YEAR-END REPORT
FOR THE 2014 FIELD SEASON
AT LEVIATHAN MINE

Alpine County, California

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1. INTRODUCTION

Leviathan Mine is a former sulfur mine that the State of California acquired in the early 1980s to address water quality problems caused by historical mining. Jurisdiction over Leviathan Mine rests with the State Water Resources Control Board, which, in turn, has delegated jurisdiction over cleanup work to the California Regional Water Quality Control Board, Lahontan Region (Water Board). On May 11, 2000, the United States Environmental Protection Agency (USEPA) placed Leviathan Mine on the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) National Priorities List, thus making Leviathan Mine a federal Superfund site.

On July 19, 2000, pursuant to its authority under CERCLA, USEPA issued an Administrative Abatement Action (AAA) to the Water Board and directed the Water Board to implement certain pollution abatement and site monitoring activities at Leviathan Mine. With slight modifications, USEPA subsequently reissued the AAA in 2001, 2002, 2003, 2004, and 2005. In its 2005 AAA, USEPA decided, instead of issuing the AAA every year, to allow its Remedial Project Manager to notify Water Board of the necessity to continue the work for an additional year, for each year that the first phase of Non-Time Critical Removal Action (NTCRA) continues.

This Year-End Report for the 2014 Field Season at Leviathan Mine (Year-End Report) has been prepared by the Water Board for the USEPA. This Year-End Report was prepared to comply with Paragraph No. 50 of USEPA's July 14, 2005 AAA, which states:

> "Within thirty (30) days after the LRWQCB [Water Board] concludes that the seasonal work on the NTCRA has been fully performed, the LRWQCB shall so notify EPA and shall schedule and conduct a pre-certification inspection to be attended by the LRWQCB and EPA. The pre-certification inspection shall be followed by a written report submitted within ninety (90) days of the inspection by the LRWQCB's Project Coordinator certifying that all work to date on the NTCRA has been completed in full satisfaction of the requirements of this Administrative Action."

The pre-certification inspection occurred at the Leviathan Mine Site on November 12, 2014.

This Year-End Report constitutes the "*written report*" as referenced in Paragraph No. 50 of the AAA, and contains year-end summaries of Water Board field activities performed in 2014. The activities required of the Water Board by the USEPA are described in Paragraph No. 37 of the AAA. These activities consist of:

1. Summer treatment of Acid Mine Drainage (AMD) captured year-round in a series of ponds;
2. Site maintenance of ponds, drainage and diversion channels, and gates and fences; and
3. Site monitoring of water quality, water quantity, and meteorological information.

Water Board staff conducted the above-listed activities in accordance with the *2014 Work Plan for Leviathan Mine, Alpine County, California* (Work Plan) prepared by the Water Board.

This report describes the site activities performed in 2014, and is organized into the following sections:

- A background section that describes the site setting and history; collection and storage of AMD; and the treatment process;
- A sludge removal and pond water treatment section describing the removal and disposal of sludge and treatment of AMD in 2014;
- A site meteorological and surface water flow monitoring section; and
- A general site maintenance section.

Pond water treatment data are summarized in six tables in Appendix A (A-1 through A-6). Laboratory reports and electronic data deliverables for pond water samples, USGS flow and stage data, and meteorological data are included as electronic files on the enclosed disc and organized into Appendices B through E.

2. BACKGROUND

2.1 Site Setting and History

Leviathan Mine is located on the eastern slope of the Sierra Nevada Mountains in Alpine County, California (Figure 1). The mine is approximately six miles east of Markleeville, California and five miles west of Topaz Lake, Nevada. Based on the Final Title Search and Survey Report conducted by Science Applications International Corporation (SAIC) for the USEPA on January 31, 2000, the Leviathan Mine encompasses thirty-two patented mineral claims and a patented mill site. The majority of land disturbed by mining activities is on state-owned property, with the remainder of the disturbance located on property owned by the United States Department of Agriculture, Forest Service, Humboldt-Toiyabe National Forest (USFS). The USFS owns the majority of land surrounding the mine according to the above-mentioned SAIC report, with the exception of ten private parcels along the southern boundary of the mine site.

Leviathan and Aspen Creeks (Figure 2) flow across the mine site and join below the mine. Approximately 1.5 miles downstream of the confluence of Leviathan and Aspen Creeks, Leviathan Creek joins Mountaineer Creek. The combined flow of Leviathan and Mountaineer Creeks forms Bryant Creek. Approximately 3.5 miles downstream of the confluence of Leviathan and Mountaineer Creeks, Bryant Creek flows across the Nevada state line. Approximately 3.3 miles downstream of the Nevada state line, Bryant Creek joins the East Fork Carson River.

Historical mining activities at Leviathan Mine included underground and open pit extraction of sulfur-rich ore. These activities resulted in the exposure of naturally occurring sulfide minerals to air and water. This exposure triggered a series of chemical reactions that caused local groundwater to become acidic and metal-rich. The acidic groundwater discharges from an old mine tunnel as well as seeps at several locations within the Leviathan Mine site. When this AMD enters local surface water bodies, it adversely affects water quality, which, in turn, affects algae, insect, and fish growth, and damages the in-stream habitat through deposition of metal-rich precipitates.

The Water Board has implemented several projects to abate AMD from entering local surface water bodies. In 1985, the Water Board completed construction of a pollution abatement project at Leviathan Mine to address certain specific problem areas. This project included the construction of AMD storage and evaporation ponds, which are a major component of the Water Board's pond water collection and treatment activities.

2.2 AMD Collection and Storage

The 1985 pollution abatement project included construction of five lined evaporation ponds (Figure 3) to capture and evaporate AMD from remnant underground mine workings. The primary sources of AMD to the pond system are the Adit and the Pit Under-Drain (PUD).

The Adit is the location where acidic groundwater emanated from a remnant tunnel excavated during underground mining activities in the 1930s. The exact condition of the interior of the tunnel is unknown, but the tunnel is collapsed at its portal. The approximate location of the tunnel and other site features are shown in Figure 3. As part of the 1985 pollution abatement project, the Water Board's contractor installed an underground drain to collect acidic groundwater emanating from the Adit. The underground drain consists of a 12-inch-diameter perforated pipe in a bed of drain rock. The perforated pipe is connected to a non-perforated 12-inch pipe that carries the AMD to a concrete flow control structure. AMD from the Adit has a pH of less than 3.0 and typically has a discharge rate between 9 and 15 gallons per minute (gpm) with rates as high as approximately 50 gpm (flow data collected from1999 to present).

The Water Board's contractor installed the PUD during construction of the 1985 pollution abatement project to dewater saturated soils in the bottom of the open pit (Pit) prior to backfilling the Pit to its current elevation. The PUD consists of approximately 1,500 linear feet of 12-inch-diameter perforated pipe set in a bed of drain rock beneath the Pit bottom, buried in backfill material. The perforated pipes connect to a non-perforated 18-inch-diameter pipe that conveys the PUD discharge to the flow control structure. AMD from the PUD has a pH of less than 3.0 and typically has a flow rate between 0.1 and 4 gpm, with rates as high as approximately 42 gpm (flow data collected from 1999 to present).

The five evaporation ponds (Ponds 1, 2 South, 2 North, 3, and 4; see Figure 3) cover a combined surface area of approximately 12.8 acres with a cumulative holding capacity of approximately 16.5 million gallons, based on an October 1998 survey conducted by ARCO Environmental Remediation, LLC. AMD from the flow control structure is routed to the pond system via underground PVC piping. AMD is directed to the pond system by gravity to any combination of Ponds 1, 2 South, and 2 North via a series of valves, as these ponds are interconnected and are at the same elevation. These three ponds are commonly called the "upper ponds" and have a combined volume of approximately 14 million gallons. Pond 3 can receive overflow from the upper ponds by gravity via PVC overflow pipes. Overflow from Pond 3 flows in PVC piping and can be directed by gravity, via valves, to either the Leviathan Creek or to Pond 4. Pond 4 overflows directly to the Leviathan Creek via PVC piping. Pond 4 is being utilized by Atlantic Richfield Company (ARC) for storage and treatment of other AMD sources. Since the spring of 2006, Pond 4 has been isolated from Pond 3 by a closed valve, and there has been no discharge from the Pond 3 to Pond 4. Any discharges from Pond 3 are routed to

Leviathan Creek. In 2014, Pond 3 received no overflow from any of the upper ponds, and there was no discharge from Pond 3 to Leviathan Creek or Pond 4.

2.3 Pond Water Treatment (PWT) Processes

The Water Board treats AMD from the upper ponds and discharges the treated AMD during the summer (and spring, if needed) to renew pond storage capacity for the subsequent winter and spring months. There was no need for spring treatment in 2014. The Water Board's treatment of AMD contained in the ponds is accomplished through lime neutralization. The neutralization of AMD by the addition of lime has long been accepted as an effective means to raise pH and remove metals in AMD. Lime (calcium hydroxide or $Ca[OH]_2$), is mixed into the AMD from the pond system; the addition of lime causes an increase in pH and the precipitation of dissolved constituents, including metals, contained in the AMD. The precipitated solids are settled out of solution, and the final products are: (1) a practically metal-free effluent with near neutral pH, and (2) a metal-rich waste sludge.

The Water Board assembled the PWT plant (Plant) during the 1999 field season on the northeast corner of Pond 1 and tested the process at full-scale during the 1999 and 2000 field seasons. The Water Board has continued to operate the Plant during the summer months from 2001 through 2014. The typical Water Board field season at Leviathan Mine runs from mid-June through mid-October.

The Plant, which has also been referred to as the Pond 1 lime treatment plant, because the treatment system is located adjacent to Pond 1, treats the AMD stored in the three upper ponds. The Plant draws AMD from Pond 1 for treatment, thereby lowering the surface elevation of AMD stored in Pond 1. The lower level in Pond 1 causes AMD from Pond 2 North and Pond 2 South to flow by gravity to Pond 1. As the level of AMD drops near the end of the treatment season, portable transfer pumps have to be used to move water from Ponds 2N and 2S to Pond 1. The Plant conveys the treated AMD and suspended precipitated solids to the Pit Clarifier located in the bottom of the Pit. The Pit Clarifier has plan dimensions of approximately 150 feet by 150 feet, and includes a gravel/sand-covered perforated pipe underdrain and a 10-inch diameter PVC decanting device, known as the piccolo decant structure.

3. 2014 POND WATER TREATMENT AND SLUDGE REMOVAL

The 2014 AMD treatment and associated activities included sludge removal from the Pit Clarifier in July and AMD treatment at the Plant in September. These activities are further discussed in the following section.

3.1 Pit Clarifier Sludge Removal and Disposal

Approximately 178 tons of sludge generated during operation of the Plant in 2013 were removed from the Pit Clarifier by the Water Board's contractor, URS Corporation Americas (URS), in July 2014. The sludge was sampled, analyzed, and characterized in the fall of 2013; the results from the fall 2013 sampling were reported in the Water Board's 2013 year-end report. URS resampled the sludge in the Pit Clarifier in June of 2014 and submitted their sample for laboratory Toxicity Characteristic Leaching Procedure (TCLP) analysis to verify the appropriate disposal facility. In July 2014,

Water Board staff resampled the sludge in the Pit Clarifier and submitted their sample for laboratory analysis to determine percent solids. Analytical results for the 2014 resampling efforts are summarized in Table A-6 of Appendix A. Sludge generated during the 2013 field season was 56.5 percent solids at the time of disposal when sampled in July 2014, whereas the percent solids averaged 30 percent when sampled in October 2013. The sludge was hauled to a Class I hazardous waste landfill in Beatty, Nevada for disposal. Hazardous waste manifests are available for review at the Water Board's office in South Lake Tahoe. The sand drainage layer in the bottom of the Pit Clarifier was evaluated following sludge removal; the sand layer was adequate and replenishment was not necessary.

3.2 2014 Summer Pond Water Treatment Plant Operation

The Water Board contracted with URS for Plant operations for the 2014 field season. AMD treatment began in early September, with the first treated AMD entering the Pit Clarifier on September 8, 2014. Discharge of treated AMD from the Pit Clarifier to Leviathan Creek began on September 12, 2014, and treatment ceased on September 17, 2014. URS chose to operate the Plant 24 hours per day, Monday through Friday during the treatment season.

URS pumped AMD from Pond 1 to a 10,000-gallon fiberglass tank (R-1). A mixer was used in R-1. The AMD flowed by gravity from R-1 through a two-chambered combination flash/flocculation mix tank (FF-1). The fluid mixture flowed by gravity from FF-1 into a 10,000-gallon fiberglass reaction tank referred to as R-2. A mixer and compressed air were used in R-2 to agitate, oxidize, and promote mixing. A pre-mixed lime slurry, delivered to the Plant via tanker trucks, was added to R-2. A pH probe in R-2 measured pH and metered the addition of lime slurry. The lime slurry raised the pH of the AMD to an approximate range of 8.2 to 8.5, as measured in R-2. The lime addition in R-2 was the only lime addition used during the 2014 treatment season. The fluid mixture then flowed by gravity through a second flash/flocculation mix tank (FF-2) in which a mixer and compressed air were used to promote mixing.

The fluid mixture flowed by gravity from FF-2 into a clarifier tank (CL-2). A polyacrylamide polymer solution was injected into the fluid mixture at the bottom of CL-2 to promote flocculation and solids settling in the Pit Clarifier. Two 10-hp mud pumps transferred the fluid mixture from the bottom of CL-2 to the Pit Clarifier, where solids settled out in near-quiescent conditions. In 2014, URS used a pH probe in FF-2 to control the mud pumps and to prevent the transfer of treated AMD having a pH below 8.1 or above 8.8 to the Pit Clarifier. By means of this control system, treated AMD having a pH outside the range of 8.1-8.8 is automatically diverted to Pond 1. The pH probe, controller, and pump combination provided additional reliability as well as a final confirmation pH measurement.

A small portion of utility water is used to dilute the polyacrylamide polymer that is added into the fluid mixture at the bottom of CL-2. Typically, this utility water is collected from Leviathan Creek upstream of the disturbed portion of the site and is stored in two 15,000-gallon utility water tanks adjacent to the Plant. This year, due to unusually low precipitation over the winter months, flow in Leviathan Creek was insufficient to supply an adequate volume of utility water. As such, utility water for plant startup during the 2014 treatment season was comprised of a combination of Leviathan Creek water and

utility water trucked to the site. Unlike the 2012 and 2013 treatment seasons, sufficient utility water was not available to sustain plant operations until the effluent weir box was opened. As such, URS began collecting treated AMD directly from the Pit Clarifier underdrain prior to initiating discharge to Leviathan Creek. Once the discharge of treated AMD to Leviathan Creek was initiated, treated AMD from the Water Board's effluent weir box was the source of utility water much like the 2012 and 2013 treatment seasons. Approximately 740,000 gallons of AMD were neutralized while using treated effluent as utility water. Based on laboratory analytical results of effluent samples and field observations, no negative impacts on treatment efficiency were observed while using treated effluent as utility water.

In 2014, treated AMD was discharged from the Pit Clarifier using only the underdrain. Discharge via the piccolo decant structure did not occur. Treated AMD stage data and water quality control samples were collected at the 90-degree V-notch weir in the Water Board's effluent weir box. Stage data were recorded at 15-minute intervals using a data logger/pressure transducer system. For 2014, the Water Board's stage data were used to calculate treated effluent discharge volumes. The V-notch weir was flow tested by USGS and Water Board staff at both high flows (approximately 240 gpm) and low flows (less than 50 gpm). The USGS developed a rating curve based on these data; the rating curve was used to convert the 15-minute stage readings into flow rates.

Discharge of treated AMD from the Pit Clarifier to Leviathan Creek began on September 12, 2014. Discharge to Leviathan Creek occurred continuously until all treated AMD was discharged from the Pit Clarifier. After the pond water was treated and the Plant was shut down on September 17, 2014, treated AMD continued to be discharged from the Pit Clarifier as the accumulated sludge drained. By September 22, 2014, approximately 815,000 gallons of treated AMD had been discharged to Leviathan Creek, and flows from the Pit Clarifier underdrain were well below 5 gpm. A summary of daily flow volumes discharged to Leviathan Creek is presented in Table A-1 of Appendix A.

The 2014 PWT Plant operation consumed approximately 40.46 standard tons of dry lime, 90 pounds of liquid flocculent, 595 gallons of diesel fuel, and 50 gallons of gasoline. The Water Board's treatment effort in 2014, combined with natural evaporation, resulted in the upper pond system having the maximum available storage capacity of approximately 14 million gallons at the end of the treatment effort.

Sludge generated by the Plant in 2014 is contained in the Pit Clarifier to allow for further dewatering. Dewatering of the sludge over the winter will increase solids content and reduce both the volume and mass of the sludge. Water Board staff estimates that approximately 65–85 tons of sludge will be disposed of in 2015.

3.3 Summer Pond Water Treatment Monitoring

Treatment process monitoring, sampling and analysis were performed in accordance with the Water Board's March 2014 *Sampling and Analysis Plan for Leviathan Mine Site Pond Water Treatment* (PWT SAP). A summary of the monitoring parameters, locations, and frequencies for the 2014 PWT monitoring program is presented in Table 1. Specific details of sample collection and handling are described in the PWT SAP. Effluent samples were collected and analyzed for comparison with USEPA Discharge

Criteria; the USEPA Discharge Criteria are set forth in the September 25, 2008 Non-Time Critical Removal Action for the Leviathan Mine Site and summarized in Table 2. In 2014, there were four minor deviations from the PWT SAP as explained in Section 3.4.3. Samples collected by URS staff were transferred under chain of custody for laboratory analysis by off-site laboratories, Microbac, of Marietta, Ohio, and Curtis and Tompkins, Ltd, Analytical Laboratories, of Berkeley, California.

To confirm the quality of treated AMD discharged to Leviathan Creek, the Water Board's contractor, URS, collected grab samples of the treated AMD (effluent) twice weekly during the 2014 treatment season. URS collected effluent samples from the Water Board's weir box located near the Pit Clarifier. As specified in the 2014 Work Plan, effluent sample collection stopped when the discharge of effluent dropped below 5 gpm, which occurred on September 21, 2014. The first effluent sample was collected on September 12, 2014, and the last effluent sample was collected on September 18, 2014. To confirm the USEPA discharge criteria would be met, two pre-discharge samples were taken prior to discharging effluent to Leviathan Creek. These samples were collected by URS staff on September 9 and 10, 2014 from the Pit Clarifier. Additionally, URS collected Plant influent samples from the line conveying pond water to the treatment plant on a weekly basis.

In summary, the Water Board's contractor collected the following samples for analytical laboratory analysis as part of the 2014 PWT monitoring program:

- 3 effluent samples (2 per week)
- 1 effluent duplicate sample
- 2 pre-discharge samples
- 2 pre-treatment influent samples (1 per week)
- 1 field method blank sample

A portion of each grab sample was field filtered using a 0.45 micron filter, preserved with nitric acid, and submitted to the laboratory to be analyzed for the following dissolved metals/metalloids: aluminum (Al), arsenic (As), copper (Cu), chromium (Cr), cadmium (Cd), nickel (Ni), iron (Fe), lead (Pb), and zinc (Zn). An unfiltered portion of each grab sample was preserved with nitric acid and submitted to the laboratory for Total Recoverable Selenium (Se) analysis. At least once per week, in addition to the above analyses, URS submitted to the laboratory samples of Plant influent and effluent for total dissolved solids (TDS), dissolved sulfate (SO_4), calcium (Ca), cobalt (Co), magnesium (Mg), and manganese (Mn). During influent and effluent sample collection activities, URS monitored and recorded pH and temperature in the field on sampling record forms. Sample identification tracking forms and sampling record forms are available for review at the Water Board's office in South Lake Tahoe. Analytical and field monitoring results of Plant influent and effluent samples are summarized in Tables A-2 and A-3 of Appendix A, respectively.

To provide real-time information on effluent quality and system operation, treatment plant operators measured the pH and temperature approximately every hour while the system was operating at four mid-process locations (R-1, R-2, FF-2, and influent to Pit Clarifier) and at one effluent location (weir box). Operators used these data to modify

lime additions, if necessary, and maintain effluent quality. Temperature and pH data collected by URS from R-1, R-2, the Pit Clarifier, and the weir box are summarized in Table A-4 of Appendix A. Copies of URS's operator logs are available for review in the Water Board's office in South Lake Tahoe.

Sludge generated during the 2014 treatment effort, and contained in the Pit Clarifier, was sampled on October 28, 2014, for waste characterization and disposal purposes. URS collected three sludge samples from three different locations in the Pit Clarifier. At the time of sampling, the depth of accumulated sludge in the Pit Clarifier ranged from 10 to 25 inches.

Sludge samples were analyzed for comparisons with Total Threshold Limit Concentrations (TTLCs) and Soluble Threshold Limit Concentrations (STLCs) for Title 22 metals, aluminum, and iron; and percent solids. Analytical results for the sludge samples are summarized in Table A-5 of Appendix A.

3.4 Sampling Results from Summer Pond Water Treatment Monitoring

3.4.1 Monitoring Objectives

Specific objectives of the PWT monitoring program are:

- Identify the chemical characteristics of the Plant influent.
- Identify the chemical characteristics of the effluent.
- Identify the chemical characteristics of solids generated in the treatment process.
- Monitor field pH at critical points within the treatment system and at the discharge point as a means to monitor and control treatment efficiency.
- Monitor the Plant's effectiveness in meeting USEPA Discharge Criteria.

3.4.2 Data Summary

Laboratory analytical results for effluent are summarized in Table A-2. These data are collected for comparison with the USEPA Daily Maximum Discharge Criteria, which are also included in Table A-2. No exceedences of the Daily Maximum Discharge Criteria occurred in 2014. Four samples, 1415PWT005-EFF, 1415PWT007-EFF, 1415PWT008-EFF, and 1415PWT009-EFF individually exceeded the more stringent USEPA 4-day Average Discharge Criteria for selenium.

Table A-3 summarizes laboratory analytical results for Plant influent samples. Results are fairly consistent with previous treatment seasons. However, in general, metal concentrations and TDS are higher than typically observed. These higher concentrations are likely due to treatment occurring later in the season than usual and the AMD becoming more evapoconcentrated over the summer. Plant influent sample pH ranged from 1.76 to 1.84 and TDS ranged from 12,600 to 14,500 milligrams per liter (mg/L) with an average of 13,550 mg/L.

Results of pH and temperature for data collected by Plant operators are included in Table A-4. Measurements of pH taken by Plant operators show that the discharge of effluent to Leviathan Creek was within the USEPA Discharge Criteria, and that desired

pH levels were achieved in the Plant throughout the treatment season, with the possible exception of one pH measurement on September 16, 2014. A pH of 5.95 was recorded at the weir box at 0930 hours on September 16, 2014. Based on pH readings recorded from various other locations in the treatment process, both prior to and after 0930 hours, Water Board staff and URS personnel are confident that the pH reading of 5.95 at the weir box is erroneous. Based on these other in-process pH readings, Water Board staff and URS personnel believe the hand-held pH meter was either out of calibration at the time, or the reading was incorrectly recorded. Laboratory analysis of an effluent discharge sample collected at approximately the same time that the pH reading of 5.95 was taken also suggest the field pH reading is erroneous, as the laboratory analytical data meet all of the USEPA Discharge Criteria and are similar to data obtained from other samples having a pH above 7.0.

A summary of daily discharge from the Pit Clarifier is included in Table A-1. A total of approximately 815,000 gallons of effluent was discharged to Leviathan Creek in 2014. The 15-minute discharge stage data recorded by the data logger (which are the basis of discharge flow calculations) are available for review at the Water Board's office in South Lake Tahoe.

Results of the Pit Clarifier sludge characterization analyses are presented in Table A-5 for sludge generated during the 2014 treatment season. On October 28, 2014, URS collected three sludge samples from the Pit Clarifier to characterize sludge generated during the 2014 treatment season. These three sludge samples averaged 19 percent solids. With the exception of the TTLC and STLC analysis for arsenic, the sludge did not exceed any other TTLC or STLC limits. The total concentrations for arsenic exceeded the TTLC in two of the three samples. The arithmetic average arsenic concentration for these three samples was 633 milligrams per kilogram (mg/kg) on a dry-weight basis. The regulatory standard TTLC for arsenic is 500 mg/kg as measured on a wet-weight basis. Sludge sample results are reported on a dry-weight basis for this sampling effort because the percent solids at the time of disposal is not known, and therefore the dry-weight basis results constitute the most conservative evaluation of sludge quality. At the time of disposal in the late spring or early summer, the concentration of solids in the sludge has typically varied from about 25 to 55 percent. The average concentration of arsenic measured in the sludge would not exceed the TTLC on a wet-weight basis unless the sludge was approximately 79 percent or greater solids by weight; therefore, the sludge likely will not exceed the TTLC when it is disposed of in the late spring or early summer of 2015. The concentrations for arsenic exceeded the STLC in all three samples. The arithmetic average arsenic concentration for these three samples was 7.7 mg/L. The regulatory standard STLC for arsenic is 5 mg/L. It is possible that the evapoconcentrated nature of the Plant influent contributed to the exceedance of the arsenic STLC limit. Arsenic concentrations in the sludge have been detected at roughly half of the STLC limit in the recent past; however, this sludge was generated during the treatment of influent with approximately one-half to one-quarter of the Plant influent arsenic concentration observed during 2014 treatment operations.

Copies of the laboratory's electronic data deliverable (EDD) files for Plant influent, effluent, and sludge samples are provided in Appendix B on compact disc. Appendix B also includes Portable Document Format (PDF) versions of the hard copy laboratory reports.

3.4.3 Data Quality Evaluation

URS and Water Board staff reviewed the quality of the PWT monitoring results. Sample collection, handling, preservation, and analysis were conducted as specified in the PWT SAP. Field quality control samples, including one field duplicate sample and one Field Method Blank (FMB), were collected. A Chain of Custody form was completed for each group of samples submitted to the analytical laboratory. Upon receipt of the laboratory report, Water Board staff reviewed the Chain of Custody to ensure that details such as the project name, sample ID numbers, sample dates, sample times, and requested parameters were properly reported. Water Board staff's data review also included an evaluation of sample holding times, an assessment of precision, an assessment of anomalous data, and a review of field duplicate sample and FMB results.

Data qualifiers from the laboratory, URS, and Water Board review are presented with the data in Tables A-2, A-3, A-5, and A-6. In 2014, Water Board staff assigned a data qualifier of "*" for data that did not meet our field duplicate assessment (relative percent difference) for effluent data in Table A-2. URS data qualifiers are summarized in Appendix E – URS 2014 Data Summary Report, Attachment 4.

URS submitted one field duplicate sample to the laboratory to measure the precision of the entire measurement system including sampling and analytical procedures in 2014. The relative percent difference (RPD) was calculated for each analyte in the primary and corresponding duplicate samples, as follows:

- If both the sample and duplicate values were equal to or greater than five times the Reporting Limit (RL), then the RPD was calculated by dividing the absolute value of the difference of the two measurements by the average of the two measurements and multiplying by 100. The RPD must be equal to or less than 25 percent to be within control limits.
- If either the sample or duplicate value was less than five times the RL, then the absolute value of the difference between the sample and duplicate values had to be equal to or less than the RL to be in control limits.

In 2014, the field duplicate sample was within the control limits for RPD with five exceptions. The RPD for dissolved aluminum was 70 percent, the RPD for dissolved arsenic was 30 percent, the RPD for dissolved cobalt was 54 percent, the RPD for dissolved copper was 34 percent, and the RPD for dissolved iron was 27 percent for the sample/duplicate pair (sample 1415PWT007-EFF and duplicate 1415PWT008-EFF). Per the PWT SAP, the control limit of 25 percent is based on the analytical precision goals for the laboratory matrix spike duplicate samples.

One FMB sample was collected and submitted for laboratory analysis of the same parameters as PWT effluent samples. The FMB was collected and processed in the same method as that of effluent samples, except using laboratory-supplied purified deionized water for the FMB. There were 6 detections in the FMB 1415PWT004-FMB. These detections are discussed below and concentrations are compared with sample 1415PWT005-EFF. Three of the six parameters detected in the FMB have discharge criteria established by the USEPA at Leviathan Mine. Dissolved arsenic was detected in FMB 1415PWT004-FMB at 0.00576 mg/L; the dissolved arsenic concentration in the

effluent sample analyzed in the same batch as sample 1415PWT004-FMB was 0.0200 mg/L. The USEPA maximum discharge criterion for dissolved arsenic at Leviathan Mine is 0.34 mg/L. Dissolved cobalt was detected in the FMB 1415PWT004-FMB at 0.00210 mg/L; the dissolved cobalt concentration in the effluent sample analyzed in the same batch as sample 1415PWT004-FMB was 0.00655 mg/L. Dissolved copper was detected in the FMB 1415PWT004-FMB at 0.00215 mg/L; the dissolved copper concentration in the effluent sample analyzed in the same batch as sample 1415PWT004-FMB was 0.00707 mg/L. The USEPA maximum discharge criterion for dissolved copper at Leviathan Mine is 0.026 mg/L. Dissolved manganese was detected in FMB 1415PWT004-FMB at 0.0104 mg/L; the dissolved manganese concentration in the effluent sample analyzed in the same batch as sample 1415PWT004-FMB was 0.0877 mg/L. Dissolved nickel was detected in FMB 1415PWT004-FMB at 0.00666 mg/L; the dissolved nickel concentration in the effluent sample analyzed in the same batch as sample 1415PWT004-FMB was 0.0297 mg/L. The USEPA maximum discharge criterion for dissolved nickel at Leviathan Mine is 0.84 mg/L. TDS was detected in FMB1415PWT004-FMB at 116 mg/L; the TDS concentration in the effluent sample analyzed in the same batch as sample 1415PWT004-FMB was 2880 mg/L.

There were four minor deviations from the PWT SAP that occurred this year on Plant influent samples (1415PWT003-INF and 1415PWT006-INF) for sulfate and TDS analyses. For both samples, sulfate and TDS were initially analyzed within hold time; however it appeared that the initial sample results were erroneous. The holding time for sulfate is 28 days. The holding time for TDS is 7 days. Water Board staff requested that sulfate and TDS samples be reanalyzed, at which time the holding time for both samples had elapsed. For sulfate, samples 1415PWT003-INF and 1415PWT006-INF were reanalyzed 17 and 21 days past hold times, respectively. For TDS, samples 1415PWT003-INF and 1415PWT006-INF were reanalyzed 38 and 42 days past hold times, respectively. The sulfate and TDS results from the reanalysis are included in Table A-3.

3.4.4 Database Format Discrepancies

Water Board staff did not format the laboratory-supplied EDDs in accordance with the template provided by ARC in their September 2006 Database Tech memo report (section B.6.3.1 of the 2010 PWT QAPP). ARC indicated in early January 2011 that they are trying to improve consistency across the Site-Wide Database, and therefore the EDD templates are being refined. The laboratory used by the Water Board's contractor provides laboratory data in an EDD that will require minimal changes by ARC prior to upload to the database. This information was submitted to ARC in a letter dated January 13, 2011, and the USEPA was also copied on this communication.
Water Board staff will continue to coordinate with subcontractors and laboratories during the 2015 Pond Water Treatment activities to ensure that samples required by the Water Board's Work Plan are collected and analyzed in accordance with the PWT SAP.

4. METEOROLOGICAL AND SURFACE WATER MONITORING

In a letter dated March 28, 2011, the USEPA authorized the Water Board to discontinue surface water quality monitoring and meteorological monitoring responsibilities for the site. Although the Water Board is not required to monitor meteorological data at the

site, it continued to do so through 2014. In addition, and as required by the USEPA, the Water Board continued its efforts through the 2014 water year to monitor surface water flow in the vicinity of Leviathan Mine. The Water Board also monitored the level of Pond 1. The meteorological and surface water flow data generated by Water Board monitoring activities are presented in the following section.

4.1 Meteorological Monitoring

A weather station is located on the Water Board's construction trailer near Pond 1. It is a Davis Integrated Sensor Suite model and has been in operation since November 2002. The system measures the following conditions hourly: wind speed, wind direction, rainfall, outside temperature, outside humidity, ultraviolet radiation, and solar radiation. Water Board staff download data from this weather station periodically. Hourly data organized in monthly files in Microsoft Excel format from October 2013 to September 2014 are included on compact disc in Appendix C.

4.2 Flow and Stage Monitoring

Flow data are reported on the basis of water year. The 2014 water year began October 1, 2013 and ended September 30, 2014. Under contract to the Water Board, the United States Geological Survey (USGS) monitored water flows and pond water level stage at 15 locations during the 2014 water year. Flow monitoring locations, USGS station numbers, and equipment are detailed in Table 3 and shown on Figure 4. As shown in Table 3, 13 of the 15 stations have continuous stage records, one of the 15 stations (Station 16, Aspen Creek above the confluence of Aspen and Leviathan Creeks) is monitored manually only during USGS field visits which occur approximately every six weeks, and one station (Station 24, Mountaineer Creek) is a calculated relationship derived by subtracting Station 23 (Leviathan Creek above the confluence of Mountaineer and Leviathan Creeks) from Station 25 (Bryant Creek below the confluence of Mountaineer and Leviathan Creeks). Tables D-1 through D-13 (Appendix D) provide the final provisional data for the 2014 water year. The USGS typically publishes the data by the spring following the completion of the water year. Once published, the data is no longer provisional, and will then be submitted to ARC by the Water Board for uploading to the Site-Wide Database. Some flow and stage data may have been impacted by snow and/or ice and modified accordingly by the USGS.

Real-time provisional flow and stage recordings can be viewed on the web for the following six stations: Adit, PUD, Station 1, Station 15, Station 25, and Pond 1. The real-time data can be accessed through the USGS's website at: http://waterdata.usgs.gov/ca/nwis/current?type=flow.

Published data reports can be searched by USGS station number at the USGS website: http://ca.water.usgs.gov/waterdata/.

5. SITE MAINTENANCE

The Water Board conducted routine site maintenance work during the 2014 field season in accordance with the 2014 Work Plan.

5.1 Routine Maintenance

Routine maintenance activities performed in 2014 included repairing the perimeter fence, removing sediment from storm water conveyances, and coordinating invasive plant control.

The perimeter fencing is barbed-wire and surrounds the majority of the site. In early-June 2014, Water Board staff inspected the perimeter fence and noted that minor repairs to the fence were required in a number of locations around the site. Water Board staff performed periodic fence repairs throughout the field season and completed fence repairs by mid-August.

Water Board staff visually inspected storm water conveyances in the Pit and around the ponds for the presence of accumulated sediment. Water Board staff directed URS to reestablish an earthen drainage swale above the Flow Control Structure and to remove accumulated sediment from storm water conveyance ditches exiting the Pit and in the Pond 1 area. The earthen drainage swale was reestablished in early-April 2014 and sediment removal from the storm water conveyances was completed in late-September 2014.

Water Board staff also directed URS to fill in minor rills in the Pond 2 North and Pond 2 South liner cover material. These minor rills were filled in late-September 2014.

The El Dorado County, Department of Agriculture (EDCDA) visited Leviathan Mine on July 10, 2014 and spot applied an herbicide (Telar®) on invasive plants. This year, as in 2002 through 2013, the EDCDA sprayed to eradicate tall whitetop (*Lepidium latifolium*) as well as dyers woad (*Isatis tinctoria L.)*.

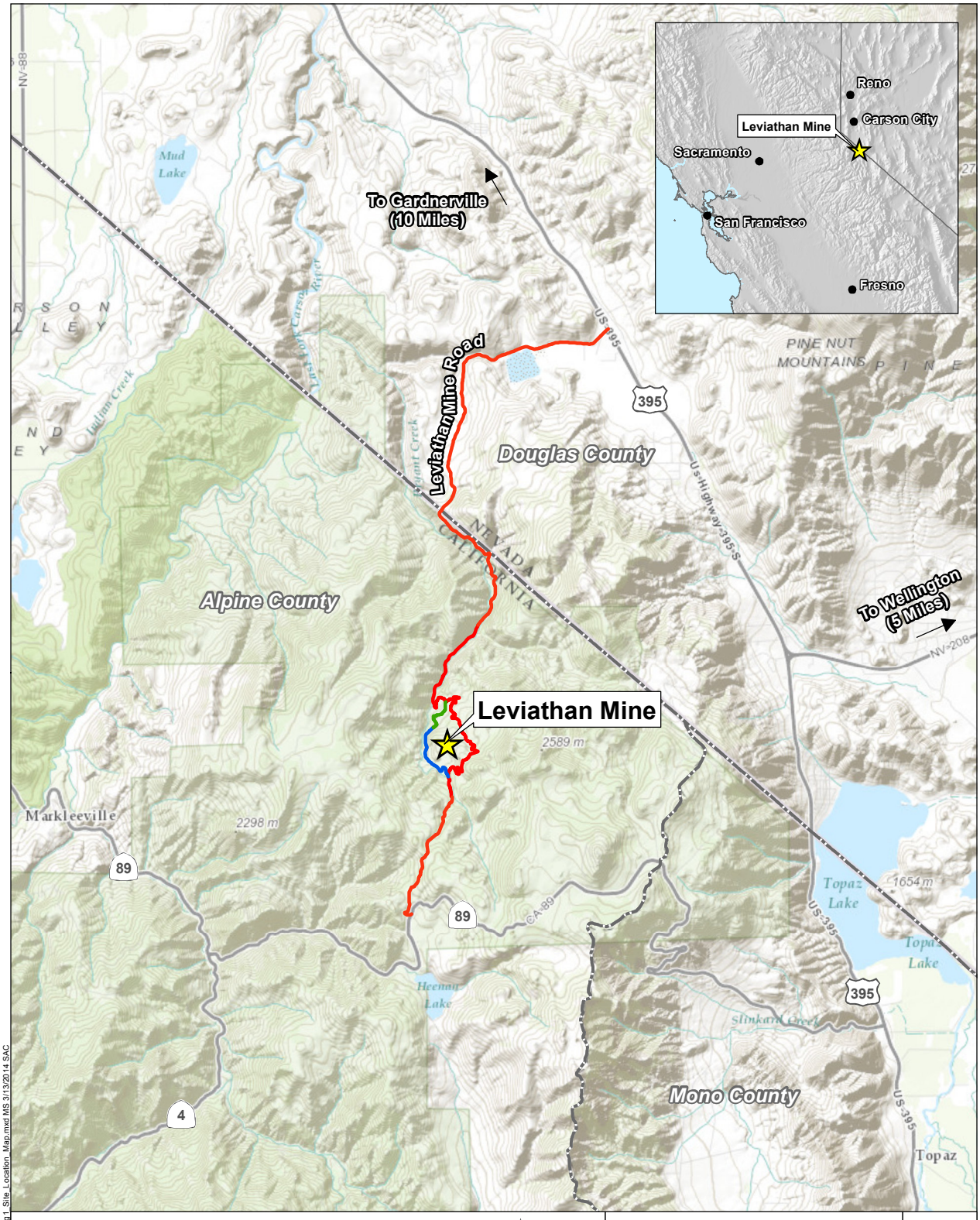
5.2 Revegetation Evaluation Study

In the late 1990's, Dr. Vic Claassen, with the Soils and Revegetation Laboratory at the University of California, Davis, worked with the Water Board to develop specifications for soil treatment and revegetation of the Pit and pond slope areas. Now over ten years later, Dr. Claassen is evaluating those revegetation efforts and evaluating potential enhancements. Revegetation evaluation study activities performed during the 2014 field season are part of a two-year study. The revegetation evaluation study final report is expected to be completed by mid-2015.

During the summer and fall of 2014, Dr. Claassen evaluated existing vegetative growth and substrate (mine waste material) conditions in the Pit, Pond 2 slopes, and the Delta Slope to generate recommendations to improve revegetation. As part of the work, plant transects that were established in 2013 were re-evaluated and vegetative cover was estimated using a line-intercept method. Using historical and current field data, treatment recommendations for improved revegetation were generated for the different substrates. Demonstration plots were installed in 2013 in the Pit, Pond 2 slope, and Delta Slope areas. The demonstration plots were developed to enhance deep rooting of plants used in revegetation efforts. The demonstration plots were monitored and evaluated in 2014 for root depth, residual pH and buffering, plant cover, and moisture content.

Using historic and current field and laboratory data, Dr. Claassen will generate guidelines for future revegetation work at Leviathan Mine. The guidelines will include strategies to address compacted substrate; recommendations for slope configuration; and parameters for soil amendments (type and application) intended to address acidity, fertility, and erosion.

LIST OF FIGURES



Forest Service Road 31348
Leviathan Mine Access Road
Leviathan Mine Road
(Forest Service Road 31052)
National Forest

N

0 1 2
Miles

Leviathan Mine
Site Location Map

Figure 1

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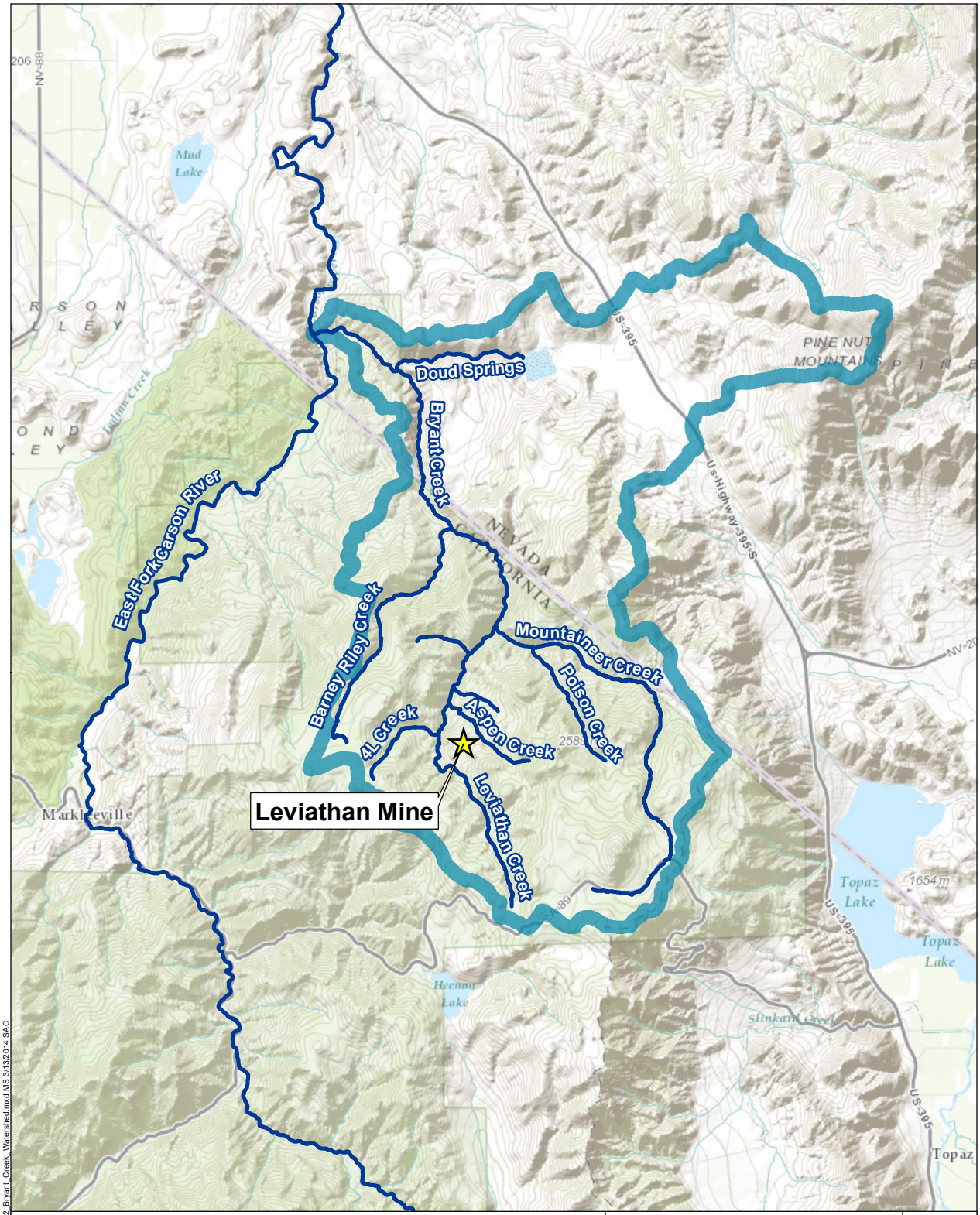

Bryant Creek Watershed

Figure 2

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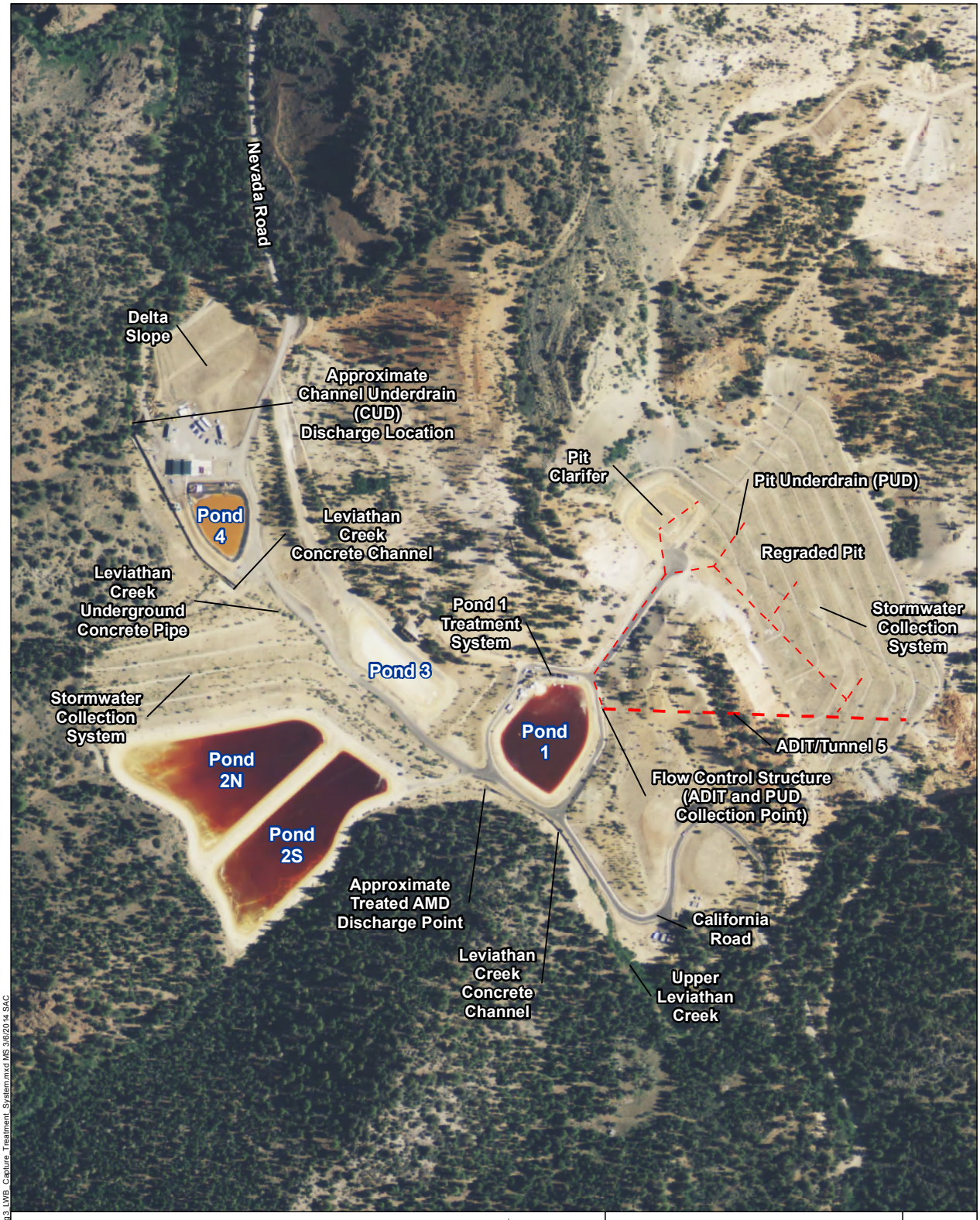

ADIT/Tunnel 5

Pit Underdrain (PUD)

N

0 250 500

Feet

Lahontan Water Board AMD Capture and Treatment System

Figure 3

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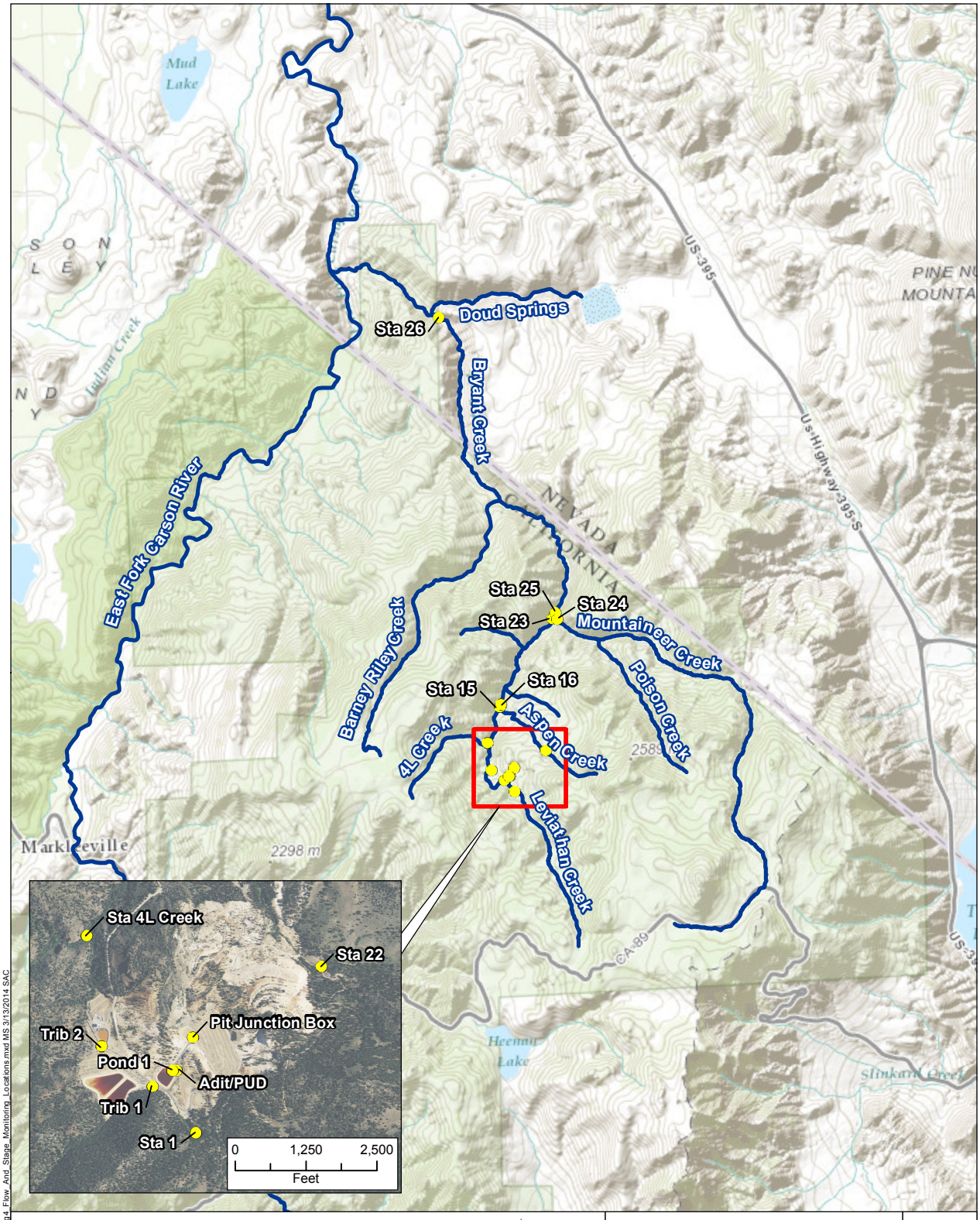

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Flow and Stage Monitoring Locations

Figure 4

LIST OF TABLES

TABLE 1
2014 SUMMER POND WATER TREATMENT MONITORING PROGRAM
LEVIATHAN MINE, ALPINE COUNTY, CALIFORNIA

SAMPLE LOCATION	LOCATION DESCRIPTION	ANALYSES	SCHEDULE	SAMPLER
Influent	Sampling port prior to lime addition	EPA-Required Discharge Criteria[1] with Additional Analytes[2]	weekly	Contractor
Mid Process	Various	pH, Temperature (field)	several times per day, as needed	Contractor
Effluent	Weir Box	pH, Temperature (field)	several times per day, as needed	Contractor
		EPA-Required Discharge Criteria	twice per week[5]	Contractor
		EPA-Required Discharge Criteria with Additional Analytes	weekly	Contractor
Duplicate Samples	Effluent samples at weir box	EPA-Required Discharge Criteria	minimum of 10%	Contractor
Field Method Blank	Collected at Weir Box using laboratory-supplied inorganic blank water	EPA-Required Discharge Criteria	minimum of 10%	Contractor
Sludge	Pit Clarifier	CAM-17[3] metals plus Al and Fe (for comparison with STLC and TTLC)[4]	three composite samples collected once per year after treatment	Contractor

Notes:
1. Dissolved As, Al, Cd, Cr, Cu, Fe, Pb, Ni, Zn (off-site laboratory); total recoverable Se (off-site laboratory); pH (field); temperature (field)
2. Dissolved Ca, Co, Mg, Mn, sulfate, TDS (off-site laboratory analysis)
3. Refers to 22 CCR 66261.24(a)(2)(A); CAM-17 metals: Sb, As, Ba, Be, Cd, Cr, Co, Cu, Pb, Hg, Mo, Ni, Se, Ag, Tl, V, Zn (off-site lab analysis)
4. STLC is the Soluble Threshold Limit Concentration and TTLC is the Total Threshold Limit Concentration.
5. Effluent samples were collected twice per week until discharge from the Pit Clarifier dropped below 5 gallons per minute.

TABLE 2
USEPA DISCHARGE CRITERIA
LEVIATHAN MINE, ALPINE COUNTY, CALIFORNIA

WATER QUALITY PARAMETER	MAXIMUM [2]	AVERAGE [4]
pH	Between 6.0 – 9.0 SU [1]	
Arsenic (dissolved)	0.34 mg/l	0.15 mg/l [3]
Aluminum (dissolved)	4.0 mg/l	2.0 mg/l [3]
Cadmium (dissolved)	0.009 mg/l	0.004 mg/l [3]
Chromium (dissolved)	0.97 mg/l	0.31 mg/l [3]
Copper (dissolved)	0.026 mg/l	0.016 mg/l [3]
Iron (dissolved)	2.0 mg/l	1.0 mg/l [3]
Lead (dissolved)	0.136 mg/l	0.005 mg/l [3]
Nickel (dissolved)	0.84 mg/l	0.094 mg/l [3]
Selenium (Total Recoverable)	Not Promulgated	0.005 mg/l [3]
Zinc (dissolved)	0.21 mg/l	0.21 mg/l [3]

Notes:
1: pH measurement based on 24-hour (single day) average discharge.
2: Concentrations based on a daily grab samples, each grab sample field-filtered and acid fixed promptly after collection.
3: Concentrations based on four daily grab samples, each grab sample field-filtered and acid fixed promplty after collection.
4: If the concentration detected by the contract laboratory is less than the detection limit, 1/2 the detection limit shall be used in calculating the Average concentration.

TABLE 3
2014 FLOW AND STAGE MONITORING LOCATIONS
LEVIATHAN MINE, ALPINE COUNTY, CALIFORNIA

Station ID (USGS Number)	Station Description	Equipment	Installation of Gaging Station
Continuous Stage Measurement and Calculated Flow			
Station 1 (10308783)	Leviathan Creek above the mine	Continuous flow recorder and appurtenances, solar power supply.	October 1998
Pit Under Drain (PUD) (10308785)	Drainage from shallow ground water collection pipes in pit, diverted into evaporation ponds	Continuous flow recorder and appurtenances, solar power supply, telemetry (real time provisional data available).	October 1999
Adit (10308784)	Drainage from tunnel #5 diverted into evaporation ponds	Continuous flow recorder and appurtenances, solar power supply, telemetry (real time provisional data available).	October 1999
4L Creek (103087889)	4L Creek just above confluence with Leviathan Creek	Continuous flow recorder and appurtenances, solar power supply.	October 2003
Station 15 (10308789)	Leviathan Creek, above the confluence of Leviathan and Aspen creeks	Continuous flow recorder and appurtenances, solar power supply, telemetry (real time provisional data available).	October 1998
Station 22 (103087891)	Aspen Creek above mine	Continuous flow recorder and appurtenances, solar power supply.	October 2003
Station 23 (10308792)	Leviathan Creek above the confluence of Leviathan and Mountaineer creeks	Continuous flow recorder and appurtenances, solar power supply	November 1999
Station 25 (10308794)	Bryant Creek below the confluence of Leviathan and Mountaineer creeks	Continuous flow recorder and appurtenances, solar power supply, telemetry (real time provisional data available).	October 1998
Station 26 (10308800)	Bryant Creek above the confluence of Doud Springs and Bryant Creek	Continuous flow recorder and appurtenances, solar power supply, telemetry (real time provisional data available).	August 2001
Pit Junction Box (103087855)	Storm water collection vault in open pit	Continuous flow recorder and appurtenances, solar power supply.	October 2009
Unnamed Trib 2 (103087865)	Ephemeral tributary north of Pond 2 North (Commonly referred to as the Lower Tributary)	Continuous flow recorder and appurtenances, solar power supply.	November 2009
Unnamed Trib 1 (103087835)	Ephemeral tributary south of Pond 2 South (Commonly referred to as the Upper Tributary)	Continuous flow recorder and appurtenances, solar power supply.	November 2009
Continuous Stage Measurement			
Pond 1 Stage (103087853)	Water level in Pond 1	Continuous stage recorder and appurtenances, solar power supply, telemetry (real time provisional data available).	October 1999
Other Flow Data			
Station 16 (103087898)	Aspen Creek, above the confluence of Leviathan and Aspen creeks	Hand-held flow meters. Monthly flow measurements to establish relationship with STA 15.	not applicable
Station 24	Mountaineer Creek above the confluence of Leviathan and Mountaineer creeks	None. Flow calculated by difference on a monthly basis: (STA 25 – STA 23 = STA 24).	not applicable

APPENDICES

Appendix A - Data Summary for 2014 Pond Water Treatment

Table A-1
2014 Pond Water Treatment
Daily Discharge Summary

Date	Volume Discharged (Gallons)	Cumulative Discharge (Gallons)
9/12/2014	8,920	8,920
9/13/2014	16,790	25,710
9/14/2014	16,790	42,500
9/15/2014	76,320	118,820
9/16/2014	162,720	281,540
9/17/2014	100,800	382,340
9/18/2014	260,640	642,980
9/19/2014	129,600	772,580
9/20/2014	16,790	789,370
9/21/2014	4,694	794,064
9/22/2014	1,728	795,792
Pre-discharge utility water *	19,000	814,792

Note:

Volume of treated AMD discharged to Leviathan Creek as measured at the Water Board weir box

* - Utility water collected from the pit clarifier prior to opening the underdrain

Table A-2
2014 Pond Water Treatment Effluent Field and Analytical Results

SAMPLE ID	Sample Description	SAMPLE DATE	pH	TEMP	Aluminum			Arsenic			Cadmium			Calcium			Chromium			Cobalt			Copper			Iron			Lead			Magnesium			Manganese			Nickel			Selenium			Sulfate (as SO_4)			Total Dissolved Solids			Zinc		
USEPA Daily Maximum Discharge Criteria			**6.0 - 9.0**		**4**			**0.34**			**0.009**			**NP**			**0.97**			**NP**			**0.026**			**2**			**0.136**			**NP**			**NP**			**0.84**			**NP**			**NP**			**NP**			**0.21**		
USEPA 4-Day Average Discharge Criteria			**NP**		**2**			**0.15**			**0.004**			**NP**			**0.31**			**NP**			**0.016**			**1**			**0.005**			**NP**			**NP**			**0.094**			**0.005**			**NP**			**NP**			**0.21**		
					Result	**DQ**	**EQ**	**Result**	**DQ**	**EQ**	**Result**	**DQ**	**EQ**	**Result**	**DQ**	**EQ**	**Result**	**DQ**	**EQ**	**Result**	**DQ**	**EQ**	**Result**	**DQ**	**EQ**	**Result**	**DQ**	**EQ**	**Result**	**DQ**	**EQ**	**Result**	**DQ**	**EQ**	**Result**	**DQ**	**EQ**	**Result**	**DQ**	**EQ**	**Result**	**DQ**	**EQ**	**Result**	**DQ**	**EQ**	**Result**	**DQ**	**EQ**	**Result**	**DQ**	**EQ**
1415PWT001-PC	Pre-Discharge	9/9/2014	7.18	71.5 °F	0.619			0.0107			0.000300	U		1030			0.0161			0.0128			0.0157			0.0500	U		0.000500	U		49.2			0.509			0.107			0.00671		J+	2900			4220			0.0100	U	
1415PWT002-PC	Pre-Discharge	9/10/2014	7.26	56.6 °F	0.259			0.0179			0.000300	U		881			0.0323			0.0116			0.0168			0.0500	U		0.000500	U		64.1			0.398			0.0686			0.00792		J+	2380			3400			0.0100	U	
1415PWT005-EFF	PWT Effluent	9/12/2014	6.5	61 °F	0.0939	J	J	0.0200		U	0.000300	U		636		J	0.0168			0.00655		U	0.00707		U	0.0990	J	U	0.000500	U		66.0			0.0877			0.0297		U	0.00705			1920			2880			0.0100	U	
1415PWT007-EFF	PWT Effluent	9/16/2014	5.95	61 °F	0.0500	U	*	0.0295		*	0.000314	J	J	715			0.0138			0.0117		*	0.00802		*	0.166		*	0.000500	U		70.0			0.301			0.0473			0.00841			2040			3160			0.0100	U	
1415PWT008-EFF	Field Duplicate	9/16/2014	5.95	61 °F	0.104		U, *	0.0218		*	0.000310	J		689			0.0125			0.00669		*	0.00567		*	0.126		*	0.000500	U		67.7			0.306			0.0372			0.00745			2030			3200			0.0100	U	
1415PWT009-EFF	PWT Effluent	9/18/2014	7.38	59.7 °F	0.0563	J	J	0.0224			0.000300	U		NA			0.0108			NA			0.00512			0.0500	U		0.000500	U		NA			NA			0.0220			0.00765			NA			NA			0.0100	U	

Notes:
PC indicates sample collected from Pit Clarifier prior to the start of discharge of treated AMD to Leviathan Creek.
EFF indicates sample is a sample of effluent discharged to Leviathan Creek.
All values reported in milligrams per liter (mg/L) except pH which are in Standard Units and temperature which are in the units specified above.
All parameters are dissolved except Selenium which is total recoverable.
NP - Not Promulgated
NA - Not Analyzed

Data Qualifiers (DQ) from the Laboratory:
J = Analyte positively identifed, but the quantitation was below the reporting limit.
U = Not detected at or above adjusted sample detection limit.

EPA Qualifiers (EQ) from an additional QA/QC:
J = estimated concentration; the analyte was detected between the RL and DL and/or one or more quality control parameters were not met
J+ = estimated concentraton; potential high bias
U = qualified as not detected; associated with blank contamination
* - failed Relative Percent Difference assessment

Table A-3
2014 Pond Water Treatment Influent Field and Analytical Results

SAMPLE ID	Sample Description	SAMPLE DATE	PH	TEMP	Aluminum			Arsenic			Cadmium			Calcium			Chromium			Cobalt			Copper			Iron			Lead			Magnesium			Manganese			Nickel			Selenium			Sulfate (as SO_4)			Total Dissolved Solids			Zinc		
					Result	DQ	EQ	Result	DQ	EQ	Result	DQ	EQ	Result	DQ	EQ	Result	DQ	EQ	Result	DQ	EQ	Result	DQ	EQ	Result	DQ	EQ	Result	DQ	EQ	Result	DQ	EQ	Result	DQ	EQ	Result	DQ	EQ	Result	DQ	EQ	Result	DQ	EQ	Result	DQ	EQ	Result	DQ	EQ
1415PWT003-INF	PWT Influent	09/12/2014	1.76	66.9 °F	1350			20.1			0.0975			503			3.14			7.93			5.58			948			0.000874	J	J	138			34.8			20.9			0.00106			11600		J-, H2	14500	H1	J, H3	3.24		
1415PWT006-INF	PWT Influent	09/16/2014	1.84	69.5 °F	913			10.0			0.0937			507			2.54			7.69			5.00			656			0.00117			131			31.8			19.4			0.00255			7920		J-, H2	12600	H1	J, H3	2.85		

Notes:
All values reported in milligrams per liter (mg/L) except pH which are in Standard Units and temperature which are in the units specified above.
All parameters are dissolved except Selenium which is total recoverable.
NP - Not Promulgated

Data Qualifiers (DQ) from the Laboratory:
J = Analyte positively identifed, but the quantitation was below the reporting limit.
H1 = Sample analysis performed past holding time.

EPA Qualifiers (EQ) from an additional QA/QC from URS:
J = estimated concentration; the analyte was detected between the RL and DL and/or one or more quality control parameters were not met.
J- = estimated concentration; potential low bias.
H2 = Original Sulfate samples were analyzed within hold time, however the results appeared to be anomolous, samples were re-analyzed on 11/04/14, sample 1415PWT003-INF and sample 1415PWT006-INF were analyzed 17 and 21 days past hold time, respectively. Results from 11/04/14 analysis are displayed in table.
H3 = Original Total Dissolved Solids samples were analyzed within hold time, however the results appeared to be anomolous, samples were re-analyzed on 11/04/14, sample 1415PWT003-INF and sample 1415PWT006-INF were analyzed 38 and 42 days past hold time, respectively. Results from 11/04/14 analysis are displayed in table.

Table A-4
Summary of 2014
Pond Water Treatment Plant Operator's Logs

Date	Time	Influent Flowrate (gpm)[1]	R-1 Setpoint[2]	R-1 pH	R-1 temp	R-2 Setpoint	R-2 pH	R-2 temp	FF-2 pH	Clarifier Pit pH	Clarifier Pit temp	Discharge Weir pH	Discharge Weir temp
09/08/14	17:00	NA	NA	2.51	66.70	8.40	8.35	64.50	8.65	6.28	66.50	ND	ND
09/08/14	17:30	NA	NA	2.51	66.70	8.40	8.34	65.50	8.63	7.64	65.80	ND	ND
09/08/14	18:30	NA	NA	1.95	68.90	8.40	8.45	66.80	8.50	7.20	66.20	ND	ND
09/08/14	19:30	NA	NA	2.17	62.96	8.20	7.66	67.20	8.43	7.54	64.80	ND	ND
09/08/14	20:30	NA	NA	2.10	62.60	8.40	8.51	67.20	8.70	7.95	64.00	ND	ND
09/08/14	21:30	NA	NA	2.13	60.26	8.40	8.40	66.90	8.70	8.10	61.00	ND	ND
09/08/14	22:30	NA	NA	2.10	59.40	8.40	8.40	66.30	8.70	8.10	62.10	ND	ND
09/08/14	23:30	NA	NA	2.07	58.30	8.40	8.38	65.40	8.70	8.05	58.10	ND	ND
09/09/14	0:30	NA	NA	2.11	57.60	8.40	8.45	64.50	8.71	7.98	55.80	ND	ND
09/09/14	1:30	NA	NA	2.12	56.10	8.40	8.50	63.50	8.68	8.01	62.20	ND	ND
09/09/14	2:30	NA	NA	2.12	56.30	8.40	8.48	62.60	8.68	8.04	57.60	ND	ND
09/09/14	3:30	NA	NA	2.01	54.70	8.40	8.48	61.60	7.98	8.02	58.60	ND	ND
09/09/14	4:30	NA	NA	1.84	53.60	8.40	8.61	60.20	7.95	8.00	54.90	ND	ND
09/09/14	5:30	NA	NA	1.83	52.20	8.40	8.48	59.20	7.65	7.85	55.60	ND	ND
09/09/14	6:30	NA	NA	1.88	49.40	8.40	8.43	57.50	7.65	7.78	54.50	ND	ND
09/09/14	7:30	NA	NA	2.57	47.20	8.40	8.37	56.50	8.41	8.40	53.60	ND	ND
09/09/14	8:30	NA	NA	2.98	50.50	8.40	8.22	54.50	8.63	8.89	55.00	ND	ND
09/09/14	9:30	NA	NA	2.95	55.50	8.20	8.26	53.70	8.35	8.55	55.50	ND	ND
09/09/14	10:30	NA	NA	2.28	57.10	8.10	7.99	54.00	8.17	8.14	56.80	ND	ND
09/09/14	11:30	NA	NA	2.21	61.50	8.13	8.16	55.30	8.26	8.19	57.40	ND	ND
09/09/14	12:30	NA	NA	2.16	65.00	8.13	8.38	57.30	8.27	8.03	59.70	ND	ND
09/09/14	13:30	NA	NA	2.21	68.70	8.13	8.28	59.00	8.33	7.98	61.10	ND	ND
09/09/14	14:30	NA	NA	2.30	69.20	8.17	8.43	60.10	8.36	8.13	62.10	ND	ND
09/09/14	15:30	NA	NA	2.12	70.00	8.17	8.37	62.10	8.34	8.03	64.00	ND	ND
09/09/14	16:30	NA	NA	2.03	68.30	8.17	8.36	64.10	8.30	7.91	61.20	ND	ND
09/09/14	17:30	NA	NA	2.12	70.70	8.18	8.32	66.00	8.33	7.99	64.60	ND	ND
09/09/14	18:30	NA	NA	2.06	68.00	8.20	8.32	67.20	8.65	8.35	67.30	ND	ND
09/09/14	19:30	NA	NA	2.26	64.20	8.30	8.26	68.20	8.45	7.84	66.00	ND	ND
09/09/14	20:30	NA	NA	2.17	62.10	8.30	8.09	68.10	8.51	8.14	66.30	ND	ND
09/09/14	21:30	NA	NA	2.18	61.30	8.30	8.29	67.70	8.47	8.05	66.10	ND	ND
09/09/14	22:30	NA	NA	2.18	59.80	8.30	8.23	67.10	8.47	8.06	64.20	ND	ND
09/09/14	23:30	NA	NA	2.11	58.10	8.30	8.37	65.90	8.51	8.10	62.50	ND	ND
09/10/14	0:30	NA	NA	2.33	56.30	8.30	8.33	64.70	8.46	8.03	61.20	ND	ND
09/10/14	1:30	NA	NA	2.26	53.10	8.30	8.42	63.30	8.54	8.13	60.00	ND	ND
09/10/14	2:30	NA	NA	2.37	55.20	8.30	8.32	62.50	8.46	8.01	59.50	ND	ND
09/10/14	3:30	NA	NA	2.10	54.20	8.30	8.30	61.50	8.41	8.01	58.60	ND	ND
09/10/14	4:30	NA	NA	2.27	52.80	8.30	8.14	60.20	8.51	8.02	55.90	ND	ND
09/10/14	5:30	NA	NA	1.93	51.70	8.30	8.27	59.40	8.44	8.03	54.90	ND	ND
09/10/14	6:30	NA	NA	1.95	50.10	8.30	8.43	58.50	8.53	8.06	55.40	ND	ND
09/10/14	7:30	NA	NA	1.86	50.10	8.30	8.35	58.00	8.55	8.09	53.50	ND	ND
09/10/14	8:30	NA	NA	2.42	54.60	8.30	8.58	57.40	8.61	8.01	58.50	ND	ND
09/10/14	9:30	NA	NA	1.70	58.50	8.20	8.26	57.40	8.43	7.81	62.30	ND	ND
09/10/14	10:30	NA	NA	1.91	61.90	8.22	8.28	57.50	8.33	7.55	62.90	ND	ND
09/10/14	11:30	NA	NA	1.94	66.30	8.25	8.34	57.90	8.38	7.64	64.40	ND	ND
09/10/14	12:30	NA	NA	1.95	66.40	8.25	8.36	58.60	8.36	7.69	64.70	ND	ND
09/10/14	13:30	NA	NA	1.92	68.30	8.25	8.36	59.30	8.36	7.82	64.90	ND	ND
09/10/14	14:30	NA	NA	1.92	70.70	8.25	8.46	59.90	8.40	7.68	66.30	ND	ND
09/10/14	15:30	NA	NA	ND	ND	8.25	7.61	61.30	5.33	ND	ND	ND	ND
09/10/14	16:30	NA	NA	2.10	70.70	8.30	8.35	63.80	8.33	7.90	66.10	ND	ND
09/10/14	17:30	NA	NA	1.75	71.40	8.35	8.39	65.90	8.33	7.93	67.50	ND	ND
09/10/14	18:30	NA	NA	1.95	68.80	8.38	8.28	67.40	8.33	7.92	68.70	ND	ND
09/10/14	19:30	NA	NA	1.85	65.20	8.38	8.40	68.60	8.55	8.36	67.60	ND	ND
09/10/14	20:30	NA	NA	1.75	63.70	8.38	8.47	69.20	8.56	7.75	65.80	ND	ND
09/10/14	21:30	NA	NA	1.68	62.10	8.38	8.24	68.70	8.58	7.85	68.70	ND	ND
09/10/14	22:30	NA	NA	1.92	59.60	8.38	8.34	68.20	8.60	7.88	67.20	ND	ND
09/10/14	23:30	NA	NA	1.84	57.20	8.38	8.24	66.50	8.60	7.93	66.50	ND	ND
09/11/14	0:30	NA	NA	1.83	56.30	8.38	8.46	65.10	8.56	8.02	65.00	ND	ND
09/11/14	1:30	NA	NA	1.88	55.30	8.38	8.33	63.60	8.55	7.92	63.50	ND	ND
09/11/14	2:30	NA	NA	1.83	55.60	8.38	8.27	62.00	8.56	7.86	62.20	ND	ND
09/11/14	3:30	NA	NA	1.87	55.70	8.38	8.26	60.80	8.53	8.10	58.10	ND	ND
09/11/14	4:30	NA	NA	2.09	50.00	8.38	8.29	59.50	8.57	8.12	60.00	ND	ND

Table A-4
Summary of 2014
Pond Water Treatment Plant Operator's Logs

Date	Time	Influent Flowrate (gpm)[1]	R-1 Setpoint[2]	R-1 pH	R-1 temp	R-2 Setpoint	R-2 pH	R-2 temp	FF-2 pH	Clarifier Pit pH	Clarifier Pit temp	Discharge Weir pH	Discharge Weir temp
09/11/14	5:30	NA	NA	2.11	51.70	8.38	8.32	57.80	8.50	8.05	58.50	ND	ND
09/11/14	6:30	NA	NA	2.08	50.10	8.38	8.37	57.10	8.52	8.02	57.20	ND	ND
09/11/14	7:30	NA	NA	2.28	48.10	8.38	8.39	56.60	8.43	8.18	56.20	ND	ND
09/11/14	8:30	NA	NA	2.31	52.00	8.40	8.30	55.30	8.53	8.27	56.30	ND	ND
09/11/14	9:30	NA	NA	2.28	57.00	8.40	8.37	54.70	8.20	8.19	56.60	ND	ND
09/11/14	10:30	NA	NA	2.18	61.50	8.43	8.25	55.50	8.67	8.42	57.80	ND	ND
09/11/14	11:30	NA	NA	1.93	63.80	8.38	8.31	56.60	8.55	8.31	59.30	ND	ND
09/11/14	12:30	NA	NA	1.95	68.50	8.35	8.45	58.40	7.69	ND	ND	ND	ND
09/11/14	13:30	NA	NA	1.97	69.20	8.40	8.44	59.80	8.31	8.17	62.70	ND	ND
09/11/14	14:30	NA	NA	1.96	73.00	8.39	8.46	61.80	8.42	8.20	66.20	ND	ND
09/11/14	15:30	NA	NA	1.99	71.20	8.30	8.27	63.30	8.53	8.22	67.20	ND	ND
09/11/14	16:30	NA	NA	1.95	71.80	8.30	8.23	64.20	8.52	8.24	67.60	ND	ND
09/11/14	17:30	NA	NA	1.90	73.10	8.26	8.19	65.00	8.49	8.16	67.80	ND	ND
09/11/14	18:30	NA	NA	ND	ND	8.40	8.08	66.20	7.49	ND	ND	ND	ND
09/11/14	19:30	NA	NA	2.16	65.00	8.25	8.55	67.40	8.27	7.95	67.70	ND	ND
09/11/14	20:30	NA	NA	2.21	65.20	8.25	8.41	67.70	8.17	7.65	67.80	ND	ND
09/11/14	21:30	NA	NA	2.22	61.00	8.35	8.48	67.90	8.30	8.04	67.50	ND	ND
09/11/14	22:30	NA	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
09/11/14	23:30	NA	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
09/12/14	0:30	NA	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
09/12/14	1:30	NA	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
09/12/14	2:30	NA	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
09/12/14	3:30	NA	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
09/12/14	4:30	NA	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
09/12/14	5:30	NA	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
09/12/14	6:30	NA	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
09/12/14	7:30	NA	NA	2.34	48.90	8.50	8.52	57.90	8.11	ND	ND	ND	ND
09/12/14	8:30	NA	NA	2.25	52.20	8.45	8.41	57.10	8.46	8.08	57.90	ND	ND
09/12/14	9:30	NA	NA	2.30	59.40	8.45	8.47	56.20	8.42	8.23	58.20	ND	ND
09/12/14	10:30	NA	NA	2.19	61.10	8.48	8.40	56.30	8.42	8.07	58.80	ND	ND
09/12/14	11:30	NA	NA	2.25	62.30	8.46	8.40	56.60	8.44	8.12	59.60	7.80	60.60
09/12/14	12:30	NA	NA	1.91	68.80	8.46	8.41	57.20	8.47	8.01	60.00	7.71	61.40
09/12/14	13:30	NA	NA	1.81	65.10	8.46	8.38	53.30	8.50	7.92	61.10	7.30	62.50
09/15/14	10:30	NA	NA	2.22	62.00	8.43	8.34	61.10	8.62	7.66	ND	ND	ND
09/15/14	11:30	NA	NA	2.15	65.00	8.39	8.29	61.40	8.59	8.04	64.30	7.73	62.70
09/15/14	12:30	NA	NA	2.23	66.80	8.35	7.60	61.60	8.13	ND	ND	6.35	61.40
09/15/14	13:30	NA	NA	2.14	68.20	8.35	8.29	62.30	8.51	8.37	64.70	7.84	62.10
09/15/14	14:30	NA	NA	2.00	69.30	8.37	8.20	63.60	8.43	8.04	65.90	7.59	62.60
09/15/14	15:30	NA	NA	2.02	71.30	8.37	8.25	64.60	8.55	8.24	67.40	7.75	63.40
09/15/14	16:30	NA	NA	2.00	71.70	8.39	8.28	66.40	8.56	8.28	68.80	7.68	64.50
09/15/14	17:30	NA	NA	1.68	76.50	8.35	8.27	67.20	8.63	8.26	70.00	7.68	64.40
09/15/14	18:30	NA	NA	2.01	68.60	8.34	8.35	67.90	8.64	8.24	69.50	7.58	64.40
09/15/14	19:30	NA	NA	2.18	64.10	8.34	8.45	68.60	8.67	8.41	68.30	8.12	64.10
09/15/14	20:30	NA	NA	2.12	63.20	8.34	8.36	68.30	8.66	8.24	68.50	7.61	67.30
09/15/14	21:30	NA	NA	2.07	62.50	8.34	8.66	68.30	8.67	8.20	69.10	6.87	64.70
09/15/14	22:30	NA	NA	2.14	60.80	8.34	8.60	68.00	8.65	8.16	67.70	7.96	63.30
09/15/14	23:30	NA	NA	2.14	60.00	8.34	8.76	66.70	8.66	8.13	66.80	7.83	63.20
09/16/14	0:30	NA	NA	2.05	60.10	8.34	8.72	65.80	8.64	8.17	65.90	7.63	63.10
09/16/14	1:30	NA	NA	2.15	59.40	8.34	8.63	64.60	8.62	8.07	65.30	7.58	62.70
09/16/14	2:30	NA	NA	2.15	58.60	8.34	8.71	64.00	8.61	8.19	65.20	7.94	62.50
09/16/14	3:30	NA	NA	2.16	56.20	8.34	8.32	62.90	8.57	8.07	63.10	7.79	61.50
09/16/14	4:30	NA	NA	2.20	55.90	8.34	8.42	61.70	8.63	8.17	61.60	7.99	61.50
09/16/14	5:30	NA	NA	2.16	55.80	8.34	8.43	61.50	8.58	7.84	61.60	7.79	61.10
09/16/14	6:30	NA	NA	2.18	55.80	8.34	8.51	60.90	8.56	8.01	60.20	7.94	60.20
09/16/14	7:30	NA	NA	1.90	54.80	8.40	8.31	59.60	8.57	8.46	60.70	8.02	60.70
09/16/14	8:30	NA	NA	1.85	57.90	8.40	8.30	58.50	8.55	8.52	60.40	7.94	60.60
09/16/14	9:30	NA	NA	1.84	59.50	8.40	8.36	58.50	8.58	8.20	61.40	5.95	61.00
09/16/14	10:30	NA	NA	1.90	64.90	8.40	8.29	58.50	8.58	8.59	62.70	7.68	61.00
09/16/14	11:30	NA	NA	1.81	67.90	8.40	8.34	60.30	8.59	8.62	62.90	7.91	62.00
09/16/14	12:30	NA	NA	1.80	71.90	8.40	8.34	62.40	8.60	8.67	65.10	7.78	62.90
09/16/14	13:30	NA	NA	1.64	73.60	8.40	8.29	64.50	8.63	8.44	67.00	7.81	64.00

Table A-4
Summary of 2014
Pond Water Treatment Plant Operator's Logs

Date	Time	Influent Flowrate (gpm)[1]	R-1 Setpoint[2]	R-1 pH	R-1 temp	R-2 Setpoint	R-2 pH	R-2 temp	FF-2 pH	Clarifier Pit pH	Clarifier Pit temp	Discharge Weir pH	Discharge Weir temp
09/16/14	14:30	NA	NA	1.67	75.10	8.38	8.29	67.20	8.66	8.47	70.00	7.78	64.90
09/16/14	15:30	NA	NA	1.67	75.30	8.35	8.26	69.90	8.62	8.52	72.40	7.75	65.60
09/16/14	16:30	NA	NA	1.63	75.10	8.32	8.22	71.90	8.59	8.46	74.00	7.96	66.30
09/16/14	17:30	NA	NA	1.57	74.60	8.30	8.21	72.90	8.61	8.49	74.90	7.86	66.50
09/16/14	18:30	NA	NA	1.61	71.00	8.25	8.23	73.00	8.60	8.44	74.40	7.51	66.70
09/16/14	19:30	NA	NA	1.89	66.50	8.25	8.38	72.90	8.61	8.07	77.10	7.80	66.20
09/16/14	20:30	NA	NA	1.65	63.70	8.25	8.43	72.20	8.62	8.12	71.80	6.77	65.50
09/16/14	21:30	NA	NA	1.73	63.00	8.25	8.35	71.00	8.57	8.50	66.50	8.25	64.90
09/16/14	22:30	NA	NA	1.74	60.00	8.25	8.44	69.90	8.58	8.46	65.50	8.31	63.40
09/16/14	23:30	NA	NA	1.84	60.60	8.25	8.65	68.40	8.57	8.40	65.00	8.10	64.40
09/17/14	0:30	NA	NA	1.87	55.70	8.25	8.71	66.20	8.53	8.51	63.30	8.29	60.60
09/17/14	1:30	NA	NA	1.95	58.60	8.25	8.77	65.20	8.52	8.35	62.00	8.18	60.20
09/17/14	2:30	NA	NA	1.79	55.00	8.25	8.55	63.80	8.54	8.26	65.90	8.12	61.50
09/17/14	3:30	NA	NA	1.98	53.60	8.25	8.43	63.00	8.52	8.26	63.90	8.10	61.50
09/17/14	4:30	NA	NA	1.98	51.40	8.25	8.53	61.90	8.51	8.20	63.50	8.06	61.90
09/17/14	5:30	NA	NA	1.78	51.90	8.25	8.71	61.10	8.49	8.10	60.50	7.98	61.70
09/17/14	6:30	NA	NA	1.87	53.00	8.25	8.32	59.20	8.49	8.09	61.60	7.96	61.00
09/17/14	7:30	NA	NA	1.88	52.60	8.25	8.37	59.40	8.37	8.21	61.40	7.92	61.70
09/17/14	8:30	NA	NA	1.69	55.20	8.35	8.25	58.20	8.52	8.28	61.30	7.99	61.60
09/17/14	9:30	NA	NA	2.30	62.20	8.35	8.22	57.10	8.46	8.22	60.00	8.01	61.80
09/17/14	10:30	NA	NA	2.08	66.20	8.40	8.68	57.90	8.63	8.13	62.50	7.85	62.00
09/17/14	11:30	NA	NA	2.02	71.40	8.37	8.33	58.90	8.57	8.03	64.90	7.84	62.20
09/17/14	12:30	NA	NA	ND	ND	8.37	8.27	61.80	8.58	8.24	65.50	8.04	63.70
09/17/14	13:30	NA	NA	ND	ND	8.37	8.29	64.70	8.66	8.39	67.90	7.95	64.50

[1] Flow meter offline - influent flow not recorded.

[2] Reaction vessel R-1 not used for lime injection

NA = not applicable

ND = no data

Table A-5
2014 Pond Water Treatment Sludge Analytical Results

Regulatory Criteria	DATE	Percent Solids	Aluminum			Antimony			Arsenic			Barium			Beryllium			Cadmium			Chromium			Cobalt			Copper			Iron			Lead			Mercury			Molybdenum			Nickel			Selenium			Silver			Thallium			Vanadium			Zinc		
TTLC (mg/kg)		NP	NP			500			500			10000			75			100			2500			8000			2500			NP			1000			20			3500			2000			100			500			700			2400			5000		
TCLP (mg/L)		NP	NP			NP			5			100			NP			1			5			NP			NP			NP			5			0.2			NP			NP			1			5			NP			NP			NP		
STLC (mg/L)		NP	NP			15			5			100			0.75			1			560			80			25			NP			5			0.2			350			20			1			5			7			24			250		
Sample ID and Testing Procedure		**Percent Solids**	**Result**	**DQ**	**EQ**	**Result**	**DQ**	**EQ**	**Result**	**DQ**	**EQ**	**Result**	**DQ**	**EQ**	**Result**	**DQ**	**EQ**	**Result**	**DQ**	**EQ**	**Result**	**DQ**	**EQ**	**Result**	**DQ**	**EQ**	**Result**	**DQ**	**EQ**	**Result**	**DQ**	**EQ**	**Result**	**DQ**	**EQ**	**Result**	**DQ**	**EQ**	**Result**	**DQ**	**EQ**	**Result**	**DQ**	**EQ**	**Result**	**DQ**	**EQ**	**Result**	**DQ**	**EQ**	**Result**	**DQ**	**EQ**	**Result**	**DQ**	**EQ**	**Result**	**DQ**	**EQ**
1415PWT010-PC-A-(0-13")	10/28/2014	18																																																								
TTLC (mg/kg dry)			59000			0.81	ND		490			4.1			2.0			6.6			120			340			230			49000			0.78	J	J	0.0066	ND		0.28	J	J	860			0.86	ND		0.63	J	J	1.9	J	J	23			170		
TCLP (mg/L)			7.5			0.0065	ND		0.013	ND	UJ	0.028	J	U	0.0030	ND		0.0058	ND		0.023	J	J	0.27			0.020	J	J	0.17	J		0.0091	ND	UJ	0.00010	ND		0.0046	J	U	2.9			0.069	J	J	0.0066	ND		0.020	ND		0.0067	ND		0.065	J	J
STLC (mg/L)			810			0.0065	ND		7.1			0.081			0.045			0.0058	ND		2.7			7.0			4.1			980			0.0091	ND		0.00030	J	J	0.016	J	U	17			0.023	ND		0.0098	J	U	0.020	ND		0.68			3.8		
1415PWT011-PC-B-(0-25")	10/28/2014	21																																																							
TTLC (mg/kg dry)			46000			0.67	ND		690			4.3			1.5			5.1			100			240			170			48000			0.31	ND		0.0054	ND		0.34	J	J	620			0.72	ND		0.76	J	J	1.5	J	J	36			120		
STLC (mg/L)			800			0.0065	ND		9.1			0.048	J	J	0.039			0.0058	ND		2.6			6.0			3.6			1000			0.0091	ND		0.00016	J	J	0.014	J	U	15			0.023	ND		0.0066	ND		0.020	ND		0.83			3.2		
1415PWT012-PC-C-(0-10")	10/28/2014	17																																																							
TTLC (mg/kg dry)			68000			0.80	ND		720			7.5			2.3			7.7			140			380			270			62000			0.64	J	J	0.0061	ND		0.31	J	J	950			24			0.49	J	J	2.1	J	J	34			190		
STLC (mg/L)			790			0.0065	ND		6.9			0.044	J	J	0.043			0.0058	ND		2.6			6.8			4.0			930			0.0091	ND		0.00012	J	J	0.014	J	U	17			0.023	ND		0.0081	J	U	0.020	ND		0.58			3.6		

Notes:
Sludge samples represent a homogenized section through the entire sludge blanket thickenss.
TTLC - Total Threshold Limit Concentration
STLC - Soluble Threshold Limit Concentration
NP - Not Promulgated

Data Qualifiers (DQ) from the Laboratory:
ND - Not detected at or above adjusted sample detection limit.
J - The analyte was positively identified, but the quantitation was below the reporting limit.

EPA Qualifiers (EQ) from an additional QA/QC:
J = estimated concentration; the analyte was detected between the RL and DL and/or one or more quality control parameters were not met
U = qualified as not detected; associated with blank contamination
UJ = estimated reporting limit; the analyte was not detected and there is a potential for low bias/false negative result at the stated RL

Table A-6
2014 Pond Water Treatment Sludge Additional Analytical Results

Regulatory Criteria	DATE	Percent Solids	Antimony			Arsenic			Barium			Beryllium			Cadmium			Chromium			Cobalt			Copper			Lead			Mercury			Molybdenum			Nickel			Selenium			Silver			Thallium			Vanadium			Zinc		
TCLP (mg/L)		NP	NP			5			100			NP			1			5			NP			NP			5			0.2			NP			NP			1			5			NP			NP			NP		
Sample ID and Testing Procedure		**Percent Solids**	**Result**	**DQ**	**EQ**	**Result**	**DQ**	**EQ**	**Result**	**DQ**	**EQ**	**Result**	**DQ**	**EQ**	**Result**	**DQ**	**EQ**	**Result**	**DQ**	**EQ**	**Result**	**DQ**	**EQ**	**Result**	**DQ**	**EQ**	**Result**	**DQ**	**EQ**	**Result**	**DQ**	**EQ**	**Result**	**DQ**	**EQ**	**Result**	**DQ**	**EQ**	**Result**	**DQ**	**EQ**	**Result**	**DQ**	**EQ**	**Result**	**DQ**	**EQ**	**Result**	**DQ**	**EQ**	**Result**	**DQ**	**EQ**
SLUDGE1	**06/16/2014**																																																	
TCLP (mg/L)			0.0065	ND		0.013	ND		0.047	J	U	0.0048	J	U	0.0058	ND		0.0057	ND		0.640			0.029	J	U	0.0091	ND		0.00010	ND		0.039	J	J	2.300			0.110			0.027	J	U	0.076	J	U	0.0067	ND		0.130	J	J
1314PWTPC SLUDGE1	**7/1/2014**	56.5	NA			NA			NA			NA			NA			NA			NA			NA			NA			NA			NA			NA			NA			NA			NA			NA			NA		

Notes:

Sludge samples represent a homogenized section through the entire sludge blanket thickenss.

TCLP - Toxicity Characteristic Leaching Procedure

NP - Not Promulgated

SLUDGE1 is a Pit clarifier sludge sample collected by URS personnel from sludge generated during the 2013 field season for disposal characterization purposes

1314PWTPC SLUDGE1 is a Pit clarifier sludge sample collected by Water Board personnel from sludge generated during the 2013 field season for informational purposes

NA - Not Analyzed

Data Qualifiers (DQ) from the Laboratory:

ND - Not detected at or above adjusted sample detection limit.

J - The analyte was positively identified, but the quantitation was below the reporting limit.

EPA Qualifiers (EQ) from an additional QA/QC:

J = estimated concentration; the analyte was detected between the RL and DL and/or one or more quality control parameters were not met

U = qualified as not detected; associated with blank contamination

Appendices B through E (on compact disc)

Appendix B – 2014 Pond Water Treatment Data

Laboratory Reports (PDF format)

Analytical Laboratory Electronic Data Deliverable Files (Microsoft Excel format)

Appendix C – 2014 Water Year Pond 1 Weather Station Data

Hourly Data Organized by Month (Microsoft Excel format)

Appendix D – 2014 Water Year USGS Flow and Stage Annual Data Reports

Annual Water Data Reports for 13 Stations (Microsoft Excel format)

Appendix E – URS: Leviathan Mine Pond Water Treatment, 2014 Data Summary Report

Attachment 4 – Data Quality Summary (PDF format)