EXECUTIVE OFFICER'S REPORT
Covers March 1, 2023 – March 31, 2023

Contents

1. Personnel Report – *Sandra Lopez*

New Hires – none

Vacancies

- Supervising Engineering Geologist, Victorville. This position will manage the South Lahontan Basin office. It will plan, organize, manage, coordinate, and report the work of the South Division.
- Water Resource Control Engineer, Wastewater & Agricultural Unit, Victorville. This position provides regulatory oversight of projects involving discharges to groundwater or surface waters and projects intended to restore and/or enhance water quality in the Waste Discharge Requirements (WDRs), National Pollutant Discharge Elimination System (NPDES), and Site Cleanup Programs.
- Environmental Scientist, Land Disposal Unit, Victorville. This position will provide regulatory oversight of dredge and fill permitting and compliance of Caltrans projects regionwide.
- Staff Services Analyst (General), Victorville. This position will provide support to technical and administrative staff, ensure documents comply with accessibility standards, assist with process improvements, prepare agenda items and staff

documents for distribution and provide administrative support at regional board meetings held throughout the region.

- Staff Services Analyst (General), South Lake Tahoe. This position will provide support to technical and administrative staff, ensure documents comply with accessibility standards, assist with process improvements, prepare agenda items and staff documents for distribution, and provide administrative support at regional board meetings held throughout the region.

- Scientific Aids (two positions), Regulatory & Enforcement Unit, South Lake Tahoe. This position supports staff primarily through review of submitted self-monitoring reports, along with other special projects.

- Water Resource Control Engineer, Cleanup/Site Investigation & Enforcement Unit, South Lake Tahoe. This position will oversee/direct site investigation and cleanup activities at various sites, such as underground storage tank sites, dry cleaner sites, mines, landfills, and Department of Defense sites.

- Water Resource Control Engineer, Regulatory and Enforcement Unit, South Lake Tahoe. This position will be the lead contact on several facilities under state Waste Discharge Requirements to land, discharges to surface water such as wastewater treatment facilities, and stormwater on industrial and construction sites.

Departures – none

2. Early season treatment at Leviathan Mine, Alpine County – *Leviathan Unit*

Water Board contractors began water treatment at Leviathan Mine in February 2023, approximately five months earlier than normal. This early season work is more challenging because it occurs outside the regular field season (June 1 through September 30) when winter weather conditions persist and complicate site access and operations. Water Board contractors successfully treated water between storms during February through March and have been continuously treating pond water since March 29, 2023.

Site Background

Leviathan Mine is an inactive mine located in Alpine County, California, approximately six miles east of Markleeville as shown in Figure 2.1. Past mining activities resulted in the perpetual generation and discharge of acid mine drainage (AMD) from the mine property. The discharge of AMD adversely impacts downstream receiving waters.

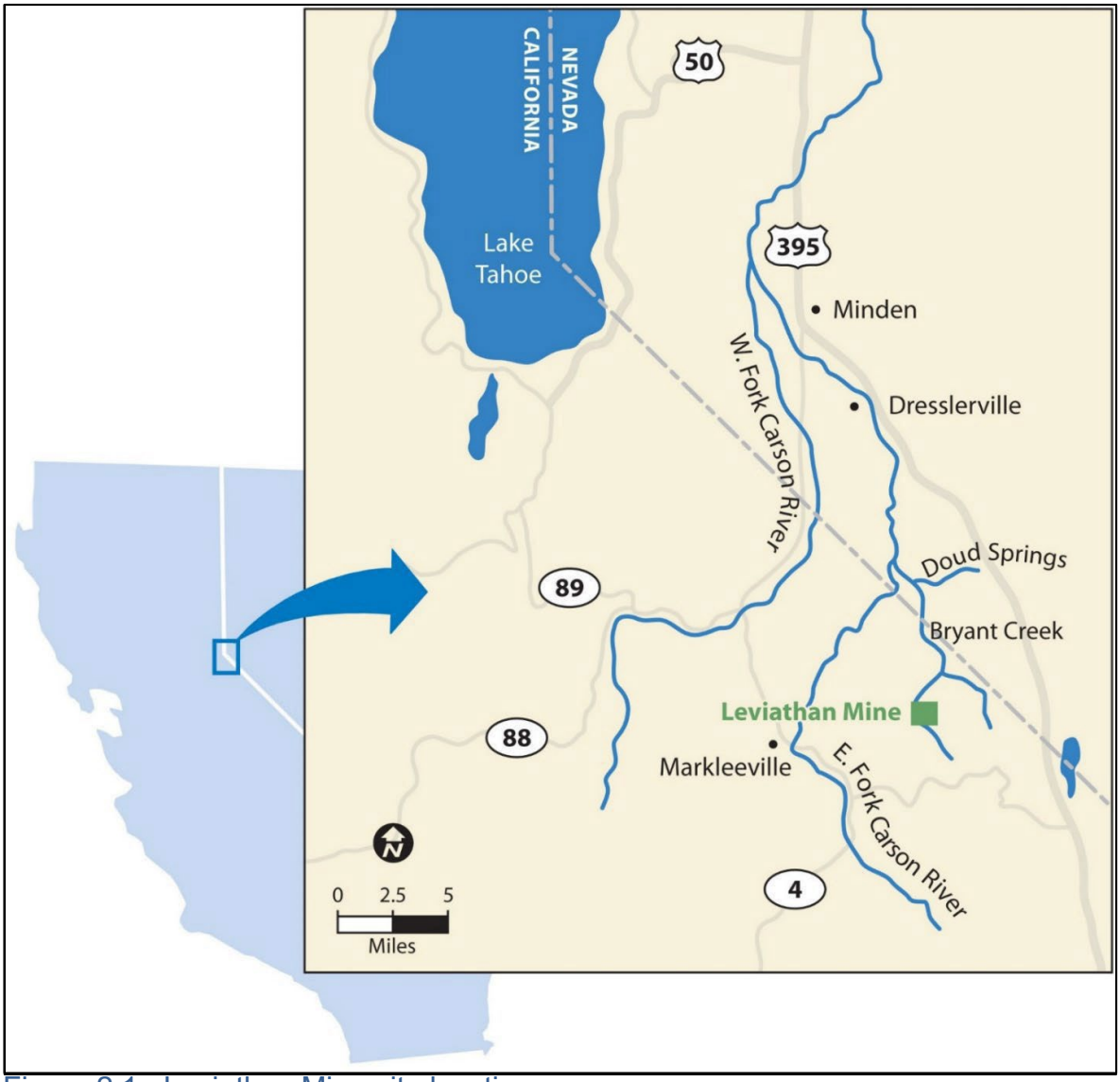

Figure 2.1 - Leviathan Mine site location

Water Board staff directly coordinate with United States Environmental Protection Agency (USEPA), Atlantic Richfield Company (AR), and project stakeholders including the Washoe Tribe of Nevada and California, Nevada Division of Environmental Protection, and the United States Forest Service. Currently, the Water Board is under order by USEPA to perform year-round capture of select AMD sources in onsite storage ponds, and summertime treatment of the AMD and discharge of the treated effluent to Leviathan Creek (meeting USEPA discharge criteria). The objective of summertime treatment is to maximize the available storage capacity in the ponds to store influent AMD and direct precipitation until the Water Board reactivates the treatment system in the subsequent summer.

Early Season Treatment

Occasionally, during water years when the amount of rain and snow on the ponds is above normal (such as the 2023 water year), the storage ponds can fill to capacity before the Water Board is able to initiate their summer treatment effort in early-July. This has occurred during the following years: 2005, 2006, 2011, 2017, 2018, and 2019. Importantly, the pond system includes a flow bypass to divert excess flow out of the pond system before water levels reach the top elevation of the pond berms.

In previous above-normal water years, when it became apparent that the capacity of the pond system could be exceeded and site conditions permitted safe access, the Water Board successfully implemented early season treatment using a portable treatment system. This system can be mobilized and put into service before site conditions allow for the startup of the summertime treatment system. During the 2023 water year, the Water Board began mobilization of the portable treatment system in early-February and started treating pond water by mid-February. This is the earliest the Water Board has ever attempted early season treatment. Unfortunately, this extra early start created additional operational challenges (e.g., loss of access due to snow, ice formation on equipment, and frozen pipes and pumps, etc.) that caused or required frequent shut down of the treatment system.

After regaining access to the site following a series of winter storms in March, Water Board staff discovered untreated pond water was entering the pond flow bypass system and discharging to Leviathan Creek. The untreated discharge to Leviathan Creek continued for approximately 10 days after it was discovered by Water Board staff at a flow rate between 5 and 10 gallons per minute.

Per an agreed upon contingency monitoring plan, Water Board contractors have been collecting and analyzing water samples to evaluate potential changes in surface water quality from the discharge of untreated, partially treated, or treated pond water to Leviathan Creek. The analytical data indicates that the discharge of untreated pond water to Leviathan Creek did not adversely affect the downstream water quality of Leviathan or Bryant creeks.

Water Board contractors have been successful at operating the portable treatment system continuously since March 29, 2023, and analytical data indicate that metal concentrations in treated effluent discharged to Leviathan Creek meet the USEPA discharge criteria. If conditions permit, Water Board contractors will continue the treatment process until there is ample storage capacity in the storage ponds to store incoming AMD and water from direct precipitation. While early season treatment is underway, Water Board contractors will continue to collect field measurements and water quality samples per the agreed upon monitoring and reporting program. Water Board staff anticipate early season treatment continuing as snowmelt increases AMD outflow from saturated soils. Water Board staff intend to direct their contractors to reactivate the summertime treatment system as early as possible during the 2023 field season.

3. 2023 Stormflows along the Mighty Mojave River – *Amanda Lopez and Anna Garcia*

The Mojave River began flowing at the surface after a series of storms dropped rain and snow across southern California in early 2023. While the Mojave River flows above-ground periodically, it is usually a dry, sandy riverbed in the middle of a parched desert landscape. Surface flow was observed at the Barstow First Street Bridge (Figure 3.1) on March 15, 2023. A few days later and following the passing of another storm system, South Lahontan Basin staff Engineering Geologists Amanda Lopez and Tiara Crucius followed the Mojave River surface flow beginning at the headwaters at the Mojave Forks Dam (Figure 3.2), stopping at Hinkley Road (Figure 3.3), and re-visiting the Barstow First Street Bridge (Figure 3.4) observing significantly more flow at this location compared to what was observed on March 15, 2023. Continuous surface flow was observed through the riverbed out to Afton Canyon, a rare occurrence that last happened in 2010. On March 25, 2023, surface flow was encountered cutting the west boundary of the Mojave National Preserve, having reached Soda Dry Lake (Figure 3.5).

Many years of ongoing drought conditions in the Mojave River Basin have resulted in rapidly declining groundwater levels. The Mojave Water Agency (MWA) manages water resources in the Mojave River Basin and has implemented a cooperative agreement with the United States Geological Survey (USGS) since the early 1990s that includes monitoring and maintenance of multiple stream gaging stations along the Mojave River. These stream gaging stations measure the amount and velocity of surface flow along the river and provide data for estimating the amount of groundwater recharge occurring between the stations. The USGS also collects continuous data for temperature, pH, and specific conductance and performs bi-monthly water quality sampling for general minerals, general physical properties, and dissolved metals at the West Fork, Deep Creek, and Lower Narrows stream gaging sites. All water quality data are available on the USGS National Water Information System (NWIS) and accessible through NWIS Mapper.

According to Tony Winkel, MWA Principal Hydrogeologist, provisional data indicate these 2023 storms have delivered 100,000 acre-feet (AF) to the Mojave watershed. Mr. Winkel noted that “we’re seeing some great recharge going on right now, hope it continues.”

Figure 3.1 - Barstow First Street from east side of the First Street Bridge on 03/15/2023. USGS Barstow stream gage measured discharge is 133 cubic feet per second

Figure 3.2 - Mojave River headwaters: Deep Creek on the left, West Fork on the right. View from top of Mojave Forks dam on 03/23/2023. USGS Deep Creek stream gage measured discharge 952 cubic feet per second and USGS West Fork stream gage measured discharge 481 cubic feet per second

Figure 3.3 - Hinkley Road Bridge on 03/23/2023. USGS Hinkley stream gage discharge measured 1470 cubic feet per second

Figure 3.4 - Barstow First Street from west side of the First Street Bridge on 03/23/2023. USGS Barstow stream gage measured discharge 308 cubic feet per second

Figure 3.5 - Surface flow at the end of the Mojave River at Soda Dry Lake on 03/25/2023

4. **Impacts of heavy snow and rain events on South Tahoe Public Utility District's pump stations and recycled water reservoirs** – *Tiffany Barulich*

South Tahoe Public Utility District (STPUD) took emergency actions to mitigate impacts to their collection system and recycled water operations. Heavy snow and rain events from January 2023 to March 2023 necessitated these emergency responses. The emergency actions were taken at the Bellevue Pump Station in the Upper Truckee River Marsh, and the recycled water reservoir, Harvey Place, in Alpine County. This report discusses the risks communicated and responses taken by STPUD to prevent a sewer system overflow and potential discharge into a surface water body.

Emergency Retention Basins

STPUD experienced inflows greater than treatment plan capacity during March 2023. These inflows resulted from stormwater surface flows and saturated soils causing high infiltration and inflow throughout their sewage collection system. Normal sewage flows into the treatment plant are between 3-4 million gallons per day (MGD). STPUD pretreatment system can accommodate high flow rates up to 17 MGD but the treatment system and export line can only handle roughly 8 MGD. The use of emergency retention basins is required when the flows into the treatment plant exceed 8 MGD. In mid-January and early March 2023, the inflows peaked at 11 MGD and had sustained inflows over 8 MGD (Figure 2). The emergency retention basins were used in both storm events and as intended without being overwhelmed.

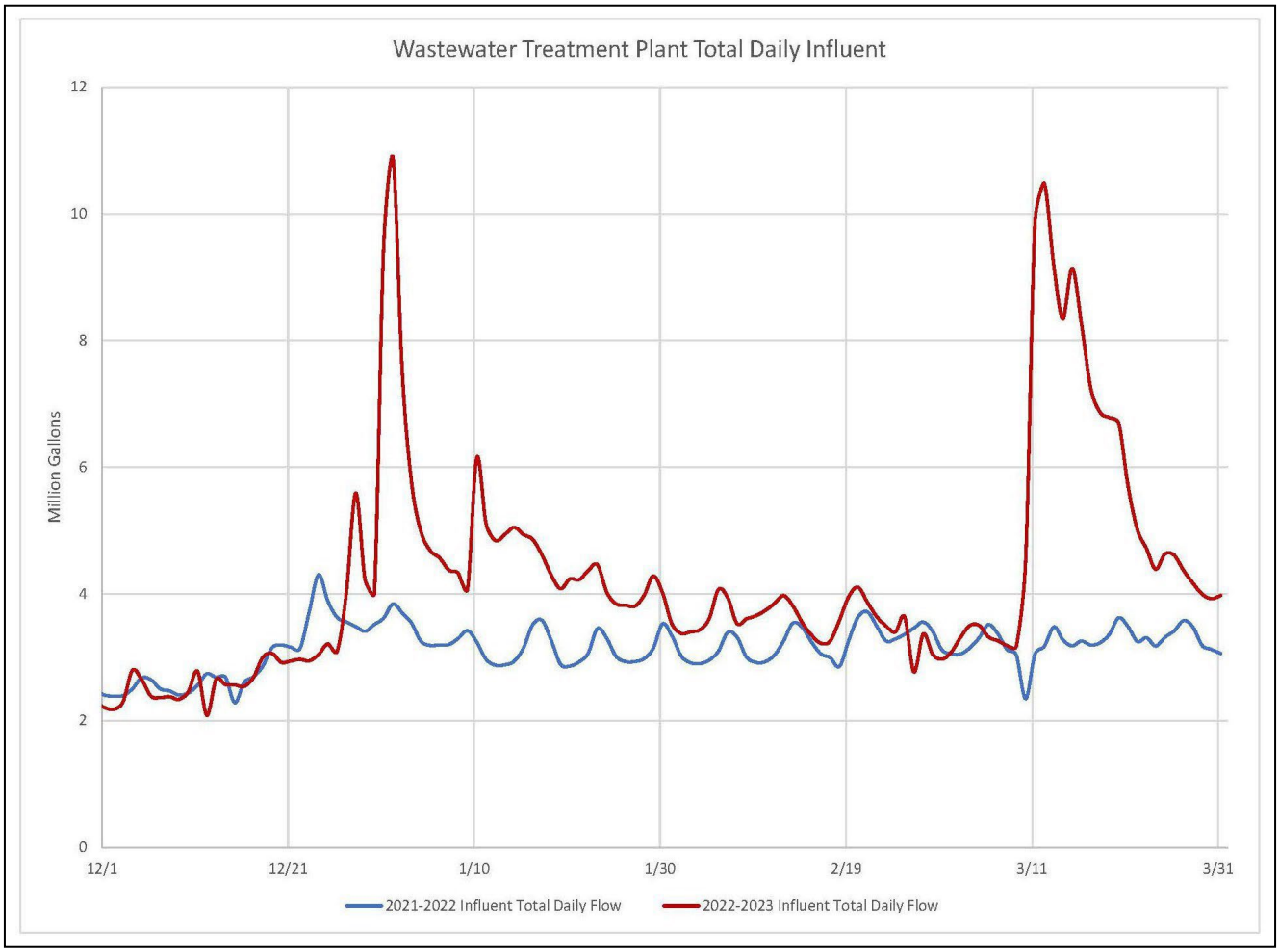

Figure 4.1 – South Tahoe Public Utiltiy flows into the watste water treatment plant during winter of 2021-2022 and 2022-2023

Harvey Place Reservoir

High-water levels occurred at the Harvey Place Reservoir, the discharge location for all STPUD's treated wastewater. The reservoir levels approached the emergency "glory hole" spillway near the end of March 2023, due to export pumps running continuously from the treatment plant. The storms in Alpine County also added significant storm runoff volume into the reservoir (Figure 3). STPUD assessed the risks of overflowing the reservoir into Indian Creek versus the risks of releasing recycled water to the Fredericksburg Ditch before their recycled water permits allowed. STPUD determined weakened dam integrity and overflow due to sustained high volumes flowing into the reservoir was a greater risk than releasing unauthorized recycled water into their ice-berm-compromised Diamond Valley Ranch ditch system. A total of 42 acre-feet (13.7 million gallons) was released into the Fredericksburg Ditch over a period of 4 days at 5 cubic feet per second. This release avoided a spill into Indian Creek and provided sufficient freeboard to handle further runoff.

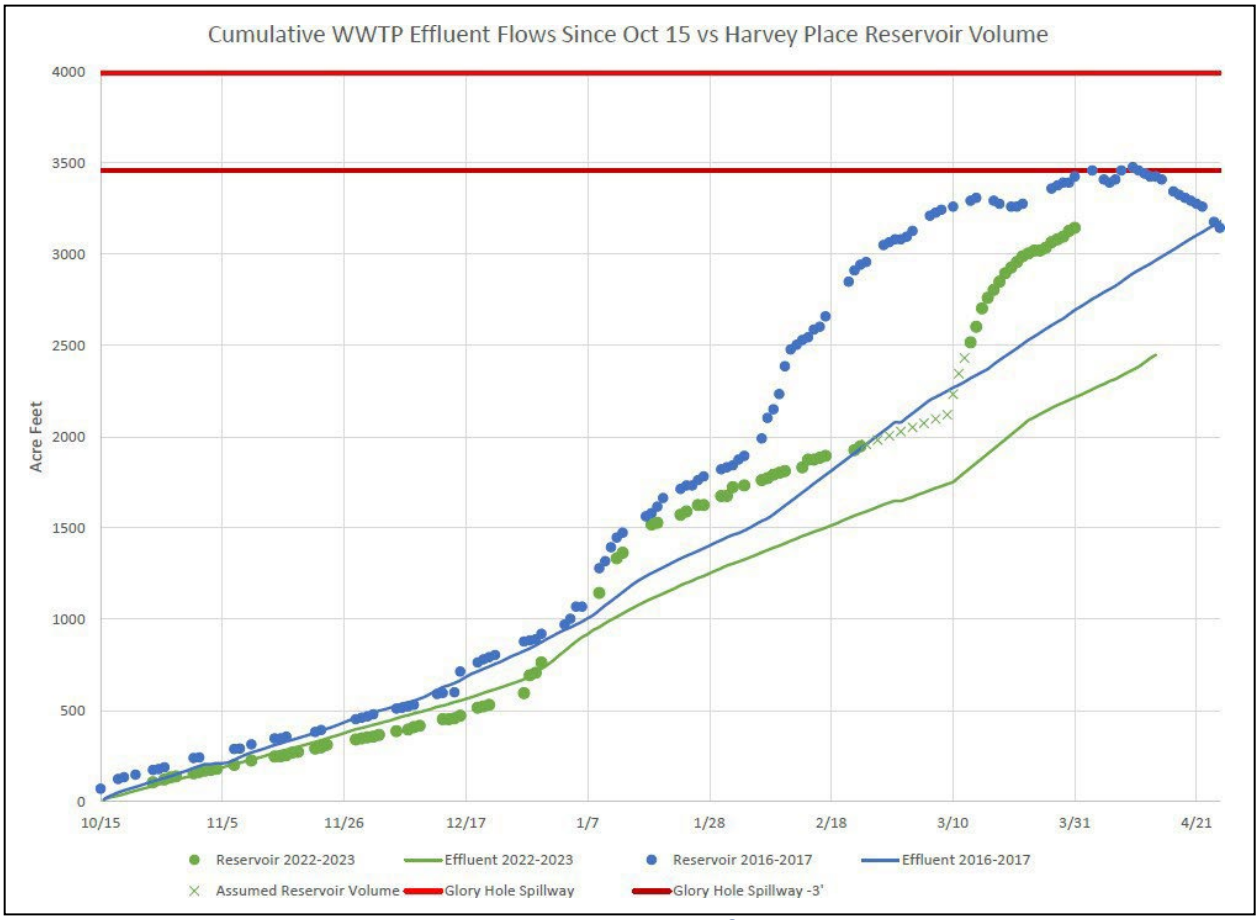

Figure 4.2 – Volume in the Harvey Place Reservoir from 2017 and 2023 compared to the effluent being pumped from the Luther Pass Pump Station indicated the reservoir volumes almost breached the glory hole due to stormwater runoff

Recycled water is permitted to be released to ranch lands downstream of the ditches after April 1. According to permit requirements, the recycled water is supposed to be stored onsite in predesignated emergency retention fields prior to April 1. Instead, water was directed to the ranchers with preexisting agreements because these emergency retention fields have not been built and the small On-Farm emergency storage site was saturated. Discussions at STPUD's emergency response committee meetings indicated the emergency retention fields are being prepared in Phase 2 of the building of the Diamond Valley Ranch and are being assessed in the Recycled Water Strategic Plan. Ultimately, diverting the flows to the Fredericksburg Ditch and diverting the water to the ranchers prevented a discharge into the Carson River and Indian Creek. STPUD is now releasing recycled water from the Harvey Place Reservoir within the limits of their permit.

Bellevue Pump Station

While wastewater treatment plant flows and reservoir volumes reached maximums, the storm events in March 2023 also directly impacted the operations of one of the biggest and oldest pump stations, the Bellevue Pump Station (Bellevue). Bellevue was

impacted by high volumes of sewage due to the increased volumes of surface water runoff and ground water infiltrating and flowing into the sewer collection system. To keep up with the flows, the Bellevue's two pumps were pumping simultaneously at max capacity increasing the potential of pump burnout and failure. For instance, the 2021-2022 winter flows from the Bellevue were about 100,000 gallons a day but the early March storms with heavy snow resulted in flow rates between 1 and 1.4 million gallons per day, a tenfold increase (Figure 4).

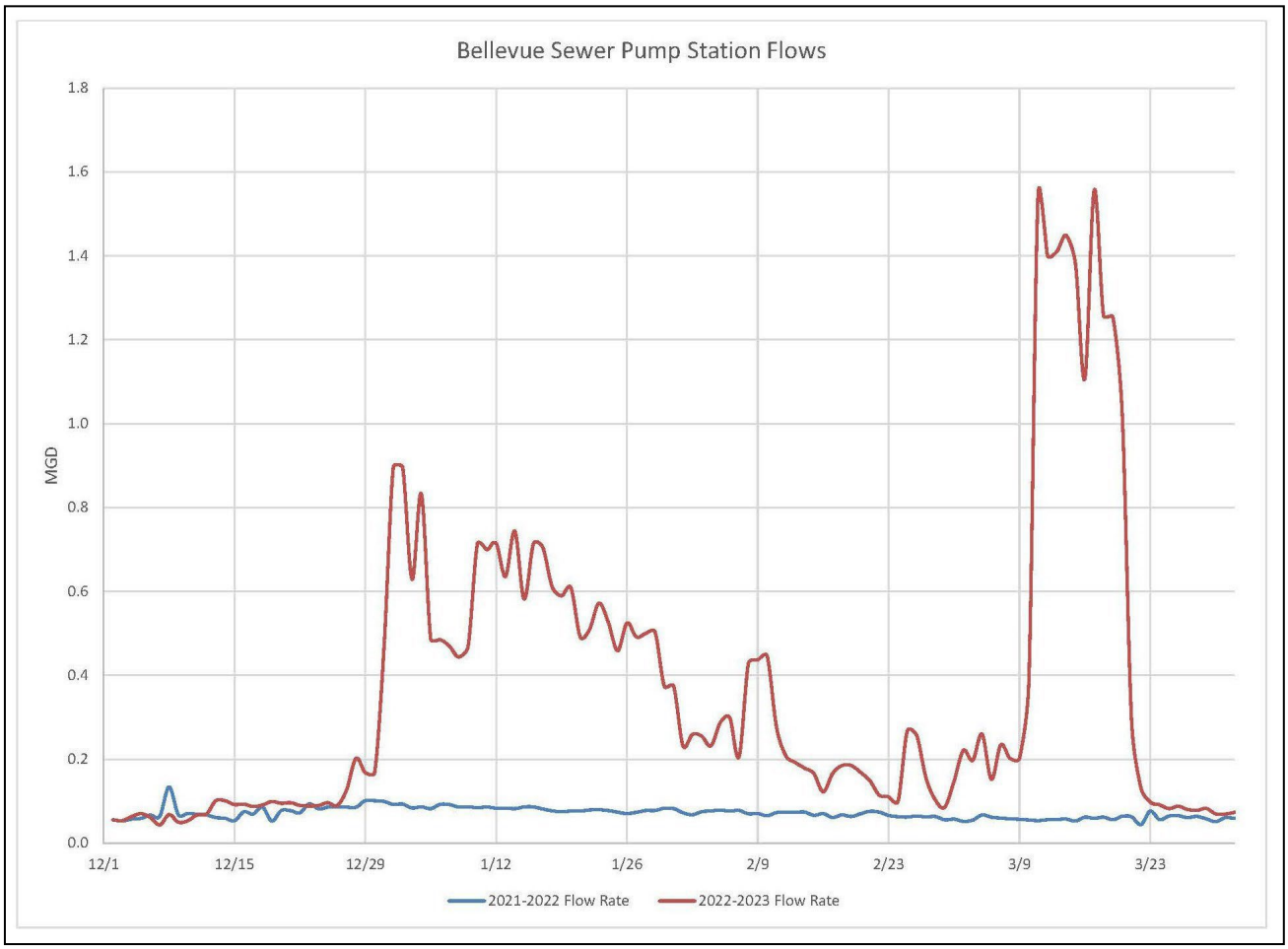

Figure 4.3 – Bellevue Pump Station flows in winter 2021-2022 compared to winter 2022-2023

The March 2023 storms increased localized flooding in the Upper Truckee River Marsh and flooded Bellevue risking electrical failure of the pumps. Electrical failure of a single pump would have been a serious and time-consuming issue to address considering both pumps were running nonstop at max capacity. A long-term failure of Bellevue without a backup pump or plan could mean a major sewage spill into the Upper Truckee River Marsh and or the neighborhoods. A series of cumulative actions were successful in preventing a pump failure and sewage release to the marsh and the neighborhoods. STPUD emergency responses to the Bellevue flooding included:

- reducing the risk of electrical failure due to flooding by adding sandbags, plywood, and sheet piles outside of Bellevue
- setting up an emergency pump capable of handling more than the maximum flows (1.7 – 2.4 MGD) in case of pump failure
- setting up a bypass pump option and an emergency diversion
- working on breaking up ice dams in the meadow to redirect flow towards the Upper Truckee River
- communicating with the California Tahoe Conservancy, Cal Fire, and Lahontan Water Board staff to breach a littoral drift sand berm blocking a historic outfall channel to Lake Tahoe
- applying for emergency permitting with the Army Corps of Engineers

Addressing the sand berm at the historic channel outfall provided immediate relief to Bellevue by reducing the water level in the marsh by more than a foot within 24 hours. Figure 1 shows the relationship between the Upper Truckee Marsh, Trout Creek, Bellevue, the Al Tahoe neighborhood, and the outlet to Lake Tahoe.

Figure 4.4 – Bellevue Pump Station in relation to the Al Tahoe neighborhood and the Upper Truckee River Marsh

Ongoing Response

As a result of these incidents, the Lahontan Water Board staff participated in multiple emergency operation committee meetings hosted by STPUD, conducted multiple field inspections, and consulted with STPUD management about regulatory restrictions on response options. Risks of response actions were communicated with STPUD management from the Lahontan staff to better understand the limits of their existing permits.

A review of the STPUD Sewer System Management Plan will be conducted to address sources of inflow and infiltration into the system and update their emergency response. This update is anticipated to require STPUD to armor their collection system further against future sources of inflow and infiltration of storm water to prevent emergency situations encountered by the storms in March 2023. STPUD plans to include lessons learned from the 2022-2023 winter in their Bellevue Pump Station improvement projects slated to begin within the next five years.