*70-130*		"	"	"	"
Surrogate: 4-Bromofluorobenzene		*95.2 %*		*70-130*		"	"	"	"

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Report To: CALIF WATER RESOURCES CONTROL BOARD
364 KNOLLCREST DRIVE SUITE 205
REDDING, CA 96002
Attention: STACY GOTHAM
Project: GENERAL TESTING MINERAL WWTP

Lab No: 17B0676
Reported: 03/16/17
Phone: (530) 224-4993
P.O. #

Semi Volatile Organic Compounds

Analyte	Units	Results	Qualifier	MDL	RL	Method	Analyzed	Prepared	Batch
EFF-001 Water (17B0676-01)	**Sampled:02/14/17 13:15**		**Received:02/14/17 16:59 Temp (C): 5.1**						
Acenaphthene	ug/l	ND		0.4	1.0	EPA 625	02/28/17	02/20/17	B7B1165
Acenaphthylene	"	ND		0.4	5.0	"	"	"	"
Anthracene	"	ND		0.4	5.0	"	"	"	"
Benzidine	"	ND		1.1	5.0	"	"	"	"
Benzo (a) anthracene	"	ND		0.4	5.0	"	"	"	"
Benzo (a) pyrene	"	ND		0.4	2.0	"	"	"	"
Benzo (b) fluoranthene	"	ND		0.2	5.0	"	"	"	"
Benzo (g,h,i) perylene	"	ND		0.3	5.0	"	"	"	"
Benzo (k) fluoranthene	"	ND		0.2	2.0	"	"	"	"
Bis(2-chloroethyl)ether	"	ND		0.4	1.0	"	"	"	"
Bis(2-chloroethoxy)methane	"	ND		0.4	5.0	"	"	"	"
Bis(2-chloroisopropyl)ether	"	ND		0.4	2.0	"	"	"	"
Bis(2-ethylhexyl)phthalate (DEHP)	"	ND		1.1	3.0	"	"	"	"
4-Bromophenyl phenyl ether	"	ND		0.5	5.0	"	"	"	"
Butyl benzyl phthalate	"	ND		0.5	5.0	"	"	"	"
4-Chloro-3-methylphenol	"	ND		0.3	1.0	"	"	"	"
2-Chloronaphthalene	"	ND		0.3	2.0	"	"	"	"
2-Chlorophenol	"	ND		0.5	5.0	"	"	"	"
4-Chlorophenyl phenyl ether	"	ND		0.4	5.0	"	"	"	"
Chrysene	"	ND		0.2	5.0	"	"	"	"
Dibenz (a,h) anthracene	"	ND		0.05	0.1	"	"	"	"
3,3´-Dichlorobenzidine	"	ND		0.4	5.0	"	"	"	"
2,4-Dichlorophenol	"	ND		0.3	2.0	"	"	"	"
Diethyl phthalate	"	ND		0.6	2.0	"	"	"	"
2,4-Dimethylphenol	"	ND		0.2	2.0	"	"	"	"
Dimethyl phthalate	"	ND		0.6	5.0	"	"	"	"
Di-n-butyl phthalate	"	**2.5**	J	1.4	5.0	"	"	"	"
Di-n-octyl phthalate	"	ND		0.4	5.0	"	"	"	"
4,6-Dinitro-2-methylphenol	"	ND		0.4	5.0	"	"	"	"
2,4-Dinitrophenol	"	ND		0.7	3.0	"	"	"	"
2,4-Dinitrotoluene	"	ND		0.4	3.0	"	"	"	"
2,6-Dinitrotoluene	"	ND		0.5	5.0	"	"	"	"
1,2-Diphenylhydrazine	"	ND		0.5	1.0	"	"	"	"
Fluoranthene	"	ND		0.3	1.0	"	"	"	"
Fluorene	"	ND		0.4	5.0	"	"	"	"
Hexachlorobenzene	"	ND		0.5	1.0	"	"	"	"
Hexachlorobutadiene	"	ND		0.3	1.0	"	"	"	"
Hexachlorocyclopentadiene	"	ND		0.7	1.0	"	"	"	"
Indeno (1,2,3-cd) pyrene	"	ND		0.04	0.05	"	"	"	"
Hexachloroethane	"	ND		0.3	1.0	"	"	"	"
Isophorone	"	ND		0.8	1.0	"	"	"	"
Naphthalene	"	ND		0.4	1.0	"	"	"	"
Nitrobenzene	"	ND		0.4	1.0	"	"	"	"
2-Nitrophenol	"	ND		0.4	5.0	"	"	"	"
4-Nitrophenol	"	ND		0.6	5.0	"	"	"	"
N-Nitrosodi-n-propylamine	"	ND		0.9	5.0	"	"	"	"
N-Nitrosodimethylamine	"	ND		0.2	2.0	"	"	"	"
N-Nitrosodiphenylamine	"	ND		0.4	1.0	"	"	"	"
Pentachlorophenol (PCP)	"	ND		0.4	1.0	"	"	"	"
Phenanthrene	"	ND		0.4	5.0	"	"	"	"
Phenol	"	ND		0.2	1.0	"	"	"	"
Pyrene	"	ND		0.2	5.0	"	"	"	"

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Semi Volatile Organic Compounds

Analyte	Units	Results	Qualifier	MDL	RL	Method	Analyzed	Prepared	Batch
EFF-001 Water (17B0676-01)	**Sampled:02/14/17 13:15**		**Received:02/14/17 16:59 Temp (C): 5.1**						
2,4,6-Trichlorophenol	"	ND		0.3	5.0	"	"	02/20/17	"
Surrogate: 2-Fluorophenol		*23.7 %*		*7.96-71.8*		"	"	"	"
Surrogate: Phenol-d5		*16.6 %*		*7.56-52.1*		"	"	"	"
Surrogate: 2,4,6-Tribromophenol		*56.5 %*		*28.5-126*		"	"	"	"
Surrogate: Nitrobenzene-d5		*45.8 %*		*16.4-104*		"	"	"	"
Surrogate: 2-Fluorobiphenyl		*46.1 %*		*22.1-108*		"	"	"	"
Surrogate: Terphenyl-d14		*76.4 %*		*21-147*		"	"	"	"
RSW-001 Water (17B0676-02)	**Sampled:02/14/17 14:30**		**Received:02/14/17 16:59 Temp (C): 7.2**						
Acenaphthene	ug/l	ND		0.4	1.0	EPA 625	02/28/17	02/20/17	B7B1165
Acenaphthylene	"	ND		0.4	5.0	"	"	"	"
Anthracene	"	ND		0.4	5.0	"	"	"	"
Benzidine	"	ND		1.1	5.0	"	"	"	"
Benzo (a) anthracene	"	ND		0.4	5.0	"	"	"	"
Benzo (a) pyrene	"	ND		0.4	2.0	"	"	"	"
Benzo (b) fluoranthene	"	ND		0.2	5.0	"	"	"	"
Benzo (g,h,i) perylene	"	ND		0.3	5.0	"	"	"	"
Benzo (k) fluoranthene	"	ND		0.2	2.0	"	"	"	"
Bis(2-chloroethyl)ether	"	ND		0.4	1.0	"	"	"	"
Bis(2-chloroethoxy)methane	"	ND		0.4	5.0	"	"	"	"
Bis(2-chloroisopropyl)ether	"	ND		0.4	2.0	"	"	"	"
Bis(2-ethylhexyl)phthalate (DEHP)	"	ND		1.1	3.0	"	"	"	"
4-Bromophenyl phenyl ether	"	ND		0.5	5.0	"	"	"	"
Butyl benzyl phthalate	"	ND		0.5	5.0	"	"	"	"
4-Chloro-3-methylphenol	"	ND		0.3	1.0	"	"	"	"
2-Chloronaphthalene	"	ND		0.3	2.0	"	"	"	"
2-Chlorophenol	"	ND		0.5	5.0	"	"	"	"
4-Chlorophenyl phenyl ether	"	ND		0.4	5.0	"	"	"	"
Chrysene	"	ND		0.2	5.0	"	"	"	"
Dibenz (a,h) anthracene	"	ND		0.05	0.1	"	"	"	"
3,3´-Dichlorobenzidine	"	ND		0.4	5.0	"	"	"	"
2,4-Dichlorophenol	"	ND		0.3	2.0	"	"	"	"
Diethyl phthalate	"	ND		0.6	2.0	"	"	"	"
2,4-Dimethylphenol	"	ND		0.2	2.0	"	"	"	"
Dimethyl phthalate	"	ND		0.6	5.0	"	"	"	"
Di-n-butyl phthalate	"	**3.2**	J	1.4	5.0	"	"	"	"
Di-n-octyl phthalate	"	ND		0.4	5.0	"	"	"	"
4,6-Dinitro-2-methylphenol	"	ND		0.4	5.0	"	"	"	"
2,4-Dinitrophenol	"	ND		0.7	3.0	"	"	"	"
2,4-Dinitrotoluene	"	ND		0.4	3.0	"	"	"	"
2,6-Dinitrotoluene	"	ND		0.5	5.0	"	"	"	"
1,2-Diphenylhydrazine	"	ND		0.5	1.0	"	"	"	"
Fluoranthene	"	ND		0.3	1.0	"	"	"	"
Fluorene	"	ND		0.4	5.0	"	"	"	"
Hexachlorobenzene	"	ND		0.5	1.0	"	"	"	"
Hexachlorobutadiene	"	ND		0.3	1.0	"	"	"	"
Hexachlorocyclopentadiene	"	ND		0.7	1.0	"	"	"	"
Indeno (1,2,3-cd) pyrene	"	ND		0.04	0.05	"	"	"	"
Hexachloroethane	"	ND		0.3	1.0	"	"	"	"
Isophorone	"	ND		0.8	1.0	"	"	"	"
Naphthalene	"	ND		0.4	1.0	"	"	"	"
Nitrobenzene	"	ND		0.4	1.0	"	"	"	"
2-Nitrophenol	"	ND		0.4	5.0	"	"	"	"

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Attention: STACY GOTHAM

Project: GENERAL TESTING MINERAL WWTP

Lab No: 17B0676
Reported: 03/16/17
Phone: (530) 224-4993
P.O. #

Semi Volatile Organic Compounds

Analyte	Units	Results	Qualifier	MDL	RL	Method	Analyzed	Prepared	Batch
RSW-001 Water (17B0676-02)	**Sampled:02/14/17 14:30**		**Received:02/14/17 16:59 Temp (C): 7.2**						
4-Nitrophenol	"	ND		0.6	5.0	"	"	02/20/17	"
N-Nitrosodi-n-propylamine	"	ND		0.9	5.0	"	"	"	"
N-Nitrosodimethylamine	"	ND		0.2	2.0	"	"	"	"
N-Nitrosodiphenylamine	"	ND		0.4	1.0	"	"	"	"
Pentachlorophenol (PCP)	"	ND		0.4	1.0	"	"	"	"
Phenanthrene	"	ND		0.4	5.0	"	"	"	"
Phenol	"	ND		0.2	1.0	"	"	"	"
Pyrene	"	ND		0.2	5.0	"	"	"	"
2,4,6-Trichlorophenol	"	ND		0.3	5.0	"	"	"	"
Surrogate: 2-Fluorophenol		*41.4 %*		*7.96-71.8*		"	"	"	"
Surrogate: Phenol-d5		*28.6 %*		*7.56-52.1*		"	"	"	"
Surrogate: 2,4,6-Tribromophenol		*80.0 %*		*28.5-126*		"	"	"	"
Surrogate: Nitrobenzene-d5		*62.6 %*		*16.4-104*		"	"	"	"
Surrogate: 2-Fluorobiphenyl		*62.6 %*		*22.1-108*		"	"	"	"
Surrogate: Terphenyl-d14		*90.0 %*		*21-147*		"	"	"	"

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Project: GENERAL TESTING MINERAL WWTP

Lab No: 17B0676
Reported: 03/16/17
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Pesticides

Analyte	Units	Results	Qualifier	MDL	RL	Method	Analyzed	Prepared	Batch
EFF-001 Water (17B0676-01)	**Sampled:02/14/17 13:15**		**Received:02/14/17 16:59 Temp (C): 5.1**						
Aldrin	ug/l	ND		0.002	0.005	EPA 608	03/01/17	02/20/17	B7B1163
alpha-BHC	"	ND		0.002	0.005	"	"	"	"
beta-BHC	"	ND		0.002	0.005	"	"	"	"
gamma-BHC (Lindane)	"	ND		0.002	0.005	"	"	"	"
delta-BHC	"	ND		0.002	0.005	"	"	"	"
Chlordane (tech)	"	ND		0.100	0.100	"	"	"	"
alpha-Chlordane	"	ND		0.002	0.005	"	"	"	"
gamma-Chlordane	"	ND		0.002	0.005	"	"	"	"
4,4´-DDE	"	ND		0.002	0.005	"	"	"	"
4,4´-DDD	"	ND		0.002	0.005	"	"	"	"
4,4´-DDT	"	ND		0.002	0.005	"	"	"	"
Dieldrin	"	ND		0.002	0.005	"	"	"	"
Endosulfan I	"	ND		0.002	0.005	"	"	"	"
Endosulfan II	"	ND		0.002	0.005	"	"	"	"
Endosulfan sulfate	"	ND		0.002	0.005	"	"	"	"
Endrin	"	ND		0.002	0.005	"	"	"	"
Endrin aldehyde	"	ND		0.003	0.010	"	"	"	"
Endrin ketone	"	ND		0.002	0.005	"	"	"	"
Heptachlor	"	ND		0.002	0.005	"	"	"	"
Heptachlor epoxide	"	ND		0.002	0.005	"	"	"	"
Methoxychlor	"	ND		0.002	0.005	"	"	"	"
Toxaphene	"	ND		0.100	0.500	"	"	"	"
PCB-1016	"	ND		0.100	0.300	"	"	"	"
PCB-1221	"	ND		0.100	0.300	"	"	"	"
PCB-1232	"	ND		0.100	0.300	"	"	"	"
PCB-1242	"	ND		0.100	0.300	"	"	"	"
PCB-1248	"	ND		0.100	0.300	"	"	"	"
PCB-1254	"	ND		0.100	0.300	"	"	"	"
PCB-1260	"	ND		0.100	0.300	"	"	"	"
PCB-1262	"	ND		0.100	0.300	"	"	"	"
Surrogate: Tetrachloro-meta-xylene		*48.8 %*		*14.2-103*		"	"	"	"
Surrogate: Decachlorobiphenyl		*60.1 %*		*27.7-133*		"	"	"	"
RSW-001 Water (17B0676-02)	**Sampled:02/14/17 14:30**		**Received:02/14/17 16:59 Temp (C): 7.2**						
Aldrin	ug/l	ND		0.002	0.005	EPA 608	03/01/17	02/20/17	B7B1163
alpha-BHC	"	ND		0.002	0.005	"	"	"	"
beta-BHC	"	ND		0.002	0.005	"	"	"	"
gamma-BHC (Lindane)	"	ND		0.002	0.005	"	"	"	"
delta-BHC	"	ND		0.002	0.005	"	"	"	"
Chlordane (tech)	"	ND		0.100	0.100	"	"	"	"
alpha-Chlordane	"	ND		0.002	0.005	"	"	"	"
gamma-Chlordane	"	ND		0.002	0.005	"	"	"	"
4,4´-DDE	"	ND		0.002	0.005	"	"	"	"
4,4´-DDD	"	ND		0.002	0.005	"	"	"	"
4,4´-DDT	"	ND		0.002	0.005	"	"	"	"
Dieldrin	"	ND		0.002	0.005	"	"	"	"
Endosulfan I	"	ND		0.002	0.005	"	"	"	"
Endosulfan II	"	ND		0.002	0.005	"	"	"	"
Endosulfan sulfate	"	ND		0.002	0.005	"	"	"	"
Endrin	"	ND		0.002	0.005	"	"	"	"
Endrin aldehyde	"	ND		0.003	0.010	"	"	"	"
Endrin ketone	"	ND		0.002	0.005	"	"	"	"
Heptachlor	"	ND		0.002	0.005	"	"	"	"

Approved By

Basic Laboratory, Inc.
California ELAP Cert #1677 and #2718

www.basiclab.com

basic laboratory

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Redding, California 96001
voice 530.243.7234
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3860 Morrow Lane, Suite F
Chico, California 95928
voice 530.894.8966
fax 530.894.5143

Report To: CALIF WATER RESOURCES CONTROL BOARD
364 KNOLLCREST DRIVE SUITE 205
REDDING, CA 96002

Attention: STACY GOTHAM

Project: GENERAL TESTING MINERAL WWTP

Lab No: 17B0676
Reported: 03/16/17
Phone: (530) 224-4993
P.O. #

Pesticides

Analyte	Units	Results	Qualifier	MDL	RL	Method	Analyzed	Prepared	Batch
RSW-001 Water (17B0676-02)	**Sampled:02/14/17 14:30**		**Received:02/14/17 16:59 Temp (C): 7.2**						
Heptachlor epoxide	"	ND		0.002	0.005	"	"	02/20/17	"
Methoxychlor	"	ND		0.002	0.005	"	"	"	"
Toxaphene	"	ND		0.100	0.500	"	"	"	"
PCB-1016	"	ND		0.100	0.300	"	"	"	"
PCB-1221	"	ND		0.100	0.300	"	"	"	"
PCB-1232	"	ND		0.100	0.300	"	"	"	"
PCB-1242	"	ND		0.100	0.300	"	"	"	"
PCB-1248	"	ND		0.100	0.300	"	"	"	"
PCB-1254	"	ND		0.100	0.300	"	"	"	"
PCB-1260	"	ND		0.100	0.300	"	"	"	"
PCB-1262	"	ND		0.100	0.300	"	"	"	"
Surrogate: Tetrachloro-meta-xylene		*79.4 %*		*14.2-103*		"	"	"	"
Surrogate: Decachlorobiphenyl		*55.5 %*		*27.7-133*		"	"	"	"

Approved By

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Report To: CALIF WATER RESOURCES CONTROL BOARD
364 KNOLLCREST DRIVE SUITE 205
REDDING, CA 96002
Attention: STACY GOTHAM
Project: GENERAL TESTING MINERAL WWTP

Lab No: 17B0676
Reported: 03/16/17
Phone: (530) 224-4993
P.O. #

Notes and Definitions

QR-04	Duplicate results are within one reporting limit and pass all necessary QC criteria.
J	Detected but below the Reporting Limit; therefore, result is an estimated concentration (CLP J-Flag). The J flag is equivalent to the DNQ Estimated Concentration flag.
DET	Analyte DETECTED
ND	Analyte NOT DETECTED at or above the detection limit
NR	Not Reported
dry	Sample results reported on a dry weight basis
RPD	Relative Percent Difference
<	Less than reporting limit
≤	Less than or equal to reporting limit
>	Greater than reporting limit
≥	Greater than or equal to reporting limit
MDL	Method Detection Limit
RL/ML	Minimum Level of Quantitation
MCL/AL	Maxium Contaminant Level/Action Level
mg/kg	Results reported as wet weight
TTLC	Total Threshold Limit Concentration
STLC	Soluble Threshold Limit Concentration
TCLP	Toxicity Characteristic Leachate Procedure
Note 1	Received Temperature - according to EPA guidelines, samples for most chemistry methods should be held at ≤6 degrees C after collection, including during transportation, unless the time from sampling to delivery is <2 hours. Regulating agencies may invalidate results if temperature requirements are not met.
Note 2	According to 40 CFR Part 136 Table II, the following tests should be analyzed in the field within 15 minutes of sampling: pH, chlorine, dissolved oxygen, and sulfite.

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Basic Laboratory, Inc.
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EMSL Analytical, Inc.
464 McCormick Street San Leandro, CA 94577
Phone/Fax: (510) 895-3675 / (510) 895-3680
http://www.EMSL.com / sanleandrolab@emsl.com

EMSL Order ID: 091703133
Customer ID: BASL62
Customer PO:
Project ID:

Attn: Ricky Jensen
Basic Laboratory, Inc.
2218 Railroad Avenue
Redding, CA 96001

Phone: (530) 894-8966
Fax: (530) 894-5143
Collected: 02/14/2017
Received: 02/16/2017
Analyzed: 03/01/2017

Proj: 17B0676

Test Report: Determination of Asbestos Structures >10µm in Drinking Water Performed by the 100.2 Method (EPA 600/R-94/134)

					ASBESTOS				
Sample ID Client / EMSL	*Sample Filtration Date/Time*	*Original Sample Vol. Filtered (ml)*	*Effective Filter Area (mm^2)*	*Area Analyzed (mm^2)*	*Asbestos Types*	*Fibers Detected*	*Analytical Sensitivity* MFL (million fibers per liter)	*Concentration*	*Confidence Limits*
17B0676-01 - EFF-001 091703133-0001	2/16/2017 05:00 PM	5	1289	0.2600	None Detected	ND	0.99	<0.99	0.00 - 3.70
Due to excessive particulate the analytical sensitivity of 0.2 MFL as required by the method was not reached.									
17B0676-02 - RSW-001 091703133-0002	2/16/2017 05:00 PM	50	1289	0.1300	None Detected	ND	0.20	<0.20	0.00 - 0.73

Analyst(s)
Rui Cindy Geng (2)

Matthew Batongbacal
or Other Approved Signatory

Any questions please contact Matthew Batongbacal.

Initial report from: 03/01/2017 15:05:22

FRONTIER ANALYTICAL LABORATORY

February 28, 2017

FAL Project ID: 10459

Mr. Ricky Jensen
Basic Laboratory, Inc.
2218 Railroad Ave.
Redding CA, 96001-2504

Dear Mr. Jensen,

The following results are associated with Frontier Analytical Laboratory project **10459**. This corresponds to your subcontract order number **17B0676**. Two aqueous samples were received on 2/16/2017. These samples were extracted and analyzed by EPA Method 1613 for 2,3,7,8-TCDD only. Basic Laboratory Inc. requested a turnaround time of fifteen business days for project **10459.**

The following report consists of an Analytical Data section and a Sample Receipt section. The Analytical Data section contains our sample tracking log and the analytical results. The Sample Receipt section contains your chain of custody, our sample login form and the sample photo. The attached results are specifically for the samples referenced in this report only. These results meet all National Environmental Laboratory Accreditation Program (NELAP) requirements and shall not be reproduced except in full. Frontier Analytical Laboratory's State of Oregon NELAP certificate number is **4041**. Our State of California ELAP certificate number is **2934**. This report has been emailed to you as a portable document format (PDF) file. A hardcopy will not be sent to you unless specifically requested.

If you have any questions regarding project **10459**, please contact me at (916) 934-0900. Thank you for choosing Frontier Analytical Laboratory for your analytical testing needs.

Sincerely,

Thomas C. Crabtree

Thomas C. Crabtree
Director

FRONTIER ANALYTICAL LABORATORY
5172 Hillsdale Circle * El Dorado Hills, CA 95762
Tel (916) 934-0900 * Fax (916) 934-0999
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FRONTIER
ANALYTICAL LABORATORY

Frontier Analytical Laboratory

Sample Tracking Log

FAL Project ID: 10459

Received on: **02/16/2017** Project Due: **03/10/2017** Storage: **R2**

FAL Sample ID	Dup	Client Project ID	Client Sample ID	Requested Method	Matrix	Sampling Date	Sampling Time	Hold Time Due Date
10459-001-SA	1	17B0676	17B0676-01 EFF-001	EPA 1613 TCDD	Aqueous	02/14/2017	01:15 pm	02/14/2018
10459-002-SA	1	17B0676	17B0676-02 RSW-001	EPA 1613 TCDD	Aqueous	02/14/2017	02:30 pm	02/14/2018

FAL Sample ID	Notes
10459-001-SA	'Added 1mL 80mg/mL of sodium thiosulfate.'

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EPA Method 1613
TCDD

FRONTIER ANALYTICAL LABORATORY

FAL ID: 10459-001-MB
Client ID: Method Blank
Matrix: Aqueous
Batch No: X4006

Date Extracted: 02-17-2017
Date Received: NA
Amount: 1.000 L

ICal: PCDDFAL3-1-25-17
GC Column: DB5MS
Units: pg/L

Acquired: 02-20-2017
WHO TEQ: NA

Compound	Conc	DL	Qual	MDL
2,3,7,8-TCDD	ND	0.456		0.161

Internal Standards	% Rec	QC Limits	Qual
13C-2,3,7,8-TCDD	90.4	31.0 - 137	
Cleanup Surrogate			
37Cl-2,3,7,8-TCDD	96.8	42.0 - 164	

A	Isotopic Labeled Standard outside QC range but signal to noise ratio is >10:1
B	Analyte is present in Method Blank
C	Chemical Interference
D	Presence of Diphenyl Ethers
DNQ	Analyte concentration is below calibration range
E	Analyte concentration is above calibration range
F	Analyte confirmation on secondary column
J	Analyte concentration is below calibration range
M	Maximum possible concentration
ND	Analyte Not Detected at Detection Limit Level
NP	Not Provided
P	Pre-filtered through a Whatman 0.7um GF/F filter
S	Sample acceptance criteria not met
X	Matrix interferences
*	Result taken from dilution or reinjection

Analyst: [signature]

Date: 2/21/2017

Reviewed By: [signature]

Date: 2/27/2017

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WECK LABORATORIES, INC.

Certificate of Analysis

FINAL REPORT

Work Orders:	7B16005	Report Date:	3/15/2017
		Received Date:	2/16/2017
		Turnaround Time:	Normal
Project:	17B0676	Phones:	(530) 243-7234
		Fax:	(530) 243-7494
		P.O. #:	
Attn:	Ricky Jensen	Billing Code:	
Client:	Basic Laboratory 2218 Railroad Ave. Redding, CA 96001-2504		

Dear Ricky Jensen,

Enclosed are the results of analyses for samples received 2/16/17 with the Chain-of-Custody document. The samples were received in good condition, at 2.9 °C and on ice. All analyses met the method criteria except as noted in the case narrative or in the report with data qualifiers.

Sample Results

Sample: 17B0676-01, Alias: EFF-001 — Sampled: 02/14/17 13:15 by Client

7B16005-01 (Water)

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Method: EPA 515.3 — **Batch ID:** W7B1011	**Instr:** GC08			**Prepared:** 02/16/17 09:36			**Analyst:** rmr
2,4,5-T	ND	0.070	0.20	ug/l	1	02/17/17 17:50	
2,4,5-TP (Silvex)	ND	0.090	0.20	ug/l	1	02/17/17 17:50	
2,4-D	ND	0.070	0.40	ug/l	1	02/17/17 17:50	
2,4-DB	ND	0.070	2.0	ug/l	1	02/17/17 17:50	
3,5-Dichlorobenzoic acid	ND	0.090	1.0	ug/l	1	02/17/17 17:50	
Acifluorfen	ND	0.060	0.40	ug/l	1	02/17/17 17:50	
Bentazon	ND	0.11	2.0	ug/l	1	02/17/17 17:50	
Dalapon	ND	0.10	0.40	ug/l	1	02/17/17 17:50	
DCPA	ND	0.070	0.10	ug/l	1	02/17/17 17:50	
Dicamba	ND	0.12	0.60	ug/l	1	02/17/17 17:50	
Dichloroprop	ND	0.080	0.30	ug/l	1	02/17/17 17:50	
Dinoseb	ND	0.14	0.40	ug/l	1	02/17/17 17:50	
Pentachlorophenol	ND	0.040	0.20	ug/l	1	02/17/17 17:50	
Picloram	ND	0.050	0.60	ug/l	1	02/17/17 17:50	
Surrogate(s) *2,4-DCAA*	*102%*		*70-130*	*Conc: 10.2*		*02/17/17 17:50*	
Method: EPA 525.2 — **Batch ID:** W7B1572	**Instr:** GCMS16			**Prepared:** 02/27/17 08:49			**Analyst:** Statio
Alachlor	ND	0.022	0.10	ug/l	1	03/10/17 18:28	
Atrazine	ND	0.034	0.10	ug/l	1	03/10/17 18:28	
Bromacil	ND	0.038	0.50	ug/l	1	03/10/17 18:28	

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Sample Results

(Continued)

Sample: 17B0676-01, Alias: EFF-001
7B16005-01 (Water)

Sampled: 02/14/17 13:15 by Client

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Method: EPA 525.2 (Continued) **Batch ID:** W7B1572	**Instr:** GCMS16			**Prepared:** 02/27/17 08:49			**Analyst:** Statio
Molinate	ND	0.039	0.10	ug/l	1	03/10/17 18:28	
Simazine	ND	0.015	0.10	ug/l	1	03/10/17 18:28	
Thiobencarb	ND	0.025	0.10	ug/l	1	03/10/17 18:28	
Surrogate(s)							
1,3-Dimethyl-2-nitrobenzene	*103%*		*73-138*	*Conc: 5.13*		*03/10/17 18:28*	
Perylene-d12	*32%*		*30-118*	*Conc: 1.59*		*03/10/17 18:28*	
Triphenyl phosphate	*88%*		*70-149*	*Conc: 4.42*		*03/10/17 18:28*	

Sample: 17B0676-02, Alias: RSW-001
7B16005-02 (Water)

Sampled: 02/14/17 14:30 by Client

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Method: EPA 515.3 **Batch ID:** W7B1011	**Instr:** GC08			**Prepared:** 02/16/17 09:36			**Analyst:** rmr
2,4,5-T	ND	0.070	0.20	ug/l	1	02/17/17 18:26	
2,4,5-TP (Silvex)	ND	0.090	0.20	ug/l	1	02/17/17 18:26	
2,4-D	ND	0.070	0.40	ug/l	1	02/17/17 18:26	
2,4-DB	ND	0.070	2.0	ug/l	1	02/17/17 18:26	
3,5-Dichlorobenzoic acid	ND	0.090	1.0	ug/l	1	02/17/17 18:26	
Acifluorfen	ND	0.060	0.40	ug/l	1	02/17/17 18:26	
Bentazon	ND	0.11	2.0	ug/l	1	02/17/17 18:26	
Dalapon	ND	0.10	0.40	ug/l	1	02/17/17 18:26	
DCPA	ND	0.070	0.10	ug/l	1	02/17/17 18:26	
Dicamba	ND	0.12	0.60	ug/l	1	02/17/17 18:26	
Dichloroprop	ND	0.080	0.30	ug/l	1	02/17/17 18:26	
Dinoseb	ND	0.14	0.40	ug/l	1	02/17/17 18:26	
Pentachlorophenol	ND	0.040	0.20	ug/l	1	02/17/17 18:26	
Picloram	ND	0.050	0.60	ug/l	1	02/17/17 18:26	
Surrogate(s)							
2,4-DCAA	*98%*		*70-130*	*Conc: 9.80*		*02/17/17 18:26*	
Method: EPA 525.2 **Batch ID:** W7B1572	**Instr:** GCMS16			**Prepared:** 02/27/17 08:49			**Analyst:** Statio
Alachlor	ND	0.022	0.10	ug/l	1	03/10/17 18:55	I-05
Atrazine	ND	0.034	0.10	ug/l	1	03/10/17 18:55	
Bromacil	ND	0.038	0.50	ug/l	1	03/10/17 18:55	I-05
Molinate	ND	0.039	0.10	ug/l	1	03/10/17 18:55	
Simazine	ND	0.015	0.10	ug/l	1	03/10/17 18:55	I-05
Thiobencarb	ND	0.025	0.10	ug/l	1	03/10/17 18:55	I-05
Surrogate(s)							
1,3-Dimethyl-2-nitrobenzene	*98%*		*73-138*	*Conc: 4.91*		*03/10/17 18:55*	
Perylene-d12	*26%*		*30-118*	*Conc: 1.31*		*03/10/17 18:55*	S-GC
Triphenyl phosphate	*54%*		*70-149*	*Conc: 2.69*		*03/10/17 18:55*	S-GC

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Notes and Definitions

Item	Definition
BS-04	The recovery of this analyte in LCS or LCSD was outside control limit. Sample was accepted based on the remaining LCS, LCSD or LCS-LL.
I-05	Low internal standard recovery possibly due to matrix interference. The result is suspect.
J	Estimated conc. detected <MRL and >MDL.
Q-12	The RPD result exceeded the QC control limits; however, both percent recoveries were acceptable. Sample results for the QC batch were accepted based on the percent recoveries and/or other acceptable QC data.
QC-2	This QC sample was reanalyzed to complement samples that require re-analysis on different date. See analysis date.
S-GC	Surrogate recovery outside of control limits due to a possible matrix effect. The data was accepted based on valid recovery of the remaining surrogate.
ND	NOT DETECTED at or above the Method Reporting Limit (MRL). If Method Detection Limit (MDL) is reported, then ND means not detected at or above the MDL.
Dil	Dilution
dry	Sample results reported on a dry weight basis
RPD	Relative Percent Difference
% Rec	Percent Recovery
Source	Sample that was matrix spiked or duplicated.
MDL	Method Detection Limit
MRL	The minimum levels, concentrations, or quantities of a target variable (e.g., target analyte) that can be reported with a specified degree of confidence. The MRL is also known as Limit of Quantitation (LOQ) and Detection Limit for Reporting (DLR)
MDA	Minimum Detectable Activity
NR	Not Reportable
TIC	Tentatively Identified Compound (TIC) using mass spectrometry. The reported concentration is relative concentration based on the nearest internal standard. If the library search produces no matches at, or above 85%, the compound is reported as unknown.

Any remaining sample(s) will be disposed of one month from the final report date unless other arrangements are made in advance.
An Absence of Total Coliform meets the drinking water standards as established by the California State Water Resources Control Board (SWRCB)
All results are expressed on wet weight basis unless otherwise specified.
All samples collected by Weck Laboratories have been sampled in accordance to laboratory SOP Number MIS 002.

Reviewed by:

Brandon Gee
Operations Manager/Senior PM

ELAP-CA #1132 • EPA-UCMR #CA00211 • LACSD #10143 • NJ-DEP #CA015 • NV-DEP #NAC 445A

This is a complete final report. The information in this report applies to the samples analyzed in accordance with the chain-of-custody document. Weck Laboratories certifies that the test results meet all requirements of TNI unless noted by qualifiers or written in the Case Narrative. This analytical report must be reproduced in its entirety.

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Redding, California 96001 fax 530.243.7494

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Report To: TEHAMA COUNTY SANITATION DIST
9380 SAN BENITO AVENUE
GERBER, CA 96035
Attention: GARY ANTONE
Project: GENERAL TESTING MINERAL WWTP
Description: EFF-001
Matrix: Wastewater

Lab No: 17B0677
Reported: 03/08/17
Phone: 385-1462

Lab ID: 17B0677-01

Sampled: 02/14/17 13:15
Received: 02/14/17 17:03

General Chemistry

Analyte	Units	Results	Qualifier	MDL	RL	Method	Analyzed	Prepared	Batch
Hardness	mg/l	**13**		3	5	SM 2340C	02/17/17	02/17/17	B7B1127
pH (see note 2)	pH Units	**7.01**				SM 4500-H+ B	02/15/17	02/15/17	B7B1028
Alkalinity as CaCO3	mg/l	**22**		1	5	SM 2320B	02/21/17	02/21/17	B7B1201
Bicarbonate	"	**27**		1	5	"	"	"	"
Carbonate	"	ND		1	5	"	"	"	"
Hydroxide	"	ND		1	5	"	"	"	"
Chloride	"	**0.72**		0.10	0.50	EPA 300.0	02/16/17	02/16/17	B7B1079
Nitrate as N	"	**0.12**		0.02	0.05	EPA 353.2	02/16/17	02/16/17	B7B1089
Nitrite as N	"	**0.004**	J	0.003	0.010	"	"	"	"
Sulfate as SO4	"	**1.5**		0.2	1.0	EPA 300.0	02/16/17	02/16/17	B7B1079
Specific Conductance	umhos/cm	**71**		2	10	SM 2510B	02/14/17	02/14/17	B7B1044
Total Dissolved Solids	mg/l	**45**		3	6	SM 2540C	02/20/17	02/20/17	B7B1167
BOD - 5 Day	"	ND		3	3	SM 5210B	02/20/17	02/15/17	B7B1061
Total Suspended Solids	"	**11.0**		2.0	6.0	SM 2540D	02/16/17	02/16/17	B7B1072
Ammonia as N	"	ND		0.01	0.05	EPA 350.1	02/15/17	02/15/17	B7B0948
Total Phosphorus as P	"	**0.17**		0.02	0.05	SM 4500P-B+E	02/15/17	02/15/17	B7B1062

Microbiology

Analyte	Units	Results	Qualifier	MDL	RL	Method	Analyzed	Prepared	Batch
Total Coliforms	MPN/100 ml	<2			2	SM 9221B	02/18/17	02/14/17	B7B1159

Metals - Total

Analyte	Units	Results	Qualifier	MDL	RL	Method	Analyzed	Prepared	Batch
Boron	ug/l	**5.2**	J	2.0	10.0	EPA 200.8	02/27/17	02/23/17	B7B1102
Calcium	mg/l	**4.1**		0.2	1.0	EPA 200.7	02/21/17	02/20/17	B7B1153
Iron	ug/l	**217**		7	15	EPA 200.8	02/27/17	02/23/17	B7B1102
Magnesium	mg/l	**1.1**		0.2	1.0	EPA 200.7	02/21/17	02/20/17	B7B1153
Manganese	ug/l	**3.8**		0.1	0.5	EPA 200.8	02/27/17	02/23/17	B7B1102
Potassium	mg/l	**0.8**	J	0.2	1.0	EPA 200.7	02/21/17	02/20/17	B7B1153
Sodium	"	**9.6**		0.2	1.0	"	"	"	"

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California ELAP Cert #1677 and #2718

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Report To: TEHAMA COUNTY SANITATION DIST
9380 SAN BENITO AVENUE
GERBER, CA 96035
Attention: GARY ANTONE
Project: GENERAL TESTING MINERAL WWTP
Description: EFF-001
Matrix: Wastewater

Lab No: 17B0677
Reported: 03/08/17
Phone: 385-1462

Lab ID: 17B0677-01

Sampled: 02/14/17 13:15
Received: 02/14/17 17:03

Metals - Dissolved

Analyte	Units	Results	Qualifier	MDL	RL	Method	Analyzed	Prepared	Batch
Copper	ug/l	**1.9**		0.1	0.5	EPA 200.8	02/23/17	02/23/17	B7B1299
Zinc	"	**3.7**		0.6	2.0	"	"	"	"

Notes and Definitions

J	Detected but below the Reporting Limit; therefore, result is an estimated concentration (CLP J-Flag). The J flag is equivalent to the DNQ Estimated Concentration flag.
DET	Analyte DETECTED
ND	Analyte NOT DETECTED at or above the detection limit
NR	Not Reported
dry	Sample results reported on a dry weight basis
RPD	Relative Percent Difference
<	Less than reporting limit
≤	Less than or equal to reporting limit
>	Greater than reporting limit
≥	Greater than or equal to reporting limit
MDL	Method Detection Limit
RL/ML	Minimum Level of Quantitation
MCL/AL	Maxium Contaminant Level/Action Level
mg/kg	Results reported as wet weight
TTLC	Total Threshold Limit Concentration
STLC	Soluble Threshold Limit Concentration
TCLP	Toxicity Characteristic Leachate Procedure
Note 1	Received Temperature - according to EPA guidelines, samples for most chemistry methods should be held at ≤6 degrees C after collection, including during transportation, unless the time from sampling to delivery is <2 hours. Regulating agencies may invalidate results if temperature requirements are not met.
Note 2	According to 40 CFR Part 136 Table II, the following tests should be analyzed in the field within 15 minutes of sampling: pH, chlorine, dissolved oxygen, and sulfite.

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Report To: TEHAMA COUNTY SANITATION DISTRICT
9380 SAN BENITO AVE.
GERBER, CA 96035

Attention: GARY ANTONE

Project Name: MINERAL WWTP
Sample Type: WATER

Lab Number: 17B0677-01
Date: 03/07/17
Phone: 385-1462
Date Sampled: 02/14/17
Date Received: 02/14/17
P.O. #:

Sample Description: EFF - 001

Static-Renewal Acute Toxicity 96 Hour Bioassay - RESULTS

Results: 100 % Survival - Test 100 % Survival - Control

Static-Renewal Acute Toxicity 96 Hour Bioassay - Chemical & Physical Data

Method: EPA-821-R-02-012 5th Edition

Date/Time Test Started: 02/15/17 17:30 **Date/Time Test Completed:** 02/19/17 17:30 **Species:** *Oncorhynchus mykiss*

Age of Test Organism: 22 days **Batch #:** 7B08011

Acclimatization: 12°C +/- 1°C for 96 hours **Minimum test solution volume:** 3.5 Liters

TEST DATA	Initial		24 Hour		48 Hour		72 Hour		96 Hour	
Survival	10	10	10	10	10	10	10	10	10	10
Temp	11.9	11.6	11.8	11.5	11.7	11.6	11.8	11.5	12.0	11.7
pH	6.54	6.57	6.65	6.67	6.66	6.69	6.49	6.49	6.57	6.88
DO (mg/l)	10.5	10.6	8.8	9.0	9.4	9.1	9.2	9.3	9.2	9.5
Alkalinity (mg/l)	22									
Hardness (mg/l)	13									
Specific Cond. (umhos/cm)	71									
Total Chlorine (mg/l)	1.49									
Ammonia (mg/L as N)	ND									

CONTROL DATA	Initial		24 Hour		48 Hour		72 Hour		96 Hour	
Survival	10	10	10	10	10	10	10	10	10	10
Temp	12.1	11.8	12.1	11.7	12.1	11.8	12.0	11.5	12.9	12.1
pH	7.85	7.87	7.60	7.76	7.51	7.49	7.51	7.49	7.52	7.51
DO (mg/l)	11.2	11.5	9.0	8.9	8.8	8.6	9.1	8.8	9.3	9.2
Alkalinity (mg/l)	47									
Hardness (mg/l)	40									
Specific Cond. (umhos/cm)	96									
Total Chlorine (mg/l)	0.02(J)									

Reference Toxicant Survival Data: 10 fish exposed per concentration

Concentration	Initial	24 Hour	48 Hour	72 Hour	96 Hour
0.8% w/v NaCl	10	10	10	10	10
1.2% w/v NaCl	10	10	10	9	8
1.6% w/v NaCl	10	6	0	0	0
1.8% w/v NaCl	10	1	0	0	0

Reference Toxicant LC 50: 1.29 %
Confidence Limits 1.13-1.45 %

Toxicant (Sodium Chloride) ID No.: 7A16023

The information shown on this sheet is test data only and no analysis or interpretation is intended or implied
ND-Not detected.

Reported By

WECK LABORATORIES, INC.

Certificate of Analysis

FINAL REPORT

Work Orders:	7B16006	**Report Date:**	3/02/2017
		Received Date:	2/16/2017
Project:	17B0677	**Turnaround Time:**	Normal
		Phones:	(530) 243-7234
		Fax:	(530) 243-7494
Attn:	Jennifer McCurdy	**P.O. #:**	
Client:	Basic Laboratory 2218 Railroad Ave. Redding, CA 96001-2504	**Billing Code:**	

Dear Jennifer McCurdy,

Enclosed are the results of analyses for samples received 2/16/17 with the Chain-of-Custody document. The samples were received in good condition, at 2.9 °C and on ice. All analyses met the method criteria except as noted in the case narrative or in the report with data qualifiers.

Sample Results

Sample: 17B0677-01, Alias: EFF-001 — Sampled: 02/14/17 13:15 by Client

7B16006-01 (Water)

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Method: EPA 525.2 — **Batch ID:** W7B1396 — **Instr:** GCMS13 — **Prepared:** 02/23/17 09:21 — **Analyst:** EFC							
Chlorpyrifos	ND	6.9	10	ng/l	1	02/28/17 20:19	
Diazinon	ND	5.2	10	ng/l	1	02/28/17 20:19	
Surrogate(s)							
1,3-Dimethyl-2-nitrobenzene	*99%*		*76-128*	*Conc: 493*		*02/28/17 20:19*	
Triphenyl phosphate	*125%*		*40-163*	*Conc: 626*		*02/28/17 20:19*	

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Notes and Definitions

Item	Definition
MS-05	The spike recovery and/or RPD were outside acceptance limits for the MS and/or MSD due to possible matrix interference. The LCS and/or LCSD were within acceptance limits showing that the laboratory is in control and the data is acceptable.
ND	NOT DETECTED at or above the Method Reporting Limit (MRL). If Method Detection Limit (MDL) is reported, then ND means not detected at or above the MDL.
Dil	Dilution
dry	Sample results reported on a dry weight basis
RPD	Relative Percent Difference
% Rec	Percent Recovery
Source	Sample that was matrix spiked or duplicated.
MDL	Method Detection Limit
MRL	The minimum levels, concentrations, or quantities of a target variable (e.g., target analyte) that can be reported with a specified degree of confidence. The MRL is also known as Limit of Quantitation (LOQ) and Detection Limit for Reporting (DLR)
MDA	Minimum Detectable Activity
NR	Not Reportable
TIC	Tentatively Identified Compound (TIC) using mass spectrometry. The reported concentration is relative concentration based on the nearest internal standard. If the library search produces no matches at, or above 85%, the compound is reported as unknown.

Any remaining sample(s) will be disposed of one month from the final report date unless other arrangements are made in advance.
An Absence of Total Coliform meets the drinking water standards as established by the California State Water Resources Control Board (SWRCB)
All results are expressed on wet weight basis unless otherwise specified.
All samples collected by Weck Laboratories have been sampled in accordance to laboratory SOP Number MIS 002.

Reviewed by:

Brandon Gee
Operations Manager/Senior PM

ELAP-CA #1132 • EPA-UCMR #CA00211 • LACSD #10143 • NJ-DEP #CA015 • NV-DEP #NAC 445A

This is a complete final report. The information in this report applies to the samples analyzed in accordance with the chain-of-custody document. Weck Laboratories certifies that the test results meet all requirements of TNI unless noted by qualifiers or written in the Case Narrative. This analytical report must be reproduced in its entirety.

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Report To: PACE ENGINEERING
1730 SOUTH STREET
REDDING, CA 96001
Attention: LAURIE McCOLLUM
Project: GENERAL TESTING MINERAL WWTP GROUNDWATER WELL

Lab No: 17C1133
Reported: 04/11/17
Phone: 244-0202
P.O. #

Microbiology

Analyte	Units	Results	Qualifier	MDL	RL	Method	Analyzed	Prepared	Batch
WELL 1 Water (17C1133-01)	**Sampled:03/28/17 10:32**		**Received:03/28/17 15:43**						
Total Coliforms	MPN/100 ml	<2		2	2	SM 9221B/E	04/01/17	03/28/17	B7D0667
Fecal Coliforms	"	<2		2	2	"	"	"	"
WELL 1 Water (17C1133-02)	**Sampled:03/28/17 10:38**		**Received:03/28/17 15:43**						
Total Coliforms	MPN/100 ml	**17**		2	2	SM 9221B/E	04/01/17	03/28/17	B7D0667
Fecal Coliforms	"	<2		2	2	"	"	"	"
WELL 2 Water (17C1133-03)	**Sampled:03/28/17 11:30**		**Received:03/28/17 15:43**						
Total Coliforms	MPN/100 ml	**2**		2	2	SM 9221B/E	04/01/17	03/28/17	B7D0667
Fecal Coliforms	"	<2		2	2	"	"	"	"
WELL 2 Water (17C1133-04)	**Sampled:03/28/17 11:33**		**Received:03/28/17 15:43**						
Total Coliforms	MPN/100 ml	**2**		2	2	SM 9221B/E	04/01/17	03/28/17	B7D0667
Fecal Coliforms	"	<2		2	2	"	"	"	"
WELL 3 Water (17C1133-05)	**Sampled:03/28/17 13:17**		**Received:03/28/17 15:43**						
Total Coliforms	MPN/100 ml	**2**		2	2	SM 9221B/E	04/01/17	03/28/17	B7D0667
Fecal Coliforms	"	<2		2	2	"	"	"	"
WELL 3 Water (17C1133-06)	**Sampled:03/28/17 13:20**		**Received:03/28/17 15:43**						
Total Coliforms	MPN/100 ml	**4**		2	2	SM 9221B/E	04/01/17	03/28/17	B7D0667
Fecal Coliforms	"	<2		2	2	"	"	"	"

Notes and Definitions

DET	Analyte DETECTED
ND	Analyte NOT DETECTED at or above the detection limit
NR	Not Reported
dry	Sample results reported on a dry weight basis
RPD	Relative Percent Difference
<	Less than reporting limit
≤	Less than or equal to reporting limit
>	Greater than reporting limit
≥	Greater than or equal to reporting limit
MDL	Method Detection Limit
RL/ML	Minimum Level of Quantitation
MCL/AL	Maxium Contaminant Level/Action Level
mg/kg	Results reported as wet weight
TTLC	Total Threshold Limit Concentration
STLC	Soluble Threshold Limit Concentration
TCLP	Toxicity Characteristic Leachate Procedure
Note 1	Received Temperature - according to EPA guidelines, samples for most chemistry methods should be held at ≤6 degrees C after collection, including during transportation, unless the time from sampling to delivery is <2 hours. Regulating agencies may invalidate results if temperature requirements are not met.
Note 2	According to 40 CFR Part 136 Table II, the following tests should be analyzed in the field within 15 minutes of sampling: pH, chlorine, dissolved oxygen, and sulfite.

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Report To: TEHAMA COUNTY SANITATION DIST
9380 SAN BENITO AVENUE
GERBER, CA 96035
Attention: GARY ANTONE
Project: GENERAL TESTING MINERAL WWTP GROUNDWATER MONITORING

Lab No: 17B0690
Reported: 03/01/17
Phone: 385-1462
P.O. #

General Chemistry

Analyte	Units	Results	Qualifier	MDL	RL	Method	Analyzed	Prepared	Batch
RGW-001 Ground Water (17B0690-01) Sampled:02/14/17 12:11 Received:02/15/17 08:05									
Hardness	mg/l	**70**		3	5	SM 2340C	02/17/17	02/17/17	B7B1127
pH (see note 2)	pH Units	**6.70**				SM 4500-H+ B	02/15/17	02/15/17	B7B1028
Alkalinity as CaCO3	mg/l	**86**		1	5	SM 2320B	02/21/17	02/21/17	B7B1201
Bicarbonate	"	**105**		1	5	"	"	"	"
Carbonate	"	ND		1	5	"	"	"	"
Hydroxide	"	ND		1	5	"	"	"	"
Chloride	"	**2.01**		0.10	0.50	EPA 300.0	02/16/17	02/16/17	B7B1079
Specific Conductance	umhos/cm	**160**		2	10	SM 2510B	02/15/17	02/15/17	B7B1055
Total Dissolved Solids	mg/l	**119**		3	6	SM 2540C	02/20/17	02/20/17	B7B1167
Nitrogen, Total	"	**0.1**	J	0.1	0.2	(CALC)	02/21/17	02/20/17	[CALC]
Total Kjeldahl Nitrogen	"	ND		0.1	0.2	EPA 351.2	"	"	B7B1168
Ammonia as N	"	ND		0.01	0.05	EPA 350.1	02/22/17	02/22/17	B7B1234
Nitrate+Nitrite as N	"	**0.10**		0.02	0.05	EPA 353.2	02/15/17	02/15/17	B7B1046
Total Phosphorus as P	"	**0.03**	J	0.02	0.05	SM 4500P-B+E	02/22/17	02/22/17	B7B1243
RGW-002 Ground Water (17B0690-02) Sampled:02/14/17 15:30 Received:02/15/17 08:05									
Hardness	mg/l	**87**		3	5	SM 2340C	02/17/17	02/17/17	B7B1127
pH (see note 2)	pH Units	**7.05**				SM 4500-H+ B	02/15/17	02/15/17	B7B1028
Alkalinity as CaCO3	mg/l	**104**		1	5	SM 2320B	02/21/17	02/21/17	B7B1201
Bicarbonate	"	**127**		1	5	"	"	"	"
Carbonate	"	ND		1	5	"	"	"	"
Hydroxide	"	ND		1	5	"	"	"	"
Chloride	"	**14.8**		0.10	0.50	EPA 300.0	02/17/17	02/16/17	B7B1079
Specific Conductance	umhos/cm	**249**		2	10	SM 2510B	02/15/17	02/15/17	B7B1055
Total Dissolved Solids	mg/l	**166**		3	6	SM 2540C	02/20/17	02/20/17	B7B1167
Nitrogen, Total	"	**0.4**		0.1	0.2	(CALC)	02/21/17	02/20/17	[CALC]
Total Kjeldahl Nitrogen	"	**0.3**		0.1	0.2	EPA 351.2	"	"	B7B1168
Ammonia as N	"	**0.11**		0.01	0.05	EPA 350.1	02/22/17	02/22/17	B7B1234
Nitrate+Nitrite as N	"	**0.06**		0.02	0.05	EPA 353.2	02/15/17	02/15/17	B7B1046
Total Phosphorus as P	"	**0.06**		0.02	0.05	SM 4500P-B+E	02/22/17	02/22/17	B7B1243
RGW-003 Ground Water (17B0690-03) Sampled:02/14/17 16:45 Received:02/15/17 08:05									
Hardness	mg/l	**72**		3	5	SM 2340C	02/17/17	02/17/17	B7B1127
pH (see note 2)	pH Units	**6.92**				SM 4500-H+ B	02/15/17	02/15/17	B7B1028
Alkalinity as CaCO3	mg/l	**86**		1	5	SM 2320B	02/21/17	02/21/17	B7B1201
Bicarbonate	"	**105**		1	5	"	"	"	"
Carbonate	"	ND		1	5	"	"	"	"
Hydroxide	"	ND		1	5	"	"	"	"
Chloride	"	**8.99**		0.10	0.50	EPA 300.0	02/17/17	02/16/17	B7B1079
Specific Conductance	umhos/cm	**195**		2	10	SM 2510B	02/15/17	02/15/17	B7B1055
Total Dissolved Solids	mg/l	**162**		3	6	SM 2540C	02/20/17	02/20/17	B7B1167
Nitrogen, Total	"	**0.3**		0.1	0.2	(CALC)	02/21/17	02/20/17	[CALC]
Total Kjeldahl Nitrogen	"	**0.3**		0.1	0.2	EPA 351.2	"	"	B7B1168
Ammonia as N	"	**0.15**		0.01	0.05	EPA 350.1	02/22/17	02/22/17	B7B1234
Nitrate+Nitrite as N	"	**0.05**		0.02	0.05	EPA 353.2	02/15/17	02/15/17	B7B1046
Total Phosphorus as P	"	**0.15**		0.02	0.05	SM 4500P-B+E	02/22/17	02/22/17	B7B1243

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Report To: TEHAMA COUNTY SANITATION DIST
9380 SAN BENITO AVENUE
GERBER, CA 96035
Attention: GARY ANTONE
Project: GENERAL TESTING MINERAL WWTP GROUNDWATER MONITORING

Lab No: 17B0690
Reported: 03/01/17
Phone: 385-1462
P.O. #

Metals - Total

Analyte	Units	Results	Qualifier	MDL	RL	Method	Analyzed	Prepared	Batch
RGW-001 Ground Water	**(17B0690-01)**	**Sampled:02/14/17 12:11**		**Received:02/15/17 08:05**					
Boron	ug/l	**2.7**	J	2.0	10.0	EPA 200.8	02/17/17	02/16/17	B7B1101
Calcium	mg/l	**16.5**		0.2	1.0	EPA 200.7	02/21/17	02/20/17	B7B1153
Iron	ug/l	**85**		7	15	EPA 200.8	02/17/17	02/16/17	B7B1101
Magnesium	mg/l	**8.6**		0.2	1.0	EPA 200.7	02/21/17	02/20/17	B7B1153
Manganese	ug/l	**5.2**		0.1	0.5	EPA 200.8	02/17/17	02/16/17	B7B1101
Potassium	mg/l	**1.0**		0.2	1.0	EPA 200.7	02/21/17	02/20/17	B7B1153
Sodium	"	**6.6**		0.2	1.0	"	"	"	"
RGW-002 Ground Water	**(17B0690-02)**	**Sampled:02/14/17 15:30**		**Received:02/15/17 08:05**					
Boron	ug/l	**36.6**		2.0	10.0	EPA 200.8	02/17/17	02/16/17	B7B1101
Calcium	mg/l	**21.0**		0.2	1.0	EPA 200.7	02/21/17	02/20/17	B7B1153
Iron	ug/l	**3340**		7	15	EPA 200.8	02/17/17	02/16/17	B7B1101
Magnesium	mg/l	**8.1**		0.2	1.0	EPA 200.7	02/21/17	02/20/17	B7B1153
Manganese	ug/l	**4800**	R-07	1.0	5.0	EPA 200.8	02/27/17	02/23/17	B7B1102
Potassium	mg/l	**2.6**		0.2	1.0	EPA 200.7	02/21/17	02/20/17	B7B1153
Sodium	"	**16.8**		0.2	1.0	"	"	"	"
RGW-003 Ground Water	**(17B0690-03)**	**Sampled:02/14/17 16:45**		**Received:02/15/17 08:05**					
Boron	ug/l	**24.3**	R-08, J	10.0	50.0	EPA 200.8	02/17/17	02/16/17	B7B1101
Calcium	mg/l	**19.3**		0.2	1.0	EPA 200.7	02/21/17	02/20/17	B7B1153
Iron	ug/l	**6620**	R-08	35	75	EPA 200.8	02/17/17	02/16/17	B7B1101
Magnesium	mg/l	**8.0**		0.2	1.0	EPA 200.7	02/21/17	02/20/17	B7B1153
Manganese	ug/l	**2340**	R-08	0.5	2.5	EPA 200.8	02/17/17	02/16/17	B7B1101
Potassium	mg/l	**2.7**		0.2	1.0	EPA 200.7	02/21/17	02/20/17	B7B1153
Sodium	"	**13.8**		0.2	1.0	"	"	"	"

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Report To: TEHAMA COUNTY SANITATION DIST
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GERBER, CA 96035
Attention: GARY ANTONE
Project: GENERAL TESTING MINERAL WWTP GROUNDWATER MONITORING

Lab No: 17B0690
Reported: 03/01/17
Phone: 385-1462
P.O. #

Metals - Dissolved

Analyte	Units	Results	Qualifier	MDL	RL	Method	Analyzed	Prepared	Batch
RGW-001 Ground Water (17B0690-01)	**Sampled:02/14/17 12:11**		**Received:02/15/17 08:05**						
Iron	ug/l	ND		7	15	EPA 200.8	02/23/17	02/23/17	B7B1299
Manganese	"	**2.8**		0.1	0.5	"	"	"	"
RGW-002 Ground Water (17B0690-02)	**Sampled:02/14/17 15:30**		**Received:02/15/17 08:05**						
Iron	ug/l	**143**		35	75	EPA 200.8	02/23/17	02/23/17	B7B1299
Manganese	"	**4430**		0.5	2.5	"	"	"	"
RGW-003 Ground Water (17B0690-03)	**Sampled:02/14/17 16:45**		**Received:02/15/17 08:05**						
Iron	ug/l	**102**		7	15	EPA 200.8	02/23/17	02/23/17	B7B1299
Manganese	"	**2050**		0.1	0.5	"	"	"	"

Notes and Definitions

R-08	The sample was diluted due to sample matrix resulting in elevated reporting limits.
R-07	The sample was diluted due to the presence of high levels of target analytes resulting in elevated reporting limits.
QR-04	Duplicate results are within one reporting limit and pass all necessary QC criteria.
J	Detected but below the Reporting Limit; therefore, result is an estimated concentration (CLP J-Flag). The J flag is equivalent to the DNQ Estimated Concentration flag.
DET	Analyte DETECTED
ND	Analyte NOT DETECTED at or above the detection limit
NR	Not Reported
dry	Sample results reported on a dry weight basis
RPD	Relative Percent Difference
<	Less than reporting limit
≤	Less than or equal to reporting limit
>	Greater than reporting limit
≥	Greater than or equal to reporting limit
MDL	Method Detection Limit
RL/ML	Minimum Level of Quantitation
MCL/AL	Maxium Contaminant Level/Action Level
mg/kg	Results reported as wet weight
TTLC	Total Threshold Limit Concentration
STLC	Soluble Threshold Limit Concentration
TCLP	Toxicity Characteristic Leachate Procedure
Note 1	Received Temperature - according to EPA guidelines, samples for most chemistry methods should be held at ≤6 degrees C after collection, including during transportation, unless the time from sampling to delivery is <2 hours. Regulating agencies may invalidate results if temperature requirements are not met.
Note 2	According to 40 CFR Part 136 Table II, the following tests should be analyzed in the field within 15 minutes of sampling: pH, chlorine, dissolved oxygen, and sulfite.

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Report To: TEHAMA COUNTY SANITATION DIST
9380 SAN BENITO AVENUE
GERBER, CA 96035
Attention: GARY ANTONE
Project: GENERAL TESTING MINERAL WWTP INFLUENT
Description: INF-001
Matrix: Wastewater

Lab No: 17B0680
Reported: 03/01/17
Phone: 385-1462

Lab ID: 17B0680-01

Sampled: 02/14/17 10:50
Received: 02/14/17 17:05

General Chemistry

Analyte	Units	Results	Qualifier	MDL	RL	Method	Analyzed	Prepared	Batch
pH (see note 2)	pH Units	**6.73**				SM 4500-H+ B	02/15/17	02/15/17	B7B1028
BOD - 5 Day	mg/l	**17**		3	3	SM 5210B	02/20/17	02/15/17	B7B1061
Total Suspended Solids	"	**10.3**		2.0	6.0	SM 2540D	02/16/17	02/16/17	B7B1072

Notes and Definitions

J	Detected but below the Reporting Limit; therefore, result is an estimated concentration (CLP J-Flag). The J flag is equivalent to the DNQ Estimated Concentration flag.
DET	Analyte DETECTED
ND	Analyte NOT DETECTED at or above the detection limit
NR	Not Reported
dry	Sample results reported on a dry weight basis
RPD	Relative Percent Difference
<	Less than reporting limit
≤	Less than or equal to reporting limit
>	Greater than reporting limit
≥	Greater than or equal to reporting limit
MDL	Method Detection Limit
RL/ML	Minimum Level of Quantitation
MCL/AL	Maxium Contaminant Level/Action Level
mg/kg	Results reported as wet weight
TTLC	Total Threshold Limit Concentration
STLC	Soluble Threshold Limit Concentration
TCLP	Toxicity Characteristic Leachate Procedure
Note 1	Received Temperature - according to EPA guidelines, samples for most chemistry methods should be held at ≤6 degrees C after collection, including during transportation, unless the time from sampling to delivery is <2 hours. Regulating agencies may invalidate results if temperature requirements are not met.
Note 2	According to 40 CFR Part 136 Table II, the following tests should be analyzed in the field within 15 minutes of sampling: pH, chlorine, dissolved oxygen, and sulfite.

Kirby Jensen

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Report To: TEHAMA COUNTY SANITATION DIST
9380 SAN BENITO AVENUE
GERBER, CA 96035
Attention: GARY ANTONE
Project: GENERAL TESTING MINERAL WWTP RSW-001 RSW-002

Lab No: 17B0678
Reported: 03/01/17
Phone: 385-1462
P.O. #

General Chemistry

Analyte	Units	Results	Qualifier	MDL	RL	Method	Analyzed	Prepared	Batch
RSW-002 Water (17B0678-01)	**Sampled:02/14/17 14:25**		**Received:02/14/17 17:04**						
Hardness	mg/l	**15**		3	5	SM 2340C	02/17/17	02/17/17	B7B1127
pH (see note 2)	pH Units	**7.25**				SM 4500-H+ B	02/15/17	02/15/17	B7B1028
Alkalinity as CaCO3	mg/l	**21**		1	5	SM 2320B	02/22/17	02/22/17	B7B1238
Bicarbonate	"	**26**		1	5	"	"	"	"
Carbonate	"	ND		1	5	"	"	"	"
Hydroxide	"	ND		1	5	"	"	"	"
Chloride	"	**0.70**		0.10	0.50	EPA 300.0	02/16/17	02/16/17	B7B1079
Specific Conductance	umhos/cm	**40**		2	10	SM 2510B	02/14/17	02/14/17	B7B1044
Total Dissolved Solids	mg/l	**50**		3	6	SM 2540C	02/20/17	02/20/17	B7B1167
Ammonia as N	"	ND		0.01	0.05	EPA 350.1	02/22/17	02/22/17	B7B1234
Total Phosphorus as P	"	ND		0.02	0.05	SM 4500P-B+E	02/15/17	02/15/17	B7B1062
Turbidity	NTU	**3.0**		0.1	0.5	SM 2130B	02/15/17	02/15/17	B7B1052
RSW-001 Water (17B0678-02)	**Sampled:02/14/17 14:44**		**Received:02/14/17 17:04**						
Hardness	mg/l	**15**		3	5	SM 2340C	02/17/17	02/17/17	B7B1127
pH (see note 2)	pH Units	**7.31**				SM 4500-H+ B	02/15/17	02/15/17	B7B1028
Alkalinity as CaCO3	mg/l	**18**		1	5	SM 2320B	02/21/17	02/21/17	B7B1201
Bicarbonate	"	**22**		1	5	"	"	"	"
Carbonate	"	ND		1	5	"	"	"	"
Hydroxide	"	ND		1	5	"	"	"	"
Chloride	"	**0.69**		0.10	0.50	EPA 300.0	02/16/17	02/16/17	B7B1079
Specific Conductance	umhos/cm	**40**		2	10	SM 2510B	02/14/17	02/14/17	B7B1044
Total Dissolved Solids	mg/l	**32**		3	6	SM 2540C	02/20/17	02/20/17	B7B1167
Ammonia as N	"	**0.02**	J	0.01	0.05	EPA 350.1	02/22/17	02/22/17	B7B1234
Total Phosphorus as P	"	ND		0.02	0.05	SM 4500P-B+E	02/15/17	02/15/17	B7B1062
Turbidity	NTU	**2.8**		0.1	0.5	SM 2130B	02/15/17	02/15/17	B7B1052

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Report To: TEHAMA COUNTY SANITATION DIST
9380 SAN BENITO AVENUE
GERBER, CA 96035
Attention: GARY ANTONE
Project: GENERAL TESTING MINERAL WWTP RSW-001 RSW-002

Lab No: 17B0678
Reported: 03/01/17
Phone: 385-1462
P.O. #

Metals - Total

Analyte	Units	Results	Qualifier	MDL	RL	Method	Analyzed	Prepared	Batch
RSW-002 Water (17B0678-01)	**Sampled:02/14/17 14:25**		**Received:02/14/17 17:04**						
Boron	ug/l	**2.4**	J	2.0	10.0	EPA 200.8	02/17/17	02/16/17	B7B1101
Calcium	mg/l	**4.0**		0.2	1.0	EPA 200.7	02/21/17	02/20/17	B7B1153
Iron	ug/l	**183**		7	15	EPA 200.8	02/17/17	02/16/17	B7B1101
Magnesium	mg/l	**1.6**		0.2	1.0	EPA 200.7	02/21/17	02/20/17	B7B1153
Manganese	ug/l	**4.3**		0.1	0.5	EPA 200.8	02/17/17	02/16/17	B7B1101
Potassium	mg/l	**0.8**	J	0.2	1.0	EPA 200.7	02/21/17	02/20/17	B7B1153
Sodium	"	**2.2**		0.2	1.0	"	"	"	"
RSW-001 Water (17B0678-02)	**Sampled:02/14/17 14:44**		**Received:02/14/17 17:04**						
Boron	ug/l	**2.2**	J	2.0	10.0	EPA 200.8	02/17/17	02/16/17	B7B1101
Calcium	mg/l	**4.0**		0.2	1.0	EPA 200.7	02/21/17	02/20/17	B7B1153
Iron	ug/l	**149**		7	15	EPA 200.8	02/17/17	02/16/17	B7B1101
Magnesium	mg/l	**1.6**		0.2	1.0	EPA 200.7	02/21/17	02/20/17	B7B1153
Manganese	ug/l	**3.8**		0.1	0.5	EPA 200.8	02/17/17	02/16/17	B7B1101
Potassium	mg/l	**0.8**	J	0.2	1.0	EPA 200.7	02/21/17	02/20/17	B7B1153
Sodium	"	**2.2**		0.2	1.0	"	"	"	"

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Report To: TEHAMA COUNTY SANITATION DIST
9380 SAN BENITO AVENUE
GERBER, CA 96035
Attention: GARY ANTONE
Project: GENERAL TESTING MINERAL WWTP RSW-001 RSW-002

Lab No: 17B0678
Reported: 03/01/17
Phone: 385-1462
P.O. #

Metals - Dissolved

Analyte	Units	Results	Qualifier	MDL	RL	Method	Analyzed	Prepared	Batch
RSW-002 Water (17B0678-01)	**Sampled:02/14/17 14:25**		**Received:02/14/17 17:04**						
Copper	ug/l	**0.3**	J	0.1	0.5	EPA 200.8	02/23/17	02/23/17	B7B1299
Zinc	"	ND		0.6	2.0	"	"	"	"
RSW-001 Water (17B0678-02)	**Sampled:02/14/17 14:44**		**Received:02/14/17 17:04**						
Copper	ug/l	**0.3**	J	0.1	0.5	EPA 200.8	02/23/17	02/23/17	B7B1299
Zinc	"	ND		0.6	2.0	"	"	"	"

Notes and Definitions

J	Detected but below the Reporting Limit; therefore, result is an estimated concentration (CLP J-Flag). The J flag is equivalent to the DNQ Estimated Concentration flag.
DET	Analyte DETECTED
ND	Analyte NOT DETECTED at or above the detection limit
NR	Not Reported
dry	Sample results reported on a dry weight basis
RPD	Relative Percent Difference
<	Less than reporting limit
≤	Less than or equal to reporting limit
>	Greater than reporting limit
≥	Greater than or equal to reporting limit
MDL	Method Detection Limit
RL/ML	Minimum Level of Quantitation
MCL/AL	Maxium Contaminant Level/Action Level
mg/kg	Results reported as wet weight
TTLC	Total Threshold Limit Concentration
STLC	Soluble Threshold Limit Concentration
TCLP	Toxicity Characteristic Leachate Procedure
Note 1	Received Temperature - according to EPA guidelines, samples for most chemistry methods should be held at ≤6 degrees C after collection, including during transportation, unless the time from sampling to delivery is <2 hours. Regulating agencies may invalidate results if temperature requirements are not met.
Note 2	According to 40 CFR Part 136 Table II, the following tests should be analyzed in the field within 15 minutes of sampling: pH, chlorine, dissolved oxygen, and sulfite.

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	17B0678-01	17B0678-02
Calcium	4	4
Magnesium	1.6	1.6
Sodium	2.2	2.2
Potassium	0.8	0.8
Bicarbonate	26	22
Carbonate	0	0
Hydroxide	0	0
Chloride	0.7	0.69
Nitrate @ N		
Nitrate @ NO3		
Sulfate		
Fluoride		
Silica		
CATIONS	0.45	0.45
ANIONS	0.45	0.38
%RPD	0.33	16.27
HARDNESS	17	17

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Report To: TEHAMA COUNTY SANITATION DIST
9380 SAN BENITO AVENUE
GERBER, CA 96035
Attention: GARY ANTONE
Project: GENERAL TESTING MINERAL WWTP SUPPLY MONITORING

Lab No: 17B0679
Reported: 03/06/17
Phone: 385-1462

Description: SPL-001 **Lab ID:** 17B0679-01 **Sampled:** 02/14/17 13:30
Matrix: Water **Received:** 02/14/17 17:05

General Chemistry

Analyte	Units	Results	Qualifier	MDL	RL	Method	Analyzed	Prepared	Batch
Hardness	mg/l	**39**		3	5	SM 2340C	02/17/17	02/17/17	B7B1127
Alkalinity as CaCO3	"	**45**		1	5	SM 2320B	02/21/17	02/21/17	B7B1201
Bicarbonate	"	**55**		1	5	"	"	"	"
Carbonate	"	ND		1	5	"	"	"	"
Hydroxide	"	ND		1	5	"	"	"	"
Chloride	"	**1.51**		0.10	0.50	EPA 300.0	02/16/17	02/16/17	B7B1079
Specific Conductance	umhos/cm	**90**		2	10	SM 2510B	02/15/17	02/15/17	B7B1055
Total Dissolved Solids	mg/l	**63**		3	6	SM 2540C	02/20/17	02/20/17	B7B1167
Total Phosphorus as P	"	**0.03**	J	0.02	0.05	SM 4500P-B+E	02/22/17	02/22/17	B7B1243

Metals - Total

Analyte	Units	Results	Qualifier	MDL	RL	Method	Analyzed	Prepared	Batch
Boron	ug/l	ND		2.0	10.0	EPA 200.8	02/27/17	02/23/17	B7B1102
Calcium	mg/l	**11.4**		0.2	1.0	EPA 200.7	02/21/17	02/20/17	B7B1153
Iron	ug/l	ND		7	15	EPA 200.8	02/27/17	02/23/17	B7B1102
Magnesium	mg/l	**2.8**		0.2	1.0	EPA 200.7	02/21/17	02/20/17	B7B1153
Manganese	ug/l	**0.2**	J	0.1	0.5	EPA 200.8	02/27/17	02/23/17	B7B1102
Potassium	mg/l	**0.8**	J	0.2	1.0	EPA 200.7	02/21/17	02/20/17	B7B1153
Sodium	"	**4.9**		0.2	1.0	"	"	"	"

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Report To: TEHAMA COUNTY SANITATION DIST
9380 SAN BENITO AVENUE
GERBER, CA 96035
Attention: GARY ANTONE
Project: GENERAL TESTING MINERAL WWTP SUPPLY MONITORING

Lab No: 17B0679
Reported: 03/06/17
Phone: 385-1462

Notes and Definitions

J	Detected but below the Reporting Limit; therefore, result is an estimated concentration (CLP J-Flag). The J flag is equivalent to the DNQ Estimated Concentration flag.
DET	Analyte DETECTED
ND	Analyte NOT DETECTED at or above the detection limit
NR	Not Reported
dry	Sample results reported on a dry weight basis
RPD	Relative Percent Difference
<	Less than reporting limit
≤	Less than or equal to reporting limit
>	Greater than reporting limit
≥	Greater than or equal to reporting limit
MDL	Method Detection Limit
RL/ML	Minimum Level of Quantitation
MCL/AL	Maxium Contaminant Level/Action Level
mg/kg	Results reported as wet weight
TTLC	Total Threshold Limit Concentration
STLC	Soluble Threshold Limit Concentration
TCLP	Toxicity Characteristic Leachate Procedure
Note 1	Received Temperature - according to EPA guidelines, samples for most chemistry methods should be held at ≤6 degrees C after collection, including during transportation, unless the time from sampling to delivery is <2 hours. Regulating agencies may invalidate results if temperature requirements are not met.
Note 2	According to 40 CFR Part 136 Table II, the following tests should be analyzed in the field within 15 minutes of sampling: pH, chlorine, dissolved oxygen, and sulfite.

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	17B00679-01
Calcium	11.4
Magnesium	2.8
Sodium	4.9
Potassium	0.8
Bicarbonate	55
Carbonate	0
Hydroxide	0
Chloride	1.51
Nitrate @ N	
Nitrate @ NO3	
Sulfate	
Fluoride	
Silica	
CATIONS	1.03
ANIONS	0.94
%RPD	8.98
HARDNESS	40

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Report To:	TEHAMA COUNTRY SANITATION DISTRICT 9380 SAN BENITO AVE. GERBER, CA 96035	***Lab Number:***	19D0521-01
		Date:	04/30/19
		Phone:	385-1462
		Date Sampled:	04/09/19
Attention:	TIMOTHY MCSURLEY	***Date Received:***	04/19/19
		P.O. #:	
Project Name:	MINERAL WWTP	***Page 1 of 1***	
Sample Type:	WASTEWATER		

Sample Description: EFF-001 GRAB

Static-Renewal Acute Toxicity 96 Hour Bioassay - RESULTS

Results: **100** % Survival - Test **100** % Survival - Control

Static-Renewal Acute Toxicity 96 Hour Bioassay - Chemical & Physical Data

Method: EPA-821-R-02-012 5th Edition

Date/Time Test Started: 04/09/19 17:15 ***Date/Time Test Completed:*** 04/13/19 17:15 ***Species:*** *Oncorhynchus mykiss*

Age of Test Organism: 23 days ***Batch #:*** 9D03011

Acclimatization: 12°C +/- 1°C for 96 hours ***Minimum test solution volume:*** 3.5 Liters

TEST DATA	Initial		24 Hour		48 Hour		72 Hour		96 Hour	
Survival - #	10	10	10	10	10	10	10	10	10	10
Temp (°C)	11.2	11.8	12.2	11.4	12.2	11.6	12.3	11.7	12.5	11.8
pH (S.I. Units)	6.80	6.82	6.99	7.10	7.08	7.16	6.96	6.95	7.02	6.97
DO (mg/l)	11.4	11.3	10.2	10.4	10.1	10.5	10.2	9.9	9.9	9.8
Alkalinity (mg/l)	17									
Hardness (mg/l)	17									
Specific Cond. (umhos/cm)	58									
Total Chlorine (mg/l)	ND									
Ammonia (mg/L as N)	ND									

CONTROL DATA	Initial		24 Hour		48 Hour		72 Hour		96 Hour	
Survival - #	10	10	10	10	10	10	10	10	10	10
Temp (°C)	12.6	12.4	12.6	12.3	12.9	12.4	12.9	12.4	13.0	12.5
pH (S.I. Units)	8.02	8.11	7.65	7.68	7.63	7.64	7.72	7.72	7.68	7.69
DO (mg/l)	12.8	12.7	10.3	10.3	10.3	10.4	10.3	10.4	10.0	10.0
Alkalinity (mg/l)	51									
Hardness (mg/l)	44									
Specific Cond. (umhos/cm)	117									
Total Chlorine (mg/l)	ND									

Reference Toxicant Survival Data: 10 fish exposed per concentration

Concentration	Initial	24 Hour	48 Hour	72 Hour	96 Hour
0.8% w/v NaCl	10	10	10	10	10
1.2% w/v NaCl	10	10	10	10	10
1.6% w/v NaCl	10	5	3	3	3
1.8% w/v NaCl	10	0	0	0	0

Reference Toxicant LC 50: 1.53 %

Confidence Limits 1.36-1.75 %

Toxicant (Sodium Chloride) ID No.: 8A17018

The information shown on this sheet is test data only and no analysis or interpretation is intended or implied

ND-Not detected.

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Report To: TEHAMA COUNTY SANITATION DIST
9380 SAN BENITO AVENUE
GERBER, CA 96035

Lab No: 19D0521
Reported: 04/30/19
Phone: 385-1462

Attention: TIMOTHY McSORLEY
Project: MINERAL WWTP - NPDES
Description: EFF-001 **Lab ID:** 19D0521-01 **Sampled:** 04/09/19 14:45
Matrix: Wastewater **Received:** 04/09/19 17:05

General Chemistry

Analyte	Units	Results	Qualifier	MDL	RL	Method	Analyzed	Prepared	Batch
Hardness as CaCO3	mg/l	**17**		3	5	SM 2340C	04/26/19	04/26/19	B9D1588
pH (see note 2)	pH Units	**8.75**				SM 4500-H+ B	04/09/19	04/09/19	B9D1123
Alkalinity as CaCO3	mg/l	**17**		2	5	SM 2320B	04/12/19	04/12/19	B9D1241
Bicarbonate	"	**21**		2	5	"	"	"	"
Carbonate	"	ND		2	5	"	"	"	"
Hydroxide	"	ND		2	5	"	"	"	"
Chloride	"	**4.54**		0.16	0.50	EPA 300.0	04/11/19	04/11/19	B9D1189
Nitrate as N	"	ND		0.02	0.05	EPA 353.2	04/10/19	04/10/19	B9D1144
Nitrite as N	"	ND		0.003	0.010	"	"	"	"
Specific Conductance	umhos/cm	**58**		2	10	SM 2510B	04/12/19	04/12/19	B9D1243
Total Dissolved Solids	mg/l	**43**		3	6	SM 2540C	04/11/19	04/11/19	B9D1202
BOD - 5 Day	"	**4**		3	3	SM 5210B	04/15/19	04/10/19	B9D1134
Total Suspended Solids	"	**4.6**	J	2.0	6.0	SM 2540D	04/11/19	04/11/19	B9D1171
Ammonia as N	"	ND		0.025	0.050	EPA 350.1	04/15/19	04/15/19	B9D1268
Total Phosphorus as P	"	**0.124**		0.024	0.050	SM 4500P-B+E	04/15/19	04/15/19	B9D1278
Chlorine, Total Residual (see note 2)	"	ND		0.03	0.10	SM 4500-Cl G	04/09/19	04/09/19	B9D1129

Microbiology

Analyte	Units	Results	Qualifier	MDL	RL	Method	Analyzed	Prepared	Batch
Total Coliforms	MPN/100 ml	<2		2	2	SM 9221B/E	04/11/19	04/09/19	B9D1264
Fecal Coliforms	"	<2		2	2	"	"	"	"

Metals - Total

Analyte	Units	Results	Qualifier	MDL	RL	Method	Analyzed	Prepared	Batch
Boron	ug/l	**4.1**	J	2.0	10.0	EPA 200.8	04/19/19	04/12/19	B9D1177
Calcium	mg/l	**4.3**		0.1	1.0	EPA 200.7	04/18/19	04/11/19	B9D1167
Iron	ug/l	**99.3**		7.5	15.0	EPA 200.8	04/19/19	04/12/19	B9D1177
Magnesium	mg/l	**1.3**		0.1	1.0	EPA 200.7	04/18/19	04/11/19	B9D1167
Manganese	ug/l	**3.47**		0.19	0.50	EPA 200.8	04/19/19	04/12/19	B9D1177
Potassium	mg/l	**0.7**	J	0.3	1.0	EPA 200.7	04/18/19	04/11/19	B9D1167
Sodium	"	**5.3**		0.2	1.0	"	"	"	"

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Report To: TEHAMA COUNTY SANITATION DIST
9380 SAN BENITO AVENUE
GERBER, CA 96035
Attention: TIMOTHY McSORLEY
Project: MINERAL WWTP - NPDES
Description: EFF-001
Matrix: Wastewater

Lab No: 19D0521
Reported: 04/30/19
Phone: 385-1462

Lab ID: 19D0521-01

Sampled: 04/09/19 14:45
Received: 04/09/19 17:05

Metals - Dissolved

Analyte	Units	Results	Qualifier	MDL	RL	Method	Analyzed	Prepared	Batch
Copper	ug/l	**1.50**		0.17	0.50	EPA 200.8	04/12/19	04/12/19	B9D1050
Zinc	"	**1.9**	J	0.5	2.0	"	"	"	"

Notes and Definitions

QR-04	Duplicate results are within one reporting limit and pass all necessary QC criteria.
J	Detected but below the Reporting Limit; therefore, result is an estimated concentration (CLP J-Flag). The J flag is equivalent to the DNQ Estimated Concentration flag.
DET	Analyte DETECTED
ND	Analyte NOT DETECTED at or above the detection limit
NR	Not Reported
dry	Sample results reported on a dry weight basis
RPD	Relative Percent Difference
<	Less than reporting limit
≤	Less than or equal to reporting limit
>	Greater than reporting limit
≥	Greater than or equal to reporting limit
MDL	Method Detection Limit
RL/ML	Minimum Level of Quantitation
MCL/AL	Maxium Contaminant Level/Action Level
mg/kg	Results reported as wet weight
TTLC	Total Threshold Limit Concentration
STLC	Soluble Threshold Limit Concentration
TCLP	Toxicity Characteristic Leachate Procedure
Note 1	Received Temperature - according to EPA guidelines, samples for most chemistry methods should be held at ≤6 degrees C after collection, including during transportation, unless the time from sampling to delivery is <2 hours. Regulating agencies may invalidate results if temperature requirements are not met.
Note 2	According to 40 CFR Part 136 Table II, the following tests should be analyzed in the field within 15 minutes of sampling: pH, chlorine, dissolved oxygen, and sulfite.

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WECK LABORATORIES, INC.

Certificate of Analysis

FINAL REPORT

Work Orders: 9D11032

Project: 19D0521

Attn: Jennifer McCurdy

Client: Basic Laboratory
2218 Railroad Ave.
Redding, CA 96001-2504

Report Date: 4/25/2019

Received Date: 4/11/2019

Turnaround Time: Normal

Phones: (530) 243-7234

Fax: (530) 243-7494

P.O. #:

Billing Code:

Dear Jennifer McCurdy,

Enclosed are the results of analyses for samples received 4/11/19 with the Chain-of-Custody document. The samples were received in good condition, at 4.6 °C and on ice. All analyses met the method criteria except as noted in the case narrative or in the report with data qualifiers.

Sample Results

Sample: 19D0521-01, Alias: EFF-001 Sampled: 04/09/19 14:45 by Client

9D11032-01 (Water)

Analyte		Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Method: EPA 8141A	**Batch ID:** W9D0792	**Instr:** GC03		**Prepared:** 04/12/19 09:08			**Analyst:** ars	
Azinphos methyl (Guthion)		ND	0.0070	0.10	ug/l	1	04/20/19 09:45	
Bolstar		ND	0.0060	0.10	ug/l	1	04/20/19 09:45	
Chlorpyrifos		ND	0.0060	0.10	ug/l	1	04/20/19 09:45	
Coumaphos		ND	0.0090	0.10	ug/l	1	04/20/19 09:45	
Demeton-o		ND	0.0070	0.10	ug/l	1	04/20/19 09:45	
Demeton-s		ND	0.0070	0.10	ug/l	1	04/20/19 09:45	
Diazinon		**0.012**	0.0060	0.10	ug/l	1	04/20/19 09:45	J
Dichlorvos		ND	0.036	0.10	ug/l	1	04/20/19 09:45	
Dimethoate		ND	0.23	0.25	ug/l	1	04/20/19 09:45	
Disulfoton		ND	0.0050	0.10	ug/l	1	04/20/19 09:45	
Ethoprop		ND	0.0060	0.10	ug/l	1	04/20/19 09:45	
Ethyl parathion		ND	0.085	0.25	ug/l	1	04/20/19 09:45	
Fensulfothion		ND	0.010	0.10	ug/l	1	04/20/19 09:45	
Fenthion		ND	0.0050	0.10	ug/l	1	04/20/19 09:45	
Malathion		ND	0.23	0.25	ug/l	1	04/20/19 09:45	
Merphos		ND	0.027	0.10	ug/l	1	04/20/19 09:45	
Methyl parathion		ND	0.0060	0.10	ug/l	1	04/20/19 09:45	
Mevinphos		ND	0.0090	0.10	ug/l	1	04/20/19 09:45	
Naled		ND	0.0050	0.10	ug/l	1	04/20/19 09:45	
Phorate		ND	0.0050	0.10	ug/l	1	04/20/19 09:45	

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FINAL REPORT

Sample Results

(Continued)

Sample: 19D0521-01, Alias: EFF-001 — Sampled: 04/09/19 14:45 by Client

9D11032-01 (Water) — (Continued)

Analyte			Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Method: EPA 8141A (Continued)	**Batch ID:** W9D0792	**Instr:** GC03			**Prepared:** 04/12/19 09:08			**Analyst:** ars	
Ronnel			ND	0.0060	0.10	ug/l	1	04/20/19 09:45	
Stirophos			ND	0.010	0.10	ug/l	1	04/20/19 09:45	
Thionazin			ND	0.060	0.25	ug/l	1	04/20/19 09:45	
Tokuthion (Prothiofos)			ND	0.0060	0.10	ug/l	1	04/20/19 09:45	
Total Demeton, -o and -s			ND	0.014	0.20	ug/l	1	04/20/19 09:45	
Total Parathion, ethyl & methyl			ND	0.091	0.35	ug/l	1	04/20/19 09:45	
Trichloronate			ND	0.0060	0.10	ug/l	1	04/20/19 09:45	
Surrogate(s)									
Triphenyl phosphate			*118%*		*10-181*	*Conc: 1.18*		*04/20/19 09:45*	

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Notes and Definitions

Item	Definition
J	Estimated conc. detected <MRL and >MDL.
ND	NOT DETECTED at or above the Method Reporting Limit (MRL). If Method Detection Limit (MDL) is reported, then ND means not detected at or above the MDL.
Dil	Dilution
dry	Sample results reported on a dry weight basis
RPD	Relative Percent Difference
% Rec	Percent Recovery
Source	Sample that was matrix spiked or duplicated.
MDL	Method Detection Limit
MRL	The minimum levels, concentrations, or quantities of a target variable (e.g., target analyte) that can be reported with a specified degree of confidence. The MRL is also known as Limit of Quantitation (LOQ) and Detection Limit for Reporting (DLR)
MDA	Minimum Detectable Activity
NR	Not Reportable
TIC	Tentatively Identified Compound (TIC) using mass spectrometry. The reported concentration is relative concentration based on the nearest internal standard. If the library search produces no matches at, or above 85%, the compound is reported as unknown.

Any remaining sample(s) will be disposed of one month from the final report date unless other arrangements are made in advance.
An Absence of Total Coliform meets the drinking water standards as established by the California State Water Resources Control Board (SWRCB)
All results are expressed on wet weight basis unless otherwise specified.
All samples collected by Weck Laboratories have been sampled in accordance to laboratory SOP Number MIS 002.

Reviewed by:

Regina Giancola

Regina Giancola
Project Manager

EPA-UCMR #CA00211 • Guam-EPA #17-008R • HW-DOH # • ISO 17025 #L2457.01 • LACSD #10143 • NELAP-CA #04229CA • NELAP-OR #4047 • NJ-DEP #CA015 • NV-DEP #NAC 445A • SCAQMD #93LA1006

This is a complete final report. The information in this report applies to the samples analyzed in accordance with the chain-of-custody document. Weck Laboratories certifies that the test results meet all requirements of TNI unless noted by qualifiers or written in the Case Narrative. This analytical report must be reproduced in its entirety.

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Report To: TEHAMA COUNTY SANITATION DIST
9380 SAN BENITO AVENUE
GERBER, CA 96035
Attention: TIMOTHY McSORLEY
Project: MINERAL WWTP - NPDES
Description: INF-001
Matrix: Wastewater

Lab No: 19D0518
Reported: 04/24/19
Phone: 385-1462

Lab ID: 19D0518-01

Sampled: 04/09/19 12:40
Received: 04/09/19 17:00

General Chemistry

Analyte	Units	Results	Qualifier	MDL	RL	Method	Analyzed	Prepared	Batch
pH (see note 2)	pH Units	**6.58**				SM 4500-H+ B	04/09/19	04/09/19	B9D1123
BOD - 5 Day	mg/l	**5**		3	3	SM 5210B	04/15/19	04/10/19	B9D1134
Total Suspended Solids	"	**4.4**	J	2.0	6.0	SM 2540D	04/11/19	04/11/19	B9D1171

Notes and Definitions

QR-04	Duplicate results are within one reporting limit and pass all necessary QC criteria.
J	Detected but below the Reporting Limit; therefore, result is an estimated concentration (CLP J-Flag). The J flag is equivalent to the DNQ Estimated Concentration flag.
DET	Analyte DETECTED
ND	Analyte NOT DETECTED at or above the detection limit
NR	Not Reported
dry	Sample results reported on a dry weight basis
RPD	Relative Percent Difference
<	Less than reporting limit
≤	Less than or equal to reporting limit
>	Greater than reporting limit
≥	Greater than or equal to reporting limit
MDL	Method Detection Limit
RL/ML	Minimum Level of Quantitation
MCL/AL	Maxium Contaminant Level/Action Level
mg/kg	Results reported as wet weight
TTLC	Total Threshold Limit Concentration
STLC	Soluble Threshold Limit Concentration
TCLP	Toxicity Characteristic Leachate Procedure
Note 1	Received Temperature - according to EPA guidelines, samples for most chemistry methods should be held at ≤6 degrees C after collection, including during transportation, unless the time from sampling to delivery is <2 hours. Regulating agencies may invalidate results if temperature requirements are not met.
Note 2	According to 40 CFR Part 136 Table II, the following tests should be analyzed in the field within 15 minutes of sampling: pH, chlorine, dissolved oxygen, and sulfite.

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Report To: TEHAMA COUNTY SANITATION DIST
9380 SAN BENITO AVENUE
GERBER, CA 96035
Attention: TIMOTHY McSORLEY
Project: MINERAL WWTP - NPDES PONDS

Lab No: 19D0520
Reported: 04/24/19
Phone: 385-1462
P.O. # B-39118-17

General Chemistry

Analyte	Units	Results	Qualifier	MDL	RL	Method	Analyzed	Prepared	Batch
PND-001 - Grab Water (19D0520-01)		**Sampled:04/09/19 15:03**		**Received:04/09/19 17:03**					
Nitrate as N	mg/l	ND		0.02	0.05	EPA 353.2	04/10/19	04/10/19	B9D1144
BOD - 5 Day	"	**5**		3	3	SM 5210B	04/15/19	04/10/19	B9D1134
Total Suspended Solids	"	**8.0**		2.0	6.0	SM 2540D	04/11/19	04/11/19	B9D1171
PND-002 - Grab Water (19D0520-02)		**Sampled:04/09/19 15:06**		**Received:04/09/19 17:03**					
Nitrate as N	mg/l	ND		0.02	0.05	EPA 353.2	04/10/19	04/10/19	B9D1144
BOD - 5 Day	"	**8**		3	3	SM 5210B	04/15/19	04/10/19	B9D1134
Total Suspended Solids	"	**14.6**		2.0	6.0	SM 2540D	04/11/19	04/11/19	B9D1171

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Report To: TEHAMA COUNTY SANITATION DIST
9380 SAN BENITO AVENUE
GERBER, CA 96035
Attention: TIMOTHY McSORLEY
Project: MINERAL WWTP - NPDES PONDS

Lab No: 19D0520
Reported: 04/24/19
Phone: 385-1462
P.O. # B-39118-17

Metals - Total

Analyte	Units	Results	Qualifier	MDL	RL	Method	Analyzed	Prepared	Batch
PND-001 - Grab Water (19D0520-01) Sampled:04/09/19 15:03 Received:04/09/19 17:03									
Iron	ug/l	**101**		7.5	15.0	EPA 200.8	04/19/19	04/12/19	B9D1177
Manganese	"	**3.98**		0.19	0.50	"	"	"	"
PND-002 - Grab Water (19D0520-02) Sampled:04/09/19 15:06 Received:04/09/19 17:03									
Iron	ug/l	**237**		7.5	15.0	EPA 200.8	04/19/19	04/12/19	B9D1177
Manganese	"	**8.39**		0.19	0.50	"	"	"	"

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Report To: TEHAMA COUNTY SANITATION DIST
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GERBER, CA 96035
Attention: TIMOTHY McSORLEY
Project: MINERAL WWTP - NPDES PONDS

Lab No: 19D0520
Reported: 04/24/19
Phone: 385-1462
P.O. # B-39118-17

Metals - Dissolved

Analyte	Units	Results	Qualifier	MDL	RL	Method	Analyzed	Prepared	Batch
PND-001 - Grab Water (19D0520-01) Sampled:04/09/19 15:03 Received:04/09/19 17:03									
Copper	ug/l	**1.03**		0.17	0.50	EPA 200.8	04/12/19	04/12/19	B9D1050
Zinc	"	**2.1**		0.5	2.0	"	"	"	"
PND-002 - Grab Water (19D0520-02) Sampled:04/09/19 15:06 Received:04/09/19 17:03									
Copper	ug/l	**0.97**		0.17	0.50	EPA 200.8	04/12/19	04/12/19	B9D1050
Zinc	"	**2.0**		0.5	2.0	"	"	"	"

Notes and Definitions

QR-04	Duplicate results are within one reporting limit and pass all necessary QC criteria.
J	Detected but below the Reporting Limit; therefore, result is an estimated concentration (CLP J-Flag). The J flag is equivalent to the DNQ Estimated Concentration flag.
DET	Analyte DETECTED
ND	Analyte NOT DETECTED at or above the detection limit
NR	Not Reported
dry	Sample results reported on a dry weight basis
RPD	Relative Percent Difference
<	Less than reporting limit
≤	Less than or equal to reporting limit
>	Greater than reporting limit
≥	Greater than or equal to reporting limit
MDL	Method Detection Limit
RL/ML	Minimum Level of Quantitation
MCL/AL	Maxium Contaminant Level/Action Level
mg/kg	Results reported as wet weight
TTLC	Total Threshold Limit Concentration
STLC	Soluble Threshold Limit Concentration
TCLP	Toxicity Characteristic Leachate Procedure
Note 1	Received Temperature - according to EPA guidelines, samples for most chemistry methods should be held at ≤6 degrees C after collection, including during transportation, unless the time from sampling to delivery is <2 hours. Regulating agencies may invalidate results if temperature requirements are not met.
Note 2	According to 40 CFR Part 136 Table II, the following tests should be analyzed in the field within 15 minutes of sampling: pH, chlorine, dissolved oxygen, and sulfite.

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Report To: TEHAMA COUNTY SANITATION DIST
9380 SAN BENITO AVENUE
GERBER, CA 96035
Attention: TIMOTHY McSORLEY
Project: MINERAL WWTP - NPDES RECEIVING WATER

Lab No: 19D0519
Reported: 04/29/19
Phone: 385-1462
P.O. # B-39118-17

General Chemistry

Analyte	Units	Results	Qualifier	MDL	RL	Method	Analyzed	Prepared	Batch
RSW-001 - Grab Water (19D0519-01) Sampled:04/09/19 09:45 Received:04/09/19 17:01									
Hardness as CaCO3	mg/l	**18**		3	5	SM 2340C	04/26/19	04/26/19	B9D1588
pH (see note 2)	pH Units	**7.23**				SM 4500-H+ B	04/09/19	04/09/19	B9D1123
Alkalinity as CaCO3	mg/l	**17**		2	5	SM 2320B	04/12/19	04/12/19	B9D1241
Bicarbonate	"	**20**		2	5	"	"	"	"
Carbonate	"	ND		2	5	"	"	"	"
Hydroxide	"	ND		2	5	"	"	"	"
Chloride	"	**0.44**	J	0.16	0.50	EPA 300.0	04/11/19	04/11/19	B9D1189
Specific Conductance	umhos/cm	**42**		2	10	SM 2510B	04/12/19	04/12/19	B9D1243
Total Dissolved Solids	mg/l	**37**		3	6	SM 2540C	04/11/19	04/11/19	B9D1202
Ammonia as N	"	ND		0.025	0.050	EPA 350.1	04/15/19	04/15/19	B9D1268
Total Phosphorus as P	"	ND		0.024	0.050	SM 4500P-B+E	04/15/19	04/15/19	B9D1278
Turbidity	NTU	**4.2**		0.2	0.5	SM 2130B	04/10/19	04/10/19	B9D1147
RSW-002 - Grab Water (19D0519-02) Sampled:04/09/19 15:30 Received:04/09/19 17:01									
Hardness as CaCO3	mg/l	**17**		3	5	SM 2340C	04/26/19	04/26/19	B9D1588
pH (see note 2)	pH Units	**7.30**				SM 4500-H+ B	04/09/19	04/09/19	B9D1123
Alkalinity as CaCO3	mg/l	**17**		2	5	SM 2320B	04/12/19	04/12/19	B9D1241
Bicarbonate	"	**20**		2	5	"	"	"	"
Carbonate	"	ND		2	5	"	"	"	"
Hydroxide	"	ND		2	5	"	"	"	"
Chloride	"	**0.44**	J	0.16	0.50	EPA 300.0	04/11/19	04/11/19	B9D1189
Specific Conductance	umhos/cm	**43**		2	10	SM 2510B	04/12/19	04/12/19	B9D1243
Total Dissolved Solids	mg/l	**42**		3	6	SM 2540C	04/11/19	04/11/19	B9D1202
Ammonia as N	"	ND		0.025	0.050	EPA 350.1	04/15/19	04/15/19	B9D1268
Total Phosphorus as P	"	ND		0.024	0.050	SM 4500P-B+E	04/15/19	04/15/19	B9D1278
Turbidity	NTU	**3.6**		0.2	0.5	SM 2130B	04/10/19	04/10/19	B9D1147

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Report To: TEHAMA COUNTY SANITATION DIST
9380 SAN BENITO AVENUE
GERBER, CA 96035
Attention: TIMOTHY McSORLEY
Project: MINERAL WWTP - NPDES RECEIVING WATER

Lab No: 19D0519
Reported: 04/29/19
Phone: 385-1462
P.O. # B-39118-17

Microbiology

Analyte	Units	Results	Qualifier	MDL	RL	Method	Analyzed	Prepared	Batch
RSW-002 - Grab Water (19D0519-02) Sampled:04/09/19 15:30 Received:04/09/19 17:01									
Total Coliforms	MPN/100 ml	**240**			2	SM 9221B	04/12/19	04/09/19	B9D1263
RSW-001 - Grab Water (19D0519-03) Sampled:04/09/19 15:27 Received:04/09/19 17:01									
Total Coliforms	MPN/100 ml	**300**			2	SM 9221B	04/12/19	04/09/19	B9D1263

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Project: MINERAL WWTP - NPDES RECEIVING WATER

Lab No: 19D0519
Reported: 04/29/19
Phone: 385-1462
P.O. # B-39118-17

Metals - Total

Analyte	Units	Results	Qualifier	MDL	RL	Method	Analyzed	Prepared	Batch
RSW-001 - Grab Water (19D0519-01) Sampled:04/09/19 09:45 Received:04/09/19 17:01									
Boron	ug/l	**2.9**	J	2.0	10.0	EPA 200.8	04/19/19	04/12/19	B9D1177
Calcium	mg/l	**4.2**	J	0.5	5.0	EPA 200.7	04/18/19	04/11/19	B9D1167
Iron	ug/l	**242**		7.5	15.0	EPA 200.8	04/19/19	04/12/19	B9D1177
Magnesium	mg/l	**1.7**	J	0.5	5.0	EPA 200.7	04/18/19	04/11/19	B9D1167
Manganese	ug/l	**8.02**		0.19	0.50	EPA 200.8	04/19/19	04/12/19	B9D1177
Potassium	mg/l	**1.6**	J	1.5	5.0	EPA 200.7	04/18/19	04/11/19	B9D1167
Sodium	"	**2.8**	J	1.0	5.0	"	"	"	"
RSW-002 - Grab Water (19D0519-02) Sampled:04/09/19 15:30 Received:04/09/19 17:01									
Boron	ug/l	**3.0**	J	2.0	10.0	EPA 200.8	04/19/19	04/12/19	B9D1177
Calcium	mg/l	**4.1**	J	0.5	5.0	EPA 200.7	04/18/19	04/11/19	B9D1167
Iron	ug/l	**200**		7.5	15.0	EPA 200.8	04/19/19	04/12/19	B9D1177
Magnesium	mg/l	**1.8**	J	0.5	5.0	EPA 200.7	04/18/19	04/11/19	B9D1167
Manganese	ug/l	**7.78**		0.19	0.50	EPA 200.8	04/19/19	04/12/19	B9D1177
Potassium	mg/l	ND		1.5	5.0	EPA 200.7	04/18/19	04/11/19	B9D1167
Sodium	"	**2.5**	J	1.0	5.0	"	"	"	"

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Report To: TEHAMA COUNTY SANITATION DIST
9380 SAN BENITO AVENUE
GERBER, CA 96035
Attention: TIMOTHY McSORLEY
Project: MINERAL WWTP - NPDES RECEIVING WATER

Lab No: 19D0519
Reported: 04/29/19
Phone: 385-1462
P.O. # B-39118-17

Metals - Dissolved

Analyte	Units	Results	Qualifier	MDL	RL	Method	Analyzed	Prepared	Batch
RSW-001 - Grab Water (19D0519-01)	**Sampled:04/09/19 09:45**		**Received:04/09/19 17:01**						
Copper	ug/l	**0.28**	J	0.17	0.50	EPA 200.8	04/12/19	04/12/19	B9D1050
Zinc	"	ND		0.5	2.0	"	"	"	"
RSW-002 - Grab Water (19D0519-02)	**Sampled:04/09/19 15:30**		**Received:04/09/19 17:01**						
Copper	ug/l	**0.24**	J	0.17	0.50	EPA 200.8	04/12/19	04/12/19	B9D1050
Zinc	"	ND		0.5	2.0	"	"	"	"

Notes and Definitions

QR-04	Duplicate results are within one reporting limit and pass all necessary QC criteria.
J	Detected but below the Reporting Limit; therefore, result is an estimated concentration (CLP J-Flag). The J flag is equivalent to the DNQ Estimated Concentration flag.
DET	Analyte DETECTED
ND	Analyte NOT DETECTED at or above the detection limit
NR	Not Reported
dry	Sample results reported on a dry weight basis
RPD	Relative Percent Difference
<	Less than reporting limit
≤	Less than or equal to reporting limit
>	Greater than reporting limit
≥	Greater than or equal to reporting limit
MDL	Method Detection Limit
RL/ML	Minimum Level of Quantitation
MCL/AL	Maxium Contaminant Level/Action Level
mg/kg	Results reported as wet weight
TTLC	Total Threshold Limit Concentration
STLC	Soluble Threshold Limit Concentration
TCLP	Toxicity Characteristic Leachate Procedure
Note 1	Received Temperature - according to EPA guidelines, samples for most chemistry methods should be held at ≤6 degrees C after collection, including during transportation, unless the time from sampling to delivery is <2 hours. Regulating agencies may invalidate results if temperature requirements are not met.
Note 2	According to 40 CFR Part 136 Table II, the following tests should be analyzed in the field within 15 minutes of sampling: pH, chlorine, dissolved oxygen, and sulfite.

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Cation / Anion Balance

	19D0519-01	19D0519-02
Calcium	4.2	4.1
Magnesium	1.7	1.8
Sodium	2.8	0
Potassium	1.6	2.5
Bicarbonate as HCO_3	20	20
Carbonate as CO_3	0	0
Hydroxide as OH	0	0
Chloride	0.44	0.44
Nitrate as N		
Nitrate as NO_3		
Sulfate		
Fluoride		
Silica as SiO_2		
CATIONS	0.51	0.42
ANIONS	0.34	0.34
%RPD	40.34	20.18
HARDNESS	17	18

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Report To: CALIF WATER RESOURCES CONTROL BRD
364 KNOLLCREST DRIVE SUITE 205
REDDING, CA 96002
Attention: KATE SJOBERG
Project: MINERAL WATER TREATMENT PLANT

Lab No: 19D0480
Reported: 05/07/19
Phone: 224-4845
P.O. #

General Chemistry

Analyte	Units	Results	Qualifier	MDL	RL	Method	Analyzed	Prepared	Batch
MINERAL RSW - Grab Water	**(19D0480-01)**	**Sampled:04/09/19 09:45**		**Received:04/09/19 14:08**					
Hardness as CaCO3	mg/l	**18**		3	5	SM 2340C	04/26/19	04/26/19	B9D1588
pH (see note 2)	pH Units	**7.27**				SM 4500-H+ B	04/09/19	04/09/19	B9D1123
Cyanide - Total	ug/l	ND		2.1	3.0	EPA 335.4	04/11/19	04/11/19	B9D1175
MINERAL EFF - Grab Water	**(19D0480-02)**	**Sampled:04/09/19 12:23**		**Received:04/09/19 14:08**					
Hardness as CaCO3	mg/l	**17**		3	5	SM 2340C	04/26/19	04/26/19	B9D1588
pH (see note 2)	pH Units	**8.48**				SM 4500-H+ B	04/09/19	04/09/19	B9D1123
Cyanide - Total	ug/l	ND		2.1	3.0	EPA 335.4	04/11/19	04/11/19	B9D1175

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Lab No: 19D0480
Reported: 05/07/19
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Metals - Total

Analyte	Units	Results	Qualifier	MDL	RL	Method	Analyzed	Prepared	Batch
MINERAL RSW - Grab Water	**(19D0480-01)**	**Sampled:04/09/19 09:45**		**Received:04/09/19 14:08**					
Aluminum	ug/l	**364**		1.6	5.0	EPA 200.8	04/19/19	04/12/19	B9D1177
Antimony	"	ND		0.17	0.50	"	"	"	"
Arsenic	"	ND		0.19	0.50	"	"	"	"
Beryllium	"	ND		0.08	0.50	"	"	"	"
Cadmium	"	ND		0.08	0.20	"	"	"	"
Chromium	"	**0.71**		0.13	0.50	"	"	"	"
Chromium, Hexavalent (CrVI)	"	**0.096**	J	0.010	0.100	EPA 218.6	04/11/19	04/11/19	B9D1190
Chromium, Trivalent	"	**0.609**		0.130	0.500	(CALC)	04/19/19	04/12/19	[CALC]
Copper	"	**0.50**	J	0.17	0.50	EPA 200.8	"	"	B9D1177
Lead	"	**0.18**	J	0.07	0.50	"	"	"	"
Mercury	"	ND		0.07	0.20	EPA 245.2	04/22/19	04/22/19	B9D1407
Nickel	"	**0.67**		0.16	0.50	EPA 200.8	04/19/19	04/12/19	B9D1177
Selenium	"	ND		0.3	2.0	"	"	"	"
Silver	"	ND		0.04	0.20	"	04/18/19	04/12/19	B9D1179
Thallium	"	ND		0.06	0.50	"	04/19/19	04/12/19	B9D1177
Zinc	"	**0.9**	J	0.5	2.0	"	"	"	"
MINERAL EFF - Grab Water	**(19D0480-02)**	**Sampled:04/09/19 12:23**		**Received:04/09/19 14:08**					
Aluminum	ug/l	**126**		1.6	5.0	EPA 200.8	04/19/19	04/12/19	B9D1177
Antimony	"	ND		0.17	0.50	"	"	"	"
Arsenic	"	ND		0.19	0.50	"	"	"	"
Beryllium	"	ND		0.08	0.50	"	"	"	"
Cadmium	"	ND		0.08	0.20	"	"	"	"
Chromium	"	**0.23**	J	0.13	0.50	"	"	"	"
Chromium, Hexavalent (CrVI)	"	**0.033**	J	0.010	0.100	EPA 218.6	04/11/19	04/11/19	B9D1190
Chromium, Trivalent	"	**0.197**	J	0.130	0.500	(CALC)	04/19/19	04/12/19	[CALC]
Copper	"	**1.97**		0.17	0.50	EPA 200.8	"	"	B9D1177
Lead	"	**0.13**	J	0.07	0.50	"	"	"	"
Mercury	"	ND		0.07	0.20	EPA 245.2	04/22/19	04/22/19	B9D1407
Nickel	"	**0.29**	J	0.16	0.50	EPA 200.8	04/19/19	04/12/19	B9D1177
Selenium	"	ND		0.3	2.0	"	"	"	"
Silver	"	ND		0.04	0.20	"	04/18/19	04/12/19	B9D1179
Thallium	"	ND		0.06	0.50	"	04/19/19	04/12/19	B9D1177
Zinc	"	**5.9**		0.5	2.0	"	"	"	"

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Report To: CALIF WATER RESOURCES CONTROL BRD
364 KNOLLCREST DRIVE SUITE 205
REDDING, CA 96002
Attention: KATE SJOBERG
Project: MINERAL WATER TREATMENT PLANT

Lab No: 19D0480
Reported: 05/07/19
Phone: 224-4845
P.O. #

Volatile Organic Compounds

Analyte	Units	Results	Qualifier	MDL	RL	Method	Analyzed	Prepared	Batch
MINERAL RSW - Grab Water (19D0480-01)		**Sampled:04/09/19 09:45**		**Received:04/09/19 14:08**					
Acrolein	ug/l	ND	QM-05	1.73	2.00	EPA 624	04/11/19	04/11/19	B9D1184
Acrylonitrile	"	ND		0.28	0.50	"	"	"	"
Benzene	"	ND		0.09	0.50	"	04/11/19	"	"
Bromodichloromethane	"	ND		0.09	0.50	"	"	"	"
Bromoform	"	ND		0.09	0.50	"	"	"	"
Bromomethane	"	ND		0.54	1.00	"	"	"	"
Carbon tetrachloride	"	ND		0.09	0.50	"	"	"	"
Chlorobenzene	"	ND		0.08	0.50	"	"	"	"
Chloroethane	"	ND		0.24	0.50	"	"	"	"
2-Chloroethylvinyl ether	"	ND	QM-05	0.51	1.00	"	04/11/19	"	"
Chloroform	"	ND		0.12	0.50	"	04/11/19	"	"
Chloromethane	"	ND		0.14	0.50	"	"	"	"
Dibromochloromethane	"	ND		0.08	0.50	"	"	"	"
1,2-Dibromo-3-chloropropane (DBCP)	"	ND		0.40	0.50	"	"	"	"
1,2-Dibromoethane (EDB)	"	ND		0.09	0.50	"	"	"	"
1,2-Dichlorobenzene (o-DCB)	"	ND		0.08	0.50	"	"	"	"
1,3-Dichlorobenzene (m-DCB)	"	ND		0.08	0.50	"	"	"	"
1,4-Dichlorobenzene (p-DCB)	"	ND		0.08	0.50	"	"	"	"
1,1-Dichloroethane (1,1-DCA)	"	ND		0.12	0.50	"	"	"	"
1,2-Dichloroethane (1,2-DCA)	"	ND		0.15	0.50	"	"	"	"
1,1-Dichloroethene (1,1-DCE)	"	ND	QM-05	0.29	0.50	"	"	"	"
cis-1,2-Dichloroethene (c-1,2-DCE)	"	ND		0.10	0.50	"	"	"	"
trans-1,2-Dichloroethene (t-1,2-DCE)	"	ND		0.14	0.50	"	"	"	"
Dichloromethane (Methylene Chloride)	"	ND		0.50	0.50	"	"	"	"
1,2-Dichloropropane	"	ND		0.10	0.50	"	"	"	"
1,3-Dichloropropane	"	ND		0.11	0.50	"	"	"	"
1,1-Dichloropropene	"	ND		0.08	0.50	"	"	"	"
cis-1,3-Dichloropropene	"	ND		0.09	0.50	"	"	"	"
trans-1,3-Dichloropropene	"	ND		0.14	0.50	"	"	"	"
1,3-Dichloropropene (total)	"	ND		0.14	0.50	"	"	"	"
Ethylbenzene	"	ND		0.08	0.50	"	"	"	"
Methyl tert-Butyl Ether (MTBE)	"	ND		0.10	0.50	"	"	"	"
Styrene	"	ND		0.09	0.50	"	"	"	"
1,1,2,2-Tetrachloroethane	"	ND		0.12	0.50	"	"	"	"
Tetrachloroethene (PCE)	"	ND		0.10	0.50	"	"	"	"
Toluene	"	ND	QM-05, QR-03	0.08	0.50	"	"	"	"
1,2,4-Trichlorobenzene	"	ND		0.27	0.50	"	"	"	"
1,1,1-Trichloroethane (1,1,1-TCA)	"	ND		0.10	0.50	"	"	"	"
1,1,2-Trichloroethane (1,1,2-TCA)	"	ND		0.10	0.50	"	"	"	"
Trichloroethene (TCE)	"	ND		0.12	0.50	"	"	"	"
Trichlorofluoromethane (Freon 11)	"	ND		0.21	0.50	"	"	"	"
Trichlorotrifluoroethane (Freon 113)	"	ND		0.12	0.50	"	"	"	"
Vinyl chloride	"	ND		0.12	0.50	"	"	"	"
m,p-Xylene	"	ND		0.15	1.00	"	"	"	"
o-Xylene	"	ND		0.08	0.50	"	"	"	"
Xylenes (total)	"	ND		0.15	1.00	"	"	"	"
Surrogate: 1,2-Dichloroethane-d4		*108 %*		*70-130*		"	"	"	"
Surrogate: 1,2-Dichloroethane-d4		*109 %*		*70-130*		"	*04/11/19*	"	"
Surrogate: Toluene-d8		*110 %*		*70-130*		"	*04/11/19*	"	"
Surrogate: 4-Bromofluorobenzene		*102 %*		*70-130*		"	"	"	"
MINERAL EFF - Grab Water (19D0480-02)		**Sampled:04/09/19 12:23**		**Received:04/09/19 14:08**					
Acrolein	ug/l	ND	QM-05	1.73	2.00	EPA 624	04/11/19	04/11/19	B9D1184

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Report To: CALIF WATER RESOURCES CONTROL BRD
364 KNOLLCREST DRIVE SUITE 205
REDDING, CA 96002
Attention: KATE SJOBERG
Project: MINERAL WATER TREATMENT PLANT

Lab No: 19D0480
Reported: 05/07/19
Phone: 224-4845
P.O. #

Volatile Organic Compounds

Analyte	Units	Results	Qualifier	MDL	RL	Method	Analyzed	Prepared	Batch
MINERAL EFF - Grab Water (19D0480-02)		**Sampled:04/09/19 12:23**		**Received:04/09/19 14:08**					
Acrylonitrile	"	ND		0.28	0.50	"	"	04/11/19	"
Benzene	"	ND		0.09	0.50	"	04/11/19	"	"
Bromodichloromethane	"	**0.39**	J	0.09	0.50	"	"	"	"
Bromoform	"	ND		0.09	0.50	"	"	"	"
Bromomethane	"	ND		0.54	1.00	"	"	"	"
Carbon tetrachloride	"	ND		0.09	0.50	"	"	"	"
Chlorobenzene	"	ND		0.08	0.50	"	"	"	"
Chloroethane	"	ND		0.24	0.50	"	"	"	"
2-Chloroethylvinyl ether	"	ND	QM-05	0.51	1.00	"	04/11/19	"	"
Chloroform	"	**7.45**		0.12	0.50	"	04/11/19	"	"
Chloromethane	"	ND		0.14	0.50	"	"	"	"
Dibromochloromethane	"	ND		0.08	0.50	"	"	"	"
1,2-Dibromo-3-chloropropane (DBCP)	"	ND		0.40	0.50	"	"	"	"
1,2-Dibromoethane (EDB)	"	ND		0.09	0.50	"	"	"	"
1,2-Dichlorobenzene (o-DCB)	"	ND		0.08	0.50	"	"	"	"
1,3-Dichlorobenzene (m-DCB)	"	ND		0.08	0.50	"	"	"	"
1,4-Dichlorobenzene (p-DCB)	"	ND		0.08	0.50	"	"	"	"
1,1-Dichloroethane (1,1-DCA)	"	ND		0.12	0.50	"	"	"	"
1,2-Dichloroethane (1,2-DCA)	"	ND		0.15	0.50	"	"	"	"
1,1-Dichloroethene (1,1-DCE)	"	ND	QM-05	0.29	0.50	"	"	"	"
cis-1,2-Dichloroethene (c-1,2-DCE)	"	ND		0.10	0.50	"	"	"	"
trans-1,2-Dichloroethene (t-1,2-DCE)	"	ND		0.14	0.50	"	"	"	"
Dichloromethane (Methylene Chloride)	"	ND		0.50	0.50	"	"	"	"
1,2-Dichloropropane	"	ND		0.10	0.50	"	"	"	"
1,3-Dichloropropane	"	ND		0.11	0.50	"	"	"	"
1,1-Dichloropropene	"	ND		0.08	0.50	"	"	"	"
cis-1,3-Dichloropropene	"	ND		0.09	0.50	"	"	"	"
trans-1,3-Dichloropropene	"	ND		0.14	0.50	"	"	"	"
1,3-Dichloropropene (total)	"	ND		0.14	0.50	"	"	"	"
Ethylbenzene	"	ND		0.08	0.50	"	"	"	"
Methyl tert-Butyl Ether (MTBE)	"	ND		0.10	0.50	"	"	"	"
Styrene	"	ND		0.09	0.50	"	"	"	"
1,1,2,2-Tetrachloroethane	"	ND		0.12	0.50	"	"	"	"
Tetrachloroethene (PCE)	"	ND		0.10	0.50	"	"	"	"
Toluene	"	ND	QM-05, QR-03	0.08	0.50	"	"	"	"
1,2,4-Trichlorobenzene	"	ND		0.27	0.50	"	"	"	"
1,1,1-Trichloroethane (1,1,1-TCA)	"	ND		0.10	0.50	"	"	"	"
1,1,2-Trichloroethane (1,1,2-TCA)	"	ND		0.10	0.50	"	"	"	"
Trichloroethene (TCE)	"	ND		0.12	0.50	"	"	"	"
Trichlorofluoromethane (Freon 11)	"	ND		0.21	0.50	"	"	"	"
Trichlorotrifluoroethane (Freon 113)	"	ND		0.12	0.50	"	"	"	"
Vinyl chloride	"	ND		0.12	0.50	"	"	"	"
m,p-Xylene	"	ND		0.15	1.00	"	"	"	"
o-Xylene	"	ND		0.08	0.50	"	"	"	"
Xylenes (total)	"	ND		0.15	1.00	"	"	"	"
Surrogate: 1,2-Dichloroethane-d4		*107 %*		*70-130*		"	*04/11/19*	"	"
Surrogate: 1,2-Dichloroethane-d4		*107 %*		*70-130*		"	*04/11/19*	"	"
Surrogate: Toluene-d8		*19.2 %*	*S-04*	*70-130*		"	"	"	"
Surrogate: 4-Bromofluorobenzene		*99.4 %*		*70-130*		"	"	"	"
TRIP BLANK - Trip Blank Blank (19D0480-03)		**Sampled:04/09/19 00:00**		**Received:04/09/19 14:08**					
Acrolein	ug/l	ND	QM-05	1.73	2.00	EPA 624	04/11/19	04/11/19	B9D1184
Acrylonitrile	"	ND		0.28	0.50	"	"	"	"

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Report To: CALIF WATER RESOURCES CONTROL BRD
364 KNOLLCREST DRIVE SUITE 205
REDDING, CA 96002
Attention: KATE SJOBERG
Project: MINERAL WATER TREATMENT PLANT

Lab No: 19D0480
Reported: 05/07/19
Phone: 224-4845
P.O. #

Volatile Organic Compounds

Analyte	Units	Results	Qualifier	MDL	RL	Method	Analyzed	Prepared	Batch
TRIP BLANK - Trip Blank Blank	**(19D0480-03)**	**Sampled:04/09/19 00:00**		**Received:04/09/19 14:08**					
Benzene	"	ND		0.09	0.50	"	04/11/19	04/11/19	"
Bromodichloromethane	"	ND		0.09	0.50	"	"	"	"
Bromoform	"	ND		0.09	0.50	"	"	"	"
Bromomethane	"	ND		0.54	1.00	"	"	"	"
Carbon tetrachloride	"	ND		0.09	0.50	"	"	"	"
Chlorobenzene	"	ND		0.08	0.50	"	"	"	"
Chloroethane	"	ND		0.24	0.50	"	"	"	"
2-Chloroethylvinyl ether	"	ND	QM-05	0.51	1.00	"	04/11/19	"	"
Chloroform	"	ND		0.12	0.50	"	04/11/19	"	"
Chloromethane	"	ND		0.14	0.50	"	"	"	"
Dibromochloromethane	"	ND		0.08	0.50	"	"	"	"
1,2-Dibromo-3-chloropropane (DBCP)	"	ND		0.40	0.50	"	"	"	"
1,2-Dibromoethane (EDB)	"	ND		0.09	0.50	"	"	"	"
1,2-Dichlorobenzene (o-DCB)	"	ND		0.08	0.50	"	"	"	"
1,3-Dichlorobenzene (m-DCB)	"	ND		0.08	0.50	"	"	"	"
1,4-Dichlorobenzene (p-DCB)	"	ND		0.08	0.50	"	"	"	"
1,1-Dichloroethane (1,1-DCA)	"	ND		0.12	0.50	"	"	"	"
1,2-Dichloroethane (1,2-DCA)	"	ND		0.15	0.50	"	"	"	"
1,1-Dichloroethene (1,1-DCE)	"	ND	QM-05	0.29	0.50	"	"	"	"
cis-1,2-Dichloroethene (c-1,2-DCE)	"	ND		0.10	0.50	"	"	"	"
trans-1,2-Dichloroethene (t-1,2-DCE)	"	ND		0.14	0.50	"	"	"	"
Dichloromethane (Methylene Chloride)	"	ND		0.50	0.50	"	"	"	"
1,2-Dichloropropane	"	ND		0.10	0.50	"	"	"	"
1,3-Dichloropropane	"	ND		0.11	0.50	"	"	"	"
1,1-Dichloropropene	"	ND		0.08	0.50	"	"	"	"
cis-1,3-Dichloropropene	"	ND		0.09	0.50	"	"	"	"
trans-1,3-Dichloropropene	"	ND		0.14	0.50	"	"	"	"
1,3-Dichloropropene (total)	"	ND		0.14	0.50	"	"	"	"
Ethylbenzene	"	ND		0.08	0.50	"	"	"	"
Methyl tert-Butyl Ether (MTBE)	"	ND		0.10	0.50	"	"	"	"
Styrene	"	ND		0.09	0.50	"	"	"	"
1,1,2,2-Tetrachloroethane	"	ND		0.12	0.50	"	"	"	"
Tetrachloroethene (PCE)	"	ND		0.10	0.50	"	"	"	"
Toluene	"	ND	QM-05, QR-03	0.08	0.50	"	"	"	"
1,2,4-Trichlorobenzene	"	ND		0.27	0.50	"	"	"	"
1,1,1-Trichloroethane (1,1,1-TCA)	"	ND		0.10	0.50	"	"	"	"
1,1,2-Trichloroethane (1,1,2-TCA)	"	ND		0.10	0.50	"	"	"	"
Trichloroethene (TCE)	"	ND		0.12	0.50	"	"	"	"
Trichlorofluoromethane (Freon 11)	"	ND		0.21	0.50	"	"	"	"
Trichlorotrifluoroethane (Freon 113)	"	ND		0.12	0.50	"	"	"	"
Vinyl chloride	"	ND		0.12	0.50	"	"	"	"
m,p-Xylene	"	ND		0.15	1.00	"	"	"	"
o-Xylene	"	ND		0.08	0.50	"	"	"	"
Xylenes (total)	"	ND		0.15	1.00	"	"	"	"
Surrogate: 1,2-Dichloroethane-d4		*105 %*		*70-130*		*"*	*04/11/19*	*"*	*"*
Surrogate: 1,2-Dichloroethane-d4		*107 %*		*70-130*		*"*	*04/11/19*	*"*	*"*
Surrogate: Toluene-d8		*107 %*		*70-130*		*"*	*"*	*"*	*"*
Surrogate: 4-Bromofluorobenzene		*99.6 %*		*70-130*		*"*	*"*	*"*	*"*

Approved By
Basic Laboratory Inc
California ELAP Cert #1677 and #2718

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Chico, California 95928
voice 530.894.8966
fax 530.894.5143

Report To:	CALIF WATER RESOURCES CONTROL BRD 364 KNOLLCREST DRIVE SUITE 205 REDDING, CA 96002	**Lab No:**	19D0480
		Reported:	05/07/19
		Phone:	224-4845
Attention:	KATE SJOBERG	**P.O. #**	
Project:	MINERAL WATER TREATMENT PLANT		

Notes and Definitions

S-04	The surrogate recovery for this sample is outside of established control limits due to a sample matrix effect. Recoveries for the laboratory control samples are within the control limits.
QR-04	Duplicate results are within one reporting limit and pass all necessary QC criteria.
QR-03	The RPD value for the sample duplicate or MS/MSD was outside of the QC acceptance limits due to matrix interference. QC batch accepted based on LCS and/or LCSD recovery and/or RPD values.
QM-05	The spike recovery was outside acceptance limits for the MS and/or MSD due to matrix interference. The LCS and/or LCSD were within acceptance limits showing that the laboratory is in control and the data is acceptable.
J	Detected but below the Reporting Limit; therefore, result is an estimated concentration (CLP J-Flag). The J flag is equivalent to the DNQ Estimated Concentration flag.
DET	Analyte DETECTED
ND	Analyte NOT DETECTED at or above the detection limit
NR	Not Reported
dry	Sample results reported on a dry weight basis
RPD	Relative Percent Difference
<	Less than reporting limit
≤	Less than or equal to reporting limit
>	Greater than reporting limit
≥	Greater than or equal to reporting limit
MDL	Method Detection Limit
RL/ML	Minimum Level of Quantitation
MCL/AL	Maxium Contaminant Level/Action Level
mg/kg	Results reported as wet weight
TTLC	Total Threshold Limit Concentration
STLC	Soluble Threshold Limit Concentration
TCLP	Toxicity Characteristic Leachate Procedure
Note 1	Received Temperature - according to EPA guidelines, samples for most chemistry methods should be held at ≤6 degrees C after collection, including during transportation, unless the time from sampling to delivery is <2 hours. Regulating agencies may invalidate results if temperature requirements are not met.
Note 2	According to 40 CFR Part 136 Table II, the following tests should be analyzed in the field within 15 minutes of sampling: pH, chlorine, dissolved oxygen, and sulfite.

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Basic Laboratory Inc
California ELAP Cert #1677 and #2718

EMSL Analytical, Inc.

464 McCormick Street San Leandro, CA 94577
Phone/Fax: (510) 895-3675 / (510) 895-3680
http://www.EMSL.com / sanleandrolab@emsl.com

EMSL Order ID: 091908345
Customer ID: BASL62
Customer PO: 19D0480
Project ID:

Attn: Jennifer McCurdy
Basic Laboratory, Inc.
2218 Railroad Avenue
Redding, CA 96001

Phone: (530) 894-8966
Fax: (530) 894-5143
Received: 04/10/2019
Analyzed: 04/24/2019

Proj: 19D0480

Test Report: Determination of Asbestos Structures >10µm in Drinking Water Performed by the 100.2 Method (EPA 600/R-94/134)

Sample ID Client / EMSL	Sample Filtration Date/Time	Original Sample Vol. Filtered (ml)	Effective Filter Area (mm^2)	Area Analyzed (mm^2)	ASBESTOS: Asbestos Types	Fibers Detected	Analytical Sensitivity (MFL)	Concentration (MFL)	Confidence Limits (MFL)
19D0480-01 091908345-0001	4/10/2019 06:05 PM	10	1281	0.1280	None Detected	ND	1.00	<1.00	0.00 - 3.70
19D0480-02 091908345-0002	4/10/2019 06:05 PM	10	1281	0.1280	None Detected	ND	1.00	<1.00	0.00 - 3.70

MFL (million fibers per liter)

19D0480-01 — *Collection Date/Time: 04/09/2019*

Due to excessive particulate the analytical sensitivity of 0.2 MFL as required by the method was not reached.

19D0480-02 — *Collection Date/Time: 04/09/2019*

Due to excessive particulate the analytical sensitivity of 0.2 MFL as required by the method was not reached.

Analyst(s)
Vicky Zhao (2)

Matthew Batongbacal
or Other Approved Signatory

Any questions please contact Matthew Batongbacal.

Initial report from: 04/24/2019 10:06:20

McCampbell Analytical, Inc.
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Analytical Report

Client:	Basic Laboratory, Inc.	**WorkOrder:**	1904578
Date Received:	4/11/19 12:08	**Extraction Method:**	SW8151A
Date Prepared:	4/12/19	**Analytical Method:**	E515.3
Project:	19D0480	**Unit:**	µg/L

Chlorinated Herbicides

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
Mineral RSW	**1904578-001C**	**Water**	**04/09/2019 09:45**	**GC15A 04121920.D**	**176160**

Analytes	Result	MDL	RL	DF	Date Analyzed
Bentazon	ND	0.17	1.0	1	04/12/2019 23:07
2,4-D (Dichlorophenoxyacetic acid)	ND	0.35	1.0	1	04/12/2019 23:07
Dalapon	ND	0.47	1.0	1	04/12/2019 23:07
Dicamba	ND	0.27	1.0	1	04/12/2019 23:07
Dinoseb (DNBP)	ND	0.072	1.0	1	04/12/2019 23:07
Pentachlorophenol (PCP)	ND	0.065	0.20	1	04/12/2019 23:07
Picloram	ND	0.27	1.0	1	04/12/2019 23:07
2,4,5-TP (Silvex)	ND	0.099	1.0	1	04/12/2019 23:07

Surrogates	REC (%)	Limits	
DCAA	114	70-130	04/12/2019 23:07

Analyst(s): DP

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
Mineral EFF	**1904578-002C**	**Water**	**04/09/2019 12:23**	**GC15A 04121921.D**	**176160**

Analytes	Result	MDL	RL	DF	Date Analyzed
Bentazon	ND	0.17	1.0	1	04/12/2019 23:36
2,4-D (Dichlorophenoxyacetic acid)	ND	0.35	1.0	1	04/12/2019 23:36
Dalapon	ND	0.47	1.0	1	04/12/2019 23:36
Dicamba	ND	0.27	1.0	1	04/12/2019 23:36
Dinoseb (DNBP)	ND	0.072	1.0	1	04/12/2019 23:36
Pentachlorophenol (PCP)	ND	0.065	0.20	1	04/12/2019 23:36
Picloram	ND	0.27	1.0	1	04/12/2019 23:36
2,4,5-TP (Silvex)	ND	0.099	1.0	1	04/12/2019 23:36

Surrogates	REC (%)	Limits	
DCAA	118	70-130	04/12/2019 23:36

Analyst(s): DP

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Analytical Report

Client:	Basic Laboratory, Inc.	**WorkOrder:**	1904578
Date Received:	4/11/19 12:08	**Extraction Method:**	E608/SW3620B
Date Prepared:	4/15/19	**Analytical Method:**	E608
Project:	19D0480	**Unit:**	µg/L

Organochlorine Pesticides + PCBs w/ Florisil Clean-up

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
Mineral RSW	**1904578-001B**	**Water**	**04/09/2019 09:45**	**GC22 04161911.D**	**176265**

Analytes	Result	Qualifiers	MDL	RL	DF	Date Analyzed
Aldrin	ND		0.00028	0.0010	1	04/16/2019 16:54
a-BHC	ND		0.00031	0.0010	1	04/16/2019 16:54
b-BHC	ND		0.00069	0.0010	1	04/16/2019 16:54
d-BHC	ND		0.00014	0.0010	1	04/16/2019 16:54
g-BHC	ND		0.00045	0.0010	1	04/16/2019 16:54
Chlordane (Technical)	ND		0.0023	0.020	1	04/16/2019 16:54
a-Chlordane	ND		0.00085	0.0010	1	04/16/2019 16:54
g-Chlordane	ND		0.00015	0.0010	1	04/16/2019 16:54
p,p-DDD	ND		0.00011	0.0010	1	04/16/2019 16:54
p,p-DDE	ND		0.00018	0.0010	1	04/16/2019 16:54
p,p-DDT	**0.00028**	J	0.00017	0.0010	1	04/16/2019 16:54
Dieldrin	ND		0.00014	0.0010	1	04/16/2019 16:54
Endosulfan I	ND		0.00011	0.0010	1	04/16/2019 16:54
Endosulfan II	ND		0.00046	0.0010	1	04/16/2019 16:54
Endosulfan sulfate	ND		0.00033	0.0020	1	04/16/2019 16:54
Endrin	ND		0.00018	0.0010	1	04/16/2019 16:54
Endrin aldehyde	ND		0.00053	0.0010	1	04/16/2019 16:54
Endrin ketone	ND		0.00026	0.0010	1	04/16/2019 16:54
Heptachlor	ND		0.00041	0.0010	1	04/16/2019 16:54
Heptachlor epoxide	ND		0.00025	0.0010	1	04/16/2019 16:54
Methoxychlor	ND		0.00012	0.0010	1	04/16/2019 16:54
Toxaphene	ND		0.0020	0.020	1	04/16/2019 16:54
Aroclor1016	ND		0.0019	0.020	1	04/16/2019 16:54
Aroclor1221	ND		0.0024	0.020	1	04/16/2019 16:54
Aroclor1232	ND		0.0038	0.020	1	04/16/2019 16:54
Aroclor1242	ND		0.0028	0.020	1	04/16/2019 16:54
Aroclor1248	ND		0.0018	0.020	1	04/16/2019 16:54
Aroclor1254	ND		0.0015	0.020	1	04/16/2019 16:54
Aroclor1260	ND		0.0028	0.020	1	04/16/2019 16:54
PCBs, total	ND		NA	0.020	1	04/16/2019 16:54

Surrogates	REC (%)	Limits	
Decachlorobiphenyl	103	14-168	04/16/2019 16:54

Analyst(s): CK

(Cont.)

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Analytical Report

Client:	Basic Laboratory, Inc.	**WorkOrder:**	1904578
Date Received:	4/11/19 12:08	**Extraction Method:**	E608/SW3620B
Date Prepared:	4/15/19	**Analytical Method:**	E608
Project:	19D0480	**Unit:**	µg/L

Organochlorine Pesticides + PCBs w/ Florisil Clean-up

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
Mineral EFF	1904578-002B	Water	04/09/2019 12:23	GC22 04161932.D	176265

Analytes	Result	Qualifiers	MDL	RL	DF	Date Analyzed
Aldrin	ND		0.0014	0.0050	5	04/17/2019 13:35
a-BHC	ND		0.0016	0.0050	5	04/17/2019 13:35
b-BHC	ND		0.0034	0.0050	5	04/17/2019 13:35
d-BHC	ND		0.00070	0.0050	5	04/17/2019 13:35
g-BHC	ND		0.0022	0.0050	5	04/17/2019 13:35
Chlordane (Technical)	ND		0.012	0.10	5	04/17/2019 13:35
a-Chlordane	ND		0.0043	0.0050	5	04/17/2019 13:35
g-Chlordane	ND		0.00075	0.0050	5	04/17/2019 13:35
p,p-DDD	ND		0.00055	0.0050	5	04/17/2019 13:35
p,p-DDE	**0.0016**	J	0.00090	0.0050	5	04/17/2019 13:35
p,p-DDT	ND		0.00085	0.0050	5	04/17/2019 13:35
Dieldrin	ND		0.00070	0.0050	5	04/17/2019 13:35
Endosulfan I	ND		0.00055	0.0050	5	04/17/2019 13:35
Endosulfan II	ND		0.0023	0.0050	5	04/17/2019 13:35
Endosulfan sulfate	ND		0.0016	0.010	5	04/17/2019 13:35
Endrin	ND		0.00090	0.0050	5	04/17/2019 13:35
Endrin aldehyde	ND		0.0026	0.0050	5	04/17/2019 13:35
Endrin ketone	ND		0.0013	0.0050	5	04/17/2019 13:35
Heptachlor	ND		0.0021	0.0050	5	04/17/2019 13:35
Heptachlor epoxide	ND		0.0012	0.0050	5	04/17/2019 13:35
Methoxychlor	ND		0.00060	0.0050	5	04/17/2019 13:35
Toxaphene	ND		0.010	0.10	5	04/17/2019 13:35
Aroclor1016	ND		0.0095	0.10	5	04/17/2019 13:35
Aroclor1221	ND		0.012	0.10	5	04/17/2019 13:35
Aroclor1232	ND		0.019	0.10	5	04/17/2019 13:35
Aroclor1242	ND		0.014	0.10	5	04/17/2019 13:35
Aroclor1248	ND		0.0090	0.10	5	04/17/2019 13:35
Aroclor1254	ND		0.0075	0.10	5	04/17/2019 13:35
Aroclor1260	ND		0.014	0.10	5	04/17/2019 13:35
PCBs, total	ND		NA	0.10	5	04/17/2019 13:35

Surrogates	REC (%)	Limits	
Decachlorobiphenyl	99	14-168	04/17/2019 13:35

Analyst(s): CK

Analytical Comments: a1

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Analytical Report

Client:	Basic Laboratory, Inc.	**WorkOrder:**	1904578
Date Received:	4/11/19 12:08	**Extraction Method:**	E625
Date Prepared:	4/12/19	**Analytical Method:**	E625
Project:	19D0480	**Unit:**	µg/L

Semi-Volatile Organics

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
Mineral RSW	1904578-001A	Water	04/09/2019 09:45	GC17 04121914.D	176181

Analytes	Result	Qualifiers	MDL	RL	DF	Date Analyzed
Acenaphthene	ND		0.0048	0.0095	1	04/12/2019 17:16
Acenaphthylene	ND		0.0047	0.0095	1	04/12/2019 17:16
Anthracene	ND		0.0041	0.0095	1	04/12/2019 17:16
Benzidine	ND		0.52	4.7	1	04/12/2019 17:16
Benzo (a) anthracene	ND		0.018	0.019	1	04/12/2019 17:16
Benzo (a) pyrene	ND		0.0061	0.0095	1	04/12/2019 17:16
Benzo (b) fluoranthene	**0.0051**		0.0038	0.0047	1	04/12/2019 17:16
Benzo (g,h,i) perylene	ND		0.0067	0.019	1	04/12/2019 17:16
Benzo (k) fluoranthene	**0.0070**	J	0.0060	0.0095	1	04/12/2019 17:16
Benzyl Alcohol	ND		2.8	4.7	1	04/12/2019 17:16
Bis (2-chloroethoxy) Methane	ND		0.80	0.95	1	04/12/2019 17:16
Bis (2-chloroethyl) Ether	ND		0.0020	0.0047	1	04/12/2019 17:16
Bis (2-chloroisopropyl) Ether	ND		0.0085	0.0095	1	04/12/2019 17:16
Bis (2-ethylhexyl) Adipate	ND		0.37	2.8	1	04/12/2019 17:16
Bis (2-ethylhexyl) Phthalate	**0.042**		0.032	0.038	1	04/12/2019 17:16
4-Bromophenyl Phenyl Ether	ND		0.43	0.95	1	04/12/2019 17:16
Butylbenzyl Phthalate	ND		0.092	0.19	1	04/12/2019 17:16
4-Chloroaniline	ND		0.0048	0.019	1	04/12/2019 17:16
4-Chloro-3-methylphenol	ND		0.52	0.95	1	04/12/2019 17:16
2-Chloronaphthalene	ND		0.54	0.95	1	04/12/2019 17:16
2-Chlorophenol	ND		0.0082	0.019	1	04/12/2019 17:16
4-Chlorophenyl Phenyl Ether	ND		0.46	0.95	1	04/12/2019 17:16
Chrysene	**0.0099**		0.0088	0.0095	1	04/12/2019 17:16
Dibenzo (a,h) anthracene	ND		0.0089	0.0095	1	04/12/2019 17:16
Dibenzofuran	ND		0.35	0.95	1	04/12/2019 17:16
Di-n-butyl Phthalate	**0.045**	B	0.0065	0.019	1	04/12/2019 17:16
1,2-Dichlorobenzene	ND		1.0	1.9	1	04/12/2019 17:16
1,3-Dichlorobenzene	ND		1.1	1.9	1	04/12/2019 17:16
1,4-Dichlorobenzene	ND		0.95	1.9	1	04/12/2019 17:16
3,3-Dichlorobenzidine	ND		0.0077	0.019	1	04/12/2019 17:16
2,4-Dichlorophenol	ND		0.0058	0.0095	1	04/12/2019 17:16
Diethyl Phthalate	ND		0.014	0.019	1	04/12/2019 17:16
2,4-Dimethylphenol	ND		0.77	0.95	1	04/12/2019 17:16
Dimethyl Phthalate	ND		0.010	0.019	1	04/12/2019 17:16
4,6-Dinitro-2-methylphenol	ND		1.7	4.7	1	04/12/2019 17:16
2,4-Dinitrophenol	ND		0.14	0.47	1	04/12/2019 17:16
2,4-Dinitrotoluene	ND		0.0063	0.024	1	04/12/2019 17:16

(Cont.)

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Analytical Report

Client:	Basic Laboratory, Inc.	**WorkOrder:**	1904578
Date Received:	4/11/19 12:08	**Extraction Method:**	E625
Date Prepared:	4/12/19	**Analytical Method:**	E625
Project:	19D0480	**Unit:**	µg/L

Semi-Volatile Organics

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
Mineral RSW	1904578-001A	Water	04/09/2019 09:45	GC17 04121914.D	176181

Analytes	Result	Qualifiers	MDL	RL	DF	Date Analyzed
2,6-Dinitrotoluene	ND		0.0050	0.0095	1	04/12/2019 17:16
Di-n-octyl Phthalate	ND		0.019	0.12	1	04/12/2019 17:16
1,2-Diphenylhydrazine	ND		0.38	0.95	1	04/12/2019 17:16
Fluoranthene	**0.0099**		0.0065	0.0095	1	04/12/2019 17:16
Fluorene	ND		0.0061	0.0095	1	04/12/2019 17:16
Hexachlorobenzene	ND		0.0041	0.0047	1	04/12/2019 17:16
Hexachlorobutadiene	ND		0.0033	0.0095	1	04/12/2019 17:16
Hexachlorocyclopentadiene	ND		0.46	4.7	1	04/12/2019 17:16
Hexachloroethane	ND		0.0065	0.0095	1	04/12/2019 17:16
Indeno (1,2,3-cd) pyrene	**0.0069**	J	0.0062	0.019	1	04/12/2019 17:16
Isophorone	ND		0.63	0.95	1	04/12/2019 17:16
2-Methylnaphthalene	ND		0.0050	0.0095	1	04/12/2019 17:16
2-Methylphenol (o-Cresol)	ND		0.50	0.95	1	04/12/2019 17:16
3 & 4-Methylphenol (m,p-Cresol)	ND		0.39	0.95	1	04/12/2019 17:16
Naphthalene	**0.012**		0.0046	0.0095	1	04/12/2019 17:16
2-Nitroaniline	ND		1.7	4.7	1	04/12/2019 17:16
3-Nitroaniline	ND		2.9	4.7	1	04/12/2019 17:16
4-Nitroaniline	ND		2.6	4.7	1	04/12/2019 17:16
Nitrobenzene	ND		0.90	0.95	1	04/12/2019 17:16
2-Nitrophenol	ND		2.3	4.7	1	04/12/2019 17:16
4-Nitrophenol	ND		1.0	4.7	1	04/12/2019 17:16
N-Nitrosodiphenylamine	ND		0.39	0.95	1	04/12/2019 17:16
N-Nitrosodi-n-propylamine	ND		0.62	0.95	1	04/12/2019 17:16
Pentachlorophenol	ND		0.052	0.24	1	04/12/2019 17:16
Phenanthrene	ND		0.0052	0.019	1	04/12/2019 17:16
Phenol	ND		0.0084	0.019	1	04/12/2019 17:16
Pyrene	**0.0071**	J	0.0054	0.019	1	04/12/2019 17:16
Pyridine	ND		0.47	0.95	1	04/12/2019 17:16
1,2,4-Trichlorobenzene	ND		0.085	0.95	1	04/12/2019 17:16
2,4,5-Trichlorophenol	ND		0.0058	0.047	1	04/12/2019 17:16
2,4,6-Trichlorophenol	ND		0.0047	0.047	1	04/12/2019 17:16
N-Nitrosodimethylamine	ND		2.7	4.7	1	04/12/2019 17:16

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http://www.mccampbell.com / E-mail: main@mccampbell.com

Analytical Report

Client:	Basic Laboratory, Inc.	**WorkOrder:**	1904578
Date Received:	4/11/19 12:08	**Extraction Method:**	E625
Date Prepared:	4/12/19	**Analytical Method:**	E625
Project:	19D0480	**Unit:**	µg/L

Semi-Volatile Organics

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
Mineral RSW	1904578-001A	Water	04/09/2019 09:45	GC17 04121914.D	176181

Analytes	Result	Qualifiers	MDL	RL	DF	Date Analyzed
Surrogates	**REC (%)**			**Limits**		
2-Fluorophenol	38			1-92		04/12/2019 17:16
Phenol-d5	27			5-104		04/12/2019 17:16
Nitrobenzene-d5	62			4-143		04/12/2019 17:16
2-Fluorobiphenyl	51			9-134		04/12/2019 17:16
2,4,6-Tribromophenol	89			1-159		04/12/2019 17:16
Terphenyl-d14	82			5-150		04/12/2019 17:16

Analyst(s): REB

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Analytical Report

Client:	Basic Laboratory, Inc.	**WorkOrder:**	1904578
Date Received:	4/11/19 12:08	**Extraction Method:**	E625
Date Prepared:	4/12/19	**Analytical Method:**	E625
Project:	19D0480	**Unit:**	µg/L

Semi-Volatile Organics

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
Mineral EFF	1904578-002A	Water	04/09/2019 12:23	GC17 04121915.D	176181

Analytes	Result	Qualifiers	MDL	RL	DF	Date Analyzed
Acenaphthene	ND		0.0049	0.0095	1	04/12/2019 17:43
Acenaphthylene	ND		0.0048	0.0095	1	04/12/2019 17:43
Anthracene	ND		0.0041	0.0095	1	04/12/2019 17:43
Benzidine	ND		0.52	4.8	1	04/12/2019 17:43
Benzo (a) anthracene	ND		0.018	0.019	1	04/12/2019 17:43
Benzo (a) pyrene	ND		0.0061	0.0095	1	04/12/2019 17:43
Benzo (b) fluoranthene	ND		0.0038	0.0048	1	04/12/2019 17:43
Benzo (g,h,i) perylene	ND		0.0068	0.019	1	04/12/2019 17:43
Benzo (k) fluoranthene	ND		0.0060	0.0095	1	04/12/2019 17:43
Benzyl Alcohol	ND		2.8	4.8	1	04/12/2019 17:43
Bis (2-chloroethoxy) Methane	ND		0.80	0.95	1	04/12/2019 17:43
Bis (2-chloroethyl) Ether	ND		0.0020	0.0048	1	04/12/2019 17:43
Bis (2-chloroisopropyl) Ether	ND		0.0085	0.0095	1	04/12/2019 17:43
Bis (2-ethylhexyl) Adipate	ND		0.37	2.9	1	04/12/2019 17:43
Bis (2-ethylhexyl) Phthalate	**0.078**		0.032	0.038	1	04/12/2019 17:43
4-Bromophenyl Phenyl Ether	ND		0.43	0.95	1	04/12/2019 17:43
Butylbenzyl Phthalate	ND		0.092	0.19	1	04/12/2019 17:43
4-Chloroaniline	ND		0.0049	0.019	1	04/12/2019 17:43
4-Chloro-3-methylphenol	ND		0.52	0.95	1	04/12/2019 17:43
2-Chloronaphthalene	ND		0.54	0.95	1	04/12/2019 17:43
2-Chlorophenol	ND		0.0082	0.019	1	04/12/2019 17:43
4-Chlorophenyl Phenyl Ether	ND		0.46	0.95	1	04/12/2019 17:43
Chrysene	ND		0.0089	0.0095	1	04/12/2019 17:43
Dibenzo (a,h) anthracene	ND		0.0090	0.0095	1	04/12/2019 17:43
Dibenzofuran	ND		0.35	0.95	1	04/12/2019 17:43
Di-n-butyl Phthalate	**0.045**	B	0.0065	0.019	1	04/12/2019 17:43
1,2-Dichlorobenzene	ND		1.0	1.9	1	04/12/2019 17:43
1,3-Dichlorobenzene	ND		1.1	1.9	1	04/12/2019 17:43
1,4-Dichlorobenzene	ND		0.95	1.9	1	04/12/2019 17:43
3,3-Dichlorobenzidine	ND		0.0077	0.019	1	04/12/2019 17:43
2,4-Dichlorophenol	ND		0.0058	0.0095	1	04/12/2019 17:43
Diethyl Phthalate	**0.015**	J	0.014	0.019	1	04/12/2019 17:43
2,4-Dimethylphenol	ND		0.77	0.95	1	04/12/2019 17:43
Dimethyl Phthalate	ND		0.010	0.019	1	04/12/2019 17:43
4,6-Dinitro-2-methylphenol	ND		1.7	4.8	1	04/12/2019 17:43
2,4-Dinitrophenol	ND		0.14	0.48	1	04/12/2019 17:43
2,4-Dinitrotoluene	ND		0.0063	0.024	1	04/12/2019 17:43

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Analytical Report

Client:	Basic Laboratory, Inc.	**WorkOrder:**	1904578
Date Received:	4/11/19 12:08	**Extraction Method:**	E625
Date Prepared:	4/12/19	**Analytical Method:**	E625
Project:	19D0480	**Unit:**	µg/L

Semi-Volatile Organics

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
Mineral EFF	1904578-002A	Water	04/09/2019 12:23	GC17 04121915.D	176181

Analytes	Result	Qualifiers	MDL	RL	DF	Date Analyzed
2,6-Dinitrotoluene	ND		0.0051	0.0095	1	04/12/2019 17:43
Di-n-octyl Phthalate	ND		0.019	0.12	1	04/12/2019 17:43
1,2-Diphenylhydrazine	ND		0.38	0.95	1	04/12/2019 17:43
Fluoranthene	ND		0.0065	0.0095	1	04/12/2019 17:43
Fluorene	ND		0.0061	0.0095	1	04/12/2019 17:43
Hexachlorobenzene	ND		0.0041	0.0048	1	04/12/2019 17:43
Hexachlorobutadiene	ND		0.0033	0.0095	1	04/12/2019 17:43
Hexachlorocyclopentadiene	ND		0.46	4.8	1	04/12/2019 17:43
Hexachloroethane	ND		0.0065	0.0095	1	04/12/2019 17:43
Indeno (1,2,3-cd) pyrene	ND		0.0062	0.019	1	04/12/2019 17:43
Isophorone	ND		0.63	0.95	1	04/12/2019 17:43
2-Methylnaphthalene	ND		0.0051	0.0095	1	04/12/2019 17:43
2-Methylphenol (o-Cresol)	ND		0.51	0.95	1	04/12/2019 17:43
3 & 4-Methylphenol (m,p-Cresol)	ND		0.39	0.95	1	04/12/2019 17:43
Naphthalene	ND		0.0046	0.0095	1	04/12/2019 17:43
2-Nitroaniline	ND		1.7	4.8	1	04/12/2019 17:43
3-Nitroaniline	ND		3.0	4.8	1	04/12/2019 17:43
4-Nitroaniline	ND		2.6	4.8	1	04/12/2019 17:43
Nitrobenzene	ND		0.91	0.95	1	04/12/2019 17:43
2-Nitrophenol	ND		2.3	4.8	1	04/12/2019 17:43
4-Nitrophenol	ND		1.0	4.8	1	04/12/2019 17:43
N-Nitrosodiphenylamine	ND		0.39	0.95	1	04/12/2019 17:43
N-Nitrosodi-n-propylamine	ND		0.62	0.95	1	04/12/2019 17:43
Pentachlorophenol	ND		0.052	0.24	1	04/12/2019 17:43
Phenanthrene	ND		0.0052	0.019	1	04/12/2019 17:43
Phenol	ND		0.0084	0.019	1	04/12/2019 17:43
Pyrene	ND		0.0054	0.019	1	04/12/2019 17:43
Pyridine	ND		0.47	0.95	1	04/12/2019 17:43
1,2,4-Trichlorobenzene	ND		0.085	0.95	1	04/12/2019 17:43
2,4,5-Trichlorophenol	ND		0.0058	0.048	1	04/12/2019 17:43
2,4,6-Trichlorophenol	**0.015**	J	0.0047	0.048	1	04/12/2019 17:43
N-Nitrosodimethylamine	ND		2.7	4.8	1	04/12/2019 17:43

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Analytical Report

Client:	Basic Laboratory, Inc.	**WorkOrder:**	1904578
Date Received:	4/11/19 12:08	**Extraction Method:**	E625
Date Prepared:	4/12/19	**Analytical Method:**	E625
Project:	19D0480	**Unit:**	µg/L

Semi-Volatile Organics

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
Mineral EFF	1904578-002A	Water	04/09/2019 12:23	GC17 04121915.D	176181

Analytes	Result	Qualifiers	MDL	RL	DF	Date Analyzed
Surrogates	REC (%)			Limits		
2-Fluorophenol	23			1-92		04/12/2019 17:43
Phenol-d5	8			5-104		04/12/2019 17:43
Nitrobenzene-d5	67			4-143		04/12/2019 17:43
2-Fluorobiphenyl	51			9-134		04/12/2019 17:43
2,4,6-Tribromophenol	90			1-159		04/12/2019 17:43
Terphenyl-d14	86			5-150		04/12/2019 17:43

Analyst(s): REB

PLATES

DATE	PACE ENGINEERING REDDING, CALIFORNIA	TEHAMA COUNTY SANITATION DISTRICT NO. 1 MINERAL 2019 WASTEWATER MASTER PLAN	PLATE
9/2019		EXISTING 2017 PIPE CAPACITY	1

Plot Date: 9/4/2019 Login Name: nhumphreys
File Name: M:\Hydraulic Models\Sewer Models\Mineral Collection System\Base Model\2017 Mineral Existing Collection System.mxd

LEGEND:

- 8" GRAVITY FLOW SEWER AND SIZE W/PIPE CAPACITY UTILIZED: LESS THAN 50%
- 8" GRAVITY FLOW SEWER AND SIZE W/PIPE CAPACITY UTILIZED: 50% - 75%
- 77 MANHOLE AND NUMBER
- OUTFALL TO WWTP
- PARCEL
- 8 PROJECTED INFILL/GROWTH
- 8" PROPOSED PIPE REPLACEMENT
- 57 PROPOSED MANHOLE REPLACEMENT

NOTES:
1. PIPE CAPACITY ASSUMES 25% SYSTEM WIDE REDUCTION IN I&I FROM 2017 FLOWS. IF I&I IS NOT REDUCED, INCREASE PARALLELED PIPE SIZE TO 10-INCH BETWEEN POINTS 1 AND 2.
2. REFER TO TABLE 7 FOR DETAILS OF PROJECTED GROWTH DUE TO INFILL.

BAR IS ONE INCH ON ORIGINAL DRAWING

0" 1"

IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY.

PACE ENGINEERING
REDDING, CALIFORNIA

SIGNED

DES NH	CKD LM	JOB NO.
DRN NH	DATE 09/04/19	288.36

TEHAMA COUNTY SANITATION DISTRICT NO.1 MINERAL
2019 WASTEWATER MASTER PLAN

FUTURE 2037 GROWTH, PIPE CAPACITY, AND RECOMMENDED IMPROVEMENTS

PLATE
2

Plot Date: September 04, 2019 — 8:49 am Login Name: nhumphreys
File Name: M:\Land Projects\0288.36 Mineral WW Collection & Treatment System Improvement Project\DWG\Mineral Sewer System 2017.dwg, Layout: PLATE 2