

BEAR VALLEY WATER DISTRICT  
2016 ANNUAL OPERATIONS REPORT

Order # R5-2016-054



January 27, 2017

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## SECTION 1 - INTRODUCTION AND BACKGROUND

### 1.1 Introduction

The Bear Valley Water District (District) provides sanitary sewer collection, treatment and disposal for approximately 600 residential and commercial connections in the Alpine County community of Bear Valley. The District's service area is comprised of approximately 3000 acres located primarily north of California State Highway 4. The District serves the developed private, residential and commercial areas of the Bear Valley village as well as developed adjoining federal recreational lands including the United States Forest Service's (USFS) Lake Alpine Resort and campgrounds, special use permitted (SUP) residential cabins and the Bear Valley Mountain downhill ski resort. The District's wastewater treatment and disposal facility (WWTF) is regulated by the Central Valley Regional Water Quality Control Board (Regional Board) under Waste Discharge Requirements (WDRs) Order No. 5-01-208 and Order No. R5-2016-0054.

### 1.2 Background

During the 2016 water year (October 2015 to September 2016), an annual daily average flow of approximately 0.06 million gallons per day (MGD) (approximately 21.40 MG total) was received at the District WWTF. WDRs Order No. 5-01-208 currently limit influent flow to 0.1 MGD (annual average basis).

Preliminary treatment at the District's main pump station (headworks) consists of shredding (comminutor) and grit removal before the influent reaches the primary sedimentation tank where the settleable solids are allowed to fall to the bottom of the tank. Effluent flow is then measured through a Badger magnetic flow tube during transfer via three, 10 HP Paco pumps to a 14.18 million gallon (MG) two cell, aerated treatment lagoon for secondary biological nutrient removal. While in the two cell lagoon system, the constituents are largely consumed and/or sequestered. Air is delivered to the secondary treatment lagoon via one 40 HP, VFD-equipped Gardner Denver positive displacement blower to thirty six (36) – 9' high, 18" diameter, submerged helixor, coarse bubble diffusers. Inline YSI sensors communicate with the VFD blower by way of the SCADA system to keep dissolved oxygen and suspended solids at optimum levels. Treated effluent from the aerated lagoon is then chlorinated during transfer via (2) - 200 GPM Paco pumps through a 12,000 gallon chlorine contact tank. The chlorinated effluent is then placed into storage and receives further treatment in a 76.4 MG effluent polishing reservoir.

During the irrigation season, typically late spring through early autumn, the polished effluent is disposed of through spray irrigation on approximately 80 acres of sprayfields: 40 acres of land which is authorized by Special Use Permit (SUP) from the USFS and 40 acres under private lease through 2048. Both the leased disposal area and the permitted land have been in service since before the installation of the groundwater monitoring wells (approximately 40 years for the leased land) at the site.

Effluent disposal via spray irrigation involves the disbursement of the effluent through low impact, high uniformity, Nelson sprinkler heads upon soils and vegetation within the disposal area. The average monthly application rates to the 80 acre sprayfield area during the peak disposal months of 2016 ranged from approximately 2.06 MG - 23.78 MG per month ( 0.026 MG – 0.297 MG per acre per month). The water is allowed to percolate into the soil and evapotranspire into the atmosphere. WDRs Order No. 5-01-208 limit application of wastewater to reasonable rates considering soil, climate, and irrigation management system.

## **SECTION 2 - NPDES PERMIT REQUIREMENTS**

The District's NPDES Permit contains Final Effluent Limitations on the discharge from the storage reservoir (EFF-001) as well as receiving water limitations to Bloods Creek. In 2007 the outfall project was completed to allow discharge pursuant to the District's current NPDES Permit (WDRs Order No. R5-2016-0054 (adopted 24 June 2016 and effective 1 August 2016). During the discharge period of January 1 to June 30, 2016, the District did not discharge effluent to Bloods Creek; therefore no effluent subject to the NPDES requirements existed during 2016.

The NPDES permit requires Notification of Discharge be submitted to RWQCB and other agencies in order to obtain permission to discharge to surface waters in any given year. Since no discharge occurred in 2016, that notification was not required.

## SECTION 3 - FACILITY CONTACT INFORMATION AND WASTEWATER TREATMENT PLANT OPERATOR CERTIFICATIONS

### 3.1 Facility Contact Information

Bear Valley Water District  
P.O. Box 5027  
Bear Valley, CA 95223

Administrative Contact: Jeff Gouveia, General Manager  
Phone: (209) 753-2112  
Fax: (209) 753-6267

Routine Contact: Jeff Gouveia, General Manager  
Phone: (209) 753-2112  
Fax: (209) 753-6267

Emergency Contact: Jeff Gouveia, General Manager  
Emergency Contact Phone: (209) 743-0836

### 3.2 District Operator Certifications & Responsibilities

Three District staff members are currently certified operators. Brief summaries of staff certifications and responsibilities are as follows:

**Jeff Gouveia, General Manager - Grade I-41218**, oversees all phases of operations and administration of District.

**Guy West, Grade II-28912, Chief Plant Operator**, performs day to day operational tasks, treatment, collections, and land application. Mr. West is responsible for all phases of operations.

**Steven Mikesell, Grade II-28053, Field Supervisor**, oversees land application, treatment, and collections.

**Robin Murphy, Grade I-10626**, performs day to day operational tasks, treatment, collections, and land application.

**SECTION 4 - INSTRUMENT CALIBRATION**

According to the General Monitoring Provisions of the District’s NPDES MRP, all instruments must be calibrated at least annually or according to the instrument manufacturer’s instructions. The following flow monitoring and field instruments were calibrated in 2016:

**Main Pump Station (Headworks)**

<b>Instrument</b>	<b>Calibration</b>
Hach Sigma 980 Permanent Open Channel Flow Meter	Not required per manufacturer
Badger M-3000 Magnetic Flow Meter	Not required per manufacturer
GLI pH Analyzer	September 2016 Annually by Staff
Keller Submersible Level Transmitter	September 2016 Aqua Sierra Controls

**Treatment Plant Control Building**

<b>Instrument</b>	<b>Calibration</b>
YSI Dissolved Oxygen Analyzer Pond Monitoring	September 2016 Aqua Sierra Controls
YSI Suspended Solids Analyzer Pond Monitoring	Not required per manufacturer
Portable Dissolved Oxygen Probe Pond and Creek Monitoring	Weekly by staff
Portable pH Probe Pond and Creek Monitoring	Weekly by staff
Hach Model 2100N Laboratory Turbidimeter	Quarterly by staff
Hach Auto Cat 9000 Chlorine Amperometric Titrator	Fully Serviced & Calibrated by Hach Dec 2016
Keller Submersible Level Transmitter Treatment Lagoon	September 2016 Aqua Sierra Controls

KPSI Submersible Level Transmitter Polishing Reservoir	September 2016 Aqua Sierra Controls
Endress & Hauser 4" Magnetic Flow Meter Pond Transfer – Treatment > Storage Reservoir	New Flow Tube Installed & Calibrated October 2016

**Surface Water Discharge Components**

<b>Instrument</b>	<b>Calibration</b>
GLI pH Analyzer Surface Water Discharge	September 2016 Aqua Sierra Controls
Siemens CFC Chlorine Residual Analyzer Surface Water Discharge	Weekly By Staff
PMC Submersible Level Transmitter Bloods Creek - Surface Water Discharge	New Transducer Installed & Calibrated October 2016
Endress & Hauser Magnetic Flow Meter Surface Water Discharge	Not required per manufacturer

**Land Application Components**

<b>Instrument</b>	<b>Calibration</b>
McCrometer 4" Bolt On Saddle Meters Sprayfield Flow Meters	Every 4-5 years with average flows and usage per manufacturer – Last calibrated in 2014

**Lake Alpine Boat Ramp Lift Station**

<b>Instrument</b>	<b>Calibration</b>
Blue Ribbon Submersible Level Transmitter	Sept 2016 Aqua Sierra Controls

## **SECTION 5 – OPERATION AND MAINTENANCE MANUAL**

The District maintains a current Operation and Maintenance (O&M) Manual as well as a current Contingency Plan for the all the facilities managed by the District. These items are reviewed annually each November and updated as necessary.

District staff last reviewed for accuracy and revised as necessary the Operation and Maintenance Manual as well as a Contingency Plan in November 2016 ensuring these items reflect the wastewater treatment plant as currently constructed and operated.

## **SECTION 6 – SUMMARIES OF MONITORING DATA**

Provision X.C.4.e of the District’s Monitoring & Reporting Program indicates tabular and graphical summaries shall be submitted upon written request by the Central Valley Water Board. No such request was received by the District in 2016.

## **SECTION 7 – VIOLATIONS AND CORRECTIVE ACTIONS**

### **7.1 Notices of Violation**

No Notices of Violation were received in 2016.

### **7.2 Corrective Actions**

Central Valley Water Board staff conducted an inspection of the facility on 5 October 2016 to determine compliance with WDR’s R5-2016-0045. An inspection report was issued on 18 November 2016 recommending implementation a system for logging and tracking work orders. The District implemented this corrective action in December 2016 with the introduction of an excel worksheet for logging and tracking work orders. The District is also working toward implementing a GIS-centric asset management system (AMS) solution to better log and track work orders in the future.



### 7.3 Technical Reports

The District completed and submitted the following technical and other documents as required by the NPDES Permit during 2016:

1. Annual Operations Report submitted – Submitted January 28, 2016
2. Comments & Suggestions to Tentative Order R5-2016-0045 - Submitted May 26, 2016
3. Analytical Methods Report for R5-2016-0045 - Submitted August 10, 2016
4. First Tri-Annual Groundwater Monitoring Report - Submitted August 23, 2016
5. Second Tri-Annual Monitoring Reports - Submitted October 24, 2016
6. Revised Analytical Methods Report for R5-2016-0045 - Submitted November 1, 2016
7. Third Tri-Annual Monitoring Reports - Submitted December 12, 2016
8. Updated Dilution/Mixing Zone Study Work Plan –Submitted December 19, 2016

## SECTION 8 – SLUDGE/SOLID WASTE DISPOSAL

### 8.1 Treatment Lagoon

Effluent is transferred from the District's headworks following preliminary treatment to a 14.18 million gallon (MG) two cell, aerated treatment lagoon for secondary biological nutrient removal. While in the two cell lagoon system, the solids are largely consumed and/or sequestered as air is delivered to the secondary treatment lagoon to thirty six (36) - 9' high, 18" diameter, submerged helixor, coarse bubble diffusers. The aeration and mixing strategy employed by the District suspends solids sufficiently for successful floc formation permitting efficient biological consumption of most solids.

Limited sludge at the WWTF has accumulates at the bottom of the two cell treatment lagoon since 1972. The sludge depth at the bottom of the treatment pond is measured with a sludge judge annually. Sludge measurement in September 2016 revealed that the sludge has not exceeded six inches on average and is more commonly one to three inches in most portions of the 350' square lagoon.

In July 2016, staff also performed a sonar scan and analysis of the bottom of the treatment lagoon. This scan revealed some larger sludge accumulation on the sides of the baffle wall as well as around the 9' high, 18" diameter helixors where ostensibly the mixers cannot properly suspend the solids.

In general, the organic solids loading rate on the pond system appears to be so low compared to their natural decay and consumption rate that no material accumulation of sludge appears to have occurred over the past 40+ years. At some point in the distant future, the treatment ponds may require sludge to be removed and disposed of at an appropriate landfill.

## **8.2 Lift Stations**

At the headworks of the WWTF, the most common materials generated generally include grease, sediment, and minor non-organic solid waste. The items not shredded during pretreatment are removed as necessary from the waste stream and disposed of in local, municipal waste transfer stations bound for landfill. Meanwhile, annual organic solids removal at all four (4) District lift stations, totaling approximately 1500 – 2000 gallons, is routinely performed each September or October and was completed this year by El Dorado Septic on September 29, 2016.

**BEAR VALLEY WATER DISTRICT, 2016 ANNUAL OPERATIONS REPORT**

Appendix A. 2016 Updated Polishing Pond Elevation Chart  
January 28, 2017

**APPENDIX A 2016 UPDATED POLISHING POND ELEVATION CHART**