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WATER MONITORING PLAN

LEADVILLE MILL

PERMIT M1990-057

(VERSION 1)

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1.0 INTRODUCTION

This water monitoring sampling and analysis plan (SAP) details the methods and procedures that will be used to collect and analyze representative groundwater and surface water samples at the Leadville Mill (LM) site in Lake County Colorado. Regulatory activities are governed by the Colorado Division of Reclamation Mining & Safety (Division).

The Facility is located at 13815 Highway 24 South, Leadville, Colorado in Lake County. This plan describes the activities that CJK Milling Company (CJK) will conduct at the groundwater monitoring locations as required under Rule 6.4.7. CJK will update this plan if changes in the groundwater monitoring well network occur or if conditions change that require plan revisions for Division review and approval.

2.0 WATER MONITORING

This section includes the details of groundwater monitoring at the LM.

2.1 GROUNDWATER

This section includes the details of groundwater monitoring at the LM.

2.1.1 SAMPLING WELL NETWORK

The monitoring well network consists of the 7 groundwater monitoring wells as summarized in **Table 2-1** and shown in **Figure 2-1**. Based on the of the hydrogeology at the Mill, wells BMW-1, PZ-4, MA1TMW-4 and LM-MW-3 are up gradient from the Landfill, while LM-MW-2, MW-13 and MW-13A are down gradient.

TABLE 2-1: MONITORING WELL INFORMATION

	Up Gradient Wells				**Down Gradient Wells**		
Well ID	**LM-MW-3**	**BMW-1**	**MA1TMW-4**	**PZ-4**	**LM-MW-2**	**MW13**	**MW13a**
Latitude (decimal degrees)	39.23045	39.24549	39.23606	39.24546	39.22897	39.22636	39.22630
Longitude (decimal degrees)	-106.33145	-106.30721	-106.33153	-106.30716	-106.33358	-106.34207	-106.34215
Completion Depth (ft)	66	1,244	85	137	53	100	25
Well Diameter (in)	4	2	4	2	4	2	2
Top of Casing (ft)	9,744.0	9,996.7	9,796.0	9,998.0	9,701.0	9,620.5	9,621.2
Ground Elevation (ft)	9,741.0	9,995.0	9,794.0	9,996.5	9,698.0	9,619.0	9,619.7
Approx Static Water Elev (ft)	9,683.9	9,978.7	9,718.3	9,897.3	9,650.5	9,594.3	9,600.2
Approx Static Water Level (ft)	60.1	18.0	77.7	100.7	50.5	26.3	21.0

FIGURE 2-1: LEADVILLE MILL & GROUNDWATER MONITORING WELL LOCATIONS

2.1.2 SAMPLING FREQUENCY & CONSTITUENTS

When sufficient groundwater is present in monitoring wells for sampling (i.e. one foot of water column or greater), the monitoring program will include sampling groundwater for analyses of the constituents in **Table 2-2** on a quarterly basis. Samples will be analyzed by a State certified lab. Parameters to verify groundwater stability, including pH, specific conductivity, and temperature, will be collected in the field.

If an existing monitoring well becomes dry and stays dry for a minimum of two (2) consecutive quarters, a new well will be drilled as close as possible based upon any drilling constraints. The data from this well will be combined to the existing database.

The analytical laboratory will report results to the method detection limit (MDL) for the project, including J-qualified (estimated) values. Laboratory analytical methods will be able to achieve a reporting limit (RL) equal to or less than the standards in **Table 2-2**. Any changes to the constituent list must be approved in writing by the Division prior to implementation. A sample volume may be limited due to a limited water column present in a monitoring well resulting in an insufficient sample volume for analysis of all constituents. In this instance, procedures described in **Section 2.1.3** below will be followed, and analysis of a limited number of constituents will not be considered a change to the constituent list.

TABLE 2-2: CONSTITUENTS FOR GROUNDWATER SAMPLING

Constituent[1]	**Standard**	**Total**	**Dissolved**
Aluminum (Al)	5 mg/l	X	X
Antimony(Sb)	0.006mg/l	X	X
Arsenic(As)	0.01mg/l	X	X
Barium(Ba)	2.0mg/l	X	X
Beryllium(Be)	0.004mg/l	X	X
Boron (B)[2]	0.75 mg/l	X	X
Cadmium(Cd)	0.005mg/l	X	X
Chlorophenol	0.0002 mg/l	X	
Chloride (Cl)	250 mg/l	X	X
Chromium(Cr) [3]	0.1mg/l	X	X
Cobalt (Co)	0.05 mg/l	X	X
Copper (Cu)	0.2 mg/l	X	X
Cyanide [Free](CN)	0.2mg/l	X	
Fluoride(F)	2 mg/l	X	X
Iron (Fe)	0.3 mg/l	X	X
Lead(Pb)	0.05mg/l	X	X
Lithium (Li)	2.5 mg/l	X	X
Manganese (Mn)	0.05 mg/l	X	X
Mercury (inorganic)(Hg)	0.002mg/l	X	X
Molybdenum(Mo)	0.21mg/l	X	X
Nickel(Ni)	0.1mg/l	X	X
Nitrate(NO3)	10.0mg/l as N	X	X
Nitrite(NO2)	1.0mg/l as N	X	X
Total Nitrate+Nitrite	10.0mg/l as N	X	X
Selenium(Se)	0.02 mg/l	X	X
Silver(Ag)	0.05mg/l	X	X
Thallium(Tl)	0.002mg/l	X	X
Uranium(U)[4]	0.0168 to 0.03Mmg/l	X	X
Vanadium (V)	0.1 mg/l	X	X
Zinc (Zn)	2 mg/l	X	X
Phenol	0.3 mg/l	X	
Sulfate (SO 4)	250 mg/l	X	X
Zinc (Zn)	5 mg/l	X	X

Notes

1. This information was copied directly from 5 CCR 1002-41.8 Tables 1, 2 and 3
2. Can be 5 mg/l if not used for some fruits, nuts, etc (Note g)
3. Combine Tri and Hex chrome
4. Where ground water quality exceeds the first number in the range due to a release of contaminants that occurred prior to September 15, 2012, (regardless of the date of discovery or subsequent migration of such contaminants) clean-up levels for the entire contaminant plume shall be no more restrictive than the second number in the range or the ground water quality resulting from such release, whichever is more protective

TABLE 2-3: CONSTITUENTS FOR GROUNDWATER SAMPLING (CONTINUED)

Constituent[1]	**Standard**[2]
Asbestos	7,000,000fibers/Liter
Color	15 color units
Corrosivity	Noncorrosive
Foaming Agents	0.5 mg/l
Odor	3 threshold odor numbers
pH	6.5 - 8.5
Total Coliforms (30-day average)	2.2 aorg/100 ml
Total Coliforms (max in 30 days)	23org/100 ml
Gross Alpha Particle Activity	15pCi/l
Beta and Photon Emitters	4mrem/year

Notes

1. This information was copied directly from 5 CCR 1002-41.8 Tables 1, 2 and 3
2. All parameters analyzed for total values only

2.1.3 SAMPLING PROCEDURES

In accordance with Appendix B3 of the Regulations, CJK is required to conduct groundwater sampling at the groundwater monitoring well network locations quarterly when sufficient groundwater is present to collect a sample. Groundwater level measurements from each monitoring well will be collected during each monitoring event to prepare potentiometric surface maps.

Monitoring well LM-MW-2 is the Mill point of compliance well.

CJK will follow the sampling and analysis requirements below.

2.1.4 LEVEL MEASUREMENTS, EQUIPMENT DECONTAMINATION, & WELL INSPECTIONS

Groundwater level measurements will be collected from monitoring wells at the same frequency as sample collection. Prior to purging wells for groundwater sampling activities, depth to groundwater and total depth will be measured and recorded at all monitoring wells with a water level indicator. These measurements will be collected on the same day, moving from wells with the least impacted groundwater to most impacted to limit possible cross-contamination, LM-MW-2 will be the last well measured.

The water level indicator and other reusable equipment will be decontaminated prior to use and between monitoring wells by rinsing with distilled water. If deemed necessary, additional decontamination procedures may be used, as follows:

- Brush with bristle brush to remove gross particulates (as appropriate);
- Scrub thoroughly with a laboratory-grade phosphate-free detergent (e.g. Alconox®)/potable water solution;
- Rinse thoroughly with deionized, distilled, or potable water; and

- Allow equipment to gravity drain/air dry.

TABLE 2-4: BACKGROUND TDS VALUE (MG/L) MAX ALLOWABLE TDS CONCENTRATION

0 – 500:	400 mg/l or 1.25 times the background level, whichever is least restrictive
500 - 10,000	1.25 times the background value
>10,001 or greater	No limit

This information is provided in 5 CCR 1002-41.8 Table 4

The depth to groundwater and well total depth measurements will be measured to the nearest 0.00-ft and recorded on a field form. Each monitoring well will be inspected, and the condition of the well riser, lock, cap, casing, and concrete pad will be recorded on the field form, on a field sheet, or in a field log book.

If monitoring wells are found to have greater than 20% of the well screen obscured by sediment, the monitoring well should be re-developed following sampling or at least 24 hours before the next sampling event. Re-development of monitoring wells may also be necessary should observations collected during sampling activities indicate that re-development is needed (e.g. increase in turbidity, etc.).

PURGING

Prior to sampling groundwater from a monitoring well, purging is necessary to remove stagnant water from the well casing to allow representative sampling of formation groundwater.

Low-flow purging and sampling methods will be used, generally following the September 2017 USEPA guidance for low flow sampling (USEPA 2017). The low-flow purge method involves purging the well at a relatively low flow rate that minimizes drawdown, with the pump or tubing inlet located slightly above the midpoint of the screened interval of the well. The well will be sampled when water quality parameters are stable. At a minimum, temperature, pH, and specific conductivity will be measured in the field during purging. Proper calibration of the water quality parameter collection equipment will be conducted daily prior to use in accordance with the manufacturer's instructions for each monitoring event. Records of equipment type and the calibration will be included in the annual monitoring reports described in **Section 4.0**.

Efforts will be made to maintain a purging rate which minimizes drawdown. Per USEPA 2017, the drawdown will not exceed approximately 0.3-ft. If drawdown is greater than 0.3-ft, the flow rate will be lowered. If drawdown continues to be greater than 0.3-ft, this will be noted in the field records and CJK will contact the Division about utilizing a different purge method for future events.

Under this purging method, purging will be considered complete (and sampling will take place) when three consecutive field readings are within:

- Temperature: ± 1ºC;
- pH: ± 0.2 standard units;
- Specific conductivity: ± 10%;

A minimum of one tubing volume, including the volume of water in the pump and any other chamber will be purged prior to recording of the water quality field measurements. During well purging, field parameters will be measured at a minimum frequency of five-minute intervals. The pump's flow rate must be able to "turn over" at least one flow-through cell volume between measurements (e.g. for a 250-ml flow-through cell with a flow rate of 50-mm/min, the monitoring frequency would be every five minutes; for a 500-mm flow-through cell it would be every ten minutes). If the cell volume cannot be replaced in the five-minute interval, then the time between measurements must be increased accordingly.

If stabilization cannot be achieved, it will be noted on the field sampling form and purging will continue until the well is dry.

Bladder pumps will be used for the low flow sampling. Dedicated tubing will be used for each monitoring well and will be replaced as needed. All non-dedicated and reusable sampling equipment will be decontaminated between wells.

SAMPLE COLLECTION

Following purging at each monitoring well, samples will be collected for laboratory analysis. If a well purges dry, it will be allowed to recover and water samples will be collected after the groundwater has recovered a minimum of half of its original measured saturated thickness. The well will be sampled immediately after the groundwater level has recovered sufficiently to collect sample volume, up to 24-hours following purging.

The sample containers will be filled directly from the bladder pump tubing, and the flow rate will remain approximately the same as it was for purging.

For dissolved metals analysis, the analytical laboratory samples will be raw water placed in containers with no preservatives so they can be filtered in the lab. If samples are field-filtered, a disposable in-line filter housing equipped with a 0.45-micron filter will be used by connecting it to the discharge end of the pump tubing. New filters will be used for each well for each event.

Upon collection, samples will be put in a cooler with ice to cool them to approximately 4ºC until they arrive at the analytical laboratory. Samples will be either shipped or hand delivered to the laboratory. The samples will be kept under strict chain-of-custody protocol as follows:

- The laboratory chain-of-custody will be completed in the field as the samples are collected and all applicable data fields will be populated accurately;
- Samples will remain in the Sampler's custody until shipment or delivery to the laboratory; and
- Sample coolers that are shipped will have custody seals and will be shipped for overnight delivery to an appropriately accredited analytical laboratory.

2.1.5 QUALITY CONTROL & VALIDATION

QUALITY CONTROL SAMPLING

Sampling will include the following quality control samples that will be collected, as required, during each monitoring event.

- Trip Blanks: Provided by the analytical laboratory that remain in the sample collection cooler to allow for assessment of possible contaminant introduction as the sample cooler travels from the analytical laboratory to the field and back to the analytical laboratory. There will be one trip blank per cooler containing the VOC samples. The trip blank(s) will be obtained from the analytical laboratory and will not be opened by any party other than the environmental laboratory.
- Equipment Blanks: A sample collected in the field using distilled water that is poured through the non-dedicated sampling equipment, after is has been decontaminated, and captured in the sample containers to allow for assessment of potential contaminant introduction through the non-dedicated sampling equipment. This also allows for assessment of decontamination procedures conducted on non-dedicated sampling equipment. A minimum of one equipment blank per sampling event will be collected.
- Field Duplicates: A duplicate sample collected in the field from a pre-specified groundwater sampling well. Based on well placement, the field duplicate will be collected from LM-MW-2 unless otherwise specified. A minimum of one field duplicate per sampling event will be collected, if sufficient water volume is available.

- Matrix Spike/Matrix Spike Duplicates (MS/MSD): MS/MSD aliquots from the Mill will be collected at the discretion of the groundwater professional and are utilized to evaluate potential site-specific groundwater matrix interferences.

DATA VALIDATION

The laboratory will prepare a Level II Quality Assurance/Quality Control (QA/QC) data report which includes method blanks, duplicate analyses, laboratory control samples, and MS/MSD samples for the constituents and analytical methods. CJK is responsible for reviewing the laboratory QA/QC and determining if the results are valid and acceptable for use. Review of the laboratory QA/QC and sample analyses will include sample receipt, holding times, method blanks, laboratory control samples, MS/MSDs, continuing calibration samples, surrogate recoveries, duplicates, equipment blanks, and trip blanks as applicable.

Upon receipt of the analytical results, general (i.e. Tier 1) analytical data validation, including checks and evaluation, will be performed. At a minimum, data validation will consist of the following:

- Overall data completeness;
- A review of laboratory qualified data;
- Comparison of trip blank and equipment results to sample results;
- Comparison of field duplicate results to original sample results;
- Comparison of method blank results to sample results; and
- Review of Level II laboratory QA/QC sample results.

Results of the data review will be documented and if necessary, used to initiate additional review by the laboratory or possible addition of qualifiers of the analytical data by the reviewer.

FIELD RECORDS

The following information will be maintained either on field forms or in a field notebook as part of the groundwater monitoring record:

- Date and time;
- Weather conditions (e.g. ambient air temperature, recent precipitation, wind);
- Monitoring well number/identification;
- Sample number with date and time of sampling;
- Sampler name(s) and organization;

- Instrument calibrations (date, time, calibration method used, and calibration criteria achieved);
- Wellhead inspection records;
- Measured depth to groundwater;
- Measured well total depth;
- Calculated water volume residing in the casing prior to sampling;
- Volume of water purged;
- Purge rate, method, and volume;
- Purge parameters (pH, temperature, specific conductivity, ORP, etc.);
- Method of sample preservation; and
- Notes regarding any unusual circumstance or events that occurred during sampling that may affect the sample results.

2.2 SURFACE WATER

2.2.1 *SAMPLING LOCATIONS*

The surface water sampling network includes the four grab-sample locations shown on **Figure 2-2** and **Figure 2-3** and summarized in **Table 2-4**. The four sampling points include:

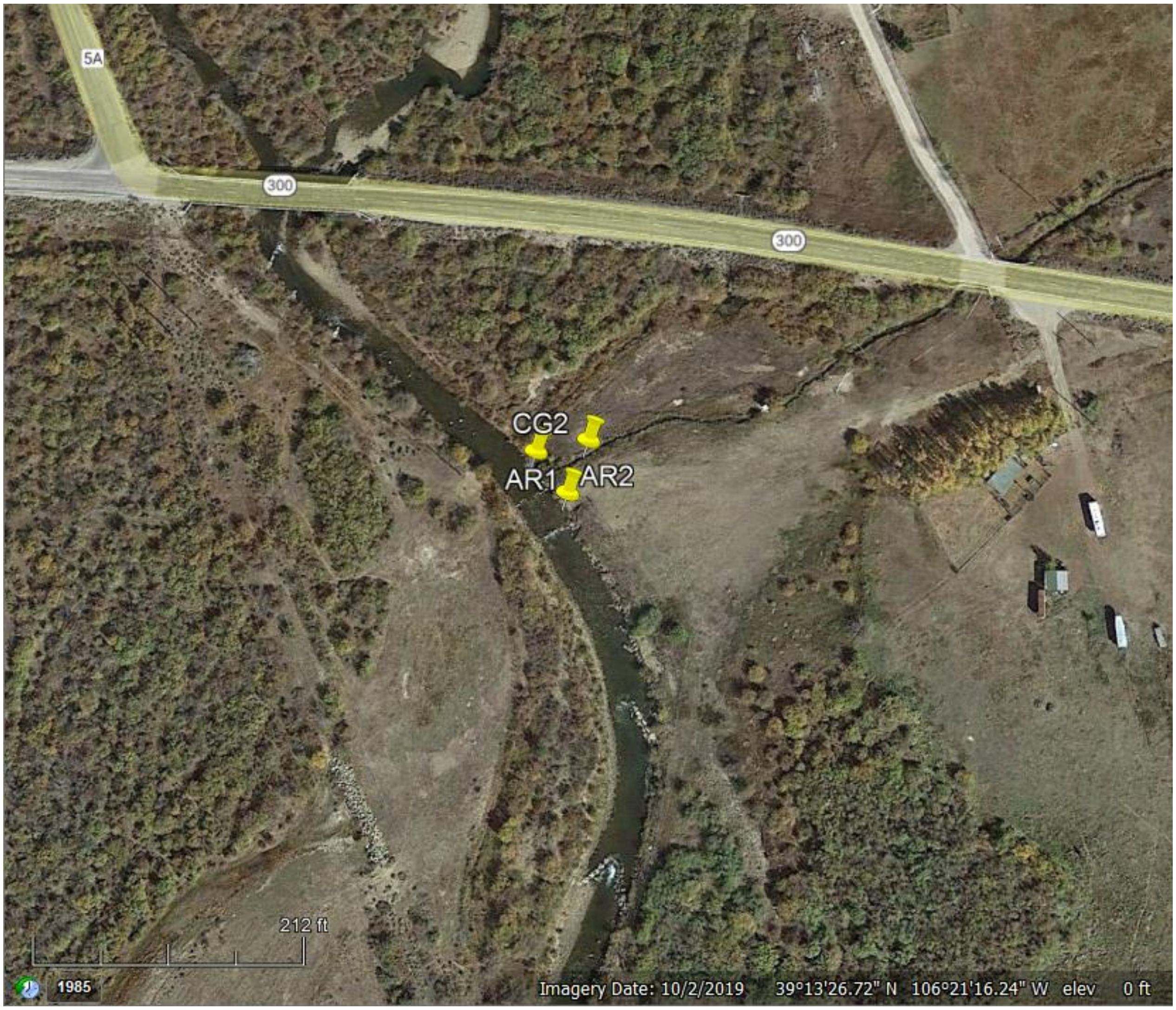
- **CG1**: This sampling point is located upstream of the facility in California Gulch just north of the intersection of US Highway 285 and Lake County Road 23A.
- **CG2**: This sampling point is located downstream of the facility in California Gulch immediately above the confluence with the Arkansas River.
- **AR1**: This sampling point is located in the Arkansas River immediately above its confluence with California Gulch.
- **AR2**: This sampling point is located in the Arkansas River immediately below its confluence with California Gulch.

TABLE 2-5: SURFACE WATER SAMPLING LOCATION SUMMARY

Identifier	Location	Stream Segment	Latitude	Longitude
	California Gulch			
CG1	Upstream, of proposed facility	6	39.2527	-106.3202
CG2	Downstream near Arkansas River Confluence	6	39.2219	-106.3559
	Arkansas River			
AR1	Upstream of California Gulch Confluence	2b	39.2219	-106.3560
AR2	Downstream of California Gulch Confluence	2b	39.2218	-106.3559

FIGURE 2-2: SURFACE WATER SAMPLING LOCATION CG1

FIGURE 2-3: SURFACE WATER SAMPLING LOCATION CG2, AR1 & AR2



Surface Water Standards are defined by stream segment in 5 CCR 1002-32, Regulation No. 32 Classifications and Numeric Standards for the Arkansas River Basin.

Locations CG1 and CG2 are in Segment 2b: Mainstem of the Arkansas River from a point immediately above California Gulch to a point immediately above the confluence with Lake Fork.

- Locations AR1 and AR2 are in Segment 6: Mainstem of California Gulch, including all tributaries, from the source to the confluence with the Arkansas River.

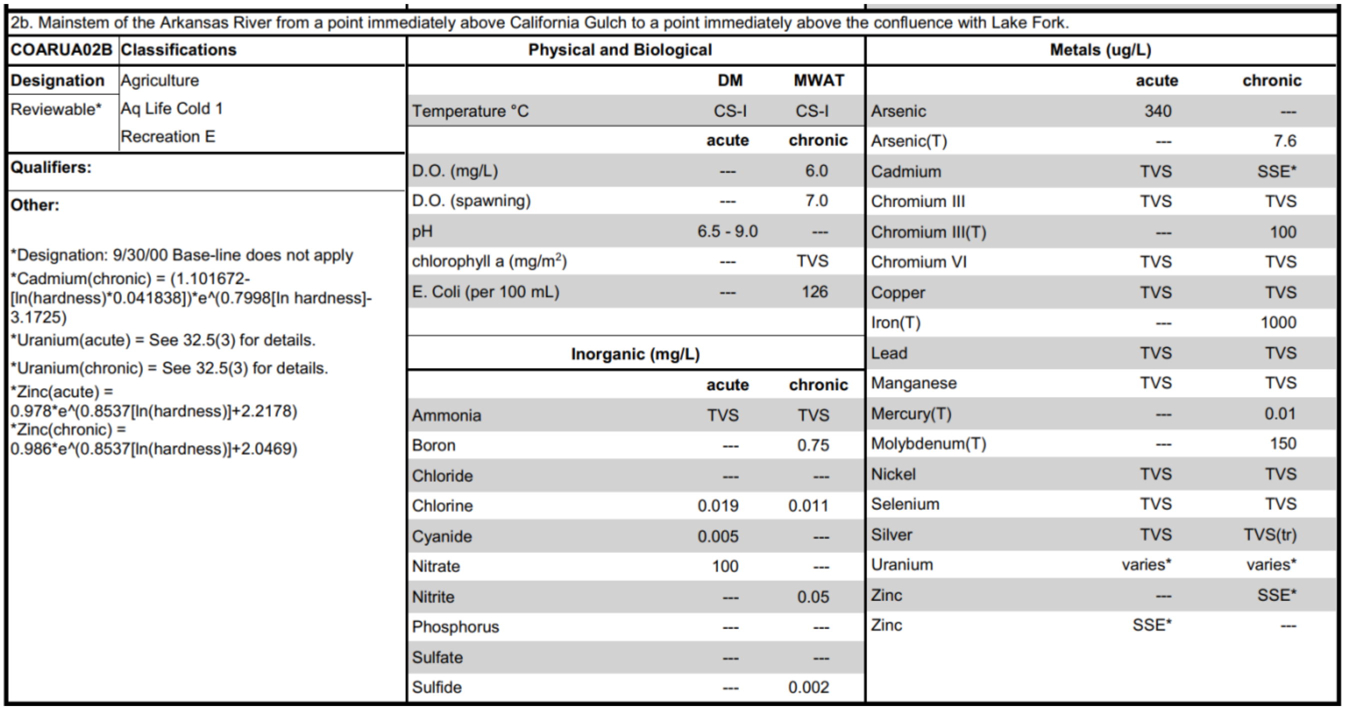
2.2.2 SAMPLING FREQUENCY & CONSTITUENTS

The program includes sampling all four surface-water locations on a quarterly basis. Samples will be analyzed by a State certified lab. The field parameters pH, specific conductivity, and temperature, will be collected at each sample point for each event.

All four locations have the same analytical suite, but locations AR1 and AR2 have different standards than CG1and CG2 because they are located in different stream reaches.

Figure 2-4 shows the analytes and standards for Segment 2b, mainstem of the Arkansas River from a point immediately above California Gulch to a point immediately above the confluence with Lake Fork.

FIGURE 2-4: CONSTITUENTS & STANDARD FOR SEGMENT 2b[1]



2b. Mainstem of the Arkansas River from a point immediately above California Gulch to a point immediately above the confluence with Lake Fork.

COARUA02B	Classifications
Designation	Agriculture
Reviewable*	Aq Life Cold 1
	Recreation E
Qualifiers:	
Other:	

*Designation: 9/30/00 Base-line does not apply
*Cadmium(chronic) = (1.101672-[ln(hardness)*0.041838])*e^(0.7998[ln hardness]-3.1725)
*Uranium(acute) = See 32.5(3) for details.
*Uranium(chronic) = See 32.5(3) for details.
*Zinc(acute) = 0.978*e^(0.8537[ln(hardness)]+2.2178)
*Zinc(chronic) = 0.986*e^(0.8537[ln(hardness)]+2.0469)

Physical and Biological		
	DM	**MWAT**
Temperature °C	CS-I	CS-I
	acute	**chronic**
D.O. (mg/L)	---	6.0
D.O. (spawning)	---	7.0
pH	6.5 - 9.0	---
chlorophyll a (mg/m^2)	---	TVS
E. Coli (per 100 mL)	---	126

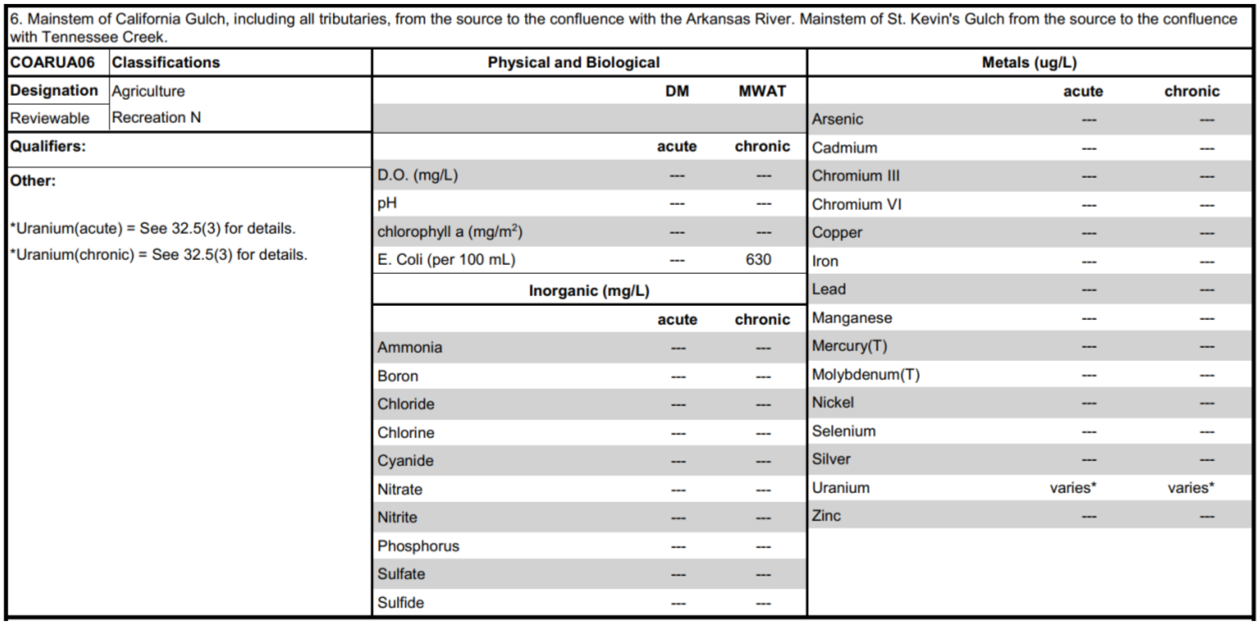
Inorganic (mg/L)		
	acute	**chronic**
Ammonia	TVS	TVS
Boron	---	0.75
Chloride	---	---
Chlorine	0.019	0.011
Cyanide	0.005	---
Nitrate	100	---
Nitrite	---	0.05
Phosphorus	---	---
Sulfate	---	---
Sulfide	---	0.002

Metals (ug/L)		
	acute	**chronic**
Arsenic	340	---
Arsenic(T)	---	7.6
Cadmium	TVS	SSE*
Chromium III	TVS	TVS
Chromium III(T)	---	100
Chromium VI	TVS	TVS
Copper	TVS	TVS
Iron(T)	---	1000
Lead	TVS	TVS
Manganese	TVS	TVS
Mercury(T)	---	0.01
Molybdenum(T)	---	150
Nickel	TVS	TVS
Selenium	TVS	TVS
Silver	TVS	TVS(tr)
Uranium	varies*	varies*
Zinc	---	SSE*
Zinc	SSE*	---

(1) Table Value Standards. These standards vary.

Figure 2-5 shows the analytes and standards for Segment 6, mainstem of the Arkansas River from a point immediately above California Gulch to a point immediately above the confluence with Lake Fork.

FIGURE 2-5: CONSTITUENTS & STANDARD FOR SEGMENT 6



6. Mainstem of California Gulch, including all tributaries, from the source to the confluence with the Arkansas River. Mainstem of St. Kevin's Gulch from the source to the confluence with Tennessee Creek.

COARUA06	**Classifications**
Designation	Agriculture
Reviewable	Recreation N
Qualifiers:	
Other:	

*Uranium(acute) = See 32.5(3) for details.
*Uranium(chronic) = See 32.5(3) for details.

Physical and Biological

	DM	MWAT
	acute	**chronic**
D.O. (mg/L)	---	---
pH	---	---
chlorophyll a (mg/m^2)	---	---
E. Coli (per 100 mL)	---	630

Inorganic (mg/L)

	acute	chronic
Ammonia	---	---
Boron	---	---
Chloride	---	---
Chlorine	---	---
Cyanide	---	---
Nitrate	---	---
Nitrite	---	---
Phosphorus	---	---
Sulfate	---	---
Sulfide	---	---

Metals (ug/L)

	acute	chronic
Arsenic	---	---
Cadmium	---	---
Chromium III	---	---
Chromium VI	---	---
Copper	---	---
Iron	---	---
Lead	---	---
Manganese	---	---
Mercury(T)	---	---
Molybdenum(T)	---	---
Nickel	---	---
Selenium	---	---
Silver	---	---
Uranium	varies*	varies*
Zinc	---	---

The two figures are directly copied from the applicable regulations. The standards for analytes with the TVS descriptor are table value standards that are derived from the site-specific field data.

Figure 2-6 shows the equations used to generate these standards.

FIGURE 2-6: TABLE VALUE STANDARDS FOR APPLICABLE CONSTITUENTS

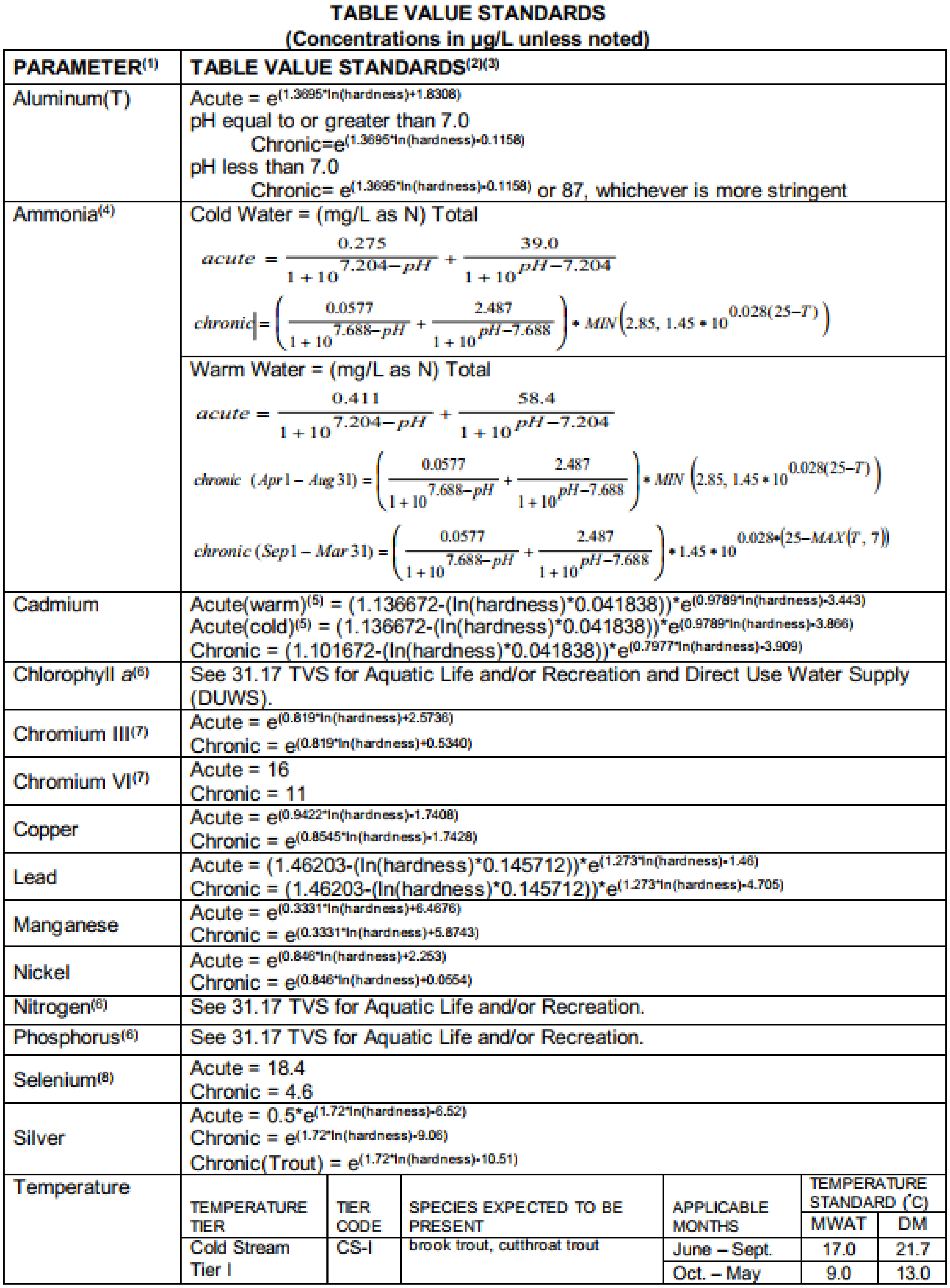


TABLE VALUE STANDARDS
(Concentrations in µg/L unless noted)

<table>
<tr><th>PARAMETER(1)</th><th colspan="6">TABLE VALUE STANDARDS(2)(3)</th></tr>
<tr><td>Aluminum(T)</td><td colspan="6">Acute = $e^{(1.3695*\ln(hardness)+1.8308)}$
pH equal to or greater than 7.0
Chronic=$e^{(1.3695*\ln(hardness)-0.1158)}$
pH less than 7.0
Chronic= $e^{(1.3695*\ln(hardness)-0.1158)}$ or 87, whichever is more stringent</td></tr>
<tr><td rowspan="2">Ammonia(4)</td><td colspan="6">Cold Water = (mg/L as N) Total
$acute = \frac{0.275}{1+10^{7.204-pH}} + \frac{39.0}{1+10^{pH-7.204}}$
$chronic = \left(\frac{0.0577}{1+10^{7.688-pH}} + \frac{2.487}{1+10^{pH-7.688}}\right) \bullet MIN\left(2.85,\ 1.45 \bullet 10^{0.028(25-T)}\right)$</td></tr>
<tr><td colspan="6">Warm Water = (mg/L as N) Total
$acute = \frac{0.411}{1+10^{7.204-pH}} + \frac{58.4}{1+10^{pH-7.204}}$
$chronic\ \ (Apr1 - Aug31) = \left(\frac{0.0577}{1+10^{7.688-pH}} + \frac{2.487}{1+10^{pH-7.688}}\right) \bullet MIN\left(2.85,\ 1.45 \bullet 10^{0.028(25-T)}\right)$
$chronic\ (Sep1 - Mar31) = \left(\frac{0.0577}{1+10^{7.688-pH}} + \frac{2.487}{1+10^{pH-7.688}}\right) \bullet 1.45 \bullet 10^{0.028 \bullet (25-MAX(T,\ 7))}$</td></tr>
<tr><td>Cadmium</td><td colspan="6">Acute(warm)(5) = (1.136672-(ln(hardness)*0.041838))*$e^{(0.9789*\ln(hardness)-3.443)}$
Acute(cold)(5) = (1.136672-(ln(hardness)*0.041838))*$e^{(0.9789*\ln(hardness)-3.866)}$
Chronic = (1.101672-(ln(hardness)*0.041838))*$e^{(0.7977*\ln(hardness)-3.909)}$</td></tr>
<tr><td>Chlorophyll *a*(6)</td><td colspan="6">See 31.17 TVS for Aquatic Life and/or Recreation and Direct Use Water Supply (DUWS).</td></tr>
<tr><td>Chromium III(7)</td><td colspan="6">Acute = $e^{(0.819*\ln(hardness)+2.5736)}$
Chronic = $e^{(0.819*\ln(hardness)+0.5340)}$</td></tr>
<tr><td>Chromium VI(7)</td><td colspan="6">Acute = 16
Chronic = 11</td></tr>
<tr><td>Copper</td><td colspan="6">Acute = $e^{(0.9422*\ln(hardness)-1.7408)}$
Chronic = $e^{(0.8545*\ln(hardness)-1.7428)}$</td></tr>
<tr><td>Lead</td><td colspan="6">Acute = (1.46203-(ln(hardness)*0.145712))*$e^{(1.273*\ln(hardness)-1.46)}$
Chronic = (1.46203-(ln(hardness)*0.145712))*$e^{(1.273*\ln(hardness)-4.705)}$</td></tr>
<tr><td>Manganese</td><td colspan="6">Acute = $e^{(0.3331*\ln(hardness)+6.4676)}$
Chronic = $e^{(0.3331*\ln(hardness)+5.8743)}$</td></tr>
<tr><td>Nickel</td><td colspan="6">Acute = $e^{(0.846*\ln(hardness)+2.253)}$
Chronic = $e^{(0.846*\ln(hardness)+0.0554)}$</td></tr>
<tr><td>Nitrogen(6)</td><td colspan="6">See 31.17 TVS for Aquatic Life and/or Recreation.</td></tr>
<tr><td>Phosphorus(6)</td><td colspan="6">See 31.17 TVS for Aquatic Life and/or Recreation.</td></tr>
<tr><td>Selenium(8)</td><td colspan="6">Acute = 18.4
Chronic = 4.6</td></tr>
<tr><td>Silver</td><td colspan="6">Acute = 0.5*$e^{(1.72*\ln(hardness)-6.52)}$
Chronic = $e^{(1.72*\ln(hardness)-9.06)}$
Chronic(Trout) = $e^{(1.72*\ln(hardness)-10.51)}$</td></tr>
<tr><td rowspan="4">Temperature</td><td rowspan="2">TEMPERATURE TIER</td><td rowspan="2">TIER CODE</td><td rowspan="2">SPECIES EXPECTED TO BE PRESENT</td><td rowspan="2">APPLICABLE MONTHS</td><td colspan="2">TEMPERATURE STANDARD (°C)</td></tr>
<tr><td>MWAT</td><td>DM</td></tr>
<tr><td rowspan="2">Cold Stream Tier I</td><td rowspan="2">CS-I</td><td rowspan="2">brook trout, cutthroat trout</td><td>June – Sept.</td><td>17.0</td><td>21.7</td></tr>
<tr><td>Oct. – May</td><td>9.0</td><td>13.0</td></tr>
</table>

The analytical laboratory will report results to the method detection limit (MDL) for the project, including J-qualified (estimated) values. Laboratory analytical methods will be able to achieve a reporting limit (RL) equal to or less than the standards in **Figure 2-4** and **Figure 2-5**. Any changes to the constituent list must be approved in writing by the Division prior to implementation.

3.0 STATISTICS & MONITORING PROGRAMS

Once sufficient baseline data are collected or additional wells installed in the future, currently anticipated to consist of five (5) samples, one or more statistical methods will be specified to evaluate the monitoring constituent data for potential impacts from the waste placement. The statistical methods will require Division approval. The statistical analysis methods will be presented in the annual monitoring reports described below in **Section 4.0**.

Presentation of the statistical analysis will include a discussion of observations that may affect the sampling program and below description of statistical analysis (e.g. seasonality, trends in data, spatial variability, and management of non-detects). Should baseline data indicate changes to the sampling schedule, statistical analysis methods, or verification sampling plan are necessary, a modified plan will be required to be submitted for review and approval by the Division.

The statistical method used will be protective of human health and the environment, and will take the following into consideration:

- Distribution of the data for each constituent;
- Seasonal influences on the data;
- Data trends; and
- Data outliers.

Once the statistical methods are established, groundwater data will be evaluated following each monitoring event to determine if a statistically significant increase (SSI) over background has occurred for each constituent and at each monitoring well. Statistical analysis for the identification of SSIs is not required to be performed for select cations (magnesium, sodium, potassium, calcium), select anions, (carbonate, bicarbonate, total alkalinity, chloride, sulfate, nitrate, nitrite), or field parameters (pH, specific conductivity, temperature, or total organic carbon). Statistical analysis to identify SSIs are also not required to be performed for VOCs. An initial SSI is defined by either a constituent result exceeding the Division-approved statistical limit, or for VOCs, any detection above the practical quantitation limit/RL.

CJK will determine if there has been an initial SSI within 30 days of receiving the finalized laboratory analytical report and completion of data quality review/data validation. If an initial SSI is identified, CJK will notify the Division in writing within 14 days. For an initial SSI, confirmatory samples to verify the SSI will be conducted within 90 days of the original sample collection event during the next monitoring event, or as approved by the Division.

If one or more verified SSIs are identified, CJK will take the following actions:

1. Documentation of the verified SSIs will be placed in the operating record and sent to Division;
2. Establish an assessment monitoring program within 90 days; or
3. CJK may demonstrate to Division that a source other than the Mill is responsible for the SSIs.

The baseline data will be reviewed periodically (every two to three years) to determine if recent results that are not statistically significant can be incorporated into an updated baseline dataset for the determination of new statistical limits. The rationale for updating statistical limits will be presented to the Division for review and approval prior to use for the identification of SSIs.

4.0 WATER MONITORING REPORTING

CJK will provide 3-quarterly and 1-annual monitoring reports that include surface and groundwater information by the following deadlines.

- First quarter report due by May 1st of every year.
- Second quarter report due by August 1st of every year.
- Third quarter report due by November 1st of every year.
- Fourth quarter report due by February 1st of the following year.

The annual monitoring reports will provide appropriate documentation of each groundwater monitoring event. At a minimum, the annual monitoring reports will contain text, tables, figures, and appendices as summarized in the following lists.

TEXT DISCUSSIONS

- Background information;
- Well inspection, groundwater level and total depth measurements summary, groundwater characteristics, and flow direction;
- Well purging and sampling summary;
- Field and laboratory QA/QC and data validation summary;
- Groundwater monitoring and statistical analysis results including trends and outliers and a list of identified initial and/or verified SSIs;
- If conducted, a description of the new or revised statistical limits;
- Discussion of surrounding land use changes;
- Management of IDW;
- Deviations from this monitoring plan or problems encountered, including any maintenance items identified and performed on the groundwater monitoring network; and
- Recommendations and conclusions.

TABLES

- Groundwater monitoring well construction and survey information;

- Groundwater levels, calculated groundwater elevations, and measured total depths;
- Field data and analytical results summary with comparison to the applicable regulation 41 standards or if not established, USEPA RSLs; and
- Statistical analysis summary.

FIGURES

- Mill location map;
- Mill map with groundwater monitoring locations;
- Potentiometric surface maps as applicable; and
- Groundwater elevation time series plot (hydrographs).

APPENDICES

- Field Forms;
- Laboratory reports including chain-of-custody documentation;
- Statistical summary for each constituent in each well (baseline period, % non-detects, trends, outliers, data distribution, statistical method, statistical limit, as applicable);
- Statistical graphs and plots as applicable, including trend charts;
- Tabulated historical groundwater analytical and elevation results, including the current year's results; and
- Statistical limit summary.