GROUNDWATER CHARACTERIZATION STUDY OF THE WHARF EXPANSION PROJECT AREA

Topical Report RSI-2173

prepared for

Wharf Resource (USA), Inc.
10928 Wharf Road
Lead, South Dakota 57754

January 2011

RESPEC
CONSULTING & SERVICES

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by

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1.0 INTRODUCTION

Wharf Resources (USA) Inc. (Wharf) has proposed to expand existing heap-leach gold operations on the proposed permit areas known as the Wharf and Golden Reward Expansions. These areas are located approximately 2 to 3 miles west of Lead, South Dakota, in Lawrence County. Figure 1-1 shows the expansion study areas. The blue outline represents the current permitted mine boundaries for Wharf and Golden Reward while the pink outline represents the proposed expansion permit area.

A baseline environmental study in the Expansion Area was completed per the requirements of the South Dakota Department of Environment and Natural Resources (SD DENR). The SD DENR mining rules Admisitrative Rules of South Dakota (ARSD) 74:29 and South Dakota statutes South Dakota Codified Law (SDCL) 45-6B require a baseline sampling plan to adequately characterize baseline water quality of the Expansion Area. Rule ARSD 74:29:2:07 requires water-quality grab samples be collected monthly for at least 1 year; permit requirements also require the measurement of water-level data for a period of at least 1 year. Relevant South Dakota mining permit requirements are listed below.

The following is a list of descriptions, analysis, and sampling required by South Dakota law for mine permit applicants:

1. SDCL 45-6B-7 (9) (a-o): Baseline water quality (Appendix E) and level of aquifers (Section 2.4)
2. SDCL 45-6B-92 (4): Water: direct or indirect sources of drinking water (description of) (Section 2.6)
3. ARSD 74:29:02:07: Water-quality (Appendix E) and water-level data (Section 2.4)
4. ARSD 74:29:02:11: Effect on hydrologic balance on surface and groundwater (Section 4.0)
5. ARSD 74:29:02:11(1): Baseline Surface and Groundwater reports
6. ARSD 74:29:02:11(4): Well location inventory map (Figures 3-1 to 3-3, Appendix H)
7. ARSD 74:29:02:11(5): Potentiometric surface map (Figure 2-2)
8. ARSD 74:29:02:11(7): Surface and groundwater monitoring plan for life of mine (Section 3.2)
9. ARSD 74:29:02:11(11): Estimate of project water requirements (Section 2.6.2)
10. ARSD 74:29:07:08: Hydrologic balance – water quality (Section 2.5).

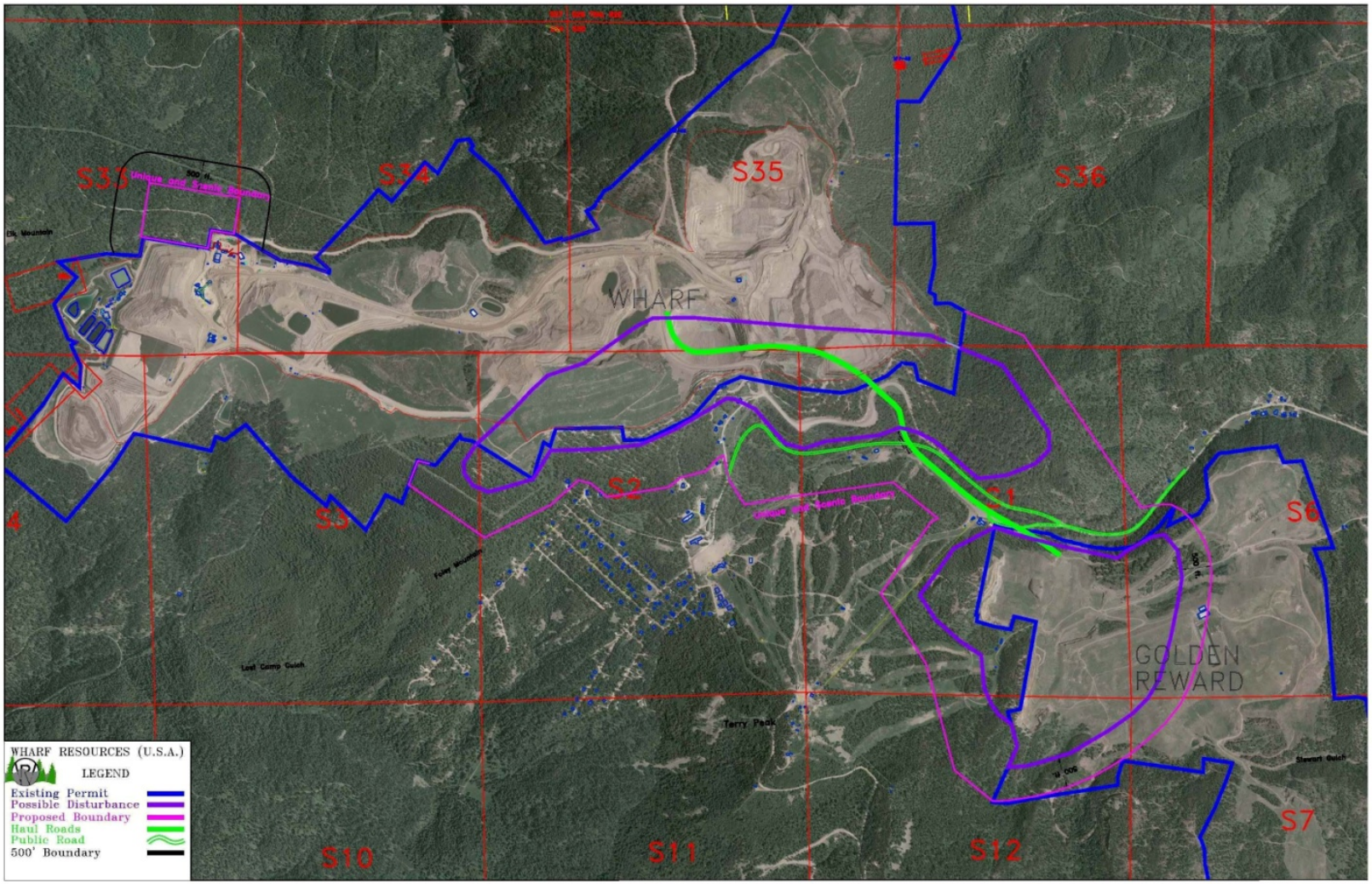

Figure 1-1. Expansion Baseline Study Area Map.

The purpose of this report is to summarize the condition of the groundwater environment near the proposed mining operation based on available hydrogeology and water-quality data. A statistical analysis of the available water-quality data is also included. Identification of baseline groundwater conditions is critical to the understanding of the groundwater system, including any potential impacts to the actual mining operation and any associated impacts to subsurface water quality and quantity.

This report is organized to optimize available information and understanding of the site's hydrogeology and groundwater quality. Chapter 2.0 provides information about the site hydrogeology including descriptions of hydrogeologic units and the potentiometric surface. Water-quality information is presented in Chapter 3.0. Chapter 4.0 summarizes any potential impacts to the groundwater system as a result of the Wharf Expansion Project. References are cited in Chapter 5.0.

Additional well information and water-quality data are provided in the appendices. Appendices A and B contain information about the existing groundwater monitoring program at Wharf and Golden Reward, respectively. Available well completion diagrams for baseline wells are provided in Appendix C. Appendix D provides information on water-level and water-quality sampling protocols. Appendix E contains the raw water-quality data for baseline sites from October 15, 2005, through October 14, 2010. Statistics tables by site are provided in Appendix F with statistical boxplots in Appendix G. A map of well locations is provided in Appendix H.

2.0 HYDROGEOLOGY

2.1 HYDROGEOLOGIC UNITS

The Wharf Mine and proposed Expansion Area are located in the north-central portion of the Black Hills uplift in western South Dakota. Within the Expansion Area, the geology consists of Precambrian metamorphic rocks overlain by sediments of the Cambrian Deadwood Formation. These rocks have been intruded by Tertiary-age igneous dikes and sills. Mineralization in the Expansion Area is primarily within the Deadwood Formation but also in and along the Tertiary intrusions. Additional details about the hydrogeology of each of the major formations in the Expansion Area are provided below.

2.1.1 Precambrian

The Precambrian Ellison Formation is the dominant rock unit within the area and underlies the entire project at depth. The formation consists of interbedded quartzites and phyllites that are strongly folded and foliated. Foliation dips near vertically and strikes approximately north-south. Precambrian units that underlie the majority of the Wharf Expansion Area are not conducive for hosting large-scale disseminated deposits like those found in the overlying Paleozoic sediments and Tertiary intrusive.

Precambrian rock units in the project area are not considered significant aquifers. Water flow within the Precambrian is dominated by secondary permeability resulting from fracturing and weathering [Driscoll et al., 2002]. Precambrian rocks with greater fracture density have higher porosity and permeability. Rahn [1985] estimated the total porosity of the Precambrian aquifers to be 3 percent and the effective porosity to be 1 percent. Where fractured and jointed, the Precambrian has only minor storage capacity. In general, there is virtually no storage in the deep Precambrian (greater than 500 feet) as a result of lithostatic forces that keep fractures closed. This is confirmed by deep exploration holes in the Wharf area that did not encounter significant amounts of water at depth from 500 to over 2,000 feet [Lessard, 1990].

Data from Precambrian wells and exploration holes in the Wharf area show that local effective transmissivity ranges from 1 to 20 square feet per day (ft^2/day) and hydraulic conductivity is in the range of 1×10^{-5} centimeters per second (cm/s) [J. M. Montgomery Consulting Engineers, Inc., 1996]. Unfractured Precambrian rock likely has an extremely low hydraulic conductivity on the order of 1×10^{-8} cm/s [J. M. Montgomery Consulting Engineers, Inc., 1996].

2.1.2 Deadwood Formation

The Cambrian Deadwood Formation unconformably overlies the Precambrian and consists of quartz and limestone conglomerate, sandstone, quartzite, siltstone, shale, and limestone. Locally, a pebble conglomerate is present at the basal unconformity. The Deadwood Formation is informally divided into the lower, middle, and upper members based upon stratigraphy and

preference for hosting mineralization. Within the Wharf Expansion Area, the dominant ore hosts are the lower and upper members. Within the Wharf area, the Deadwood Formation is about 400 feet thick and dips southwesterly at 6 to 15 degrees [J. M. Montgomery Consulting Engineers, Inc, 1996]. In the Golden Reward area, the Deadwood Formation is cut by small faults, effectively compartmentalizing the aquifer into zones [Golden Reward Mining Company, 1990]. Within the Nevada Gulch area, the Deadwood Formation has sporadic perched zones and may be partially saturated locally.

The hydraulic properties of the Deadwood Formation are extremely variable in the Wharf area because of varying lithology and degree of hydrothermal alteration. Hydraulic conductivity measurements in Annie Creek Valley are around 7×10^{-4} cm/s [J. M. Montgomery Consulting Engineers, Inc., 1996]; a hydraulic conductivity value of 1.6×10^{-4} cm/s was measured in Ross Valley [Klohn Leonoff Consulting Engineers, 1986]. Rahn [1985] estimated the effective porosity of the aquifer to be 5 percent. In the northern Black Hills, the effective porosity is presumably lower in areas where the formation has undergone extensive hydrothermal alteration. The transmissivity of the Deadwood within the Black Hills region typically ranges from 250 to 1,000 ft^2/day [Downey, 1984]. Three pumping tests conducted on the Deadwood in the Golden Reward area resulted in estimated transmissivity values of 1.5 to 6 ft^2/day [Hydrometrics, Inc., 1988].

2.1.3 Winnipeg Shale

The Ordovician-age Winnipeg Shale consists of friable, green shale. Within the project area, the Winnipeg Shale lies conformably above the Deadwood Formation where present on Green Mountain and Foley Ridge. The Winnipeg is above the water table within the project area, and as such, it is not considered a hydrogeologic unit in this study.

2.1.4 Tertiary Intrusives

Tertiary-age igneous intrusions are common throughout the Wharf area. The intrusions are locally subdivided into monzonite porphyry, phonolite porphyry, and porphyry breccia. These rocks primarily intrude the Precambrian and Deadwood as sills, although dikes and stocks are also present within the area. The sills are typically less than 20 feet thick, although local thicknesses may be 100 feet or greater. A significant monzonite porphyry sill intrudes the upper part of the Deadwood Formation in the project area near Green Mountain. Also, a phonolite porphyry sill overlies the Winnipeg shale on Foley Ridge and Green Mountain. Within the Wharf Expansion project area, porphyry breccia was discovered along the west side of Bald Mountain. These intrusions, and the fluids associated with them, are responsible for hydrothermal gold deposits in the mining district.

Tertiary-intrusive rock units are hydraulically similar to the Precambrian units. Because of their limited size and low porosity, the Tertiary intrusives do not serve as an important aquifer in the area. However, these units will occasionally produce enough water to supply a domestic well. One test in a Tertiary intrusive yielded a hydraulic condcutivityof 4×10^{-5} cm/s, which may be an overestimate, especially in unfractured areas.

2.1.5 Colluvium/Alluvium

Saturated colluvium and alluvium is of very limited extent across the Wharf Expansion project area. Saturated areas of this unconsolidated material are limited to springs and creek bottoms. Sediments consist of clay, silt, sand, and some gravel. Although these sediments are water bearing, they are not considered good aquifers as they have low permeability, low well yield, and limited thickness and extent.

As part of the Golden Reward Mine Permit [Hydrometrics, Inc., 1988], three aquifer pumping tests and four slug tests were performed on shallow wells. Results indicate that transmissivity of the colluvial/alluvial sediments ranges from 0.47 to 444 ft^2/day with hydraulic conductivity values from 0.079 to 18.13 ft/day [Hydrometrics, Inc., 1988].

2.2 GROUNDWATER OCCURRENCE

The occurrence of groundwater in the expansion project area can be evaluated through drilling and knowledge of historic underground and surface workings in the Wharf and Golden Reward areas. All evaluations of historic records and the results of recent drilling programs indicate this region is devoid of any significant water at the depths projected for surface mining.

Historical records show that underground workings in the Wharf area are essentially dry. In the past [Miller, 1992], water was encountered in the lower workings of the Bald Mountain Mining Company's workings below Nevada Gulch. A more complete evaluation of water in the underground workings in the area is included in the Clinton Expansion groundwater characterization report [J. M. Montgomery Consulting Engineers, Inc., 1996].

New monitoring well (MW) MW-59 was drilled to a total depth of 250 feet; no water was encountered during drilling and the well did not fill when left open. The Railroad MW on the eastern slope of Terry Peak encountered water at an elevation of 5,957.88 feet, a level slightly lower than the planned expansion pits. During exploration activities in the Expansion Area, no exploration holes encountered water.

2.3 SPRINGS

There are several springs around the Wharf and Golden Reward Mine areas. Since these springs are fed by groundwater sources, they are discussed in this groundwater characterization report. A few springs may be the result of perched water zones while others may be the expression of the regional water table.

Six spring localities, shown in Figure 2-1, are currently sampled as part of Wharf's ongoing water-quality monitoring program: False Bottom, Ross, Beaver, War Eagle, Annie Creek II, and

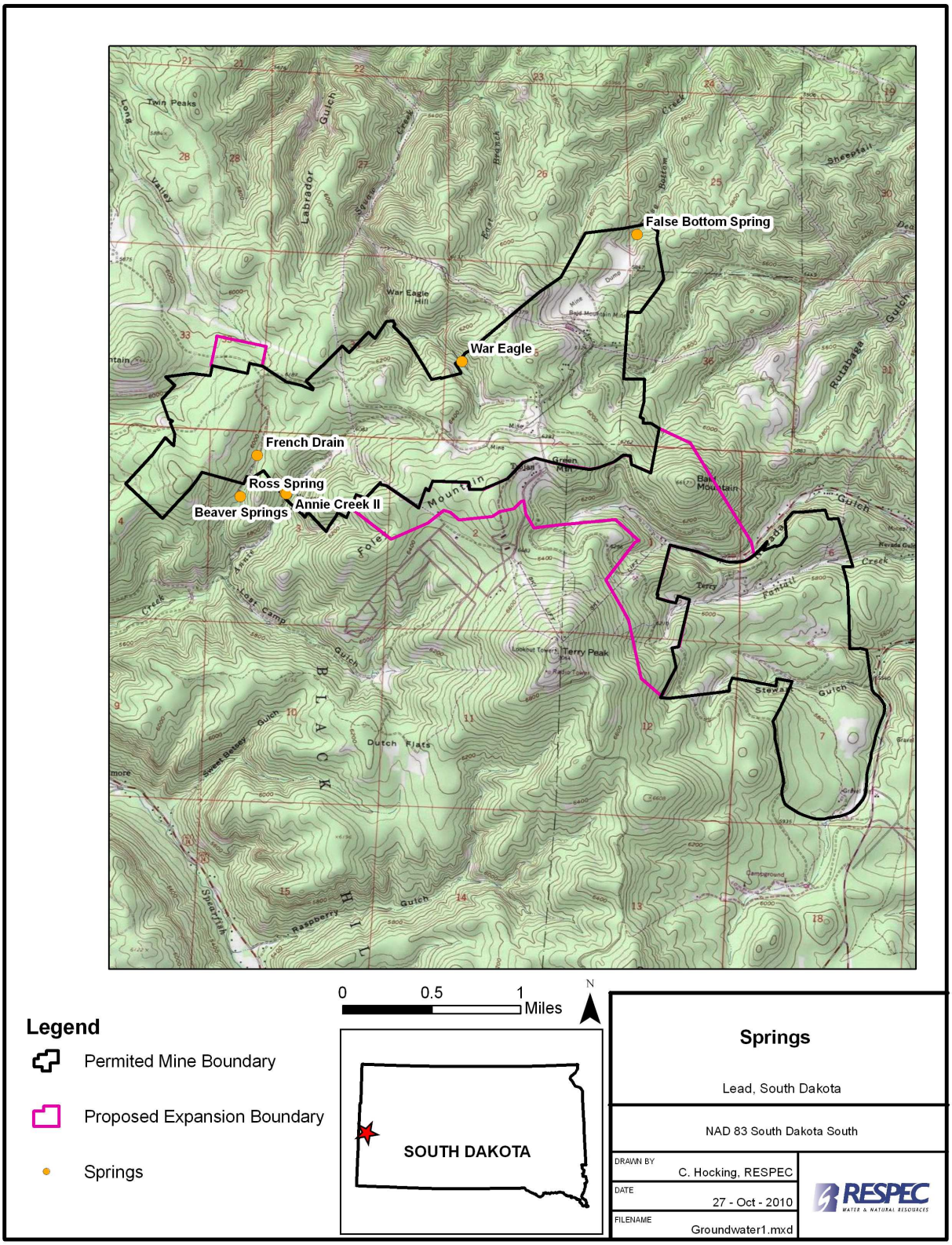

Figure 2-1. Spring Sampling Sites Map.

Ross Valley French Drain. Measured flows at these six springs range from 1 to 150 gallons per minute (gpm) with higher flows during spring and low to no flows in later summer and fall. False Bottom Spring is located at the headwaters of False Bottom Creek, War Eagle is located on Cleopatra Creek, and the other four springs are located on tributaries of Annie Creek.

The majority of the area springs and seeps identified in previous investigations are typically dry with intermittent periods of low flows. Based on historic surveys presented in the Golden Reward Mining Permit Application [Hydrometrics, Inc., 1988] and Wharf's Clinton Application [Wharf Resources (USA) Inc., 1997], other minor, unnamed springs in the area are located in drainages of False Bottom Creek, Deadwood Creek, Nevada Gulch, Fantail Creek, and Stewart Gulch. A map of springs with known flow during 2010 is presented in Figure 2-2. The majority of these springs produce only a few gallons a minute during the wet spring time of the year. One spring, located at the head of Nevada Gulch and Fantail Creek, is located within the proposed Expansion Area. All other minor springs are located outside of the proposed disturbance areas.

2.4 POTENTIOMETRIC SURFACE

2.4.1 Water-Level Measurements

Water-level measurements have been taken by Wharf monthly for 1 year in new monitoring wells and quarterly in existing wells using a water-level indicator. Water-level measurements will be made immediately before water-quality sampling. Following baseline sampling, it is recommended that the new wells continue to be monitored for water level four times per year.

Water-level data collected in 2010 were used to update existing potentiometric maps of the Expansion Area. August 2010 water-level measurements are provided in Table 2-1 with additional measurements in Appendix E and well locations shown in Appendix H. Water-level readings for three baseline wells (MW-59, Terry Peak MW, and Nevada Gulch MW) were not collected as these wells are blocked. MW-59 was drilled to 250 feet but can only be measured to 202 feet (where it is dry) because the well has filled with grout or bentonite. Some of the other wells cannot be measured because the water-level meter cable kinks as it is lowered into the well because of various facilities located in the well, such as power supply cables and pump columns.

Additionally, levels were not measured in August 2010 for Wells MW-42, MW-43, and the Joseph Well. Wells MW-42 and MW-43 are flowing artesian wells with the water elevation slightly above the land surface at that locality. The Joseph Well was not measured as it is blocked because of power supply cables and pump columns. Historical median water table elevation measurements for these wells were used to help update the potentiometric surface maps. Because of seasonal changes in water level at these wells, the use of these historical depth measurements may not accurately represent the August 2010 water level at those

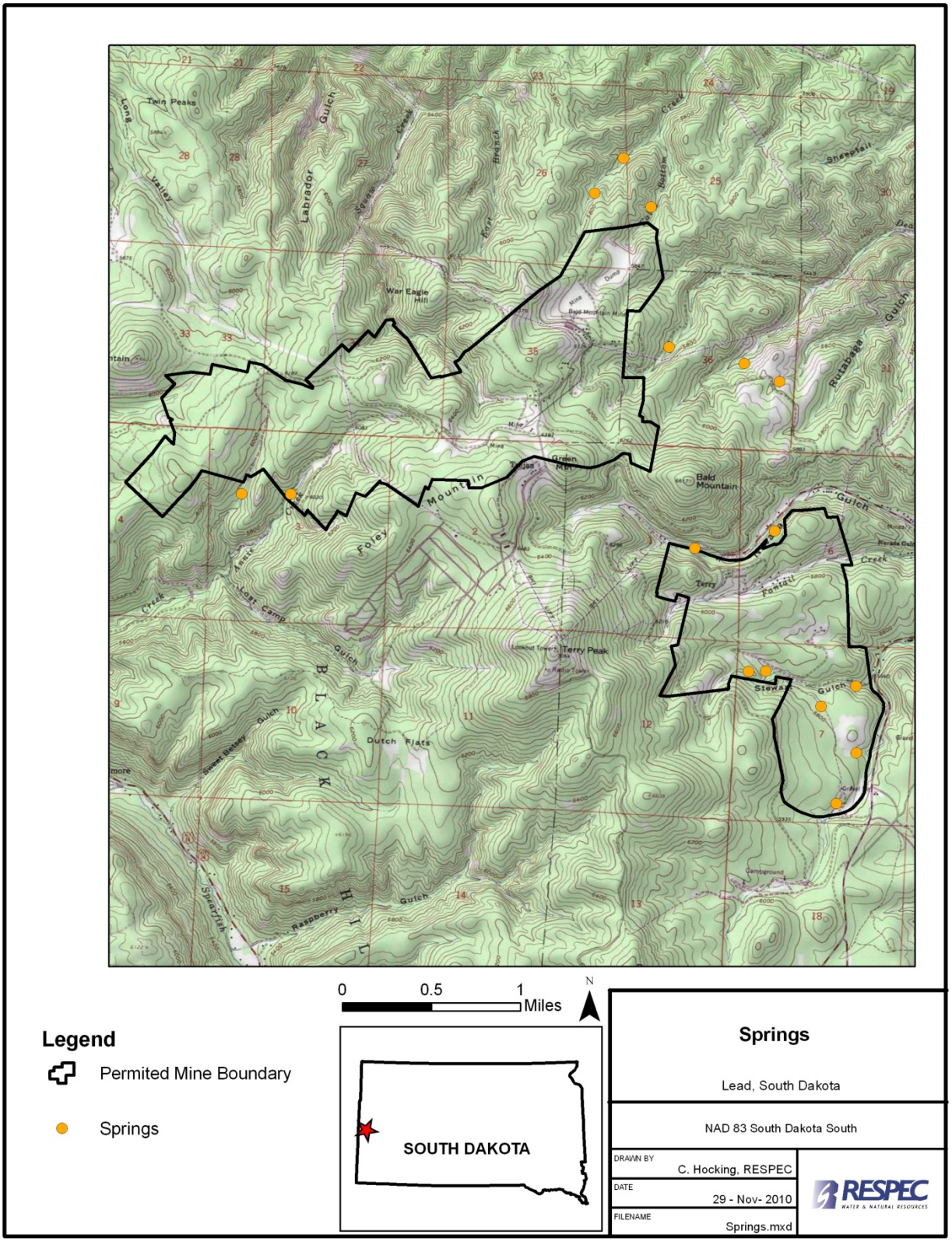

Figure 2-2. Locations of Springs or Seeps Flowing in the Year 2010.

Table 2-1. August 2010 Water Level Measurements (Page 1 of 3)

Monitoring Site	Casing Elevation (ft)	Date Sampled	Depth to Water (ft)	Water Elevation (ft)
DM01	5,767.36	8/17/2010	196.2	5,571.16
DM14A	5,891.62	8/13/2010	286.4	5,605.22
DM16	5,768.91	8/13/2010	122.9	5,646.01
Foley Shaft	6,420[(a)]	8/31/2010	107.3	6,312.70
GWAC6	5,146.51	8/20/2010	22.05	5,124.46
HDH-10A	6,045.50	8/11/2010	107.1	5,938.40
HDH-11	6,044.52	8/11/2010	(b)	(b)
HDH-12	5,963.83	8/10/2010	24.95	5,938.88
HDH-8A	6,132.01	8/13/2010	(b)	(b)
Horseshoe MW	5,980.78	8/25/2010	38.32	5,942.46
Joseph Well	6,027.31	8/12/2010	(b)	(b)
MM03	5,636.03	8/13/2010	58.91	5,577.12
MM04A	5,953.12	8/12/2010	362.88	5,590.24
MW-1	5,924.39	8/4/2010	48.6	5,875.79
MW-10	5,889.57	8/6/2010	114.4	5,775.17
MW-10A	5,888.43	8/6/2010	113.2	5,775.23
MW-13	5,872.63	8/3/2010	31.82	5,840.81
MW-13A	5,874.44	8/3/2010	70.3	5,804.14
MW-14	6,121.40	8/11/2010	325.1	5,796.30
MW-15	6,044.21	8/11/2010	95.15	5,949.06
MW-17	5,803.88	8/5/2010	39.55	5,764.33
MW-18	5,803.14	8/5/2010	34.88	5,768.26
MW-19	5,942.30	8/5/2010	109.6	5,832.70
MW-1A	5,919.80	8/4/2010	76.4	5,843.40
MW-2	5,844.86	8/3/2010	58.49	5,786.37
MW-2A	5,846.12	8/3/2010	40.45	5,805.67

Table 2-1. August 2010 Water Level Measurements (Page 2 of 3)

Monitoring Site	Casing Elevation (ft)	Date Sampled	Depth to Water (ft)	Water Elevation (ft)
MW-31	5,893.47	8/3/2010	(b)	(b)
MW-33	5,732.60	8/5/2010	22.53	5,710.07
MW-37	6,268.52	8/12/2010	528.2	5,740.32
MW-40	6,073.02	8/26/2010	119.1	5,953.92
MW-41	5,907.96	8/12/2010	156.47	5,751.49
MW-42	5,636.96	8/19/2010	(b)	(b)
MW-43	5,637.57	8/19/2010	(b)	(b)
MW-44	6,001.86	8/11/2010	48.4	5,953.46
MW-45	5,809.67	8/3/2010	34	5,775.67
MW-47	6,007.73	8/11/2010	(b)	(b)
MW-48	6,127.01	8/11/2010	248.3	5,878.71
MW-49	6,152.16	8/11/2010	48.5	6,103.66
MW-50	6,001.01	8/11/2010	59.14	5,941.87
MW-51	6,019.68	8/11/2010	251.4	5,768.28
MW-52	6,251.98	8/10/2010	379.2	5,872.78
MW-53.1	6,050.90	8/11/2010	103.96	5,946.94
MW-53.2	6,050.90	8/11/2010	104.61	5,946.29
MW-54.1	6,014.90	8/11/2010	72.27	5,942.63
MW-54.2	6,014.90	8/11/2010	73.86	5,941.04
MW-55.1	5,985.60	8/11/2010	67.09	5,918.51
MW-55.2	5,985.60	8/11/2010	74.97	5,910.63
MW-55.3	5,985.60	8/11/2010	133.6	5,852.00
MW-55.4	5,985.60	8/11/2010	133.68	5,851.92
MW-55.5	5,985.60	8/11/2010	133.7	5,851.90
MW-56.1	6,009.00	8/10/2010	61.89	5,947.11
MW-56.2	6,009.00	8/10/2010	61.11	5,947.89
MW-56.3	6,009.00	8/10/2010	65.27	5,943.73

Table 2-1. August 2010 Water Level Measurements (Page 3 of 3)

Monitoring Site	Casing Elevation (ft)	Date Sampled	Depth to Water (ft)	Water Elevation (ft)
MW-57.1	6,046.80	8/11/2010	99.32	5,947.48
MW-57.2	6,046.80	8/11/2010	100.49	5,946.31
MW-58.1	6,177.70	8/13/2010	280.73	5,896.97
Mw-58.2	6,177.70	8/13/2010	296.08	5,881.62
MW-58.3	6,177.70	8/13/2010	277	5,900.70
MW-58.4	6,177.70	8/24/2010	279.49	5,898.21
MW-9	5,983.85	8/6/2010	201.3	5,782.55
MW-9A	5,983.59	8/6/2010	217.3	5,766.29
Nevada Gulch MW	(b)	8/25/2010	(b)	(b)
OM05	5,751.24	8/17/2010	10.2	5,741.04
PW02	5,552.56	8/17/2010	11.7	5,540.86
PW04	5,588.5	8/17/2010	11.12	5,577.38
PW-2	6,082.03	8/9/2010	150	5,932.03
Railroad MW	6,254.08	8/26/2010	296.2	5,957.88
SM01A	5,855.87	8/12/2010	12.75	5,843.12
SM02A	5,814.55	8/12/2010	20.3	5,794.25
SM03A	5,568.55	8/12/2010	19.4	5,549.15
SM06	5,570.89	8/17/2010	19	5,551.89
SM-08	5,639.61	8/13/2010	28.4	5,611.21
SM-09	5,801.8	8/12/2010	(b)	(b)
SM10	5,740.02	8/12/2010	60.61	5,679.41
SM-11	5,853.88	8/12/2010	11.6	5,842.28
SM-12	5,864.63	8/12/2010	14.55	5,850.08
SM-13	5,868.54	8/12/2010	6.4	5,862.14
TP MW	(b)	8/31/2010	(b)	(b)

(a) Elevation approximated.

(b) Well blocked, no level collected.

locations. The potentiometric maps provided in the Wharf and Golden Reward Mine Permit Applications [Wharf (USA) Resources, 1997; Hydrometrics, Inc., 1988] were georeferenced and modified to represent current water-level measurement data. The updated potentiometric surface was hand-contoured based on August 2010 water-level measurements and is shown on Figure 2-3.

The water table mirrors topography to a certain extent. For example, the groundwater table on the eastern flank of Terry Peak slopes gently to the northeast. Water depth is typically greater than 200 feet below ground surface; within the Expansion Area in particular, depth to water varies from 0 to 400 feet below ground surface. The groundwater level is closest to the land surface at Well SS-09 in Nevada Gulch where the groundwater table is approximately the level of the stream. The water level is furthest from the land surface at MM04A and MW-19. Ore zones in the Expansion Area are generally above the water table; however, seasonal variations and perched zones complicate the situation. Water levels in the area may be impacted by pumping from local users, especially for snowmaking at Terry Peak, so data from the past decades may no longer be representative of current conditions.

2.4.2 Groundwater Gradients and Velocities

Based on current data, the average gradient in the Wharf Mine area is fairly steep with gradients from 0.06 to 0.18. In previous investigations, the groundwater velocity was calculated as 1.3 ft/day in the Deadwood Formation and 0.15 ft/day in the Precambrain [J. M. Montgomery Consulting Engineers, Inc., 1996].

2.5 RECHARGE AND DISCHARGE

The expansion project area sits upon a regional groundwater divide. On the north slope of Foley, Bald, and Green Mountains, flow is toward the north and east toward Deadwood, False Bottom, and Cleopatra Creeks. Subsurface flow on the south side of the mountains is toward Annie Creek and Nevada Gulch. On the eastern slopes of Terry Peak, flow is dominantly northeast toward Nevada Gulch with some flow directed toward Stewart Gulch. A map of generalized groundwater flow directions is provided in Figure 2-4.

Being that the Wharf Expansion Area lies on a groundwater divide, the only significant inflow into the area is from precipitation recharge. Based on past studies, recharge is approximately 3 inches per year on undisturbed land, 9 inches per year on opened pits, and 4.5 inches per year on reclaimed areas [J. M. Montgomery Consulting Engineers, Inc., 1996]. Additional groundwater recharge may occur as leakage from the shallow alluvial/colluvial aquifer [Golden Reward Mining Company, 1990].

Sources of groundwater discharge include wells, springs, seeps, and subsurface flow out of the area. False Bottom Spring discharges an average of 10 gpm; baseflow to Deadwood,

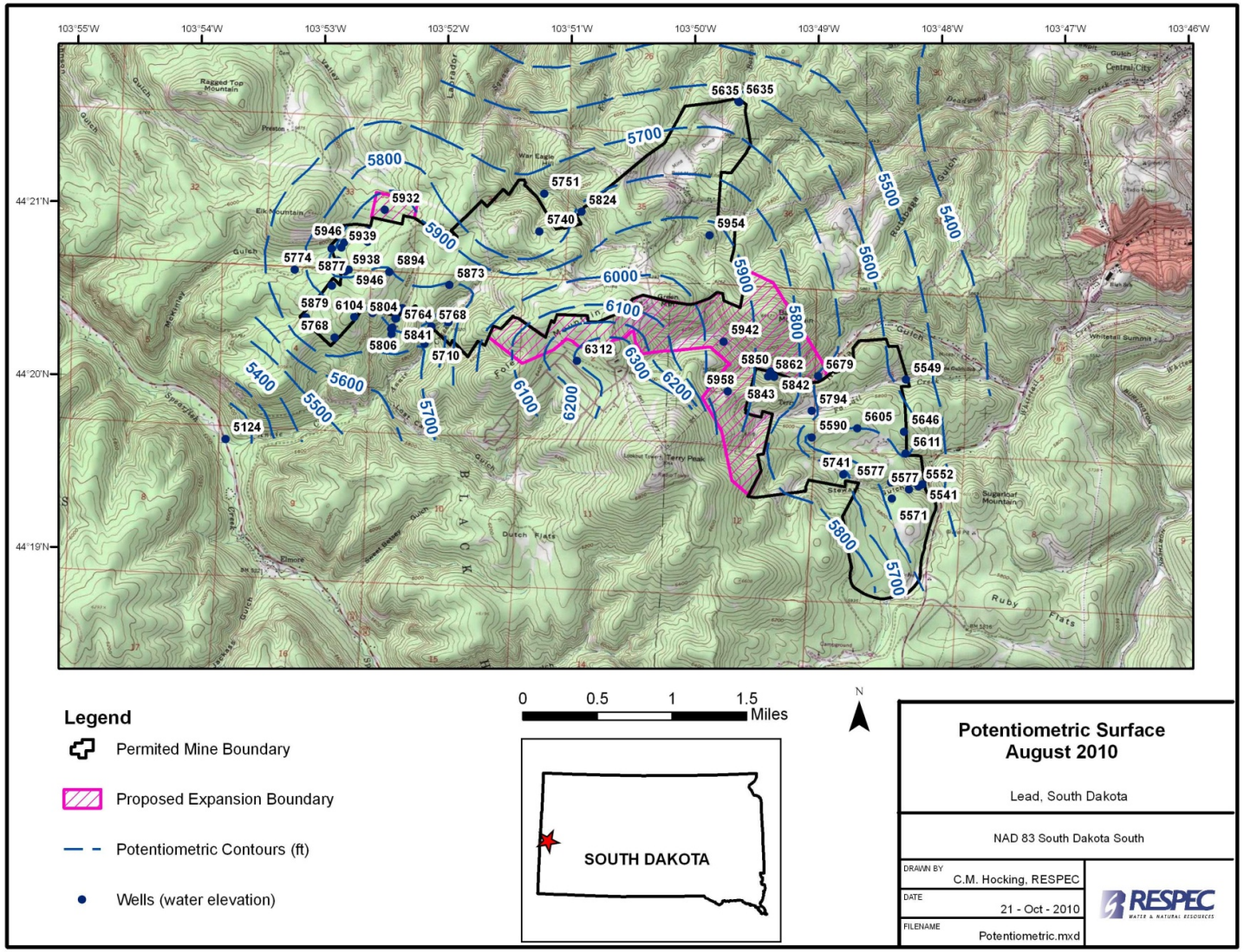

Figure 2-3. August 2010 Potentiometric Surface (Feet Above Mean Sea Level).

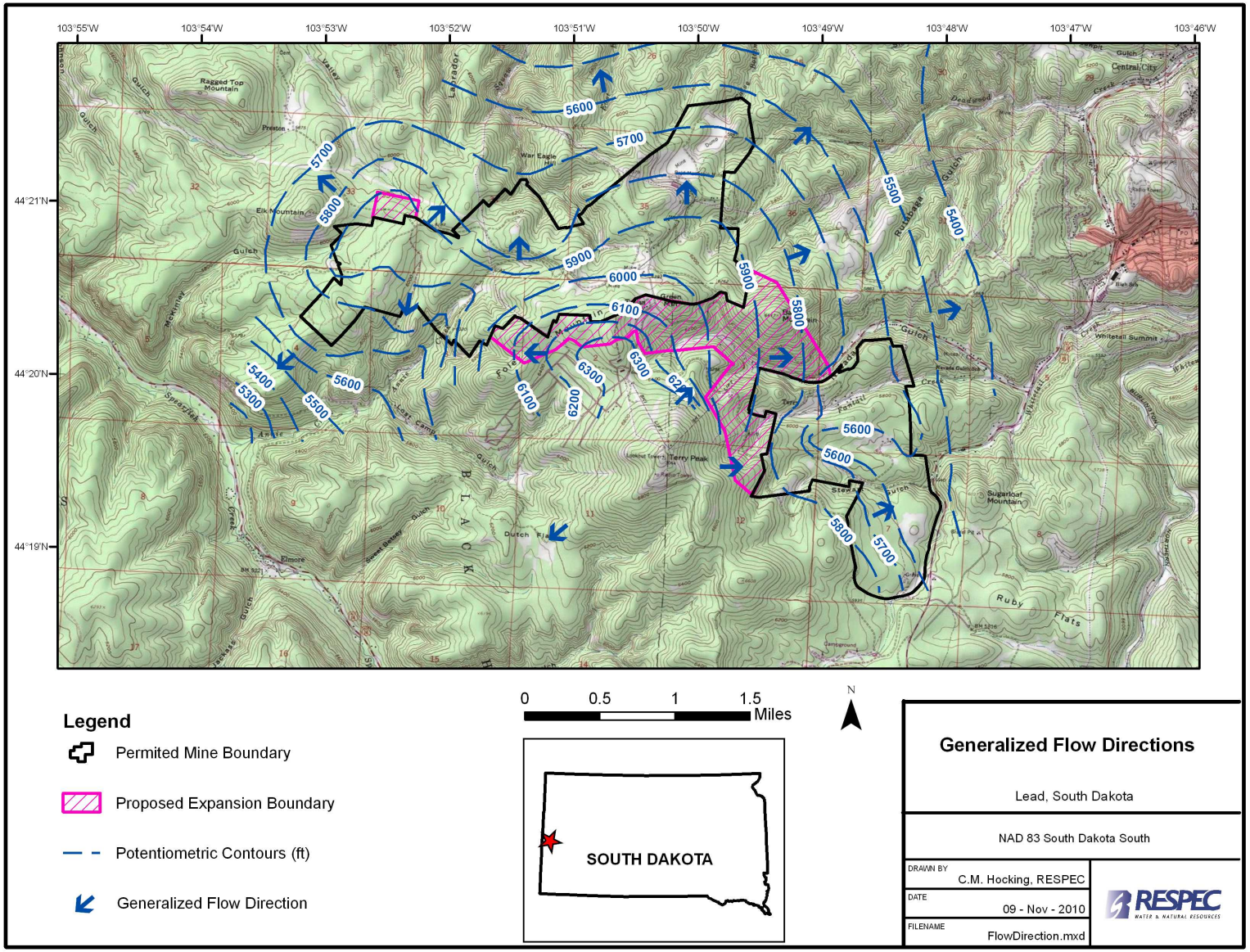

Figure 2-4. Generalized Groundwater Flow Directions.

Cleopatra, and False Bottom Creeks ranges from 100 to 150 gpm [J. M. Montgomery Consulting Engineers, Inc., 1996]. Discharge from wells in the area, described in the next section, is limited.

2.6 GROUNDWATER USE

Within the Wharf and Golden Reward Expansion Areas, there are numerous wells. The majority of these wells are monitoring wells or other wells owned and operated by Wharf Resources. There are no water supply wells within the Expansion Area. The following sections detail water use based on local water rights and operational water usage. Wells used strictly for monitoring purposes (including short-duration pumping to acquire water-quality samples) are discussed in Sections 3.1 and 3.2 of this report.

2.6.1 Water Rights

A review of existing wells and the historical use of water in the area was used to evaluate usage of groundwater in the local area. The state of South Dakota lists 11 water rights (Table 2-2) for groundwater within:

- Township 4 North, Range 2 East, Sections 1, 2, 3, 4, and 12.
- Township 5 North, Range 2 East, Sections 33, 34, 35, and 36.
- Township 4 North, Range 3 East, Sections 6 and 7.

Table 2-2 lists the groundwater water rights. The past and present general groundwater uses are related to housing development, mining and more recently, skiing and snow making. Seven of these water rights are controlled by Wharf Resources (including two Golden Reward water rights), mostly for mining purposes. The Black Hills Chairlift Company has two appropriated water rights for use in snow making and other activities at Terry Peak. At least four of the active wells are drilled into past mine workings that collect fracture-related flow waters.

2.6.2 Private Wells

There are several private groundwater wells within 1 mile of the Expansion Area. These wells are primarily shallow domestic water supply wells. The majority of private wells in the area are located in Township 4 North, Range 3 East, Section 6 at residences in Nevada Gulch.

A map of private wells was created based on well completion reports available from the SD DENR's online database [South Dakota Department of Environment and Natural Resources, 2010]. All private wells (and monitoring wells) are provided in Appendix H. The locations of wells outside of the permit area must be considered approximate as the well completion reports list wells only to the nearest section or quarter section. Wells within close proximity of the

Table 2-2. Groundwater Water Rights in the Expansion Study Area

Permit No.	Name	Use	cfs[a]	Sec, T, R	Source
301-1	Black Hills Chairlift Company	Commercial	0.02	1, 4N, 2E	Crystalline rock
301A-1	Black Hills Chairlift Company	Commercial	2.13	1, 4N, 2E	Crystalline rock, (Ben Hur Mine)
1346-1	Wharf Resources	Domestic	0.22	3, 4N, 2E	Madison limestone
1335-1	Whitetail Court	Commercial	0.036	6, 4N, 3E	Alluvium
1666-1	Golden Reward Mining Company	Industrial	1.83	6, 4N, 3E	Crystalline rock
1666A-1	Golden Reward Mining Company	Commercial	0.00	7, 4N, 3E	Deadwood; crystalline rock
1493-1	Wharf Resources	Industrial	0.356	33, 5N, 2E	Madison limestone
1761-1	Wharf Resources	Industrial	0.314	33, 5N, 2E	Madison limestone
1406A-1	Terry Valley Trojan Water District	Suburban housing development	0.178	34, 5N, 2E	Deadwood (Two Johns Mine)
1365-1	Wharf Resources	Industrial, domestic	0.16	35, 5N, 2E	Crystalline rock (Annie Cr Mine)
1174-1	Wharf Resources	Commercial, municipal	0.67	35, 5N, 2E	Deadwood (Squaw Creek Shaft)

(a) cfs = cubic feet per second

Expansion Area were field checked to verify their presence/location. In several instances, wells listed in the SD DENR database as being located within or near the project area were misreported on the well completion form; wells listed in the SD DENR database that have an improper location or are abandoned are not represented on the map.

2.6.3 Operational Use

Groundwater supply for the Wharf Mine is obtained primarily from wells completed in the Madison Aquifer, approximately 2 miles southeast of the Clinton Project Area. Some additional water supply for Wharf is obtained from the Joseph Well within the Clinton project area; pumping of the Joseph Well may have minor effects on the water elevation. With regard to the expansion project, no additional water usage is required beyond what is currently used as part of Wharf's ongoing mining operations.

3.0 GROUNDWATER QUALITY

3.1 EXISTING GROUNDWATER MONITORING PROGRAM

Water-quality and water-level monitoring programs have been in place at Wharf since at least 1985 and at Golden Reward since 1987. At the Wharf Mine, 37 groundwater monitoring wells (MW) are being sampled for water quality and water level, with an additional three wells monitored for water level only (Table 3-1 and Figure 3-1). At the Golden Reward Mine, 15 wells are part of the ongoing monitoring (Table 3-2 and Figure 3-2). Appendices A and B contain additional information on sampling frequency and parameter lists for the Wharf and Golden Reward hydrology monitoring programs. Sampling protocols are provided in Appendix D.

Table 3-1. Existing Groundwater Monitoring Sites at Wharf

Site	Frequency	Parameter List[(a)]	Site	Frequency	Parameter List[(a)]
MW-1	Monthly	1, 2	MW-42	4 times/year	1
MW-1A	Monthly	1, 2	MW-43	4 times/year	1
MW-2	Monthly	1, 2	MW-44	4 times/year	1
MW-2A	Monthly	1, 2	MW-45	Monthly	1, 2
MW-9	4 times/year	1	MW-47	4 times/year	1
MW-9A	4 times/year	1	MW-48	4 times/year	1
MW-10	4 times/year	1	MW-49	4 times/year	1
MW-10A	4 times/year	1	MW-50	4 times/year	1
MW-13	Monthly	1, 2	MW-51	4 times/year	1
MW-13A	Monthly	1, 2	MW-52	4 times/year	1
MW-14	4 times/year	1	MW-53	Monthly	1, 2
MW-15	4 times/year	1	MW-54	Monthly	1, 2
MW-17	4 times/year	1	MW-55	Monthly	1, 2
MW-18	4 times/year	1	MW-56	Monthly	1, 2
MW-19[(b)]	4 times/year	1	MW-57	Monthly	1, 2
MW-31	Monthly	1, 2	MW-58	Monthly	1, 2
MW-33[(b)]	4 times/year	1	Joseph Well	4 times/year	1
MW-37	Monthly	1, 2	MW-1B	Monthly	Water-Level Readings Only
MW-40[(b)]	4 times/year	1	MW-1C	Monthly	Water-Level Readings Only
MW-41	4 times/year	1	MW-2B	Monthly	Water-Level Readings Only

(a) Parameter lists provided in Appendix A.
(b) Site for inclusion in permit application analysis.

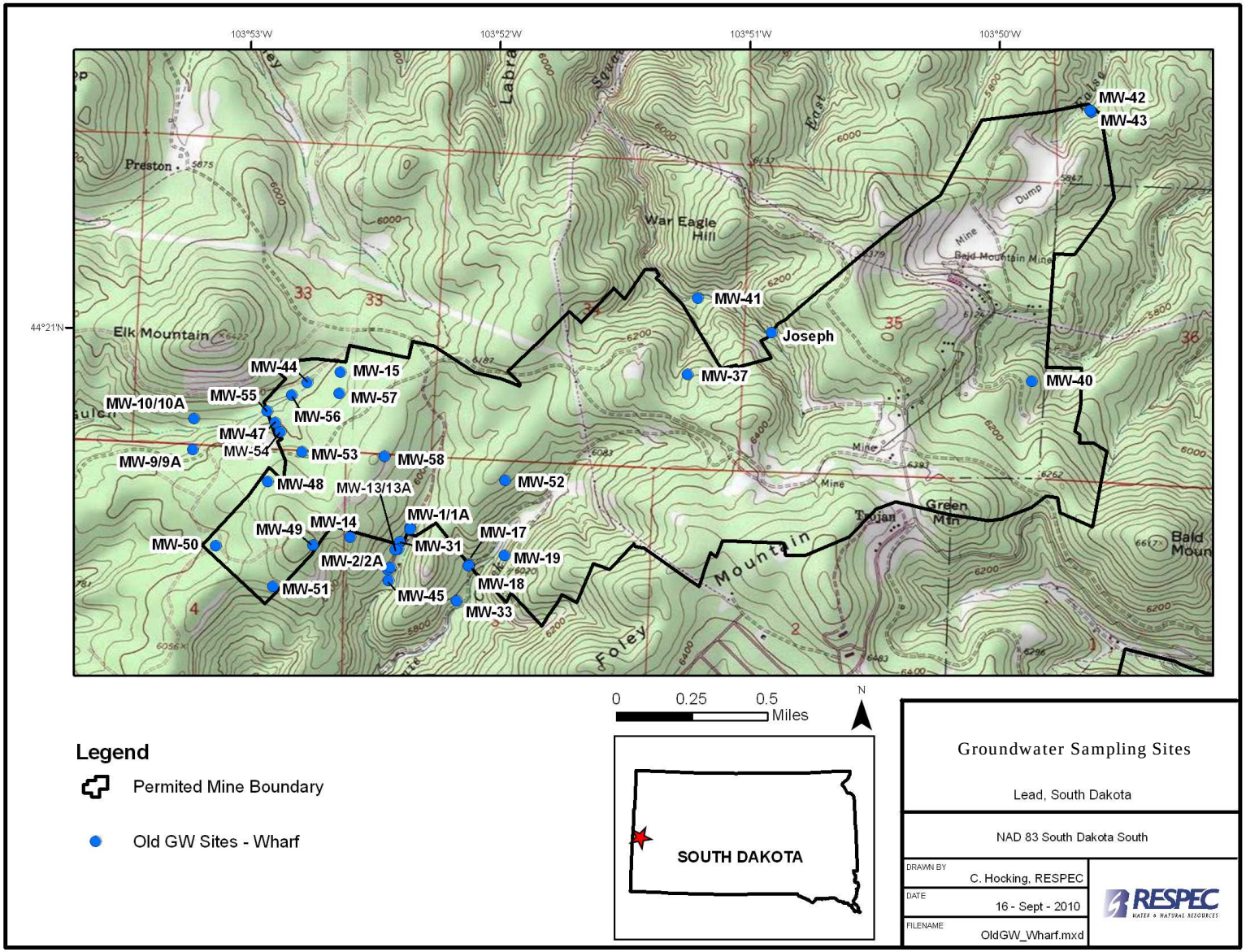

Figure 3-1. Groundwater Monitoring Sites.

Table 3-2. Existing Groundwater Monitoring Sites at Golden Reward

Site	Frequency	Parameter List[a]
DM01	Quarterly	Ground Indicator List
DM14A	Quarterly	Ground Indicator List
DM16	Quarterly	Ground Short Plus List
MM03	Quarterly	Ground Indicator List
MM04A[b]	Quarterly	Ground Indicator List
OM05[b]	Quarterly	Ground Indicator List
PW02	Quarterly	Ground Short Plus List
PW04	Quarterly	Ground Indicator List
SM01A[b]	Quarterly	Special List
SM02A[b]	Quarterly	Ground Indicator List
SM03A[b]	Quarterly	Ground Short Plus List
SM06[b]	Quarterly	Ground Short Plus List
SM08	Quarterly	Ground Short Plus List
SM09[b]	Quarterly	Ground Indicator List
SM10[b]	Quarterly	Ground Short Plus List

(a) Parameter lists provided in Appendix B.
(b) Site for inclusion in monthly water-level measurements.

Of these existing wells, only 11 wells are considered baseline wells for the Expansion Area. In addition to ongoing monitoring programs at Wharf and Golden Reward Mines, seven new monitoring sites were added for this baseline investigation. The list of the baseline sites for the Expansion Area is provided in Section 3.2. Additional data on sampling methods, results, and analysis are also provided in the following sections.

Of the area springs and seeps, water-quality samples are collected from six sites. According to guidance from the SD DENR, only two sites are considered baseline for the Expansion Area, Beaver Spring and Ross Spring (shown on Figure 2-1). Samples are collected quarterly at Beaver Spring and monthly at Ross Spring. Additional information on spring sampling frequency and parameter lists are provided in Appendix A.

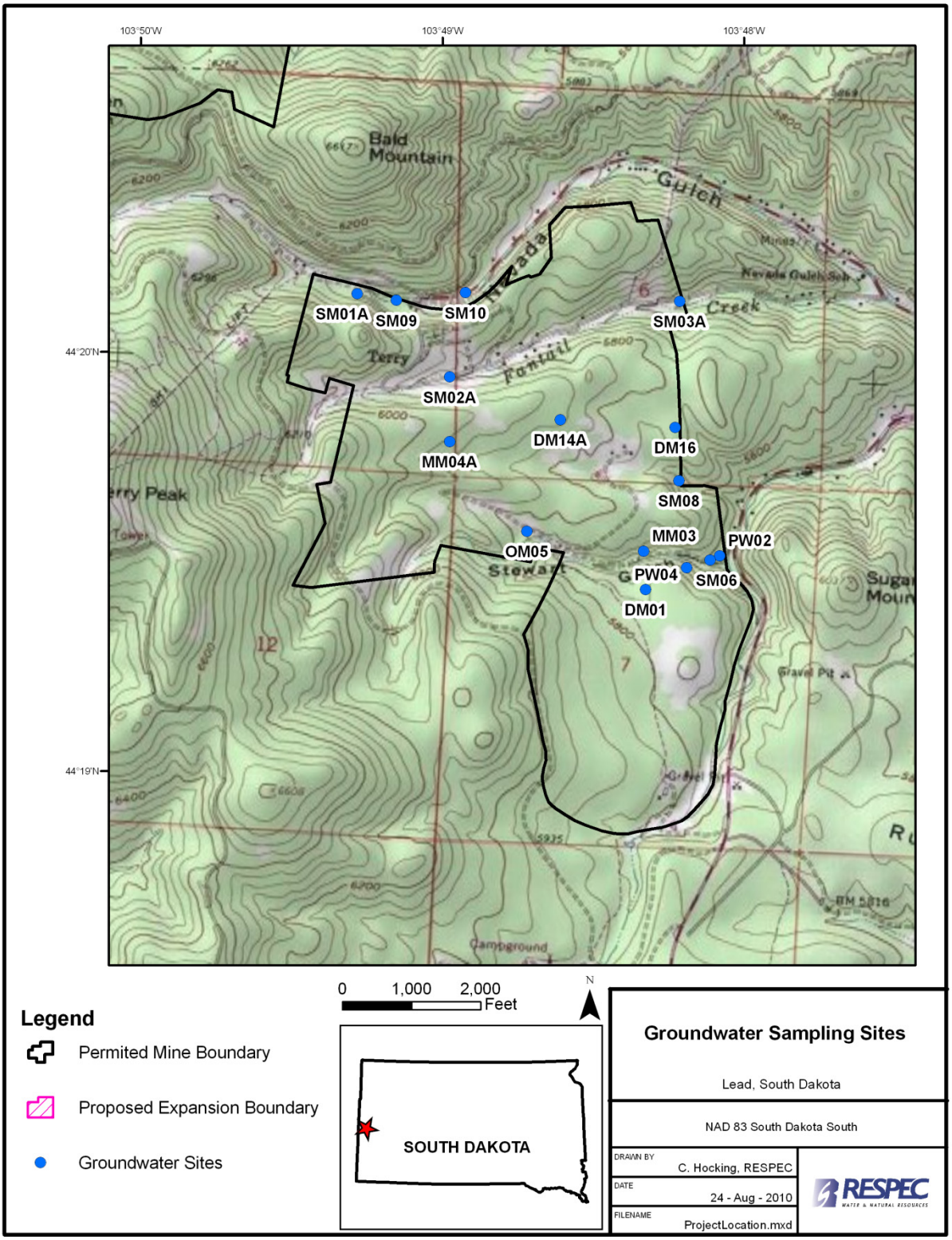

Figure 3-2. Existing Golden Reward Groundwater Sampling Sites.

3.2 WHARF EXPANSION PROJECT BASELINE MONITORING PROGRAM

The existing Wharf and Golden Reward groundwater monitoring programs were evaluated to determine which sites were applicable to the new Expansion Area. A total of 11 existing sites were chosen based on location and SD DENR recommendations. These sites are provided in Table 3-3 and Figure 3-3. In addition to these existing baseline sites, Wharf Resources has added six new monitoring sites. These new sites include the Horseshoe MW, Nevada Gulch MW, Foley Shaft, Terry Peak well, Railroad MW, and PW-2. A newly drilled well at the headwaters of Deadwood Creek, MW-59, was installed in February 2010 and was dry at a final depth of 250 feet and not able to be sampled. Table 3-3 contains well elevation and depth information with available well completion reports for the baseline wells provided in Appendix C. The Foley Shaft is an old mineshaft and, therefore, does not have any well completion information. Well completion reports could also not be located for the Nevada Gulch MW or the Terry Peak well.

All the new monitoring sites, except PW-2, have been sampled monthly (depending upon site accessibility) beginning in December 2009 and will continue to be sampled through December 2010. Well PM-2 was installed in August 2010 with monthly sampling beginning in October 2010. Field measurements include pH, conductivity, and temperature. Groundwater samples at new monitoring wells are analyzed in the laboratory for a variety of constituents listed in Table 3-4. Groundwater metals are analyzed for dissolved concentration. Existing monitoring wells have been sampled with the same frequency and parameters as they have been for the last several years; additional sampling details for existing monitor sites are provided in Appendices A and B.

Wharf will review the groundwater monitoring program with the SD DENR upon request and determine any changes to the sampling program that may be necessary. It is currently proposed that Wharf will continue their current monitoring program with the addition that the six new well sites will be monitored four times per year for the life of the mine unless otherwise directed by the SD DENR.

3.3 SAMPLING METHODS

Wharf will collect samples from the new sites in addition to existing monitoring at Wharf following their established sampling protocols (Appendix D).

3.4 DATA

Water-quality results for baseline hydrology wells sampled previous to the finalization of this report are provided in Appendix E. Data are included from October 15, 2005, through October 14, 2010. Water-quality results for Beaver and Ross Springs are also provided in Appendix E. Additional water-quality data for new monitoring sites will be provided to the SD DENR as sampling and laboratory analysis are completed.

Table 3-3. Groundwater Monitoring Sites at the Expansion Study Area (Page 1 of 2)

Site	Purpose[a]	Description	Casing Elevation (ft)[b]	Ground Elevation (ft)[b]	Well Depth (ft)[b]	Screen Interval (ft)[b]	Legal Location
Horseshoe MW	1	Well located in Nevada Gulch parking lot	5,980.78	ND	63	55-63	Sec. 1, T4N, R2E
Nevada Gulch MW	1	Terry Peak water well at the Nevada Gulch Lodge (Dark Horse)	ND	ND	145	ND	Sec. 1, T4N, R2E
Foley Shaft	1	Foley Mine Shaft	ND	ND	ND	ND	Sec. 2, T4N, R2E
Terry Peak Water Well	1	Well located ¾ of the way up Terry Peak completed in the Ben Hur Mine	ND	ND	827	ND	Sec. 2, T4N, R2E
Railroad MW	1	Well located on the railroad grade (Liberty)	6,254.08	ND	510	290–370	Sec. 1, T4N, R2E
PW-2	1	Well located north of Pad No. 4	6,082.03	ND	400	ND	Sec. 33, T5N, R2E
MW-59	1	Dry well located near head of Deadwood Creek at Bald Mountain	6,153.5	ND	250	170-250	Sec. 36, T5N, R2E
MW-19	2	Well in Annie Creek drainage inside Wharf Mine Permit Area	5,902.30	5,904.04	270	ND	Sec. 3, T4N, R2E
MW-33	2	Well in Annie Creek drainage downstream of Wharf Mine	5,732.60	5,730.10	120	ND	Sec. 3, T4N, R2E
MW-40	2	Well located just east of Trojan Pit	6,073.02	6,071.20	300	ND	Sec. 35, T5N, R2E
MM04A	3	Well located east of Terry Peak inside Golden Reward	5,954.04	5,950.88	400	372–376	Sec. 6, T4N, R3E
OM05	3	Well located in Stewart Gulch	5,751.24	ND	24	ND	Sec. 7, T4N, R3E
SM01A	3	Well located on Nevada Gulch south of Bald Mountain	5,855.49	5,852.50	35	11–14	Sec. 1, T4N, R2E
SM02A	3	Well located on Fantail Creek	5,814.17	5,811.31	85	14–44	Sec. 1, T4N, R2E

Table 3-3. Groundwater Monitoring Sites at the Expansion Study Area (Page 2 of 2)

Site	Purpose[a]	Description	Casing Elevation (ft)[b]	Ground Elevation (ft)[b]	Well Depth (ft)[b]	Screen Interval (ft)[b]	Legal Location
SM03A	3	Well located at eastern Golden Reward boundary on Fantail Creek	5,560.00	5,558.05	35	13	Sec. 6, T4N, R3E
SM06	3	Well located at Golden Reward boundary on Stewart Gulch	5,570.57	5,568.59	45	911	Sec. 7, T4N, R3E
SM09	3	Well located on Nevada Gulch south of Bald Mountain	5,801.80	ND	ND	ND	Sec. 1, T4N, R2E
SM10	3	Well located on Nevada Gulch southeast of Bald Mountain	5,740.02	ND	ND	ND	Sec. 6, T4N, R3E

(a) 1 = New sampling site.

2 = Existing Wharf sampling site.

3 = Existing Golden Reward Site

(b) ND = No data available.

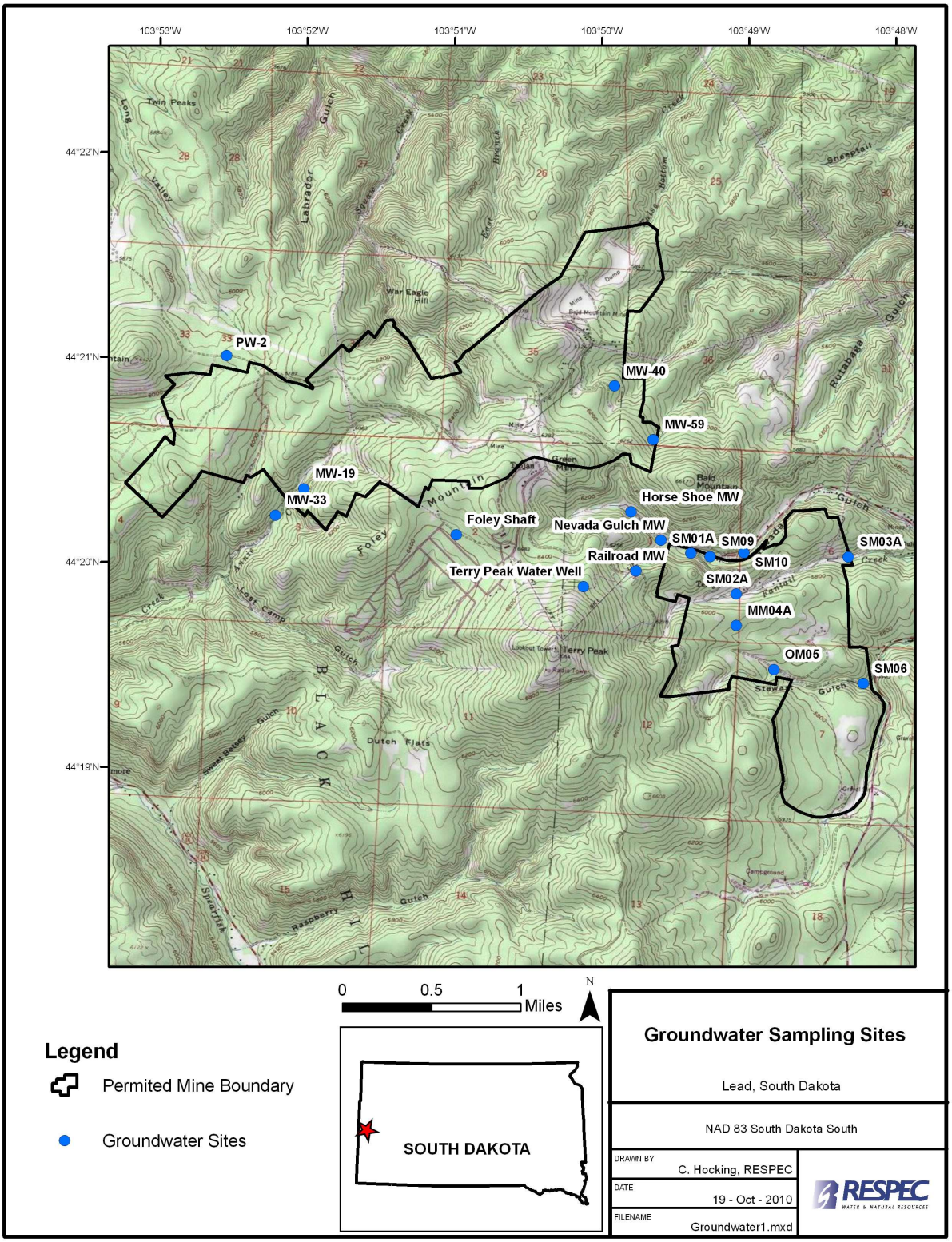

Figure 3-3. Baseline Groundwater Sampling Sites.

Table 3-4. Constituents to Be Analyzed in New Monitoring Well Samples

Aluminum	Selenium
Arsenic	Silver
Barium	Sodium
Cadmium	Sulfate
Calcium	Zinc
Chloride	Gross Alpha[(a)]
Chromium	Gross Beta[(a)]
Copper	Radon 222[(a)]
Fluoride	Radium 226[(a)]
Iron	Radium 228[(a)]
Lead	Cyanide[(total and WAD)]
Gold	Anion-Cation Balance
Magnesium	Bicarbonate
Manganese	Carbonate
Mercury	Conductivity
Nitrate	Total Dissolved Solids (TDS)
Nitrite	pH
Potassium	

(a) One-time sample at new monitoring site.

Comprehensive statistics for all baseline wells are included in Table 3-5. Statistics for each site are included in Appendix F. Data include the number of samples analyzed, number detected, mean, median, quartile one (Q1), quartile three (Q3), maximum, and minimum. Box plots were constructed to give visual summaries of the dataset. Box plots for a number of constituents are presented in Appendix G. Radiological constituents were analysed for one sample for each of the new baseline groundwater monitoring wells. These data are presented in Table 3-6.

If a water-quality result was reported as less than the practical quantitation limit (PQL) value in the raw data, that result was included in the statistical analyses as half of the PQL value. If two separate PQL values were reported for a single constituent, the PQL occurring

Table 3-5. Summary Statistics for all Expansion Area Baseline Wells (January 1, 2006, to October 6, 2010) Data (Page 1 of 6)

Constituent	PQL	*n* Analyzed	*n* Detected	Mean	StDev	Q1	Median	Q3	Minimum	Maximum
Field										
Field Conductivity (µmhos/cm)	N/A	213	N/A	450	460	189	330	600	1.42	2900
Field Depth (ft)	N/A	174	N/A	89	111	15.4	39.45	118	0	376
Field ORP (mV)	N/A	35	N/A	133	120	65.5	116	177.5	-78	684
Field Oxygen (O2) (mg/L)	N/A	37	N/A	6.89	2.54	4.1425	7.94	8.71	1.62	9.92
Field pH (SU)	N/A	214	N/A	7.4	1.1	6.69	7.21	7.67	5.8	12.4
Field Temperature (° C)	N/A	212	N/A	7.8	1.7	6.7	7.5	8.4	3.5	16.3
Metals, Dissolved										
Aluminum (Al),Dissolved (mg/L)	0.01	84	84	0.243	0.583	0.03455	0.0658	0.104	0.0116	3.32
Antimony (Sb),Dissolved (mg/L)	0.005	52	2	0.00288	0.00196	0.0025	0.0025	0.0025	0.0025	0.0146
Arsenic (As),Dissolved (mg/L)	0.0005	315	151	0.0125	0.0387	0.00025	0.00025	0.010225	0.00025	0.238
Barium (Ba),Dissolved (mg/L)	0.0025	132	128	0.066	0.058	0.02615	0.0538	0.07565	0.00125	0.32
Beryllium (Be),Dissolved (mg/L)	0.001	52	6	0.00071	0.00070	0.0005	0.0005	0.0005	0.0005	0.0048
Cadmium (Cd),Dissolved (mg/L)	0.0001	196	9	0.00012	0.00033	0.00005	0.00005	0.00005	0.00005	0.00293
Calcium (Ca),Dissolved (mg/L)	1	149	143	87.6	143.3	8.8075	32.1	51.575	0.5	554

Table 3-5. Summary Statistics for all Expansion Area Baseline Wells (January 1, 2006, to October 6, 2010) Data (Page 2 of 6)

Constituent	PQL	*n* Analyzed	*n* Detected	Mean	StDev	Q1	Median	Q3	Minimum	Maximum
Chromium (Cr),Dissolved (mg/L)	0.0005	132	16	0.00057	0.00110	0.00025	0.00025	0.00025	0.00025	0.0102
Cobalt (Co),Dissolved (mg/L)	0.001	51	8	0.00148	0.00261	0.0005	0.0005	0.0005	0.0005	0.0101
Copper (Cu),Dissolved (mg/L)	0.0005	309	81	0.010	0.080	0.00025	0.00025	0.005085	0.00025	1.37
Gold (Au),Dissolved (mg/L)	0.001	213	76	0.0024	0.0076	0.0005	0.0005	0.002	0.0005	0.082
Iron (Fe),Dissolved (mg/L)	0.025	153	101	6.11	9.10	0.0125	0.254	11.05	0.0125	32.3
Lead (Pb),Dissolved (mg/L)	0.0001	175	29	0.00045	0.00123	0.00005	0.00005	0.00005	0.00005	0.0116
Lithium (Li),Dissolved (mg/L)	0.02	42	31	0.01335	0.01382	0.0044	0.01	0.0146	0.001	0.0576
Magnesium (Mg),Dissolved (mg/L)	0.5	149	144	25.0	40.2	2.2225	7.56	21.8	0.25	159
Manganese (Mn),Dissolved (mg/L)	0.001	84	54	10.44	15.17	0.0005	0.03275	19.2	0.0005	43.3
Molybdenum (Mo),Dissolved (mg/L)	0.001	51	26	0.00234	0.00545	0.0005	0.00101	0.00175	0.0005	0.0337
Nickel (Ni),Dissolved (mg/L)	0.005	52	7	0.00477	0.00646	0.0025	0.0025	0.0025	0.0025	0.0272
Potassium (K),Dissolved (mg/L)	0.5	146	140	2.73	3.58	0.801	1.04	4.51	0.25	30.7
Silver (Ag),Dissolved (mg/L)	0.0001	111	2	0.0001	0.0002	0.00005	0.00005	0.00005	0.00005	0.002
Sodium (Na),Dissolved (mg/L)	0.5	307	307	8.00	10.45	3.59	5.02	7.595	1.36	71.3

Table 3-5. Summary Statistics for all Expansion Area Baseline Wells (January 1, 2006, to October 6, 2010) Data (Page 3 of 6)

Constituent	PQL	*n* Analyzed	*n* Detected	Mean	StDev	Q1	Median	Q3	Minimum	Maximum
Strontium (Sr),Dissolved (mg/L)	0.001	65	65	0.333	0.511	0.058575	0.107	0.2345	0.00138	1.65
Vanadium (V),Dissolved (mg/L)	0.005	51	2	0.00262	0.00058	0.0025	0.0025	0.0025	0.0025	0.00556
Zinc (Zn),Dissolved (mg/L)	0.05	289	82	0.0528	0.0593	0.025	0.025	0.053	0.025	0.309
Metals, Total										
Aluminum (Al),Total (mg/L)	0.01	3	3	0.584	0.838	0.0773	0.149	1.19975	0.0534	1.55
Antimony (Sb),Total (mg/L)	0.005	3	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Arsenic (As),Total (mg/L)	0.005	3	2	0.01114	0.00981	0.0041575	0.00913	0.0186325	0.0025	0.0218
Barium (Ba),Total (mg/L)	0.005	3	3	0.0816	0.0764	0.03255	0.0486	0.1389	0.0272	0.169
Beryllium (Be),Total (mg/L)	0.001	3	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Cadmium (Cd),Total (mg/L)	0.001	3	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Chromium (Cr),Total (mg/L)	0.001	3	1	0.00093	0.00075	0.0005	0.0005	0.001475	0.0005	0.0018
Cobalt (Co),Total (mg/L)	0.001	3	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Copper (Cu),Total (mg/L)	0.005	3	1	0.00412	0.00281	0.0025	0.0025	0.0061525	0.0025	0.00737
Gold (Au),Total (mg/L)	.001	3	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Iron (Fe),Total (mg/L)	0.05	3	3	0.4553	0.4183	0.173	0.314	0.773	0.126	0.926
Lead (Pb),Total (mg/L)	0.001	3	2	0.00124	0.00072	0.000695	0.00128	0.0017675	0.0005	0.00193
Lithium (Li),Total (mg/L)	0.02	3	3	0.01533	0.01810	0.003925	0.007	0.028825	0.0029	0.0361

Table 3-5. Summary Statistics for all Expansion Area Baseline Wells (January 1, 2006, to October 6, 2010) Data (Page 4 of 6)

Constituent	PQL	*n* Analyzed	*n* Detected	Mean	StDev	Q1	Median	Q3	Minimum	Maximum
Manganese (Mn),Total (mg/L)	0.01	3	1	0.0093	0.0075	0.005	0.005	0.01475	0.005	0.018
Mercury (Hg),Total (mg/L)	0.0002	270	47	0.00030	0.00071	0.0001	0.0001	0.0001	0.0001	0.0058
Molybdenum (Mo),Total (mg/L)	0.001	3	1	0.01753	0.02950	0.0005	0.0005	0.038825	0.0005	0.0516
Nickel (Ni),Total (mg/L)	0.005	3	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Silver (Ag),Total (mg/L)	0.001	3	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Strontium (Sr),Total (mg/L)	0.001	3	3	0.0614	0.0599	0.016405	0.0619	0.106225	0.00124	0.121
Vanadium (V),Total (mg/L)	0.005	3	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Zinc (Zn),Total (mg/L)	0.05	3	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Metals, Total Recoverable										
Arsenic (As),Total Recoverable (mg/L)	0.005	4	2	0.01973	0.02789	0.0025	0.00775	0.03695	0.0025	0.0609
Cadmium (Cd),Total Recoverable (mg/L)	0.001	3	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Chromium (Cr),Total Recoverable (mg/L)	0.001	2	1	0.00258	0.00293	0.0005	0.002575	0.00465	0.0005	0.00465
Copper (Cu),Total Recoverable (mg/L)	0.005	3	1	0.0147	0.0211	0.0025	0.0025	0.029875	0.0025	0.039
Lead (Pb),Total Recoverable (mg/L)	0.001	3	1	0.00843	0.01374	0.0005	0.0005	0.01835	0.0005	0.0243
Nickel (Ni),Total Recoverable (mg/L)	0.005	2	2	0.04225	0.04278	0.012	0.04225	0.0725	0.012	0.0725

Table 3-5. Summary Statistics for all Expansion Area Baseline Wells (January 1, 2006, to October 6, 2010) Data (Page 5 of 6)

Constituent	PQL	*n* Analyzed	*n* Detected	Mean	StDev	Q1	Median	Q3	Minimum	Maximum
Silver (Ag),Total Recoverable (mg/L)	0.001	3	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Zinc (Zn),Total Recoverable (mg/L)	0.05	3	1	0.0527	0.0479	0.025	0.025	0.08725	0.025	0.108
Iron (Fe),Total Recoverable (mg/L)	0.05	1	1	0.759	0	0.759	0.759	0.759	0.759	0.759
Nonmetallics										
Bicarbonate (mg/L)	10	239	202	120.6	79.3	48.1	104	191.25	17.2	352
Boron (B),Dissolved (mg/L)	0.02	1	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Boron (B),Total (mg/L)	0.02	51	14	0.0269	0.0685	0.01	0.01	0.02215	0.01	0.491
Carbonate (mg/L)	5	125	12	43.1	42.39	17.8	21.6	48.75	12	135
Chloride (Cl-) (mg/L)	0.5	221	165	4.6	10.8	0.25	2.75	5.25	0.25	100
Cyanide, Free (mg/L)	0.02	54	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Cyanide, Total (mg/L)	0.01	309	2	0.005	0.001	0.005	0.005	0.005	0.005	0.02
Cyanide, WAD (mg/L)	0.01	309	1	0.0050	0.0003	0.005	0.005	0.005	0.005	0.011
Fluoride (mg/L)	0.05	260	260	0.432	0.586	0.212	0.2855	0.4235	0.087	3.45
Nitrogen, Ammonia (NH3) (mg/L)	0.05	114	3	0.0277	0.0234	0.025	0.025	0.025	0.025	0.271
Nitrogen, Nitrate (NO3) (mg/L)	0.05	314	246	1.62	2.33	0.072	0.308	2.43	0.025	12.2
Nitrogen, Nitrite (NO2) (mg/L)	0.05	312	2	0.0252	0.0031	0.025	0.025	0.025	0.025	0.073
Selenium (Se),Dissolved (mg/L)	0.0005	288	25	0.0013	0.0042	0.00025	0.00025	0.00025	0.00025	0.045

Table 3-5. Summary Statistics for all Expansion Area Baseline Wells (January 1, 2006, to October 6, 2010) Data (Page 6 of 6)

Constituent	PQL	*n* Analyzed	*n* Detected	Mean	StDev	Q1	Median	Q3	Minimum	Maximum
Selenium (Se),Total (mg/L)	0.001	3	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Selenium (Se),Total Recoverable (mg/L)	0.001	4	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Silicon (Si),Dissolved (mg/L)	1	51	50	9.59	4.36	6.72	8.53	11.95	2	17.8
Silicon (Si),Total (mg/L)	N/A	3	N/A	8.27	5.20	4.73	6.62	12.23	4.1	14.1
Sulfate (SO4) (mg/L)	1	311	212	207.5	443.4	0.5	48.8	150	0.5	1950
Physical Properties										
Alkalinity (mg/L)	10	55	55	68.3	59.8	32.675	52.9	81.525	14.1	284
Alkalinity Hydroxide (mg/L)	N/A	5	N/A	10.12	10.81	4.795	5.44	12.7325	3.4	29.3
Anion - Cation Balance (%)	N/A	135	N/A	-1.26	2.78	-3	-1.3	0.27025	-8.44	6.1
Anions (meq/L)	N/A	135	N/A	6.05	10.49	0.96325	2.61	3.8875	0.438	42.4
BOD, 5-Day (mg/L)	N/A	1	N/A	3.0	0.0	3	3	3	3	3
Cations (meq/L)	N/A	135	N/A	5.94	10.38	0.9115	2.52	3.7675	0.417	41.9
Electrical Conductivity (µmhos/cm)	1	311	N/A	620.5	654.4	225.5	391	696	48.9	2780
Hardness (mg/L)	N/A	57	N/A	74.5	79.7	21.7	58.5	85.875	5	380
pH (SU)	N/A	311	N/A	7.33	0.82	6.78	7.26	7.73	6.03	11.6
Total Dissolved Solids (mg/L)	50	321	321	472.3	645.2	135	245	449.25	27	2860
Total Suspended Solids (mg/L)	4	84	52	90.5	256.9	2	16	44	2	1730
Turbidity (NTU)	0.2	53	53	53.7	117.7	4.45	16	46.25	0.2	650

Table 3-6. Radiological Data for New Groundwater-Quality Sites

Parameter	Horseshoe Monitoring Well	Nevada Gulch Monitoring Well	Foley Shaft	Terry Peak	Railroad Monitoring Well	PW-2
	12/17/2009	11/10/2009	11/5/2009	11/10/2009	11/30/2009	10/6/2010
Gross Alpha (pCi/L)	55.9	–0.2[u]	2.7	2.2	20.9	–0.6[u]
Gross Alpha precision (±) (pCi/L)	4.5	0.9	0.9	1	4.8	2.1
Gross Alpha MDC (pCi/L)	3.1	1.6	1.3	1.4	6.0	3.6
Gross Beta (pCi/L)	36.7	0.7[u]	0.9[u]	0.7[u]	31.2	2.6[u]
Gross Beta precision (±) (pCi/L)	2.4	1.7	1.7	1.7	3.8	1.9
Gross Beta MDC (pCi/L)	3.1	2.8	2.8	2.8	5.4	3.1
Radium 226 (pCi/L)	3.1	–0.2[u]	0.2	0.4	0.8	–0.02[u]
Radium 226 precision (±) (pCi/L)	0.4	0.1	0.09	0.2	0.3	0.1
Radium 226 MDC (pCi/L)	0.1	0.3	0.09	0.2	0.3	0.2
Radium 228 (pCi/L)	2.2	–0.5[u]	0.4[u]	0.3[u]	0.8[u]	–0.2[u]
Radium 228 precision (±) (pCi/L)	1.1	1	0.7	0.7	1.0	0.6
Radium 228 MDC (pCi/L)	1.7	1.6	1.1	1.2	1.7	1
Radon 222 (pCi/L)	3,370	14,400	<100	1,060	2,570	<100
Radon 222 precision (±) (pCi/L)	–	186	–	83.7	–	–

u = not detected at minimum detectable concentration

more frequently was used as the PQL when reporting results of the statistical analyses. Similarly, if a PQL was not listed for some of a single constituent's results but was listed for other results of the same constituent, the listed PQL value was used for all of that constituent's results. If results of statistical analysis were calculated to be less than the PQL, those results were then reported as N/A instead of the calculated value. Also, if a result was reported as zero in the raw data for a constituent having a specified PQL, half of the specified PQL was used in the statistical analyses instead of the zero value.

3.5 ANALYSIS AND SUMMARY OF GROUNDWATER CHEMISTRY

In general, the groundwater-quality results at baseline sampling sites are similar to results from existing sampling sites and are representative for groundwater in the area. Most baseline wells have similar concentrations of most major anions and cations, including calcium, chloride, fluoride, sodium, and sulfate. Following is a summary of baseline groundwater chemistry.

Field pH values range from 6 to 12, with the median value among baseline wells of 7.21. Horseshoe MW has the highest pH values that range from 10.5 to over 12. It is hypothesized that the pH at the Horseshoe MW is significantly higher than other local wells because the well was improperly grouted and may have a significant amount of grout still getting into the well.

One well that stands apart from the others in terms of general water quality is SM01A, an existing Golden Reward sampling site in Nevada Gulch. SM01A generally has higher concentrations of calcium, iron, magnesium, manganese, sulfate, and just anions and cations in general. SM01 has the highest median laboratory conductivity of 2,585 µmhos/cm.

Additional outstanding water-quality characteristics are noted. The Horseshoe well has the highest carbonate concentrations with a median value of 26.35 mg/L compared to most sites with undetected carbonate concentrations. Well SM09 stands out in its high median chloride value of 90 mg/L and as having the highest median and maximum dissolved selenium concentrations. The Railroad monitor well has the highest median concentration of arsenic with a value just over 0.2 mg/L. The majority of samples had arsenic levels below 0.025 mg/L.

Based on the singular radiological sample from each new monitoring well, both the Horseshoe and Railroad wells had gross alpha concentrations exceeding the EPA's maximum contaminant level (MCL) of 15 pCi/L. The proposed MCL for radon of 300 pCi/L was exceeded in the Horseshoe, Nevada Gulch, Terry Peak, and Railroad monitoring wells. The Horseshoe monitoring well sample also exceeded the MCL for combined radium 226/228 of 5 pCi/L.

Nitrate and cyanide are typically of concern at Wharf as nitrate is used in rock blasting and cyanide primarily results from the heap-leach process. All but four of the nitrate samples have concentrations below the U.S. Environmental Protection Agency (EPA) drinking water standard

of 10 mg/L. Wells including the Horseshoe, Nevada Gulch, Foley Shaft, Railroad, MW-33, SM01A, SM03A, SM09, SM10, and PW-2 have background nitrate concentrations less than 1 mg/L. The Terry Peak well, upgradient of Wharf mining activities, has a median nitrate concentration of about 2.4 mg/L, although a recent sample collected in August 2010 has a value of 10.7 mg/L. A single sample from MW-19, collected in 2006, exceeded the drinking water standard with a value of 11.3 mg/L; nitrate concentrations have decreased since that time. Well OM-05 also had two samples, collected in 2006 and 2008, exceeding the EPA drinking water standard; however, all samples collected for the past 2 years have been below 2 mg/L nitrate. Cyanide, including free, total, and Weak Acid Dissociable (WAD), was below the detection limit in all baseline well samples except three samples from MW-40. In summary, historical impacts to groundwater from previous mining activities are minor but are evident through the temporary elevated occurrences of nitrate.

4.0 PROJECTED IMPACTS

Impacts to groundwater hydrology, water quality, and local water supply wells as a result of mining in the new Expansion Area would be minimal. Potential impacts are anticipated to be similar to impacts experienced in previously mined areas of the Wharf and Golden Reward Mines.

4.1 POTENTIAL IMPACTS TO GROUNDWATER HYDROLOGY

Potential impacts of concern to groundwater hydrology are pit inflow, recharge, and discharge changes. Inflows into the pits are not anticipated at the proposed expansion pits because recent drilling programs and measured water levels indicate that significant water is not present at the depths projected for surface mining. Additionally, existing mine pits have not had pit inflow problems, and the low permeability of the rock limits water availability. The proposed expansion project is also likely to have minimal impact on groundwater recharge and discharge in the project area. Recharge to the pit areas will likely increase during mining and restoration; however, this water will be available to the local aquifers and surface water. Discharge rates from existing supply wells are not anticipated to increase as operational water usage will remain consistent with current practices.

4.2 POTENTIAL IMPACTS TO GROUNDWATER QUALITY

Current plans do not include the disposal of spent ore in future Expansion Area pits; hence, only minor, if any, impacts on groundwater chemistry are predicted in association with pits and waste rock disposal. The presence of mine pits themselves exposes additional rock surfaces to infiltrating water. Acid rock drainage is typically one of the common impacts from mining resulting from oxidation of sulfide minerals. In the Expansion Area, as the rest of the Wharf and Golden Reward Mine areas, the ore being mined has low concentrations of sulfide minerals and will not likely impact water quality. A full geochemical analysis of the mined rock is provided in the Large-Scale Mine Permit Application.

Impacts to groundwater quality resulting from waste rock disposal may be similar to the groundwater impacts in nearby areas that have previously been mined and backfilled with waste rock. Examples of these impacts include increased nitrate concentrations in shallow wells within the Wharf permit boundary. Given these experiences, it is possible that an increase in nitrate may occur below the proposed expansion pits. The increase in nitrate from blasting and disposal of waste rock is not expected to exceed the groundwater standard of 10 parts per million (ppm) outside the proposed expansion permit area.

4.3 POTENTIAL IMPACTS TO LOCAL WATER SUPPLIES

There are no water supply wells within the Expansion Area, and the majority of active wells in the nearby regions are owned by Wharf or the Black Hills Chairlift Company. General water uses are related to housing development, mining, and snow making. Based on the information presented above, the expansion project is not anticipated to adversely affect water supply or water quality for Terry Peak snow making or local drinking water wells.

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APPENDIX A

EXISTING WHARF HYDROLOGY MONITORING PROGRAM SUMMARY

Table A-1. Existing Hydrological Monitoring Sites and Sampling Frequency at Wharf Mine (Page 1 of 2)

Site	Drainage	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
HDH-8A	RV	X			X	X			X				
MW-1	RV	X	X	X	X	X	X	X	X	X	X	X	X
MW-13	RV	X	X	X	X	X	X	X	X	X	X	X	X
MW-13A	RV	X	X	X	X	X	X	X	X	X	X	X	X
MW-14	RV	X			X	X			X				
MW-1A	RV	X	X	X	X	X	X	X	X	X	X	X	X
MW-2	RV	X	X	X	X	X	X	X	X	X	X	X	X
MW-2A	RV	X	X	X	X	X	X	X	X	X	X	X	X
MW-31	RV	X	X	X	X	X	X	X	X	X	X	X	X
MW-45	RV	X	X	X	X	X	X	X	X	X	X	X	X
Ross Springs	RV	X	X	X	X	X	X	X	X	X	X	X	X
RV French Drain	RV	X	X	X	X	X	X	X	X	X	X	X	X
RVLC Pond	RV	X	X	X	X	X	X	X	X	X	X	X	X
RVSO Discharge	RV	X	X	X	X	X	X	X	X	X	X	X	X
Annie Creek @ USGS	REL	X			X	X			X				
Annie Creek II	REL	X			X	X			X				
Beaver Springs	REL	X			X	X			X				
GWAC6	REL	X							X				
MW-17	REL	X			X	X			X				
MW-18	REL	X			X	X			X				
MW-19	REL	X			X	X			X				
MW-33	REL	X			X	X			X				
MW-52	REL	X			X	X			X				
MW-9	MG	X			X	X			X				
MW-9A	MG	X			X	X			X				
MW-10	MG	X			X	X			X				
MW-10A	MG	X			X	X			X				
HDH-10A	MG	X	X	X	X	X	X	X	X	X	X	X	X
HDH-11	MG	X			X	X			X				
HDH-12	MG	X			X	X			X				
McKinley Gulch	MG	X			X	X			X				
MW-15	MG	X			X	X			X				
MW-44	MG	X			X	X			X				

Table A-1. Existing Hydrological Monitoring Sites and Sampling Frequency at Wharf Mine (Page 2 of 2)

Site	Drainage	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
MW-47	MG	X			X	X			X				
MW-48	MG	X			X	X			X				
MW-49	MG	X			X	X			X				
MW-50	MG	X			X	X			X				
MW-51	MG	X			X	X			X				
MW-53	MG	X	X	X	X	X	X	X	X	X	X	X	X
MW-54	MG	X	X	X	X	X	X	X	X	X	X	X	X
MW-55	MG	X	X	X	X	X	X	X	X	X	X	X	X
MW-56	MG	X	X	X	X	X	X	X	X	X	X	X	X
MW-57	MG	X	X	X	X	X	X	X	X	X	X	X	X
MW-58	MG	X	X	X	X	X	X	X	X	X	X	X	X
FB Spring	FBC	X			X	X			X				
FB-1	FBC	X			X	X			X				
FB-2	FBC	X			X	X			X				
MW-42	FBC	X			X	X			X				
MW-43	FBC	X			X	X			X				
BMT-1	DC	X			X	X			X				
DWD-1	DC	X			X	X			X				
MW-40	DC	X			X	X			X				
Joseph Well	CC	X			X	X			X				
MW-37	CC	X	X	X	X	X	X	X	X	X	X	X	X
MW-41	CC	X			X	X			X				
Lost Camp	AA								X				
Spearfish Falls	AA								X				
Squaw War Eagle	AA								X				

X = Parameter List 1 (Table A-3) X = Parameter List 2 (Table A-4)

RV = Ross Valley REL = Reliance MG = McKinley Gulch
FBC = False Bottom Creek DC = Deadwood Creek CC = Cleopatra Creek
AA = Misc. Drainages

Table A-2. Monitoring Wells With Water-Level Readings Only

Site	Drainage	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
MW-1B	RV	X	X	X	X	X	X	X	X	X	X	X	X
MW-1C	RV	X	X	X	X	X	X	X	X	X	X	X	X
MW-2B	RV	X	X	X	X	X	X	X	X	X	X	X	X

RV = Ross Valley

Table A-3. Water-Quality Parameter List 1 (Page 1 of 2)

Site	pH, Lab	EC, Lab	WAD CN	Total CN	NO2, Nitrite	NO3, Nitrate	NH3, Ammonia	TDS	TSS	F, Flouride	Bicarbonate	Na, Sodium	SO4, Sulfate	As, Arsenic	Se, Selenium	Cd, Cadmium	Cu, Copper	Au, Gold	Ag, Silver	Hg, Mercury	pH, Field	EC, Field	ORP, Field	DO, Field	Temp, Field	Flow Rate	Water-Level
French Drain	X	X	X	X	X	X	X	X		X	X	X	X	TR,D	TR,D		D	D	D	T	X	X	X	X	X	X	
HDH-8A	X	X	X	X	X	X	X	X		X	X	X	X	D	D		D	D	D	T	X	X	X	X	X		X
MW-1	X	X	X	X	X	X	X	X		X	X	X	X	TR,D	TR,D		D	D	D	T	X	X	X	X	X		X
MW-13	X	X	X	X	X	X	X	X		X	X	X	X	D	D		D	D	D	T	X	X	X	X	X		X
MW-13A	X	X	X	X	X	X	X	X		X	X	X	X	D	D		D	D	D	T	X	X	X	X	X		X
MW-14	X	X	X	X	X	X	X	X		X	X	X	X	D	D		D	D	D	T	X	X	X	X	X		X
MW-1A	X	X	X	X	X	X	X	X		X	X	X	X	D	D		D	D	D	T	X	X	X	X	X		X
MW-2	X	X	X	X	X	X	X	X		X	X	X	X	D	D		D	D	D	T	X	X	X	X	X		X
MW-2A	X	X	X	X	X	X	X	X		X	X	X	X	D	D		D	D	D	T	X	X	X	X	X		X
MW-31	X	X	X	X	X	X	X	X		X	X	X	X	D	D		D	D	D	T	X	X	X	X	X		X
MW-45	X	X	X	X	X	X	X	X		X	X	X	X	D	D		D	D	D	T	X	X	X	X	X		X
Ross Springs	X	X	X	X	X	X	X	X		X	X	X	X	D	D		D	D	D	T	X	X	X	X	X	X	
RVLC Pond	X	X	X	X	X	X	X	X		X	X	X	X	TR,D	TR,D		D	D	D	T	X	X	X	X	X		
RVSO Discharge		X	X	X	X	X	X			X	X	X	X	TR,D	TR,D		D	D	D	T	X	X	X	X	X	X	
Annie Creek @ USGS	X	X	X	X	X	X	X	X	X	X	X	X	X	T	T		D	D	D	T	X	X	X	X	X	X	
Annie Creek II	X	X	X	X	X	X	X	X	X	X	X	X	X	T	T		D	D	D	T	X	X	X	X	X	X	
Beaver Springs	X	X	X	X	X	X	X	X		X	X	X	X	D	D		D	D	D	T	X	X	X	X	X	X	
GWAC6	X	X	X	X	X	X	X	X	X	X	X	X	X	T,D	T,D		D	D	D	T	X	X	X	X	X		X
MW-17	X	X	X	X	X	X	X	X		X	X	X	X	D	D		D	D	D	T	X	X	X	X	X		X
MW-18	X	X	X	X	X	X	X	X		X	X	X	X	D	D		D	D	D	T	X	X	X	X	X		X
MW-19	X	X	X	X	X	X	X	X		X	X	X	X	D	D		D	D	D	T	X	X	X	X	X		X
MW-33	X	X	X	X	X	X	X	X		X	X	X	X	D	D		D	D	D	T	X	X	X	X	X		X
MW-52	X	X	X	X	X	X	X	X		X	X	X	X	D	D		D	D	D	T	X	X	X	X	X		X
HDH-10A	X	X	X	X	X	X	X	X		X	X	X	X	D	D	D	D	D	D	T	X	X	X	X	X		X
HDH-11	X	X	X	X	X	X	X	X		X	X	X	X	D	D	D	D	D	D	T	X	X	X	X	X		X
HDH-12	X	X	X	X	X	X	X	X		X	X	X	X	D	D	D	D	D	D	T	X	X	X	X	X		X
McKinley Gulch	X	X	X	X	X	X	X	X	X	X	X	X	X	T	T	D	D	D	D	T	X	X	X	X	X	X	
MW-9	X	X	X	X	X	X	X	X		X	X	X	X	D	D	D	D	D	D	T	X	X	X	X	X		X
MW-9A	X	X	X	X	X	X	X	X		X	X	X	X	D	D	D	D	D	D	T	X	X	X	X	X		X
MW-10	X	X	X	X	X	X	X	X		X	X	X	X	D	D	D	D	D	D	T	X	X	X	X	X		X
MW-10A	X	X	X	X	X	X	X	X		X	X	X	X	D	D	D	D	D	D	T	X	X	X	X	X		X

Table A-3. Water-Quality Parameter List 1 (Page 2 of 2)

Site	pH, Lab	EC, Lab	WAD CN	Total CN	NO2, Nitrite	NO3, Nitrate	NH3, Ammonia	TDS	TSS	F, Flouride	Bicarbonate	Na, Sodium	SO4, Sulfate	As, Arsenic	Se, Selenium	Cd, Cadmium	Cu, Copper	Au, Gold	Ag, Silver	Hg, Mercury	pH, Field	EC, Field	ORP, Field	DO, Field	Temp, Field	Flow Rate	Water-Level
MW-15	X	X	X	X	X	X	X	X		X	X	X	X	D	D	D	D	D	D	T	X	X	X	X	X		X
MW-44	X	X	X	X	X	X	X	X		X	X	X	X	D	D	D	D	D	D	T	X	X	X	X	X		X
MW-47	X	X	X	X	X	X	X	X		X	X	X	X	D	D	D	D	D	D	T	X	X	X	X	X		X
MW-48	X	X	X	X	X	X	X	X		X	X	X	X	D	D	D	D	D	D	T	X	X	X	X	X		X
MW-49	X	X	X	X	X	X	X	X		X	X	X	X	D	D	D	D	D	D	T	X	X	X	X	X		X
MW-50	X	X	X	X	X	X	X	X		X	X	X	X	D	D	D	D	D	D	T	X	X	X	X	X		X
MW-51	X	X	X	X	X	X	X	X		X	X	X	X	D	D	D	D	D	D	T	X	X	X	X	X		X
MW-53	X	X	X	X	X	X	X	X		X	X	X	X	D	D	D	D	D	D	T	X	X	X	X	X		X
MW-54	X	X	X	X	X	X	X	X		X	X	X	X	D	D	D	D	D	D	T	X	X	X	X	X		X
MW-55	X	X	X	X	X	X	X	X		X	X	X	X	D	D	D	D	D	D	T	X	X	X	X	X		X
MW-56	X	X	X	X	X	X	X	X		X	X	X	X	D	D	D	D	D	D	T	X	X	X	X	X		X
MW-57	X	X	X	X	X	X	X	X		X	X	X	X	D	D	D	D	D	D	T	X	X	X	X	X		X
MW-58	X	X	X	X	X	X	X	X		X	X	X	X	D	D	D	D	D	D	T	X	X	X	X	X		X
FB Spring	X	X	X	X	X	X	X	X	X	X	X	X	X	D	D		D	D	D	T	X	X	X	X	X	X	
FB-1	X	X	X	X	X	X	X	X	X	X	X	X	X	T	T		D	D	D	T	X	X	X	X	X	X	
FB-2	X	X	X	X	X	X	X	X	X	X	X	X	X	T	T		D	D	D	T	X	X	X	X	X	X	
MW-42	X	X	X	X	X	X	X	X		X	X	X	X	D	D		D	D	D	T	X	X	X	X	X		X
MW-43	X	X	X	X	X	X	X	X		X	X	X	X	D	D		D	D	D	T	X	X	X	X	X		X
BMT-1	X	X	X	X	X	X	X	X	X	X	X	X	X	T	T		D	D	D	T	X	X	X	X	X	X	
DWD-1	X	X	X	X	X	X	X	X	X	X	X	X	X	T	T		D	D	D	T	X	X	X	X	X	X	
MW-40	X	X	X	X	X	X	X	X		X	X	X	X	D	D		D	D	D	T	X	X	X	X	X		X
Joseph Well	X	X	X	X	X	X	X	X		X	X	X	X	D	D		D	D	D	T	X	X	X	X	X		X
MW-37	X	X	X	X	X	X	X	X		X	X	X	X	D	D		D	D	D	T	X	X	X	X	X		X
MW-41	X	X	X	X	X	X	X	X		X	X	X	X	D	D		D	D	D	T	X	X	X	X	X		X
Lost Camp	X	X	X	X	X	X	X	X	X	X	X	X	X	T	T		D	D	D	T	X	X	X	X	X	X	
Spearfish Falls	X	X	X	X	X	X	X	X	X	X	X	X	X	T	T		D	D	D	T	X	X	X	X	X	X	
Squaw War Eagle	X	X	X	X	X	X	X	X	X	X	X	X	X	T	T		D	D	D	T	X	X	X	X	X	X	

Table A-4. Water-Quality Parameter List 2

Site	NO2, Nitrite	NO3, Nitrate	NH3, Ammonia	As, Arsenic	pH, Field	EC, field	ORP, Field	DO, Field	Temp, Field	Flow Rate	Water Level
Ross Spring	X	X	X	D	X	X	X	X	X	X	
RVSO Discharge	X	X	X	TR,D	X	X	X	X	X	X	
French Drain	X	X	X	TR,D	X	X	X	X	X	X	
RVLCP	X	X	X	TR,D	X	X	X	X	X		
MW-1	X	X	X	TR,D	X	X	X	X	X		X
MW-1A	X	X	X	D	X	X	X	X	X		X
MW-31	X	X	X	D	X	X	X	X	X		X
MW-13	X	X	X	D	X	X	X	X	X		X
MW-13A	X	X	X	D	X	X	X	X	X		X
MW-2	X	X	X	D	X	X	X	X	X		X
MW-2A	X	X	X	D	X	X	X	X	X		X
MW-45	X	X	X	D	X	X	X	X	X		X
HDH-10A	X	X	X	D	X	X	X	X	X		X
MW-53	X	X	X	D	X	X	X	X	X		X
MW-54	X	X	X	D	X	X	X	X	X		X
MW-55	X	X	X	D	X	X	X	X	X		X
MW-56	X	X	X	D	X	X	X	X	X		X
MW-57	X	X	X	D	X	X	X	X	X		X
MW-58	X	X	X	D	X	X	X	X	X		X
MW-37	X	X	X	D	X	X	X	X	X		X

Table A-5. Water-Quality Parameter List 3[a]

pH	SO_4 (Sulfate)
Conductivity	As (Arsenic – Dissolved)
TDS (Total Dissolved Solids)	Se (Selenium – Dissolved)
TSS (Total Suspended Solids)	Hg (Mercury – Total)
Na (Sodium)	NO_3 (Nitrate)
HCO_3 (Bicarbonate)	

(a) This list is also known as the "Indicator List" for Golden Reward Sampling.

APPENDIX B

EXISTING GOLDEN REWARD HYDROLOGY MONITORING PROGRAM SUMMARY

Table 2
Existing Monitoring Program Summary
Through Expiration of Permits GW05-88
and SD-0026905

Table 2a *Existing Monitoring Program Summary Through Expiration of Permits GWD5-88 and SD-0026905**

Site	*Frequency*	*Parameter List*
SS01	Quarterly	Surface Water Discharge Permit List
SS04	Quarterly	Surface Indicator List
SS06	Quarterly	Surface Water Discharge Permit List
SS12	Quarterly	Surface Indicator List
SS14A	Quarterly	Surface Water Discharge Permit List
SS17	Quarterly	Special List
DM01	Quarterly	Ground Indicator List
DM14A	Quarterly	Ground Indicator List
DM16	Quarterly	Ground Short Plus List
MM03	Quarterly	Ground Indicator List
MM04A	Quarterly	Ground Indicator List
OM05	Quarterly	Ground Indicator List
PW02	Quarterly	Ground Short Plus List
PW04	Quarterly	Ground Indicator List
SM01A	Quarterly	Special List
SM02A	Quarterly	Ground Indicator List
SM03A	Quarterly	Ground Short Plus List
SM06	Quarterly	Ground Short Plus List
SM08	Quarterly	Ground Short Plus List
SM09	Quarterly	Ground Indicator List
SM10	Quarterly	Ground Short Plus List

*Permit GWD5-88 expires 12/12/2008 and will be renewed to 12/12/2013
Permit SWD-0026905 expires 9/30/2009

Table 2b *Monitoring Program Summary*

GROUND INDICATOR LIST	*SURFACE INDICATOR LIST*
Dissolved Metals	***Dissolved Metals***
pH	pH
Conductivity	Conductivity
TDS – total dissolved solids	TDS – total dissolved solids
CN – cyanide, total and WAD*	CN – cyanide, total and WAD* (if CN is not detected)
Na – sodium	Na – sodium
SO_4 – sulfate	SO_4 – sulfate
F – fluoride	F – fluoride
As – arsenic	As – arsenic
Cu – copper	Cu – copper
Se – selenium	Se – selenium
Zn – zinc	Zn – zinc
Hg – mercury	Hg – mercury
NO_3 – Nitrate	NO_3 – Nitrate
NO_2 – Nitrite	NO_2 - Nitrite

Table 2c *Monitoring Program Summary*

GROUND SHORT PLUS LIST	*SURFACE WATER DISCHARGE PERMIT LIST*
Dissolved Metals	***Total Recoverable Metals***
pH	pH
Conductivity	Conductivity
TDS – total dissolved solids	TDS - total dissolved solids
CN – cyanide, total and WAD*	Hardness
HCO_3 - bicarbonate	SO_4 - sulfate
SO_4 – sulfate	As - arsenic
Na - sodium	Cd - cadmium
Cl – chloride	Cr - chromium
F – fluoride	Cu - copper
As - arsenic	Pb - lead
Au – gold	Se - selenium
Ba – barium	Ag - silver
Cd – cadmium	Zn – zinc
Cr - Chromium	Hg – mercury (total)
Cu – copper	NO_3 – Nitrate
Fe – iron	NO_2 - Nitrite
Pb – lead	
Hg – mercury (total)	
Se – selenium	
Zn – zinc	
NO_3 – Nitrate	
NO_2 - Nitrite	

Table 2d *Monitoring Program Summary*

SPECIAL LIST	
Dissolved Metals	
pH	Mg – magnesium
Conductivity	K – potassium
TDS – total dissolved solids	Al – aluminum
TSS – total suspended solids (surface water only)	As – arsenic
CN – cyanide, total and WAD*	Cu – copper
HCO_3 - bicarbonate	Fe – iron
SO_4 – sulfate	Mn – manganese
Na - sodium	Zn – zinc
Cl – chloride	NO_3 – Nitrate
Ca – calcium	NO_2 - Nitrite

Table 3
Postclosure Monitoring Program Summary After Expiration of Permits GW05-88 and SD-0026905

Table 3a *Post Closure Monitoring Program Summary After Expiration Of Permits GW05-88 And SD-0026905*

Site	*Frequency*	*Parameter List*	*Post Closure End Date*
GW Compliance Point-DM16	Quarterly	Indicator	Dec 2013
GW Compliance Point-PW-02	Quarterly	Indicator	Dec 2013
GW Compliance Point-SM03A	Quarterly	Indicator	Dec 2013
GW Compliance Point-SM06	Quarterly	Indicator	Dec 2013
GW Compliance Point-SM08	Quarterly	Indicator	Dec 2013
GW Compliance Point-SM10	Quarterly	Indicator	Dec 2013
GW Compliance Point-DM16	Semi-Annual	Indicator	Dec 2018
GW Compliance Point-PW-02	Semi-Annual	Indicator	Dec 2018
GW Compliance Point-SM03A	Semi-Annual	Indicator	Dec 2018
GW Compliance Point-SM06	Semi-Annual	Indicator	Dec 2018
GW Compliance Point-SM08	Semi-Annual	Indicator	Dec 2018
GW Compliance Point-SM10	Semi-Annual	Indicator	Dec 2018
SW Compliance Point-SS01	Storm Event	Indicator	As needed*
SW Compliance Point-14A	Semi-Annual	Indicator	Dec 2018
DM-01	Quarterly	Indicator	Dec 2038
DM-14A	Semi-Annual	Indicator	Dec 2013
MM03	Quarterly	Indicator	Dec 2018
MM03	Semi-Annual	Indicator	Dec 2028
MM04A	Semi-Annual	Indicator	Dec 2018

Table 3a *Post Closure Monitoring Program Summary After Expiration Of Permits GW05-88 And SD-0026905*

OM-05	Quarterly	Indicator	Dec 2018
OM-05	Semi-Annual	Indicator	Dec 2028
PW-04	Quarterly	Indicator	Dec 2018
PW-04	Semi-Annual	Indicator	Dec 2028
SM01A	Quarterly	Special List	Dec 2038
SM02A	Semi-Annual	Indicator	Dec 2018
SM-09	Quarterly	Special List	Dec 2038
SS04	Storm Event	Indicator	As needed*
SS06	Semi-Annual	Indicator	Dec 2018
SS12	Semi-Annual	Indicator	Dec 2018
SS17	Semi-Annual	Indicator	Dec 2018
New wells near SM-01	Will be abandoned per South Dakota requirements	--	--

SS=surface water monitoring
All other sample sites are ground water monitoring sites
*Pending approval from DENR Surface Water Quality Program

Table 3b Groundwater and Surface Water Monitoring Parameter List

*INDICATOR LIST**	*SPECIAL LIST**
pH	pH
Conductivity	Conductivity
TDS	TDS
TSS (surface water sites only)	NO3-nitrate
Na - sodium	Na - sodium
HCO3 -bicarbonate	HCO3 -bicarbonate
SO4-sulfate	SO4-sulfate
As -arsenic (dissolved)	Al (dissolved)
Se -selenium (dissolved)	As -arsenic (dissolved)
Hg -mercury (total)	Fe -iron (dissolved)
NO3-nitrate	Se -selenium (dissolved)
	Zn - zinc (dissolved)
	Hg -mercury (total)

*The full list of parameters will be tested at the beginning of the post closure period. However, if parameters show a limited variance with time, Golden Reward will request that those parameters no longer be tested.

APPENDIX C

WELL COMPLETION DIAGRAMS

PW-2

SD EForm - 1621LD V1

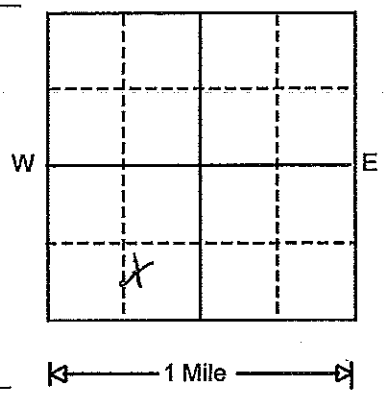
SOUTH DAKOTA WATER WELL COMPLETION REPORT

11-02

Location SE ¼ SW ¼ Sec 27 Twp 5N Rg 2E

County Lawrence

Please mark well location with an "X"



Well Completion Date

August 9, 2010

Distance to nearest potential pollution source (septic tank, abandoned well, feed lot, etc.)?

500.0 ft. from Septic (identify source)

PROPOSED USE:

☑ Domestic/Stock ☐ Municipal ☐ Business ☐ Test holes
☐ Irrigation ☐ Industrial ☐ Institutional ☐ Monitoring well

METHOD OF DRILLING:
Rotary Downhole Hammer

CASING DATA: ☑ Steel ☐ Plastic ☐ Other

If other describe 402' of 7" OD Steel

PIPEWEIGHT	DIAMETER	FROM	TO	HOLE DIAMETER
LB/FT	IN	400.0 FT	0.0 FT	8.75 IN
LB/FT	IN	FT	FT	IN
LB/FT	IN	FT	FT	IN

GROUTING DATA:

Grout Type	No. of Sacks	Grout Weight	From	To
Portland II	40	Lb/gal	150.0 Ft	0.0 Ft
		Lb/gal	Ft	Ft

Describe grouting procedure
through trimmie pipe

SCREEN: ☑ Perforated pipe ☐ Manufactured

Diameter 7.00 Inches Length 0.0 Feet

Material

Slot Size Set From Feet to Feet

Other information staggered from the bottom

WAS A PACKER OR SEAL USED? ☑ Yes ☐ No

If so, what material? Neoprene

Describe packer(s) and location

DISINFECTION: Was well disinfected upon completion?

☑ Yes, How? w/chlorine solution

☐ No, Why Not?

Lab to which water quality sample sent for analysis

Well Owner: Wharf Resources

Business Name:

Address: 10928 Wharf Road

City, State, Zip: Lead SD 57754

WELL LOG:

FORMATION	DEPTH FROM	DEPTH TO
Drift	0	10
Madison	10	190
Fracture Madison 100 gpm	190	210
Fracture Madison	210	380
Fracture Madison	380	381
Top of Deadwood	381	400

STATIC WATER LEVEL 150.0 FEET

If flowing: closed in pressure PSI

GPM flow 100.0 through Inch pipe

Controlled by ☐ Valve ☐ Reducers ☐ Other

Reduced flow rate GPM

Can well be completely shut in?

WELL TEST DATA:

☑ Pumped Describe: w/air

☐ Bailed

☐ Other

Pumping Level Below Land Surface

Ft. After Hrs. pumped GPM

Ft. After Hrs. pumped GPM

If pump installed, pump rate: GPM

REMARKS

This well was drilled under license # 324 and this report is true and accurate.

Drilling firm: Alexander Drilling Inc.

Signature of License Representative:

Signature of Well Owner or Equitable Property Holder:

Horseshoe MW

SOUTH DAKOTA WATER WELL COMPLETION REPORT

07-92

Location SE ¼ NW ¼ Sec 1 Twp 4N Rg 2E

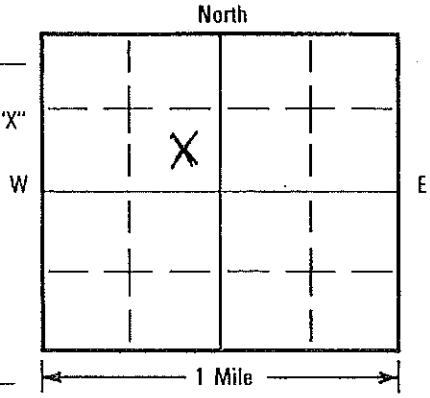
County: Lawrence

Please mark well location with an "X"

MW #1

@ Terry Peak

Well Completion Date: 12-1-09



Well Owner: Wharf Resources

Business Name: Wharf Resources

Address: HC 37, PO Box 811
Lead, SD 57754

WELL LOG:

FORMATION	DEPTH FROM	DEPTH TO
Clay redish brown	0	11
some cobbles + boulders		
Quartzite	11	28
Schist gray to	28	38
light green		
Schist gray	38	63

LOCATION:
Distance from nearest potential pollution source (septic tank, abandoned well, feed lot, etc.)? >1,000 ft. from Septic system (identify source).

PROPOSED USE:
☐ Domestic/Stock ☐ Municipal ☐ Business ☐ Test Holes
☐ Irrigation ☐ Industrial ☐ Institutional ☒ Monitoring well

METHOD OF DRILLING: DHH

CASING DATA: ☒ Steel ☒ Plastic ☐ Other

If other describe

PIPEWEIGHT	DIAMETER	FROM	TO	HOLE DIAMETER
24 LB/FT	8 5/8 IN	+3 FT	17 FT	12 ¼ IN
SDR-17 LB/FT	4½ IN	+3 FT	63 FT	7 7/8 IN
LB/FT	IN	FT	FT	IN

GROUTING DATA

Grout Type	No. of Sacks	Grout Weight	From	To
Cement	6	12.5 lb./gal	0 ft.	45 ft.
Cement	6	15 lb./gal	0 ft.	17 ft.

Describe grouting procedure: grouted through tremie line

SCREEN: ☒ Perforated pipe ☐ Manufactured

Diameter 4½ IN Length 8 FEET

Material PVC

Slot Size .025" Set From 63 Feet to 55 Feet

Other information: filter pack (pea gravel) from 63 - 50

WAS A PACKER OR SEAL USED? ☒ YES ☐ NO

If so, what material? bentonite

Describe packer(s) and location? 45 - 50

DISINFECTION: Was well disinfected upon completion?
___ YES, How:
X NO, Why Not?

Laboratory sent to for water quality analysis

hand sampled by Owner

STATIC WATER LEVEL 50 Feet

If flowing: closed in pressure ___ PSI

GPM flow ___ through ___ inch pipe

Controlled by ☐ Valve ☐ Reducers ☐ Other

Reduced Flowrate ___ GPM

Can well be completely shut in?

WELL TEST DATA:

☐ Pumped Describe:
☐ Bailed air developed
☐ Other

Pumping Level Below Land Surface

63 ft. After 1 Hrs. pumped ½ GPM

___ ft. After ___ Hrs. pumped ___ GPM

If pump installed, pump rate ___ GPM

REMARKS

This well was drilled under license # 331

And this report is true and accurate.

Drilling firm: Taylor Drilling Co.

Signature of License Representative: Rick Taylor

Signature of Well Owner or Equitable Property Holder: Robert A. Walter

Date: 12/16/09

Railroad MW

SOUTH DAKOTA WATER WELL COMPLETION REPORT

07-92

Location NE ¼ SW ¼ Sec 1 Twp 4N Rg 2E

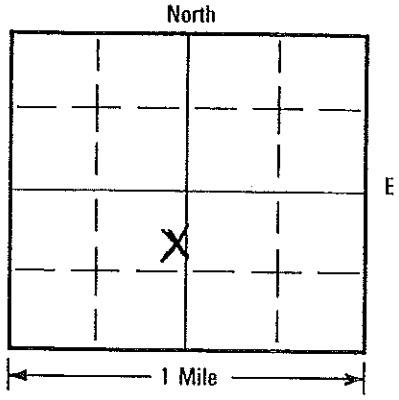
County Lawrence

Please mark well location with an "X"

MW # 2
@ Terry Peak

Well Completion Date

11-24-09



LOCATION:
Distance from nearest potential pollution source (septic tank, abandoned well, feed lot, etc.)? >1,000 ft. from Surface Mine (identify source).

PROPOSED USE:
☐ Domestic/Stock ☐ Municipal ☐ Business ☐ Test Holes
☐ Irrigation ☐ Industrial ☐ Institutional ☒ Monitoring well

METHOD OF DRILLING:
DHH

CASING DATA: ☒ Steel ☒ Plastic ☐ Other
If other describe

PIPEWEIGHT	DIAMETER	FROM	TO	HOLE DIAMETER
24 LB/FT	8 5/8 IN	+3 FT	20 FT	12 1/4 IN
SDR-17 LB/FT	4½ IN	+3 FT	370 FT	7 7/8 IN
LB/FT	IN	FT	FT	IN

GROUTING DATA

Grout Type	No. of Sacks	Grout Weight	From	To
Cement	39	12.5 lb./gal	0 ft.	260 ft.
Cement	5	15 lb./gal	0 ft.	17 ft.

Describe grouting procedure grouted through tremie line

SCREEN: ☒ Perforated pipe ☐ Manufactured
Diameter 4½ IN Length 80 FEET
Material PVC
Slot Size .025" Set From 370 Feet to 290 Feet
Other information filter pack (pea gravel) from 370 - 265

WAS A PACKER OR SEAL USED? ☒ YES ☐ NO
If so, what material? bentonite
Describe packer(s) and location? 375-380 + 260-265

DISINFECTION: Was well disinfected upon completion?
YES, How:
Laboratory sent to for water quality analysis X NO, Why Not? Monitor Well
no pump hand bailer sampled by owner

Well Owner:
Business Name: Wharf Resources
Address: HC 37, PO Box 811
Lead, SD 57754

WELL LOG:

FORMATION	DEPTH FROM	DEPTH TO
porphyry white to light gray some oxid.	0	230
Shale brown, green, gray	230	320
Dolomite	320	340
Heavily altered dk red to black	340	364
Quartzite	364	371
Schist lt. green	371	399
Schist gray	399	447
Schist graphitic	447	510

STATIC WATER LEVEL 287 Fee
If flowing: closed in pressure PS
GPM flow through inch pip
Controlled by ☐ Valve ☐ Reducers ☐ Other
Reduced Flowrate GPM
Can well be completely shut in?

WELL TEST DATA:
☐ Pumped Describe:
☐ Bailed air developed
☐ Other
Pumping Level Below Land Surface
370 ft. After 6 Hrs. pumped 1½ GPM
ft. After Hrs. pumped GPM
If pump installed, pump rate GPM

REMARKS

This well was drilled under license # 331
And this report is true and accurate.
Drilling firm Taylor Drilling Co.
Signature of License Representative: Ralph Taylor
Signature of Well Owner or Equitable Property Holder: Bruce A. Waterbury
Date: 12/16/09

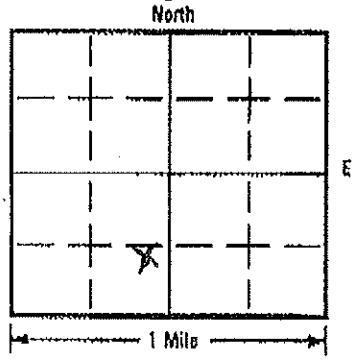
SOUTH DAKOTA WATER WELL COMPLETION REPORT

07-92

Location ____ ¼ ____ ¼ Sec 36 Twp 5 N Rg 2 E

County: Lawrence

Please mark well location with an "X"



Well Completion Date: 2-24-10

Well Owner: Wharf Resources

Business Name:

Address: HC 37 Box 811
Lead SD 57754

WELL LOG:

FORMATION	DEPTH FROM	DEPTH TO
silt, clay, cobbles light brown	0	3
schist black to grey	3	250

LOCATION:
Distance from nearest potential pollution source (septic tank, abandoned well, feed lot, etc.)? >1000 ft. from anything (identify source).

PROPOSED USE:
☐ Domestic/Stock ☐ Municipal ☐ Business ☐ Test Holes
☐ Irrigation ☐ Industrial ☐ Institutional ☒ Monitoring well

METHOD OF DRILLING: Air Rotary

CASING DATA: ☒ Steel ☒ Plastic ☐ Other

If other describe

PIPEWEIGHT	DIAMETER	FROM	TO	HOLE DIAMETER
24 LB/FT	8 5/8 IN	0 FT	14 FT	12 1/4 IN
SDR 17 LB/FT	4½ IN	0 FT	250 FT	7 7/8 IN
LB/FT	IN	FT	FT	IN

GROUTING DATA

Grout Type	No. of Sacks	Grout Weight	From	To
cement	8	15 lb./gal	0 ft.	14 ft.
cement	29	12.5 lb./gal	0 ft.	154 ft.

Describe grouting procedure: pressure grouted through Tremie Line

SCREEN: ☒ Perforated pipe ☐ Manufactured

Diameter 4½ IN Length 80 FEET

Material PVC SDR 17

Slot Size .025 Set From 170 Feet to 250 Feet

Other information

WAS A PACKER OR SEAL USED? ☒ YES ☐ NO

If so, what material? bentonite

Describe packer(s) and location? 154 - 160

DISINFECTION: Was well disinfected upon completion?

____ YES, How:

Laboratory sent to for water quality analysis

X NO, Why Not? Dry hole

STATIC WATER LEVEL — Feet

If flowing: closed in pressure ____ PSI

GPM flow ____ through ____ inch pipe

Controlled by ☐ Valve ☐ Reducers ☐ Other

Reduced Flowrate ____ GPM

Can well be completely shut in?

WELL TEST DATA:

☐ Pumped Describe: no water
☐ Bailed encountered
☐ Other

Pumping Level Below Land Surface

____ ft. After ____ Hrs. pumped ____ GPM

____ ft. After ____ Hrs. pumped ____ GPM

If pump installed, pump rate ____ GPM

REMARKS

This well was drilled under license # 331

And this report is true and accurate.

Drilling firm: Taylor Drilling Co.

Signature of License Representative: [signature]

Signature of Well Owner or Equitable Property Holder

Date

APPENDIX D

SAMPLING METHODS

WATER SAMPLING PROTOCOL FOR WHARF RESOURCES AND GOLDEN REWARD MINING COMPANIES

Preparation:

1. Always take the following equipment:
   - Bottles (Clean, laboratory supplied, the proper size and number)
   - Coolers w/ ice or snow
   - pH meters
   - Conductivity meters
   - Temperature meters
   - Water Level Indicator
   - Flow Meter
   - Tape Measure
   - Watch
   - Field Book
   - Pen
   - Felt Tip Marker
   - Keys for Well Cap Locks
   - Lubricant for Locks
   - Bailer
   - Bottle of Deionized Water
   - Waterproof Gloves
   - Two-Way Radio

2. Take the following equipment when weather conditions and vehicle capacity allow:
   - Paper Towels
   - Bottle Labels
   - Water Filter Barrel and Filters
   - Air Pump (Foot Pump)
   - Chain-of-Custody Forms
   - Sampling List Forms
   - Appropriate Preservatives
   - Portable Flume

3. Calibrate the pH and conductivity meters each morning prior to sampling. Please refer to calibration manuals supplied with the meters.

4. If sampling at the Surface Water Discharge Compliance Points or Outfalls and if hypochlorite is being utilized and the treated water is being discharged and flowing past any Compliance Point or Outfall to be sampled, check the calibration of the chlorine meter and take the kit with you.

Surface Water and Surface Water Discharge Permit (SWD) Sampling:

1. Always start at the furtherst downstream location and work your way upstream.

2. Record in field book sample location, date, and sample code (if using one).

3. Check the area around the surface site for any changes from nature or vandalism. Record any changes in the field book. In case of vandalism, report to supervisor or department head.

4. SWD: Take air temperature and record in field book.

5. SWD: Observe the sky conditions and record in field book. (cloudy, clear, etc.)

6. SWD: Observe wind conditions and record in field book. (calm, 0-5 mph, steady, gusty, etc.)

7. SWD: Observe is there is a visible sheen on the water and record in field book.

8. SWD: Observe the turbidity and record in the field book.

9. SWD: Record in the field book the precipitation conditions for the past 24 hours.

10. SWD: Observe the flow conditions and record in the field book. (high, low, average, etc.)

11. SWD: If hypochlorite is being utilized and the treated water is being discharged and flowing past this site, analyze a sample of the water for Total Residual Chlorine and record in field book. (Use the instructions included in the kit.)

12. Label the sample bottles with a permanent marker. List:
    a. Location
    b. Site Name or Code Number
    c. Date
    d. Time

13. Triple rinse all sample bottles with sample solution. To do this:
    a. partially fill the bottles
    b. replace the cap and shake bottle vigorously
    c. remove the lid and pour the water out
    d. repeat steps a. through c.
    e. repeat steps a. through c. again
    f. once the bottles and caps are rinsed, be careful not to touch the inside of the bottles and caps, or the tops of the bottles where the caps screw on

14. Take the pH of the sample solution and record in field book.

15. Take conductivity of the sample solution and record in the field book.

16.. Take temperature of the sample solution and record in the field book.

17. Collect sample in the rinsed bottles within the same minute and cap immediately.
    a. If safe, collect the sample from the middle of the stream. If unsafe, collect the sample while standing on the bank and reach out into the stream.
    b. Collect the sample facing upstream, so that the sample entering the bottle has not been influenced by any of your actions.
    c. Plunge the bottle to just below the surface of the water and allow to fill.
    d. Do not stir up sediment from the stream bottom when sampling.

18. Once the samples are obtained, immediately place them in an iced cooler.

19. Record the time of sampling in the field book.

20. Use the flow meter or portable flume to obtain flow according to its respective instruction manual.

21. Record the flow measurements in the field book.

22. Refer to section "**Sample Preparation**" below.

Well Sampling:

1. Record in field book sample location, date, and sample code (if using one).

2. Check the well casing, cap, lock, and surrounding area for any changes from nature or vandalism. Record any changes in the field book. In case of vandalism, report to supervisor or department head.

3. Remove the lock from the well cap and lubricate - if it was hard to open.

4. Measure the water level in the well using the water level indicator.
   a. Turn on the water level indicator
   b. Check the batteries and make sure both the light and buzzer on the indicator are working by pressing the test button.
   c. Lower in the probe down the well until the light turns on and the buzzer sounds.
   d. At that point, measure the depth to water to the nearest 0.01 feet.
   e. Measure to the point marked on the well casing.
   f. Turn the indicator off.
   g. Reel the tape and probe in, wiping it off at the same time.

5. Record the water level in the field book.

6. Label the sample bottles with a permanent marker. List:
   a. Location
   b. Site Name or Code Number
   c. Date
   d. Time

If there is a pump:

7. Connect the well plug to the generator or to the cord connected to the generator.

8. Turn the generator on and fully choke the generator.

9. Pull on the pull rope until the generator starts. Once it is warmed up, shut the choke off.

10. Flip the power switch on the generator to "ON" to supply power to the pump.

11. Note the time when water starts to flow from the well.

12. When water starts flowing from the well, triple rinse all sample bottles with sample solution.
    a. partially fill the bottles
    b. replace the cap and shake bottle vigorously
    c. remove the lid and pour the water out
    d. repeat steps a. through c.
    e. repeat steps a. through c. again

13. *Calculate amount of time to purge well of three well volumes and purge well for that amount of time:*
    Time how long it takes in seconds to fill the 500 ml bottle
    500 ml ÷ 3785.3 = 0.132 gallons of water
    seconds ÷ 60 = minutes
    0.132 gallons of water ÷ minutes = Flow rate from the well in gallons per minute
    Total Well Depth in feet – Water Level in feet = Column of water in feet
    Diameter of the well casing in inches ÷ 24 = Radius of well casing in feet
    Volume of well = Column of water in ft. x 3.14 x radius of well casing in ft. x radius of well casing in ft.
    3 Well Volumes = Volume of well x 3
    Gallons of water to purge = 3 Well Volumes x 7.48
    Purge time in minutes = Gallons of water to purge ÷ Flow rate from the well in gallons per minute

Or

13. *Take a pH reading from the water purging from the well every 2 to 3 minutes.*
    When three consecutive readings stabilize (+/- 0.5 units), water sampling may commence.

14. When the well is purged, sampling may commence.

If there is a hand pump:

15. *Calculate amount of time to purge well of three well volumes and purge well for that amount of time:*
    Time how long it takes in seconds to fill the 500 ml bottle
    500 ml ÷ 3785.3 = 0.132 gallons of water
    seconds ÷ 60 = minutes
    0.132 gallons of water ÷ minutes = Flow rate from the well in gallons per minute
    Total Well Depth in feet – Water Level in feet = Column of water in feet
    Diameter of the well casing in inches ÷ 24 = Radius of well casing in feet
    Volume of well = Column of water in ft. x 3.14 x radius of well casing in ft. x radius of well casing in ft.
    3 Well Volumes = Volume of well x 3
    Gallons of water to purge = 3 Well Volumes x 7.48
    Purge time in minutes = Gallons of water to purge ÷ Flow rate from the well in gallons per minute

Or

15. *Take a pH reading from the water purging from the well every 2 to 3 minutes during pumping.*
    When three consecutive readings stabilize (+/- 0.5 units), water sampling may commence.

16. Start hand pumping the well.

17. When water starts flowing from the well, triple rinse all sample bottles with sample solution.
    a. partially fill the bottles
    b. replace the cap and shake bottle vigorously
    c. remove the lid and pour the water out
    d. repeat steps a. through c.
    e. repeat steps a. through c. again
    f. once the bottles and caps are rinsed, be careful not to touch the inside of the bottles and caps, or the tops of the bottles where the caps screw on

18. Once the well is purged, sampling may commence.

If there is no pump (there should be a dedicated bailer at the well – if not obtain one):

19. *Calculate amount of time to purge well of three well volumes and purge well for that amount of time:*
    Drop the bailer down the well and determine the typical amount of water the bailer holds.
    Water in bailer in ml ÷ 3785.3 = gallons of water per bailer
    Total Well Depth in feet – Water Level in feet = Column of water in feet
    Diameter of the well casing in inches ÷ 24 = Radius of well casing in feet
    Volume of well = Column of water in ft. x 3.14 x radius of well casing in ft. x radius of well casing in ft.
    3 Well Volumes = Volume of well x 3
    Gallons of water to purge = 3 Well Volumes x 7.48
    Number of bailers of water to Purge = Gallons of water to purge ÷ Gallons of water per bailer

Or

19. *Take a pH reading from the water purging from the well every 2 to 3 minutes during pumping. When three consecutive readings stabilize (+/- 0.5 units), water sampling may commence.*

20. Start bailing the well.

21. When water starts flowing from the well, triple rinse all sample bottles with sample solution.
    a. partially fill the bottles
    b. replace the cap and shake bottle vigorously
    c. remove the lid and pour the water out
    d. repeat steps a. through c.
    e. repeat steps a. through c. again
    f. once the bottles and caps are rinsed, be careful not to touch the inside of the bottles and caps, or the tops of the bottles where the caps screw on

22. Once the well is purged, sampling may commence.

Commence Sampling:

23. Take the pH of the sample solution and record in field book.

24. Take conductivity of the sample solution and record in the field book.

25. Take temperature of the sample solution and record in the field book.

26. Collect sample in the rinsed bottles and cap immediately.

27. Once the samples are obtained, immediately place them in an iced cooler.

28. Record the time of sampling in the field book.

29. Replace the cap and lock on the well. If there is a marker, such as rebar, to indicate the location of the well (in case of deep snow), remember to replace it.

30. Refer to section "**Sample Preparation**" below.

Sample Preparation:

If the weather conditions and vehicle capacity (e.g.: snowmobile) do not allow all of the equipment to be carried, please perform the following at the water quality lab when coming in to the mine site at noon for lunch and again when coming in to the mine site at the end of the day.

If the weather conditions and vehicle capacity allow the carrying of all of the equipment, please perform the following immediately after obtaining the sample:

1. Fill out the bottle labels with:
   Sample Location (Wharf Resources or Golden Reward)
   Site Name (Well or Surface Site)
   Date
   Time

2. Place labels on the appropriate bottles.

3. Filter the sampled collected for dissolved metals.
    a. Triple rinse the filter barrel with deionized water or sample water if available.
    b. Place the water for the dissolved metals in the filter barrel.
    c. Place the filter membrane over the opening of the bottle, making sure the O-ring is in place.
    d. Place the screen over the filter membrane.
    e. Place the filter barrel bottom on and tighten the wing nuts.
    f. Flip the barrel over and place a clean sample bottle under the spigot.
    g. Attach the coupling from the hose of the foot pump to the top of the filter barrel.
    h. Pump the foot pump until water exits the spigot at the bottom of the filter barrel.
    i. Allow the sample bottle to fill, pumping the foot pump only when necessary to keep the flow going.

4. Preserve the sample bottles.
    a. One vial nitric acid preservative for total metals, total recoverable metals, and dissolved metals when the sample bottle is 250 ml.
    b. One vial sulfuric acid preservative for nutrients when the sample bottle is 250 ml.
    c. One vial sodium hydroxide preservative for cyanides when the sample bottle is 125 ml.

5. Place the sample bottles in the refrigerator until they are packaged for shipping.

6. When all samples have been filtered for the day, clean the filter barrel by triple rinsing it with deionized water.

Shipping to the Laboratory:

1. Complete the laboratory requisition forms (parameter list, chain-of-custody).
    a. Use the Monthly Schedule Parameter List and Forms supplied to you by the Environmental Coordinator to fill out the parameter list.
    b. Use the Chain-of-Custody forms supplied to you by the Environmental Coordinator and be sure to sign and date the Chain-of-Custody.
    c. Make photocopies of both the completed parameter list and Chain-of-Custody for future reference and give them to the Environmental Coordinator.

2. Pack the samples upright in a cooler with ice to keep them cool.

3. Enclose the original parameter list and Chain-of-Custody in a plastic bag and place them in the cooler on top of the water sample bottles.

4. Seal the cooler with heavy duty packing tape.

5. Attach a label prominently displaying the destination.

6. Take the bottles to the warehouse for shipping with the Wharf Resources' Parts Runner on Monday and Thursday mornings prior to 9:00 a.m.

APPENDIX E

WATER-QUALITY RESULTS BY SITE

WELL HORSESHOE MONITORING WELL
2009–2010

Table E-1. Horseshoe MW Water Quality 2009 (Page 1 of 2)

Parameter	12/17/2009
Alkalinity (mg/L)	284
Alkalinity Hydroxide (mg/L)	–
Aluminum (Al),Dissolved (mg/L)	0.0866
Anion - Cation Balance (%)	4.76
Anions (meq/L)	5.74
Antimony (Sb),Dissolved (mg/L)	<0.005
Arsenic (As),Dissolved (mg/L)	<0.005
Barium (Ba),Dissolved (mg/L)	0.305
Beryllium (Be),Dissolved (mg/L)	<0.001
Bicarbonate (mg/L)	135
Boron (B),Total (mg/L)	<0.02
Cadmium (Cd),Dissolved (mg/L)	<0.001
Calcium (Ca),Dissolved (mg/L)	104
Carbonate (mg/L)	104
Cations (meq/L)	6.31
Chloride (Cl-) (mg/L)	<0.5
Chromium (Cr),Dissolved (mg/L)	0.0024
Cobalt (Co),Dissolved (mg/L)	<0.001
Copper (Cu),Dissolved (mg/L)	<0.005
Cyanide, Free (mg/L)	<0.01
Cyanide, Total (mg/L)	<0.01
Cyanide, WAD (mg/L)	<0.01
Electrical Conductivity (µmhos/cm)	568
Field Conductivity (µmhos/cm)	604
Field Depth (ft)	45.9
Field ORP (mV)	–
Field Oxygen (O2) (mg/L)	–
Field pH (SU)	11.2

Table E-1. Horseshoe MW Water Quality 2009
(Page 2 of 2)

Parameter	12/17/2009
Field Temperature (° C)	6.1
Fluoride (mg/L)	0.917
Gold (Au),Dissolved (mg/L)	<0.001
Hardness (mg/L)	278
Iron (Fe),Dissolved (mg/L)	<0.05
Lead (Pb),Dissolved (mg/L)	<0.001
Lithium (Li),Dissolved (mg/L)	–
Lithium (Li),Total (mg/L)	–
Magnesium (Mg),Dissolved (mg/L)	4.47
Manganese (Mn),Dissolved (mg/L)	<0.01
Mercury (Hg),Total (mg/L)	<0.0002
Molybdenum (Mo),Dissolved (mg/L)	0.022
Nickel (Ni),Dissolved (mg/L)	<0.005
Nitrogen, Ammonia (NH3) (mg/L)	0.066
Nitrogen, Nitrate (NO3) (mg/L)	0.202
Nitrogen, Nitrite (NO2) (mg/L)	<0.05
pH (SU)	11.1
Potassium (K),Dissolved (mg/L)	9.71
Selenium (Se),Dissolved (mg/L)	<0.005
Silicon (Si),Dissolved (mg/L)	3.73
Silver (Ag),Dissolved (mg/L)	<0.001
Sodium (Na),Dissolved (mg/L)	11.6
Strontium (Sr),Dissolved (mg/L)	0.927
Sulfate (SO4) (mg/L)	<10
Total Dissolved Solids (mg/L)	218
Total Suspended Solids (mg/L)	376
Turbidity (NTU)	–
Vanadium (V),Dissolved (mg/L)	<0.005
Zinc (Zn),Dissolved (mg/L)	<0.05

Table E-2. Horseshoe MW Water Quality 2010 (Page 1 of 3)

Parameter	1/21/2010	2/9/2010	3/16/2010	4/27/2010	5/19/2010	6/17/2010	7/28/2010	8/25/2010	9/24/2010
Alkalinity (mg/L)	235	243	104	53.9	90	63.3	52.2	48	48.9
Alkalinity Hydroxide (mg/L)	3.4	29.3				5.26	7.21	5.44	–
Aluminum (Al),Dissolved (mg/L)	0.0394	0.0708	0.0337	0.0247	0.0537	0.0288	0.026	0.037	0.0527
Anion - Cation Balance (%)	1.8	0.462	6.1	–6.34	–7.14	–2.63	–0.713	–0.676	2.01
Anions (meq/L)	4.71	5.01	2.31	1.12	1.86	1.32	1.11	1.03	1.17
Antimony (Sb),Dissolved (mg/L)	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Arsenic (As),Dissolved (mg/L)	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Barium (Ba),Dissolved (mg/L)	0.32	0.263	0.175	0.181	0.168	0.171	0.17	0.163	0.188
Beryllium (Be),Dissolved (mg/L)	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Bicarbonate (mg/L)	<10	<10	58.6	33.6	61	<10	0	0	22.1
Boron (B),Total (mg/L)	<0.02	0.0239	<0.02	<0.02	0.038	<0.02	<0.02	0.0252	<0.02
Cadmium (Cd),Dissolved (mg/L)	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Calcium (Ca),Dissolved (mg/L)	83.5	93.3	41.2	8.65	14.3	8.18	6.15	4.26	11.9
Carbonate (mg/L)	135	94.2	33.6	15.8	24	28.7	18.6	19.2	18.5
Cations (meq/L)	4.88	5.05	2.61	0.988	1.61	1.25	1.09	1.01	1.22
Chloride (Cl-) (mg/L)	<0.5	3	<0.5	0.75	1	0.75	1.38	1.38	1.59
Chromium (Cr),Dissolved (mg/L)	0.0029	0.00308	0.00187	0.00202	0.00232	0.00279	0.00264	0.00254	0.00216
Cobalt (Co),Dissolved (mg/L)	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Copper (Cu),Dissolved (mg/L)	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Cyanide, Free (mg/L)	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Cyanide, Total (mg/L)	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Cyanide, WAD (mg/L)	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Electrical Conductivity (µmhos/cm)	659	834	167	101	115	190	182	165	107

Table E-2. Horseshoe MW Water Quality 2010 (Page 2 of 3)

Parameter	1/21/2010	2/9/2010	3/16/2010	4/27/2010	5/19/2010	6/17/2010	7/28/2010	8/25/2010	9/24/2010
Field Conductivity (µmhos/cm)	860	590	270	96.2	113	130	126	121	98
Field Depth (ft)	46.6	46.4	47.5	46.1	44.5	40	38.9	38.3	41.6
Field ORP (mV)		<18			13		–	84	61
Field Oxygen (O2) (mg/L)		3.44			3.65		–	4.24	3.16
Field pH (SU)	12.4	11.6	11.5	10.5	10.8	11.1	11.2	11.2	10.4
Field Temperature (° C)	6.6	6.5	7.1	8	7.4	8	8.6	8.6	8.4
Fluoride (mg/L)		1.06	0.265	0.247	0.282	0.402	0.345	0.384	0.314
Gold (Au),Dissolved (mg/L)	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0.082	<0.001	<0.001
Hardness (mg/L)	218	235	33.7	30.6	43.3	24.3	18.2	14.3	36.2
Iron (Fe),Dissolved (mg/L)	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Lead (Pb),Dissolved (mg/L)	<0.001	<0.001	<0.001	<0.001	0.00145	<0.001	<0.001	<0.001	<0.001
Lithium (Li),Dissolved (mg/L)	0.017	0.0085	0.0058	–	0.0115	0.0191	0.0185	0.0214	0.013
Lithium (Li),Total (mg/L)	–	–	–	0.007	–	–	–	–	–
Magnesium (Mg),Dissolved (mg/L)	2.33	0.57	1.2	2.18	1.84	0.93	0.695	0.9	1.58
Manganese (Mn),Dissolved (mg/L)	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Mercury (Hg),Total (mg/L)	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Molybdenum (Mo),Dissolved (mg/L)	0.0049	0.0337	0.00156	0.00265	0.00327	0.00474	0.0032	0.00381	0.00278
Nickel (Ni),Dissolved (mg/L)	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Nitrogen, Ammonia (NH3) (mg/L)	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Nitrogen, Nitrate (NO3) (mg/L)	0.157	0.108	0.114	0.149	0.194	0.169	0.127	0.12	0.114
Nitrogen, Nitrite (NO2) (mg/L)	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
pH (SU)	11.5	11.6	10.3	9.7	9.95	10.7	10.6	10.5	9.82
Potassium (K),Dissolved (mg/L)	6.92	3.95	4.98	4.22	6.98	12.8	11.7	10.2	7.24

Table E-2. Horseshoe MW Water Quality 2010 (Page 3 of 3)

Parameter	1/21/2010	2/9/2010	3/16/2010	4/27/2010	5/19/2010	6/17/2010	7/28/2010	8/25/2010	9/24/2010
Selenium (Se),Dissolved (mg/L)	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Silicon (Si),Dissolved (mg/L)	3.41	6.38	8.41	8.04	8.77	8.64	7.97	8	8.02
Silver (Ag),Dissolved (mg/L)	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Sodium (Na),Dissolved (mg/L)	7.9	5.76	7.54	6.19	13	10.1	9.89	10.7	7.1
Strontium (Sr),Dissolved (mg/L)	0.746	0.624	0.259	0.203	0.196	0.229	0.224	0.198	0.179
Sulfate (SO4) (mg/L)	<10	<10	<10	<10	<10	<10	<10	<10	6.63
Total Dissolved Solids (mg/L)	183	208	70	74	68	60	76	59	71
Total Suspended Solids (mg/L)	104	110	75	54	74	42	18	<10	70
Turbidity (NTU)	50	65	45	31	45	28	12	4.3	37
Vanadium (V),Dissolved (mg/L)	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	12	4.3	37
Zinc (Zn),Dissolved (mg/L)	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.005	<0.005	<0.005

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Table E-3. Nevada Gulch MW Water Quality 2009 (Page 1 of 3)

Parameter	11/10/2009	12/16/2009
Alkalinity (mg/L)	49.7	37.9
Aluminum (Al),Dissolved (mg/L)	–	0.411
Aluminum (Al),Total (mg/L)	0.0534	–
Anion - Cation Balance (%)	–3.93	–2.09
Anions (meq/L)	2.63	2.26
Antimony (Sb),Dissolved (mg/L)	–	<0.005
Antimony (Sb),Total (mg/L)	<0.005	–
Arsenic (As),Dissolved (mg/L)	–	0.00608
Arsenic (As),Total (mg/L)	<0.005	–
Barium (Ba),Dissolved (mg/L)	–	0.0252
Barium (Ba),Total (mg/L)	0.0272	–
Beryllium (Be),Dissolved (mg/L)	–	0.00202
Beryllium (Be),Total (mg/L)	<0.001	–
Bicarbonate (mg/L)	60.6	46.2
Boron (B),Total (mg/L)	<0.02	<0.02
Cadmium (Cd),Dissolved (mg/L)	–	<0.001
Cadmium (Cd),Total (mg/L)	<0.001	–
Calcium (Ca),Dissolved (mg/L)	<1	19.7
Carbonate (mg/L)	0	0
Cations (meq/L)	2.43	2.16
Chloride (Cl-) (mg/L)	10.5	9.75
Chromium (Cr),Dissolved (mg/L)	–	<0.001
Chromium (Cr),Total (mg/L)	<0.001	–
Cobalt (Co),Dissolved (mg/L)	–	0.0077
Cobalt (Co),Total (mg/L)	<0.001	–
Copper (Cu),Dissolved (mg/L)	–	<0.005
Copper (Cu),Total (mg/L)	0.00737	–
Cyanide, Free (mg/L)	<0.01	<0.01

Table E-3. Nevada Gulch MW Water Quality 2009 (Page 2 of 3)

Parameter	11/10/2009	12/16/2009
Cyanide, Total (mg/L)	<0.01	<0.01
Cyanide, WAD (mg/L)	<0.01	<0.01
Electrical Conductivity (µmhos/cm)	278	259
Field Conductivity (µmhos/cm)	310	175
Field ORP (mV)	–	–
Field Oxygen (O2) (mg/L)	–	–
Field pH (SU)	6.9	6.59
Field Temperature (° C)	9.1	9.6
Fluoride (mg/L)	3.45	3.06
Gold (Au),Dissolved (mg/L)	–	<0.001
Gold (Au),Total (mg/L)	<0.001	–
Hardness (mg/L)	<5	82.5
Iron (Fe),Dissolved (mg/L)	–	4.55
Iron (Fe),Total (mg/L)	0.314	–
Lead (Pb),Dissolved (mg/L)	–	<0.001
Lead (Pb),Total (mg/L)	0.00128	–
Lithium (Li),Dissolved (mg/L)	–	–
Lithium (Li),Total (mg/L)	–	–
Magnesium (Mg),Dissolved (mg/L)	<0.5	8.1
Manganese (Mn),Dissolved (mg/L)	–	1.74
Manganese (Mn),Total (mg/L)	<0.01	–
Mercury (Hg),Total (mg/L)	<0.0002	<0.0002
Molybdenum (Mo),Dissolved (mg/L)	–	0.00123
Molybdenum (Mo),Total (mg/L)	0.0516	–
Nickel (Ni),Dissolved (mg/L)	–	0.0202
Nickel (Ni),Total (mg/L)	<0.005	–
Nitrogen, Ammonia (NH3) (mg/L)	<0.05	<0.05
Nitrogen, Nitrate (NO3) (mg/L)	<0.05	<0.05

Table E-3. Nevada Gulch MW Water Quality 2009 (Page 3 of 3)

Parameter	11/10/2009	12/16/2009
Nitrogen, Nitrite (NO2) (mg/L)	<0.05	<0.05
pH (SU)	7.08	6.9
Potassium (K),Dissolved (mg/L)	<0.5	7.8
Selenium (Se),Dissolved (mg/L)	–	<0.005
Selenium (Se),Total (mg/L)	<0.005	–
Silicon (Si),Dissolved (mg/L)	–	8.19
Silicon (Si),Total (mg/L)	14.1	–
Silver (Ag),Dissolved (mg/L)	–	<0.001
Silver (Ag),Total (mg/L)	<0.001	–
Sodium (Na),Dissolved (mg/L)	55.8	5.8
Strontium (Sr),Dissolved (mg/L)	–	0.147
Strontium (Sr),Total (mg/L)	0.00124	–
Sulfate (SO4) (mg/L)	55.3	51.1
Total Dissolved Solids (mg/L)	199	168
Total Suspended Solids (mg/L)	<10	<10
Turbidity (NTU)	0.35	1.9
Turbidity (NTU)	0.35	1.9
Vanadium (V),Dissolved (mg/L)	–	<0.005
Vanadium (V),Total (mg/L)	<0.005	–
Zinc (Zn),Dissolved (mg/L)	–	0.0919
Zinc (Zn),Total (mg/L)	<0.05	–

Table E-4. Nevada Gulch MW Water Quality 2010 (Page 1 of 4)

Parameter	1/21/2010	2/24/2010	3/17/2010	4/27/2010	5/19/2010	6/17/2010	7/28/2010	8/25/2010	9/24/2010
Alkalinity (mg/L)	28.5	31.5	21.5	50.9	50.9	38.8	32.9	37.7	39.6
Aluminum (Al),Dissolved (mg/L)	0.572	0.574	0.534	0.186	0.0351	0.0441	1.17	0.0398	0.128
Anion - Cation Balance (%)	–1.83	–4.73	–0.45	–4.3	2.87	1.43	0.0244	0.317	–2.09
Anions (meq/L)	2.21	2.32	2.23	2.46	2.93	2.65	2.4	2.61	2.69
Antimony (Sb),Dissolved (mg/L)	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.0146	<0.005	<0.005
Antimony (Sb),Total (mg/L)	–	–	–	–	–	–	–	–	–
Arsenic (As),Dissolved (mg/L)	<0.005	0.00501	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Barium (Ba),Dissolved (mg/L)	0.0274	0.022	0.0178	0.0212	<0.005	<0.005	–	–	–
Barium (Ba),Total (mg/L)	–	–	–	–	–	–	0.00512	<0.005	<0.005
Beryllium (Be),Dissolved (mg/L)	0.00177	0.00224	<0.001	0.0018	<0.001	<0.001	–	–	–
Beryllium (Be),Total (mg/L)	–	–	–	–	–	–	0.0048	<0.001	0.00111
Bicarbonate (mg/L)	34.8	38.5	26.3	62.1	62	47.3	–	–	–
Boron (B),Total (mg/L)	<0.02	<0.02	<0.02	<0.02	0.0463	<0.02	40.2	46	48.3
Cadmium (Cd),Dissolved (mg/L)	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.02	<0.02	<0.02
Cadmium (Cd),Total (mg/L)	–	–	–	–	–	–	<0.001	<0.001	<0.001
Calcium (Ca),Dissolved (mg/L)	19.3	19.7	23.4	19.4	<1	<1	–	–	–
Carbonate (mg/L)	0	0	0	0	0	0	–	–	–
Cations (meq/L)	2.13	2.11	2.21	2.26	3.1	2.72	<1	<1	<1
Chloride (Cl-) (mg/L)	10.5	13.3	15.3	6.75	21	17.5	0	0	0
Chromium (Cr),Dissolved (mg/L)	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	2.4	2.63	2.58
Chromium (Cr),Total (mg/L)	–	–	–	–	–	–	15.4	16.8	19.3
Cobalt (Co),Dissolved (mg/L)	0.0101	0.0101	0.00939	0.00573	<0.001	<0.001	<0.001	<0.001	<0.001

Table E-4. Nevada Gulch MW Water Quality 2010 (Page 2 of 4)

Parameter	1/21/2010	2/24/2010	3/17/2010	4/27/2010	5/19/2010	6/17/2010	7/28/2010	8/25/2010	9/24/2010
Cobalt (Co),Total (mg/L)	–	–	–	–	–	–	–	–	–
Copper (Cu),Dissolved (mg/L)	<0.005	<0.005	<0.005	<0.005	0.069	0.113	–	–	–
Copper (Cu),Total (mg/L)	–	–	–	–	–	–	0.00289	<0.001	<0.001
Cyanide, Free (mg/L)	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	–	–	–
Cyanide, Total (mg/L)	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.103	0.0599	0.0627
Cyanide, WAD (mg/L)	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	–	–	–
Electrical Conductivity (µmhos/cm)	260	258	260	257	321	287	–	–	–
Field Conductivity (µmhos/cm)	280	280	280	189	224	196	<0.01	<0.01	<0.01
Field ORP (mV)	–	–	–	–	262	–	<0.01	<0.01	<0.01
Field Oxygen (O2) (mg/L)	–	–	–	–	2.9	–	<0.01	<0.01	<0.01
Field pH (SU)	6.43	6.63	6.4	7.31	7.46	6.88	279	284	292
Field Temperature (° C)	7.7	7.5	8.5	8.6	8.9	9.3	212	250	232
Fluoride (mg/L)	2.99	2.99	3.01	3.45	3.14	3.36	–	684	170
Gold (Au),Dissolved (mg/L)	<0.001	<0.001	<0.001	<0.001	<0.001	0.002	–	1.96	1.62
Gold (Au),Total (mg/L)	–	–	–	–	–	–	6.19	6.38	6.32
Hardness (mg/L)	82	81.1	75.7	84.6	<5	<5	11.8	10.2	10.3
Iron (Fe),Dissolved (mg/L)	6.33	5.56	6.02	3.37	0.243	0.248	2.62	3.06	3.04
Iron (Fe),Total (mg/L)	–	–	–	–	–	–	<0.001	<0.001	<0.001
Lead (Pb),Dissolved (mg/L)	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	–	–	–
Lead (Pb),Total (mg/L)	–	–	–	–	–	–	10.7	<5	<5
Lithium (Li),Dissolved (mg/L)	0.044	0.0468	0.0421	–	<0.002	0.0022	<0.05	0.209	<0.05
Lithium (Li),Total (mg/L)	–	–	–	0.0361	–	–	–	–	–

Table E-4. Nevada Gulch MW Water Quality 2010 (Page 3 of 4)

Parameter	1/21/2010	2/24/2010	3/17/2010	4/27/2010	5/19/2010	6/17/2010	7/28/2010	8/25/2010	9/24/2010
Magnesium (Mg),Dissolved (mg/L)	8.2	7.75	6.86	8.77	<0.5	<0.5	–	–	–
Manganese (Mn),Dissolved (mg/L)	1.76	1.66	1.74	1.64	<0.01	<0.01	0.00148	<0.001	<0.001
Mercury (Hg),Total (mg/L)	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	–	–	–
Molybdenum (Mo),Dissolved (mg/L)	0.00121	0.0012	0.00101	0.0016	0.00148	0.00111	0.0576	0.0151	0.0479
Molybdenum (Mo),Total (mg/L)	–	–	–	–	–	–	–	–	–
Nickel (Ni),Dissolved (mg/L)	0.0272	0.026	0.027	0.0152	<0.005	<0.005	2	<0.5	<0.5
Nickel (Ni),Total (mg/L)	–	–	–	–	–	–	0.171	<0.01	<0.01
Nitrogen, Ammonia (NH3) (mg/L)	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	–	–	–
Nitrogen, Nitrate (NO3) (mg/L)	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.0002	<0.0002	<0.0002
Nitrogen, Nitrite (NO2) (mg/L)	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.00282	0.0018	0.00133
pH (SU)	6.69	6.99	6.6	6.74	7.27	6.64	–	–	–
Potassium (K),Dissolved (mg/L)	6.61	6.25	6.56	6.12	<0.5	<0.5	0.00508	<0.005	<0.005
Selenium (Se),Dissolved (mg/L)	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	–	–	–
Silicon (Si),Dissolved (mg/L)	8.24	17.1	17.8	17.4	16.3	16.5	0.051	<0.05	<0.05
Silicon (Si),Total (mg/L)	–	–	–	–	–	–	<0.05	<0.05	<0.05
Silver (Ag),Dissolved (mg/L)	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.05	<0.05	<0.05
Silver (Ag),Total (mg/L)	–	–	–	–	–	–	6.07	6.5	6.66
Sodium (Na),Dissolved (mg/L)	5.88	6.3	5.67	8.07	71.3	62.6	30.7	0.651	0.699
Strontium (Sr),Dissolved (mg/L)	0.147	0.137	0.14	0.147	0.00197	0.00138	0.00643	<0.005	<0.005
Sulfate (SO4) (mg/L)	56.8	55.8	58.1	51.4	55.5	57.7	–	–	–
Total Dissolved Solids (mg/L)	173	187	187	177	204	175	17.3	16.7	16.8
Total Suspended Solids (mg/L)	<10	<10	<10	<10	<10	<10	–	–	–

Table E-4. Nevada Gulch MW Water Quality 2010 (Page 4 of 4)

Parameter	1/21/2010	2/24/2010	3/17/2010	4/27/2010	5/19/2010	6/17/2010	7/28/2010	8/25/2010	9/24/2010
Turbidity (NTU)	0.5	13	9.4	9.7	0.5	0.3	<0.001	<0.001	<0.001
Turbidity (NTU)	0.5	13	9.4	9.7	0.5	0.3	–	–	–
Vanadium (V),Dissolved (mg/L)	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	–	–	–
Vanadium (V),Total (mg/L)	–	–	–	–	–	–	33.2	60	58.9
Zinc (Zn),Dissolved (mg/L)	0.0605	0.0706	0.0903	<0.05	<0.05	<0.05	0.0123	0.00516	0.00277

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Table E-5. Foley Shaft Water Quality 2009 (Page 1 of 3)

Parameter	11/5/2009
Alkalinity (mg/L)	28
Aluminum (Al),Dissolved (mg/L)	–
Aluminum (Al),Total (mg/L)	1.55
Anion - Cation Balance (%)	–
Anions (meq/L)	–
Antimony (Sb),Dissolved (mg/L)	–
Antimony (Sb),Total (mg/L)	<0.005
Arsenic (As),Dissolved (mg/L)	–
Arsenic (As),Total (mg/L)	0.00913
Barium (Ba),Dissolved (mg/L)	–
Barium (Ba),Total (mg/L)	0.0486
Beryllium (Be),Dissolved (mg/L)	–
Beryllium (Be),Total (mg/L)	<0.001
Bicarbonate (mg/L)	34.1
Boron (B),Total (mg/L)	<0.02
Cadmium (Cd),Dissolved (mg/L)	–
Cadmium (Cd),Total (mg/L)	<0.001
Calcium (Ca),Dissolved (mg/L)	5.95
Carbonate (mg/L)	0
Cations (meq/L)	–
Chloride (Cl-) (mg/L)	<0.5
Chromium (Cr),Dissolved (mg/L)	–
Chromium (Cr),Total (mg/L)	0.0018
Cobalt (Co),Dissolved (mg/L)	–
Cobalt (Co),Total (mg/L)	<0.001
Copper (Cu),Dissolved (mg/L)	–
Copper (Cu),Total (mg/L)	<0.005
Cyanide, Free (mg/L)	<0.01

Table E-5. Foley Shaft Water Quality 2009 (Page 2 of 3)

Parameter	11/5/2009
Cyanide, Total (mg/L)	<0.01
Cyanide, WAD (mg/L)	<0.01
Electrical Conductivity (µmhos/cm)	62
Field Conductivity (µmhos/cm)	–
Field Depth (ft)	–
Field ORP (mV)	–
Field Oxygen (O2) (mg/L)	–
Field pH (SU)	–
Field Temperature (° C)	–
Fluoride (mg/L)	0.134
Gold (Au),Dissolved (mg/L)	–
Gold (Au),Total (mg/L)	<0.001
Hardness (mg/L)	18.8
Iron (Fe),Dissolved (mg/L)	–
Iron (Fe),Total (mg/L)	0.926
Lead (Pb),Dissolved (mg/L)	–
Lead (Pb),Total (mg/L)	0.00193
Lithium (Li),Dissolved (mg/L)	–
Magnesium (Mg),Dissolved (mg/L)	0.95
Manganese (Mn),Dissolved (mg/L)	–
Manganese (Mn),Total (mg/L)	0.018
Mercury (Hg),Total (mg/L)	<0.0002
Molybdenum (Mo),Dissolved (mg/L)	–
Molybdenum (Mo),Total (mg/L)	<0.001
Nickel (Ni),Dissolved (mg/L)	–
Nickel (Ni),Total (mg/L)	<0.005
Nitrogen, Ammonia (NH3) (mg/L)	<0.05
Nitrogen, Nitrate (NO3) (mg/L)	<0.05

Table E-5. Foley Shaft Water Quality 2009 (Page 3 of 3)

Parameter	11/5/2009
Nitrogen, Nitrite (NO2) (mg/L)	<0.05
pH (SU)	7.52
Potassium (K),Dissolved (mg/L)	–
Selenium (Se),Dissolved (mg/L)	–
Selenium (Se),Total (mg/L)	<0.005
Silicon (Si),Dissolved (mg/L)	–
Silicon (Si),Total (mg/L)	4.1
Silver (Ag),Dissolved (mg/L)	–
Silver (Ag),Total (mg/L)	<0.001
Sodium (Na),Dissolved (mg/L)	–
Strontium (Sr),Dissolved (mg/L)	–
Strontium (Sr),Total (mg/L)	0.0619
Sulfate (SO4) (mg/L)	<10
Total Dissolved Solids (mg/L)	41
Total Suspended Solids (mg/L)	<10
Turbidity (NTU)	12
Turbidity (NTU)	12
Vanadium (V),Dissolved (mg/L)	–
Vanadium (V),Total (mg/L)	<0.005
Zinc (Zn),Dissolved (mg/L)	–
Zinc (Zn),Total (mg/L)	<0.05

Table E-6. Foley Shaft Water Quality 2010 (Page 1 of 3)

Parameter	1/18/2010	2/9/2010	3/16/2010	4/12/2010	5/11/2010	6/17/2010	7/28/2010	8/31/2010	9/24/2010
Alkalinity (mg/L)	25.9	25.2	32.6	29.9	28.2	25.6	34.1	–	38.6
Aluminum (Al),Dissolved (mg/L)	0.389	0.236	0.37	2.64	3.32	3.13	0.634	0.86	0.83
Anion - Cation Balance (%)	–0.512	3.83	0.638	–1.12	0.707	2.36	4.25	–0.338	-0.00681
Anions (meq/L)	0.525	0.514	0.875	0.683	0.678	0.635	0.741	0.829	0.822
Antimony (Sb),Dissolved (mg/L)	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Arsenic (As),Dissolved (mg/L)	0.00542	<0.005	<0.005	0.0124	0.00993	0.0105	0.00842	0.00745	0.00646
Barium (Ba),Dissolved (mg/L)	0.0214	0.0263	0.0204	0.0354	0.0477	0.0301	0.0359	0.0383	0.0346
Beryllium (Be),Dissolved (mg/L)	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Bicarbonate (mg/L)	31.6	30.8	39.8	36.5	34.4	31.2	41.6	48	47.1
Boron (B),Total (mg/L)	<0.02	0.491	<0.02	<0.02	<0.02	<0.02	<0.02	0.0224	<0.02
Cadmium (Cd),Dissolved (mg/L)	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Calcium (Ca),Dissolved (mg/L)	5.24	5.66	8.08	6.52	7.19	6.3	9.28	9.41	9.39
Carbonate (mg/L)	<5	<5	<5	<5	<5	<5	<5	<5	<5
Cations (meq/L)	0.52	0.555	0.886	0.668	0.687	0.665	0.807	0.824	0.822
Chloride (Cl-) (mg/L)	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	1.62	1.13	1.43
Chromium (Cr),Dissolved (mg/L)	<0.001	<0.001	<0.001	0.00234	0.0027	0.00243	<0.001	<0.001	<0.001
Cobalt (Co),Dissolved (mg/L)	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Copper (Cu),Dissolved (mg/L)	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Cyanide, Free (mg/L)	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Cyanide, Total (mg/L)	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Cyanide, WAD (mg/L)	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Electrical Conductivity (µmhos/cm)	59.1	57.3	74.1	62	62.4	57.2	75.4	83.2	84.2

Table E-6. Foley Shaft Water Quality 2010 (Page 2 of 3)

Parameter	1/18/2010	2/9/2010	3/16/2010	4/12/2010	5/11/2010	6/17/2010	7/28/2010	8/31/2010	9/24/2010
Field Conductivity (µmhos/cm)	35.7	37	–	41	35	35.8	46	50.5	535
Field Depth (ft)	131	138	–	87.4	65.7	60.3	94.4	107	126
Field ORP (mV)	–	51	–	53	115	–	–	197	192
Field Oxygen (O2) (mg/L)	–	7.23	–	8.4	9.3	–	–	9.92	7.26
Field pH (SU)	7.11	6.98	–	6.93	7.19	6.71	6.55	6.63	6.55
Field Temperature (° C)	5.5	4.5	–	6.6	4.7	5.5	7.4	5.8	5.8
Fluoride (mg/L)	0.126	0.172	0.129	0.104	0.104	0.097	0.092	0.096	0.087
Gold (Au),Dissolved (mg/L)	<0.001	<0.001	<0.001	<0.001	<0.001	0.003	<0.001	<0.001	<0.001
Hardness (mg/L)	17.4	20	23.4	22.1	24.7	22.1	29.3	29.6	28.7
Iron (Fe),Dissolved (mg/L)	0.259	0.208	0.319	1.62	1.66	1.49	0.311	0.45	0.467
Lead (Pb),Dissolved (mg/L)	<0.001	<0.001	<0.001	0.00268	0.00559	0.00161	0.00286	0.0021	<0.001
Lithium (Li),Dissolved (mg/L)	0.00323	0.0031	<0.002	0.00226	0.0039	0.0038	<0.002	0.00418	<0.002
Magnesium (Mg),Dissolved (mg/L)	1.05	1.42	0.789	1.41	1.64	1.55	1.5	1.47	1.27
Manganese (Mn),Dissolved (mg/L)	<0.01	<0.01	<0.01	0.0285	0.0654	0.0199	0.0285	0.0274	0.0173
Mercury (Hg),Total (mg/L)	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Molybdenum (Mo),Dissolved (mg/L)	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Nickel (Ni),Dissolved (mg/L)	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Nitrogen, Ammonia (NH3) (mg/L)	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Nitrogen, Nitrate (NO3) (mg/L)	<0.05	<0.05	0.103	0.072	0.056	0.195	0.12	0.07	0.063
Nitrogen, Nitrite (NO2) (mg/L)	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
pH (SU)	6.96	7.17	7.54	7.34	7.04	6.43	6.65	6.89	6.79
Potassium (K),Dissolved (mg/L)	1.05	0.653	0.969	1.43	1.56	1.7	1.55	1.54	1.18

Table E-6. Foley Shaft Water Quality 2010 (Page 3 of 3)

Parameter	1/18/2010	2/9/2010	3/16/2010	4/12/2010	5/11/2010	6/17/2010	7/28/2010	8/31/2010	9/24/2010
Selenium (Se),Dissolved (mg/L)	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Silicon (Si),Dissolved (mg/L)	3.11	9.02	7.42	10.7	12.9	12.5	11.2	8.94	7.92
Silver (Ag),Dissolved (mg/L)	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Sodium (Na),Dissolved (mg/L)	3.33	3.2	9.04	4.35	3.48	4.14	4.14	4.43	5.01
Strontium (Sr),Dissolved (mg/L)	0.0514	0.0582	0.0585	0.0639	0.0586	0.0582	0.0715	0.0812	0.0741
Sulfate (SO4) (mg/L)	<10	<10	<10	<10	2.29	<10	<10	<10	<10
Total Dissolved Solids (mg/L)	71	63	58	119	121	77	90	88	85
Total Suspended Solids (mg/L)	<10	<10	<10	<10	28	<10	46	10	<10
Turbidity (NTU)	16	16	15	50	50	40	39	22	18
Turbidity (NTU)	16	16	15	50	50	40	39	22	18
Vanadium (V),Dissolved (mg/L)	<0.005	<0.005	<0.005	<0.005	0.00556	<0.005	<0.005	<0.005	<0.005
Zinc (Zn),Dissolved (mg/L)	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05

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Table E-7. Terry Peak Well Water Quality 2009 (Page 1 of 3)

Parameter	11/10/2009	12/7/2009
Alkalinity (mg/L)	60.7	83.2
Aluminum (Al),Dissolved (mg/L)	–	0.018
Aluminum (Al),Total (mg/L)	0.149	–
Anion - Cation Balance (%)	–1.05	–0.0984
Anions (meq/L)	2.25	2.83
Antimony (Sb),Dissolved (mg/L)	–	<0.005
Antimony (Sb),Total (mg/L)	<0.005	–
Arsenic (As),Dissolved (mg/L)	–	0.033
Arsenic (As),Total (mg/L)	0.0218	–
Barium (Ba),Dissolved (mg/L)	–	0.117
Barium (Ba),Total (mg/L)	0.169	–
Beryllium (Be),Dissolved (mg/L)	–	<0.001
Beryllium (Be),Total (mg/L)	<0.001	–
Bicarbonate (mg/L)	74	102
Boron (B),Total (mg/L)	0.0276	–
Cadmium (Cd),Dissolved (mg/L)	–	<0.001
Cadmium (Cd),Total (mg/L)	<0.001	–
Calcium (Ca),Dissolved (mg/L)	31	39.6
Carbonate (mg/L)	0	0
Cations (meq/L)	2.21	2.83
Chloride (Cl-) (mg/L)	10.3	12.5
Chromium (Cr),Dissolved (mg/L)	–	<0.001
Chromium (Cr),Total (mg/L)	<0.001	–
Cobalt (Co),Dissolved (mg/L)	–	<0.001
Cobalt (Co),Total (mg/L)	<0.001	–
Copper (Cu),Dissolved (mg/L)	–	<0.005
Copper (Cu),Total (mg/L)	<0.005	–
Cyanide, Free (mg/L)	<0.01	<0.01

Table E-7. Terry Peak Well Water Quality 2009 (Page 2 of 3)

Parameter	11/10/2009	12/7/2009
Cyanide, Total (mg/L)	<0.01	<0.01
Cyanide, WAD (mg/L)	<0.01	<0.01
Electrical Conductivity (µmhos/cm)	230	292
Field Conductivity (µmhos/cm)	260	–
Field pH (SU)	7.48	–
Field Temperature (° C)	6.8	–
Fluoride (mg/L)	0.599	0.799
Gold (Au),Dissolved (mg/L)	–	0.003
Gold (Au),Total (mg/L)	<0.001	–
Hardness (mg/L)	101	130
Iron (Fe),Dissolved (mg/L)	–	<0.05
Iron (Fe),Total (mg/L)	0.126	–
Lead (Pb),Dissolved (mg/L)	–	<0.001
Lead (Pb),Total (mg/L)	<0.001	–
Lithium (Li),Dissolved (mg/L)	–	–
Magnesium (Mg),Dissolved (mg/L)	5.85	7.56
Manganese (Mn),Dissolved (mg/L)	–	<0.01
Manganese (Mn),Total (mg/L)	<0.01	–
Mercury (Hg),Total (mg/L)	<0.0002	<0.0002
Molybdenum (Mo),Dissolved (mg/L)	–	<0.001
Molybdenum (Mo),Total (mg/L)	<0.001	–
Nickel (Ni),Dissolved (mg/L)	–	<0.005
Nickel (Ni),Total (mg/L)	<0.005	–
Nitrogen, Ammonia (NH3) (mg/L)	<0.05	<0.05
Nitrogen, Nitrate (NO3) (mg/L)	3.71	3.35
Nitrogen, Nitrite (NO2) (mg/L)	<0.05	<0.05
pH (SU)	7.57	7.81
Potassium (K),Dissolved (mg/L)	1.18	1.34

Table E-7. Terry Peak Well Water Quality 2009 (Page 3 of 3)

Parameter	11/10/2009	12/7/2009
Selenium (Se),Dissolved (mg/L)	–	<0.005
Selenium (Se),Total (mg/L)	<0.005	–
Silicon (Si),Dissolved (mg/L)	–	<1
Silicon (Si),Total (mg/L)	6.62	–
Silver (Ag),Dissolved (mg/L)	–	<0.001
Silver (Ag),Total (mg/L)	<0.001	–
Sodium (Na),Dissolved (mg/L)	3.38	4.54
Strontium (Sr),Dissolved (mg/L)	–	0.142
Strontium (Sr),Total (mg/L)	0.121	–
Sulfate (SO4) (mg/L)	21.7	25.4
Total Dissolved Solids (mg/L)	151	162
Total Suspended Solids (mg/L)	<10	<10
Turbidity (NTU)	1.2	0.4
Turbidity (NTU)	1.2	0.4
Vanadium (V),Dissolved (mg/L)	–	<0.005
Vanadium (V),Total (mg/L)	<0.005	–
Zinc (Zn),Dissolved (mg/L)	–	<0.05
Zinc (Zn),Total (mg/L)	<0.05	–

Table E-8. Terry Peak Well Water Quality 2010 (Page 1 of 3)

Parameter	1/21/2010	2/25/2010	3/31/2010	4/29/2010	5/25/2010	6/30/2010	7/28/2010	8/31/2010
Alkalinity (mg/L)	54.1	71.6	76.5	17.7	14.1	17.9	53.7	–
Aluminum (Al),Dissolved (mg/L)	0.0169	0.0139	0.0444	0.091	0.098	0.0654	0.0188	0.0226
Anion - Cation Balance (%)	–4.42	0.13	–1.91	–3.4	–2.42	3.74	–4.11	3.63
Anions (meq/L)	1.77	2.29	2.31	0.597	0.438	0.497	2.53	4.06
Antimony (Sb),Dissolved (mg/L)	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Arsenic (As),Dissolved (mg/L)	0.0156	0.0195	0.0175	0.0135	0.0147	0.0174	0.0203	0.0179
Barium (Ba),Dissolved (mg/L)	0.159	0.153	0.17	0.146	0.116	0.138	0.179	0.185
Barium (Ba),Total (mg/L)	–	–	–	–	–	–	–	–
Beryllium (Be),Dissolved (mg/L)	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Bicarbonate (mg/L)	66	87.4	93.4	21.6	17.2	21.8	65.5	92.7
Boron (B),Total (mg/L)	<0.02	<0.02	<0.02	<0.02	<0.02	0.028	<0.02	<0.02
Cadmium (Cd),Dissolved (mg/L)	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Calcium (Ca),Dissolved (mg/L)	22.6	33.3	28.7	6.53	4.5	6.09	31.6	58.2
Carbonate (mg/L)	0	0	0	0	0	0	0	0
Cations (meq/L)	1.62	2.3	2.22	0.558	0.417	0.536	2.33	4.36
Chloride (Cl-) (mg/L)	6.5	8	7	1.75	3.25	1	5.1	8.25
Chromium (Cr),Dissolved (mg/L)	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Cobalt (Co),Dissolved (mg/L)	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Copper (Cu),Dissolved (mg/L)	0.00525	<0.005	0.0109	<0.005	0.00816	<0.005	<0.005	<0.005
Cyanide, Free (mg/L)	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Cyanide, Total (mg/L)	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Cyanide, WAD (mg/L)	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01

Table E-8. Terry Peak Well Water Quality 2010 (Page 2 of 3)

Parameter	1/21/2010	2/25/2010	3/31/2010	4/29/2010	5/25/2010	6/30/2010	7/28/2010	8/31/2010
Electrical Conductivity (µmhos/cm)	187	230	236	67.3	48.9	60.1	262	407
Field Conductivity (µmhos/cm)	170	–	–	45.4	–	70	200	273
Field pH (SU)	8.21	–	–	8.35	–	6.97	–	167
Field Temperature (° C)	7.3	–	–	6.9	–	9.7	–	7.94
Fluoride (mg/L)	0.572	0.692	0.735	0.185	0.183	0.197	7.36	7.4
Gold (Au),Dissolved (mg/L)	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	10.1	8.5
Gold (Au),Total (mg/L)	–	–	–	–	–	–	0.417	0.709
Hardness (mg/L)	73	64.4	89.7	22.4	15.4	20.5	0.005	0.005
Iron (Fe),Dissolved (mg/L)	<0.05	<0.05	0.29	0.133	0.183	0.13	–	–
Iron (Fe),Total (mg/L)	–	–	–	–	–	–	105	204
Lead (Pb),Dissolved (mg/L)	<0.001	<0.001	0.00115	0.0011	0.00159	0.00134	<0.05	<0.05
Lithium (Li),Dissolved (mg/L)	0.0029	0.001	0.00575	<0.002	<0.002	<0.02	<0.001	<0.001
Magnesium (Mg),Dissolved (mg/L)	4.02	5.66	4.38	1.48	1.01	1.29	–	–
Manganese (Mn),Dissolved (mg/L)	<0.01	<0.01	0.0114	0.0146	0.0163	0.0278	<0.002	0.0056
Manganese (Mn),Total (mg/L)	–	–	–	–	–	–	6.27	10.7
Mercury (Hg),Total (mg/L)	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	0.014	0.0123
Molybdenum (Mo),Dissolved (mg/L)	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	–	–
Molybdenum (Mo),Total (mg/L)	–	–	–	–	–	–	<0.0002	<0.0002
Nickel (Ni),Dissolved (mg/L)	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.001	<0.001
Nitrogen, Ammonia (NH3) (mg/L)	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.005	<0.005
Nitrogen, Nitrate (NO3) (mg/L)	2.26	2.46	1.79	1.12	0.76	1.42	–	–
Nitrogen, Nitrite (NO2) (mg/L)	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05

Table E-8. Terry Peak Well Water Quality 2010 (Page 3 of 3)

Parameter	1/21/2010	2/25/2010	3/31/2010	4/29/2010	5/25/2010	6/30/2010	7/28/2010	8/31/2010
pH (SU)	7.7	7.63	7.56	7.21	7.11	6.94	5.84	10.7
Potassium (K),Dissolved (mg/L)	0.963	1.13	1.69	0.898	0.764	1	<0.05	<0.05
Selenium (Se),Dissolved (mg/L)	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	7.49	7.72
Selenium (Se),Total (mg/L)	–	–	–	–	–	–	1.87	1.8
Silicon (Si),Dissolved (mg/L)	3.28	6.63	7.09	2	5.73	6.28	0.00828	0.00957
Silver (Ag),Dissolved (mg/L)	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	6.56	6.99
Sodium (Na),Dissolved (mg/L)	3.14	3.2	8.81	2	2.05	2.29	<0.001	<0.001
Strontium (Sr),Dissolved (mg/L)	0.0697	0.107	0.0926	0.0467	0.029	0.0507	–	–
Strontium (Sr),Total (mg/L)	–	–	–	–	–	–	4.41	5.62
Sulfate (SO4) (mg/L)	15	20.1	19.7	<10	<10	<10	0.152	0.189
Total Dissolved Solids (mg/L)	98	148	111	57	64	27	–	–
Total Suspended Solids (mg/L)	<10	22.4	16	16	<10	<10	42.1	73
Turbidity (NTU)	2	5.2	4.5	9	7.7	14	170	267
Turbidity (NTU)	2	5.2	4.5	9	7.7	14	24	<10
Vanadium (V),Dissolved (mg/L)	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	15	1.7
Vanadium (V),Total (mg/L)	–	–	–	–	–	–	15	1.7
Zinc (Zn),Dissolved (mg/L)	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.005	<0.005

WELL RAILROAD MW
2009–2010

Table E-9. Railroad MW Water Quality 2009 (Page 1 of 3)

Parameter	11/30/2009	12/16/2009
Alkalinity (mg/L)	118	116
Aluminum (Al),Dissolved (mg/L)	0.0522	0.0265
Anion - Cation Balance (%)	–	–3.5
Anions (meq/L)	–	2.39
Antimony (Sb),Dissolved (mg/L)	<0.005	<0.005
Arsenic (As),Dissolved (mg/L)	0.212	0.163
Barium (Ba),Dissolved (mg/L)	0.0393	0.0439
Beryllium (Be),Dissolved (mg/L)	<0.001	<0.001
Bicarbonate (mg/L)	120	114
Boron (B),Dissolved (mg/L)	–	–
Boron (B),Total (mg/L)	–	0.0442
Cadmium (Cd),Dissolved (mg/L)	<0.001	<0.001
Calcium (Ca),Dissolved (mg/L)	30.7	35.5
Carbonate (mg/L)	12	13.9
Cations (meq/L)	–	2.23
Chloride (Cl-) (mg/L)	<0.5	<0.5
Chromium (Cr),Dissolved (mg/L)	<0.001	<0.001
Cobalt (Co),Dissolved (mg/L)	<0.001	<0.001
Copper (Cu),Dissolved (mg/L)	<0.005	<0.005
Cyanide, Free (mg/L)	<0.01	<0.01
Cyanide, Total (mg/L)	<0.01	<0.01
Cyanide, WAD (mg/L)	<0.01	<0.01
Electrical Conductivity (µmhos/cm)	165	136
Field Conductivity (µmhos/cm)	–	112
Field Depth (ft)	–	–
Field ORP (mV)	–	–
Field Oxygen (O2) (mg/L)	–	–

Table E-9. Railroad MW Water Quality 2009 (Page 2 of 3)

Parameter	11/30/2009	12/16/2009
Field pH (SU)	–	9.91
Field Temperature (° C)	–	7.3
Fluoride (mg/L)	0.236	0.356
Gold (Au),Dissolved (mg/L)	<0.001	<0.001
Hardness (mg/L)	89.9	102
Iron (Fe),Dissolved (mg/L)	<0.05	<0.05
Lead (Pb),Dissolved (mg/L)	<0.001	<0.001
Lithium (Li),Dissolved (mg/L)	–	–
Lithium (Li),Total (mg/L)	–	–
Magnesium (Mg),Dissolved (mg/L)	3.22	3.33
Manganese (Mn),Dissolved (mg/L)	<0.01	<0.01
Mercury (Hg),Total (mg/L)	–	<0.0002
Molybdenum (Mo),Dissolved (mg/L)	0.00109	0.00117
Nickel (Ni),Dissolved (mg/L)	<0.005	<0.005
Nitrogen, Ammonia (NH3) (mg/L)	<0.05	<0.05
Nitrogen, Nitrate (NO3) (mg/L)	0.315	0.608
Nitrogen, Nitrite (NO2) (mg/L)	<0.05	<0.05
pH (SU)	9.19	9.2
Potassium (K),Dissolved (mg/L)	2.78	3.08
Selenium (Se),Dissolved (mg/L)	<0.005	<0.005
Silicon (Si),Dissolved (mg/L)	13.6	7.03
Silver (Ag),Dissolved (mg/L)	<0.001	<0.001
Sodium (Na),Dissolved (mg/L)	1.98	2.5
Strontium (Sr),Dissolved (mg/L)	0.0992	0.105
Sulfate (SO4) (mg/L)	<10	<10
Total Dissolved Solids (mg/L)	125	95
Total Suspended Solids (mg/L)	243	979
Turbidity (NTU)	95	270

Table E-9. Railroad MW Water Quality 2009 (Page 3 of 3)

Parameter	11/30/2009	12/16/2009
Turbidity (NTU)	95	270
Vanadium (V),Dissolved (mg/L)	<0.005	0.00538
Zinc (Zn),Dissolved (mg/L)	<0.05	<0.05

Table E-10. Railroad Well Water Quality 2010 (Page 1 of 3)

Parameter	1/21/2010	2/23/2010	3/24/2010	4/27/2010	5/20/2010	6/25/2010	7/28/2010	8/26/2010	9/24/2010
Alkalinity (mg/L)	68.7	84.4	62.2	57.5	65.3	57.1	53.2	52.9	97
Aluminum (Al),Dissolved (mg/L)	0.0321	0.0389	0.0339	0.021	0.133	0.0116	0.0228	0.0259	0.0271
Anion - Cation Balance (%)	4.6	–3	–	–4.51	–4.65	–3.52	–6.83	–3.32	–4.74
Anions (meq/L)	1.58	1.74	–	1.45	1.66	1.45	1.43	1.38	2.1
Antimony (Sb),Dissolved (mg/L)	0.0101	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Arsenic (As),Dissolved (mg/L)	0.218	0.197	0.227	0.209	0.233	0.238	0.219	0.203	0.203
Barium (Ba),Dissolved (mg/L)	0.0449	0.0551	0.0581	0.0511	0.143	0.0295	0.0289	0.0325	0.0532
Beryllium (Be),Dissolved (mg/L)	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Bicarbonate (mg/L)	78.4	102	75.9	70.2	79.7	69.7	64.9	64.6	118
Boron (B),Dissolved (mg/L)	–	–	<0.02	–	–	–	–	–	–
Boron (B),Total (mg/L)	<0.02	0.0537	–	<0.02	<0.02	0.0331	<0.02	0.0214	0.0368
Cadmium (Cd),Dissolved (mg/L)	0.00102	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Calcium (Ca),Dissolved (mg/L)	28.8	24.3	24.5	20.5	18	20.7	24.3	20	19.5
Carbonate (mg/L)	<5	<5	0	0	0	0	0	0	0
Cations (meq/L)	1.74	1.64	–	1.33	1.51	1.36	1.24	1.29	1.91
Chloride (Cl-) (mg/L)	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	1.06	0.8	3.94
Chromium (Cr),Dissolved (mg/L)	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Cobalt (Co),Dissolved (mg/L)	<0.001	<0.001	0.00118	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Copper (Cu),Dissolved (mg/L)	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Cyanide, Free (mg/L)	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Cyanide, Total (mg/L)	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Cyanide, WAD (mg/L)	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01

Table E-10. Railroad Well Water Quality 2010 (Page 2 of 3)

Parameter	1/21/2010	2/23/2010	3/24/2010	4/27/2010	5/20/2010	6/25/2010	7/28/2010	8/26/2010	9/24/2010
Electrical Conductivity (µmhos/cm)	156	150	146	147	150	151	144	141	145
Field Conductivity (µmhos/cm)	150	96.3	150	94.9	–	150	90.7	90	95
Field Depth (ft)	309	315	314	298	–	290	295	296	–
Field ORP (mV)	–	3	–	–	–	–	–	188	118
Field Oxygen (O2) (mg/L)	–	7.15	–	–	–	–	–	6.98	7.19
Field pH (SU)	9.5	9.29	8.84	8.3	–	7.98	7.87	8.24	8.63
Field Temperature (° C)	6.3	6.3	5.9	6.6	–	10.9	7.9	7.4	6.6
Fluoride (mg/L)	0.474	0.347	0.446	0.445	0.358	0.486	0.354	0.438	0.218
Gold (Au),Dissolved (mg/L)	<0.001	<0.001	0.001	<0.001	0.001	<0.001	<0.001	0.002	<0.001
Hardness (mg/L)	81.9	74.6	73	61.4	58.5	61	57	58.9	79.9
Iron (Fe),Dissolved (mg/L)	<0.05	<0.05	<0.05	<0.05	0.268	<0.05	<0.05	<0.05	<0.05
Lead (Pb),Dissolved (mg/L)	0.00126	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Lithium (Li),Dissolved (mg/L)	0.0044	0.013	0.002	–	0.0054	<0.02	<0.002	0.0146	<0.002
Lithium (Li),Total (mg/L)	–	–	–	0.0029	–	–	–	–	–
Magnesium (Mg),Dissolved (mg/L)	2.42	3.39	2.86	2.47	3.3	2.26	2.14	2.17	6.06
Manganese (Mn),Dissolved (mg/L)	<0.01	<0.01	<0.01	<0.01	0.0578	<0.01	<0.01	<0.01	<0.01
Mercury (Hg),Total (mg/L)	<0.0002	0.0002	0.0007	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Molybdenum (Mo),Dissolved (mg/L)	0.00225	<0.001	0.00141	<0.001	<0.001	0.00126	<0.001	<0.001	0.00229
Nickel (Ni),Dissolved (mg/L)	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Nitrogen, Ammonia (NH3) (mg/L)	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Nitrogen, Nitrate (NO3) (mg/L)	0.63	0.654	0.576	0.601	0.68	0.62	0.646	0.61	0.643
Nitrogen, Nitrite (NO2) (mg/L)	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05

Table E-10. Railroad Well Water Quality 2010 (Page 3 of 3)

Parameter	1/21/2010	2/23/2010	3/24/2010	4/27/2010	5/20/2010	6/25/2010	7/28/2010	8/26/2010	9/24/2010
pH (SU)	8.54	8.31	8.23	7.94	8.02	7.7	7.92	7.94	8.24
Potassium (K),Dissolved (mg/L)	1.12	2.55	1.36	1.09	1.49	1.6	0.987	1.05	1.26
Selenium (Se),Dissolved (mg/L)	0.00544	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Silicon (Si),Dissolved (mg/L)	5.88	11.8	11.2	10.8	13.8	11.5	12	11.6	11.8
Silver (Ag),Dissolved (mg/L)	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Sodium (Na),Dissolved (mg/L)	1.67	1.84	8.32	1.73	6.95	2.2	1.81	2.1	11.2
Strontium (Sr),Dissolved (mg/L)	0.0809	0.077	0.108	0.0602	0.0642	0.0565	0.0519	0.0472	0.0743
Sulfate (SO4) (mg/L)	11	<10	<10	11.4	13.7	11.6	12.6	11.3	<10
Total Dissolved Solids (mg/L)	105	111	114	118	120	95	107	100	114
Total Suspended Solids (mg/L)	160	948	1730	216	178	65.6	114	40	942
Turbidity (NTU)	60	450	650	70	70	19	40	5.2	350
Turbidity (NTU)	60	450	650	70	70	19	40	5.2	350
Vanadium (V),Dissolved (mg/L)	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Zinc (Zn),Dissolved (mg/L)	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05

WELL MW19
2005–2010

Table E-11. MW19 Water Quality 2005–2006 (Page 1 of 2)

Parameter	11/2/2005	1/5/2006	4/3/2006	5/5/2006	8/8/2006	11/2/2006
Anion - Cation Balance (%)	–2.75	–2.83	–1.15	–2.36	–2.16	–2.1
Anions (meq/L)	3.96	3.98	3.36	2.64	3.94	3.8
Arsenic (As),Dissolved (mg/L)	0.012	0.012	0.013	0.015	0.008	0.01
Bicarbonate (mg/L)	148	152	89.7	130	227	216
Cadmium (Cd),Dissolved (mg/L)	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Calcium (Ca),Dissolved (mg/L)	48.5	48.5	41.5	31.8	48.8	47.3
Carbonate (mg/L)	0	0	0	0	0	0
Cations (meq/L)	3.75	3.76	3.28	2.52	3.77	3.64
Chloride (Cl-) (mg/L)	2.25	2	2	0.5	2	2.25
Copper (Cu),Dissolved (mg/L)	0.017	0.005	0.011	<0.005	<0.005	<0.005
Cyanide, Total (mg/L)	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Cyanide, WAD (mg/L)	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Electrical Conductivity (µmhos/cm)	404	396	373	269	378	381
Field Conductivity (µmhos/cm)	–	–	–	–	–	–
Field Depth (ft)	–	–	–	–	–	–
Field ORP (mV)	–	–	–	–	–	–
Field Oxygen (O2) (mg/L)	–	–	–	–	–	–
Field pH (SU)	–	–	–	–	–	–
Field Temperature (° C)	–	–	–	–	–	–
Fluoride (mg/L)	0.232	0.231	0.195	0.271	0.303	0.297
Gold (Au),Dissolved (mg/L)	0.004	0.003	0.006	0.002	0.003	0.005
Lead (Pb),Dissolved (mg/L)	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Magnesium (Mg),Dissolved (mg/L)	13.1	13.4	11.3	9.01	14.1	13.4
Mercury (Hg),Total (mg/L)	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Nitrogen, Ammonia (NH3) (mg/L)	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Nitrogen, Nitrate (NO3) (mg/L)	9.55	8.91	11.3	2.85	1.99	2.45
Nitrogen, Nitrite (NO2) (mg/L)	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
pH (SU)	7.48	7.38	7.53	7.75	7.94	7.67
Potassium (K),Dissolved (mg/L)	1.09	1.03	1.29	0.945	0.94	1.11
Selenium (Se),Dissolved (mg/L)	<0.005	<0.005	0.005	<0.005	<0.005	<0.005
Silver (Ag),Dissolved (mg/L)	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001

Table E-11. MW19 Water Quality 2005–2006 (Page 2 of 2)

Parameter	11/2/2005	1/5/2006	4/3/2006	5/5/2006	8/8/2006	11/2/2006
Sodium (Na),Dissolved (mg/L)	5.1	4.98	5.76	3.93	3.5	3.45
Sulfate (SO4) (mg/L)	37.2	37.8	48.8	13.5	<10	<10
Total Dissolved Solids (mg/L)	256	242	253	175	230	227
Total Suspended Solids (mg/L)	–	–	–	–	–	–
Zinc (Zn),Dissolved (mg/L)	<0.05	<0.05	<0.05	<0.05	0.097	<0.05

Table E-12. MW19 Water Quality 2007 (Page 1 of 2)

Parameter	1/9/2007	4/17/2007	5/16/2007	8/2/2007	11/13/2007
Anion - Cation Balance (%)	1.7	–2.78	–1.04	–2.95	–3.93
Anions (meq/L)	3.88	3.8	4.05	3.07	3.78
Arsenic (As),Dissolved (mg/L)	0.011	0.013	0.011	0.013	0.008
Bicarbonate (mg/L)	223	219	226	121	218
Cadmium (Cd),Dissolved (mg/L)	<0.001	<0.001	<0.001	<0.001	<0.001
Calcium (Ca),Dissolved (mg/L)	54.8	46.5	53.5	36.6	43
Carbonate (mg/L)	0	0	0	0	0
Cations (meq/L)	4.01	3.59	3.96	2.89	3.49
Chloride (Cl-) (mg/L)	1.75	1.5	2	0.75	<0.5
Copper (Cu),Dissolved (mg/L)	<0.005	<0.005	<0.005	0.006	0.301
Cyanide, Total (mg/L)	<0.01	<0.01	<0.01	<0.01	<0.01
Cyanide, WAD (mg/L)	<0.01	<0.01	<0.01	<0.01	<0.01
Electrical Conductivity (µmhos/cm)	378	379	385	322	382
Field Conductivity (µmhos/cm)	350	330	290	358	350
Field Depth (ft)	249	248	235	112	118
Field ORP (mV)	–	–	–	–	170
Field Oxygen (O2) (mg/L)	–	–	–	–	9.57
Field pH (SU)	7.85	7.95	7.31	7.61	7.89
Field Temperature (° C)	5.7	7.5	8.3	8.7	6.7
Fluoride (mg/L)	0.3	0.281	0.277	0.229	0.295
Gold (Au),Dissolved (mg/L)	0.005	0.002	<0.001	<0.001	<0.001
Lead (Pb),Dissolved (mg/L)	<0.001	<0.001	<0.001	<0.001	0.005
Magnesium (Mg),Dissolved (mg/L)	13.1	13.3	13.5	10.2	13.3
Mercury (Hg),Total (mg/L)	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Nitrogen, Ammonia (NH3) (mg/L)	<0.05	<0.05	<0.05	<0.05	<0.05
Nitrogen, Nitrate (NO3) (mg/L)	2.19	2.11	3.78	5.26	2.61
Nitrogen, Nitrite (NO2) (mg/L)	<0.05	<0.05	<0.05	<0.05	<0.05
pH (SU)	7.83	8.02	7.8	7.73	7.76

Table E-12. MW19 Water Quality 2007 (Page 2 of 2)

Parameter	1/9/2007	4/17/2007	5/16/2007	8/2/2007	11/13/2007
Potassium (K),Dissolved (mg/L)	0.975	0.83	0.661	1.05	0.851
Selenium (Se),Dissolved (mg/L)	<0.005	<0.005	<0.005	<0.005	<0.005
Silver (Ag),Dissolved (mg/L)	<0.001	<0.001	<0.001	<0.001	<0.001
Sodium (Na),Dissolved (mg/L)	4.06	3.66	3.86	4.63	5.3
Sulfate (SO4) (mg/L)	<10	<10	<10	32.5	<10
Total Dissolved Solids (mg/L)	214	206	211	204	206
Total Suspended Solids (mg/L)	–	–	–	–	–
Zinc (Zn),Dissolved (mg/L)	<0.05	<0.05	<0.05	<0.05	0.167

Table E-13. MW19 Water Quality 2008 (Page 1 of 2)

Parameter	1/10/2008	4/8/2008	5/20/2008	8/13/2008	11/19/2008
Anion - Cation Balance (%)	–0.196	–1.05	–4.89	–3.28	–5.49
Anions (meq/L)	3.94	3.94	4	3.83	3.82
Arsenic (As),Dissolved (mg/L)	0.01	0.009	0.0178	0.0124	0.00992
Bicarbonate (mg/L)	224	223	223	213	220
Cadmium (Cd),Dissolved (mg/L)	<0.001	<0.001	<0.001	<0.001	<0.001
Calcium (Ca),Dissolved (mg/L)	53	53.2	46.7	45.7	41.3
Carbonate (mg/L)	0	0	0	0	0
Cations (meq/L)	3.92	3.86	3.63	3.58	3.42
Chloride (Cl-) (mg/L)	2.75	3.25	3.75	4	<0.5
Copper (Cu),Dissolved (mg/L)	<0.005	0.018	0.0123	<0.005	<0.005
Cyanide, Total (mg/L)	<0.01	<0.01	<0.01	<0.01	<0.01
Cyanide, WAD (mg/L)	<0.01	<0.01	<0.01	<0.01	<0.01
Electrical Conductivity (µmhos/cm)	381	378	386	378	379
Field Conductivity (µmhos/cm)	340	310	350	350	–
Field Depth (ft)	9	125	120	109	–
Field ORP (mV)	–	–	–	–	–
Field Oxygen (O2) (mg/L)	–	–	–	–	–
Field pH (SU)	7.91	8.03	7.94	8.07	–
Field Temperature (° C)	7.5	7	8	7.9	–
Fluoride (mg/L)	0.34	0.317	0.317	0.345	0.309
Gold (Au),Dissolved (mg/L)	<0.001	<0.001	0.001	<0.001	<0.001
Lead (Pb),Dissolved (mg/L)	<0.001	<0.001	0.00296	<0.001	<0.001
Magnesium (Mg),Dissolved (mg/L)	13.1	12.6	13.7	13.5	13.4
Mercury (Hg),Total (mg/L)	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Nitrogen, Ammonia (NH3) (mg/L)	<0.05	<0.05	<0.05	<0.05	<0.05
Nitrogen, Nitrate (NO3) (mg/L)	2.34	2.46	3.08	2.85	2.76
Nitrogen, Nitrite (NO2) (mg/L)	<0.05	<0.05	<0.05	<0.05	<0.05
pH (SU)	8	7.91	7.85	7.75	7.92
Potassium (K),Dissolved (mg/L)	0.73	0.703	0.76	1.05	0.7
Selenium (Se),Dissolved (mg/L)	<0.005	<0.005	<0.005	<0.005	<0.005

Table E-13. MW19 Water Quality 2008 (Page 2 of 2)

Parameter	1/10/2008	4/8/2008	5/20/2008	8/13/2008	11/19/2008
Silver (Ag),Dissolved (mg/L)	0.002	<0.001	<0.001	<0.001	<0.001
Sodium (Na),Dissolved (mg/L)	4.15	3.47	3.46	3.85	5.6
Sulfate (SO4) (mg/L)	<10	<10	<10	<10	<10
Total Dissolved Solids (mg/L)	204	226	213	197	205
Total Suspended Solids (mg/L)	–	–	–	–	–
Zinc (Zn),Dissolved (mg/L)	<0.05	0.064	0.0789	<0.05	<0.05

Table E-14. MW19 Water Quality 2009 (Page 1 of 2)

Parameter	1/13/2009	4/29/2009	5/14/2009	6/18/2009	8/12/2009
Anion - Cation Balance (%)	–3	–1.66	–3.55	–0.976	–
Anions (meq/L)	3.86	3.95	3.96	4.2	–
Arsenic (As),Dissolved (mg/L)	0.0111	0.00817	0.00865	0.0103	0.00988
Bicarbonate (mg/L)	222	223	221	221	223
Cadmium (Cd),Dissolved (mg/L)	<0.001	<0.001	<0.001	<0.001	–
Calcium (Ca),Dissolved (mg/L)	46.2	47.6	47.5	54.5	–
Carbonate (mg/L)	0	0	0	0	–
Cations (meq/L)	3.63	3.83	3.69	4.12	–
Chloride (Cl-) (mg/L)	<0.5	<0.5	1	1.25	–
Copper (Cu),Dissolved (mg/L)	0.00534	0.00547	<0.005	<0.005	<0.005
Cyanide, Total (mg/L)	<0.01	<0.01	<0.01	<0.01	<0.01
Cyanide, WAD (mg/L)	<0.01	<0.01	<0.01	<0.01	<0.01
Electrical Conductivity (µmhos/cm)	385	392	391	383	386
Field Conductivity (µmhos/cm)	–	370	410	–	261
Field Depth (ft)	–	119	114	–	107
Field ORP (mV)	–	–	–	–	116
Field Oxygen (O2) (mg/L)	–	–	–	–	8.77
Field pH (SU)	–	7.56	7.44	–	7.35
Field Temperature (° C)	–	7.7	7.9	–	8.2
Fluoride (mg/L)	0.293	0.306	0.308	0.301	0.31
Gold (Au),Dissolved (mg/L)	0.001	0.008	0.002	<0.001	<0.001
Lead (Pb),Dissolved (mg/L)	<0.001	<0.001	<0.001	<0.001	–
Magnesium (Mg),Dissolved (mg/L)	14	14.4	13.7	14.7	–
Mercury (Hg),Total (mg/L)	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Nitrogen, Ammonia (NH3) (mg/L)	<0.05	<0.05	<0.05	<0.05	<0.05
Nitrogen, Nitrate (NO3) (mg/L)	2.84	3.94	4.05	3.51	3.63
Nitrogen, Nitrite (NO2) (mg/L)	<0.05	<0.05	<0.05	<0.05	<0.05
pH (SU)	7.77	8.06	7.75	7.88	7.93
Potassium (K),Dissolved (mg/L)	0.72	0.9	0.825	0.95	–
Selenium (Se),Dissolved (mg/L)	<0.005	<0.005	<0.005	<0.005	<0.005

Table E-14. MW19 Water Quality 2009 (Page 2 of 2)

Parameter	1/13/2009	4/29/2009	5/14/2009	6/18/2009	8/12/2009
Silver (Ag),Dissolved (mg/L)	<0.001	<0.001	<0.001	<0.001	<0.001
Sodium (Na),Dissolved (mg/L)	3.67	5.6	3.88	3.75	3.95
Sulfate (SO4) (mg/L)	<10	<10	<10	13	<10
Total Dissolved Solids (mg/L)	172	225	212	221	180
Total Suspended Solids (mg/L)	–	–	–	–	<10
Zinc (Zn),Dissolved (mg/L)	<0.05	0.0515	<0.05	<0.05	–

Table E-15. MW19 Water Quality 2010 (Page 1 of 2)

Parameter	1/26/2010	4/5/2010	5/4/2010	8/5/2010
Anion - Cation Balance (%)	–	–	–	–
Anions (meq/L)	–	–	–	–
Arsenic (As),Dissolved (mg/L)	0.0093	0.00948	0.00784	0.0109
Bicarbonate (mg/L)	224	226	226	222
Cadmium (Cd),Dissolved (mg/L)	–	–	–	–
Calcium (Ca),Dissolved (mg/L)	–	–	–	–
Carbonate (mg/L)	–	–	–	–
Cations (meq/L)	–	–	–	–
Chloride (Cl-) (mg/L)	–	–	–	–
Copper (Cu),Dissolved (mg/L)	0.0135	<0.005	<0.005	<0.005
Cyanide, Total (mg/L)	<0.01	<0.01	<0.01	<0.01
Cyanide, WAD (mg/L)	<0.01	<0.01	<0.01	<0.01
Electrical Conductivity (µmhos/cm)	393	401	407	398
Field Conductivity (µmhos/cm)	261	266	278	268
Field Depth (ft)	110	119	117	110
Field ORP (mV)	–	107	100	137
Field Oxygen (O2) (mg/L)	9.13	8.22	8.3	8.49
Field pH (SU)	7.67	7.48	7.35	7.23
Field Temperature (° C)	8	8	8	8.4
Fluoride (mg/L)	0.3	0.301	0.317	0.281
Gold (Au),Dissolved (mg/L)	<0.001	<0.001	<0.001	<0.001
Lead (Pb),Dissolved (mg/L)	–	–	–	–
Magnesium (Mg),Dissolved (mg/L)	–	–	–	–
Mercury (Hg),Total (mg/L)	<0.0002	<0.0002	<0.0002	<0.0002
Nitrogen, Ammonia (NH3) (mg/L)	<0.05	<0.05	<0.05	<0.05
Nitrogen, Nitrate (NO3) (mg/L)	4.59	5.02	5.32	5.96
Nitrogen, Nitrite (NO2) (mg/L)	<0.05	<0.05	<0.05	<0.05
pH (SU)	7.75	7.82	7.74	7.82

Table E-15. MW19 Water Quality 2010 (Page 2 of 2)

Parameter	1/26/2010	4/5/2010	5/4/2010	8/5/2010
Potassium (K),Dissolved (mg/L)	–	–	–	–
Selenium (Se),Dissolved (mg/L)	<0.005	<0.005	<0.005	<0.005
Silver (Ag),Dissolved (mg/L)	<0.001	<0.001	<0.001	<0.001
Sodium (Na),Dissolved (mg/L)	3.69	4.01	4.12	4.32
Sulfate (SO4) (mg/L)	<10	<10	<10	<10
Total Dissolved Solids (mg/L)	235	219	233	245
Total Suspended Solids (mg/L)	–	–	–	–
Zinc (Zn),Dissolved (mg/L)	–	–	–	–

WELL MW33
2005–2010

Table E-16. MW33 Water Quality 2005–2006 (Page 1 of 2)

Parameter	11/2/2005	1/5/2006	4/3/2006	5/5/2006	8/8/2006	11/2/2006
Anion - Cation Balance (%)	–2.64	–1.62	–3.29	–3.42	0.0267	–1.75
Anions (meq/L)	3.79	3.79	3.87	3.85	3.83	3.84
Arsenic (As),Dissolved (mg/L)	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Bicarbonate (mg/L)	230	229	233	233	232	232
Cadmium (Cd),Dissolved (mg/L)	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Calcium (Ca),Dissolved (mg/L)	32.9	32.8	34.1	32.6	34.8	33.8
Carbonate (mg/L)	0	0	0	0	0	0
Cations (meq/L)	3.6	3.67	3.62	3.59	3.83	3.71
Chloride (Cl-) (mg/L)	<0.5	0.5	0.75	<0.5	<0.5	0.5
Copper (Cu),Dissolved (mg/L)	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Cyanide, Total (mg/L)	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Cyanide, WAD (mg/L)	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Electrical Conductivity (µmhos/cm)	356	356	360	360	360	360
Field Conductivity (µmhos/cm)	–	–	–	–	–	–
Field Depth (ft)	–	–	–	–	–	–
Field ORP (mV)	–	–	–	–	–	–
Field Oxygen (O2) (mg/L)	–	–	–	–	–	–
Field pH (SU)	–	–	–	–	–	–
Field Temperature (° C)	–	–	–	–	–	–
Fluoride (mg/L)	0.296	0.272	0.283	0.276	0.288	0.287
Gold (Au),Dissolved (mg/L)	0.002	0.001	0.004	0.002	<0.001	0.004
Lead (Pb),Dissolved (mg/L)	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Magnesium (Mg),Dissolved (mg/L)	21.8	22.7	21.2	21.8	23.4	22.6
Mercury (Hg),Total (mg/L)	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Nitrogen, Ammonia (NH3) (mg/L)	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Nitrogen, Nitrate (NO3) (mg/L)	0.103	0.11	0.11	0.157	0.121	0.101
Nitrogen, Nitrite (NO2) (mg/L)	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
pH (SU)	7.85	7.96	8.08	8.01	8.09	7.96
Potassium (K),Dissolved (mg/L)	0.708	0.771	0.728	0.699	0.99	0.94
Selenium (Se),Dissolved (mg/L)	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Silver (Ag),Dissolved (mg/L)	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001

Table E-16. MW33 Water Quality 2005–2006 (Page 2 of 2)

Parameter	11/2/2005	1/5/2006	4/3/2006	5/5/2006	8/8/2006	11/2/2006
Sodium (Na),Dissolved (mg/L)	3.4	3.41	3.59	3.59	3.34	3.23
Sulfate (SO4) (mg/L)	<10	<10	<10	<10	<10	<10
Total Dissolved Solids (mg/L)	197	184	203	187	202	190
Total Suspended Solids (mg/L)	–	–	–	–	–	–
Zinc (Zn),Dissolved (mg/L)	–	–	–	–	<0.05	<0.05

Table E-17. MW33 Water Quality 2007 (Page 1 of 2)

Parameter	1/9/2007	4/17/2007	5/16/2007	6/27/2007	8/2/2007	11/13/2007
Anion - Cation Balance (%)	0.724	–3.36	–2.46	–	–.77	0.486
Anions (meq/L)	3.83	3.83	3.86	–	3.88	3.89
Arsenic (As),Dissolved (mg/L)	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Bicarbonate (mg/L)	232	232	233	–	235	232
Cadmium (Cd),Dissolved (mg/L)	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Calcium (Ca),Dissolved (mg/L)	38.6	32.6	32.9	–	33.6	38.7
Carbonate (mg/L)	0	0	0	–	0	0
Cations (meq/L)	3.88	3.58	3.67	–	3.67	3.93
Chloride (Cl-) (mg/L)	<0.5	<0.5	0.5	–	<0.5	2.25
Copper (Cu),Dissolved (mg/L)	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Cyanide, Total (mg/L)	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Cyanide, WAD (mg/L)	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Electrical Conductivity (µmhos/cm)	360	362	364	367	365	365
Field Conductivity (µmhos/cm)	330	310	350	–	344	330
Field Depth (ft)	58.8	–	25	–	25	23
Field ORP (mV)	–	–	–	–	–	192
Field Oxygen (O2) (mg/L)	–	–	–	–	–	9.01
Field pH (SU)	8.09	8.17	7.85	–	7.83	7.92
Field Temperature (° C)	6.2	7.9	8.2	–	8.9	6.8
Fluoride (mg/L)	0.286	0.271	0.258	0.25	0.271	0.28
Gold (Au),Dissolved (mg/L)	0.003	0.004	<0.001	0.011	<0.001	<0.001
Lead (Pb),Dissolved (mg/L)	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Magnesium (Mg),Dissolved (mg/L)	21.6	21.7	22.5	–	22	21.4
Mercury (Hg),Total (mg/L)	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Nitrogen, Ammonia (NH3) (mg/L)	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Nitrogen, Nitrate (NO3) (mg/L)	0.123	0.113	0.11	0.219	0.143	0.162
Nitrogen, Nitrite (NO2) (mg/L)	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
pH (SU)	7.99	8.25	7.99	7.76	8.08	7.83
Potassium (K),Dissolved (mg/L)	0.87	0.79	0.817	–	0.877	0.801
Selenium (Se),Dissolved (mg/L)	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Silver (Ag),Dissolved (mg/L)	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Sodium (Na),Dissolved (mg/L)	3.69	3.39	3.66	–	3.72	5.1

Table E-17. MW33 Water Quality 2007 (Page 2 of 2)

Parameter	1/9/2007	4/17/2007	5/16/2007	6/27/2007	8/2/2007	11/13/2007
Sulfate (SO4) (mg/L)	<10	<10	<10	–	<10	<10
Total Dissolved Solids (mg/L)	181	175	183	153	195	179
Total Suspended Solids (mg/L)	–	–	–	–	–	–
Zinc (Zn),Dissolved (mg/L)	<0.05	0.116	<0.05	<0.05	<0.05	<0.05

Table E-18. MW33 Water Quality 2008 (Page 1 of 2)

Parameter	1/25/2008	4/9/2008	5/13/2008	8/13/2008	11/18/2008
Anion - Cation Balance (%)	–0.941	–4.2	–1.77	–1.22	–2.33
Anions (meq/L)	3.85	3.83	3.78	3.78	3.76
Arsenic (As),Dissolved (mg/L)	<0.005	<0.005	<0.005	<0.005	<0.005
Bicarbonate (mg/L)	233	232	229	228	228
Cadmium (Cd),Dissolved (mg/L)	<0.001	<0.001	<0.001	<0.001	<0.001
Calcium (Ca),Dissolved (mg/L)	36.3	32.1	33.5	33.1	31.3
Carbonate (mg/L)	0	0	0	0	0
Cations (meq/L)	3.77	3.52	3.65	3.69	3.59
Chloride (Cl-) (mg/L)	<0.5	<0.5	<0.5	0.5	<0.5
Copper (Cu),Dissolved (mg/L)	<0.005	<0.005	<0.005	<0.005	<0.005
Cyanide, Total (mg/L)	<0.01	<0.01	<0.01	<0.01	<0.01
Cyanide, WAD (mg/L)	<0.01	<0.01	<0.01	<0.01	<0.01
Electrical Conductivity (µmhos/cm)	359	360	360	357	351
Field Conductivity (µmhos/cm)	370	280	350	330	–
Field Depth (ft)	23.4	23.4	23.4	22	–
Field ORP (mV)	–	–	–	–	–
Field Oxygen (O2) (mg/L)	–	–	–	–	–
Field pH (SU)	8.14	8.34	8.38	7.9	–
Field Temperature (° C)	6.5	6	6.8	7.8	–
Fluoride (mg/L)	0.278	0.294	0.299	0.328	0.299
Gold (Au),Dissolved (mg/L)	<0.001	<0.001	<0.001	0.008	<0.001
Lead (Pb),Dissolved (mg/L)	<0.001	<0.001	<0.001	<0.001	<0.001
Magnesium (Mg),Dissolved (mg/L)	21.8	21.4	22.1	22.7	21.8
Mercury (Hg),Total (mg/L)	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Nitrogen, Ammonia (NH3) (mg/L)	<0.05	<0.05	<0.05	<0.05	<0.05
Nitrogen, Nitrate (NO3) (mg/L)	0.135	0.101	0.109	0.108	0.11
Nitrogen, Nitrite (NO2) (mg/L)	<0.05	<0.05	<0.05	<0.05	<0.05
pH (SU)	7.98	7.99	8.07	7.94	8.01
Potassium (K),Dissolved (mg/L)	0.88	0.787	0.726	0.91	0.79
Selenium (Se),Dissolved (mg/L)	<0.005	<0.005	<0.005	<0.005	<0.005

Table E-18. MW33 Water Quality 2008 (Page 2 of 2)

Parameter	1/25/2008	4/9/2008	5/13/2008	8/13/2008	11/18/2008
Silver (Ag),Dissolved (mg/L)	<0.001	<0.001	<0.001	<0.001	<0.001
Sodium (Na),Dissolved (mg/L)	3.4	3.17	3.24	3.37	5
Sulfate (SO4) (mg/L)	<10	<10	<10	<10	<10
Total Dissolved Solids (mg/L)	177	194	181	165	170
Total Suspended Solids (mg/L)	–	–	–	–	–
Zinc (Zn),Dissolved (mg/L)	<0.05	<0.05	<0.05	<0.05	<0.05

Table E-19. MW33 Water Quality 2009 (Page 1 of 2)

Parameter	1/13/2009	4/29/2009	5/14/2009	6/18/2009	8/12/2009
Anion - Cation Balance (%)	–2.73	1.17	–1.16	–2.52	–
Anions (meq/L)	3.79	3.17	3.79	4.03	–
Arsenic (As),Dissolved (mg/L)	<0.005	<0.005	<0.005	<0.005	<0.005
Bicarbonate (mg/L)	230	192	230	230	232
Cadmium (Cd),Dissolved (mg/L)	<0.001	<0.001	<0.001	<0.001	–
Calcium (Ca),Dissolved (mg/L)	32.8	34.7	33.9	37.7	–
Carbonate (mg/L)	0	0	0	0	–
Cations (meq/L)	3.59	3.24	3.71	3.83	–
Chloride (Cl-) (mg/L)	<0.5	<0.5	<0.5	<0.5	–
Copper (Cu),Dissolved (mg/L)	<0.005	<0.005	<0.005	<0.005	<0.005
Cyanide, Total (mg/L)	<0.01	<0.01	<0.01	<0.01	<0.01
Cyanide, WAD (mg/L)	<0.01	<0.01	<0.01	<0.01	<0.01
Electrical Conductivity (µmhos/cm)	358	300	358	352	356
Field Conductivity (µmhos/cm)	–	300	370	–	231
Field Depth (ft)	–	19.6	19	–	20.4
Field ORP (mV)	–	–	–	–	117
Field Oxygen (O2) (mg/L)	–	–	–	–	8.54
Field pH (SU)	–	7.61	7.88	–	7.67
Field Temperature (° C)	–	7.1	9.1	–	7
Fluoride (mg/L)	0.277	0.182	0.288	0.269	0.286
Gold (Au),Dissolved (mg/L)	<0.001	0.001	<0.001	<0.001	<0.001
Lead (Pb),Dissolved (mg/L)	<0.001	<0.001	<0.001	<0.001	–
Magnesium (Mg),Dissolved (mg/L)	21.7	16.3	22.3	21.6	–
Mercury (Hg),Total (mg/L)	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Nitrogen, Ammonia (NH3) (mg/L)	<0.05	<0.05	<0.05	<0.05	<0.05
Nitrogen, Nitrate (NO3) (mg/L)	0.078	0.11	0.079	0.085	0.128
Nitrogen, Nitrite (NO2) (mg/L)	<0.05	<0.05	<0.05	<0.05	<0.05
pH (SU)	7.9	7.94	7.91	8.02	7.92
Potassium (K),Dissolved (mg/L)	0.76	<0.5	0.865	0.88	–
Selenium (Se),Dissolved (mg/L)	<0.005	<0.005	<0.005	<0.005	<0.005

Table E-19. MW33 Water Quality 2009 (Page 2 of 2)

Parameter	1/13/2009	4/29/2009	5/14/2009	6/18/2009	8/12/2009
Silver (Ag),Dissolved (mg/L)	<0.001	<0.001	<0.001	<0.001	<0.001
Sodium (Na),Dissolved (mg/L)	3.47	3.9	3.66	3.54	3.85
Sulfate (SO4) (mg/L)	<10	<10	<10	<10	<10
Total Dissolved Solids (mg/L)	164	149	162	173	183
Total Suspended Solids (mg/L)	–	–	–	–	<10
Zinc (Zn),Dissolved (mg/L)	<0.05	<0.05	<0.05	<0.05	–

Table E-20. MW33 Water Quality 2010 (Page 1 of 2)

Parameter	1/26/2010	4/5/2010	5/4/2010	7/8/2010	8/5/2010
Anion - Cation Balance (%)	–	–	–	–	–
Anions (meq/L)	–	–	–	–	–
Arsenic (As),Dissolved (mg/L)	<0.005	<0.005	<0.005	<0.005	<0.005
Bicarbonate (mg/L)	234	233	233	230	232
Cadmium (Cd),Dissolved (mg/L)	–	–	–	–	–
Calcium (Ca),Dissolved (mg/L)	–	–	–	–	–
Carbonate (mg/L)	–	–	–	–	–
Cations (meq/L)	–	–	–	–	–
Chloride (Cl-) (mg/L)	–	–	–	–	–
Copper (Cu),Dissolved (mg/L)	<0.005	<0.005	<0.005	<0.005	<0.005
Cyanide, Total (mg/L)	<0.01	<0.01	<0.01	<0.01	<0.01
Cyanide, WAD (mg/L)	<0.01	<0.01	<0.01	<0.01	<0.01
Electrical Conductivity (µmhos/cm)	356	359	358	358	356
Field Conductivity (µmhos/cm)	227	234	1.42	222	239
Field Depth (ft)	24.3	23.3	21.2	–	22.5
Field ORP (mV)	–	62	258	–	85
Field Oxygen (O2) (mg/L)	9.51	8.69	8.55	–	8.92
Field pH (SU)	7.94	7.71	7.58	7.76	7.76
Field Temperature (° C)	6.7	7.1	6.9	7.4	7.6
Fluoride (mg/L)	0.284	0.281	0.28	0.285	0.271
Gold (Au),Dissolved (mg/L)	<0.001	0.001	<0.001	0.001	<0.001
Lead (Pb),Dissolved (mg/L)	–	–	–	–	–
Magnesium (Mg),Dissolved (mg/L)	–	–	–	–	–
Mercury (Hg),Total (mg/L)	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Nitrogen, Ammonia (NH3) (mg/L)	<0.05	<0.05	<0.05	<0.05	<0.05
Nitrogen, Nitrate (NO3) (mg/L)	0.137	0.118	0.112	0.114	0.135
Nitrogen, Nitrite (NO2) (mg/L)	<0.05	<0.05	<0.05	<0.05	0.073
pH (SU)	7.89	7.91	8	7.72	7.96
Potassium (K),Dissolved (mg/L)	–	–	–	–	–
Selenium (Se),Dissolved (mg/L)	<0.005	<0.005	<0.005	<0.005	<0.005

Table E-20. MW33 Water Quality 2010 (Page 2 of 2)

Parameter	1/26/2010	4/5/2010	5/4/2010	7/8/2010	8/5/2010
Silver (Ag),Dissolved (mg/L)	<0.001	<0.001	<0.001	<0.001	<0.001
Sodium (Na),Dissolved (mg/L)	3.4	3.87	3.85	3.94	4.22
Sulfate (SO4) (mg/L)	<10	<10	<10	<10	<10
Total Dissolved Solids (mg/L)	207	174	187	191	192
Total Suspended Solids (mg/L)	–	–	–	–	–
Zinc (Zn),Dissolved (mg/L)	–	–	–	–	–

WELL MW40
2005–2010

Table E-21. MW40 Water Quality 2005–2006

Parameter	11/3/2005	1/6/2006	4/4/2006	5/5/2006	6/5/2006	8/8/2006	11/7/2006
Anion - Cation Balance (%)	–5.87	–7.63	–3.82	–1.26	–3.58	–1.3	0.441
Anions (meq/L)	0.731	0.732	0.709	0.698	0.686	0.707	0.722
Arsenic (As),Dissolved (mg/L)	<0.005	<0.005	<0.005	<0.005	0.005	<0.005	<0.005
Bicarbonate (mg/L)	–	23.1	23.4	23.5	23	23	23.8
Cadmium (Cd),Dissolved (mg/L)	22.7	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Calcium (Ca),Dissolved (mg/L)	<0.001	7.36	7.83	7.88	7.63	8.2	8.86
Carbonate (mg/L)	7.75	<5	<5	<5	<5	<5	<5
Cations (meq/L)	0	0.628	0.657	0.681	0.638	0.689	0.728
Chloride (Cl-) (mg/L)	0.65	<0.5	0.5	<0.5	<0.5	<0.5	<0.5
Copper (Cu),Dissolved (mg/L)	<0.5	<0.005	<0.005	0.007	0.015	0.014	<0.005
Cyanide, Total (mg/L)	<0.005	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Cyanide, WAD (mg/L)	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Electrical Conductivity (µmhos/cm)	<0.01	78.9	81.4	82	80.5	79.7	81.3
Gold (Au),Dissolved (mg/L)	79.4	0.001	0.001	<0.001	0.001	0.001	<0.001
Magnesium (Mg),Dissolved (mg/L)	–	2.12	2.28	2.27	2.09	2.3	2.18
Nitrogen, Nitrate (NO3) (mg/L)	–	1.01	1.24	1.47	1.41	1.24	1.23
Nitrogen, Nitrite (NO2) (mg/L)	–	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
pH (SU)	–	6.36	7.02	6.58	6.71	6.64	6.39
Potassium (K),Dissolved (mg/L)	–	0.743	0.759	0.777	0.74	0.94	1.02
Selenium (Se),Dissolved (mg/L)	–	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Sodium (Na),Dissolved (mg/L)	–	1.55	1.36	1.87	1.54	1.53	1.85
Sulfate (SO4) (mg/L)	0.002	13.5	10.7	<10	<10	11.6	11.7
Total Dissolved Solids (mg/L)	2.18	58	60	54	35	58	64
Zinc (Zn),Dissolved (mg/L)	–	<0.05	<0.05	<0.05	<0.05	0.065	<0.05

Table E-22. MW40 Water Quality 2007

Parameter	1/9/2007	4/26/2007	5/30/2007	6/27/2007	8/1/2007	11/13/2007
Anion - Cation Balance (%)	–0.793	1.85	2.4	–5.08	–4.48	–0.355
Anions (meq/L)	0.811	0.722	1.21	1.27	0.941	0.614
Arsenic (As),Dissolved (mg/L)	<0.005	<0.005	<0.005	0.005	<0.005	<0.005
Bicarbonate (mg/L)	23.4	23.1	21.3	21.4	22.1	22.6
Cadmium (Cd),Dissolved (mg/L)	<0.001	<0.001	<0.001	0.002	<0.001	<0.001
Calcium (Ca),Dissolved (mg/L)	10.1	8.86	16.1	14.3	9.65	6.4
Carbonate (mg/L)	<5	<5	<5	<5	<5	<5
Cations (meq/L)	0.799	0.75	1.27	1.15	0.861	0.61
Chloride (Cl-) (mg/L)	<0.5	<0.5	<0.5	0.5	<0.5	<0.5
Copper (Cu),Dissolved (mg/L)	<0.005	<0.005	<0.005	<0.005	0.007	<0.005
Cyanide, Total (mg/L)	<0.01	<0.01	0.02	0.011	<0.01	<0.01
Cyanide, WAD (mg/L)	<0.01	<0.01	0.011	<0.01	<0.01	<0.01
Electrical Conductivity (µmhos/cm)	87.2	87.5	159	143	113	88.1
Field Conductivity (µmhos/cm)	100	80	150	–	102	80
Field Depth (ft)	276	275	117	–	191	125
Field pH (SU)	5.8	6.84	6.52	–	6.83	6.47
Field Temperature (° C)	5.8	6.8	8.8	–	9.5	6.9
Gold (Au),Dissolved (mg/L)	0.002	0.002	0.06	0.035	0.023	0.004
Magnesium (Mg),Dissolved (mg/L)	2.5	2.4	4.15	4.03	3	2.44
Nitrogen, Nitrate (NO3) (mg/L)	1.62	1.55	7.46	6.1	3.94	1.95
Nitrogen, Nitrite (NO2) (mg/L)	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
pH (SU)	6.7	6.26	6.55	6.73	6.52	6.85
Potassium (K),Dissolved (mg/L)	<0.5	1.18	1.29	0.951	0.755	0.9
Selenium (Se),Dissolved (mg/L)	<0.005	<0.005	<0.005	0.005	<0.005	<0.005
Sodium (Na),Dissolved (mg/L)	2.05	1.84	2.23	1.81	2.6	1.53
Sulfate (SO4) (mg/L)	15	11.2	16	22.6	14.3	<10
Total Dissolved Solids (mg/L)	67	52	101	82	72	38
Zinc (Zn),Dissolved (mg/L)	<0.05	<0.05	<0.05	<0.05	0.053	<0.05

Table E-23. MW40 Water Quality 2008

Parameter	1/10/2008	4/15/2008	5/30/2008	6/12/2008	8/26/2008	11/5/2008
Anion - Cation Balance (%)	2.16	–2.57	–4.95	0.953	2.22	–1.56
Anions (meq/L)	0.596	0.708	0.741	0.792	0.617	0.706
Arsenic (As),Dissolved (mg/L)	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Bicarbonate (mg/L)	23.7	23.2	22.6	22.8	23.1	23.8
Cadmium (Cd),Dissolved (mg/L)	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Calcium (Ca),Dissolved (mg/L)	7.1	8.18	8.05	9.52	5.95	8.08
Carbonate (mg/L)	<5	<5	<5	<5	<5	<5
Cations (meq/L)	0.622	0.672	0.671	0.808	0.645	0.684
Chloride (Cl-) (mg/L)	0.5	<0.5	<0.5	0.5	0.5	<0.5
Copper (Cu),Dissolved (mg/L)	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Cyanide, Total (mg/L)	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Cyanide, WAD (mg/L)	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Electrical Conductivity (µmhos/cm)	87.8	85.2	87.4	101	82.3	82.2
Field Conductivity (µmhos/cm)	100	80	100	100	90	–
Field Depth (ft)	–	130	130	–	–	–
Field pH (SU)	8.04	7.2	7.11	7.05	7.23	V
Field Temperature (° C)	–	6.7	7.8	7.3	7.9	–
Gold (Au),Dissolved (mg/L)	<0.001	0.002	0.002	0.002	<0.001	<0.001
Magnesium (Mg),Dissolved (mg/L)	1.9	2.25	2.26	2.79	2.15	2.37
Nitrogen, Nitrate (NO3) (mg/L)	1.83	1.67	1.98	2.75	1.1	1.51
Nitrogen, Nitrite (NO2) (mg/L)	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
pH (SU)	6.68	6.73	6.67	6.96	6.3	6.47
Potassium (K),Dissolved (mg/L)	0.71	0.778	0.811	0.94	0.58	0.844
Selenium (Se),Dissolved (mg/L)	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Sodium (Na),Dissolved (mg/L)	2.15	1.36	1.44	1.82	3.6	1.49
Sulfate (SO4) (mg/L)	<10	<10	11	<10	<10	<10
Total Dissolved Solids (mg/L)	38	54	64	63	37	56
Zinc (Zn),Dissolved (mg/L)	<0.05	<0.05	<0.05	<0.05	<0.05	0.0644

Table E-24. MW40 Water Quality 2009 (Page 1 of 2)

Parameter	1/21/2009	4/16/2009	5/27/2009	6/10/2009	8/11/2009
Anion - Cation Balance (%)	–3.93	5.19	4.31	–2.66	–
Anions (meq/L)	0.715	0.536	0.525	0.74	–
Arsenic (As),Dissolved (mg/L)	<0.005	<0.005	<0.005	<0.005	<0.005
Arsenic (As),Total Recoverable (mg/L)	–	–	–	–	<0.005
Bicarbonate (mg/L)	24.1	23.9	23.5	23.7	24.7
Cadmium (Cd),Dissolved (mg/L)	<0.001	<0.001	<0.001	<0.001	–
Calcium (Ca),Dissolved (mg/L)	7.75	6.35	5.95	7.85	–
Carbonate (mg/L)	<5	<5	<5	<5	–
Cations (meq/L)	0.661	0.595	0.573	0.702	–
Chloride (Cl-) (mg/L)	<0.5	<0.5	<0.5	<0.5	–
Copper (Cu),Dissolved (mg/L)	<0.005	<0.005	<0.005	<0.005	<0.005
Cyanide, Total (mg/L)	<0.01	<0.01	<0.01	<0.01	<0.01
Cyanide, WAD (mg/L)	<0.01	<0.01	<0.01	<0.01	<0.01
Electrical Conductivity (µmhos/cm)	82.4	86.1	87.1	86.2	85
Field Conductivity (µmhos/cm)	–	80	90	100	55
Field Depth (ft)	–	118	119	114	119
Field ORP (mV)	–	–	–	–	182
Field Oxygen (O2) (mg/L)	–	–	–	–	7.78
Field pH (SU)	–	6.25	6.18	6.4	6.23
Field Temperature (° C)	–	6.9	7.1	6.7	7.6
Fluoride (mg/L)	–	–	–	–	0.28
Gold (Au),Dissolved (mg/L)	<0.001	0.002	<0.001	<0.001	0.003
Magnesium (Mg),Dissolved (mg/L)	2.31	2.2	2.23	2.57	–
Mercury (Hg),Total (mg/L)	–	–	–	–	<0.0002
Nitrogen, Ammonia (NH3) (mg/L)	–	–	–	–	<0.05
Nitrogen, Nitrate (NO3) (mg/L)	1.57	2.02	1.96	2.01	1.84
Nitrogen, Nitrite (NO2) (mg/L)	<0.05	<0.05	<0.05	<0.05	<0.05
pH (SU)	6.57	6.45	6.38	6.57	6.72
Potassium (K),Dissolved (mg/L)	0.84	0.723	0.81	0.789	–
Selenium (Se),Dissolved (mg/L)	<0.005	<0.005	<0.005	<0.005	<0.005
Selenium (Se),Total Recoverable (mg/L)	–	–	–	–	<0.005

Table E-24. MW40 Water Quality 2009 (Page 2 of 2)

Parameter	1/21/2009	4/16/2009	5/27/2009	6/10/2009	8/11/2009
Silver (Ag),Dissolved (mg/L)	–	–	–	–	<0.001
Sodium (Na),Dissolved (mg/L)	1.45	1.81	1.65	1.81	1.73
Sulfate (SO4) (mg/L)	<10	<10	<10	<10	<10
Total Dissolved Solids (mg/L)	56	57	55	57	54
Zinc (Zn),Dissolved (mg/L)	<0.05	<0.05	<0.05	<0.05	–

Table E-25. MW40 Water Quality 2010

Parameter	1/13/2010	4/7/2010	5/18/2010	8/26/2010
Arsenic (As),Dissolved (mg/L)	<0.005	<0.005	<0.005	<0.005
Bicarbonate (mg/L)	24	24.3	23.9	24.3
Cadmium (Cd),Dissolved (mg/L)	–	<0.001	–	–
Copper (Cu),Dissolved (mg/L)	<0.005	<0.005	<0.005	<0.005
Cyanide, Total (mg/L)	<0.01	<0.01	<0.01	<0.01
Cyanide, WAD (mg/L)	<0.01	<0.01	<0.01	<0.01
Electrical Conductivity (µmhos/cm)	88.9	88.3	89.3	88.6
Field Conductivity (µmhos/cm)	58	60.3	59	57
Field Depth (ft)	99	126	112	–
Field ORP (mV)	155	100	76	180
Field Oxygen (O2) (mg/L)	8.45	7.59	8.19	9.47
Field pH (SU)	6.35	6.51	6.61	6.2
Field Temperature (° C)	7	8.2	7.1	8.1
Fluoride (mg/L)	0.265	0.253	0.272	0.253
Gold (Au),Dissolved (mg/L)	<0.001	<0.001	<0.001	<0.001
Mercury (Hg),Total (mg/L)	<0.0002	<0.0002	<0.0002	<0.0002
Nitrogen, Ammonia (NH3) (mg/L)	<0.05	<0.05	<0.05	<0.05
Nitrogen, Nitrate (NO3) (mg/L)	2.24	2.37	2.43	2.48
Nitrogen, Nitrite (NO2) (mg/L)	<0.05	<0.05	<0.05	<0.05
pH (SU)	6.71	6.56	6.5	6.33
Selenium (Se),Dissolved (mg/L)	<0.005	<0.005	<0.005	<0.005
Silver (Ag),Dissolved (mg/L)	0.00117	<0.001	<0.001	<0.001
Sodium (Na),Dissolved (mg/L)	1.87	1.54	1.93	2.06
Sulfate (SO4) (mg/L)	<10	10.2	<10	<10
Total Dissolved Solids (mg/L)	53	69	59	65

WELL SM01A
2006–2010

Table E-26. SM01A Water Quality 2006

Parameter	1/11/2006	4/10/2006	5/17/2006	8/1/2006
Aluminum (Al),Dissolved (mg/L)	0.045	0.039	0.047	0.073
Anion - Cation Balance (%)	–	–	–	–1.69
Anions (meq/L)	–	–	–	30.6
Arsenic (As),Dissolved (mg/L)	0.005	0.005	<0.005	<0.005
Bicarbonate (mg/L)	84	91.1	71.5	83.4
Calcium (Ca),Dissolved (mg/L)	319	315	237	396
Cations (meq/L)	–	–	–	29.6
Chloride (Cl-) (mg/L)	5.5	5.25	4	5.75
Copper (Cu),Dissolved (mg/L)	<0.005	<0.005	0.015	<0.005
Cyanide, Total (mg/L)	<0.01	<0.01	<0.01	<0.01
Cyanide, WAD (mg/L)	<0.01	<0.01	<0.01	<0.01
Electrical Conductivity (µmhos/cm)	1970	2110	1620	2390
Iron (Fe),Dissolved (mg/L)	13.4	15.7	11.4	20.8
Magnesium (Mg),Dissolved (mg/L)	70.5	75.9	59.5	101
Manganese (Mn),Dissolved (mg/L)	10.2	12.8	13.4	28
Nitrogen, Nitrate (NO3) (mg/L)	0.064	<0.05	0.158	<0.05
Nitrogen, Nitrite (NO2) (mg/L)	<0.05	<0.05	<0.05	<0.05
pH (SU)	6.66	6.52	6.52	6.24
Potassium (K),Dissolved (mg/L)	5.54	4.87	4.26	6
Sodium (Na),Dissolved (mg/L)	5.32	5.46	4.92	7.25
Sulfate (SO4) (mg/L)	1250	1330	847	1400
Total Dissolved Solids (mg/L)	1770	1950	1400	2290
Total Suspended Solids (mg/L)	15	10	20	16
Zinc (Zn),Dissolved (mg/L)	0.087	0.141	0.096	0.149

Table E-27. SM01A Water Quality 2007

Parameter	1/3/2007	4/19/2007	5/17/2007	8/15/2007
Aluminum (Al),Dissolved (mg/L)	0.067	0.059	0.065	0.103
Arsenic (As),Dissolved (mg/L)	<0.005	<0.005	<0.005	0.008
Bicarbonate (mg/L)	86.7	73.4	84	90.6
Calcium (Ca),Dissolved (mg/L)	335	337	285	413
Chloride (Cl-) (mg/L)	5.25	5	5.5	3
Copper (Cu),Dissolved (mg/L)	<0.005	<0.005	0.013	0.008
Cyanide, Total (mg/L)	<0.01	<0.01	<0.01	<0.01
Cyanide, WAD (mg/L)	<0.01	<0.01	<0.01	<0.01
Electrical Conductivity (µmhos/cm)	2280	2100	1960	2430
Field Conductivity (µmhos/cm)	1890	1550	1390	–
Field Depth (ft)	12.3	12.5	12.5	11.9
Field pH (SU)	6.21	6.39	6.35	6.08
Field Temperature (° C)	6.3	6.5	8.5	–
Iron (Fe),Dissolved (mg/L)	19.5	17.8	14.1	24.7
Magnesium (Mg),Dissolved (mg/L)	85.9	73.8	79.7	109
Manganese (Mn),Dissolved (mg/L)	17.1	16.3	17.7	29.6
Nitrogen, Nitrate (NO3) (mg/L)	<0.05	0.163	0.082	<0.05
Nitrogen, Nitrite (NO2) (mg/L)	<0.05	<0.05	<0.05	<0.05
pH (SU)	6.68	6.43	6.3	6.06
Potassium (K),Dissolved (mg/L)	6.35	5.9	5.54	9.98
Sodium (Na),Dissolved (mg/L)	7.15	5.58	6.11	17.2
Sulfate (SO4) (mg/L)	1390	1190	1130	1510
Total Dissolved Solids (mg/L)	2050	1900	1780	2290
Total Suspended Solids (mg/L)	12	28	32	16
Zinc (Zn),Dissolved (mg/L)	0.104	0.12	0.189	0.17

Table E-28. SM01A Water Quality 2008 (Page 1 of 2)

Parameter	1/30/2008	4/24/2008	6/18/2008	8/28/2008	10/8/2008
Aluminum (Al),Dissolved (mg/L)	0.034	0.05	0.0725	0.105	0.0701
Anion - Cation Balance (%)	0.324	–	–1.17	–1.81	–0.5325
Anions (meq/L)	31.1	–	38.6	33.3	33.45
Arsenic (As),Dissolved (mg/L)	<0.005	<0.005	<0.005	0.00558	<0.005
Barium (Ba),Dissolved (mg/L)	–	–	–	–	0.03145
Bicarbonate (mg/L)	89.5	79.7	101	77	91.1125
Cadmium (Cd),Dissolved (mg/L)	–	–	–	–	<0.0010513
Calcium (Ca),Dissolved (mg/L)	450	355	489	390	427.5
Cations (meq/L)	31.3	–	37.7	32.1	33.05
Chloride (Cl-) (mg/L)	4.75	4.25	<0.5	4	5.375
Chromium (Cr),Dissolved (mg/L)	–	–	–	–	<0.001
Copper (Cu),Dissolved (mg/L)	<0.005	<0.005	<0.005	<0.005	<0.005
Cyanide, Total (mg/L)	<0.01	<0.01	<0.01	<0.01	<0.01
Cyanide, WAD (mg/L)	<0.01	<0.01	<0.01	<0.01	<0.01
Electrical Conductivity (µmhos/cm)	2240	2330	2740	2600	2627.5
Field Conductivity (µmhos/cm)	230	210	240	2300	–
Field Depth (ft)	13.4	11.6	9.4	11.5	–
Field pH (SU)	6.83	6.62	6.21	6.05	–
Field Temperature (° C)	6.5	6.6	8	7.5	–
Fluoride (mg/L)	–	–	–	–	0.52313
Gold (Au),Dissolved (mg/L)	–	–	–	–	<0.001
Iron (Fe),Dissolved (mg/L)	9.64	17.2	22.8	30.5	25.6625
Lead (Pb),Dissolved (mg/L)	–	–	–	–	<0.001
Magnesium (Mg),Dissolved (mg/L)	98.1	93.4	138	130	121
Manganese (Mn),Dissolved (mg/L)	10.6	15.6	39.2	33.6	36.8375
Mercury (Hg),Total (mg/L)	–	–	–	–	0.0002375
Nitrogen, Nitrate (NO3) (mg/L)	0.073	<0.05	<0.05	<0.05	<0.05
Nitrogen, Nitrite (NO2) (mg/L)	<0.05	<0.05	<0.05	<0.05	<0.05
pH (SU)	6.73	6.75	6.7	6.03	6.5925
Potassium (K),Dissolved (mg/L)	5.64	6.14	5.97	5.84	5.4
Selenium (Se),Dissolved (mg/L)	–	–	–	–	<0.00507

Table E-28. SM01A Water Quality 2008 (Page 2 of 2)

Parameter	1/30/2008	4/24/2008	6/18/2008	8/28/2008	10/8/2008
Sodium (Na),Dissolved (mg/L)	5.4	6.24	9.7	13.8	7.75
Strontium (Sr),Dissolved (mg/L)	–	–	–	–	1.6125
Sulfate (SO4) (mg/L)	1420	1460	1780	1540	1567.5
Total Dissolved Solids (mg/L)	2120	2220	2760	2580	2603.75
Total Suspended Solids (mg/L)	32	33	41	114	22.5
Zinc (Zn),Dissolved (mg/L)	0.107	0.179	0.22	0.2	0.23988

Table E-29. SM01A Water Quality 2009

Parameter	1/22/2009	4/22/2009	5/20/2009	6/17/2009	8/5/2009
Aluminum (Al),Dissolved (mg/L)	0.0587	0.0854	0.086	0.0761	0.159
Anion - Cation Balance (%)	–	–1.95	–1.78	1.8	1.95
Anions (meq/L)	–	36.5	31.8	36.3	36.7
Arsenic (As),Dissolved (mg/L)	<0.005	<0.005	<0.005	<0.005	0.0115
Bicarbonate (mg/L)	60.5	83	86.2	97.5	104
Calcium (Ca),Dissolved (mg/L)	345	450	388	484	494
Carbonate (mg/L)	<5	–	–	<5	–
Cations (meq/L)	–	35.1	30.7	37.6	38.1
Chloride (Cl-) (mg/L)	–	4	4.5	2	6.5
Copper (Cu),Dissolved (mg/L)	0.00592	<0.005	<0.005	<0.005	0.00866
Cyanide, Total (mg/L)	<0.01	<0.01	<0.01	<0.01	<0.01
Cyanide, WAD (mg/L)	<0.01	<0.01	<0.01	<0.01	<0.01
Electrical Conductivity (µmhos/cm)	2340	2610	2420	2700	2680
Field Conductivity (µmhos/cm)	–	2.6	2.4	2800	2900
Field Depth (ft)	–	6.92	10.2	–	14.1
Field pH (SU)	–	6.04	6.04	6	5.97
Field Temperature (° C)	–	6.6	6.6	6.5	6.7
Iron (Fe),Dissolved (mg/L)	16.9	27.4	20	24.3	31.7
Magnesium (Mg),Dissolved (mg/L)	108	131	121	138	139
Manganese (Mn),Dissolved (mg/L)	17.7	34.1	25.7	43.3	39.5
Nitrogen, Nitrate (NO3) (mg/L)	<0.05	0.073	0.096	<0.05	<0.05
Nitrogen, Nitrite (NO2) (mg/L)	<0.05	<0.05	<0.05	<0.05	<0.05
pH (SU)	6.11	6.48	6.44	6.79	6.12
Potassium (K),Dissolved (mg/L)	4.51	6.09	5.18	5.96	6.86
Sodium (Na),Dissolved (mg/L)	6.5	10.3	7.8	8.5	10
Sulfate (SO4) (mg/L)	1440	1680	1460	1660	1670
Total Dissolved Solids (mg/L)	2130	2520	2310	2730	2730
Total Suspended Solids (mg/L)	36	23	19	28	11
Zinc (Zn),Dissolved (mg/L)	0.18	0.235	0.173	0.232	0.252

Table E-30. SM01A Water Quality 2010

Parameter	1/20/2010	4/26/2010	5/24/2010	6/30/2010	8/12/2010
Aluminum (Al),Dissolved (mg/L)	0.0957	0.0989	0.0839	0.0773	0.108
Anion - Cation Balance (%)	–0.734	–0.313	–1.56	–0.982	–0.699
Anions (meq/L)	32.5	28.6	38.9	42.3	42.4
Arsenic (As),Dissolved (mg/L)	<0.005	<0.005	<0.005	<0.005	<0.005
Bicarbonate (mg/L)	81.9	68.6	113	106	104
Calcium (Ca),Dissolved (mg/L)	413	380	466	514	554
Cations (meq/L)	32	28.5	37.7	41.5	41.9
Chloride (Cl-) (mg/L)	6.5	5.75	6	7.25	4.24
Copper (Cu),Dissolved (mg/L)	<0.005	0.0116	<0.005	<0.005	<0.005
Cyanide, Total (mg/L)	<0.01	<0.01	<0.01	<0.01	<0.01
Cyanide, WAD (mg/L)	<0.01	<0.01	<0.01	<0.01	<0.01
Electrical Conductivity (µmhos/cm)	2430	2100	2720	2780	2750
Field Conductivity (µmhos/cm)	2400	1330	1850	2600	–
Field Depth (ft)	16.9	14.2	13.3	–	–
Field pH (SU)	6.02	6.54	5.93	6.1	–
Field Temperature (° C)	7.3	6.9	6.3	6.3	–
Iron (Fe),Dissolved (mg/L)	20.4	16.8	26.4	25.5	32.3
Magnesium (Mg),Dissolved (mg/L)	122	101	150	159	146
Manganese (Mn),Dissolved (mg/L)	22.7	20.7	39.9	39.9	40.4
Nitrogen, Nitrate (NO3) (mg/L)	<0.05	0.055	<0.05	<0.05	<0.05
Nitrogen, Nitrite (NO2) (mg/L)	<0.05	<0.05	<0.05	<0.05	<0.05
pH (SU)	6.8	6.14	6.31	6.2	6.15
Potassium (K),Dissolved (mg/L)	6.32	6.26	7.4	7.35	7.93
Sodium (Na),Dissolved (mg/L)	8.25	6.59	11	25.1	12.4
Sulfate (SO4) (mg/L)	1490	1320	1770	1940	1950
Total Dissolved Solids (mg/L)	2290	1900	2780	2810	2860
Total Suspended Solids (mg/L)	<10	23	13	15	<10
Zinc (Zn),Dissolved (mg/L)	0.195	0.178	0.268	0.309	0.292

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Table E-31. SM02A Water Quality 2006

Parameter	1/17/2006	4/10/2006	5/12/2006	8/2/2006
Arsenic (As),Dissolved (mg/L)	<0.005	<0.005	<0.005	<0.005
Copper (Cu),Dissolved (mg/L)	0.009	0.009	0.013	0.007
Cyanide, Total (mg/L)	<0.01	<0.01	<0.01	<0.01
Cyanide, WAD (mg/L)	<0.01	<0.01	<0.01	<0.01
Electrical Conductivity (µmhos/cm)	784	806	750	708
Fluoride (mg/L)	0.109	0.109	0.117	0.108
Mercury (Hg),Total (mg/L)	<0.0002	<0.0002	<0.0002	<0.0002
Nitrogen, Nitrate (NO3) (mg/L)	6.96	6.74	4.38	4.73
Nitrogen, Nitrite (NO2) (mg/L)	<0.05	<0.05	<0.05	<0.05
pH (SU)	7.1	7.08	7	6.85
Selenium (Se),Dissolved (mg/L)	<0.005	<0.005	<0.005	<0.005
Sodium (Na),Dissolved (mg/L)	8.57	9.01	8.2	8.83
Sulfate (SO4) (mg/L)	62.7	134	106	68.4
Total Dissolved Solids (mg/L)	468	497	461	728
Zinc (Zn),Dissolved (mg/L)	<0.05	<0.05	<0.05	<0.05

Table E-32. SM02A Water Quality 2007

Parameter	1/4/2007	4/19/2007	5/26/2007	8/16/2007
Arsenic (As),Dissolved (mg/L)	<0.005	<0.005	<0.005	<0.005
Copper (Cu),Dissolved (mg/L)	0.01	<0.005	0.019	0.009
Cyanide, Total (mg/L)	<0.01	<0.01	<0.01	<0.01
Cyanide, WAD (mg/L)	<0.01	<0.01	<0.01	<0.01
Electrical Conductivity (µmhos/cm)	732	539	711	725
Field Conductivity (µmhos/cm)	620	660	590	582
Field Depth (ft)	77.8	10.5	10.3	15.4
Field pH (SU)	7.17	7.42	6.98	7.04
Field Temperature (° C)	5.6	6	7.5	9.9
Fluoride (mg/L)	0.112	0.197	0.111	0.122
Mercury (Hg),Total (mg/L)	<0.0002	<0.0002	<0.0002	<0.0002
Nitrogen, Nitrate (NO3) (mg/L)	4.63	0.741	3.68	3.2
Nitrogen, Nitrite (NO2) (mg/L)	<0.05	<0.05	<0.05	<0.05
pH (SU)	7.08	7.91	6.94	7.2
Selenium (Se),Dissolved (mg/L)	<0.005	<0.005	<0.005	<0.005
Sodium (Na),Dissolved (mg/L)	10.3	1.54	9.28	8.09
Sulfate (SO4) (mg/L)	51.8	75.5	58.8	55.2
Total Dissolved Solids (mg/L)	433	329	428	420
Zinc (Zn),Dissolved (mg/L)	<0.05	0.059	<0.05	<0.05

Table E-33. SM02A Water Quality 2008 (Page 1 of 2)

Parameter	1/29/2008	4/24/2008	6/24/2008	8/28/2008	10/15/2008
Aluminum (Al),Dissolved (mg/L)	–	–	–	–	0.0129
Anion - Cation Balance (%)	–	–	–	–	0.0372
Anions (meq/L)	–	–	–	–	6.99
Arsenic (As),Dissolved (mg/L)	<0.005	<0.005	<0.005	<0.005	<0.005
Barium (Ba),Dissolved (mg/L)	–	–	–	–	0.117
Bicarbonate (mg/L)	–	–	–	–	352
Cadmium (Cd),Dissolved (mg/L)	–	–	–	–	<0.001
Calcium (Ca),Dissolved (mg/L)	–	–	–	–	106
Cations (meq/L)	–	–	–	–	6.99
Chloride (Cl-) (mg/L)	–	–	–	–	5.5
Chromium (Cr),Dissolved (mg/L)	–	–	–	–	<0.001
Copper (Cu),Dissolved (mg/L)	0.013	0.02	0.0215	0.0219	0.0111
Cyanide, Total (mg/L)	<0.01	<0.01	<0.01	<0.01	<0.01
Cyanide, WAD (mg/L)	<0.01	<0.01	<0.01	<0.01	<0.01
Electrical Conductivity (µmhos/cm)	726	777	724	717	691
Field Conductivity (µmhos/cm)	92	700	640	660	–
Field Depth (ft)	50.5	50	15	15.3	–
Field pH (SU)	7.21	7.27	7.26	7.16	–
Field Temperature (° C)	5.7	7.5	9.7	8.7	–
Fluoride (mg/L)	0.143	0.166	0.169	0.138	0.17
Gold (Au),Dissolved (mg/L)	–	–	–	–	<0.001
Iron (Fe),Dissolved (mg/L)	–	–	–	–	0.248
Lead (Pb),Dissolved (mg/L)	–	–	–	–	<0.001
Magnesium (Mg),Dissolved (mg/L)	–	–	–	–	15.2
Manganese (Mn),Dissolved (mg/L)	–	–	–	–	0.0353
Mercury (Hg),Total (mg/L)	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Nitrogen, Nitrate (NO3) (mg/L)	3.01	6.29	4.17	0.765	3.2
Nitrogen, Nitrite (NO2) (mg/L)	<0.05	<0.05	<0.05	<0.05	<0.05
pH (SU)	7.17	7.33	6.86	7.17	7.54
Potassium (K),Dissolved (mg/L)	–	–	–	–	1.85
Selenium (Se),Dissolved (mg/L)	<0.005	<0.005	<0.005	<0.005	<0.005

Table E-33. SM02A Water Quality 2008 (Page 2 of 2)

Parameter	1/29/2008	4/24/2008	6/24/2008	8/28/2008	10/15/2008
Sodium (Na),Dissolved (mg/L)	8.72	8.4	7.29	8.25	9.35
Strontium (Sr),Dissolved (mg/L)	–	–	–	–	0.399
Sulfate (SO4) (mg/L)	34.9	85.8	69.9	51	39.6
Total Dissolved Solids (mg/L)	423	456	458	437	408
Zinc (Zn),Dissolved (mg/L)	0.051	0.051	0.0806	<0.05	0.0515

Table E-34. SM02A Water Quality 2009

Parameter	4/22/2009	5/19/2009	8/5/2009
Arsenic (As),Dissolved (mg/L)	<0.005	<0.005	<0.005
Copper (Cu),Dissolved (mg/L)	0.0299	0.0139	<0.005
Cyanide, Total (mg/L)	<0.01	<0.01	<0.01
Cyanide, WAD (mg/L)	<0.01	<0.01	<0.01
Electrical Conductivity (µmhos/cm)	708	613	582
Field Conductivity (µmhos/cm)	740	660	670
Field Depth (ft)	8.43	14.4	19.4
Field pH (SU)	7.16	6.95	6.58
Field Temperature (° C)	6.8	7.1	8.4
Fluoride (mg/L)	0.143	0.123	0.382
Mercury (Hg),Total (mg/L)	<0.0002	<0.0002	<0.0002
Nitrogen, Nitrate (NO3) (mg/L)	3.12	5.59	<0.05
Nitrogen, Nitrite (NO2) (mg/L)	<0.05	<0.05	<0.05
pH (SU)	7.11	7.1	6.43
Selenium (Se),Dissolved (mg/L)	<0.005	<0.005	<0.005
Sodium (Na),Dissolved (mg/L)	7.58	6.84	4.17
Sulfate (SO4) (mg/L)	85.2	36.9	148
Total Dissolved Solids (mg/L)	448	362	361
Zinc (Zn),Dissolved (mg/L)	0.083	<0.05	<0.05

Table E-35. SM02A Water Quality 2010

Parameter	1/19/2010	4/22/2010	5/26/2010	8/12/2010
Arsenic (As),Dissolved (mg/L)	<0.005	<0.005	<0.005	<0.005
Copper (Cu),Dissolved (mg/L)	0.00633	0.0161	0.0135	0.00861
Cyanide, Total (mg/L)	<0.01	<0.01	<0.01	<0.01
Cyanide, WAD (mg/L)	<0.01	<0.01	<0.01	<0.01
Electrical Conductivity (µmhos/cm)	608	725	644	589
Field Conductivity (µmhos/cm)	620	457	389	–
Field Depth (ft)	41.1	13.3	13.1	–
Field pH (SU)	6.98	7.39	6.86	–
Field Temperature (° C)	7.2	6.8	6.4	–
Fluoride (mg/L)	0.104	0.136	0.126	0.113
Mercury (Hg),Total (mg/L)	<0.0002	<0.0002	–	<0.0002
Nitrogen, Nitrate (NO3) (mg/L)	2.43	2.62	2.52	2.14
Nitrogen, Nitrite (NO2) (mg/L)	<0.05	<0.05	<0.05	<0.05
pH (SU)	7.15	7.42	7.2	7.13
Selenium (Se),Dissolved (mg/L)	<0.005	<0.005	<0.005	<0.005
Sodium (Na),Dissolved (mg/L)	7.56	8.33	8.32	7.33
Sulfate (SO4) (mg/L)	49.9	110	72.7	59.4
Total Dissolved Solids (mg/L)	351	434	391	362
Zinc (Zn),Dissolved (mg/L)	<0.05	0.0537	<0.05	<0.05

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Table E-36. SM03A Water Quality 2006

Parameter	1/11/2006	4/10/2006	5/12/2006	8/2/2006
Arsenic (As),Dissolved (mg/L)	0.007	0.006	0.009	0.006
Barium (Ba),Dissolved (mg/L)	0.024	0.026	0.02	0.022
Bicarbonate (mg/L)	167	176	175	157
Cadmium (Cd),Dissolved (mg/L)	<0.001	<0.001	<0.001	<0.001
Chloride (Cl-) (mg/L)	8.25	3.5	3.75	5
Chromium (Cr),Dissolved (mg/L)	<0.001	<0.001	<0.001	<0.001
Copper (Cu),Dissolved (mg/L)	<0.005	<0.005	<0.005	<0.005
Cyanide, Total (mg/L)	<0.01	<0.01	<0.01	<0.01
Cyanide, WAD (mg/L)	<0.01	<0.01	<0.01	<0.01
Electrical Conductivity (µmhos/cm)	613	626	628	599
Fluoride (mg/L)	0.346	0.333	0.354	0.346
Gold (Au),Dissolved (mg/L)	0.006	0.006	0.006	<0.001
Iron (Fe),Dissolved (mg/L)	11.7	11.5	12.4	11
Lead (Pb),Dissolved (mg/L)	<0.001	<0.001	<0.001	<0.001
Mercury (Hg),Total (mg/L)	<0.0002	<0.0002	<0.0002	<0.0002
Nitrogen, Nitrate (NO3) (mg/L)	<0.05	0.467	0.2	<0.05
Nitrogen, Nitrite (NO2) (mg/L)	<0.05	<0.05	<0.05	<0.05
pH (SU)	6.48	6.59	6.78	6.57
Selenium (Se),Dissolved (mg/L)	<0.005	<0.005	<0.005	<0.005
Sodium (Na),Dissolved (mg/L)	3.37	3.62	3.43	3.96
Sulfate (SO4) (mg/L)	187	169	177	163
Total Dissolved Solids (mg/L)	387	390	395	407
Zinc (Zn),Dissolved (mg/L)	<0.05	0.051	<0.05	<0.05

Table E-37. SM03A Water Quality 2007

Parameter	1/4/2007	4/19/2007	5/26/2007	8/14/2007
Arsenic (As),Dissolved (mg/L)	0.007	<0.005	0.006	0.009
Barium (Ba),Dissolved (mg/L)	0.019	0.015	0.022	0.025
Bicarbonate (mg/L)	175	168	155	169
Cadmium (Cd),Dissolved (mg/L)	0.001	<0.001	<0.001	<0.001
Chloride (Cl-) (mg/L)	3	3	3.25	3.75
Chromium (Cr),Dissolved (mg/L)	<0.001	<0.001	<0.001	<0.001
Copper (Cu),Dissolved (mg/L)	<0.005	<0.005	<0.005	<0.005
Cyanide, Total (mg/L)	<0.01	<0.01	<0.01	<0.01
Cyanide, WAD (mg/L)	<0.01	<0.01	<0.01	<0.01
Electrical Conductivity (µmhos/cm)	615	613	587	586
Field Conductivity (µmhos/cm)	570	570	540	535
Field Depth (ft)	27.4	26.5	24.9	24.1
Field pH (SU)	6.66	6.77	6.48	6.55
Field Temperature (° C)	7.3	7.9	9	11
Fluoride (mg/L)	0.349	0.328	0.357	0.34
Gold (Au),Dissolved (mg/L)	0.003	<0.001	<0.001	<0.001
Iron (Fe),Dissolved (mg/L)	11	9.88	10.8	11.3
Lead (Pb),Dissolved (mg/L)	<0.001	0.001	<0.005	0.003
Mercury (Hg),Total (mg/L)	<0.0002	<0.0002	<0.0002	<0.0002
Nickel (Ni),Total Recoverable (mg/L)	–	–	–	–
Nitrogen, Nitrate (NO3) (mg/L)	<0.05	<0.05	<0.05	<0.05
Nitrogen, Nitrite (NO2) (mg/L)	<0.05	<0.05	<0.05	<0.05
pH (SU)	6.86	7.04	6.87	6.68
Selenium (Se),Dissolved (mg/L)	<0.005	<0.005	<0.005	<0.005
Sodium (Na),Dissolved (mg/L)	4.5	3.67	3.75	4.05
Sulfate (SO4) (mg/L)	177	178	170	175
Total Dissolved Solids (mg/L)	404	403	392	331
Zinc (Zn),Dissolved (mg/L)	<0.05	<0.05	<0.05	0.051

Table E-38. SM03A Water Quality 2008 (Page 1 of 2)

Parameter	1/29/2008	4/22/2008	5/16/2008	8/28/2008
Arsenic (As),Dissolved (mg/L)	0.005	0.005	0.00748	0.0091
Arsenic (As),Total Recoverable (mg/L)	–	–	0.0609	–
Barium (Ba),Dissolved (mg/L)	0.018	0.019	0.0237	0.0213
Bicarbonate (mg/L)	165	166	157	172
Cadmium (Cd),Dissolved (mg/L)	<0.001	<0.001	<0.001	<0.001
Cadmium (Cd),Total Recoverable (mg/L)	–	–	<0.001	–
Calcium (Ca),Dissolved (mg/L)	–	–	51.1	–
Chloride (Cl-) (mg/L)	3.25	3	3.25	4.75
Chromium (Cr),Dissolved (mg/L)	<0.001	<0.001	<0.001	<0.001
Chromium (Cr),Total Recoverable (mg/L)	–	–	0.00465	–
Copper (Cu),Dissolved (mg/L)	<0.005	<0.005	<0.005	<0.005
Copper (Cu),Total Recoverable (mg/L)	–	–	0.039	–
Cyanide, Total (mg/L)	<0.01	<0.01	<0.01	<0.01
Cyanide, WAD (mg/L)	<0.01	<0.01	<0.01	<0.01
Electrical Conductivity (µmhos/cm)	588	594	604	596
Field Conductivity (µmhos/cm)	6	580	560	550
Field Depth (ft)	22	–	21.9	–
Field pH (SU)	7.04	6.72	7.13	6.69
Field Temperature (° C)	6	8.2	9.2	9.4
Fluoride (mg/L)	0.369	0.38	0.381	0.402
Gold (Au),Dissolved (mg/L)	<0.001	0.013	<0.001	0.001
Hardness (mg/L)	–	–	253	–
Iron (Fe),Dissolved (mg/L)	11.2	11.9	12.1	13.2
Lead (Pb),Dissolved (mg/L)	<0.001	<0.001	<0.001	<0.001
Lead (Pb),Total Recoverable (mg/L)	–	–	0.0243	–
Magnesium (Mg),Dissolved (mg/L)	–	–	30.4	–
Mercury (Hg),Total (mg/L)	<0.0002	<0.0002	<0.0002	<0.0002
Nickel (Ni),Total Recoverable (mg/L)	–	–	0.0725	–

Table E-38. SM03A Water Quality 2008 (Page 2 of 2)

Parameter	1/29/2008	4/22/2008	5/16/2008	8/28/2008
Nitrogen, Nitrate (NO3) (mg/L)	<0.05	0.178	0.072	<0.05
Nitrogen, Nitrite (NO2) (mg/L)	<0.05	<0.05	<0.05	<0.05
pH (SU)	6.95	7.24	6.88	6.53
Selenium (Se),Dissolved (mg/L)	<0.005	<0.005	<0.005	<0.005
Selenium (Se),Total Recoverable (mg/L)	–	–	<0.005	–
Silver (Ag),Total Recoverable (mg/L)	–	–	<0.001	–
Sodium (Na),Dissolved (mg/L)	3.3	6.25	4.4	4.8
Sulfate (SO4) (mg/L)	172	165	177	139
Total Dissolved Solids (mg/L)	377	368	404	384
Total Suspended Solids (mg/L)	–	–	59	–
Zinc (Zn),Dissolved (mg/L)	<0.05	0.222	0.115	<0.05
Zinc (Zn),Total Recoverable (mg/L)	–	–	0.108	–

Table E-39. SM03A Water Quality 2009

Parameter	1/26/2009	4/21/2009	5/19/2009	6/17/2009	8/6/2009
Arsenic (As),Dissolved (mg/L)	<0.005	0.00524	<0.005	<0.005	<0.005
Barium (Ba),Dissolved (mg/L)	0.0191	0.0161	0.0203	0.0166	0.102
Bicarbonate (mg/L)	179	188	189	186	327
Cadmium (Cd),Dissolved (mg/L)	<0.001	<0.001	<0.001	<0.001	<0.001
Chloride (Cl-) (mg/L)	2	2.25	1.75	2	5
Chromium (Cr),Dissolved (mg/L)	<0.001	<0.001	<0.001	<0.001	<0.001
Copper (Cu),Dissolved (mg/L)	<0.005	<0.005	<0.005	0.00805	0.018
Cyanide, Total (mg/L)	<0.01	<0.01	<0.01	<0.01	<0.01
Cyanide, WAD (mg/L)	<0.01	<0.01	<0.01	<0.01	<0.01
Electrical Conductivity (µmhos/cm)	614	617	618	611	621
Field Conductivity (µmhos/cm)	–	640	650	660	560
Field Depth (ft)	–	17	18.5	–	24.1
Field pH (SU)	–	6.51	6.56	6.54	6.93
Field Temperature (° C)	–	7.7	7.9	8.3	7.1
Fluoride (mg/L)	0.363	0.378	0.394	0.389	–
Gold (Au),Dissolved (mg/L)	0.001	0.002	0.004	<0.001	<0.001
Iron (Fe),Dissolved (mg/L)	7.47	9.79	6.35	7.69	<0.05
Lead (Pb),Dissolved (mg/L)	0.00135	<0.001	0.0018	0.00172	<0.001
Mercury (Hg),Total (mg/L)	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Nitrogen, Nitrate (NO3) (mg/L)	<0.05	<0.05	<0.05	<0.05	2.27
Nitrogen, Nitrite (NO2) (mg/L)	<0.05	<0.05	<0.05	<0.05	<0.05
pH (SU)	6.92	6.8	6.63	6.76	7.42
Selenium (Se),Dissolved (mg/L)	<0.005	<0.005	<0.005	<0.005	<0.005
Sodium (Na),Dissolved (mg/L)	3.75	5.9	4.03	–	6.44
Strontium (Sr),Dissolved (mg/L)	–	–	–	0.447	–
Sulfate (SO4) (mg/L)	141	158	147	145	39.7
Total Dissolved Solids (mg/L)	367	395	393	378	377
Zinc (Zn),Dissolved (mg/L)	<0.05	<0.05	<0.05	<0.05	<0.05

Table E-40. SM03A Water Quality 2010

Parameter	1/21/2010	4/26/2010	5/26/2010	6/29/2010	8/12/2010
Arsenic (As),Dissolved (mg/L)	0.00635	<0.005	0.00584	0.00833	0.00515
Barium (Ba),Dissolved (mg/L)	0.0213	0.0195	0.018	0.0248	0.0227
Bicarbonate (mg/L)	176	182	178	181	192
Cadmium (Cd),Dissolved (mg/L)	<0.001	<0.001	–	0.00293	<0.001
Chloride (Cl-) (mg/L)	2	1.5	5.25	1.5	2.66
Chromium (Cr),Dissolved (mg/L)	<0.001	<0.001	<0.001	<0.001	<0.001
Copper (Cu),Dissolved (mg/L)	<0.005	0.00608	<0.005	0.0053	<0.005
Cyanide, Total (mg/L)	<0.01	<0.01	<0.01	<0.01	<0.01
Cyanide, WAD (mg/L)	<0.01	<0.01	<0.01	<0.01	<0.01
Electrical Conductivity (µmhos/cm)	600	607	609	597	607
Field Conductivity (µmhos/cm)	650	430	426	540	–
Field Depth (ft)	21.8	20.5	20.3	–	–
Field pH (SU)	6.62	8.95	6.55	6.61	–
Field Temperature (° C)	8.1	8	8	10.8	–
Fluoride (mg/L)	0.382	0.361	0.391	0.385	0.371
Gold (Au),Dissolved (mg/L)	<0.001	<0.001	<0.001	<0.001	<0.001
Iron (Fe),Dissolved (mg/L)	12.1	10.3	10.6	9.46	10.5
Lead (Pb),Dissolved (mg/L)	<0.001	0.00306	<0.001	0.00237	<0.001
Mercury (Hg),Total (mg/L)	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Nitrogen, Nitrate (NO3) (mg/L)	0.09	<0.05	<0.05	<0.05	<0.05
Nitrogen, Nitrite (NO2) (mg/L)	<0.05	<0.05	<0.05	<0.05	<0.05
pH (SU)	6.93	6.84	7.06	6.58	6.77
Selenium (Se),Dissolved (mg/L)	<0.005	<0.005	<0.005	<0.005	<0.005
Sodium (Na),Dissolved (mg/L)	4.07	4.5	5.35	5.06	5.36
Sulfate (SO4) (mg/L)	161	171	165	168	166
Total Dissolved Solids (mg/L)	378	374	443	380	424
Zinc (Zn),Dissolved (mg/L)	<0.05	<0.05	<0.05	<0.05	<0.05

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Table E-41. SM04A Water Quality 2006

Parameter	1/17/2006	4/10/2006	5/12/2006	8/2/2006
Arsenic (As),Dissolved (mg/L)	<0.005	0.005	0.007	0.005
Copper (Cu),Dissolved (mg/L)	<0.005	<0.005	<0.005	<0.005
Cyanide, Total (mg/L)	<0.01	<0.01	<0.01	<0.01
Cyanide, WAD (mg/L)	<0.01	<0.01	<0.01	<0.01
Electrical Conductivity (µmhos/cm)	701	693	701	807
Fluoride (mg/L)	0.177	0.176	0.242	0.21
Mercury (Hg),Total (mg/L)	<0.0002	<0.0002	<0.0002	<0.0002
Nitrogen, Nitrate (NO3) (mg/L)	8.03	6.86	4.75	5.91
Nitrogen, Nitrite (NO2) (mg/L)	<0.05	<0.05	<0.05	<0.05
pH (SU)	7.68	7.37	7.35	7.22
Selenium (Se),Dissolved (mg/L)	<0.005	<0.005	<0.005	<0.005
Sodium (Na),Dissolved (mg/L)	3.5	3.38	3.76	5.14
Sulfate (SO4) (mg/L)	49.9	58.1	95.2	130
Total Dissolved Solids (mg/L)	402	400	435	525
Zinc (Zn),Dissolved (mg/L)	<0.05	<0.05	<0.05	<0.05

Table E-42. SM04A Water Quality 2007

Parameter	1/4/2007	4/19/2007	5/26/2007	8/16/2007
Arsenic (As),Dissolved (mg/L)	0.007	0.005	<0.005	0.006
Copper (Cu),Dissolved (mg/L)	<0.005	0.006	0.016	<0.005
Cyanide, Total (mg/L)	<0.01	<0.01	<0.01	<0.01
Cyanide, WAD (mg/L)	<0.01	<0.01	<0.01	<0.01
Electrical Conductivity (µmhos/cm)	843	744	756	810
Field Conductivity (µmhos/cm)	720	660	640	767
Field Depth (ft)	375	362	367	364
Field pH (SU)	7.4	7.51	7.21	7.24
Field Temperature (° C)	7	7.5	9.7	11.3
Fluoride (mg/L)	0.236	0.134	0.168	0.184
Mercury (Hg),Total (mg/L)	<0.0002	<0.0002	<0.0002	<0.0002
Nitrogen, Nitrate (NO3) (mg/L)	5.92	7.65	6.87	6.37
Nitrogen, Nitrite (NO2) (mg/L)	<0.05	<0.05	<0.05	<0.05
pH (SU)	7.31	7.45	7.26	7.33
Selenium (Se),Dissolved (mg/L)	<0.005	<0.005	<0.005	<0.005
Sodium (Na),Dissolved (mg/L)	6.08	4.16	5.81	5.23
Sulfate (SO4) (mg/L)	171	55	71.2	121
Total Dissolved Solids (mg/L)	541	446	453	499
Zinc (Zn),Dissolved (mg/L)	<0.05	<0.05	<0.05	<0.05

Table E-43. SM04A Water Quality 2008

Parameter	1/29/2008	4/23/2008	6/18/2008	8/28/2008
Arsenic (As),Dissolved (mg/L)	<0.005	<0.005	<0.005	0.0104
Copper (Cu),Dissolved (mg/L)	0.009	<0.005	<0.005	0.0236
Cyanide, Total (mg/L)	<0.01	<0.01	<0.01	<0.01
Cyanide, WAD (mg/L)	<0.01	<0.01	<0.01	<0.01
Electrical Conductivity (µmhos/cm)	773	759	863	737
Field Conductivity (µmhos/cm)	189	670	720	690
Field Depth (ft)	376	373	371	373
Field pH (SU)	7.39	7.53	7.26	7.19
Field Temperature (° C)	7.8	9.9	9.9	10.4
Fluoride (mg/L)	0.177	0.192	0.183	0.149
Mercury (Hg),Total (mg/L)	<0.0002	<0.0002	0.0003	<0.0002
Nitrogen, Nitrate (NO3) (mg/L)	7.53	6.28	7.29	0.564
Nitrogen, Nitrite (NO2) (mg/L)	<0.05	<0.05	<0.05	<0.05
pH (SU)	7.35	7.47	7.28	7.34
Selenium (Se),Dissolved (mg/L)	<0.005	<0.005	<0.005	<0.005
Sodium (Na),Dissolved (mg/L)	6.16	4.85	5.94	5.2
Sulfate (SO4) (mg/L)	70	85.8	150	54.6
Total Dissolved Solids (mg/L)	474	466	579	441
Zinc (Zn),Dissolved (mg/L)	<0.05	<0.05	0.053	<0.05

Table E-44. SM04A Water Quality 2009

Parameter	1/26/2009	4/21/2009	5/19/2009	8/6/2009
Arsenic (As),Dissolved (mg/L)	<0.005	0.00583	0.00631	0.00715
Copper (Cu),Dissolved (mg/L)	0.00513	<0.005	<0.005	0.00592
Cyanide, Total (mg/L)	<0.01	<0.01	<0.01	<0.01
Cyanide, WAD (mg/L)	<0.01	<0.01	<0.01	<0.01
Electrical Conductivity (µmhos/cm)	765	890	1150	1010
Field Conductivity (µmhos/cm)	–	880	1150	1000
Field Depth (ft)	–	372	372	373
Field pH (SU)	–	7.12	7.07	7.19
Field Temperature (° C)	–	10.2	10.3	10.9
Fluoride (mg/L)	–	0.197	0.265	0.242
Mercury (Hg),Total (mg/L)	0.0002	<0.0002	<0.0002	<0.0002
Nitrogen, Nitrate (NO3) (mg/L)	5.7	5.89	5.7	5.91
Nitrogen, Nitrite (NO2) (mg/L)	0.05	<0.05	<0.05	<0.05
pH (SU)	7.52	7.28	7.3	7.21
Selenium (Se),Dissolved (mg/L)	<0.005	<0.005	<0.005	<0.005
Sodium (Na),Dissolved (mg/L)	5.05	8.6	10.9	7.82
Sulfate (SO4) (mg/L)	63.2	172	280	230
Total Dissolved Solids (mg/L)	459	587	820	694
Zinc (Zn),Dissolved (mg/L)	<0.05	0.0597	<0.05	0.0555

Table E-45. SM04A Water Quality 2010

Parameter	1/19/2010	4/22/2010	5/26/2010	8/12/2010
Arsenic (As),Dissolved (mg/L)	0.00648	0.00687	0.00876	0.00691
Copper (Cu),Dissolved (mg/L)	<0.005	<0.005	<0.005	<0.005
Cyanide, Total (mg/L)	<0.01	<0.01	<0.01	<0.01
Cyanide, WAD (mg/L)	<0.01	<0.01	<0.01	<0.01
Electrical Conductivity (µmhos/cm)	975	972	1120	1010
Field Conductivity (µmhos/cm)	960	717	812	–
Field Depth (ft)	375	375	374	–
Field pH (SU)	7.15	7.41	6.99	–
Field Temperature (° C)	10.6	10.6	10.7	–
Fluoride (mg/L)	0.274	0.228	0.301	0.239
Mercury (Hg),Total (mg/L)	<0.0002	<0.0002	–	<0.0002
Nitrogen, Nitrate (NO3) (mg/L)	5.21	5.6	5.2	4.45
Nitrogen, Nitrite (NO2) (mg/L)	<0.05	<0.05	<0.05	<0.05
pH (SU)	7.35	7.39	7.2	7.33
Selenium (Se),Dissolved (mg/L)	<0.005	<0.005	<0.005	<0.005
Sodium (Na),Dissolved (mg/L)	7.43	8.36	12	9.19
Sulfate (SO4) (mg/L)	241	268	352	286
Total Dissolved Solids (mg/L)	612	646	803	737
Zinc (Zn),Dissolved (mg/L)	<0.05	<0.05	<0.05	<0.05

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Table E-46. SM06 Water Quality 2006

Parameter	1/17/2006	2/1/2006	4/11/2006	5/17/2006	8/3/2006
Arsenic (As),Dissolved (mg/L)	0.016	–	0.012	0.009	0.015
Barium (Ba),Dissolved (mg/L)	0.089	–	0.04	0.116	0.085
Bicarbonate (mg/L)	170	–	134	154	183
Cadmium (Cd),Dissolved (mg/L)	<0.001	–	<0.001	<0.001	<0.001
Chloride (Cl-) (mg/L)	5.5	–	2.25	6.25	5.75
Chromium (Cr),Dissolved (mg/L)	<0.001	–	<0.001	<0.001	<0.001
Copper (Cu),Dissolved (mg/L)	0.008	–	<0.005	<0.005	<0.005
Cyanide, Total (mg/L)	<0.01	–	<0.01	<0.01	<0.01
Cyanide, WAD (mg/L)	<0.01	–	<0.01	<0.01	<0.01
Electrical Conductivity (µmhos/cm)	632	–	346	603	599
Fluoride (mg/L)	0.686	–	0.54	0.46	0.582
Gold (Au),Dissolved (mg/L)	0.006	–	0.003	0.007	0.007
Iron (Fe),Dissolved (mg/L)	0.054	–	<0.05	<0.05	0.057
Lead (Pb),Dissolved (mg/L)	<0.001	–	<0.001	<0.001	<0.001
Mercury (Hg),Total (mg/L)	0.0023	0.0017	0.0004	0.0005	0.0002
Nitrogen, Nitrate (NO3) (mg/L)	3.12	–	0.588	4.92	2.59
Nitrogen, Nitrite (NO2) (mg/L)	<0.05	–	<0.05	<0.05	<0.05
pH (SU)	7.24	–	7.55	7.7	7.38
Selenium (Se),Dissolved (mg/L)	<0.005	–	<0.005	<0.005	<0.005
Sodium (Na),Dissolved (mg/L)	6.9	–	3.99	8.32	8
Sulfate (SO4) (mg/L)	162	–	50.4	150	134
Total Dissolved Solids (mg/L)	545	–	348	417	408
Zinc (Zn),Dissolved (mg/L)	0.069	–	<0.05	0.05	0.058

Table E-47. SM06 Water Quality 2007

Parameter	1/4/2007	4/17/2007	5/26/2007	8/15/2007	9/26/2007
Arsenic (As),Dissolved (mg/L)	0.012	0.008	0.009	0.008	–
Barium (Ba),Dissolved (mg/L)	0.085	0.058	0.07	0.073	–
Bicarbonate (mg/L)	167	143	166	175	–
Cadmium (Cd),Dissolved (mg/L)	0.002	0.001	<0.001	<0.001	–
Chloride (Cl-) (mg/L)	5	5.5	7	5.5	–
Chromium (Cr),Dissolved (mg/L)	0.003	<0.001	<0.001	<0.001	–
Copper (Cu),Dissolved (mg/L)	<0.005	<0.005	<0.005	<0.005	–
Cyanide, Total (mg/L)	<0.01	<0.01	<0.01	<0.01	–
Cyanide, WAD (mg/L)	<0.01	<0.01	<0.01	<0.01	–
Electrical Conductivity (µmhos/cm)	661	451	545	565	–
Field Conductivity (µmhos/cm)	570	420	480	385	–
Field Depth (ft)	41.2	19.8	–	15.2	–
Field pH (SU)	7.41	7.72	7.45	8.18	–
Field Temperature (° C)	7.3	7.3	6.7	8.3	–
Fluoride (mg/L)	0.567	0.52	0.538	0.576	–
Gold (Au),Dissolved (mg/L)	0.003	<0.001	<0.001	<0.001	–
Iron (Fe),Dissolved (mg/L)	0.082	<0.05	<0.05	0.231	–
Lead (Pb),Dissolved (mg/L)	<0.001	<0.001	<0.001	<0.001	–
Mercury (Hg),Total (mg/L)	0.0009	0.0036	0.001	0.0032	0.0003
Nitrogen, Nitrate (NO3) (mg/L)	2.53	1.88	2.4	2.28	–
Nitrogen, Nitrite (NO2) (mg/L)	<0.05	<0.05	<0.05	<0.05	–
pH (SU)	7.7	7.67	7.66	7.42	–
Selenium (Se),Dissolved (mg/L)	<0.005	<0.005	0.008	<0.005	–
Sodium (Na),Dissolved (mg/L)	8.95	6.32	8.1	7.81	–
Sulfate (SO4) (mg/L)	189	88.4	115	139	–
Total Dissolved Solids (mg/L)	461	357	386	419	–
Zinc (Zn),Dissolved (mg/L)	0.058	0.09	0.052	0.067	–

Table E-48. SM06 Water Quality 2008

Parameter	1/24/2008	4/17/2008	6/18/2008	7/8/2008	8/26/2008
Arsenic (As),Dissolved (mg/L)	0.011	0.009	<0.005	–	0.0127
Barium (Ba),Dissolved (mg/L)	0.086	0.037	0.11	–	0.0904
Bicarbonate (mg/L)	168	100	147	–	177
Cadmium (Cd),Dissolved (mg/L)	<0.001	<0.001	<0.001	–	<0.001
Chloride (Cl-) (mg/L)	4.75	1.75	6.25	–	6.75
Chromium (Cr),Dissolved (mg/L)	<0.001	<0.001	<0.001	–	<0.001
Copper (Cu),Dissolved (mg/L)	<0.005	<0.005	<0.005	–	<0.005
Cyanide, Total (mg/L)	<0.01	<0.01	<0.01	–	<0.01
Cyanide, WAD (mg/L)	<0.01	<0.01	<0.01	–	<0.01
Electrical Conductivity (µmhos/cm)	644	282	670	–	631
Field Conductivity (µmhos/cm)	640	260	620	670	600
Field Depth (ft)	19.3	8.7	17.2	–	18.2
Field pH (SU)	7.52	8.01	7.39	7.35	7.44
Field Temperature (° C)	7.2	7.1	7.8	8.1	7.44
Fluoride (mg/L)	0.607	0.698	0.546	–	0.618
Gold (Au),Dissolved (mg/L)	<0.001	<0.001	0.003	–	<0.001
Iron (Fe),Dissolved (mg/L)	<0.05	<0.05	1.03	–	<0.05
Lead (Pb),Dissolved (mg/L)	<0.001	<0.001	<0.001	–	<0.001
Mercury (Hg),Total (mg/L)	0.0005	0.0058	0.0039	0.0016	0.0006
Nitrogen, Nitrate (NO3) (mg/L)	3.88	0.698	4.17	–	2.98
Nitrogen, Nitrite (NO2) (mg/L)	<0.05	<0.05	<0.05	–	<0.05
pH (SU)	7.48	7.42	7.58	–	7.31
Selenium (Se),Dissolved (mg/L)	<0.005	<0.005	<0.005	–	<0.005
Sodium (Na),Dissolved (mg/L)	7.6	4.74	10.2	–	11.1
Sulfate (SO4) (mg/L)	179	50.6	202	–	140
Total Dissolved Solids (mg/L)	457	527	629	574	408
Zinc (Zn),Dissolved (mg/L)	<0.05	<0.05	0.0924	–	<0.05

Table E-49. SM06 Water Quality 2009

Parameter	1/27/2009	4/22/2009	5/19/2009	6/17/2009	8/6/2009	9/18/2009
Arsenic (As),Dissolved (mg/L)	0.00789	0.0106	0.0088	0.0122	0.0117	–
Barium (Ba),Dissolved (mg/L)	0.0612	0.0387	0.0567	0.0535	0.058	–
Bicarbonate (mg/L)	168	111	157	163	152	–
Cadmium (Cd),Dissolved (mg/L)	<0.001	<0.001	<0.001	<0.001	<0.001	–
Chloride (Cl-) (mg/L)	3	3	2.5	2.75	3.75	–
Chromium (Cr),Dissolved (mg/L)	<0.001	0.0012	<0.001	<0.001	<0.001	–
Copper (Cu),Dissolved (mg/L)	<0.005	<0.005	<0.005	<0.005	<0.005	–
Cyanide, Total (mg/L)	<0.01	<0.01	<0.01	<0.01	<0.01	–
Cyanide, WAD (mg/L)	<0.01	<0.01	<0.01	<0.01	<0.01	–
Electrical Conductivity (µmhos/cm)	562	271	526	530	540	–
Field Conductivity (µmhos/cm)	–	260	550	550	580	–
Field Depth (ft)	–	16.4	18.3	–	19	–
Field pH (SU)	–	7.25	7.21	7.19	7.18	–
Field Temperature (° C)	–	6.1	6.4	6.7	7.9	–
Fluoride (mg/L)	0.588	0.392	0.513	0.558	–	–
Gold (Au),Dissolved (mg/L)	<0.001	<0.001	0.007	<0.001	<0.001	–
Iron (Fe),Dissolved (mg/L)	0.196	0.376	0.0884	0.254	0.221	–
Lead (Pb),Dissolved (mg/L)	<0.001	0.00124	<0.001	<0.001	<0.001	–
Mercury (Hg),Total (mg/L)	0.0009	0.0044	0.0017	0.0009	0.0005	–
Nitrogen, Nitrate (NO3) (mg/L)	1.38	0.353	1.06	0.978	0.955	–
Nitrogen, Nitrite (NO2) (mg/L)	<0.05	<0.05	<0.05	<0.05	<0.05	–
pH (SU)	7.5	7.41	7.31	7.36	7.25	–
Selenium (Se),Dissolved (mg/L)	<0.005	<0.005	<0.005	<0.005	<0.005	–
Sodium (Na),Dissolved (mg/L)	6.53	5.16	6.49	–	5.87	–
Strontium (Sr),Dissolved (mg/L)	–	–	–	0.492	–	–
Sulfate (SO4) (mg/L)	144	41.2	115	120	130	–
Total Dissolved Solids (mg/L)	371	536	455	396	509	370
Zinc (Zn),Dissolved (mg/L)	0.0679	0.0888	<0.05	0.0695	0.0744	–

Table E-50. SM06 Water Quality 2010 (Page 1 of 2)

Parameter	1/19/2010	2/23/2010	3/30/2010	4/26/2010	5/25/2010	6/23/2010	6/30/2010	8/17/2010	9/9/2010	10/13/2010
Arsenic (As),Dissolved (mg/L)	0.0106	–	–	0.0146	0.0559	0.0155	0.00843	0.00789	–	–
Barium (Ba),Dissolved (mg/L)	0.068	–	–	0.0428	0.143	–	0.0541	0.0783	–	–
Bicarbonate (mg/L)	167	–	–	136	142	–	158	171	–	–
Cadmium (Cd),Dissolved (mg/L)	<0.001	–	–	<0.001	–	–	<0.001	<0.001	–	–
Chloride (Cl-) (mg/L)	4	–	–	3	5.5	–	3.5	4.3	–	–
Chromium (Cr),Dissolved (mg/L)	<0.001	–	–	<0.001	0.0102	–	<0.001	<0.001	–	–
Copper (Cu),Dissolved (mg/L)	<0.005	–	–	0.00503	0.0206	–	<0.005	<0.005	–	–
Cyanide, Total (mg/L)	<0.01	–	–	<0.01	<0.01	–	<0.01	<0.01	–	–
Cyanide, WAD (mg/L)	<0.01	–	–	<0.01	<0.01	–	<0.01	<0.01	–	–
Electrical Conductivity (µmhos/cm)	628	–	–	361	391	–	498	575	–	–
Field Conductivity (µmhos/cm)	660	–	–	233	249	–	500	412	–	–
Field Depth (ft)	21	–	–	18.7	19.2	–	–	19	–	–
Field ORP (mV)	–	–	–	–	–	–	–	58	–	–
Field Oxygen (O2) (mg/L)	–	–	–	–	–	–	–	3.85	–	–
Field pH (SU)	7.24	–	–	7.66	7.09	–	7.3	7.02	–	–
Field Temperature (° C)	7.9	–	–	6.3	6.1	–	6.7	8.4	–	–
Fluoride (mg/L)	0.588	–	–	0.546	0.487	–	0.54	0.522	–	–
Gold (Au),Dissolved (mg/L)	<0.001	–	–	<0.001	<0.001	–	0.002	<0.001	–	–
Iron (Fe),Dissolved (mg/L)	<0.05	–	–	0.765	4.16	–	0.171	0.0717	–	–
Lead (Pb),Dissolved (mg/L)	<0.001	–	–	0.00138	0.0116	–	<0.001	0.00169	–	–
Mercury (Hg),Total (mg/L)	0.0018	–	–	0.0038	0.001	–	0.0019	0.0021	0.0027	0.0009
Nitrogen, Nitrate (NO3) (mg/L)	2.21	–	–	0.868	1.35	–	0.649	1.22	–	–
Nitrogen, Nitrite (NO2) (mg/L)	<0.05	–	–	<0.05	<0.05	–	<0.05	<0.05	–	–

Table E-50. SM06 Water Quality 2010 (Page 2 of 2)

Parameter	1/19/2010	2/23/2010	3/30/2010	4/26/2010	5/25/2010	6/23/2010	6/30/2010	8/17/2010	9/9/2010	10/13/2010
pH (SU)	7.33	–	–	7.43	7.49	–	7.34	7.32	–	–
Selenium (Se),Dissolved (mg/L)	<0.005	–	–	<0.005	<0.005	–	<0.005	<0.005	–	–
Sodium (Na),Dissolved (mg/L)	7.05	–	–	5.75	6.93	–	7.33	7.44	–	–
Sulfate (SO4) (mg/L)	182	–	–	78.4	83.2	–	124	158	–	–
Total Dissolved Solids (mg/L)	582	528	489	295	343	–	391	546	592	458
Zinc (Zn),Dissolved (mg/L)	0.0549	–	–	0.0665	0.197	–	0.0559	<0.05	–	–

WELL SM09
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Table E-51. SM09 Water Quality 2006

Parameter	1/11/2006	4/10/2006	5/17/2006	8/2/2006
Arsenic (As),Dissolved (mg/L)	<0.005	<0.005	<0.005	<0.005
Copper (Cu),Dissolved (mg/L)	<0.005	<0.005	<0.005	<0.005
Cyanide, Total (mg/L)	<0.01	<0.01	<0.01	<0.01
Cyanide, WAD (mg/L)	<0.01	<0.01	<0.01	<0.01
Electrical Conductivity (µmhos/cm)	764	566	603	702
Fluoride (mg/L)	0.478	0.41	0.476	0.432
Mercury (Hg),Total (mg/L)	<0.0002	<0.0002	<0.0002	<0.0002
Nitrogen, Nitrate (NO3) (mg/L)	0.296	0.722	0.425	<0.05
Nitrogen, Nitrite (NO2) (mg/L)	<0.05	<0.05	<0.05	<0.05
pH (SU)	7.19	7.39	6.95	6.68
Selenium (Se),Dissolved (mg/L)	0.045	0.013	0.03	0.014
Sodium (Na),Dissolved (mg/L)	25	33.9	29.7	42.2
Sulfate (SO4) (mg/L)	221	67.4	89.6	94.9
Total Dissolved Solids (mg/L)	500	312	360	432
Zinc (Zn),Dissolved (mg/L)	<0.05	<0.05	<0.05	<0.05

Table E-52. SM09 Water Quality 2007

Parameter	1/3/2007	4/19/2007	5/17/2007	9/26/2007
Arsenic (As),Dissolved (mg/L)	<0.005	<0.005	<0.005	<0.005
Barium (Ba),Dissolved (mg/L)	–	–	–	0.056
Bicarbonate (mg/L)	–	–	–	74.8
Cadmium (Cd),Dissolved (mg/L)	–	–	–	<0.001
Chloride (Cl-) (mg/L)	–	–	–	90
Chromium (Cr),Dissolved (mg/L)	–	–	–	<0.001
Copper (Cu),Dissolved (mg/L)	<0.005	<0.005	<0.005	<0.005
Cyanide, Total (mg/L)	<0.01	<0.01	<0.01	<0.01
Cyanide, WAD (mg/L)	<0.01	<0.01	<0.01	<0.01
Electrical Conductivity (µmhos/cm)	728	697	654	664
Field Conductivity (µmhos/cm)	640	630	600	580
Field Depth (ft)	40.7	37.4	–	29.1
Field pH (SU)	6.85	7.08	6.68	7.53
Field Temperature (° C)	6.6	8.7	9.2	8.3
Fluoride (mg/L)	0.454	0.415	0.467	0.43
Gold (Au),Dissolved (mg/L)	–	–	–	<0.001
Iron (Fe),Dissolved (mg/L)	–	–	–	0.3
Lead (Pb),Dissolved (mg/L)	–	–	–	<0.001
Mercury (Hg),Total (mg/L)	<0.0002	<0.0002	<0.0002	<0.0002
Nitrogen, Nitrate (NO3) (mg/L)	<0.05	<0.05	<0.05	<0.05
Nitrogen, Nitrite (NO2) (mg/L)	<0.05	<0.05	<0.05	<0.05
pH (SU)	6.58	6.86	6.84	7.12
Selenium (Se),Dissolved (mg/L)	0.012	0.014	0.014	0.011
Sodium (Na),Dissolved (mg/L)	44.1	39.9	40.2	42.5
Sulfate (SO4) (mg/L)	126	103	84.8	104
Total Dissolved Solids (mg/L)	395	414	382	382
Zinc (Zn),Dissolved (mg/L)	<0.05	<0.05	<0.05	<0.05

Table E-53. SM09 Water Quality 2008 (Page 1 of 2)

Parameter	5/21/2008	10/15/2008
Aluminum (Al),Dissolved (mg/L)	–	0.09
Anion - Cation Balance (%)	–	–0.639
Anions (meq/L)	–	5.8
Arsenic (As),Dissolved (mg/L)	<0.005	<0.005
Barium (Ba),Dissolved (mg/L)	0.0553	0.0527
Bicarbonate (mg/L)	91	87
Cadmium (Cd),Dissolved (mg/L)	<0.001	<0.001
Calcium (Ca),Dissolved (mg/L)	–	56
Cations (meq/L)	–	5.72
Chloride (Cl-) (mg/L)	100	82.5
Chromium (Cr),Dissolved (mg/L)	<0.001	<0.001
Copper (Cu),Dissolved (mg/L)	<0.005	<0.005
Cyanide, Total (mg/L)	<0.01	<0.01
Cyanide, WAD (mg/L)	<0.01	<0.01
Electrical Conductivity (µmhos/cm)	702	648
Fluoride (mg/L)	0.567	0.534
Gold (Au),Dissolved (mg/L)	<0.001	<0.001
Iron (Fe),Dissolved (mg/L)	0.109	2.35
Lead (Pb),Dissolved (mg/L)	<0.001	<0.001
Magnesium (Mg),Dissolved (mg/L)	–	14.6
Manganese (Mn),Dissolved (mg/L)	–	4.11
Mercury (Hg),Total (mg/L)	0.0002	<0.0002
Nitrogen, Nitrate (NO3) (mg/L)	0.117	<0.05
Nitrogen, Nitrite (NO2) (mg/L)	<0.05	<0.05
pH (SU)	7.26	7.24
Potassium (K),Dissolved (mg/L)	–	3.4
Selenium (Se),Dissolved (mg/L)	0.0151	0.0113
Sodium (Na),Dissolved (mg/L)	38.5	34.3

Table E-53. SM09 Water Quality 2008 (Page 2 of 2)

Parameter	5/21/2008	10/15/2008
Strontium (Sr),Dissolved (mg/L)	–	0.251
Sulfate (SO4) (mg/L)	103	96.9
Total Dissolved Solids (mg/L)	419	359
Zinc (Zn),Dissolved (mg/L)	0.0612	0.117

Table E-54. SM09 Water Quality 2009

Parameter	4/23/2009	5/20/2009	8/5/2009
Arsenic (As),Dissolved (mg/L)	0.0477	0.0064	0.00847
Copper (Cu),Dissolved (mg/L)	0.0253	<0.005	<0.005
Cyanide, Total (mg/L)	<0.01	<0.01	<0.01
Cyanide, WAD (mg/L)	<0.01	<0.01	<0.01
Electrical Conductivity (µmhos/cm)	575	562	512
Field Conductivity (µmhos/cm)	567	560	550
Field Depth (ft)	1.5	0	0
Field pH (SU)	6.68	6.66	6.6
Field Temperature (° C)	6.68	7.4	7.5
Fluoride (mg/L)	0.416	0.469	0.462
Mercury (Hg),Total (mg/L)	<0.0002	<0.0002	<0.0002
Nitrogen, Nitrate (NO3) (mg/L)	0.059	<0.05	<0.05
Nitrogen, Nitrite (NO2) (mg/L)	<0.05	<0.05	<0.05
pH (SU)	6.76	6.95	6.85
Selenium (Se),Dissolved (mg/L)	0.018	0.0105	0.00961
Sodium (Na),Dissolved (mg/L)	37.1	36.1	35.4
Sulfate (SO4) (mg/L)	54.3	45	36.4
Total Dissolved Solids (mg/L)	345	319	273
Zinc (Zn),Dissolved (mg/L)	0.11	<0.05	<0.05

Table E-55. SM09 Water Quality 2010

Parameter	4/22/2010	5/24/2010	8/12/2010
Arsenic (As),Dissolved (mg/L)	0.0119	0.00898	<0.005
Copper (Cu),Dissolved (mg/L)	0.00605	0.00507	<0.005
Cyanide, Total (mg/L)	<0.01	<0.01	<0.01
Cyanide, WAD (mg/L)	<0.01	<0.01	<0.01
Electrical Conductivity (µmhos/cm)	526	529	496
Field Conductivity (µmhos/cm)	369	348	–
Field Depth (ft)	0	–	–
Field pH (SU)	6.97	6.97	–
Field Temperature (° C)	7.3	7.6	–
Fluoride (mg/L)	0.432	0.452	0.447
Mercury (Hg),Total (mg/L)	<0.0002	<0.0002	<0.0002
Nitrogen, Nitrate (NO3) (mg/L)	0.181	<0.05	<0.05
Nitrogen, Nitrite (NO2) (mg/L)	<0.05	<0.05	<0.05
pH (SU)	6.95	6.79	6.81
Selenium (Se),Dissolved (mg/L)	0.0123	0.0103	0.00972
Sodium (Na),Dissolved (mg/L)	35.9	39.2	37.2
Sulfate (SO4) (mg/L)	69.4	60.4	46.8
Total Dissolved Solids (mg/L)	303	338	286
Zinc (Zn),Dissolved (mg/L)	<0.05	<0.05	<0.05

WELL SM10
2006–2010

Table E-56. SM10 Water Quality 2006

Parameter	1/11/2006	4/10/2006	5/17/2006	8/2/2006
Arsenic (As),Dissolved (mg/L)	0.014	0.012	0.013	0.013
Barium (Ba),Dissolved (mg/L)	0.064	0.069	0.06	0.058
Bicarbonate (mg/L)	126	127	104	113
Cadmium (Cd),Dissolved (mg/L)	<0.001	<0.001	<0.001	<0.001
Chloride (Cl-) (mg/L)	5.5	8.75	10	4
Chromium (Cr),Dissolved (mg/L)	<0.001	<0.001	<0.001	<0.001
Copper (Cu),Dissolved (mg/L)	<0.005	<0.005	<0.005	0.006
Cyanide, Total (mg/L)	<0.01	<0.01	<0.01	<0.01
Cyanide, WAD (mg/L)	<0.01	<0.01	<0.01	<0.01
Electrical Conductivity (µmhos/cm)	242	271	238	214
Fluoride (mg/L)	0.217	0.209	0.224	0.224
Gold (Au),Dissolved (mg/L)	0.002	0.004	0.003	0.002
Iron (Fe),Dissolved (mg/L)	0.222	<0.05	<0.05	<0.05
Lead (Pb),Dissolved (mg/L)	<0.001	<0.001	<0.001	<0.001
Mercury (Hg),Total (mg/L)	<0.0002	<0.0002	<0.0002	<0.0002
Nitrogen, Nitrate (NO3) (mg/L)	0.217	0.248	0.303	0.142
Nitrogen, Nitrite (NO2) (mg/L)	<0.05	<0.05	<0.05	<0.05
pH (SU)	7.54	7.61	7.88	7.69
Selenium (Se),Dissolved (mg/L)	<0.005	<0.005	<0.005	<0.005
Sodium (Na),Dissolved (mg/L)	3.15	4.03	4.68	3.8
Sulfate (SO4) (mg/L)	21.7	16.2	11.9	15.3
Total Dissolved Solids (mg/L)	131	154	134	135
Zinc (Zn),Dissolved (mg/L)	<0.05	<0.05	<0.05	<0.05

Table E-57. SM10 Water Quality 2007

Parameter	1/3/2007	4/26/2007	5/17/2007	8/14/2007
Arsenic (As),Dissolved (mg/L)	0.012	0.013	0.011	0.014
Barium (Ba),Dissolved (mg/L)	0.065	0.069	0.06	0.062
Bicarbonate (mg/L)	115	116	98.2	114
Cadmium (Cd),Dissolved (mg/L)	<0.001	<0.001	<0.001	<0.001
Chloride (Cl-) (mg/L)	6.5	6.5	7.25	4.5
Chromium (Cr),Dissolved (mg/L)	<0.001	<0.001	<0.001	<0.001
Copper (Cu),Dissolved (mg/L)	<0.005	<0.005	0.017	<0.005
Cyanide, Total (mg/L)	<0.01	<0.01	<0.01	<0.01
Cyanide, WAD (mg/L)	<0.01	<0.01	<0.01	<0.01
Electrical Conductivity (µmhos/cm)	253	256	229	224
Field Conductivity (µmhos/cm)	240	270	220	185
Field Depth (ft)	109	65.5	64.4	61.8
Field pH (SU)	7.83	7.52	7.53	8.37
Field Temperature (° C)	5.8	8	8.2	9.9
Fluoride (mg/L)	0.236	0.223	0.295	0.21
Gold (Au),Dissolved (mg/L)	0.003	0.002	<0.001	<0.001
Iron (Fe),Dissolved (mg/L)	<0.05	<0.05	<0.05	0.257
Lead (Pb),Dissolved (mg/L)	<0.001	<0.001	<0.001	0.001
Mercury (Hg),Total (mg/L)	<0.0002	<0.0002	<0.0002	<0.0002
Nitrogen, Nitrate (NO3) (mg/L)	0.109	0.206	0.201	0.171
Nitrogen, Nitrite (NO2) (mg/L)	<0.05	<0.05	<0.05	<0.05
pH (SU)	7.65	7.47	7.59	7.53
Selenium (Se),Dissolved (mg/L)	<0.005	<0.005	<0.005	<0.005
Sodium (Na),Dissolved (mg/L)	4.7	4.25	4.71	4.07
Sulfate (SO4) (mg/L)	19.6	15.8	23.3	26.5
Total Dissolved Solids (mg/L)	135	139	139	88
Zinc (Zn),Dissolved (mg/L)	<0.05	<0.05	<0.05	<0.05

Table E-58. SM10 Water Quality 2008 (Page 1 of 2)

Parameter	2/5/2008	4/25/2008	5/21/2008	8/26/2008	10/15/2008
Aluminum (Al),Dissolved (mg/L)	–	–	–	–	0.0142
Anion - Cation Balance (%)	–	–	–	–	–0.82
Anions (meq/L)	–	–	–	–	1.95
Arsenic (As),Dissolved (mg/L)	0.012	0.012	0.0111	0.0125	0.0114
Barium (Ba),Dissolved (mg/L)	0.066	0.066	0.06	0.06	0.0685
Bicarbonate (mg/L)	124	116	102	109	111
Cadmium (Cd),Dissolved (mg/L)	0.001	<0.001	<0.001	<0.001	<0.001
Calcium (Ca),Dissolved (mg/L)	–	–	–	–	22.8
Cations (meq/L)	–	–	–	–	1.92
Chloride (Cl-) (mg/L)	2.5	6.75	7.25	3.5	4
Chromium (Cr),Dissolved (mg/L)	<0.001	<0.001	<0.001	<0.001	<0.001
Copper (Cu),Dissolved (mg/L)	0.011	<0.005	<0.005	<0.005	<0.005
Cyanide, Total (mg/L)	<0.01	<0.01	<0.01	<0.01	<0.01
Cyanide, WAD (mg/L)	<0.01	<0.01	<0.01	<0.01	<0.01
Electrical Conductivity (µmhos/cm)	224	252	220	202	225
Field Conductivity (µmhos/cm)	210	220	–	200	–
Field Depth (ft)	68.2	61.8	–	66	–
Field pH (SU)	6.85	8.17	–	7.56	–
Field Temperature (° C)	7.5	7.8	–	7.56	–
Fluoride (mg/L)	0.219	0.248	0.244	0.278	0.242
Gold (Au),Dissolved (mg/L)	<0.001	<0.001	<0.001	<0.001	<0.001
Iron (Fe),Dissolved (mg/L)	<0.05	<0.05	<0.05	<0.05	1.3
Lead (Pb),Dissolved (mg/L)	<0.001	<0.001	<0.001	<0.001	<0.001
Magnesium (Mg),Dissolved (mg/L)	–	–	–	–	5.95
Manganese (Mn),Dissolved (mg/L)	–	–	–	–	0.204
Mercury (Hg),Total (mg/L)	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Nitrogen, Nitrate (NO3) (mg/L)	0.072	0.177	0.233	0.09	0.084
Nitrogen, Nitrite (NO2) (mg/L)	<0.05	<0.05	<0.05	<0.05	<0.05
pH (SU)	7.87	7.78	7.73	7.39	7.82
Potassium (K),Dissolved (mg/L)	–	–	–	–	0.89
Selenium (Se),Dissolved (mg/L)	<0.005	<0.005	<0.005	<0.005	<0.005

Table E-58. SM10 Water Quality 2008 (Page 2 of 2)

Parameter	2/5/2008	4/25/2008	5/21/2008	8/26/2008	10/15/2008
Sodium (Na),Dissolved (mg/L)	3.65	4	3.85	5.5	6.05
Strontium (Sr),Dissolved (mg/L)	–	–	–	–	0.169
Sulfate (SO4) (mg/L)	<10	16.1	11	<10	<10
Total Dissolved Solids (mg/L)	119	135	122	103	133
Zinc (Zn),Dissolved (mg/L)	0.097	<0.05	<0.05	<0.05	<0.05

Table E-59. SM10 Water Quality 2009

Parameter	1/26/2009	5/28/2009	6/17/2009	8/5/2009
Arsenic (As),Dissolved (mg/L)	0.00985	0.00954	0.00949	0.0105
Barium (Ba),Dissolved (mg/L)	0.0682	0.0597	0.0577	0.0565
Bicarbonate (mg/L)	118	110	108	108
Cadmium (Cd),Dissolved (mg/L)	<0.001	<0.001	<0.001	<0.001
Chloride (Cl-) (mg/L)	2.75	0.5	1.5	3.25
Chromium (Cr),Dissolved (mg/L)	<0.001	<0.001	<0.001	<0.001
Copper (Cu),Dissolved (mg/L)	<0.005	<0.005	<0.005	<0.005
Cyanide, Total (mg/L)	<0.01	<0.01	<0.01	<0.01
Cyanide, WAD (mg/L)	<0.01	<0.01	<0.01	<0.01
Electrical Conductivity (µmhos/cm)	227	212	194	200
Field Conductivity (µmhos/cm)	–	210	200	220
Field Depth (ft)	–	50.8	–	65.6
Field pH (SU)	–	7.53	7.57	7.43
Field Temperature (° C)	–	8.2	7.5	8.7
Fluoride (mg/L)	0.242	0.213	0.232	0.237
Gold (Au),Dissolved (mg/L)	0.003	0.002	<0.001	<0.001
Iron (Fe),Dissolved (mg/L)	<0.05	<0.05	0.111	<0.05
Lead (Pb),Dissolved (mg/L)	<0.001	<0.001	0.00246	<0.001
Mercury (Hg),Total (mg/L)	<0.0002	0.0004	<0.0002	<0.0002
Nitrogen, Nitrate (NO3) (mg/L)	0.055	0.124	<0.05	0.097
Nitrogen, Nitrite (NO2) (mg/L)	<0.05	<0.05	<0.05	<0.05
pH (SU)	7.75	7.38	7.73	7.57
Selenium (Se),Dissolved (mg/L)	<0.005	<0.005	<0.005	<0.005
Sodium (Na),Dissolved (mg/L)	3.56	5.58	–	2.85
Strontium (Sr),Dissolved (mg/L)	–	–	0.0984	–
Sulfate (SO4) (mg/L)	<10	<10	15.6	<10
Total Dissolved Solids (mg/L)	112	143	107	80
Zinc (Zn),Dissolved (mg/L)	<0.05	<0.05	<0.05	<0.05

Table E-60. SM10 Water Quality 2010

Parameter	1/19/2010	4/26/2010	5/24/2010	6/30/2010	8/12/2010
Arsenic (As),Dissolved (mg/L)	0.0096	0.0112	0.0112	0.0116	–
Barium (Ba),Dissolved (mg/L)	0.0914	0.0795	0.0561	0.0528	0.00971
Bicarbonate (mg/L)	115	101	97.5	103	–
Cadmium (Cd),Dissolved (mg/L)	<0.001	<0.001	<0.001	<0.001	0.0567
Calcium (Ca),Dissolved (mg/L)	–	–	–	–	104
Cations (meq/L)	–	–	–	–	<0.001
Chloride (Cl-) (mg/L)	7.5	11.5	4.25	2.75	–
Chromium (Cr),Dissolved (mg/L)	<0.001	<0.001	<0.001	<0.001	–
Copper (Cu),Dissolved (mg/L)	<0.005	<0.005	<0.005	<0.005	–
Cyanide, Total (mg/L)	<0.01	<0.01	<0.01	<0.01	–
Cyanide, WAD (mg/L)	<0.01	<0.01	<0.01	<0.01	2.94
Electrical Conductivity (µmhos/cm)	327	303	213	194	<0.001
Field Conductivity (µmhos/cm)	330	212	140	210	<0.005
Field Depth (ft)	68.9	59.5	56.7	–	–
Field pH (SU)	7.41	7.74	7.24	7.51	<0.01
Field Temperature (° C)	7.8	7.5	7.4	7.3	<0.01
Fluoride (mg/L)	0.228	0.228	0.237	0.221	200
Gold (Au),Dissolved (mg/L)	<0.001	<0.001	0.004	<0.001	–
Iron (Fe),Dissolved (mg/L)	0.066	<0.05	<0.05	0.0791	–
Lead (Pb),Dissolved (mg/L)	0.00382	<0.001	<0.001	0.00143	–
Manganese (Mn),Dissolved (mg/L)	–	–	–	–	0.221
Mercury (Hg),Total (mg/L)	<0.0002	<0.0002	<0.0002	<0.0002	<0.001
Nitrogen, Nitrate (NO3) (mg/L)	0.252	0.46	0.187	0.147	–
Nitrogen, Nitrite (NO2) (mg/L)	<0.05	<0.05	<0.05	<0.05	0.0961
pH (SU)	7.68	7.71	7.52	7.67	<0.001
Selenium (Se),Dissolved (mg/L)	<0.005	<0.005	<0.005	<0.005	–
Sodium (Na),Dissolved (mg/L)	5.76	6.39	4.64	4.12	–
Strontium (Sr),Dissolved (mg/L)	–	–	–	–	<0.0002
Sulfate (SO4) (mg/L)	49.9	49.2	16.4	10.2	–
Total Dissolved Solids (mg/L)	188	161	144	141	0.117
Zinc (Zn),Dissolved (mg/L)	<0.05	<0.05	<0.05	<0.05	<0.05

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Table E-61. OM-05 Water Quality 2006

Parameter	1/17/2006	4/11/2006	5/17/2006	8/2/2006
Arsenic (As),Dissolved (mg/L)	<0.005	<0.005	<0.005	<0.005
Copper (Cu),Dissolved (mg/L)	0.007	<0.005	<0.005	0.013
Zinc (Zn),Dissolved (mg/L)	0.05	<0.05	<0.05	<0.05
Mercury (Hg),Total (mg/L)	<0.0002	0.0006	0.0004	0.0002
Bicarbonate (mg/L)	–	–	–	–
Cyanide, Total (mg/L)	<0.01	<0.01	<0.01	<0.01
Cyanide, WAD (mg/L)	<0.01	<0.01	<0.01	<0.01
Fluoride (mg/L)	0.139	0.173	0.193	0.196
Nitrogen, Nitrate (NO3) (mg/L)	11.1	3.91	1.12	3.46
Nitrogen, Nitrite (NO2) (mg/L)	<0.05	<0.05	<0.05	<0.05
Selenium (Se),Dissolved (mg/L)	<0.005	<0.005	<0.005	<0.005
Sodium (Na),Dissolved (mg/L)	6.67	4.91	3.49	5.29
Sulfate (SO4) (mg/L)	527	227	101	257
Electrical Conductivity (µmhos/cm)	1360	800	495	804
pH (SU)	7	7.1	6.9	6.69
Total Dissolved Solids (mg/L)	1010	550	319	562

Table E-62. OM-05 Water Quality 2007

Parameter	1/4/2007	4/17/2007	5/26/2007	8/15/2007
Field Conductivity (µmhos/cm)	820	360	410	709
Field Depth (ft)	10.5	6.3	7.4	8.1
Field pH (SU)	6.99	7.58	7.16	6.77
Field Temperature (° C)	5.5	7.2	8.6	16.3
Arsenic (As),Dissolved (mg/L)	<0.005	<0.005	<0.005	<0.005
Copper (Cu),Dissolved (mg/L)	<0.005	0.052	0.008	0.006
Zinc (Zn),Dissolved (mg/L)	<0.05	<0.05	<0.05	<0.05
Mercury (Hg),Total (mg/L)	0.0004	<0.0002	0.0003	<0.0002
Cyanide, Total (mg/L)	<0.01	<0.01	<0.01	<0.01
Cyanide, WAD (mg/L)	<0.01	<0.01	<0.01	<0.01
Fluoride (mg/L)	0.154	0.182	0.211	0.193
Nitrogen, Nitrate (NO3) (mg/L)	6.03	1.64	0.453	0.052
Nitrogen, Nitrite (NO2) (mg/L)	<0.05	<0.05	<0.05	<0.05
Selenium (Se),Dissolved (mg/L)	<0.005	<0.005	<0.005	<0.005
Sodium (Na),Dissolved (mg/L)	6.4	3.75	3.87	5.15
Sulfate (SO4) (mg/L)	349	123	79	253
Electrical Conductivity (µmhos/cm)	968	516	425	797
pH (SU)	6.83	7.04	7.16	7.12
Total Dissolved Solids (mg/L)	696	311	290	495

Table E-63. OM-05 Water Quality 2008

Parameter	1/24/2008	4/22/2008	6/24/2008	8/28/2008	9/5/2008
Field Conductivity (µmhos/cm)	1370	1090	350	59	–
Field Depth (ft)	8.9	5.4	5.1	8.2	–
Field pH (SU)	7.1	7.23	7.34	6.91	–
Field Temperature (° C)	3.5	5.7	10.2	12.5	–
Arsenic (As),Dissolved (mg/L)	<0.005	<0.005	<0.005	0.0147	<0.005
Copper (Cu),Dissolved (mg/L)	0.008	0.005	0.00977	1.37	0.0193
Zinc (Zn),Dissolved (mg/L)	<0.05	0.096	<0.05	0.139	<0.05
Mercury (Hg),Total (mg/L)	0.0002	0.001	<0.0002	0.0034	<0.0002
Bicarbonate (mg/L)	–	241	–	–	–
Cyanide, Total (mg/L)	<0.01	<0.01	<0.01	<0.01	–
Cyanide, WAD (mg/L)	<0.01	<0.01	<0.01	<0.01	–
Fluoride (mg/L)	0.164	0.186	0.288	0.229	–
Nitrogen, Nitrate (NO3) (mg/L)	12.2	4.19	<0.25	0.08	–
Nitrogen, Nitrite (NO2) (mg/L)	<0.05	<0.05	<0.05	<0.05	–
Selenium (Se),Dissolved (mg/L)	<0.005	0.005	<0.005	<0.005	<0.005
Sodium (Na),Dissolved (mg/L)	7.05	15.4	2.59	6.7	6.3
Sulfate (SO4) (mg/L)	–	467	108	152	–
Electrical Conductivity (µmhos/cm)	1380	1260	391	639	–
pH (SU)	7.03	7.16	6.7	7.05	–
Total Dissolved Solids (mg/L)	1050	954	233	437	–

Table E-64. OM-05 Water Quality 2009

Parameter	1/26/2009	4/21/2009	5/19/2009	8/5/2009
Field Conductivity (µmhos/cm)	–	690	280	720
Field Depth (ft)	–	3	4.19	9
Field pH (SU)	–	6.97	6.86	6.68
Field Temperature (° C)	–	5.2	6.1	11.4
Arsenic (As),Dissolved (mg/L)	<0.005	<0.005	<0.005	<0.005
Copper (Cu),Dissolved (mg/L)	0.0115	<0.005	0.0534	0.0225
Zinc (Zn),Dissolved (mg/L)	<0.05	<0.05	<0.05	<0.05
Mercury (Hg),Total (mg/L)	0.0004	0.0007	0.0003	<0.0002
Cyanide, Total (mg/L)	<0.01	<0.01	<0.01	<0.01
Cyanide, WAD (mg/L)	<0.01	<0.01	<0.01	<0.01
Fluoride (mg/L)	–	0.177	0.257	0.214
Nitrogen, Nitrate (NO3) (mg/L)	1.04	1.53	0.313	0.613
Nitrogen, Nitrite (NO2) (mg/L)	<0.05	<0.05	<0.05	<0.05
Selenium (Se),Dissolved (mg/L)	<0.005	<0.005	<0.005	<0.005
Sodium (Na),Dissolved (mg/L)	5.02	7.9	2.36	4.37
Sulfate (SO4) (mg/L)	252	319	24.6	190
Electrical Conductivity (µmhos/cm)	857	891	270	687
pH (SU)	6.83	6.97	6.86	6.85
Total Dissolved Solids (mg/L)	594	623	176	438

Table E-65. OM-05 Water Quality 2010

Parameter	1/19/2010	4/13/2010	5/25/2010	8/17/2010
Field Conductivity (µmhos/cm)	910	469	216	515
Field Depth (ft)	11.5	7	6.2	10.2
Field ORP (mV)	–	–	–	84
Field Oxygen (O2) (mg/L)	–	–	–	3.42
Field pH (SU)	6.77	6.77	6.74	6.67
Field Temperature (° C)	5.8	5.8	5.2	12.6
Arsenic (As),Dissolved (mg/L)	<0.005	<0.005	<0.005	<0.005
Copper (Cu),Dissolved (mg/L)	0.0316	<0.005	<0.005	0.0234
Zinc (Zn),Dissolved (mg/L)	0.0543	<0.05	<0.05	<0.05
Mercury (Hg),Total (mg/L)	0.0002	0.0003	–	<0.0002
Cyanide, Total (mg/L)	<0.01	<0.01	<0.01	<0.01
Cyanide, WAD (mg/L)	<0.01	<0.01	<0.01	<0.01
Fluoride (mg/L)	0.15	0.149	0.199	0.149
Nitrogen, Nitrate (NO3) (mg/L)	1.45	1.56	0.641	0.847
Nitrogen, Nitrite (NO2) (mg/L)	<0.05	<0.05	<0.05	<0.05
Selenium (Se),Dissolved (mg/L)	<0.005	<0.005	<0.005	<0.005
Sodium (Na),Dissolved (mg/L)	5.8	4.84	3.73	5.17
Sulfate (SO4) (mg/L)	264	177	43.2	189
Electrical Conductivity (µmhos/cm)	864	669	358	681
pH (SU)	6.92	6.78	6.9	6.85
Total Dissolved Solids (mg/L)	569	461	249	464

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2010

Table E-66. PM-2 Water Quality 2010 (Page 1 of 2)

Parameter	7/21/2010	10/6/2010
Alkalinity (mg/L)	–	275
Aluminum (Al),Dissolved (mg/L)	–	0.0292
Anion - Cation Balance (%)	–	–1.79
Anions (meq/L)	–	5.61
Antimony (Sb),Dissolved (mg/L)	<0.005	<0.005
Arsenic (As),Dissolved (mg/L)	<0.005	<0.005
Barium (Ba),Dissolved (mg/L)	0.0487	0.0327
Beryllium (Be),Dissolved (mg/L)	<0.001	<0.001
Bicarbonate (mg/L)	–	336
Boron (B),Total (mg/L)	–	0.109
Cadmium (Cd),Dissolved (mg/L)	<0.001	<0.001
Calcium (Ca),Dissolved (mg/L)	–	59.8
Carbonate (mg/L)	–	0
Cations (meq/L)	–	5.41
Chloride (Cl-) (mg/L)	–	3.38
Chromium (Cr),Dissolved (mg/L)	<0.001	<0.001
Cobalt (Co),Dissolved (mg/L)	–	0.00683
Copper (Cu),Dissolved (mg/L)	–	0.00747
Cyanide, Free (mg/L)	–	<0.01
Cyanide, Total (mg/L)	–	<0.01
Cyanide, WAD (mg/L)	–	<0.01
Electrical Conductivity (µmhos/cm)	–	498
Field Conductivity (µmhos/cm)	–	316
Field Depth (ft)	–	143
Field ORP (mV)	–	163
Field Oxygen (O2) (mg/L)	–	2.25
Field pH (SU)	–	7.65
Field Temperature (° C)	–	7
Fluoride (mg/L)	0.12	0.092
Gold (Au),Dissolved (mg/L)	–	<0.001

Table E-66. PM-2 Water Quality 2010 (Page 2 of 2)

Parameter	7/21/2010	10/6/2010
Hardness (mg/L)	–	265
Iron (Fe),Dissolved (mg/L)	–	0.37
Lead (Pb),Dissolved (mg/L)	–	<0.001
Lithium (Li),Dissolved (mg/L)	–	0.005
Magnesium (Mg),Dissolved (mg/L)	–	28.2
Manganese (Mn),Dissolved (mg/L)	–	0.535
Mercury (Hg),Total (mg/L)	<0.0002	<0.0002
Molybdenum (Mo),Dissolved (mg/L)	–	<0.001
Nickel (Ni),Dissolved (mg/L)	<0.005	0.0148
Nitrogen, Ammonia (NH3) (mg/L)	–	0.271
Nitrogen, Nitrate (NO3) (mg/L)	0.241	<0.05
Nitrogen, Nitrite (NO2) (mg/L)	<0.05	<0.05
pH (SU)	–	7.71
Potassium (K),Dissolved (mg/L)	–	<0.5
Selenium (Se),Dissolved (mg/L)	<0.005	<0.005
Silicon (Si),Dissolved (mg/L)	–	2.45
Silver (Ag),Dissolved (mg/L)	–	<0.001
Sodium (Na),Dissolved (mg/L)	–	1.77
Strontium (Sr),Dissolved (mg/L)	–	0.0384
Sulfate (SO4) (mg/L)	–	<10
Total Dissolved Solids (mg/L)	–	267
Total Suspended Solids (mg/L)	–	163
Turbidity (NTU)	–	55
Turbidity (NTU)	–	55
Vanadium (V),Dissolved (mg/L)	–	<0.005
Zinc (Zn),Dissolved (mg/L)	–	<0.05

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Table E-67. Beaver Springs Water Quality 2006

Parameter	1/5/2006	4/3/2006	5/3/2006	8/9/2006	11/1/2006
Anion - Cation Balance (%)	–0.611	–0.398	–0.66	–0.651	–0.705
Anions (meq/L)	9.38	9.22	7.49	9.39	9.19
Arsenic (As),Dissolved (mg/L)	0.005	<0.005	0.007	<0.005	0.006
Bicarbonate (mg/L)	293	293	265	299	296
Cadmium (Cd),Dissolved (mg/L)	<0.001	<0.001	<0.001	<0.001	<0.001
Calcium (Ca),Dissolved (mg/L)	89.6	89	71.2	88.5	90.3
Carbonate (mg/L)	0	0	0	0	0
Cations (meq/L)	9.27	9.14	7.39	9.27	9.06
Chloride (Cl-) (mg/L)	15	14	10.8	13	13
Copper (Cu),Dissolved (mg/L)	<0.005	<0.005	<0.005	<0.005	<0.005
Cyanide, Total (mg/L)	0.073	0.069	0.044	0.065	0.07
Cyanide, WAD (mg/L)	<0.01	<0.01	<0.01	<0.01	<0.01
Electrical Conductivity (µmhos/cm)	924	906	750	913	929
Fluoride (mg/L)	0.135	0.144	0.135	0.144	0.147
Gold (Au),Dissolved (mg/L)	0.009	0.01	0.004	0.004	0.007
Lead (Pb),Dissolved (mg/L)	<0.001	<0.001	<0.001	<0.001	<0.001
Magnesium (Mg),Dissolved (mg/L)	38.7	37.2	32.1	39.3	35.6
Mercury (Hg),Total (mg/L)	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Nitrogen, Ammonia (NH3) (mg/L)	<0.05	<0.05	<0.05	<0.05	<0.05
Nitrogen, Nitrate (NO3) (mg/L)	34.3	33.5	24.1	36.6	34.3
Nitrogen, Nitrite (NO2) (mg/L)	<0.05	<0.05	<0.05	<0.05	<0.05
pH (SU)	7.67	7.86	7.72	8.04	7.86
Potassium (K),Dissolved (mg/L)	1.51	1.5	1.18	1.54	1.69
Selenium (Se),Dissolved (mg/L)	0.005	<0.005	<0.005	<0.005	<0.005
Silver (Ag),Dissolved (mg/L)	<0.001	<0.001	<0.001	<0.001	<0.001
Sodium (Na),Dissolved (mg/L)	36.2	36.9	26.8	36.3	36.5
Sulfate (SO4) (mg/L)	81.5	77.7	53.3	71.9	72.8
Total Dissolved Solids (mg/L)	583	584	436	559	553
Zinc (Zn),Dissolved (mg/L)	<0.05	<0.05	<0.05	<0.05	<0.05

Table E-68. Beaver Springs Water Quality 2007 (Page 1 of 2)

Parameter	1/10/2007	2/13/2007	4/4/2007	5/15/2007	8/2/2007	11/7/2007
Anion - Cation Balance (%)	2.28	–	–	0.442	–2.67	–3.54
Anions (meq/L)	9.17	–	–	9.1	9.85	9.39
Arsenic (As),Dissolved (mg/L)	<0.005	<0.005	0.005	0.005	0.005	<0.005
Bicarbonate (mg/L)	292	–	288	295	303	300
Cadmium (Cd),Dissolved (mg/L)	<0.001	–	<0.001	<0.001	<0.001	<0.001
Calcium (Ca),Dissolved (mg/L)	101	–	84.7	87.7	88.3	85.7
Carbonate (mg/L)	0	–	0	0	0	0
Cations (meq/L)	9.6	–	–	9.18	9.34	8.75
Chloride (Cl-) (mg/L)	13.8	–	13	13	13.3	14.3
Copper (Cu),Dissolved (mg/L)	<0.005	–	<0.005	<0.005	<0.005	<0.005
Cyanide, Total (mg/L)	0.079	0.076	0.083	0.069	0.08	0.071
Cyanide, WAD (mg/L)	<0.01	<0.01	<0.01	0.011	<0.01	<0.01
Electrical Conductivity (µmhos/cm)	906	–	873	912	912	938
Field Conductivity (µmhos/cm)	760	790	740	780	853	890
Field Flow Rate (gal/min)	27.8	37.2	51.3	52.5	97.2	32.1
Field ORP (mV)	–	120	98	–12	39	273
Field Oxygen (O2) (mg/L)	–	6.12	7.03	6.09	6.52	9.23
Field pH (SU)	7.69	7.7	7.73	7.38	7.6	7.49
Field Temperature (° C)	5.1	7	6.4	7.1	7.3	6.8
Fluoride (mg/L)	0.144	–	0.143	0.146	0.141	0.142
Gold (Au),Dissolved (mg/L)	0.009	–	0.004	<0.001	0.012	0.008
Lead (Pb),Dissolved (mg/L)	<0.001	–	<0.001	<0.001	<0.001	<0.001
Magnesium (Mg),Dissolved (mg/L)	37.4	–	37.8	39.4	38.6	37.2
Mercury (Hg),Total (mg/L)	<0.0002	–	<0.0002	<0.0002	<0.0002	<0.0002
Nitrogen, Ammonia (NH3) (mg/L)	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Nitrogen, Nitrate (NO3) (mg/L)	34.4	35.6	27.5	33.1	31.9	33.2
Nitrogen, Nitrite (NO2) (mg/L)	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
pH (SU)	8.05	–	7.76	7.83	7.85	7.51
Potassium (K),Dissolved (mg/L)	1.84	–	1.67	1.62	1.7	1.14
Selenium (Se),Dissolved (mg/L)	<0.005	0.005	<0.005	<0.005	<0.005	0.005
Silver (Ag),Dissolved (mg/L)	<0.001	–	<0.001	<0.001	<0.001	<0.001
Sodium (Na),Dissolved (mg/L)	33	–	39.9	35	39.5	31.8

Table E-68. Beaver Springs Water Quality 2007 (Page 2 of 2)

Parameter	1/10/2007	2/13/2007	4/4/2007	5/15/2007	8/2/2007	11/7/2007
Sulfate (SO4) (mg/L)	73.5	–	73	73.2	107	81.2
Total Dissolved Solids (mg/L)	534	–	519	547	578	551
Zinc (Zn),Dissolved (mg/L)	<0.05	–	<0.05	<0.05	<0.05	<0.05

Table E-69. Beaver Springs Water Quality 2008 (Page 1 of 2)

Parameter	1/25/2008	2/13/2008	4/8/2008	5/13/2008	8/12/2008	11/18/2008
Anion - Cation Balance (%)	1.71	–	–2.04	–2.37	–2.71	–0.349
Anions (meq/L)	9.08	–	9.29	8.03	8.93	8.75
Arsenic (As),Dissolved (mg/L)	<0.005	0.005	<0.005	0.0054	0.00561	<0.005
Arsenic (As),Total (mg/L)	–	0.005	<0.005	–	–	–
Bicarbonate (mg/L)	301	–	292	273	293	292
Cadmium (Cd),Dissolved (mg/L)	<0.001	–	<0.001	<0.001	<0.001	<0.001
Cadmium (Cd),Total (mg/L)	–	–	<0.001	–	–	–
Calcium (Ca),Dissolved (mg/L)	100	–	89.1	74.3	85.8	88.8
Carbonate (mg/L)	0	–	0	0	0	0
Cations (meq/L)	9.39	–	8.92	7.66	8.46	8.69
Chloride (Cl-) (mg/L)	13.5	–	25.5	11.5	13.5	12.8
Copper (Cu),Dissolved (mg/L)	<0.005	–	<0.005	<0.005	<0.005	<0.005
Copper (Cu),Total (mg/L)	–	–	<0.005	–	–	–
Cyanide, Total (mg/L)	0.08	–	<0.01	0.053	0.072	0.071
Cyanide, WAD (mg/L)	<0.01	–	<0.01	<0.01	<0.01	<0.01
Electrical Conductivity (µmhos/cm)	922	–	911	792	862	848
Field Conductivity (µmhos/cm)	890	960	850	870	820	–
Field Flow Rate (gal/min)	30.3	13.5	26.9	1	1.5	–
Field ORP (mV)	84	–	41	45	34	–
Field Oxygen (O2) (mg/L)	7.09	–	9.26	7.76	6.71	–
Field pH (SU)	7.82	7.75	7.78	7.81	7.61	–
Field Temperature (° C)	6.5	6.6	6.1	5.7	9.1	–
Fluoride (mg/L)	0.148	–	0.159	0.169	0.176	0.148
Gold (Au),Dissolved (mg/L)	0.005	–	0.0007	0.008	0.007	0.006
Gold (Au),Total (mg/L)	–	–	0.005	–	–	–
Lead (Pb),Dissolved (mg/L)	<0.001	–	<0.001	<0.001	<0.001	<0.001
Magnesium (Mg),Dissolved (mg/L)	36.9	–	35.8	33	33.7	35.3
Mercury (Hg),Total (mg/L)	<0.0002	–	<0.0002	<0.0002	<0.0002	<0.0002
Nitrogen, Ammonia (NH3) (mg/L)	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Nitrogen, Nitrate (NO3) (mg/L)	27.6	33.9	31.4	27.3	28.5	29.2
Nitrogen, Nitrite (NO2) (mg/L)	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
pH (SU)	7.7	–	7.89	8.01	7.64	7.89

Table E-69. Beaver Springs Water Quality 2008 (Page 2 of 2)

Parameter	1/25/2008	2/13/2008	4/8/2008	5/13/2008	8/12/2008	11/18/2008
Potassium (K),Dissolved (mg/L)	1.89	–	1.6	1.46	1.74	1.12
Selenium (Se),Dissolved (mg/L)	0.005	0.006	<0.005	<0.005	<0.005	<0.005
Selenium (Se),Total (mg/L)	–	0.006	<0.005	–	–	–
Silver (Ag),Dissolved (mg/L)	<0.001	–	<0.001	<0.001	<0.001	<0.001
Sodium (Na),Dissolved (mg/L)	30.4	–	34.2	27.7	31.4	30.5
Sulfate (SO4) (mg/L)	85.7	–	74	61.3	81.9	72.5
Total Dissolved Solids (mg/L)	552	–	576	443	544	518
Total Suspended Solids (mg/L)	–	–	<10	–	–	–
Zinc (Zn),Dissolved (mg/L)	<0.05	–	<0.05	0.0937	<0.05	<0.05
Zinc (Zn),Total (mg/L)	–	–	<0.05	–	–	–
Zinc (Zn),Total Recoverable (mg/L)	–	–	–	–	<0.05	–

Table E-70. Beaver Springs Water Quality 2009 (Page 1 of 2)

Parameter	1/13/2009	4/29/2009	5/13/2009	6/18/2009	8/12/2009	10/7/2009
Anion - Cation Balance (%)	1.75	1.58	–3.26	–0.178	–	–
Anions (meq/L)	8.71	7.81	9.43	8.38	–	–
Arsenic (As),Dissolved (mg/L)	0.00508	<0.005	0.006	<0.005	<0.005	–
Arsenic (As),Total Recoverable (mg/L)	–	–	–	–	–	<0.005
Bicarbonate (mg/L)	297	300	304	300	295	–
Cadmium (Cd),Dissolved (mg/L)	<0.001	<0.001	<0.001	<0.001	–	–
Cadmium (Cd),Total Recoverable (mg/L)	–	–	–	–	–	<0.001
Calcium (Ca),Dissolved (mg/L)	97	83.9	90.2	76.7	–	73.3
Carbonate (mg/L)	0	0	0	0	–	–
Cations (meq/L)	9.02	8.06	8.84	8.35	–	–
Chloride (Cl-) (mg/L)	12.8	9.5	11	11.5	–	–
Copper (Cu),Dissolved (mg/L)	<0.005	<0.005	<0.005	<0.005	<0.005	–
Copper (Cu),Total Recoverable (mg/L)	–	–	–	–	–	<0.005
Cyanide, Total (mg/L)	0.071	0.065	0.067	0.077	0.067	0.058
Cyanide, WAD (mg/L)	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Electrical Conductivity (µmhos/cm)	875	816	838	838	826	–
Field Conductivity (µmhos/cm)	–	830	910	–	534	–
Field Flow Rate (gal/min)	–	59	44	–	62	–
Field ORP (mV)	–	–	43	–	203	–
Field Oxygen (O2) (mg/L)	–	–	8.53	–	8.12	–
Field pH (SU)	–	7.47	7.46	–	7.3	–
Field Temperature (° C)	–	6.7	6.8	–	6.9	–
Fluoride (mg/L)	0.148	0.154	0.157	0.155	0.158	–
Gold (Au),Dissolved (mg/L)	0.006	0.006	0.002	0.003	0.009	–
Hardness (mg/L)	–	–	v	–	–	337
Lead (Pb),Dissolved (mg/L)	<0.001	<0.001	<0.001	<0.001	–	–
Lead (Pb),Total Recoverable (mg/L)	–	–	–	–	–	<0.001
Magnesium (Mg),Dissolved (mg/L)	35.3	31.8	35.1	38.1	–	37.3
Mercury (Hg),Total (mg/L)	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Nitrogen, Ammonia (NH3) (mg/L)	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Nitrogen, Nitrate (NO3) (mg/L)	29	23.3	40.9	25.1	26.4	25.5
Nitrogen, Nitrite (NO2) (mg/L)	<0.05	<0.05	<0.05	<0.05	<0.05	–
pH (SU)	7.76	8.12	8.1	7.92	7.67	7.58
Potassium (K),Dissolved (mg/L)	0.95	0.91	1.37	1.41	–	–

Table E-70. Beaver Springs Water Quality 2009 (Page 2 of 2)

Parameter	1/13/2009	4/29/2009	5/13/2009	6/18/2009	8/12/2009	10/7/2009
Selenium (Se),Dissolved (mg/L)	<0.005	<0.005	<0.005	<0.005	<0.005	–
Selenium (Se),Total (mg/L)	–	–	–	–	–	<0.005
Selenium (Se),Total Recoverable (mg/L)	–	–	–	–	–	<0.005
Silver (Ag),Dissolved (mg/L)	<0.001	<0.001	<0.001	<0.001	<0.001	–
Sodium (Na),Dissolved (mg/L)	28.9	28.4	32.5	31.1	30.2	–
Sulfate (SO4) (mg/L)	67.5	45.6	58	64.1	52.9	–
Total Dissolved Solids (mg/L)	502	495	498	508	474	495
Total Suspended Solids (mg/L)	–	–	–	–	<10	<10
Zinc (Zn),Dissolved (mg/L)	<0.05	<0.05	<0.05	<0.05	–	–
Zinc (Zn),Total Recoverable (mg/L)	–	–	–	–	–	<0.05

Table E-71. Beaver Springs Water Quality 2010

Parameter	1/26/2010	4/5/2010	5/3/2010	8/5/2010
Arsenic (As),Dissolved (mg/L)	<0.005	<0.005	<0.005	<0.005
Bicarbonate (mg/L)	286	285	287	286
Copper (Cu),Dissolved (mg/L)	<0.005	<0.005	<0.005	<0.005
Cyanide, Total (mg/L)	0.058	0.064	0.055	0.059
Cyanide, WAD (mg/L)	<0.01	<0.01	<0.01	<0.01
Electrical Conductivity (µmhos/cm)	801	808	797	772
Field Conductivity (µmhos/cm)	547	434	527	502
Field Flow Rate (gal/min)	50	62	55	65
Field ORP (mV)	–	126	181	161
Field Oxygen (O2) (mg/L)	8.45	8.06	8.15	8.36
Field pH (SU)	7.67	7.36	7.33	7.47
Field Temperature (° C)	6.9	6.9	6	7
Fluoride (mg/L)	0.167	0.161	0.149	0.162
Gold (Au),Dissolved (mg/L)	0.006	0.006	0.004	0.001
Mercury (Hg),Total (mg/L)	<0.0002	<0.0002	<0.0002	<0.0002
Nitrogen, Ammonia (NH3) (mg/L)	<0.05	<0.05	<0.05	<0.05
Nitrogen, Nitrate (NO3) (mg/L)	25.8	25.9	28.3	22.2
Nitrogen, Nitrite (NO2) (mg/L)	<0.05	<0.05	<0.05	<0.05
pH (SU)	7.87	7.69	7.8	7.71
Selenium (Se),Dissolved (mg/L)	<0.005	<0.005	0.00587	<0.005
Silver (Ag),Dissolved (mg/L)	<0.001	<0.001	<0.001	<0.001
Sodium (Na),Dissolved (mg/L)	28.8	30.9	30.5	29.6
Sulfate (SO4) (mg/L)	79.3	83.2	79.6	75
Total Dissolved Solids (mg/L)	505	477	479	463

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Table E-72. Ross Springs Water Quality 2006 (Page 1 of 2)

Parameter	1/10/ 2006	3/6/ 2006	4/3/ 2006	4/17/2 006	5/3/ 2006	5/15/ 2006	5/30/ 2006	6/14/ 2006	6/26/ 2006	7/12/ 2006	7/24/ 2006	8/9/ 2006	8/23/ 2006	9/6/ 2006	9/19/ 2006	10/4/ 2006	10/18/ 2006	11/1/ 2006	12/13/ 2006
Anion - Cation Balance (%)	–0.659	–	–1.69	–	–2.15	–	–	1.25	–	–	–	–0.204	–	–	–	–	–	0.525	–
Anions (meq/L)	10.6	–	9.63	–	8.42	–	–	9.67	–	–	–	10.3	–	–	–	–	–	12.8	–
Arsenic (As),Dissolved (mg/L)	0.01	0.009	0.008	–	0.038	–	–	0.053	–	0.064	–	0.026	–	0.023	–	0.07	–	0.077	0.023
Bicarbonate (mg/L)	414	–	362	–	299	–	–	281	–	–	–	353	–	–	–	–	–	315	–
Cadmium (Cd),Dissolved (mg/L)	<0.001	–	<0.001	–	<0.001	–	–	<0.001	–	–	–	<0.001	–	–	–	–	–	<0.001	–
Calcium (Ca),Dissolved (mg/L)	96.6	–	84.5	–	72.4	–	–	92.5	–	–	–	94	–	–	–	–	–	125	–
Carbonate (mg/L)	0	–	0	–	0	–	–	0	–	–	–	0	–	–	–	–	–	0	–
Cations (meq/L)	10.5	–	9.31	–	8.06	–	–	9.91	–	–	–	10.2	–	–	–	–	–	12.9	–
Chloride (Cl-) (mg/L)	15	–	14	–	10.5	–	–	13.3	–	–	–	12.5	–	–	–	–	–	21	–
Copper (Cu),Dissolved (mg/L)	<0.005	–	0.007	–	<0.005	–	–	<0.005	–	–	–	<0.005	–	–	–	–	–	0.006	–
Cyanide, Total (mg/L)	0.026	0.028	0.029	<0.01	0.018	0.019	<0.01	<0.01	<0.01	0.013	<0.01	0.015	0.016	0.013	0.014	0.033	0.062	0.059	0.046
Cyanide, WAD (mg/L)	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.012	0.012	<0.01
Electrical Conductivity (µmhos/cm)	967	–	895	–	794	–	–	930	–	–	–	967	–	–	–	–	–	1240	–
Fluoride (mg/L)	0.126	–	0.123	–	0.248	–	–	0.3	–	–	–	0.179	–	–	–	–	–	0.403	–
Gold (Au),Dissolved (mg/L)	0.003	–	0.005	–	0.006	–	–	0.007	–	–	–	0.004	–	–	–	–	–	0.008	–
Lead (Pb),Dissolved (mg/L)	<0.001	–	<0.001	–	<0.001	–	–	<0.001	–	–	–	<0.001	–	–	–	–	–	<0.001	–
Magnesium (Mg),Dissolved (mg/L)	38.4	–	33.9	–	26.4	–	–	33.8	–	–	–	37.1	–	–	–	–	–	33.8	–

Table E-72. Ross Springs Water Quality 2006 (Page 2 of 2)

Parameter	1/10/ 2006	3/6/ 2006	4/3/ 2006	4/17/2 006	5/3/ 2006	5/15/ 2006	5/30/ 2006	6/14/ 2006	6/26/ 2006	7/12/ 2006	7/24/ 2006	8/9/ 2006	8/23/ 2006	9/6/ 2006	9/19/ 2006	10/4/ 2006	10/18/ 2006	11/1/ 2006	12/13/ 2006
Mercury (Hg),Total (mg/L)	<0.0002	–	<0.0002	–	<0.0002	–	–	<0.0002	–	–	–	<0.0002	–	–	–	–	–	<0.0002	–
Nitrogen, Ammonia (NH3) (mg/L)	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.066	0.106	0.069	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Nitrogen, Nitrate (NO3) (mg/L)	12.8	12.4	11.7	24	13.7	17.7	20.6	19.4	24.9	29.5	27.6	16.5	29.6	19.1	16.8	24.9	35.1	39.1	26.4
Nitrogen, Nitrite (NO2) (mg/L)	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
pH (SU)	8.07	–	8	–	7.93	–	–	8.11	–	–	–	7.92	–	–	–	–	–	8.1	–
Potassium (K),Dissolved (mg/L)	4.76	–	4.71	–	6.14	–	–	6.85	–	–	–	5.87	–	–	–	–	–	8.92	–
Selenium (Se),Dissolved (mg/L)	<0.005	<0.005	<0.005	–	0.005	–	–	0.008	–	0.014	–	<0.005	–	<0.005	–	0.008	–	0.013	<0.005
Silver (Ag),Dissolved (mg/L)	<0.001	–	<0.001	–	<0.001	–	–	<0.001	–	–	–	<0.001	–	–	–	–	–	<0.001	–
Sodium (Na),Dissolved (mg/L)	54.5	–	50.2	–	48.8	–	–	53.9	–	–	–	53.9	–	–	–	–	–	84.7	–
Sulfate (SO4) (mg/L)	119	–	118	–	107	–	–	158	–	–	–	142	–	–	–	–	–	203	–
Total Dissolved Solids (mg/L)	592	–	568	–	482	–	–	613	–	–	–	597	–	–	–	–	–	817	–
Zinc (Zn),Dissolved (mg/L)	<0.05	–	<0.05	–	<0.05	–	–	<0.05	–	–	–	<0.05	–	–	–	–	–	<0.05	–

Table E-73. Ross Springs Water Quality 2007 (Page 1 of 2)

Parameter	1/10/2007	2/7/2007	3/13/2007	4/4/2007	5/9/2007	6/19/2007	7/25/2007	8/9/2007	9/25/2007	10/24/2007	11/8/2007	12/6/2007
Anion - Cation Balance (%)	0.278	–	–	–	0.57	2.09	–	1.43	–	–	–1.68	–
Anions (meq/L)	10.8	–	–	–	9.29	9.76	–	10.2	–	–	10.6	–
Arsenic (As),Dissolved (mg/L)	0.019	0.016	0.017	0.016	0.067	0.083	0.043	0.032	0.019	0.011	0.011	0.01
Bicarbonate (mg/L)	353	–	–	340	399	362	–	354	–	–	372	–
Cadmium (Cd),Dissolved (mg/L)	<0.001	–	–	<0.001	<0.001	<0.001	–	<0.001	–	–	<0.001	–
Calcium (Ca),Dissolved (mg/L)	95.5	–	–	92.3	88.2	103	–	93.6	–	–	99	–
Carbonate (mg/L)	0	–	–	0	0	0	–	0	–	–	0	–
Cations (meq/L)	10.9	–	–	–	9.39	10.2	–	10.5	–	–	10.3	–
Chloride (Cl-) (mg/L)	15.5	–	–	15.5	15	12.5	–	15.3	–	–	15	–
Copper (Cu),Dissolved (mg/L)	0.006	–	–	<0.005	0.006	<0.005	–	<0.005	–	–	<0.005	–
Cyanide, Total (mg/L)	0.042	0.045	0.044	0.069	0.027	0.039	0.044	0.043	0.053	0.045	0.037	0.042
Cyanide, WAD (mg/L)	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.013	<0.01
Electrical Conductivity (µmhos/cm)	1040	–	–	1010	880	920	–	966	–	–	995	–
Field Conductivity (µmhos/cm)	634	860	630	840	740	820	850	877	870	870	950	940
Field Flow Rate (gal/min)	1.55	1.15	0.037	3.81	9.01	–	17.2	6.39	70	–	6.3	2.9
Field ORP (mV)	–	105	43	73	–20	60	–85	30	–68	177	206	200
Field Oxygen (O2) (mg/L)	–	5.81	5.69	6.9	7.56	6.41	4.66	7.59	5.71	2.07	9.25	6.91
Field pH (SU)	8.04	8.03	9.07	8.56	8.02	7.89	7.75	7.56	7.86	7.87	7.95	7.94
Field Temperature (° C)	2.1	3.4	3	2.5	8.4	9.4	12.5	10.4	7.7	6.1	6.1	4.8
Fluoride (mg/L)	0.167	–	–	0.143	0.225	0.3	–	0.217	–	–	0.151	–
Gold (Au),Dissolved (mg/L)	0.005	–	–	0.002	0.003	<0.001	–	0.004	–	–	0.002	–
Lead (Pb),Dissolved (mg/L)	<0.001	–	–	<0.001	<0.001	<0.001	–	<0.001	–	–	<0.001	–
Magnesium (Mg),Dissolved (mg/L)	37.5	–	–	37	30.7	28.8	–	35.2	–	–	33.5	–
Mercury (Hg),Total (mg/L)	<0.0002	–	–	<0.0002	<0.0002	<0.0002	–	<0.0002	–	–	<0.0002	–

Table E-73. Ross Springs Water Quality 2007 (Page 2 of 2)

Parameter	1/10/2007	2/7/2007	3/13/2007	4/4/2007	5/9/2007	6/19/2007	7/25/2007	8/9/2007	9/25/2007	10/24/2007	11/8/2007	12/6/2007
Nitrogen, Ammonia (NH3) (mg/L)	<0.05	<0.05	<0.05	<0.05	<0.05	0.516	0.073	<0.05	<0.05	<0.05	<0.05	<0.05
Nitrogen, Nitrate (NO3) (mg/L)	24	24.2	15.5	22.8	<0.05	7.34	19.7	17.3	21.2	21.4	19.4	18.8
Nitrogen, Nitrite (NO2) (mg/L)	<0.05	<0.05	<0.05	<0.05	<0.05	0.54	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
pH (SU)	8.13	–	–	8.05	7.95	8.09	–	7.92	–	–	7.86	–
Potassium (K),Dissolved (mg/L)	6.27	–	–	5.28	15.9	8.97	–	7.89	–	–	4.03	–
Selenium (Se),Dissolved (mg/L)	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.008	0.006	<0.005	0.005	0.005	<0.005
Silver (Ag),Dissolved (mg/L)	<0.001	–	–	<0.001	<0.001	<0.001	–	<0.001	–	–	<0.001	–
Sodium (Na),Dissolved (mg/L)	66	–	–	66.7	47.4	55.4	–	63.4	–	–	57.3	–
Sulfate (SO4) (mg/L)	138	–	–	138	111	139	–	132	–	–	131	–
Total Dissolved Solids (mg/L)	634	–	–	616	532	649	–	582	–	–	581	–
Zinc (Zn),Dissolved (mg/L)	<0.05	–	–	<0.05	0.069	<0.05	–	<0.05	–	–	<0.05	–

Table E-74. Ross Springs Water Quality 2008 (Page 1 of 2)

Parameter	1/4/2008	2/22/2008	3/19/2008	4/2/2008	5/7/2008	6/10/2008	7/10/2008	8/13/2008	9/18/2008	10/30/2008	11/13/2008	12/12/2008
Anion - Cation Balance (%)	–1.19	–	–	–1.46	–0.415	–2.78	–	2.08	–	–	–0.942	–
Anions (meq/L)	10.6	–	–	11.3	8.74	8.96	–	8.41	–	–	8.18	–
Arsenic (As),Dissolved (mg/L)	0.011	0.011	0.05	0.071	0.013	0.0495	0.0151	0.0133	0.00859	0.0102	0.00686	0.00932
Bicarbonate (mg/L)	374	–	–	482	359	295	–	366	–	–	347	–
BOD, 5-Day (mg/L)	–	–	–	–	–	–	–	–	–	–	–	–
Cadmium (Cd),Dissolved (mg/L)	<0.001	–	–	<0.001	<0.001	<0.001	–	<0.001	–	–	<0.001	–
Calcium (Ca),Dissolved (mg/L)	98.3	–	–	94.5	86.8	77.2	–	78.7	–	–	74.6	–
Carbonate (mg/L)	0	–	–	0	0	0	–	0	–	–	0	–
Cations (meq/L)	10.4	–	–	11	8.67	8.48	–	8.76	–	–	8.03	–
Chloride (Cl-) (mg/L)	15.5	–	–	17.5	12.5	10.8	–	13.5	–	–	10.8	–
Copper (Cu),Dissolved (mg/L)	0.005	–	–	0.006	<0.005	<0.005	–	<0.005	–	–	<0.005	–
Cyanide, Total (mg/L)	0.045	0.036	0.044	0.026	0.02	0.062	0.034	0.037	0.043	0.05	0.051	0.054
Cyanide, WAD (mg/L)	<0.01	<0.01	<0.01	<0.01	0.012	0.016	<0.01	<0.01	0.01	<0.01	<0.01	<0.01
Electrical Conductivity (µmhos/cm)	983	–	–	1010	835	850	–	885	–	–	816	–
Field Conductivity (µmhos/cm)	890	1010	930	980	760	–	830	1230	–	–	–	–
Field Flow Rate (gal/min)	1.5	6.7	8.4	6.7	2	–	49.4	3	–	–	–	–
Field ORP (mV)	110	185	96	67	69	–	70	92	–	–	–	–
Field Oxygen (O2) (mg/L)	6.53	6.18	10	1.91	8.66	–	6.13	6.33	–	–	–	–
Field pH (SU)	8.42	8.01	8.38	8.11	8.03	–	7.82	7.77	–	–	–	–
Field Temperature (° C)	4	1.5	1.8	1.6	4.6	–	8.9	8.9	–	–	–	–
Fluoride (mg/L)	0.154	–	–	0.254	0.17	0.421	–	0.18	–	–	0.128	–
Gold (Au),Dissolved (mg/L)	<0.001	–	–	0.002	<0.001	0.003	–	0.003	–	–	0.001	–
Lead (Pb),Dissolved (mg/L)	<0.001	–	–	<0.001	<0.001	<0.001	–	<0.001	–	–	<0.001	–
Magnesium (Mg),Dissolved (mg/L)	36.8	–	–	38	29.6	25.1	–	31.3	–	–	30.8	–
Mercury (Hg),Total (mg/L)	<0.0002	–	–	<0.0002	<0.0002	<0.0002	–	<0.0002	–	–	<0.0002	–
Nitrogen, Ammonia (NH3) (mg/L)	<0.05	<0.05	0.056	0.235	0.152	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05

Table E-74. Ross Springs Water Quality 2008 (Page 2 of 2)

Parameter	1/4/2008	2/22/2008	3/19/2008	4/2/2008	5/7/2008	6/10/2008	7/10/2008	8/13/2008	9/18/2008	10/30/2008	11/13/2008
Nitrogen, Nitrate (NO3) (mg/L)	19.1	17.8	0.147	0.234	8.06	19.4	13.7	1.7	13.5	14.1	14.8
Nitrogen, Nitrite (NO2) (mg/L)	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
pH (SU)	7.92	–	–	7.78	8.08	8.16	–	7.83	–	–	7.87
Potassium (K),Dissolved (mg/L)	4.26	–	–	17	5.89	6.56	–	4.82	–	–	2.76
Selenium (Se),Dissolved (mg/L)	<0.005	0.007	<0.005	<0.005	<0.005	0.00578	<0.005	<0.005	<0.005	<0.005	<0.005
Silver (Ag),Dissolved (mg/L)	<0.001	–	–	<0.001	<0.001	<0.001	–	0.00125	–	–	<0.001
Sodium (Na),Dissolved (mg/L)	54.2	–	–	62.7	40.1	55	–	49.2	–	–	39.1
Sulfate (SO4) (mg/L)	130	–	–	140	92.1	116	–	91	–	–	53.9
Total Dissolved Solids (mg/L)	612	–	–	626	497	519	–	517	–	–	473
Zinc (Zn),Dissolved (mg/L)	<0.05	–	–	0.068	<0.05	<0.05	–	<0.05	–	–	<0.05

Table E-75. Ross Springs Water Quality 2009 (1/7/2009 Through 9/30/2009) (Page 1 of 2)

Parameter	1/7/2009	2/5/2009	3/5/2009	4/8/2009	5/27/2009	6/15/2009	6/18/2009	7/9/2009	8/4/2009	9/1/2009	9/17/2009	9/21/2009	9/22/2009
Anion - Cation Balance (%)	0.553	–	–2.37	1.46	–1.32	2.35	0.0386	–	–	–	–	–	–
Anions (meq/L)	9.15	–	9.59	9.45	9	8.75	8.98	–	–	–	–	–	–
Arsenic (As),Dissolved (mg/L)	0.00947	0.00862	0.0104	0.0107	0.0185	0.0729	0.0242	0.0247	0.0125	0.0314	–	–	–
Bicarbonate (mg/L)	370	–	369	365	347	263	345	–	368	–	–	–	–
BOD, 5-Day (mg/L)	–	–	–	5.4	–	–	–	–	–	–	–	–	–
Cadmium (Cd),Dissolved (mg/L)	<0.001	–	<0.001	<0.001	<0.001	<0.001	<0.001	–	–	–	–	–	–
Calcium (Ca),Dissolved (mg/L)	81.1	–	80.5	97.5	82.7	88.9	84.8	–	–	–	–	–	–
Carbonate (mg/L)	0	–	0	0	0	0	0	–	–	–	–	–	–
Cations (meq/L)	9.25	–	9.15	9.73	8.76	9.17	8.98	–	–	–	–	–	–
Chloride (Cl-) (mg/L)	13.5	–	13	12.8	11.8	12.8	11.5	–	–	–	–	–	–
Copper (Cu),Dissolved (mg/L)	<0.005	–	0.00792	<0.005	0.00573	<0.005	<0.005	–	<0.005	–	–	–	–
Cyanide, Total (mg/L)	0.06	0.06	0.055	0.048	0.034	0.04	0.034	0.041	0.046	–	–	–	–
Cyanide, WAD (mg/L)	<0.01	<0.01	<0.01	<0.01	0.022	0.01	0.017	0.011	<0.01	–	–	–	–
Electrical Conductivity (µmhos/cm)	904	–	923	899	884	865	859	–	869	–	–	–	–
Field Conductivity (µmhos/cm)	–	711	960	930	900	890	–	623	588	668	–	–	–
Field Flow Rate (gal/min)	–	–	–	50	116	140	–	74	96	29	–	–	–
Field ORP (mV)	–	102	8	16	68	57	–	–	164	224	–	–	–
Field Oxygen (O2) (mg/L)	–	7.34	8.19	8.94	8.38	7.8	–	–	8.25	7.36	–	–	–
Field pH (SU)	–	7.37	7.86	7.96	7.87	8.05	–	7.62	7.65	7.6	–	–	–
Field Temperature (° C)	–	3.4	5	4.7	11.6	9.7	–	9.1	8.2	9.4	–	–	–
Fluoride (mg/L)	0.14	–	0.13	0.144	0.206	0.526	0.214	–	0.148	–	–	–	–
Gold (Au),Dissolved (mg/L)	0.002	–	<0.001	0.003	0.002	0.004	0.003	–	0.002	–	–	–	–
Iron (Fe),Dissolved (mg/L)	–	–	–	–	–	–	<0.05	–	–	–	–	–	–

Table E-75. Ross Springs Water Quality 2009 (1/7/2009 Through 9/22/2009) (Page 2 of 2)

Parameter	1/7/2009	2/5/2009	3/5/2009	4/8/2009	5/27/2009	6/15/2009	6/18/2009	7/9/2009	8/4/2009	9/1/2009	9/17/2009	9/21/2009	9/22/2009
Lead (Pb),Dissolved (mg/L)	<0.001	–	<0.001	<0.001	<0.001	<0.001	–	–	–	–	–	–	–
Magnesium (Mg),Dissolved (mg/L)	35.9	–	34	33.8	31.4	27.2	33.3	–	–	–	–	–	–
Mercury (Hg),Total (mg/L)	<0.0002	–	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	–	<0.0002	–	–	–	–
Nitrogen, Ammonia (NH3) (mg/L)	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	–	–	–
Nitrogen, Nitrate (NO3) (mg/L)	16.8	17.4	16.8	16	13.4	17.2	13.6	15.6	13.9	22	–	–	–
Nitrogen, Nitrite (NO2) (mg/L)	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	–	–	–
pH (SU)	8.01	–	8	7.93	7.89	8.16	8.08	–	7.93	–	–	–	–
Potassium (K),Dissolved (mg/L)	3.04	–	4.75	2.98	4.52	6.48	4.42	–	–	–	–	–	–
Selenium (Se),Dissolved (mg/L)	<0.005	<0.005	<0.005	<0.005	0.00512	0.00714	<0.005	0.00519	<0.005	0.00625	–	–	–
Selenium (Se),Total Recoverable (mg/L)	–	–	–	–	–	–	–	–	–	–	0.00594	0.00772	0.0067
Silver (Ag),Dissolved (mg/L)	<0.001	–	<0.001	<0.001	<0.001	<0.001	<0.001	–	<0.001	–	–	–	–
Sodium (Na),Dissolved (mg/L)	50	–	50.9	46.1	44.6	53.7	43.7	–	46.5	–	–	–	–
Sulfate (SO4) (mg/L)	71.8	–	94.6	93.7	96.5	137	96.7	–	78.9	–	–	–	–
Total Dissolved Solids (mg/L)	518	–	576	530	544	574	425	–	502	–	–	–	–
Zinc (Zn),Dissolved (mg/L)	<0.05	–	0.0629	<0.05	<0.05	<0.05	<0.05	–	–	–	–	–	–

Table E-76. Ross Springs Water Quality 2009 (9/23/2009 Through 12/2/2009) (Page 1 of 2)

Parameter	9/23/2009	9/25/2009	10/5/2009	10/6/2009	10/7/2009	10/14/2009	11/3/2009	12/2/2009
Anion - Cation Balance (%)	–	–	–	–	–	–	–	–
Anions (meq/L)	–	–	–	–	–	–	–	–
Arsenic (As),Dissolved (mg/L)	–	–	–	–	–	0.0109	0.00959	0.011
Bicarbonate (mg/L)	–	–	–	–	–	–	–	–
BOD, 5-Day (mg/L)	–	–	–	–	–	–	–	–
Cadmium (Cd),Dissolved (mg/L)	–	–	–	–	–	–	–	–
Calcium (Ca),Dissolved (mg/L)	–	–	–	–	–	–	–	–
Carbonate (mg/L)	–	–	–	–	–	–	–	–
Cations (meq/L)	–	–	–	–	–	–	–	–
Chloride (Cl-) (mg/L)	–	–	–	–	–	–	–	–
Copper (Cu),Dissolved (mg/L)	–	–	–	–	–	–	–	–
Cyanide, Total (mg/L)	–	–	0.044	0.043	0.043	–	–	–
Cyanide, WAD (mg/L)	–	–	<0.01	<0.01	<0.01	–	–	–
Electrical Conductivity (µmhos/cm)	–	–	–	–	–	–	–	–
Field Conductivity (µmhos/cm)	–	–	–	–	–	595	586	558
Field Flow Rate (gal/min)	–	–	–	–	–	–	9.3	21
Field ORP (mV)	–	–	–	–	–	33	192	272
Field Oxygen (O2) (mg/L)	–	–	–	–	–	7.1	6.47	7.85
Field pH (SU)	–	–	–	–	–	7.64	7.65	7.55
Field Temperature (° C)	–	–	–	–	–	5.3	4.6	2.2
Fluoride (mg/L)	–	–	–	–	–	–	–	–
Gold (Au),Dissolved (mg/L)	–	–	–	–	–	–	–	–
Iron (Fe),Dissolved (mg/L)	–	–	–	–	–	–	–	–
Lead (Pb),Dissolved (mg/L)	–	–	–	–	–	–	–	–

Table E-76. Ross Springs Water Quality 2009 (9/23/2009 Through 12/2/2009) (Page 2 of 2)

Parameter	9/23/2009	9/25/2009	10/5/2009	10/6/2009	10/7/2009	10/14/2009	11/3/2009	12/2/2009
Magnesium (Mg),Dissolved (mg/L)	–	–	–	–	–	–	–	–
Mercury (Hg),Total (mg/L)	–	–	–	–	–	–	–	–
Nitrogen, Ammonia (NH3) (mg/L)	–	–	–	–	–	<0.05	<0.05	<0.05
Nitrogen, Nitrate (NO3) (mg/L)	–	–	–	–	–	14.2	13	13.8
Nitrogen, Nitrite (NO2) (mg/L)	–	–	–	–	–	0.143	<0.05	<0.05
pH (SU)	–	–	–	–	–	–	–	–
Potassium (K),Dissolved (mg/L)	–	–	–	–	–	–	–	–
Selenium (Se),Dissolved (mg/L)	–	–	–	–	–	–	–	–
Selenium (Se),Total Recoverable (mg/L)	0.00651	<0.005	–	–	–	–	–	–
Silver (Ag),Dissolved (mg/L)	–	–	–	–	–	–	–	–
Sodium (Na),Dissolved (mg/L)	–	–	–	–	–	–	–	–
Sulfate (SO4) (mg/L)	–	–	–	–	–	–	–	–
Total Dissolved Solids (mg/L)	–	–	–	–	–	–	–	–
Zinc (Zn),Dissolved (mg/L)	–	–	–	–	–	–	–	–

Table E-77. Ross Springs Water Quality 2010

Parameter	1/5/2010	2/4/2010	3/9/2010	4/15/2010	5/4/2010	6/9/2010	7/7/2010	8/3/2010	9/1/2010	10/6/2010
Arsenic (As),Dissolved (mg/L)	0.00928	0.00759	0.00771	0.0102	0.00825	0.0132	0.00989	0.01	0.0092	0.00855
Bicarbonate (mg/L)	393	–	–	351	348	–	–	392	–	–
Copper (Cu),Dissolved (mg/L)	<0.005	–	–	<0.005	<0.005	–	–	<0.005	–	–
Cyanide, Total (mg/L)	0.036	–	–	0.024	0.015	–	–	0.029	–	–
Cyanide, WAD (mg/L)	<0.01	–	–	<0.01	<0.01	–	–	<0.01	–	–
Electrical Conductivity (µmhos/cm)	970	–	–	795	717	–	–	870	–	–
Field Conductivity (µmhos/cm)	526	512	514	462	441	528	550	6.2	588	586
Field Flow Rate (gal/min)	20	6	12	15	53	–	16	7.3	21	14
Field ORP (mV)	58	30	248	37	21	9	87	195	139	46
Field Oxygen (O2) (mg/L)	7.45	6.73	8.7	6.68	10.2	14.5	7.25	8.48	9.18	9.47
Field pH (SU)	7.69	8.02	7.83	8.08	8.26	8.39	7.82	7.84	8.4	8.47
Field Temperature (° C)	1.4	0.8	1.1	3.8	4.4	8.7	7.6	10.4	8.4	8
Fluoride (mg/L)	0.143	–	–	0.141	0.134	–	–	0.133	–	–
Gold (Au),Dissolved (mg/L)	<0.001	–	–	<0.001	<0.001	–	–	0.001	–	–
Mercury (Hg),Total (mg/L)	<0.0002	–	–	<0.0002	<0.0002	–	–	<0.0002	–	–
Nitrogen, Ammonia (NH3) (mg/L)	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Nitrogen, Nitrate (NO3) (mg/L)	14.4	13.7	12.4	10.2	7.34	8.06	8.55	9.49	10.4	11.6
Nitrogen, Nitrite (NO2) (mg/L)	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
pH (SU)	7.92	–	–	8.08	8.3	–	–	8.06	–	–
Selenium (Se),Dissolved (mg/L)	<0.005	–	–	<0.005	<0.005	–	–	<0.005	–	–
Silver (Ag),Dissolved (mg/L)	<0.001	–	–	<0.001	<0.001	–	–	<0.001	–	–
Sodium (Na),Dissolved (mg/L)	57.4	–	–	49	42.4	–	–	55.4	–	–
Sulfate (SO4) (mg/L)	133	–	–	98.3	72.5	–	–	109	–	–
Total Dissolved Solids (mg/L)	578	–	–	466	433	–	–	506	–	–

APPENDIX F

WATER-QUALITY STATISTICS BY SITE

Table F-1. Horseshoe Well Water-Quality Statistics (Page 1 of 3)

Constituent	PQL	*n* Analyzed	*n* Detected	Mean	StDev	Q1	Median	Q3	Minimum	Maximum
Field										
Field Conductivity (µmhos/cm)	N/A	10	N/A	300.8	278.8	113	128	590	96.2	860
Field Depth (ft)	N/A	10	N/A	43.58	3.52	40	45.2	46.4	38.3	47.5
Field ORP (mV)	N/A	4	N/A	44.0	34.3	15.5	39.5	72.5	13	84
Field Oxygen (O2) (mg/L)	N/A	4	N/A	3.623	0.458	3.3	3.545	3.945	3.16	4.24
Field pH (SU)	N/A	10	N/A	11.19	0.58	10.8	11.2	11.5	10.4	12.4
Field Temperature (° C)	N/A	10	N/A	7.53	0.92	6.6	7.7	8.4	6.1	8.6
Metals, Dissolved										
Aluminum (Al),Dissolved (mg/L)	0.01	10	10	0.04534	0.02052	0.0288	0.0382	0.0537	0.0247	0.0866
Antimony (Sb),Dissolved (mg/L)	0.005	10	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Arsenic (As),Dissolved (mg/L)	0.0005	10	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Barium (Ba),Dissolved (mg/L)	0.0025	10	10	0.210	0.061	0.17	0.178	0.263	0.163	0.32
Beryllium (Be),Dissolved (mg/L)	0.001	10	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Cadmium (Cd),Dissolved (mg/L)	0.0001	10	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Calcium (Ca),Dissolved (mg/L)	1	10	10	37.5	40.3	8.18	13.1	83.5	4.26	104
Chromium (Cr),Dissolved (mg/L)	0.0005	10	10	0.00247	0.00039	0.00216	0.00247	0.00279	0.00187	0.00308
Cobalt (Co),Dissolved (mg/L)	0.001	10	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Copper (Cu),Dissolved (mg/L)	0.0005	10	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Gold (Au),Dissolved (mg/L)	0.001	10	1	0.0087	0.0258	0.0005	0.0005	0.0005	0.0005	0.082
Iron (Fe),Dissolved (mg/L)	0.025	10	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Lead (Pb),Dissolved (mg/L)	0.0001	10	1	0.00019	0.00044	0.00005	0.00005	0.00005	0.00005	0.00145
Lithium (Li),Dissolved (mg/L)	0.02	8	8	0.01435	0.00553	0.01	0.015	0.0188	0.0058	0.0214
Magnesium (Mg),Dissolved (mg/L)	0.5	10	10	1.670	1.159	0.9	1.39	2.18	0.57	4.47

Table F-1. Horseshoe Well Water-Quality Statistics (Page 2 of 3)

Constituent	PQL	*n* Analyzed	*n* Detected	Mean	StDev	Q1	Median	Q3	Minimum	Maximum
Manganese (Mn),Dissolved (mg/L)	0.001	10	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Molybdenum (Mo),Dissolved (mg/L)	0.001	10	10	0.00826	0.01073	0.00278	0.00354	0.0049	0.00156	0.0337
Nickel (Ni),Dissolved (mg/L)	0.005	10	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Potassium (K),Dissolved (mg/L)	0.5	10	10	7.87	3.11	4.98	7.11	10.2	3.95	12.8
Silver (Ag),Dissolved (mg/L)	0.0001	10	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Sodium (Na),Dissolved (mg/L)	0.5	10	10	9.0	2.4	7.1	8.895	10.7	5.76	13
Strontium (Sr),Dissolved (mg/L)	0.001	10	10	0.3785	0.2775	0.198	0.2265	0.624	0.179	0.927
Vanadium (V),Dissolved (mg/L)	0.005	10	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Zinc (Zn),Dissolved (mg/L)	0.05	10	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Metals, Total										
Lithium (Li),Total (mg/L)	0.02	1	1	0.007	0	0.007	0.007	0.007	0.007	0.007
Mercury (Hg),Total (mg/L)	0.0002	10	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Nonmetallics										
Bicarbonate (mg/L)	10	10	5	62.1	43.9	33.6	58.6	61	22.1	135
Boron (B),Total (mg/L)	0.02	10	3	0.0157	0.0099	0.01	0.01	0.0239	0.01	0.038
Carbonate (mg/L)	5	10	10	49.2	44.2	18.6	26.35	94.2	15.8	135
Chloride (Cl-) (mg/L)	0.5	10	7	1.1	0.8	0.25	0.875	1.38	0.25	3
Cyanide, Free (mg/L)	0.02	10	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Cyanide, Total (mg/L)	0.01	10	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Cyanide, WAD (mg/L)	0.01	10	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Fluoride (mg/L)	0.05	9	9	0.468	0.301	0.27775	0.345	0.53075	0.247	1.06
Nitrogen, Ammonia (NH3) (mg/L)	0.05	10	1	0.0291	0.0130	0.025	0.025	0.025	0.025	0.066
Nitrogen, Nitrate (NO3) (mg/L)	0.05	10	10	0.1454	0.0344	0.114	0.138	0.169	0.108	0.202

Table F-1. Horseshoe Well Water-Quality Statistics (Page 3 of 3)

Constituent	PQL	*n* Analyzed	*n* Detected	Mean	StDev	Q1	Median	Q3	Minimum	Maximum
Nitrogen, Nitrite (NO2) (mg/L)	0.05	10	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Selenium (Se),Dissolved (mg/L)	0.0005	10	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Silicon (Si),Dissolved (mg/L)	1	10	10	7.137	1.990	6.38	8.01	8.41	3.41	8.77
Sulfate (SO4) (mg/L)	1	10	1	1.113	1.938	0.5	0.5	0.5	0.5	6.63
Physical Properties										
Alkalinity (mg/L)	10	10	10	122.2	93.6	52.2	76.65	235	48	284
Alkalinity Hydroxide (mg/L)	N/A	5	N/A	10.12	10.81	4.795	5.44	12.7325	3.4	29.3
Anion - Cation Balance (%)	N/A	10	N/A	–0.24	4.29	–2.63	–0.107	2.01	–7.14	6.1
Anions (meq/L)	N/A	10	N/A	2.538	1.864	1.12	1.59	4.71	1.03	5.74
Cations (meq/L)	N/A	10	N/A	2.602	2.030	1.09	1.43	4.88	0.988	6.31
Electrical Conductivity (µmhos/cm)	1	10	10	308.8	270.4	115	174.5	568	101	834
Hardness (mg/L)	N/A	10	N/A	93.2	105.2	24.3	34.95	218	14.3	278
pH (SU)	N/A	10	N/A	10.58	0.67	9.95	10.55	11.1	9.7	11.6
Total Dissolved Solids (mg/L)	50	10	10	108.7	65.8	68	72.5	183	59	218
Total Suspended Solids (mg/L)	4	10	9	92.5	105.3	42	72	104	2	376
Turbidity (NTU)	0.2	9	9	35.3	18.9	24	37	46.25	4.3	65

Table F-2. Nevada Gulch Well Water-Quality Statistics (Page 1 of 5)

Constituent	PQL	*n* Analyzed	*n* Detected	Mean	StDev	Q1	Median	Q3	Minimum	Maximum
Field										
Field Conductivity (µmhos/cm)	N/A	12	N/A	283.2	159.0	204	241	280	175	770
Field ORP (mV)	N/A	4	N/A	259.5	317.3	46	216	473	–78	684
Field Oxygen (O2) (mg/L)	N/A	4	N/A	3.073	1.904	1.79	2.43	4.355	1.62	5.81
Field pH (SU)	N/A	12	N/A	6.792	0.550	6.39	6.61	7.105	6.19	8.01
Field Temperature (° C)	N/A	12	N/A	9.77	2.21	8.55	9.2	10.25	7.5	15.7
Metals, Dissolved										
Aluminum (Al),Dissolved (mg/L)	0.01	10	10	0.369	0.361	0.0441	0.2985	0.572	0.0351	1.17
Antimony (Sb),Dissolved (mg/L)	0.005	10	1	0.00371	0.00383	0.0025	0.0025	0.0025	0.0025	0.0146
Arsenic (As),Dissolved (mg/L)	0.0005	10	2	0.00131	0.00225	0.00025	0.00025	0.00025	0.00025	0.00608
Barium (Ba),Dissolved (mg/L)	0.0025	10	6	0.01237	0.01124	0.00125	0.01146	0.022	0.00125	0.0274
Beryllium (Be),Dissolved (mg/L)	0.001	10	6	0.00157	0.00133	0.0005	0.00144	0.00202	0.0005	0.0048
Cadmium (Cd),Dissolved (mg/L)	0.0001	10	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Calcium (Ca),Dissolved (mg/L)	1	12	6	17.7	30.1	0.5	9.9	19.7	0.5	108
Chromium (Cr),Dissolved (mg/L)	0.0005	10	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Cobalt (Co),Dissolved (mg/L)	0.001	10	6	0.00479	0.00427	0.0005	0.00431	0.00939	0.0005	0.0101
Copper (Cu),Dissolved (mg/L)	0.0005	10	5	0.0409	0.0459	0.00025	0.030075	0.069	0.00025	0.113
Gold (Au),Dissolved (mg/L)	0.01	10	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Iron (Fe),Dissolved (mg/L)	0.025	10	8	2.656	2.767	0.209	1.809	5.56	0.0125	6.33
Lead (Pb),Dissolved (mg/L)	0.0001	10	1	0.00019	0.00045	0.00005	0.00005	0.00005	0.00005	0.00148
Lithium (Li),Dissolved (mg/L)	0.02	8	7	0.03321	0.02077	0.01255	0.04305	0.04735	0.0022	0.0576
Magnesium (Mg),Dissolved (mg/L)	0.5	12	7	5.81	7.59	0.25	4.43	8.15	0.25	26.8

Table F-2. Nevada Gulch Well Water-Quality Statistics (Page 2 of 5)

Constituent	PQL	*n* Analyzed	*n* Detected	Mean	StDev	Q1	Median	Q3	Minimum	Maximum
Manganese (Mn),Dissolved (mg/L)	0.001	10	6	0.871	0.884	0.0005	0.9055	1.74	0.0005	1.76
Molybdenum (Mo),Dissolved (mg/L)	0.001	10	10	0.00148	0.00053	0.0012	0.00128	0.0016	0.00101	0.00282
Nickel (Ni),Dissolved (mg/L)	0.005	10	6	0.01307	0.01119	0.0025	0.01014	0.026	0.0025	0.0272
Silver (Ag),Dissolved (mg/L)	0.0001	10	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Strontium (Sr),Dissolved (mg/L)	0.001	10	10	0.0742	0.0733	0.00277	0.07465	0.147	0.00138	0.147
Vanadium (V),Dissolved (mg/L)	0.005	10	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Zinc (Zn),Dissolved (mg/L)	0.05	10	5	0.04985	0.02817	0.025	0.0426	0.0706	0.025	0.0919
Metals, Total										
Aluminum (Al),Total (mg/L)	0.01	1	1	0.0534	0	0.0534	0.0534	0.0534	0.0534	0.0534
Antimony (Sb),Total (mg/L)	0.005	1	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Arsenic (As),Total (mg/L)	0.005	1	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Barium (Ba),Total (mg/L)	0.005	1	1	0.0272	0	0.0272	0.0272	0.0272	0.0272	0.0272
Beryllium (Be),Total (mg/L)	0.001	1	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Cadmium (Cd),Total (mg/L)	0.001	1	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Chromium (Cr),Total (mg/L)	0.001	1	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Cobalt (Co),Total (mg/L)	0.001	1	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Copper (Cu),Total (mg/L)	0.005	1	1	0.00737	0	0.00737	0.00737	0.00737	0.00737	0.00737
Gold (Au),Total (mg/L)	N/A	1	N/A	0.001	0	0.001	0.001	0.001	0.001	0.001
Iron (Fe),Total (mg/L)	0.05	1	1	0.314	0	0.314	0.314	0.314	0.314	0.314
Lead (Pb),Total (mg/L)	0.001	1	1	0.00128	0	0.00128	0.00128	0.00128	0.00128	0.00128
Lithium (Li),Total (mg/L)	0.02	1	1	0.0361	0	0.0361	0.0361	0.0361	0.0361	0.0361
Manganese (Mn),Total (mg/L)	0.01	1	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Table F-2. Nevada Gulch Well Water-Quality Statistics (Page 3 of 5)

Constituent	PQL	*n* Analyzed	*n* Detected	Mean	StDev	Q1	Median	Q3	Minimum	Maximum
Mercury (Hg),Total (mg/L)	0.0002	12	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Molybdenum (Mo),Total (mg/L)	0.001	1	1	0.0516	0	0.0516	0.0516	0.0516	0.0516	0.0516
Nickel (Ni),Total (mg/L)	0.005	1	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Potassium (K),Dissolved (mg/L)	0.5	11	8	6.01	8.77	0.35025	6.12	6.5975	0.25	30.7
Silver (Ag),Total (mg/L)	0.001	1	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Sodium (Na),Dissolved (mg/L)	0.5	11	11	33.96	27.95	5.985	33.2	59.725	5.67	71.3
Strontium (Sr),Total (mg/L)	0.001	1	1	0.00124	0	0.00124	0.00124	0.00124	0.00124	0.00124
Vanadium (V),Total (mg/L)	0.005	1	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Zinc (Zn),Total (mg/L)	0.05	1	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Metals, Total Recoverable										
Arsenic (As),Total Recoverable (mg/L)	0.005	1	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Cadmium (Cd),Total Recoverable (mg/L)	0.001	1	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Chromium (Cr),Total Recoverable (mg/L)	0.001	1	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Copper (Cu),Total Recoverable (mg/L)	0.005	1	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Lead (Pb),Total Recoverable (mg/L)	0.001	1	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Nickel (Ni),Total Recoverable (mg/L)	0.005	1	1	0.012	0	0.012	0.012	0.012	0.012	0.012
Silver (Ag),Total Recoverable (mg/L)	0.001	1	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Zinc (Zn),Total Recoverable (mg/L)	0.05	1	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Iron (Fe),Total Recoverable (mg/L)	0.05	1	1	0.759	0	0.759	0.759	0.759	0.759	0.759
Nonmetallics										
Bicarbonate (mg/L)	10	11	11	46.57	11.56	38.925	46.2	57.525	26.3	62.1
Boron (B),Total (mg/L)	0.02	11	1	0.01330	0.01094	0.01	0.01	0.01	0.01	0.0463

Table F-2. Nevada Gulch Well Water-Quality Statistics (Page 4 of 5)

Constituent	PQL	*n* Analyzed	*n* Detected	Mean	StDev	Q1	Median	Q3	Minimum	Maximum
Carbonate (mg/L)	5	11	11	0	0	0	0	0	0	0
Chloride (Cl-) (mg/L)	0.5	11	11	14.2	4.4	10.5	15.3	17.325	6.75	21
Cyanide, Free (mg/L)	0.02	11	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Cyanide, Total (mg/L)	0.01	11	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Cyanide, WAD (mg/L)	0.01	11	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Fluoride (mg/L)	0.05	11	11	3.106	0.242	2.995	3.06	3.305	2.62	3.45
Nitrogen, Ammonia (NH3) (mg/L)	0.05	11	1	0.0274	0.0078	0.025	0.025	0.025	0.025	0.051
Nitrogen, Nitrate (NO3) (mg/L)	0.05	12	1	0.0318	0.0237	0.025	0.025	0.025	0.025	0.107
Nitrogen, Nitrite (NO2) (mg/L)	0.05	11	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Selenium (Se),Dissolved (mg/L)	0.0005	10	1	0.00087	0.00195	0.00025	0.00025	0.00025	0.00025	0.00643
Selenium (Se),Total (mg/L)	0.001	1	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Selenium (Se),Total Recoverable (mg/L)	0.001	1	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Silicon (Si),Dissolved (mg/L)	1	10	10	15.23	3.73	16.3	16.75	17.3	8.19	17.8
Silicon (Si),Total (mg/L)	N/A	1	N/A	14.1	0	14.1	14.1	14.1	14.1	14.1
Sulfate (SO4) (mg/L)	1	11	11	55.83	2.51	55.35	56.3	57.625	51.1	58.7
Physical Properties										
Alkalinity (mg/L)	10	11	11	38.17	9.50	31.85	37.9	47.175	21.5	50.9
Anion - Cation Balance (%)	N/A	11	N/A	–1.344	2.432	–3.47	–1.83	0.24385	–4.73	2.87
Anions (meq/L)	N/A	11	N/A	2.49	0.230	2.275	2.46	2.645	2.21	2.93
Cations (meq/L)	N/A	11	N/A	2.43	0.31	2.1725	2.4	2.6175	2.11	3.1
Electrical Conductivity (µmhos/cm)	1	11	11	275.9	19.9	259.25	278	286.25	257	321
Hardness (mg/L)	N/A	12	N/A	68.5	105.0	5	43.2	82.25	5	380
pH (SU)	N/A	11	N/A	6.74	0.321	6.61	6.69	6.9675	6.07	7.27

Table F-2. Nevada Gulch Well Water-Quality Statistics (Page 5 of 5)

Constituent	PQL	*n* Analyzed	*n* Detected	Mean	StDev	Q1	Median	Q3	Minimum	Maximum
Total Dissolved Solids (mg/L)	50	12	12	220.7	126.1	175	182	201.5	168	619
Total Suspended Solids (mg/L)	4	12	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Turbidity (NTU)	0.2	11	11	3.4	4.8	0.3875	0.5	7.525	0.2	13

Table F-3. Foley Shaft Well Water-Quality Statistics (Page 1 of 4)

Constituent	PQL	*n* Analyzed	*n* Detected	Mean	StDev	Q1	Median	Q3	Minimum	Maximum
Field										
Field Conductivity (µmhos/cm)	N/A	9	N/A	137.9	196.0	35.775	41	144.125	35	535
Field Depth (ft)	N/A	9	N/A	103.2	28.2	81.975	107	127.25	60.3	138
Field ORP (mV)	N/A	5	N/A	121.6	71.4	52.5	115	193.25	51	197
Field Oxygen (O2) (mg/L)	N/A	5	N/A	8.422	1.203	7.2525	8.4	9.455	7.23	9.92
Field pH (SU)	N/A	9	N/A	6.791	0.266	6.55	6.71	7.0125	6.47	7.19
Field Temperature (° C)	N/A	9	N/A	5.50	1.11	4.65	5.5	6	3.7	7.4
Metals, Dissolved										
Aluminum (Al),Dissolved (mg/L)	0.01	10	10	1.306	1.217	0.389	0.742	2.64	0.236	3.32
Antimony (Sb),Dissolved (mg/L)	0.005	10	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Arsenic (As),Dissolved (mg/L)	0.0005	10	8	0.00737	0.00442	0.00542	0.007935	0.0105	0.00025	0.0126
Barium (Ba),Dissolved (mg/L)	0.0025	10	10	0.03155	0.00846	0.0254	0.03235	0.0359	0.0204	0.0477
Beryllium (Be),Dissolved (mg/L)	0.001	10	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Cadmium (Cd),Dissolved (mg/L)	0.0001	10	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Calcium (Ca),Dissolved (mg/L)	1	11	11	7.181	1.592	5.955	6.52	8.98	5.24	9.41
Chromium (Cr),Dissolved (mg/L)	0.0005	10	3	0.00092	0.00109	0.00025	0.00025	0.00234	0.00025	0.0027
Cobalt (Co),Dissolved (mg/L)	0.001	10	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Copper (Cu),Dissolved (mg/L)	0.0005	10	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Gold (Au),Dissolved (mg/L)	0.01	10	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Iron (Fe),Dissolved (mg/L)	0.025	10	10	0.722	0.606	0.311	0.443	1.49	0.208	1.66
Lead (Pb),Dissolved (mg/L)	0.0001	10	5	0.00151	0.00185	0.00005	0.00083	0.00268	0.00005	0.00559
Lithium (Li),Dissolved (mg/L)	0.02	9	6	0.006	0.003	0.0031975	0.0039	0.01	0.00226	0.01

Table F-3. Foley Shaft Well Water-Quality Statistics (Page 2 of 4)

Constituent	PQL	*n* Analyzed	*n* Detected	Mean	StDev	Q1	Median	Q3	Minimum	Maximum
Magnesium (Mg),Dissolved (mg/L)	0.5	11	11	1.293	0.271	1.08	1.41	1.4925	0.789	1.64
Manganese (Mn),Dissolved (mg/L)	0.001	10	7	0.02187	0.01966	0.0005	0.02365	0.0285	0.0005	0.0654
Molybdenum (Mo),Dissolved (mg/L)	0.001	10	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Nickel (Ni),Dissolved (mg/L)	0.005	10	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Potassium (K),Dissolved (mg/L)	0.5	10	10	1.26	0.34	1	1.305	1.55	0.653	1.7
Silver (Ag),Dissolved (mg/L)	0.0001	10	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Sodium (Na),Dissolved (mg/L)	0.5	10	10	4.617	1.681	3.48	4.245	5.01	3.2	9.04
Strontium (Sr),Dissolved (mg/L)	0.001	10	10	0.06422	0.00910	0.0582	0.06125	0.0715	0.0514	0.0812
Vanadium (V),Dissolved (mg/L)	0.005	10	1	0.00281	0.00097	0.0025	0.0025	0.0025	0.0025	0.00556
Zinc (Zn),Dissolved (mg/L)	0.05	10	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Metals, Total										
Aluminum (Al),Total (mg/L)	0.01	1	1	1.55	0	1.55	1.55	1.55	1.55	1.55
Antimony (Sb),Total (mg/L)	0.005	1	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Arsenic (As),Total (mg/L)	0.005	1	1	0.00913	0	0.00913	0.00913	0.00913	0.00913	0.00913
Barium (Ba),Total (mg/L)	0.005	1	1	0.0486	0	0.0486	0.0486	0.0486	0.0486	0.0486
Beryllium (Be),Total (mg/L)	0.001	1	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Cadmium (Cd),Total (mg/L)	0.001	1	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Chromium (Cr),Total (mg/L)	0.001	1	1	0.0018	0	0.0018	0.0018	0.0018	0.0018	0.0018
Cobalt (Co),Total (mg/L)	0.001	1	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Copper (Cu),Total (mg/L)	0.005	1	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Gold (Au),Total (mg/L)	N/A	1	N/A	0.001	0	0.001	0.001	0.001	0.001	0.001
Iron (Fe),Total (mg/L)	0.05	1	1	0.926	0	0.926	0.926	0.926	0.926	0.926

Table F-3. Foley Shaft Well Water-Quality Statistics (Page 3 of 4)

Constituent	PQL	*n* Analyzed	*n* Detected	Mean	StDev	Q1	Median	Q3	Minimum	Maximum
Lead (Pb),Total (mg/L)	0.001	1	1	0.00193	0	0.00193	0.00193	0.00193	0.00193	0.00193
Manganese (Mn),Total (mg/L)	0.01	1	1	0.018	0	0.018	0.018	0.018	0.018	0.018
Mercury (Hg),Total (mg/L)	0.0002	11	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Molybdenum (Mo),Total (mg/L)	0.001	1	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Nickel (Ni),Total (mg/L)	0.005	1	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Silver (Ag),Total (mg/L)	0.001	1	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Strontium (Sr),Total (mg/L)	0.001	1	1	0.0619	0	0.0619	0.0619	0.0619	0.0619	0.0619
Vanadium (V),Total (mg/L)	0.005	1	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Zinc (Zn),Total (mg/L)	0.05	1	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Nonmetallics										
Bicarbonate (mg/L)	10	11	11	37.3	6.1	32.225	35.5	41.15	30.8	48
Boron (B),Total (mg/L)	0.02	11	2	0.0549	0.1447	0.01	0.01	0.01	0.01	0.491
Carbonate (mg/L)	5	11	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Chloride (Cl-) (mg/L)	0.5	11	3	0.562	0.545	0.25	0.25	0.91	0.25	1.62
Cyanide, Free (mg/L)	0.02	11	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Cyanide, Total (mg/L)	0.01	11	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Cyanide, WAD (mg/L)	0.01	11	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Fluoride (mg/L)	0.05	11	11	0.1134	0.0249	0.09625	0.104	0.12825	0.087	0.172
Nitrogen, Ammonia (NH3) (mg/L)	0.05	11	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Nitrogen, Nitrate (NO3) (mg/L)	0.05	11	7	0.0708	0.0525	0.025	0.063	0.09525	0.025	0.195
Nitrogen, Nitrite (NO2) (mg/L)	0.05	11	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Selenium (Se),Dissolved (mg/L)	0.0005	10	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Table F-3. Foley Shaft Well Water-Quality Statistics (Page 4 of 4)

Constituent	PQL	*n* Analyzed	*n* Detected	Mean	StDev	Q1	Median	Q3	Minimum	Maximum
Selenium (Se),Total (mg/L)	0.001	1	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Silicon (Si),Dissolved (mg/L)	1	10	10	8.76	3.32	7.42	8.98	11.2	3.11	12.9
Silicon (Si),Total (mg/L)	N/A	1	N/A	4.10	0.00	4.1	4.1	4.1	4.1	4.1
Sulfate (SO4) (mg/L)	1	11	1	0.663	0.540	0.5	0.5	0.5	0.5	2.29
Physical Properties										
Alkalinity (mg/L)	10	10	10	29.72	4.27	25.9	28.65	32.6	25.2	38.6
Anion - Cation Balance (%)	N/A	10	N/A	1.410	2.091	–0.338	0.6725	3.83	–1.12	4.29
Anions (meq/L)	N/A	10	N/A	0.6890	0.1271	0.588	0.6805	0.822	0.514	0.875
Cations (meq/L)	N/A	10	N/A	0.7074	0.1226	0.64	0.6775	0.822	0.52	0.886
Electrical Conductivity (µmhos/cm)	1	11	11	67.41	10.03	59.825	62.4	75.075	57.2	84.2
Hardness (mg/L)	N/A	11	N/A	23.25	4.34	19.775	22.1	27.7	17.4	29.6
pH (SU)	N/A	11	N/A	7.060	0.358	6.815	7.04	7.3375	6.43	7.54
Total Dissolved Solids (mg/L)	50	11	11	79.8	24.5	63.5	77	89.5	41	121
Total Suspended Solids (mg/L)	4	11	3	9.1	14.6	2	2	8	2	46
Turbidity (NTU)	0.2	11	11	26.8	14.8	16	18	39.75	12	50

Table F-4. Terry Peak Well Water-Quality Statistics (Page 1 of 4)

Constituent	PQL	*n* Analyzed	*n* Detected	Mean	StDev	Q1	Median	Q3	Minimum	Maximum
Field										
Field Conductivity (µmhos/cm)	N/A	6	N/A	169.7	95.0	70	185	260	45.4	273
Field ORP (mV)	N/A	1	N/A	167	0	167	167	167	167	167
Field Oxygen (O2) (mg/L)	N/A	1	N/A	7.94	0	7.94	7.94	7.94	7.94	7.94
Field pH (SU)	N/A	6	N/A	7.628	0.536	7.36	7.44	8.21	6.97	8.35
Field Temperature (° C)	N/A	6	N/A	8.22	1.44	6.9	7.9	9.7	6.8	10.1
Metals, Dissolved										
Aluminum (Al),Dissolved (mg/L)	0.01	9	9	0.0432	0.0335	0.017725	0.0226	0.0718	0.0139	0.098
Antimony (Sb),Dissolved (mg/L)	0.005	9	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Arsenic (As),Dissolved (mg/L)	0.0005	13	13	0.0207	0.0067	0.0159	0.0179	0.02375	0.0135	0.033
Barium (Ba),Dissolved (mg/L)	0.0025	9	9	0.1514	0.0249	0.13275	0.153	0.17225	0.116	0.185
Beryllium (Be),Dissolved (mg/L)	0.001	9	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Cadmium (Cd),Dissolved (mg/L)	0.0001	9	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Calcium (Ca),Dissolved (mg/L)	1	10	10	26.21	16.96	6.53	29.85	33.3	4.5	58.2
Chromium (Cr),Dissolved (mg/L)	0.0005	9	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Cobalt (Co),Dissolved (mg/L)	0.001	9	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Copper (Cu),Dissolved (mg/L)	0.0005	9	3	0.00287	0.00417	0.00025	0.00025	0.0059775	0.00025	0.0109
Gold (Au),Dissolved (mg/L)	0.01	9	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Iron (Fe),Dissolved (mg/L)	0.025	9	4	0.089	0.101	0.0125	0.0125	0.1455	0.0125	0.29
Lead (Pb),Dissolved (mg/L)	0.0001	9	4	0.00060	0.00067	0.00005	0.00005	0.0011975	0.00005	0.00159
Lithium (Li),Dissolved (mg/L)	0.02	8	4	0.007	0.004	0.00425	0.007875	0.01	0.001	0.01

Table F-4. Terry Peak Well Water-Quality Statistics (Page 2 of 4)

Constituent	PQL	*n* Analyzed	*n* Detected	Mean	StDev	Q1	Median	Q3	Minimum	Maximum
Magnesium (Mg),Dissolved (mg/L)	0.5	10	10	4.82	3.07	1.48	5.02	6.27	1.01	10.7
Manganese (Mn),Dissolved (mg/L)	0.001	9	6	0.01088	0.00912	0.0005	0.0123	0.015025	0.0005	0.0278
Molybdenum (Mo),Dissolved (mg/L)	0.001	9	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Nickel (Ni),Dissolved (mg/L)	0.005	9	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Potassium (K),Dissolved (mg/L)	0.5	10	10	1.264	0.396	0.963	1.155	1.69	0.764	1.87
Silver (Ag),Dissolved (mg/L)	0.0001	9	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Sodium (Na),Dissolved (mg/L)	0.5	10	10	3.944	2.073	2.29	3.29	4.54	2	8.81
Strontium (Sr),Dissolved (mg/L)	0.001	9	9	0.0976	0.0544	0.0497	0.0926	0.1445	0.029	0.189
Vanadium (V),Dissolved (mg/L)	0.005	9	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Zinc (Zn),Dissolved (mg/L)	0.05	9	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Metals, Total										
Aluminum (Al),Total (mg/L)	0.01	1	1	0.149	0	0.149	0.149	0.149	0.149	0.149
Antimony (Sb),Total (mg/L)	0.005	1	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Arsenic (As),Total (mg/L)	0.005	1	1	0.0218	0	0.0218	0.0218	0.0218	0.0218	0.0218
Barium (Ba),Total (mg/L)	0.005	1	1	0.169	0	0.169	0.169	0.169	0.169	0.169
Beryllium (Be),Total (mg/L)	0.001	1	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Cadmium (Cd),Total (mg/L)	0.001	1	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Chromium (Cr),Total (mg/L)	0.001	1	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Cobalt (Co),Total (mg/L)	0.001	1	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Copper (Cu),Total (mg/L)	0.005	1	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Gold (Au),Total (mg/L)	N/A	1	N/A	0.001	0	0.001	0.001	0.001	0.001	0.001
Iron (Fe),Total (mg/L)	0.05	1	1	0.126	0	0.126	0.126	0.126	0.126	0.126

Table F-4. Terry Peak Well Water-Quality Statistics (Page 3 of 4)

Constituent	PQL	*n* Analyzed	*n* Detected	Mean	StDev	Q1	Median	Q3	Minimum	Maximum
Lead (Pb),Total (mg/L)	0.001	1	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Manganese (Mn),Total (mg/L)	0.01	1	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Mercury (Hg),Total (mg/L)	0.0002	10	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Molybdenum (Mo),Total (mg/L)	0.001	1	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Nickel (Ni),Total (mg/L)	0.005	1	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Silver (Ag),Total (mg/L)	0.001	1	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Strontium (Sr),Total (mg/L)	0.001	1	1	0.121	0	0.121	0.121	0.121	0.121	0.121
Vanadium (V),Total (mg/L)	0.005	1	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Zinc (Zn),Total (mg/L)	0.05	1	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Nonmetallics										
Bicarbonate (mg/L)	10	10	10	64.2	32.6	21.8	70	92.7	17.2	102
Boron (B),Total (mg/L)	0.02	9	2	0.0140	0.0078	0.01	0.01	0.0144	0.01	0.028
Carbonate (mg/L)	5	10	10	0	0	0	0	0	0	0
Chloride (Cl-) (mg/L)	0.5	10	10	6.37	3.67	3.25	6.75	8.25	1	12.5
Cyanide, Free (mg/L)	0.02	10	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Cyanide, Total (mg/L)	0.01	10	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Cyanide, WAD (mg/L)	0.01	10	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Fluoride (mg/L)	0.05	10	10	0.5088	0.2444	0.197	0.5855	0.709	0.183	0.799
Nitrogen, Ammonia (NH3) (mg/L)	0.05	10	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Nitrogen, Nitrate (NO3) (mg/L)	0.05	10	10	3.34	2.98	1.42	2.36	3.71	0.76	10.7
Nitrogen, Nitrite (NO2) (mg/L)	0.05	10	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Selenium (Se),Dissolved (mg/L)	0.0005	9	2	0.00218	0.00384	0.00025	0.00025	0.0022575	0.00025	0.00957

Table F-4. Terry Peak Well Water-Quality Statistics (Page 4 of 4)

Constituent	PQL	*n* Analyzed	*n* Detected	Mean	StDev	Q1	Median	Q3	Minimum	Maximum
Selenium (Se),Total (mg/L)	0.001	1	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Silicon (Si),Dissolved (mg/L)	1	9	8	3.878	2.950	1.502	4.505	6.368	0.00828	7.09
Silicon (Si),Total (mg/L)	N/A	1	N/A	6.62	0	6.62	6.62	6.62	6.62	6.62
Sulfate (SO4) (mg/L)	1	10	7	21.9	22.3	0.5	19.9	25.4	0.5	73
Physical Properties										
Alkalinity (mg/L)	10	9	9	49.94	26.88	17.85	54.1	72.825	14.1	83.2
Anion - Cation Balance (%)	N/A	10	N/A	–0.991	2.905	–3.4	–1.48	0.13	–4.42	3.74
Anions (meq/L)	N/A	10	N/A	1.957	1.162	0.597	2.27	2.53	0.438	4.06
Cations (meq/L)	N/A	10	N/A	1.938	1.219	0.558	2.215	2.33	0.417	4.36
Electrical Conductivity (µmhos/cm)	1	10	10	202.0	114.7	67.3	230	262	48.9	407
Hardness (mg/L)	N/A	10	N/A	82.5	58.0	22.4	81.35	105	15.4	204
pH (SU)	N/A	10	N/A	7.474	0.289	7.21	7.565	7.7	6.94	7.81
Total Dissolved Solids (mg/L)	50	10	10	125.5	69.6	64	129.5	162	27	267
Total Suspended Solids (mg/L)	4	10	4	9.0	9.4	2	2	16	2	24
Turbidity (NTU)	0.2	10	10	6.1	5.3	1.7	4.85	9	0.4	15

Table F-5. Railroad MW Water-Quality Statistics (Page 1 of 3)

Constituent	PQL	*n* Analyzed	*n* Detected	Mean	StDev	Q1	Median	Q3	Minimum	Maximum
Field										
Field Conductivity (µmhos/cm)	N/A	9	N/A	114.3	27.5	93.85	96.3	150	90	150
Field Depth (ft)	N/A	7	N/A	302.4	10.0	295.25	298	312.75	290	315
Field ORP (mV)	N/A	3	N/A	103.0	93.4	31.75	118	170.5	3	188
Field Oxygen (O2) (mg/L)	N/A	3	N/A	7.107	0.112	7.0225	7.15	7.18	6.98	7.19
Field pH (SU)	N/A	9	N/A	8.729	0.711	8.175	8.63	9.3425	7.87	9.91
Field Temperature (° C)	N/A	9	N/A	7.24	1.51	6.3	6.6	7.525	5.9	10.9
Metals, Dissolved										
Aluminum (Al),Dissolved (mg/L)	0.01	11	11	0.0386	0.0330	0.023575	0.0271	0.03765	0.0116	0.133
Antimony (Sb),Dissolved (mg/L)	0.005	11	1	0.00319	0.00229	0.0025	0.0025	0.0025	0.0025	0.0101
Arsenic (As),Dissolved (mg/L)	0.0005	11	11	0.2111	0.0205	0.203	0.212	0.225	0.163	0.238
Barium (Ba),Dissolved (mg/L)	0.0025	11	11	0.0527	0.0317	0.0342	0.0449	0.054625	0.0289	0.143
Beryllium (Be),Dissolved (mg/L)	0.001	11	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Cadmium (Cd),Dissolved (mg/L)	0.0001	11	1	0.00014	0.00029	0.00005	0.00005	0.00005	0.00005	0.00102
Calcium (Ca),Dissolved (mg/L)	1	11	11	24.25	5.43	20.125	24.3	27.725	18	35.5
Chromium (Cr),Dissolved (mg/L)	0.0005	11	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Cobalt (Co),Dissolved (mg/L)	0.001	11	1	0.00056	0.00021	0.0005	0.0005	0.0005	0.0005	0.00118
Copper (Cu),Dissolved (mg/L)	0.0005	11	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Gold (Au),Dissolved (mg/L)	0.001	11	3	0.0007	0.0005	0.0005	0.0005	0.000875	0.0005	0.002
Iron (Fe),Dissolved (mg/L)	0.025	11	1	0.0357	0.0770	0.0125	0.0125	0.0125	0.0125	0.268
Lead (Pb),Dissolved (mg/L)	0.0001	11	1	0.00016	0.00036	0.00005	0.00005	0.00005	0.00005	0.00126
Lithium (Li),Dissolved (mg/L)	0.02	8	5	0.00868	0.00435	0.0049	0.01	0.0115	0.002	0.0146

Table F-5. Railroad MW Water-Quality Statistics (Page 2 of 3)

Constituent	PQL	*n* Analyzed	*n* Detected	Mean	StDev	Q1	Median	Q3	Minimum	Maximum
Magnesium (Mg),Dissolved (mg/L)	0.5	11	11	3.056	1.111	2.3	2.86	3.3225	2.14	6.06
Manganese (Mn),Dissolved (mg/L)	0.001	11	1	0.00571	0.01728	0.0005	0.0005	0.0005	0.0005	0.0578
Molybdenum (Mo),Dissolved (mg/L)	0.001	11	6	0.00109	0.00068	0.0005	0.00109	0.0013725	0.0005	0.00229
Nickel (Ni),Dissolved (mg/L)	0.005	11	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Potassium (K),Dissolved (mg/L)	0.5	11	11	1.670	0.761	1.0975	1.36	2.3125	0.987	3.08
Silver (Ag),Dissolved (mg/L)	0.0001	11	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Sodium (Na),Dissolved (mg/L)	0.5	11	11	3.85	3.35	1.8175	2.1	5.8375	1.67	11.2
Strontium (Sr),Dissolved (mg/L)	0.001	11	11	0.0749	0.0214	0.057425	0.0743	0.094625	0.0472	0.108
Vanadium (V),Dissolved (mg/L)	0.005	11	1	0.00276	0.00087	0.0025	0.0025	0.0025	0.0025	0.00538
Zinc (Zn),Dissolved (mg/L)	0.05	11	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Metals, Total										
Lithium (Li),Total (mg/L)	0.02	1	1	0.0029	0	0.0029	0.0029	0.0029	0.0029	0.0029
Mercury (Hg),Total (mg/L)	0.0002	10	2	0.00017	0.00019	0.0001	0.0001	0.0001	0.0001	0.0007
Nonmetallics										
Bicarbonate (mg/L)	10	11	11	87.0	22.0	69.825	78.4	111	64.6	120
Boron (B),Dissolved (mg/L)	0.02	1	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Boron (B),Total (mg/L)	0.02	9	5	0.02547	0.01699	0.01	0.0214	0.03865	0.01	0.0537
Carbonate (mg/L)	5	11	9	2.81	5.13	0	0	2.5	0	13.9
Chloride (Cl-) (mg/L)	0.5	11	3	0.709	1.107	0.25	0.25	0.6625	0.25	3.94
Cyanide, Free (mg/L)	0.02	11	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Cyanide, Total (mg/L)	0.01	11	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Cyanide, WAD (mg/L)	0.01	11	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Table F-5. Railroad MW Water-Quality Statistics (Page 3 of 3)

Constituent	PQL	*n* Analyzed	*n* Detected	Mean	StDev	Q1	Median	Q3	Minimum	Maximum
Fluoride (mg/L)	0.05	11	11	0.3780	0.0904	0.34875	0.358	0.44575	0.218	0.486
Nitrogen, Ammonia (NH3) (mg/L)	0.05	11	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Nitrogen, Nitrate (NO3) (mg/L)	0.05	11	11	0.598	0.098	0.60275	0.62	0.64525	0.315	0.68
Nitrogen, Nitrite (NO2) (mg/L)	0.05	11	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Selenium (Se),Dissolved (mg/L)	0.0005	11	1	0.00072	0.00156	0.00025	0.00025	0.00025	0.00025	0.00544
Silicon (Si),Dissolved (mg/L)	1	11	11	11.00	2.44	10.9	11.6	11.95	5.88	13.8
Sulfate (SO4) (mg/L)	1	11	6	6.74	6.01	0.5	11	11.55	0.5	13.7
Physical Properties										
Alkalinity (mg/L)	10	11	11	75.7	24.5	57.2	65.3	93.85	52.9	118
Anion - Cation Balance (%)	N/A	9	N/A	–3.27	3.17	–4.6725	–3.52	–3.24	–6.83	4.6
Anions (meq/L)	N/A	9	N/A	1.687	0.345	1.445	1.58	1.83	1.38	2.39
Cations (meq/L)	N/A	9	N/A	1.583	0.331	1.32	1.51	1.7825	1.24	2.23
Electrical Conductivity (µmhos/cm)	1	11	11	148.3	7.7	144.25	147	150.75	136	165
Hardness (mg/L)	N/A	11	N/A	72.6	14.8	59.425	73	81.4	57	102
pH (SU)	N/A	11	N/A	8.29	0.50	7.94	8.23	8.4825	7.7	9.2
Total Dissolved Solids (mg/L)	50	11	11	109.5	10.0	101.25	111	117	95	125
Total Suspended Solids (mg/L)	4	11	11	510.5	552.5	125.5	216	946.5	40	1730
Turbidity (NTU)	0.2	11	11	189.0	212.6	45	70	330	5.2	650

Table F-6. MW19 Water-Quality Statistics (Page 1 of 2)

Constituent	PQL	*n* Analyzed	*n* Detected	Mean	StDev	Q1	Median	Q3	Minimum	Maximum
Field										
Field Conductivity (µmhos/cm)	N/A	16	N/A	321.4	45.8	273	335	350	261	410
Field Depth (ft)	N/A	16	N/A	132.6	61.5	110	117.5	122.5	9	249
Field ORP (mV)	N/A	5	N/A	126.0	28.3	105.25	116	145.25	100	170
Field Oxygen (O2) (mg/L)	N/A	6	N/A	8.747	0.523	8.3	8.63	9.13	8.22	9.57
Field pH (SU)	N/A	16	N/A	7.665	0.284	7.395	7.64	7.925	7.23	8.07
Field Temperature (° C)	N/A	16	N/A	7.72	0.74	7.5	7.95	8.1	5.7	8.7
Metals, Dissolved										
Arsenic (As),Dissolved (mg/L)	0.0005	25	25	0.01083	0.00236	0.009225	0.0103	0.0121	0.00784	0.0178
Cadmium (Cd),Dissolved (mg/L)	0.0001	20	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Calcium (Ca),Dissolved (mg/L)	1	20	20	46.825	5.904	44.35	47.4	50.9	31.8	54.8
Copper (Cu),Dissolved (mg/L)	0.0005	25	10	0.0159	0.0597	0.00025	0.00025	0.00725	0.00025	0.301
Gold (Au),Dissolved (mg/L)	0.001	25	12	0.0019	0.0021	0.0005	0.0005	0.003	0.0005	0.008
Lead (Pb),Dissolved (mg/L)	0.0001	20	2	0.0004	0.0013	0.00005	0.00005	0.00005	0.00005	0.005
Magnesium (Mg),Dissolved (mg/L)	0.5	20	20	13.04	1.38	13.1	13.4	13.7	9.01	14.7
Potassium (K),Dissolved (mg/L)	0.5	20	20	0.906	0.168	0.745	0.92	1.04	0.661	1.29
Silver (Ag),Dissolved (mg/L)	0.0001	25	1	0.0001	0.0004	0.00005	0.00005	0.00005	0.00005	0.002
Sodium (Na),Dissolved (mg/L)	0.5	25	25	4.230	0.732	3.685	3.95	4.7175	3.45	5.76
Zinc (Zn),Dissolved (mg/L)	0.05	20	5	0.0417	0.0362	0.025	0.025	0.03825	0.025	0.167
Metals, Total										
Mercury (Hg),Total (mg/L)	0.0002	25	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Table F-6. MW19 Water-Quality Statistics (Page 2 of 2)

Constituent	PQL	*n* Analyzed	*n* Detected	Mean	StDev	Q1	Median	Q3	Minimum	Maximum
Nonmetallics										
Bicarbonate (mg/L)	10	25	25	203.2	39.8	215.25	222	223.25	89.7	227
Carbonate (mg/L)	5	20	20	0	0	0	0	0	0	0
Chloride (Cl-) (mg/L)	0.5	20	16	1.7	1.2	0.625	1.875	2.25	0.25	4
Cyanide, Total (mg/L)	0.01	25	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Cyanide, WAD (mg/L)	0.01	25	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Fluoride (mg/L)	0.05	25	25	0.29024	0.03537	0.28	0.3	0.30925	0.195	0.345
Nitrogen, Ammonia (NH3) (mg/L)	0.05	25	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Nitrogen, Nitrate (NO3) (mg/L)	0.05	25	25	4.21	2.44	2.5725	3.51	5.08	1.99	11.3
Nitrogen, Nitrite (NO2) (mg/L)	0.05	25	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Selenium (Se),Dissolved (mg/L)	0.0005	25	1	0.0004	0.0010	0.00025	0.00025	0.00025	0.00025	0.005
Sulfate (SO4) (mg/L)	1	25	6	7.69	14.62	0.5	0.5	3.625	0.5	48.8
Physical Properties										
Anion - Cation Balance (%)	N/A	20	N/A	–2.32	1.64	–3.14	–2.555	–1.1	–5.49	1.7
Anions (meq/L)	N/A	20	N/A	3.79	0.36	3.8	3.91	3.96	2.64	4.2
Cations (meq/L)	N/A	20	N/A	3.617	0.376	3.535	3.665	3.845	2.52	4.12
Electrical Conductivity (µmhos/cm)	1	25	25	379.4	27.9	378	383	392.25	269	407
pH (SU)	N/A	25	N/A	7.794	0.160	7.7475	7.8	7.9125	7.38	8.06
Total Dissolved Solids (mg/L)	50	26	26	218.0	22.9	205	216.5	233	172	256
Total Suspended Solids (mg/L)	4	1	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Table F-7. MW33 Water-Quality Statistics (Page 1 of 2)

Constituent	PQL	*n* Analyzed	*n* Detected	Mean	StDev	Q1	Median	Q3	Minimum	Maximum
Field										
Field Conductivity (µmhos/cm)	N/A	17	N/A	283.4	89.7	233.25	310	345.5	1.42	370
Field Depth (ft)	N/A	15	N/A	24.95	9.54	21.4	23.3	24.075	19	58.8
Field ORP (mV)	N/A	5	N/A	142.8	81.0	79.25	117	208.5	62	258
Field Oxygen (O2) (mg/L)	N/A	6	N/A	8.87	0.368	8.55	8.805	9.01	8.54	9.51
Field pH (SU)	N/A	17	N/A	7.914	0.239	7.7475	7.88	8.1025	7.58	8.38
Field Temperature (° C)	N/A	17	N/A	7.29	0.87	6.775	7.1	7.825	6	9.1
Metals, Dissolved										
Arsenic (As),Dissolved (mg/L)	0.0005	27	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Cadmium (Cd),Dissolved (mg/L)	0.0001	21	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Calcium (Ca),Dissolved (mg/L)	1	20	20	34.14	2.11	32.8	33.55	34.75	31.3	38.7
Copper (Cu),Dissolved (mg/L)	0.0005	27	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Gold (Au),Dissolved (mg/L)	0.001	27	12	0.0018	0.0025	0.0005	0.0005	0.002	0.0005	0.011
Lead (Pb),Dissolved (mg/L)	0.0001	21	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Magnesium (Mg),Dissolved (mg/L)	0.5	20	20	21.72	1.39	21.6	21.8	22.4	16.3	23.4
Potassium (K),Dissolved (mg/L)	0.5	20	19	0.792	0.150	0.744	0.7955	0.8785	0.25	0.99
Silver (Ag),Dissolved (mg/L)	0.0001	27	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Sodium (Na),Dissolved (mg/L)	0.5	26	26	3.69	0.47	3.4	3.59	3.85	3.17	5.1
Zinc (Zn),Dissolved (mg/L)	0.05	17	1	0.0304	0.0221	0.025	0.025	0.025	0.025	0.116
Metals, Total										
Mercury (Hg),Total (mg/L)	0.0002	27	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Table F-7. MW33 Water-Quality Statistics (Page 2 of 2)

Constituent	PQL	*n* Analyzed	*n* Detected	Mean	StDev	Q1	Median	Q3	Minimum	Maximum
Nonmetallics										
Bicarbonate (mg/L)	10	26	26	230.0	8.0	230	232	233	192	235
Carbonate (mg/L)	5	20	20	0	0	0	0	0	0	0
Chloride (Cl-) (mg/L)	0.5	20	6	0.425	0.452	0.25	0.25	0.5	0.25	2.25
Cyanide, Total (mg/L)	0.01	27	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Cyanide, WAD (mg/L)	0.01	27	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Fluoride (mg/L)	0.05	27	27	0.2785	0.0241	0.27125	0.281	0.28775	0.182	0.328
Nitrogen, Ammonia (NH3) (mg/L)	0.05	27	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Nitrogen, Nitrate (NO3) (mg/L)	0.05	27	27	0.1197	0.0283	0.10825	0.112	0.13325	0.078	0.219
Nitrogen, Nitrite (NO2) (mg/L)	0.05	27	1	0.0268	0.0092	0.025	0.025	0.025	0.025	0.073
Selenium (Se),Dissolved (mg/L)	0.0005	27	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Sulfate (SO4) (mg/L)	1	26	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Physical Properties										
Anion - Cation Balance (%)	N/A	20	N/A	–1.789	1.488	–2.75	–2.05	–1.0505	–4.2	1.17
Anions (meq/L)	N/A	20	N/A	3.802	0.160	3.79	3.83	3.855	3.17	4.03
Cations (meq/L)	N/A	20	N/A	3.667	0.148	3.59	3.67	3.74	3.24	3.93
Electrical Conductivity (µmhos/cm)	1	27	27	356.8	11.9	356	359	360	300	367
pH (SU)	N/A	27	N/A	7.963	0.107	7.91	7.96	8.01	7.72	8.25
Total Dissolved Solids (mg/L)	50	28	28	182.0	14.7	173.5	183	193	149	207
Total Suspended Solids (mg/L)	4	1	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Table F-8. MW40 Water-Quality Statistics (Page 1 of 2)

Constituent	PQL	*n* Analyzed	*n* Detected	Mean	StDev	Q1	Median	Q3	Minimum	Maximum
Field										
Field Conductivity (µmhos/cm)	N/A	18	N/A	85.6	23.6	60.3	85	100	55	150
Field Depth (ft)	N/A	14	N/A	146.5	58.4	117	122	130	99	276
Field ORP (mV)	N/A	5	N/A	138.6	48.2	94	155	180.5	76	182
Field Oxygen (O2) (mg/L)	N/A	5	N/A	8.296	0.738	7.7325	8.19	8.705	7.59	9.47
Field pH (SU)	N/A	18	N/A	6.657	0.527	6.25	6.515	7.05	5.8	8.04
Field Temperature (° C)	N/A	17	N/A	7.42	0.89	6.875	7.1	7.95	5.8	9.5
Metals, Dissolved										
Arsenic (As),Dissolved (mg/L)	0.0005	28	2	0.0006	0.0012	0.00025	0.00025	0.00025	0.00025	0.005
Cadmium (Cd),Dissolved (mg/L)	0.0001	24	1	0.0001	0.0004	0.00005	0.00005	0.00005	0.00005	0.002
Calcium (Ca),Dissolved (mg/L)	1	23	23	8.51	2.39	7.4275	7.88	8.86	5.95	16.1
Copper (Cu),Dissolved (mg/L)	0.0005	28	4	0.0018	0.0040	0.00025	0.00025	0.00025	0.00025	0.015
Gold (Au),Dissolved (mg/L)	0.001	28	16	0.0053	0.0131	0.0005	0.001	0.002	0.0005	0.06
Magnesium (Mg),Dissolved (mg/L)	0.5	23	23	2.477	0.559	2.185	2.28	2.485	1.9	4.15
Potassium (K),Dissolved (mg/L)	0.5	23	22	0.826	0.199	0.746	0.81	0.93	0.25	1.29
Silver (Ag),Dissolved (mg/L)	0.0001	5	1	0.00027	0.00050	0.00005	0.00005	0.00033	0.00005	0.00117
Sodium (Na),Dissolved (mg/L)	0.5	28	28	1.82	0.46	1.53	1.81	1.9	1.36	3.6
Zinc (Zn),Dissolved (mg/L)	0.05	23	3	0.0297	0.0125	0.025	0.025	0.025	0.025	0.065
Metals, Total										
Mercury (Hg),Total (mg/L)	0.0002	5	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Table F-8. MW40 Water-Quality Statistics (Page 2 of 2)

Constituent	PQL	*n* Analyzed	*n* Detected	Mean	StDev	Q1	Median	Q3	Minimum	Maximum
Metals, Total Recoverable										
Arsenic (As),Total Recoverable (mg/L)	0.005	1	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Nonmetallics										
Bicarbonate (mg/L)	10	28	28	23.29	0.81	22.9	23.4	23.85	21.3	24.7
Chloride (Cl-) (mg/L)	0.5	23	5	0.30	0.11	0.25	0.25	0.25	0.25	0.5
Cyanide, Total (mg/L)	0.01	28	2	0.006	0.003	0.005	0.005	0.005	0.005	0.02
Cyanide, WAD (mg/L)	0.01	28	1	0.0052	0.0011	0.005	0.005	0.005	0.005	0.011
Fluoride (mg/L)	0.05	5	5	0.2646	0.012	0.253	0.265	0.274	0.253	0.28
Nitrogen, Ammonia (NH3) (mg/L)	0.05	5	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Nitrogen, Nitrate (NO3) (mg/L)	0.05	28	28	2.181	1.448	1.44	1.835	2.305	1.01	7.46
Nitrogen, Nitrite (NO2) (mg/L)	0.05	28	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Selenium (Se),Dissolved (mg/L)	0.0005	28	1	0.0004	0.0009	0.00025	0.00025	0.00025	0.00025	0.005
Selenium (Se),Total Recoverable (mg/L)	0.001	1	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Sulfate (SO4) (mg/L)	1	28	12	6.05	6.88	0.5	0.5	11.65	0.5	22.6
Physical Properties										
Anion - Cation Balance (%)	N/A	23	N/A	–1.318	3.381	–3.9025	–1.3	1.62575	–7.63	5.19
Anions (meq/L)	N/A	23	N/A	0.749	0.178	0.689	0.715	0.74075	0.525	1.27
Cations (meq/L)	N/A	23	N/A	0.728	0.168	0.63975	0.672	0.7445	0.573	1.27
Electrical Conductivity (µmhos/cm)	1	28	28	91.0	18.4	82.1	86.65	88.45	78.9	159
pH (SU)	N/A	28	N/A	6.577	0.199	6.42	6.57	6.71	6.24	7.02
Total Dissolved Solids (mg/L)	50	29	29	58.3	13.2	54	57	64	35	101

Table F-9. SM01A Water-Quality Statistics (Page 1 of 2)

Constituent	PQL	*n* Analyzed	*n* Detected	Mean	StDev	Q1	Median	Q3	Minimum	Maximum
Field										
Field Conductivity (µmhos/cm)	N/A	15	N/A	1446.3	1066.9	232.5	1550	2375	2.4	2900
Field Depth (ft)	N/A	14	N/A	12.19	2.37	11.5	12.4	13.4	6.92	16.9
Field pH (SU)	N/A	16	N/A	6.211	0.264	6.03	6.09	6.37	5.93	6.83
Field Temperature (° C)	N/A	15	N/A	6.87	0.66	6.5	6.6	7.2	6.3	8.5
Metals, Dissolved										
Aluminum (Al),Dissolved (mg/L)	0.01	30	30	0.0750	0.0248	0.0627	0.071	0.086	0.034	0.159
Arsenic (As),Dissolved (mg/L)	0.0005	30	5	0.00138	0.00277	0.00025	0.00025	0.00025	0.00025	0.0115
Barium (Ba),Dissolved (mg/L)	0.0025	8	8	0.03145	0.00323	0.0288	0.0302	0.0345	0.0282	0.0364
Cadmium (Cd),Dissolved (mg/L)	0.0001	8	2	0.00034	0.00053	0.00005	0.00005	0.00062	0.00005	0.00122
Calcium (Ca),Dissolved (mg/L)	1	24	24	402.7	77.8	341	404.5	458	237	554
Chromium (Cr),Dissolved (mg/L)	0.0005	8	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Copper (Cu),Dissolved (mg/L)	0.0005	30	6	0.0023	0.0044	0.00025	0.00025	0.00025	0.00025	0.015
Gold (Au),Dissolved (mg/L)	0.001	8	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Iron (Fe),Dissolved (mg/L)	0.025	30	30	22.15	5.89	17.2	24.45	25.9	9.64	32.3
Lead (Pb),Dissolved (mg/L)	0.0001	8	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Magnesium (Mg),Dissolved (mg/L)	0.5	24	24	111.3	27.7	89.65	114	134.5	59.5	159
Manganese (Mn),Dissolved (mg/L)	0.001	30	30	28.76	10.83	17.7	33.4	38.1	10.2	43.3
Potassium (K),Dissolved (mg/L)	0.5	24	24	6.112	1.191	5.53	5.965	6.335	4.26	9.98
Sodium (Na),Dissolved (mg/L)	0.5	30	30	8.75	4.10	6.5	7.55	9.7	4.92	25.1
Strontium (Sr),Dissolved (mg/L)	0.001	8	8	1.613	0.032	1.585	1.61	1.645	1.57	1.65
Zinc (Zn),Dissolved (mg/L)	0.05	30	30	0.1998	0.0589	0.17	0.21	0.243	0.087	0.309

Table F-9. SM01A Water-Quality Statistics (Page 2 of 2)

Constituent	PQL	*n* Analyzed	*n* Detected	Mean	StDev	Q1	Median	Q3	Minimum	Maximum
Metals, Total										
Mercury (Hg),Total (mg/L)	0.0002	8	1	0.00015	0.00014	0.0001	0.0001	0.0001	0.0001	0.0005
Nonmetallics										
Bicarbonate (mg/L)	10	30	30	88.2	11.6	83	88.05	94.3	60.5	113
Carbonate (mg/L)	5	2	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Chloride (Cl-) (mg/L)	0.5	29	28	4.905	1.402	4.2475	5.25	5.75	0.25	7.25
Cyanide, Total (mg/L)	0.01	30	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Cyanide, WAD (mg/L)	0.01	30	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Fluoride (mg/L)	0.05	8	8	0.5231	0.0280	0.506	0.534	0.542	0.469	0.552
Nitrogen, Nitrate (NO3) (mg/L)	0.05	31	9	0.0458	0.0388	0.025	0.025	0.06175	0.025	0.163
Nitrogen, Nitrite (NO2) (mg/L)	0.05	30	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Selenium (Se),Dissolved (mg/L)	0.0005	8	1	0.00091	0.00188	0.00025	0.00025	0.00025	0.00025	0.00556
Sulfate (SO4) (mg/L)	1	31	31	1498.6	226.7	1392.5	1520	1597.5	847	1950
Physical Properties										
Anion - Cation Balance (%)	N/A	15	N/A	–0.645	1.210	–1.6575	–0.734	–0.3285	–1.95	1.95
Anions (meq/L)	N/A	15	N/A	35.1	4.16	31.975	33.7	38.125	28.6	42.4
Cations (meq/L)	N/A	15	N/A	34.66	4.21	31.475	33.2	37.7	28.5	41.9
Electrical Conductivity (µmhos/cm)	1	30	30	2444.0	287.7	2280	2585	2650	1620	2780
pH (SU)	N/A	30	N/A	6.46	0.24	6.24	6.5	6.68	6.03	6.8
Total Dissolved Solids (mg/L)	50	30	30	2366.7	377.3	2120	2460	2680	1400	2860
Total Suspended Solids (mg/L)	4	24	22	24.4	21.7	14	19.5	30.5	2	114

Table F-10. SM02A Water-Quality Statistics (Page 1 of 2)

Constituent	PQL	*n* Analyzed	*n* Detected	Mean	StDev	Q1	Median	Q3	Minimum	Maximum
Field										
Field Conductivity (µmhos/cm)	N/A	14	N/A	577.1	167.3	582	630	660	92	740
Field Depth (ft)	N/A	14	N/A	25.32	20.99	13.1	15.15	41.1	8.43	77.8
Field pH (SU)	N/A	14	N/A	7.102	0.223	6.98	7.16	7.26	6.58	7.42
Field Temperature (° C)	N/A	14	N/A	7.4	1.4	6.4	7.15	8.4	5.6	9.9
Metals, Dissolved										
Aluminum (Al),Dissolved (mg/L)	0.01	1	1	0.0129	0	0.0129	0.0129	0.0129	0.0129	0.0129
Arsenic (As),Dissolved (mg/L)	0.0005	20	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Barium (Ba),Dissolved (mg/L)	0.0025	1	1	0.117	0	0.117	0.117	0.117	0.117	0.117
Cadmium (Cd),Dissolved (mg/L)	0.0001	1	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Calcium (Ca),Dissolved (mg/L)	1	1	1	106	0	106	106	106	106	106
Chromium (Cr),Dissolved (mg/L)	0.0005	1	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Copper (Cu),Dissolved (mg/L)	0.0005	20	18	0.01262	0.00731	0.008805	0.01205	0.01755	0.00025	0.0299
Gold (Au),Dissolved (mg/L)	0.001	1	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Iron (Fe),Dissolved (mg/L)	0.025	1	1	0.248	0	0.248	0.248	0.248	0.248	0.248
Lead (Pb),Dissolved (mg/L)	0.0001	1	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Magnesium (Mg),Dissolved (mg/L)	0.5	1	1	15.2	0	15.2	15.2	15.2	15.2	15.2
Manganese (Mn),Dissolved (mg/L)	0.001	1	1	0.0353	0	0.0353	0.0353	0.0353	0.0353	0.0353
Potassium (K),Dissolved (mg/L)	0.5	1	1	1.85	0	1.85	1.85	1.85	1.85	1.85
Sodium (Na),Dissolved (mg/L)	0.5	20	20	7.80	1.92	7.445	8.285	8.775	1.54	10.3
Strontium (Sr),Dissolved (mg/L)	0.001	1	1	0.399	0	0.399	0.399	0.399	0.399	0.399
Zinc (Zn),Dissolved (mg/L)	0.05	20	7	0.0377	0.0195	0.025	0.025	0.05125	0.025	0.083

Table F-10. SM02A Water-Quality Statistics (Page 2 of 2)

Constituent	PQL	*n* Analyzed	*n* Detected	Mean	StDev	Q1	Median	Q3	Minimum	Maximum
Metals, Total										
Mercury (Hg),Total (mg/L)	0.0002	19	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Nonmetallics										
Bicarbonate (mg/L)	10	1	1	352	0	352	352	352	352	352
Chloride (Cl-) (mg/L)	0.5	1	1	5.5	0	5.5	5.5	5.5	5.5	5.5
Cyanide, Total (mg/L)	0.01	20	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Cyanide, WAD (mg/L)	0.01	20	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Fluoride (mg/L)	0.05	20	20	0.1449	0.0614	0.1115	0.1245	0.1545	0.104	0.382
Nitrogen, Nitrate (NO3) (mg/L)	0.05	20	19	3.547	1.934	2.475	3.2	4.68	0.025	6.96
Nitrogen, Nitrite (NO2) (mg/L)	0.05	20	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Selenium (Se),Dissolved (mg/L)	0.0005	20	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Sulfate (SO4) (mg/L)	1	20	20	72.8	31.0	51.4	65.55	85.5	34.9	148
Physical Properties										
Anion - Cation Balance (%)	N/A	1	N/A	0.0372	0	0.0372	0.0372	0.0372	0.0372	0.0372
Anions (meq/L)	N/A	1	N/A	6.99	0	6.99	6.99	6.99	6.99	6.99
Cations (meq/L)	N/A	1	N/A	6.99	0	6.99	6.99	6.99	6.99	6.99
Electrical Conductivity (µmhos/cm)	1	20	20	693.0	73.0	628.5	714	729	539	806
pH (SU)	N/A	20	N/A	7.14	0.29	7.04	7.12	7.2	6.43	7.91
Total Dissolved Solids (mg/L)	50	20	20	432.8	82.7	376.5	430.5	457	329	728

Table F-11. SM03A Water-Quality Statistics (Page 1 of 3)

Constituent	PQL	*n* Analyzed	*n* Detected	Mean	StDev	Q1	Median	Q3	Minimum	Maximum
Field										
Field Conductivity (µmhos/cm)	N/A	16	N/A	529.2	155.2	537.5	560	610	6	660
Field Depth (ft)	N/A	12	N/A	22.42	3.12	20.4	21.95	24.5	17	27.4
Field pH (SU)	N/A	16	N/A	6.832	0.596	6.55	6.64	6.85	6.48	8.95
Field Temperature (° C)	N/A	16	N/A	8.4	1.3	7.8	8.05	9.1	6	11
Metals, Dissolved										
Arsenic (As),Dissolved (mg/L)	0.0005	22	16	0.00495	0.00320	0.00025	0.00592	0.007	0.00025	0.0091
Barium (Ba),Dissolved (mg/L)	0.0025	22	22	0.0243	0.0176	0.019	0.0208	0.0237	0.015	0.102
Cadmium (Cd),Dissolved (mg/L)	0.0001	21	2	0.00023	0.00065	0.00005	0.00005	0.00005	0.00005	0.00293
Calcium (Ca),Dissolved (mg/L)	1	1	1	51.1	0	51.1	51.1	51.1	51.1	51.1
Chromium (Cr),Dissolved (mg/L)	0.0005	22	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Copper (Cu),Dissolved (mg/L)	0.0005	22	4	0.0019	0.0042	0.00025	0.00025	0.00025	0.00025	0.018
Gold (Au),Dissolved (mg/L)	0.001	22	9	0.0022	0.0031	0.0005	0.0005	0.003	0.0005	0.013
Iron (Fe),Dissolved (mg/L)	0.025	22	21	10.10	2.80	9.79	10.9	11.7	0.0125	13.2
Lead (Pb),Dissolved (mg/L)	0.0001	22	7	0.00068	0.00104	0.00005	0.00005	0.00135	0.00005	0.00306
Magnesium (Mg),Dissolved (mg/L)	0.5	1	1	30.4	0	30.4	30.4	30.4	30.4	30.4
Sodium (Na),Dissolved (mg/L)	0.5	21	21	4.455	0.948	3.73	4.07	5.1325	3.3	6.44
Strontium (Sr),Dissolved (mg/L)	0.001	1	1	0.447	0	0.447	0.447	0.447	0.447	0.447
Zinc (Zn),Dissolved (mg/L)	0.05	22	4	0.0404	0.0453	0.025	0.025	0.025	0.025	0.222
Metals, Total										
Mercury (Hg),Total (mg/L)	0.0002	22	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Table F-11. SM03A Water-Quality Statistics (Page 2 of 3)

Constituent	PQL	*n* Analyzed	*n* Detected	Mean	StDev	Q1	Median	Q3	Minimum	Maximum
Metals, Total Recoverable										
Arsenic (As),Total Recoverable (mg/L)	0.005	1	1	0.0609	0	0.0609	0.0609	0.0609	0.0609	0.0609
Cadmium (Cd),Total Recoverable (mg/L)	0.001	1	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Chromium (Cr),Total Recoverable (mg/L)	0.001	1	1	0.00465	0	0.00465	0.00465	0.00465	0.00465	0.00465
Copper (Cu),Total Recoverable (mg/L)	0.005	1	1	0.039	0	0.039	0.039	0.039	0.039	0.039
Lead (Pb),Total Recoverable (mg/L)	0.001	1	1	0.0243	0	0.0243	0.0243	0.0243	0.0243	0.0243
Nickel (Ni),Total Recoverable (mg/L)	0.005	1	1	0.0725	0	0.0725	0.0725	0.0725	0.0725	0.0725
Silver (Ag),Total Recoverable (mg/L)	0.001	1	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Zinc (Zn),Total Recoverable (mg/L)	0.05	1	1	0.108	0	0.108	0.108	0.108	0.108	0.108
Nonmetallics										
Bicarbonate (mg/L)	10	22	22	180.9	34.2	167	175.5	182	155	327
Chloride (Cl-) (mg/L)	0.5	22	22	3.348	1.578	2	3.125	3.75	1.5	8.25
Cyanide, Total (mg/L)	0.01	22	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Cyanide, WAD (mg/L)	0.01	22	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Fluoride (mg/L)	0.05	21	21	0.3666	0.0212	0.34825	0.369	0.38275	0.328	0.402
Nitrogen, Nitrate (NO3) (mg/L)	0.05	22	6	0.167	0.481	0.025	0.025	0.072	0.025	2.27
Nitrogen, Nitrite (NO2) (mg/L)	0.05	22	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Selenium (Se),Dissolved (mg/L)	0.0005	22	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Selenium (Se),Total Recoverable (mg/L)	0.001	1	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Table F-11. SM03A Water-Quality Statistics (Page 3 of 3)

Constituent	PQL	*n* Analyzed	*n* Detected	Mean	StDev	Q1	Median	Q3	Minimum	Maximum
Sulfate (SO4) (mg/L)	1	22	22	159.6	29.6	158	167	175	39.7	187
Physical Properties										
Electrical Conductivity (µmhos/cm)	1	22	22	606.8	12.2	597	608	615	586	628
Hardness (mg/L)	N/A	1	N/A	253	0	253	253	253	253	253
pH (SU)	N/A	22	N/A	6.826	0.231	6.63	6.82	6.93	6.48	7.42
Total Dissolved Solids (mg/L)	50	22	22	388.7	22.2	377	388.5	403	331	443
Total Suspended Solids (mg/L)	4	1	1	59	0	59	59	59	59	59

Table F-12. MM04A Water-Quality Statistics (Page 1 of 2)

Constituent	PQL	*n* Analyzed	*n* Detected	Mean	StDev	Q1	Median	Q3	Minimum	Maximum
Field										
Field Conductivity (µmhos/cm)	N/A	14	N/A	755.4	221.0	670	720	880	189	1150
Field Depth (ft)	N/A	14	N/A	371.6	4.3	371	373	375	362	376
Field pH (SU)	N/A	14	N/A	7.261	0.164	7.15	7.225	7.4	6.99	7.53
Field Temperature (° C)	N/A	14	N/A	9.77	1.34	9.7	10.25	10.6	7	11.3
Metals, Dissolved										
Arsenic (As),Dissolved (mg/L)	0.0005	20	14	0.00476	0.00327	0.00025	0.005915	0.006955	0.00025	0.0104
Copper (Cu),Dissolved (mg/L)	0.0005	20	6	0.00346	0.00630	0.00025	0.00025	0.005525	0.00025	0.0236
Sodium (Na),Dissolved (mg/L)	0.5	20	20	6.4	2.4	4.95	5.875	8.09	3.38	12
Zinc (Zn),Dissolved (mg/L)	0.05	20	3	0.02966	0.01143	0.025	0.025	0.025	0.025	0.0597
Metals, Total										
Mercury (Hg),Total (mg/L)	0.0002	19	2	0.00012	0.00005	0.0001	0.0001	0.0001	0.0001	0.0003
Nonmetallics										
Cyanide, Total (mg/L)	0.01	20	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Cyanide, WAD (mg/L)	0.01	20	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Fluoride (mg/L)	0.05	19	19	0.2092	0.0446	0.177	0.197	0.24125	0.134	0.301
Nitrogen, Nitrate (NO3) (mg/L)	0.05	20	20	5.884	1.580	5.405	5.91	6.865	0.564	8.03
Nitrogen, Nitrite (NO2) (mg/L)	0.05	20	1	0.026	0.006	0.025	0.025	0.025	0.025	0.05
Selenium (Se),Dissolved (mg/L)	0.0005	20	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Sulfate (SO4) (mg/L)	1	20	20	150.2	94.8	66.6	125.5	235.5	49.9	352

Table F-12. MM04A Water-Quality Statistics (Page 2 of 2)

Constituent	PQL	*n* Analyzed	*n* Detected	Mean	StDev	Q1	Median	Q3	Minimum	Maximum
Physical Properties										
Electrical Conductivity (µmhos/cm)	1	20	20	854.0	140.1	750	808.5	973.5	693	1150
pH (SU)	N/A	20	N/A	7.350	0.114	7.28	7.335	7.38	7.2	7.68
Total Dissolved Solids (mg/L)	50	20	20	551.0	130.2	449.5	512	629	400	820

Table F-13. SM06 Water-Quality Statistics (Page 1 of 2)

Constituent	PQL	*n* Analyzed	*n* Detected	Mean	StDev	Q1	Median	Q3	Minimum	Maximum
Field										
Field Conductivity (µmhos/cm)	N/A	18	N/A	479.9	150.5	385	525	600	233	670
Field Depth (ft)	N/A	14	N/A	19.37	6.95	17.2	18.85	19.3	8.7	41.2
Field ORP (mV)	N/A	1	N/A	58	0	58	58	58	58	58
Field Oxygen (O2) (mg/L)	N/A	1	N/A	3.85	0	3.85	3.85	3.85	3.85	3.85
Field pH (SU)	N/A	18	N/A	7.423	0.306	7.21	7.37	7.52	7.02	8.18
Field Temperature (° C)	N/A	18	N/A	7.21	0.75	6.7	7.25	7.9	6.1	8.4
Metals, Dissolved										
Arsenic (As),Dissolved (mg/L)	0.0005	23	22	0.01244	0.01006	0.0085225	0.0106	0.012575	0.00025	0.0559
Barium (Ba),Dissolved (mg/L)	0.0025	22	22	0.0724	0.0270	0.0541	0.069	0.086	0.037	0.143
Cadmium (Cd),Dissolved (mg/L)	0.0001	21	2	0.0002	0.0005	0.00005	0.00005	0.00005	0.00005	0.002
Chromium (Cr),Dissolved (mg/L)	0.0005	22	3	0.00087	0.00217	0.00025	0.00025	0.00025	0.00025	0.0102
Copper (Cu),Dissolved (mg/L)	0.0005	22	3	0.00174	0.00462	0.00025	0.00025	0.00025	0.00025	0.0206
Gold (Au),Dissolved (mg/L)	0.001	22	8	0.0020	0.0024	0.0005	0.0005	0.003	0.0005	0.007
Iron (Fe),Dissolved (mg/L)	0.025	22	14	0.357	0.888	0.0125	0.07685	0.231	0.0125	4.16
Lead (Pb),Dissolved (mg/L)	0.0001	22	4	0.00076	0.00247	0.00005	0.00005	0.00005	0.00005	0.0116
Sodium (Na),Dissolved (mg/L)	0.5	21	21	7.17	1.69	6.2075	7.05	8.025	3.99	11.1
Strontium (Sr),Dissolved (mg/L)	0.001	1	1	0.4920	0	0.492	0.492	0.492	0.492	0.492
Zinc (Zn),Dissolved (mg/L)	0.05	22	16	0.0619	0.0375	0.025	0.058	0.0695	0.025	0.197
Metals, Total										
Mercury (Hg),Total (mg/L)	0.0002	27	27	0.00182	0.00146	0.000675	0.0016	0.0026	0.0002	0.0058

Table F-13. SM06 Water-Quality Statistics (Page 2 of 2)

Constituent	PQL	*n* Analyzed	*n* Detected	Mean	StDev	Q1	Median	Q3	Minimum	Maximum
Nonmetallics										
Bicarbonate (mg/L)	10	22	22	155.0	20.8	143	160.5	168	100	183
Carbonate (mg/L)	5	1	1	0	0	0	0	0	0	0
Chloride (Cl-) (mg/L)	0.5	22	22	4.4	1.6	3	4.525	5.5	1.75	7
Cyanide, Total (mg/L)	0.01	22	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Cyanide, WAD (mg/L)	0.01	22	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Fluoride (mg/L)	0.05	21	21	0.5558	0.0682	0.5215	0.546	0.588	0.392	0.698
Nitrogen, Nitrate (NO3) (mg/L)	0.05	22	22	1.957	1.269	0.955	1.63	2.59	0.353	4.92
Nitrogen, Nitrite (NO2) (mg/L)	0.05	22	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Selenium (Se),Dissolved (mg/L)	0.0005	22	1	0.0006	0.0017	0.00025	0.00025	0.00025	0.00025	0.008
Sulfate (SO4) (mg/L)	1	23	23	128.1	45.6	95.05	134	161	41.2	202
Physical Properties										
Electrical Conductivity (µmhos/cm)	1	22	22	523.2	121.7	451	553.5	628	271	670
pH (SU)	N/A	22	N/A	7.45	0.14	7.33	7.42	7.55	7.24	7.7
Total Dissolved Solids (mg/L)	50	28	28	457.0	88.1	388.5	456	532	295	629

Table F-14. SM09 Water-Quality Statistics (Page 1 of 2)

Constituent	PQL	*n* Analyzed	*n* Detected	Mean	StDev	Q1	Median	Q3	Minimum	Maximum
Field										
Field Conductivity (µmhos/cm)	N/A	9	N/A	538.2	106.4	504.75	567	607.5	348	640
Field Depth (ft)	N/A	7	N/A	15.53	19.22	0	1.5	35.325	0	40.7
Field pH (SU)	N/A	9	N/A	6.891	0.293	6.675	6.85	6.9975	6.6	7.53
Field Temperature (° C)	N/A	9	N/A	7.70	0.88	7.145	7.5	8.4	6.6	9.2
Metals, Dissolved										
Aluminum (Al),Dissolved (mg/L)	0.01	1	1	0.09	0	0.09	0.09	0.09	0.09	0.09
Arsenic (As),Dissolved (mg/L)	0.0005	16	5	0.00539	0.01196	0.00025	0.00025	0.007435	0.00025	0.0477
Barium (Ba),Dissolved (mg/L)	0.0025	3	3	0.0547	0.0017	0.05335	0.0553	0.055825	0.0527	0.056
Cadmium (Cd),Dissolved (mg/L)	0.0001	3	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Calcium (Ca),Dissolved (mg/L)	1	1	1	56	0	56	56	56	56	56
Chromium (Cr),Dissolved (mg/L)	0.0005	3	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Copper (Cu),Dissolved (mg/L)	0.0005	16	3	0.00248	0.00635	0.00025	0.00025	0.00025	0.00025	0.0253
Gold (Au),Dissolved (mg/L)	0.001	3	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Iron (Fe),Dissolved (mg/L)	0.025	3	3	0.920	1.242	0.15675	0.3	1.8375	0.109	2.35
Lead (Pb),Dissolved (mg/L)	0.0001	3	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Magnesium (Mg),Dissolved (mg/L)	0.5	1	1	14.6	0	14.6	14.6	14.6	14.6	14.6
Manganese (Mn),Dissolved (mg/L)	0.001	1	1	4.11	0	4.11	4.11	4.11	4.11	4.11
Potassium (K),Dissolved (mg/L)	0.5	1	1	3.4	0	3.4	3.4	3.4	3.4	3.4
Sodium (Na),Dissolved (mg/L)	0.5	16	16	36.95	4.85	34.85	37.15	40.05	25	44.1
Strontium (Sr),Dissolved (mg/L)	0.001	1	1	0.251	0	0.251	0.251	0.251	0.251	0.251
Zinc (Zn),Dissolved (mg/L)	0.05	16	3	0.0383	0.0307	0.025	0.025	0.025	0.025	0.117

Table F-14. SM09 Water-Quality Statistics (Page 2 of 2)

Constituent	PQL	*n* Analyzed	*n* Detected	Mean	StDev	Q1	Median	Q3	Minimum	Maximum
Metals, Total										
Mercury (Hg),Total (mg/L)	0.0002	16	1	0.00011	0.00003	0.0001	0.0001	0.0001	0.0001	0.0002
Nonmetallics										
Bicarbonate (mg/L)	10	3	3	84.3	8.4	77.85	87	90	74.8	91
Chloride (Cl-) (mg/L)	0.5	3	3	90.8	8.8	84.375	90	97.5	82.5	100
Cyanide, Total (mg/L)	0.01	16	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Cyanide, WAD (mg/L)	0.01	16	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Fluoride (mg/L)	0.05	16	16	0.4588	0.0423	0.431	0.453	0.4725	0.41	0.567
Nitrogen, Nitrate (NO3) (mg/L)	0.05	16	6	0.1281	0.1972	0.025	0.025	0.149	0.025	0.722
Nitrogen, Nitrite (NO2) (mg/L)	0.05	16	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Selenium (Se),Dissolved (mg/L)	0.0005	16	16	0.0156	0.0092	0.01075	0.01265	0.01455	0.00961	0.045
Sulfate (SO4) (mg/L)	1	16	16	87.7	43.9	57.35	87.2	103	36.4	221
Physical Properties										
Anion - Cation Balance (%)	N/A	1	N/A	–0.639	0	–0.639	–0.639	–0.639	–0.639	–0.639
Anions (meq/L)	N/A	1	N/A	5.8	0	5.8	5.8	5.8	5.8	5.8
Cations (meq/L)	N/A	1	N/A	5.72	0	5.72	5.72	5.72	5.72	5.72
Electrical Conductivity (µmhos/cm)	1	16	16	620.5	85.0	545.5	625.5	699.5	496	764
pH (SU)	N/A	16	N/A	6.951	0.228	6.8	6.905	7.155	6.58	7.39
Total Dissolved Solids (mg/L)	50	16	16	363.7	60.1	315.5	359.5	404.5	273	500

Table F-15. SM10 Water-Quality Statistics (Page 1 of 3)

Constituent	PQL	*n* Analyzed	*n* Detected	Mean	StDev	Q1	Median	Q3	Minimum	Maximum
Field										
Field Conductivity (µmhos/cm)	N/A	14	N/A	219.1	42.8	200	211	220	140	330
Field Depth (ft)	N/A	12	N/A	66.5	14.3	60.65	64.95	67.1	50.8	109
Field pH (SU)	N/A	14	N/A	7.590	0.369	7.43	7.53	7.74	6.85	8.37
Field Temperature (° C)	N/A	14	N/A	7.80	0.89	7.5	7.68	8.2	5.8	9.9
Metals, Dissolved										
Aluminum (Al),Dissolved (mg/L)	0.01	1	1	0.0142	0	0.0142	0.0142	0.0142	0.0142	0.0142
Arsenic (As),Dissolved (mg/L)	0.0005	27	27	0.0114	0.0016	0.0105	0.0116	0.01245	0.00657	0.014
Barium (Ba),Dissolved (mg/L)	0.0025	24	24	0.06356	0.00829	0.0587	0.06	0.0671	0.0528	0.0914
Cadmium (Cd),Dissolved (mg/L)	0.0001	25	1	0.0001	0.0002	0.00005	0.00005	0.00005	0.00005	0.001
Calcium (Ca),Dissolved (mg/L)	1	4	4	24.9750	2.0106	23.55	24.75	26.4	22.8	27.6
Chromium (Cr),Dissolved (mg/L)	0.0005	24	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Copper (Cu),Dissolved (mg/L)	0.0005	27	3	0.0015	0.0039	0.00025	0.00025	0.00025	0.00025	0.017
Gold (Au),Dissolved (mg/L)	0.001	26	10	0.0013	0.0012	0.0005	0.0005	0.002	0.0005	0.004
Iron (Fe),Dissolved (mg/L)	0.025	24	8	0.10	0.26	0.0125	0.0125	0.07255	0.0125	1.3
Lead (Pb),Dissolved (mg/L)	0.0001	27	4	0.00037	0.00088	0.00005	0.00005	0.00005	0.00005	0.00382
Magnesium (Mg),Dissolved (mg/L)	0.5	4	4	5.738	0.229	5.545	5.76	5.93	5.48	5.95
Manganese (Mn),Dissolved (mg/L)	0.001	1	1	0.204	0	0.204	0.204	0.204	0.204	0.204
Potassium (K),Dissolved (mg/L)	0.5	4	4	1.125	0.517	0.825	0.925	1.425	0.76	1.89
Silver (Ag),Dissolved (mg/L)	0.0001	3	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Sodium (Na),Dissolved (mg/L)	0.5	26	26	4.248	0.968	3.65	4.05	4.7	2.79	6.39
Strontium (Sr),Dissolved (mg/L)	0.001	2	2	0.1337	0.0499	0.0984	0.1337	0.169	0.0984	0.169
Zinc (Zn),Dissolved (mg/L)	0.05	27	1	0.0277	0.0139	0.025	0.025	0.025	0.025	0.097

Table F-15. SM10 Water-Quality Statistics (Page 2 of 3)

Constituent	PQL	*n* Analyzed	*n* Detected	Mean	StDev	Q1	Median	Q3	Minimum	Maximum
Metals, Total										
Mercury (Hg),Total (mg/L)	0.0002	27	1	0.00011	0.00006	0.0001	0.0001	0.0001	0.0001	0.0004
Metals, Total Recoverable										
Arsenic (As),Total Recoverable (mg/L)	0.005	1	1	0.013	0	0.013	0.013	0.013	0.013	0.013
Cadmium (Cd),Total Recoverable (mg/L)	0.001	1	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Copper (Cu),Total Recoverable (mg/L)	0.005	1	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Lead (Pb),Total Recoverable (mg/L)	0.001	1	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Silver (Ag),Total Recoverable (mg/L)	0.001	1	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Zinc (Zn),Total Recoverable (mg/L)	0.05	1	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Nonmetallics										
Bicarbonate (mg/L)	10	27	27	110.5	8.0	104	110	115.75	97.5	127
Chloride (Cl-) (mg/L)	0.5	27	27	4.86	2.68	2.7975	4.25	6.6875	0.5	11.5
Cyanide, Total (mg/L)	0.01	25	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Cyanide, WAD (mg/L)	0.01	25	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Fluoride (mg/L)	0.05	25	25	0.2333	0.0203	0.2205	0.228	0.242	0.209	0.295
Nitrogen, Ammonia (NH3) (mg/L)	0.05	3	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Nitrogen, Nitrate (NO3) (mg/L)	0.05	27	25	0.160	0.092	0.1	0.147	0.20475	0.025	0.46
Nitrogen, Nitrite (NO2) (mg/L)	0.05	27	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Selenium (Se),Dissolved (mg/L)	0.0005	27	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Selenium (Se),Total Recoverable (mg/L)	0.001	1	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Sulfate (SO4) (mg/L)	1	27	17	13.15	13.48	0.5	14.7	16.625	0.5	49.9

Table F-15. SM10 Water-Quality Statistics (Page 3 of 3)

Constituent	PQL	*n* Analyzed	*n* Detected	Mean	StDev	Q1	Median	Q3	Minimum	Maximum
Physical Properties										
Alkalinity (mg/L)	10	3	3	86.9	3.6	84.55	85.6	89.65	84.2	91
Anion - Cation Balance (%)	N/A	4	N/A	–0.770	5.541	–4.63	0.475	3.09	–8.44	4.41
Anions (meq/L)	N/A	4	N/A	1.958	0.159	1.86	1.95	2.055	1.77	2.16
BOD, 5-Day (mg/L)	N/A	1	N/A	3	0	3	3	3	3	3
Cations (meq/L)	N/A	4	N/A	1.925	0.078	1.875	1.925	1.975	1.83	2.02
Electrical Conductivity (µmhos/cm)	1	27	27	227.7	32.8	202.5	223	241	194	327
Hardness (mg/L)	N/A	1	N/A	93.3	0	93.3	93.3	93.3	93.3	93.3
pH (SU)	N/A	27	N/A	7.683	0.166	7.575	7.68	7.75	7.38	8.08
Total Dissolved Solids (mg/L)	50	27	27	129.6	21.9	119.75	133	139	80	188
Total Suspended Solids (mg/L)	4	2	1	18	22.6	2	18	34	2	34

Table F-16. OM-05 Water-Quality Statistics (Page 1 of 2)

Constituent	PQL	*n* Analyzed	*n* Detected	Mean	StDev	Q1	Median	Q3	Minimum	Maximum
Field										
Field Conductivity (µmhos/cm)	N/A	15	N/A	597.9	352.0	352.5	515	795	59	1370
Field Depth (ft)	N/A	15	N/A	7.40	2.42	5.6	7.4	8.975	3	11.5
Field ORP (mV)	N/A	1	N/A	84	0	84	84	84	84	84
Field Oxygen (O2) (mg/L)	N/A	1	N/A	3.42	0	3.42	3.42	3.42	3.42	3.42
Field pH (SU)	N/A	15	N/A	6.969	0.266	6.77	6.91	7.145	6.67	7.58
Field Temperature (° C)	N/A	15	N/A	8.11	3.67	5.55	6.1	11.1	3.5	16.3
Metals, Dissolved										
Arsenic (As),Dissolved (mg/L)	0.0005	21	1	0.00094	0.00315	0.00025	0.00025	0.00025	0.00025	0.0147
Copper (Cu),Dissolved (mg/L)	0.0005	21	15	0.078	0.296	0.00025	0.008	0.022725	0.00025	1.37
Sodium (Na),Dissolved (mg/L)	0.5	21	21	5.56	2.685445959	3.84	5.15	6.4675	2.36	15.4
Zinc (Zn),Dissolved (mg/L)	0.05	21	4	0.0364	0.0290	0.025	0.025	0.025	0.025	0.139
Metals, Total										
Mercury (Hg),Total (mg/L)	0.0002	20	13	0.00046	0.00073	0.0001	0.00025	0.0004	0.0001	0.0034
Nonmetallics										
Bicarbonate (mg/L)	10	1	1	241	0	241	241	241	241	241
Cyanide, Total (mg/L)	0.01	20	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Cyanide, WAD (mg/L)	0.01	20	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Fluoride (mg/L)	0.05	19	19	0.1896	0.0386	0.1565	0.186	0.208	0.139	0.288
Nitrogen, Nitrate (NO3) (mg/L)	0.05	20	19	2.61	3.48	0.533	1.285	3.685	0.025	12.2
Nitrogen, Nitrite (NO2) (mg/L)	0.05	20	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Selenium (Se),Dissolved (mg/L)	0.0005	21	1	0.0005	0.0010	0.00025	0.00025	0.00025	0.00025	0.005
Sulfate (SO4) (mg/L)	1	19	19	215.9	133.5	111.75	190	262.25	24.6	527

Table F-16. OM-05 Water-Quality Statistics (Page 2 of 2)

Constituent	PQL	*n* Analyzed	*n* Detected	Mean	StDev	Q1	Median	Q3	Minimum	Maximum
Physical Properties										
Electrical Conductivity (µmhos/cm)	1	20	20	755.6	315.7206293	505.5	742	877.5	270	1380
pH (SU)	N/A	20	N/A	6.937	0.142426343	6.84	6.91	7.045	6.69	7.16
Total Dissolved Solids (mg/L)	50	20	20	524.05	250.5926607	315	479.5	608.5	176	1050

Table F-17. PW-2 Water-Quality Statistics (Page 1 of 3)

Constituent	PQL	*n* Analyzed	*n* Detected	Mean	StDev	Q1	Median	Q3	Minimum	Maximum
Field										
Field Conductivity (µmhos/cm)	N/A	1	N/A	316	0	316	316	316	316	316
Field Depth (ft)	N/A	1	N/A	143	0	143	143	143	143	143
Field ORP (mV)	N/A	1	N/A	163	0	163	163	163	163	163
Field Oxygen (O2) (mg/L)	N/A	1	N/A	2.25	0	2.25	2.25	2.25	2.25	2.25
Field pH (SU)	N/A	1	N/A	7.65	0	7.65	7.65	7.65	7.65	7.65
Field Temperature (° C)	N/A	1	N/A	7	0	7	7	7	7	7
Metals, Dissolved										
Aluminum (Al),Dissolved (mg/L)	0.01	1	1	0.0292	0	0.0292	0.0292	0.0292	0.0292	0.0292
Antimony (Sb),Dissolved (mg/L)	0.005	2	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Arsenic (As),Dissolved (mg/L)	0.0005	2	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Barium (Ba),Dissolved (mg/L)	0.0025	2	2	0.04070	0.01131	0.0327	0.0407	0.0487	0.0327	0.0487
Beryllium (Be),Dissolved (mg/L)	0.001	2	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Cadmium (Cd),Dissolved (mg/L)	0.0001	2	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Calcium (Ca),Dissolved (mg/L)	1	1	1	59.8	0	59.8	59.8	59.8	59.8	59.8
Chromium (Cr),Dissolved (mg/L)	0.0005	2	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Cobalt (Co),Dissolved (mg/L)	0.001	1	1	0.00683	0	0.00683	0.00683	0.00683	0.00683	0.00683
Copper (Cu),Dissolved (mg/L)	0.0005	1	1	0.00747	0	0.00747	0.00747	0.00747	0.00747	0.00747
Gold (Au),Dissolved (mg/L)	0.001	1	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Iron (Fe),Dissolved (mg/L)	0.025	1	1	0.37	0	0.37	0.37	0.37	0.37	0.37
Lead (Pb),Dissolved (mg/L)	0.0001	1	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Lithium (Li),Dissolved (mg/L)	0.02	1	1	0.005	0	0.005	0.005	0.005	0.005	0.005
Magnesium (Mg),Dissolved (mg/L)	0.5	1	1	28.2	0	28.2	28.2	28.2	28.2	28.2

Table F-17. PW-2 Water-Quality Statistics (Page 2 of 3)

Constituent	PQL	*n* Analyzed	*n* Detected	Mean	StDev	Q1	Median	Q3	Minimum	Maximum
Manganese (Mn),Dissolved (mg/L)	0.001	1	1	0.535	0	0.535	0.535	0.535	0.535	0.535
Molybdenum (Mo),Dissolved (mg/L)	0.001	1	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Nickel (Ni),Dissolved (mg/L)	0.005	2	1	0.00865	0.00870	0.0025	0.00865	0.0148	0.0025	0.0148
Potassium (K),Dissolved (mg/L)	0.5	1	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Silver (Ag),Dissolved (mg/L)	0.0001	1	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Sodium (Na),Dissolved (mg/L)	0.5	1	1	1.77	0	1.77	1.77	1.77	1.77	1.77
Strontium (Sr),Dissolved (mg/L)	0.001	1	1	0.0384	0	0.0384	0.0384	0.0384	0.0384	0.0384
Vanadium (V),Dissolved (mg/L)	0.005	1	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Zinc (Zn),Dissolved (mg/L)	0.05	1	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Metals, Total										
Mercury (Hg),Total (mg/L)	0.0002	2	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Nonmetallics										
Bicarbonate (mg/L)	10	1	1	336	0	336	336	336	336	336
Boron (B),Total (mg/L)	0.02	1	1	0.109	0	0.109	0.109	0.109	0.109	0.109
Carbonate (mg/L)	5	1	1	0	0	0	0	0	0	0
Chloride (Cl-) (mg/L)	0.5	1	1	3.38	0	3.38	3.38	3.38	3.38	3.38
Cyanide, Free (mg/L)	0.02	1	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Cyanide, Total (mg/L)	0.01	1	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Cyanide, WAD (mg/L)	0.01	1	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Fluoride (mg/L)	0.05	2	2	0.106	0.020	0.092	0.106	0.12	0.092	0.12
Nitrogen, Ammonia (NH3) (mg/L)	0.05	1	1	0.271	0	0.271	0.271	0.271	0.271	0.271
Nitrogen, Nitrate (NO3) (mg/L)	0.05	2	1	0.133	0.1527	0.025	0.133	0.241	0.025	0.241
Nitrogen, Nitrite (NO2) (mg/L)	0.05	2	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Table F-17. PW-2 Water-Quality Statistics (Page 3 of 3)

Constituent	PQL	*n* Analyzed	*n* Detected	Mean	StDev	Q1	Median	Q3	Minimum	Maximum
Selenium (Se),Dissolved (mg/L)	0.0005	2	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Silicon (Si),Dissolved (mg/L)	1	1	1	2.45	0	2.45	2.45	2.45	2.45	2.45
Sulfate (SO4) (mg/L)	1	1	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Physical Properties										
Alkalinity (mg/L)	10	1	1	275	0	275	275	275	275	275
Anion - Cation Balance (%)	N/A	1	N/A	–1.79	0	–1.79	–1.79	–1.79	–1.79	–1.79
Anions (meq/L)	N/A	1	N/A	5.61	0	5.61	5.61	5.61	5.61	5.61
Cations (meq/L)	N/A	1	N/A	5.41	0	5.41	5.41	5.41	5.41	5.41
Electrical Conductivity (µmhos/cm)	1	1	1	498	0	498	498	498	498	498
Hardness (mg/L)	N/A	1	N/A	265	0	265	265	265	265	265
pH (SU)	N/A	1	N/A	7.71	0	7.71	7.71	7.71	7.71	7.71
Total Dissolved Solids (mg/L)	50	1	1	267	0	267	267	267	267	267
Total Suspended Solids (mg/L)	4	1	1	163	0	163	163	163	163	163
Turbidity (NTU)	0.2	1	1	55	0	55	55	55	55	55

Table F-18. Beaver Springs Water-Quality Statistics (Page 1 of 3)

Constituent	PQL	*n* Analyzed	*n* Detected	Mean	StDev	Q1	Median	Q3	Minimum	Maximum
Field										
Field Conductivity (µmhos/cm)	N/A	18	N/A	749.3	163.9	547	805	870	434	960
Field ORP (mV)	N/A	14	N/A	102.6	79.6	41	91	161	–12	273
Field Oxygen (O2) (mg/L)	N/A	15	N/A	7.699	1.044	6.79	8.06	8.4275	6.09	9.26
Field pH (SU)	N/A	18	N/A	7.579	0.174	7.46	7.605	7.73	7.3	7.82
Field Temperature (° C)	N/A	18	N/A	6.72	0.81	6.4	6.8	7	5.1	9.1
Field Flow Rate (gal/min)	N/A	18	N/A	42.68	24.15	27.8	47	59	1	97.2
Metals, Dissolved										
Arsenic (As),Dissolved (mg/L)	0.005	26	11	0.0038	0.0015	0.0025	0.0025	0.005	0.0025	0.007
Cadmium (Cd),Dissolved (mg/L)	0.001	19	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Calcium (Ca),Dissolved (mg/L)	1	20	20	86.8	8.0	84.3	88.4	89.9	71.2	101
Copper (Cu),Dissolved (mg/L)	0.005	24	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Gold (Au),Dissolved (mg/L)	0.001	24	23	0.0057	0.0030	0.004	0.006	0.008	0.0005	0.012
Lead (Pb),Dissolved (mg/L)	0.001	19	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Magnesium (Mg),Dissolved (mg/L)	0.5	20	20	36.28	2.28	35.2	37.05	37.95	31.8	39.4
Potassium (K),Dissolved (mg/L)	0.5	19	19	1.465	0.287	1.2275	1.51	1.685	0.91	1.89
Silver (Ag),Dissolved (mg/L)	0.001	24	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Sodium (Na),Dissolved (mg/L)	0.5	24	24	32.38	3.66	29.9	31.25	35.6	26.8	39.9
Zinc (Zn),Dissolved (mg/L)	0.05	19	1	0.02862	0.01576	0.025	0.025	0.025	0.025	0.0937
Metals, Total										
Arsenic (As),Total (mg/L)	0.005	2	1	0.0038	0.0018	0.0025	0.00375	0.005	0.0025	0.005
Cadmium (Cd),Total (mg/L)	0.001	1	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Copper (Cu),Total (mg/L)	0.005	1	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Table F-18. Beaver Springs Water-Quality Statistics (Page 2 of 3)

Constituent	PQL	*n* Analyzed	*n* Detected	Mean	StDev	Q1	Median	Q3	Minimum	Maximum
Gold (Au),Total (mg/L)	N/A	1	N/A	0.005	0	0.005	0.005	0.005	0.005	0.005
Mercury (Hg),Total (mg/L)	0.0002	25	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Zinc (Zn),Total (mg/L)	0.05	1	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Metals, Total Recoverable										
Arsenic (As),Total Recoverable (mg/L)	0.005	1	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Cadmium (Cd),Total Recoverable (mg/L)	0.001	1	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Copper (Cu),Total Recoverable (mg/L)	0.005	1	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Lead (Pb),Total Recoverable (mg/L)	0.001	1	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Zinc (Zn),Total Recoverable (mg/L)	0.05	2	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Nonmetallics										
Bicarbonate (mg/L)	10	24	24	292.3	9.1	287.5	293	299.5	265	304
Carbonate (mg/L)	5	19	19	0	0	0	0	0	0	0
Chloride (Cl-) (mg/L)	0.5	19	19	13.41	3.22	11.825	13	13.725	9.5	25.5
Cyanide, Total (mg/L)	0.01	26	25	0.0654	0.0154	0.059	0.069	0.073	0.005	0.083
Cyanide, WAD (mg/L)	0.01	26	1	0.0052	0.0012	0.005	0.005	0.005	0.005	0.011
Fluoride (mg/L)	0.05	24	24	0.1513	0.0106	0.144	0.148	0.1585	0.135	0.176
Nitrogen, Ammonia (NH3) (mg/L)	0.05	27	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Nitrogen, Nitrate (NO3) (mg/L)	0.05	27	27	29.96	4.65	26.025	29	33.8	22.2	40.9
Nitrogen, Nitrite (NO2) (mg/L)	0.05	26	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Selenium (Se),Dissolved (mg/L)	0.001	26	6	0.0016	0.0021	0.0005	0.0005	0.0005	0.0005	0.006
Selenium (Se),Total (mg/L)	0.005	3	1	0.0037	0.0020	0.0025	0.0025	0.005125	0.0025	0.006

Table F-18. Beaver Springs Water-Quality Statistics (Page 3 of 3)

Constituent	PQL	*n* Analyzed	*n* Detected	Mean	StDev	Q1	Median	Q3	Minimum	Maximum
Selenium (Se),Total Recoverable (mg/L)	0.005	1	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Sulfate (SO4) (mg/L)	1	24	24	72.7	12.8	65.8	73.35	80.4	45.6	107
Physical Properties										
Anion - Cation Balance (%)	N/A	18	N/A	–0.688	1.796	–2.37	–0.631	0.442	–3.54	2.28
Anions (meq/L)	N/A	18	N/A	8.922	0.625	8.71	9.135	9.38	7.49	9.85
Cations (meq/L)	N/A	18	N/A	8.80	0.61	8.46	8.97	9.27	7.39	9.6
Electrical Conductivity (µmhos/cm)	1	24	24	861.2	56.3	812	867.5	912	750	938
Hardness (mg/L)	N/A	1	N/A	337	0	337	337	337	337	337
pH (SU)	0.01	25	25	7.820	0.161	7.6975	7.83	7.8975	7.51	8.12
Total Dissolved Solids (mg/L)	50	25	25	518.9	43.3	491	518	552.25	436	584
Total Suspended Solids (mg/L)	10	3	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Table F-19. Ross Springs Water-Quality Statistics (Page 1 of 2)

Constituent	PQL	*n* Analyzed	*n* Detected	Mean	StDev	Q1	Median	Q3	Minimum	Maximum
Field										
Field Conductivity (µmhos/cm)	N/A	40	N/A	730.8	219.1	586	750	890	6.2	1230
Field ORP (mV)	N/A	38	N/A	89.9	84.2	33	69.5	164	–85	272
Field Oxygen (O2) (mg/L)	N/A	38	N/A	7.38	2.13	6.41	7.35	8.48	1.91	14.5
Field pH (SU)	N/A	40	N/A	7.968	0.330	7.76	7.915	8.065	7.37	9.07
Field Temperature (° C)	N/A	40	N/A	5.89	3.29	3.2	5.15	8.8	0.8	12.5
Field Flow Rate (gal/min)	N/A	34	N/A	26.3	35.1	6	10.65	29	0.037	140
Metals, Dissolved										
Arsenic (As),Dissolved (mg/L)	0.005	58	58	0.0235	0.0214	0.00989	0.01275	0.026	0.00686	0.083
Cadmium (Cd),Dissolved (mg/L)	0.001	24	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Calcium (Ca),Dissolved (mg/L)	1	24	24	90.1	11.2	81.9	90.6	96.05	72.4	125
Copper (Cu),Dissolved (mg/L)	0.005	29	8	0.00352	0.00174	0.0025	0.0025	0.005182 5	0.0025	0.00792
Gold (Au),Dissolved (mg/L)	0.001	29	22	0.0027	0.0020	0.000875	0.002	0.004	0.0005	0.008
Iron (Fe),Dissolved (mg/L)	0.05	1	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Lead (Pb),Dissolved (mg/L)	0.001	23	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Magnesium (Mg),Dissolved (mg/L)	0.5	24	24	33.05	3.75	30.75	33.8	36.35	25.1	38.4
Potassium (K),Dissolved (mg/L)	0.5	24	24	6.4	3.5	4.47	5.575	6.705	2.76	17
Silver (Ag),Dissolved (mg/L)	0.001	29	1	0.00053	0.00014	0.0005	0.0005	0.0005	0.0005	0.00125
Sodium (Na),Dissolved (mg/L)	0.5	29	29	53.18	9.34	47.175	53.7	55.875	39.1	84.7
Zinc (Zn),Dissolved (mg/L)	0.05	24	3	0.0302	0.0141	0.025	0.025	0.025	0.025	0.069

Table F-19. Ross Springs Water-Quality Statistics (Page 2 of 2)

Constituent	PQL	*n* Analyzed	*n* Detected	Mean	StDev	Q1	Median	Q3	Minimum	Maximum
Metals, Total										
Mercury (Hg),Total (mg/L)	0.0002	29	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Nonmetallics										
Bicarbonate (mg/L)	10	29	29	356.5	41.7	346.5	359	370.5	263	482
Carbonate (mg/L)	5	24	24	0	0	0	0	0	0	0
Chloride (Cl-) (mg/L)	0.5	24	24	13.8	2.4	12.5	13.4	15.15	10.5	21
Cyanide, Total (mg/L)	0.01	59	54	0.0356	0.0165	0.0245	0.039	0.045	0.005	0.069
Cyanide, WAD (mg/L)	0.01	59	10	0.0064	0.0035	0.005	0.005	0.005	0.005	0.022
Fluoride (mg/L)	0.05	29	29	0.2051	0.0998	0.14075	0.167	0.23075	0.123	0.526
Nitrogen, Ammonia (NH3) (mg/L)	0.05	66	8	0.0413	0.0676	0.025	0.025	0.025	0.025	0.516
Nitrogen, Nitrate (NO3) (mg/L)	0.05	66	65	16.39	7.48	12.8	15.95	19.7	0.025	39.1
Nitrogen, Nitrite (NO2) (mg/L)	0.05	66	2	0.035	0.065	0.025	0.025	0.025	0.025	0.54
Selenium (Se),Dissolved (mg/L)	0.001	49	15	0.0026	0.0035	0.0005	0.0005	0.00503	0.0005	0.014
Selenium (Se),Total Recoverable (mg/L)	0.005	5	4	0.00587	0.00199	0.00508	0.00651	0.006955	0.0025	0.00772
Sulfate (SO4) (mg/L)	1	29	29	115.2	30.4	94.375	116	137.25	53.9	203
Physical Properties										
Anion - Cation Balance (%)	N/A	23	N/A	–0.184	1.517	–1.425	–0.204	1.08	–2.78	2.35
Anions (meq/L)	N/A	23	N/A	9.70	1.09	8.965	9.59	10.525	8.18	12.8
BOD, 5-Day (mg/L)	N/A	1	N/A	5.4	0	5.4	5.4	5.4	5.4	5.4
Cations (meq/L)	N/A	23	N/A	9.68	1.12	8.815	9.39	10.375	8.03	12.9
Electrical Conductivity (µmhos/cm)	1	29	29	915.1	97.1	863.5	899	967.75	717	1240
pH (SU)	0.01	29	29	8.00	0.12	7.92	8	8.0825	7.78	8.3
Total Dissolved Solids (mg/L)	50	29	29	557.2	78.1	505	568	600.75	425	817

APPENDIX G

BOXPLOTS FOR BASELINE GROUNDWATER SITES

RSI-1924-11-009

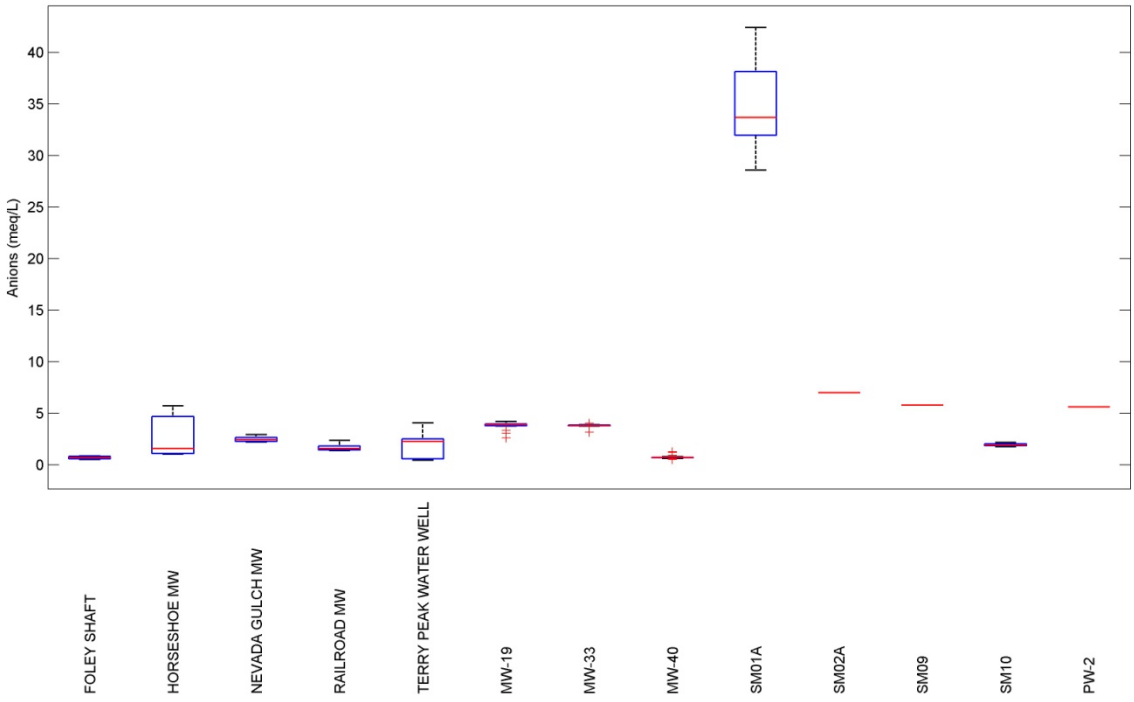


Figure G-1. Anions Boxplot.

RSI-1924-11-010

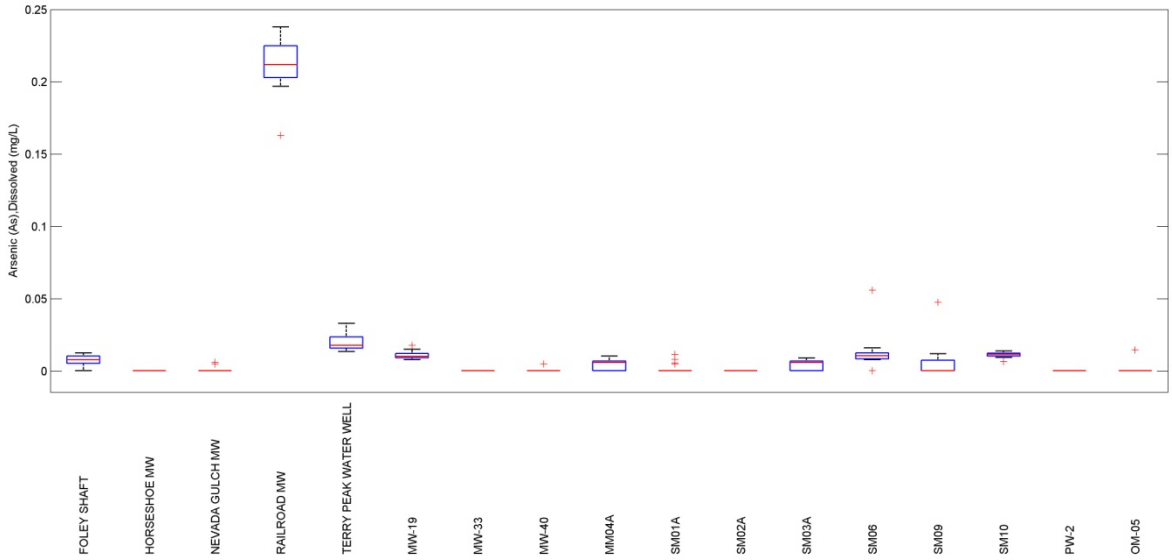


Figure G-2. Arsenic (Dissolved) Boxplot.

RSI-1924-11-011

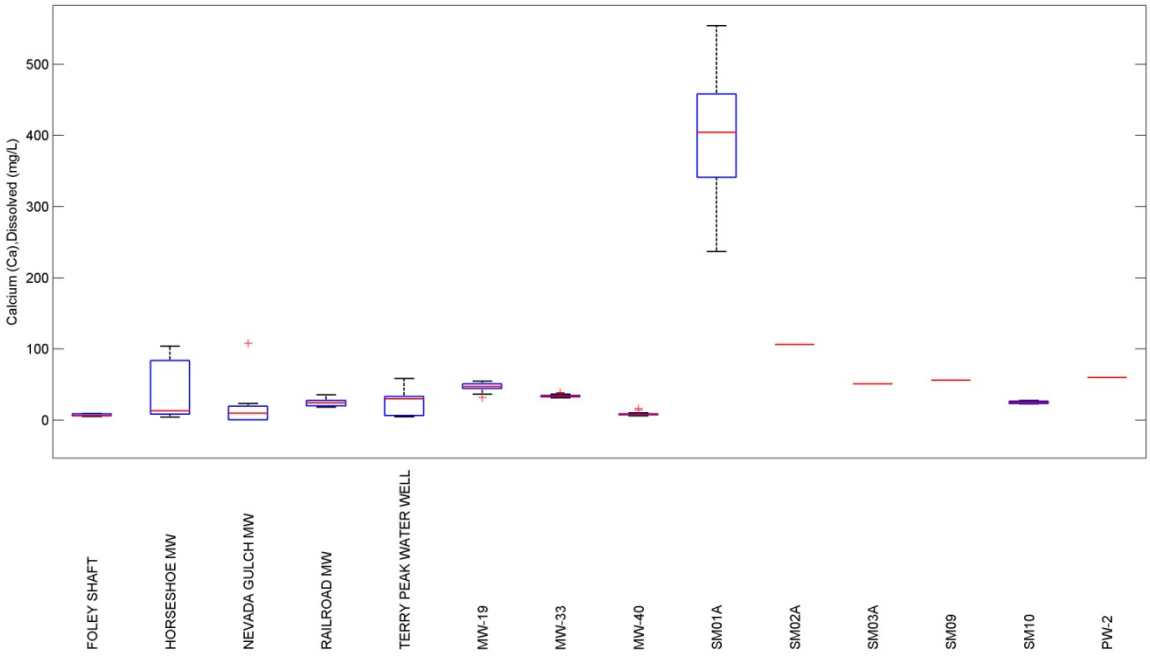


Figure G-3. Calcium Boxplot.

RSI-1924-11-012

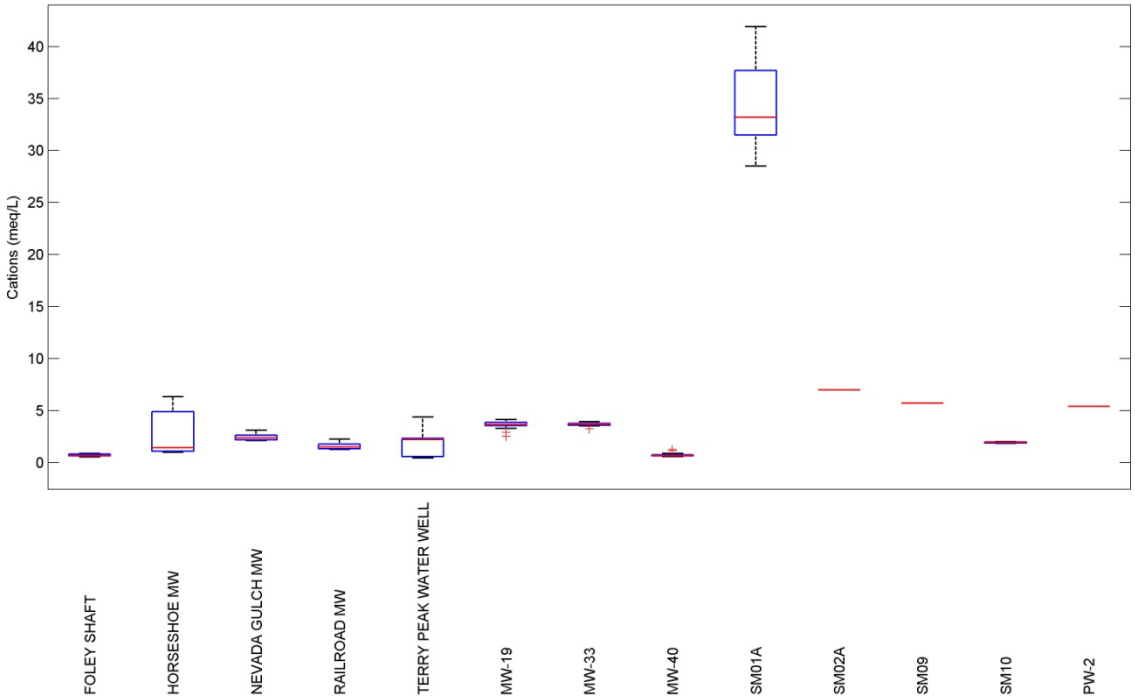


Figure G-4. Cations Boxplot.

RSI-1924-11-013

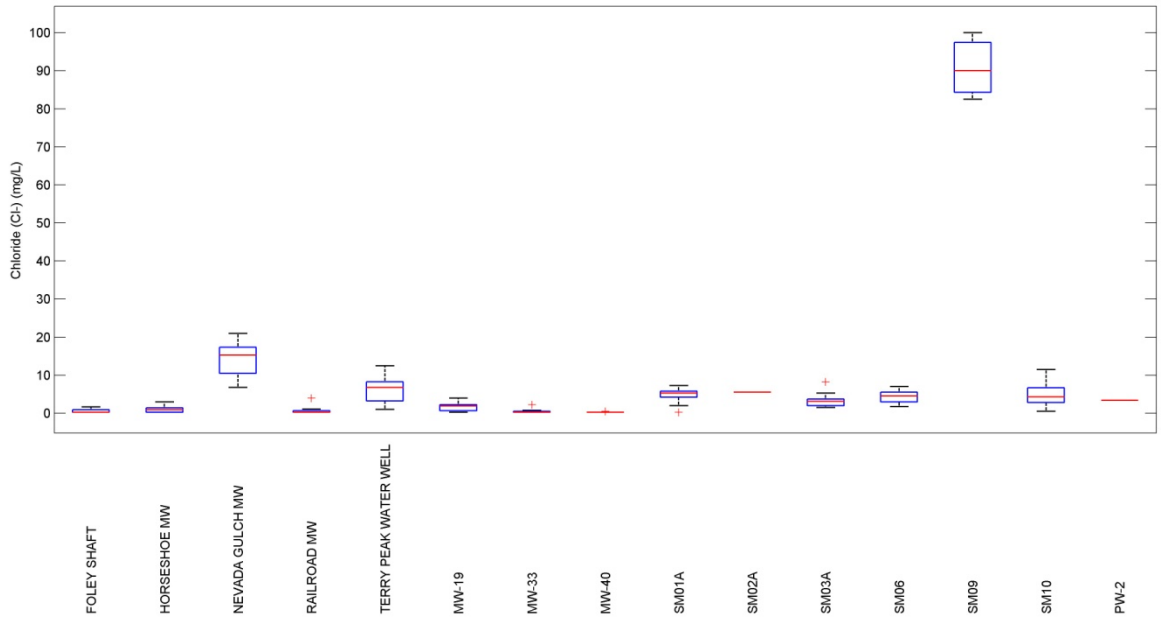


Figure G-5. Chloride Boxplot.

RSI-1924-11-014

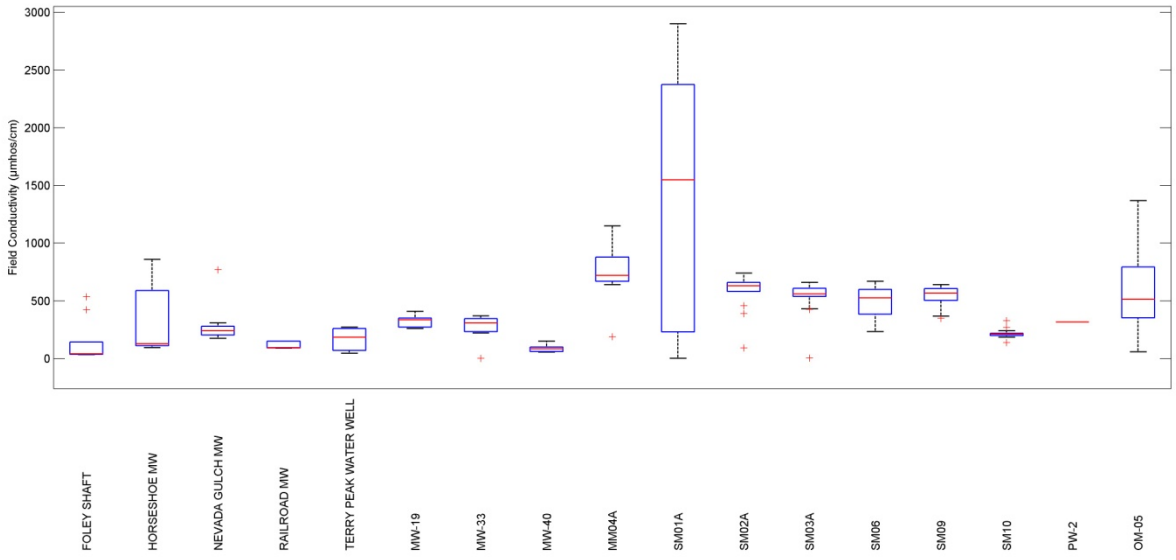


Figure G-6. Field Conductivity Boxplot.

RSI-1924-11-015

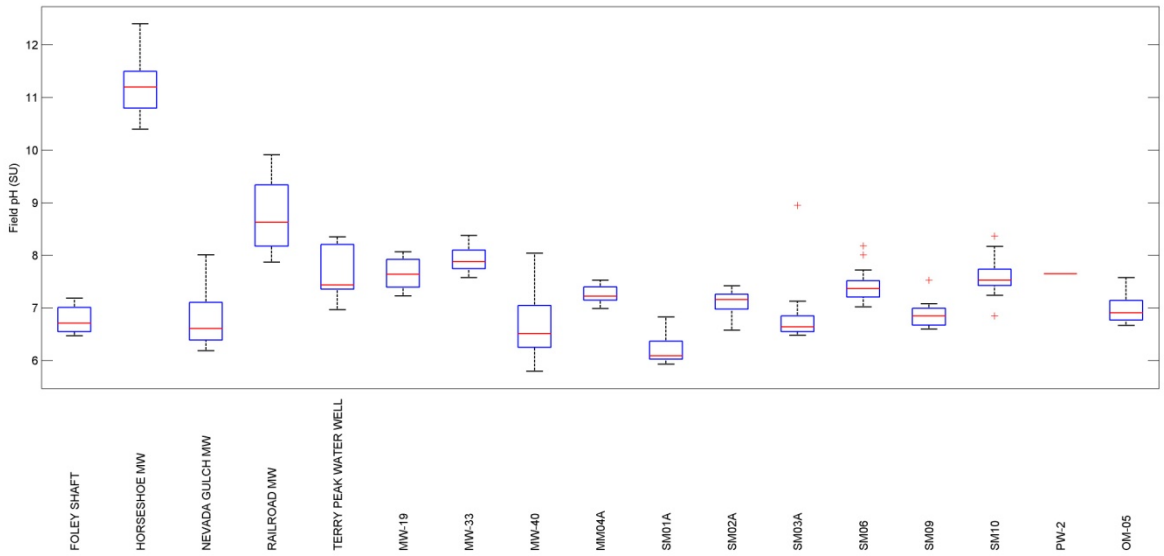


Figure G-7. Field pH Boxplot.

RSI-1924-11-016

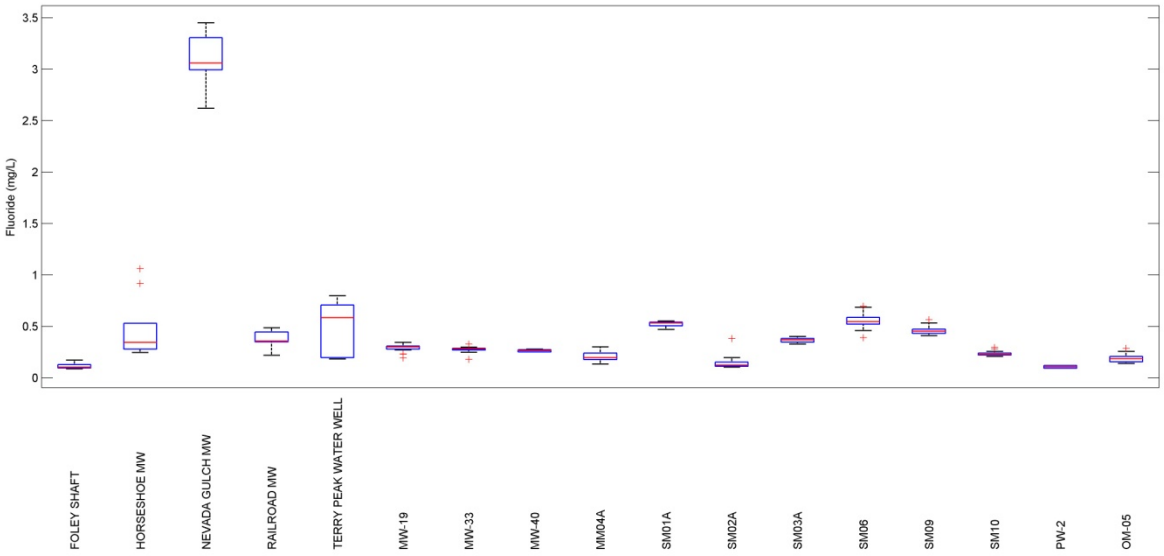


Figure G-8. Fluoride Boxplot.

RSI-1924-11-017

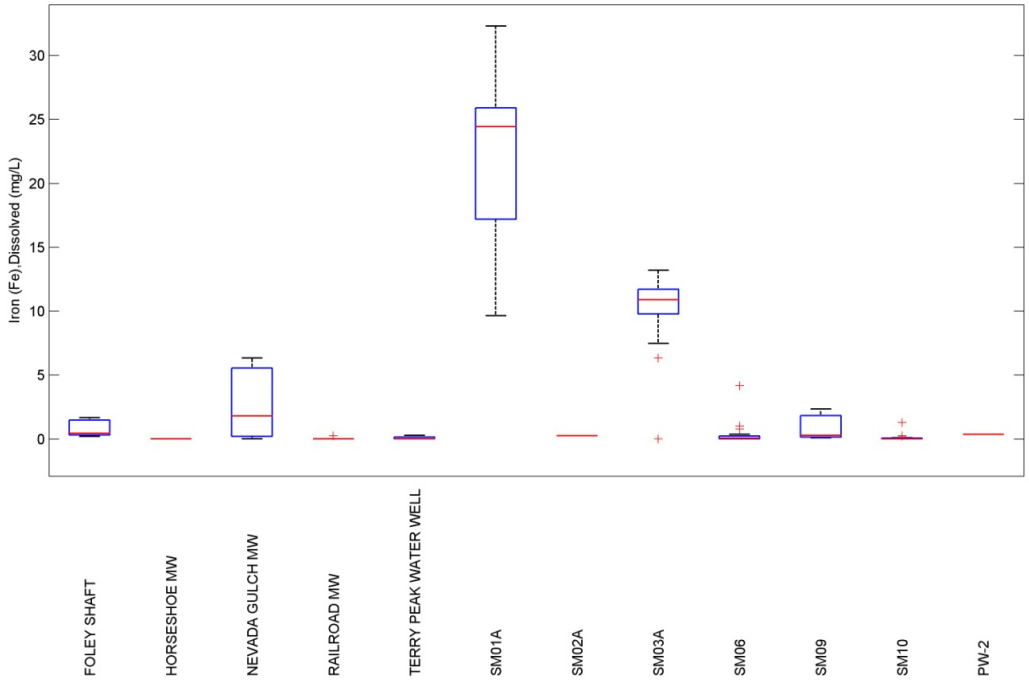


Figure G-9. Iron (Dissolved) Boxplot.

RSI-1924-11-018

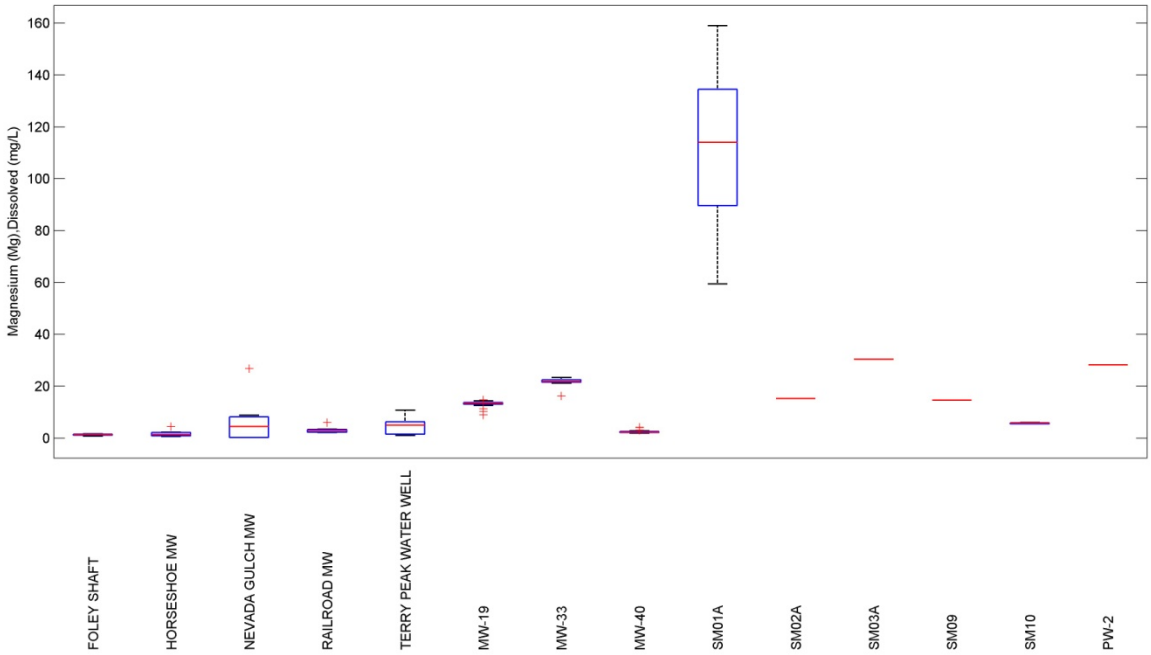


Figure G-10. Magnesium (Dissolved) Boxplot.

RSI-1924-11-019

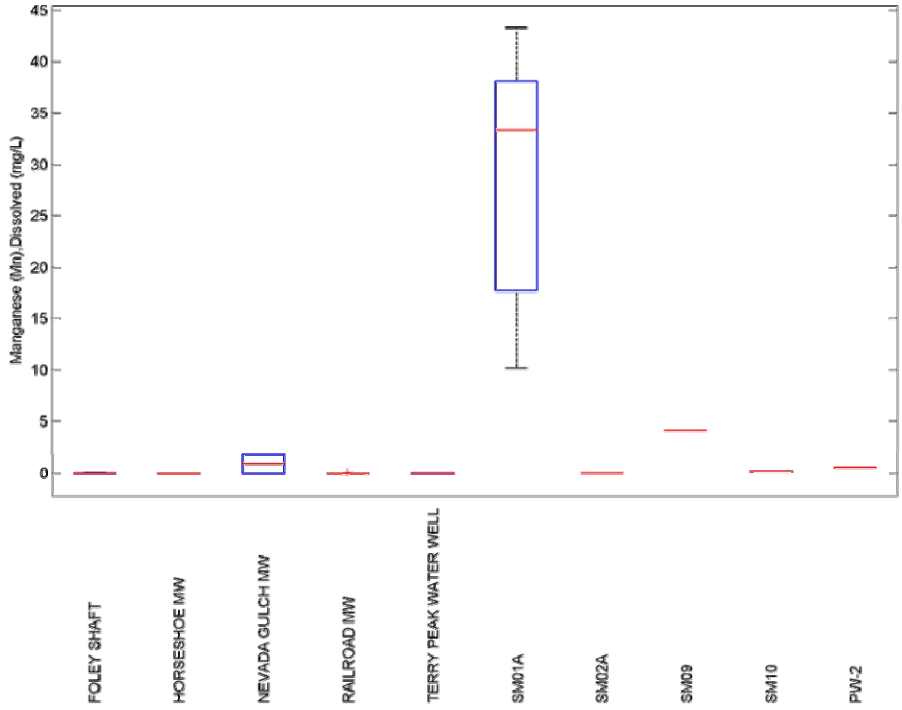


Figure G-11. Manganese (Dissolved) Boxplot.

RSI-1924-11-020

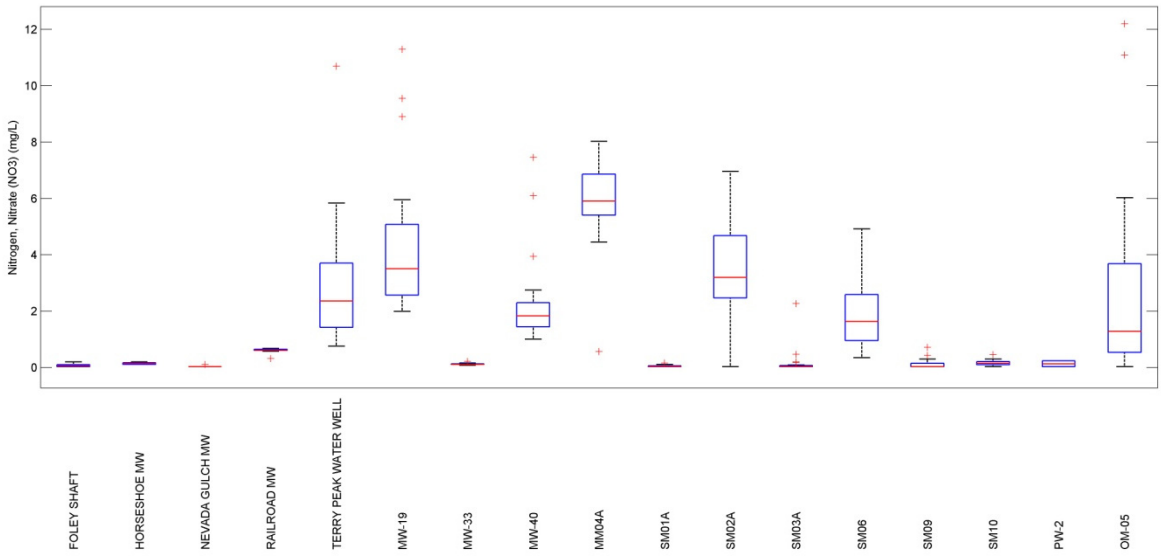


Figure G-12. Nitrate as N Boxplot.

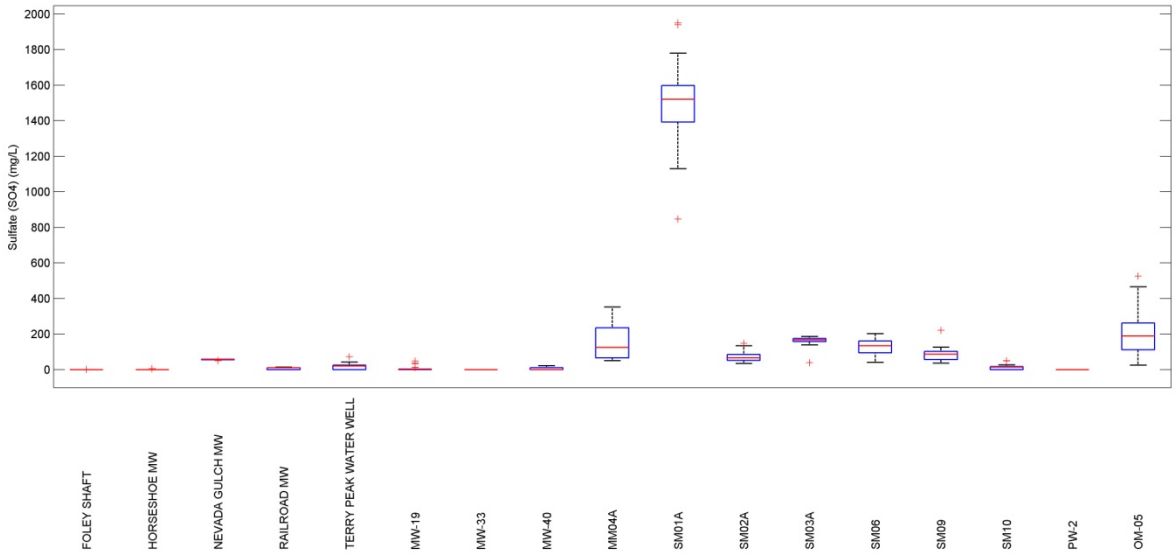
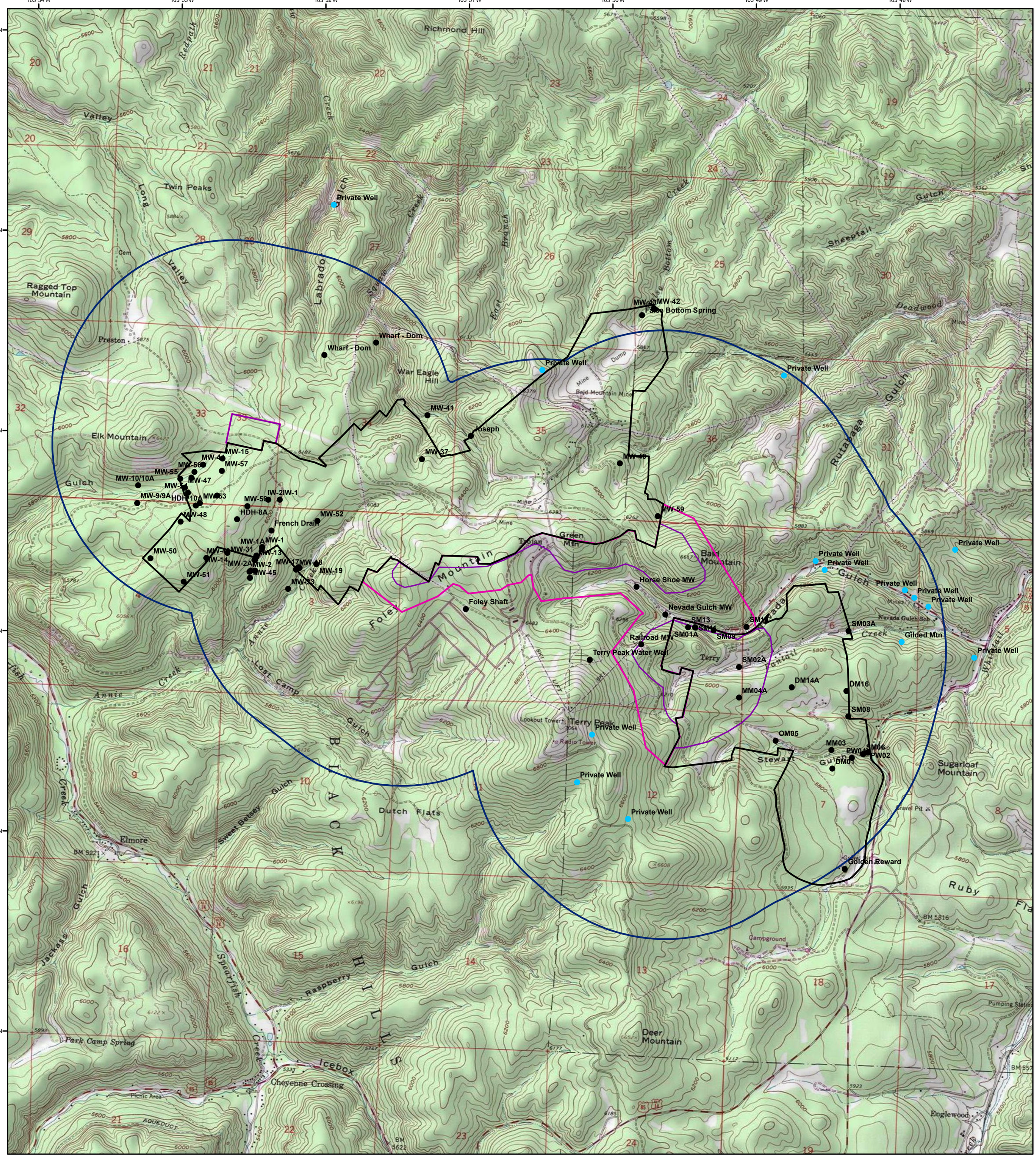


Figure G-13. Sulfate Boxplot.

APPENDIX H

WELL LOCATION INVENTORY MAP



Legend

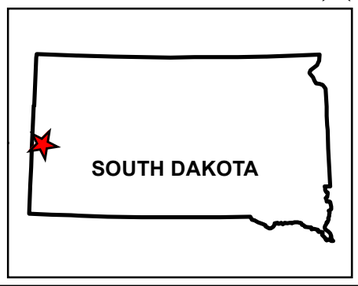
- Permited Mine Boundary
- Unique/Scenic Boundary
- Proposed Disturbance Limit
- 1 Mile Buffer

Wells

- Wharf/Golden Reward Wells
- Private Wells

0 1,000 2,000 3,000 Feet

N



Wells in the Vicinity of Wharf Resources' Expansion Project

Lead, South Dakota

NAD 83 South Dakota South

DRAWN BY	C. Hocking, RESPEC
DATE	29 - Nov - 2010
FILENAME	wells.mxd

RESPEC WATER & NATURAL RESOURCES

ADDITIONAL GROUNDWATER-QUALITY DATA

Note: Radiological data were not included in the groundwater characterization report and are provided in this appendix following the complete report. Also, additional water-quality data collected during late 2010 were not available at the time the groundwater characterization report was prepared. The water-quality tables presented at the end of this appendix serve as replacement tables for those in the report and contain all water-quality data available for 2010 as of January 15, 2011.

Table 1. Radiological Data for New Groundwater-Quality Sites

Parameter	Horseshoe Monitoring Well	Nevada Gulch Monitoring Well	Foley Shaft	Terry Peak	Railroad Monitoring Well	PW-2
	12/17/2009	11/10/2009	11/5/2009	11/10/2009	11/30/2009	10/6/2010
Gross Alpha (pCi/L)	55.9	–0.2[u]	2.7	2.2	20.9	–0.6[u]
Gross Alpha precision (±) (pCi/L)	4.5	0.9	0.9	1	4.8	2.1
Gross Alpha MDC (pCi/L)	3.1	1.6	1.3	1.4	6.0	3.6
Gross Beta (pCi/L)	36.7	0.7[u]	0.9[u]	0.7[u]	31.2	2.6[u]
Gross Beta precision (±) (pCi/L)	2.4	1.7	1.7	1.7	3.8	1.9
Gross Beta MDC (pCi/L)	3.1	2.8	2.8	2.8	5.4	3.1
Radium 226 (pCi/L)	3.1	–0.2[u]	0.2	0.4	0.8	–0.02[u]
Radium 226 precision (±) (pCi/L)	0.4	0.1	0.09	0.2	0.3	0.1
Radium 226 MDC (pCi/L)	0.1	0.3	0.09	0.2	0.3	0.2
Radium 228 (pCi/L)	2.2	–0.5[u]	0.4[u]	0.3[u]	0.8[u]	–0.2[u]
Radium 228 precision (±) (pCi/L)	1.1	1	0.7	0.7	1.0	0.6
Radium 228 MDC (pCi/L)	1.7	1.6	1.1	1.2	1.7	1
Radon 222 (pCi/L)	3,370	14,400	<100	1,060	2,570	<100
Radon 222 precision (±) (pCi/L)	–	186	–	83.7	–	–

u = not detected at minimum detectable concentration

Table 2. Updated Horseshoe MW Water Quality 2010 (Page 1 of 2)

Parameter	1/21/2010	2/9/2010	3/16/2010	4/27/2010	5/19/2010	6/17/2010	7/28/2010	8/25/2010	9/24/2010	10/28/2010	11/24/2010
Alkalinity (mg/L)	235	243	104	53.9	90	63.3	52.2	48	48.9	45.1	46.1
Alkalinity Hydroxide (mg/L)	3.4	29.3				5.26	7.21	5.44	–	–	–
Aluminum (Al),Dissolved (mg/L)	0.0394	0.0708	0.0337	0.0247	0.0537	0.0288	0.026	0.037	0.0527	0.0411	0.0304
Anion - Cation Balance (%)	1.8	0.462	6.1	–6.34	–7.14	–2.63	–0.713	–0.676	2.01	1.68	5.78
Anions (meq/L)	4.71	5.01	2.31	1.12	1.86	1.32	1.11	1.03	1.17	1	1
Antimony (Sb),Dissolved (mg/L)	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Arsenic (As),Dissolved (mg/L)	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Barium (Ba),Dissolved (mg/L)	0.32	0.263	0.175	0.181	0.168	0.171	0.17	0.163	0.188	0.18	0.138
Beryllium (Be),Dissolved (mg/L)	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Bicarbonate (mg/L)	<10	<10	58.6	33.6	61	<10	0	0	22.1	13.5	15.2
Boron (B),Total (mg/L)	<0.02	0.0239	<0.02	<0.02	0.038	<0.02	<0.02	0.0252	<0.02	<0.02	<0.02
Cadmium (Cd),Dissolved (mg/L)	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Calcium (Ca),Dissolved (mg/L)	83.5	93.3	41.2	8.65	14.3	8.18	6.15	4.26	11.9	6.05	4.91
Carbonate (mg/L)	135	94.2	33.6	15.8	24	28.7	18.6	19.2	18.5	20.4	20.2
Cations (meq/L)	4.88	5.05	2.61	0.988	1.61	1.25	1.09	1.01	1.22	1.03	1.12
Chloride (Cl-) (mg/L)	<0.5	3	<0.5	0.75	1	0.75	1.38	1.38	1.59	2.44	1.55
Chromium (Cr),Dissolved (mg/L)	0.0029	0.00308	0.00187	0.00202	0.00232	0.00279	0.00264	0.00254	0.00216	0.00188	0.00236
Cobalt (Co),Dissolved (mg/L)	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0.00131
Copper (Cu),Dissolved (mg/L)	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Cyanide, Free (mg/L)	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Cyanide, Total (mg/L)	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Cyanide, WAD (mg/L)	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Electrical Conductivity (µmhos/cm)	659	834	167	101	115	190	182	165	107	124	128
Field Conductivity (µmhos/cm)	860	590	270	96.2	113	130	126	121	98	304	140
Field Depth (ft)	46.6	46.4	47.5	46.1	44.5	40	38.9	38.3	41.6	40.5	41
Field ORP (mV)		<18			13		–	84	61	27	–
Field Oxygen (O2) (mg/L)		3.44			3.65		–	4.24	3.16	–	–
Field pH (SU)	12.4	11.6	11.5	10.5	10.8	11.1	11.2	11.2	10.4	10.3	10.2
Field Temperature (° C)	6.6	6.5	7.1	8	7.4	8	8.6	8.6	8.4	6.9	4.8
Fluoride (mg/L)		1.06	0.265	0.247	0.282	0.402	0.345	0.384	0.314	0.429	0.507
Gold (Au),Dissolved (mg/L)	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0.082	<0.001	<0.001	<0.001	0.002
Hardness (mg/L)	218	235	33.7	30.6	43.3	24.3	18.2	14.3	36.2	20.2	17.2
Iron (Fe),Dissolved (mg/L)	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Lead (Pb),Dissolved (mg/L)	<0.001	<0.001	<0.001	<0.001	0.00145	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Lithium (Li),Dissolved (mg/L)	0.017	0.0085	0.0058	–	0.0115	0.0191	0.0185	0.0214	0.013	0.011	0.0258
Lithium (Li),Total (mg/L)	–	–	–	0.007	–	–	–	–	–	–	–
Magnesium (Mg),Dissolved (mg/L)	2.33	0.57	1.2	2.18	1.84	0.93	0.695	0.9	1.58	1.24	1.21

Table 2. Updated Horseshoe MW Water Quality 2010 (Page 2 of 2)

Parameter	1/21/2010	2/9/2010	3/16/2010	4/27/2010	5/19/2010	6/17/2010	7/28/2010	8/25/2010	9/24/2010	10/28/2010	11/24/2010
Manganese (Mn),Dissolved (mg/L)	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Mercury (Hg),Total (mg/L)	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Molybdenum (Mo),Dissolved (mg/L)	0.0049	0.0337	0.00156	0.00265	0.00327	0.00474	0.0032	0.00381	0.00278	0.00369	0.00798
Nickel (Ni),Dissolved (mg/L)	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Nitrogen, Ammonia (NH3) (mg/L)	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.05
Nitrogen, Nitrate (NO3) (mg/L)	0.157	0.108	0.114	0.149	0.194	0.169	0.127	0.12	0.114	0.116	0.115
Nitrogen, Nitrite (NO2) (mg/L)	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
pH (SU)	11.5	11.6	10.3	9.7	9.95	10.7	10.6	10.5	9.82	9.71	9.87
Potassium (K),Dissolved (mg/L)	6.92	3.95	4.98	4.22	6.98	12.8	11.7	10.2	7.24	10.5	13.7
Selenium (Se),Dissolved (mg/L)	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Silicon (Si),Dissolved (mg/L)	3.41	6.38	8.41	8.04	8.77	8.64	7.97	8	8.02	7.96	8.65
Silver (Ag),Dissolved (mg/L)	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Sodium (Na),Dissolved (mg/L)	7.9	5.76	7.54	6.19	13	10.1	9.89	10.7	7.1	8.32	9.78
Strontium (Sr),Dissolved (mg/L)	0.746	0.624	0.259	0.203	0.196	0.229	0.224	0.198	0.179	0.164	0.145
Sulfate (SO4) (mg/L)	<10	<10	<10	<10	<10	<10	<10	<10	6.63	<10	7.29
Total Dissolved Solids (mg/L)	183	208	70	74	68	60	76	59	71	79	71
Total Suspended Solids (mg/L)	104	110	75	54	74	42	18	<10	70	33	16
Turbidity (NTU)	50	65	45	31	45	28	12	4.3	37	22	14
Vanadium (V),Dissolved (mg/L)	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	12	4.3	37	<0.005	<0.005
Zinc (Zn),Dissolved (mg/L)	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.005	<0.005	<0.005	<0.05	<0.05

Table 3. Updated Railroad Well Water Quality 2010 (Page 1 of 2)

Parameter	1/21/2010	2/23/2010	3/24/2010	4/27/2010	5/20/2010	6/25/2010	7/28/2010	8/26/2010	9/24/2010	10/28/2010	11/24/2010
Alkalinity (mg/L)	68.7	84.4	62.2	57.5	65.3	57.1	53.2	52.9	97	59.9	54.1
Aluminum (Al),Dissolved (mg/L)	0.0321	0.0389	0.0339	0.021	0.133	0.0116	0.0228	0.0259	0.0271	0.0251	0.0232
Anion - Cation Balance (%)	4.6	–3	–	–4.51	–4.65	–3.52	–6.83	–3.32	–4.74	0.449	–3.84
Anions (meq/L)	1.58	1.74	–	1.45	1.66	1.45	1.43	1.38	2.1	1.32	1.38
Antimony (Sb),Dissolved (mg/L)	0.0101	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Arsenic (As),Dissolved (mg/L)	0.218	0.197	0.227	0.209	0.233	0.238	0.219	0.203	0.203	0.199	0.212
Barium (Ba),Dissolved (mg/L)	0.0449	0.0551	0.0581	0.0511	0.143	0.0295	0.0289	0.0325	0.0532	0.0531	0.0467
Beryllium (Be),Dissolved (mg/L)	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Bicarbonate (mg/L)	78.4	102	75.9	70.2	79.7	69.7	64.9	64.6	118	73.1	66.1
Boron (B),Dissolved (mg/L)	–	–	<0.02	–	–	–	–	–	–	–	–
Boron (B),Total (mg/L)	<0.02	0.0537	–	<0.02	<0.02	0.0331	<0.02	0.0214	0.0368	<0.02	<0.02
Cadmium (Cd),Dissolved (mg/L)	0.00102	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Calcium (Ca),Dissolved (mg/L)	28.8	24.3	24.5	20.5	18	20.7	24.3	20	19.5	20.2	19.5
Carbonate (mg/L)	<5	<5	0	0	0	0	0	0	0	<5	<5
Cations (meq/L)	1.74	1.64	–	1.33	1.51	1.36	1.24	1.29	1.91	1.33	1.28
Chloride (Cl-) (mg/L)	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	1.06	0.8	3.94	2.06	0.78
Chromium (Cr),Dissolved (mg/L)	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Cobalt (Co),Dissolved (mg/L)	<0.001	<0.001	0.00118	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Copper (Cu),Dissolved (mg/L)	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Cyanide, Free (mg/L)	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Cyanide, Total (mg/L)	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Cyanide, WAD (mg/L)	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Electrical Conductivity (µmhos/cm)	156	150	146	147	150	151	144	141	145	144	142
Field Conductivity (µmhos/cm)	150	96.3	150	94.9	–	150	90.7	90	95	306	150
Field Depth (ft)	309	315	314	298	–	290	295	296	–	302	301
Field ORP (mV)	–	3	–	–	–	–	–	188	118	32	–
Field Oxygen (O2) (mg/L)	–	7.15	–	–	–	–	–	6.98	7.19	–	–
Field pH (SU)	9.5	9.29	8.84	8.3	–	7.98	7.87	8.24	8.63	8.23	8.49
Field Temperature (° C)	6.3	6.3	5.9	6.6	–	10.9	7.9	7.4	6.6	6.5	4.8
Fluoride (mg/L)	0.474	0.347	0.446	0.445	0.358	0.486	0.354	0.438	0.218	0.354	0.412
Gold (Au),Dissolved (mg/L)	<0.001	<0.001	0.001	<0.001	0.001	<0.001	<0.001	0.002	<0.001	<0.001	<0.001
Hardness (mg/L)	81.9	74.6	73	61.4	58.5	61	57	58.9	79.9	60.8	58.4
Iron (Fe),Dissolved (mg/L)	<0.05	<0.05	<0.05	<0.05	0.268	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Lead (Pb),Dissolved (mg/L)	0.00126	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Lithium (Li),Dissolved (mg/L)	0.0044	0.013	0.002	–	0.0054	<0.02	<0.002	0.0146	<0.002	<0.002	0.0045
Lithium (Li),Total (mg/L)	–	–	–	0.0029	–	–	–	–	–	–	–
Magnesium (Mg),Dissolved (mg/L)	2.42	3.39	2.86	2.47	3.3	2.26	2.14	2.17	6.06	2.52	2.36

Table 3. Updated Railroad Well Water Quality 2010 (Page 2 of 2)

Parameter	1/21/2010	2/23/2010	3/24/2010	4/27/2010	5/20/2010	6/25/2010	7/28/2010	8/26/2010	9/24/2010	10/28/2010	11/24/2010
Manganese (Mn),Dissolved (mg/L)	<0.01	<0.01	<0.01	<0.01	0.0578	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Mercury (Hg),Total (mg/L)	<0.0002	0.0002	0.0007	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Molybdenum (Mo),Dissolved (mg/L)	0.00225	<0.001	0.00141	<0.001	<0.001	0.00126	<0.001	<0.001	0.00229	<0.001	<0.001
Nickel (Ni),Dissolved (mg/L)	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Nitrogen, Ammonia (NH3) (mg/L)	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Nitrogen, Nitrate (NO3) (mg/L)	0.63	0.654	0.576	0.601	0.68	0.62	0.646	0.61	0.643	0.561	0.601
Nitrogen, Nitrite (NO2) (mg/L)	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
pH (SU)	8.54	8.31	8.23	7.94	8.02	7.7	7.92	7.94	8.24	7.98	7.94
Potassium (K),Dissolved (mg/L)	1.12	2.55	1.36	1.09	1.49	1.6	0.987	1.05	1.26	1.16	0.897
Selenium (Se),Dissolved (mg/L)	0.00544	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
ilicon (Si),Dissolved (mg/L)	5.88	11.8	11.2	10.8	13.8	11.5	12	11.6	11.8	11.4	11.9
Silver (Ag),Dissolved (mg/L)	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Sodium (Na),Dissolved (mg/L)	1.67	1.84	8.32	1.73	6.95	2.2	1.81	2.1	11.2	1.9	2.08
Strontium (Sr),Dissolved (mg/L)	0.0809	0.077	0.108	0.0602	0.0642	0.0565	0.0519	0.0472	0.0743	0.0554	0.0566
Sulfate (SO4) (mg/L)	11	<10	<10	11.4	13.7	11.6	12.6	11.3	<10	<10	10.2
Total Dissolved Solids (mg/L)	105	111	114	118	120	95	107	100	114	102	104
Total Suspended Solids (mg/L)	160	948	1730	216	178	65.6	114	40	942	238	<10
Turbidity (NTU)	60	450	650	70	70	19	40	5.2	350	90	3.2
Vanadium (V),Dissolved (mg/L)	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Zinc (Zn),Dissolved (mg/L)	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05

Table 4. Updated Foley Shaft Water Quality 2010 (Page 1 of 2)

Parameter	1/18/2010	2/9/2010	3/16/2010	4/12/2010	5/11/2010	6/17/2010	7/28/2010	8/31/2010	9/24/2010	10/28/2010
Alkalinity (mg/L)	25.9	25.2	32.6	29.9	28.2	25.6	34.1	–	38.6	39.3
Aluminum (Al),Dissolved (mg/L)	0.389	0.236	0.37	2.64	3.32	3.13	0.634	0.86	0.83	0.203
Aluminum (Al),Total (mg/L)	–	–	–	–	–	–	–	–	–	–
Anion – Cation Balance (%)	–0.512	3.83	0.638	–1.12	0.707	2.36	4.25	–0.338	–0.00681	0.505
Anions (meq/L)	0.525	0.514	0.875	0.683	0.678	0.635	0.741	0.829	0.822	0.875
Antimony (Sb),Dissolved (mg/L)	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Antimony (Sb),Total (mg/L)	–	–	–	–	–	–	–	–	–	–
Arsenic (As),Dissolved (mg/L)	0.00542	<0.005	<0.005	0.0124	0.00993	0.0105	0.00842	0.00745	0.00646	<0.005
Arsenic (As),Total (mg/L)	–	–	–	–	–	–	–	–	–	–
Barium (Ba),Dissolved (mg/L)	0.0214	0.0263	0.0204	0.0354	0.0477	0.0301	0.0359	0.0383	0.0346	0.0339
Barium (Ba),Total (mg/L)	–	–	–	–	–	–	–	–	–	–
Beryllium (Be),Dissolved (mg/L)	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Beryllium (Be),Total (mg/L)	–	–	–	–	–	–	–	–	–	–
Bicarbonate (mg/L)	31.6	30.8	39.8	36.5	34.4	31.2	41.6	48	47.1	47.9
Boron (B),Total (mg/L)	<0.02	0.491	<0.02	<0.02	<0.02	<0.02	<0.02	0.0224	<0.02	<0.02
Cadmium (Cd),Dissolved (mg/L)	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Cadmium (Cd),Total (mg/L)	–	–	–	–	–	–	–	–	–	–
Calcium (Ca),Dissolved (mg/L)	5.24	5.66	8.08	6.52	7.19	6.3	9.28	9.41	9.39	10.7
Carbonate (mg/L)	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
Cations (meq/L)	0.52	0.555	0.886	0.668	0.687	0.665	0.807	0.824	0.822	0.884
Chloride (Cl–) (mg/L)	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	1.62	1.13	1.43	1.38
Chromium (Cr),Dissolved (mg/L)	<0.001	<0.001	<0.001	0.00234	0.0027	0.00243	<0.001	<0.001	<0.001	<0.001
Chromium (Cr),Total (mg/L)	–	–	–	–	–	–	–	–	–	–
Cobalt (Co),Dissolved (mg/L)	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Cobalt (Co),Total (mg/L)	–	–	–	–	–	–	–	–	–	–
Copper (Cu),Dissolved (mg/L)	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Copper (Cu),Total (mg/L)	–	–	–	–	–	–	–	–	–	–
Cyanide, Free (mg/L)	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Cyanide, Total (mg/L)	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Cyanide, WAD (mg/L)	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Electrical Conductivity (µmhos/cm)	59.1	57.3	74.1	62	62.4	57.2	75.4	83.2	84.2	87.1
Field Conductivity (µmhos/cm)	35.7	37	–	41	35	35.8	46	50.5	535	188
Field Depth (ft)	131	138	–	87.4	65.7	60.3	94.4	107	126	122
Field ORP (mV)	–	51	–	53	115	–	–	197	192	101
Field Oxygen (O2) (mg/L)	–	7.23	–	8.4	9.3	–	–	9.92	7.26	–
Field pH (SU)	7.11	6.98	–	6.93	7.19	6.71	6.55	6.63	6.55	6.76
Field Temperature (° C)	5.5	4.5	–	6.6	4.7	5.5	7.4	5.8	5.8	5.8
Fluoride (mg/L)	0.126	0.172	0.129	0.104	0.104	0.097	0.092	0.096	0.087	0.104

Table 4. Updated Foley Shaft Water Quality 2010 (Page 2 of 2)

Parameter	1/18/2010	2/9/2010	3/16/2010	4/12/2010	5/11/2010	6/17/2010	7/28/2010	8/31/2010	9/24/2010	10/28/2010
Gold (Au),Dissolved (mg/L)	<0.001	<0.001	<0.001	<0.001	<0.001	0.003	<0.001	<0.001	<0.001	<0.001
Gold (Au),Total (mg/L)	–	–	–	–	–	–	–	–	–	–
Hardness (mg/L)	17.4	20	23.4	22.1	24.7	22.1	29.3	29.6	28.7	32.7
Iron (Fe),Dissolved (mg/L)	0.259	0.208	0.319	1.62	1.66	1.49	0.311	0.45	0.467	0.141
Iron (Fe),Total (mg/L)	–	–	–	–	–	–	–	–	–	–
Lead (Pb),Dissolved (mg/L)	<0.001	<0.001	<0.001	0.00268	0.00559	0.00161	0.00286	0.0021	<0.001	<0.001
Lead (Pb),Total (mg/L)	–	–	–	–	–	–	–	–	–	–
Lithium (Li),Dissolved (mg/L)	0.00323	0.0031	<0.002	0.00226	0.0039	0.0038	<0.002	0.00418	<0.002	<0.002
Magnesium (Mg),Dissolved (mg/L)	1.05	1.42	0.789	1.41	1.64	1.55	1.5	1.47	1.27	1.46
Manganese (Mn),Dissolved (mg/L)	<0.01	<0.01	<0.01	0.0285	0.0654	0.0199	0.0285	0.0274	0.0173	0.0132
Manganese (Mn),Total (mg/L)	–	–	–	–	–	–	–	–	–	–
Mercury (Hg),Total (mg/L)	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Molybdenum (Mo),Dissolved (mg/L)	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Molybdenum (Mo),Total (mg/L)	–	–	–	–	–	–	–	–	–	–
Nickel (Ni),Dissolved (mg/L)	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Nickel (Ni),Total (mg/L)	–	–	–	–	–	–	–	–	–	–
Nitrogen, Ammonia (NH3) (mg/L)	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Nitrogen, Nitrate (NO3) (mg/L)	<0.05	<0.05	0.103	0.072	0.056	0.195	0.12	0.07	0.063	0.066
Nitrogen, Nitrite (NO2) (mg/L)	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
pH (SU)	6.96	7.17	7.54	7.34	7.04	6.43	6.65	6.89	6.79	6.82
Potassium (K),Dissolved (mg/L)	1.05	0.653	0.969	1.43	1.56	1.7	1.55	1.54	1.18	1.36
Selenium (Se),Dissolved (mg/L)	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Selenium (Se),Total (mg/L)	–	–	–	–	–	–	–	–	–	–
Silicon (Si),Dissolved (mg/L)	3.11	9.02	7.42	10.7	12.9	12.5	11.2	8.94	7.92	7.15
Silicon (Si),Total (mg/L)	–	–	–	–	–	–	–	–	–	–
Silver (Ag),Dissolved (mg/L)	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Silver (Ag),Total (mg/L)	–	–	–	–	–	–	–	–	–	–
Sodium (Na),Dissolved (mg/L)	3.33	3.2	9.04	4.35	3.48	4.14	4.14	4.43	5.01	4.47
Strontium (Sr),Dissolved (mg/L)	0.0514	0.0582	0.0585	0.0639	0.0586	0.0582	0.0715	0.0812	0.0741	0.077
Strontium (Sr),Total (mg/L)	–	–	–	–	–	–	–	–	–	–
Sulfate (SO4) (mg/L)	<10	<10	<10	<10	2.29	<10	<10	<10	<10	1.93
Total Dissolved Solids (mg/L)	71	63	58	119	121	77	90	88	85	78
Total Suspended Solids (mg/L)	<10	<10	<10	<10	28	<10	46	10	<10	15
Turbidity (NTU)	16	16	15	50	50	40	39	22	18	21
Vanadium (V),Dissolved (mg/L)	<0.005	<0.005	<0.005	<0.005	0.00556	<0.005	<0.005	<0.005	<0.005	<0.005
Vanadium (V),Total (mg/L)	–	–	–	–	–	–	–	–	–	–
Zinc (Zn),Dissolved (mg/L)	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Zinc (Zn),Total (mg/L)	–	–	–	–	–	–	–	–	–	–

Table 5. Updated Nevada Gulch Water Quality 2010 (Page 1 of 3)

Parameter	1/21/2010	2/24/2010	3/17/2010	4/27/2010	5/19/2010	6/17/2010	7/28/2010	8/25/2010	9/24/2010	10/29/2010	11/24/2010
Alkalinity (mg/L)	28.5	31.5	21.5	50.9	50.9	38.8	32.9	37.7	39.6	61.8	45.9
Aluminum (Al),Dissolved (mg/L)	0.572	0.574	0.534	0.186	0.0351	0.0441	1.17	0.0398	0.128	0.057	0.228
Aluminum (Al),Total (mg/L)	–	–	–	–	–	–	–	–	–	–	–
Anion - Cation Balance (%)	–1.83	–4.73	–0.45	–4.3	2.87	1.43	0.0244	0.317	–2.09	1.47	1.4
Anions (meq/L)	2.21	2.32	2.23	2.46	2.93	2.65	2.4	2.61	2.69	2.52	2.57
Antimony (Sb),Dissolved (mg/L)	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.0146	<0.005	<0.005	<0.005	0.00592
Antimony (Sb),Total (mg/L)	–	–	–	–	–	–	–	–	–	–	–
Arsenic (As),Dissolved (mg/L)	<0.005	0.00501	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.0071
Arsenic (As),Total (mg/L)	–	–	–	–	–	–	–	–	–	–	–
Arsenic (As),Total Recoverable (mg/L)	–	–	–	–	–	–	–	–	–	–	–
Barium (Ba),Dissolved (mg/L)	0.0274	0.022	0.0178	0.0212	<0.005	<0.005	0.00512	<0.005	<0.005	0.0258	0.0282
Barium (Ba),Total (mg/L)	–	–	–	–	–	–	–	–	–	–	–
Beryllium (Be),Dissolved (mg/L)	0.00177	0.00224	<0.001	0.0018	<0.001	<0.001	0.0048	<0.001	0.00111	0.0015	0.00425
Beryllium (Be),Total (mg/L)	–	–	–	–	–	–	–	–	–	–	–
Bicarbonate (mg/L)	34.8	38.5	26.3	62.1	62	47.3	40.2	46	48.3	75.4	56
Boron (B),Total (mg/L)	<0.02	<0.02	<0.02	<0.02	0.0463	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Cadmium (Cd),Dissolved (mg/L)	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0.0025
Cadmium (Cd),Total (mg/L)	–	–	–	–	–	–	–	–	–	–	–
Cadmium (Cd),Total Recoverable (mg/L)	–	–	–	–	–	–	–	–	–	–	–
Calcium (Ca),Dissolved (mg/L)	19.3	19.7	23.4	19.4	<1	<1	<1	<1	<1	25.9	22.1
Carbonate (mg/L)	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
Cations (meq/L)	2.13	2.11	2.21	2.26	3.1	2.72	2.4	2.63	2.58	2.6	2.64
Chloride (Cl-) (mg/L)	10.5	13.3	15.3	6.75	21	17.5	15.4	16.8	19.3	3.82	12.9
Chromium (Cr),Dissolved (mg/L)	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Chromium (Cr),Total (mg/L)	–	–	–	–	–	–	–	–	–	–	–
Chromium (Cr),Total Recoverable (mg/L)	–	–	–	–	–	–	–	–	–	–	–
Cobalt (Co),Dissolved (mg/L)	0.0101	0.0101	0.00939	0.00573	<0.001	<0.001	0.00289	<0.001	<0.001	0.00382	0.00782
Cobalt (Co),Total (mg/L)	–	–	–	–	–	–	–	–	–	–	–
Copper (Cu),Dissolved (mg/L)	<0.005	<0.005	<0.005	<0.005	0.069	0.113	0.103	0.0599	0.0627	<0.005	<0.005
Copper (Cu),Total (mg/L)	–	–	–	–	–	–	–	–	–	–	–
Copper (Cu),Total Recoverable (mg/L)	–	–	–	–	–	–	–	–	–	–	–
Cyanide, Free (mg/L)	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Cyanide, Total (mg/L)	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Cyanide, WAD (mg/L)	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Electrical Conductivity (µmhos/cm)	260	258	260	257	321	287	279	284	292	263	265
Field Conductivity (µmhos/cm)	280	280	280	189	224	196	212	250	232	683	300
Field ORP (mV)	–	–	–	–	262	–	–	684	170	7	–

Table 5. Updated Nevada Gulch Water Quality 2010 (Page 2 of 3)

Parameter	1/21/2010	2/24/2010	3/17/2010	4/27/2010	5/19/2010	6/17/2010	7/28/2010	8/25/2010	9/24/2010	10/29/2010	11/24/2010
Field Oxygen (O2) (mg/L)	–	–	–	–	2.9	–	–	1.96	1.62	2.17	–
Field pH (SU)	6.43	6.63	6.4	7.31	7.46	6.88	6.19	6.38	6.32	6.62	6.51
Field Temperature (° C)	7.7	7.5	8.5	8.6	8.9	9.3	11.8	10.2	10.3	12.1	18.3
Fluoride (mg/L)	2.99	2.99	3.01	3.45	3.14	3.36	2.62	3.06	3.04	3.62	3.23
Gold (Au),Dissolved (mg/L)	<0.001	<0.001	<0.001	<0.001	<0.001	0.002	<0.001	<0.001	<0.001	<0.001	<0.001
Gold (Au),Total (mg/L)	–	–	–	–	–	–	–	–	–	–	–
Hardness (mg/L)	82	81.1	75.7	84.6	<5	<5	10.7	<5	<5	101	95
Iron (Fe),Dissolved (mg/L)	6.33	5.56	6.02	3.37	0.243	0.248	<0.05	0.209	<0.05	1.22	3.66
Iron (Fe),Total (mg/L)	–	–	–	–	–	–	–	–	–	–	–
Iron (Fe),Total Recoverable (mg/L)	–	–	–	–	–	–	–	–	–	–	–
Lead (Pb),Dissolved (mg/L)	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0.00148	<0.001	<0.001	<0.001	0.00218
Lead (Pb),Total (mg/L)	–	–	–	–	–	–	–	–	–	–	–
Lead (Pb),Total Recoverable (mg/L)	–	–	–	–	–	–	–	–	–	–	–
Lithium (Li),Dissolved (mg/L)	0.044	0.0468	0.0421	–	<0.002	0.0022	0.0576	0.0151	0.0479	0.035	0.0394
Lithium (Li),Total (mg/L)	–	–	–	0.0361	–	–	–	–	–	–	–
Magnesium (Mg),Dissolved (mg/L)	8.2	7.75	6.86	8.77	<0.5	<0.5	2	<0.5	<0.5	8.94	9.68
Manganese (Mn),Dissolved (mg/L)	1.76	1.66	1.74	1.64	<0.01	<0.01	0.171	<0.01	<0.01	1.54	1.49
Manganese (Mn),Total (mg/L)	–	–	–	–	–	–	–	–	–	–	–
Mercury (Hg),Total (mg/L)	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Molybdenum (Mo),Dissolved (mg/L)	0.00121	0.0012	0.00101	0.0016	0.00148	0.00111	0.00282	0.0018	0.00133	0.00186	0.00433
Molybdenum (Mo),Total (mg/L)	–	–	–	–	–	–	–	–	–	–	–
Nickel (Ni),Dissolved (mg/L)	0.0272	0.026	0.027	0.0152	<0.005	<0.005	0.00508	<0.005	<0.005	0.00957	0.0164
Nickel (Ni),Total (mg/L)	–	–	–	–	–	–	–	–	–	–	–
Nickel (Ni),Total Recoverable (mg/L)	–	–	–	–	–	–	–	–	–	–	–
Nitrogen, Ammonia (NH3) (mg/L)	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.051	<0.05	<0.05	<0.05	<0.05
Nitrogen, Nitrate (NO3) (mg/L)	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Nitrogen, Nitrite (NO2) (mg/L)	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
pH (SU)	6.69	6.99	6.6	6.74	7.27	6.64	6.07	6.5	6.66	6.67	6.49
Potassium (K),Dissolved (mg/L)	6.61	6.25	6.56	6.12	<0.5	<0.5	30.7	0.651	0.699	5.37	6.19
Selenium (Se),Dissolved (mg/L)	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.00643	<0.005	<0.005	<0.005	0.00853
Selenium (Se),Total (mg/L)	–	–	–	–	–	–	–	–	–	–	–
Selenium (Se),Total Recoverable (mg/L)	–	–	–	–	–	–	–	–	–	–	–
Silicon (Si),Dissolved (mg/L)	8.24	17.1	17.8	17.4	16.3	16.5	17.3	16.7	16.8	14.7	16.6
Silicon (Si),Total (mg/L)	–	–	–	–	–	–	–	–	–	–	–
Silver (Ag),Dissolved (mg/L)	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0.00122
Silver (Ag),Total (mg/L)	–	–	–	–	–	–	–	–	–	–	–
Silver (Ag),Total Recoverable (mg/L)	–	–	–	–	–	–	–	–	–	–	–

Table 5. Updated Nevada Gulch Water Quality 2010 (Page 2 of 3)

Parameter	1/21/2010	2/24/2010	3/17/2010	4/27/2010	5/19/2010	6/17/2010	7/28/2010	8/25/2010	9/24/2010	10/29/2010	11/24/2010
Sodium (Na),Dissolved (mg/L)	5.88	6.3	5.67	8.07	71.3	62.6	33.2	60	58.9	8.62	12.2
Strontium (Sr),Dissolved (mg/L)	0.147	0.137	0.14	0.147	0.00197	0.00138	0.0123	0.00516	0.00277	0.163	0.162
Strontium (Sr),Total (mg/L)	–	–	–	–	–	–	–	–	–	–	–
Sulfate (SO4) (mg/L)	56.8	55.8	58.1	51.4	55.5	57.7	56.3	58.7	57.4	47.4	53.7
Total Dissolved Solids (mg/L)	173	187	187	177	204	175	177	175	207	157	168
Total Suspended Solids (mg/L)	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
Turbidity (NTU)	0.5	13	9.4	9.7	0.5	0.3	1.4	0.2	0.5	3.8	33
Vanadium (V),Dissolved (mg/L)	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Vanadium (V),Total (mg/L)	–	–	–	–	–	–	–	–	–	–	–
Zinc (Zn),Dissolved (mg/L)	0.0605	0.0706	0.0903	<0.05	<0.05	<0.05	0.0602	<0.05	<0.05	<0.05	<0.05
Zinc (Zn),Total (mg/L)	–	–	–	–	–	–	–	–	–	–	–
Zinc (Zn),Total Recoverable (mg/L)	–	–	–	–	–	–	–	–	–	–	–

Table 6. Updated Terry Peak Water Quality 2010 (Page 1 of 2)

Parameter	1/21/2010	2/25/2010	3/31/2010	4/29/2010	5/25/2010	6/30/2010	7/28/2010	8/31/2010	9/30/2010	11/11/2010	11/24/2010
Alkalinity (mg/L)	54.1	71.6	76.5	17.7	14.1	17.9	53.7	–	74.8	62	76.2
Aluminum (Al),Dissolved (mg/L)	0.0169	0.0139	0.0444	0.091	0.098	0.0654	0.0188	0.0226	0.022	0.0221	0.0168
Aluminum (Al),Total (mg/L)	–	–	–	–	–	–	–	–	–	–	–
Anion - Cation Balance (%)	–4.42	0.13	–1.91	–3.4	–2.42	3.74	–4.11	3.63	1.93	–3.62	–3.38
Anions (meq/L)	1.77	2.29	2.31	0.597	0.438	0.497	2.53	4.06	3.43	2.71	3.41
Antimony (Sb),Dissolved (mg/L)	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Antimony (Sb),Total (mg/L)	–	–	–	–	–	–	–	–	–	–	–
Arsenic (As),Dissolved (mg/L)	0.0156	0.0195	0.0175	0.0135	0.0147	0.0174	0.0203	0.0179	0.019	0.0197	0.0227
Arsenic (As),Total (mg/L)	–	–	–	–	–	–	–	–	–	–	–
Barium (Ba),Dissolved (mg/L)	0.159	0.153	0.17	0.146	0.116	0.138	0.179	0.185	0.172	0.189	0.136
Barium (Ba),Total (mg/L)	–	–	–	–	–	–	–	–	–	–	–
Beryllium (Be),Dissolved (mg/L)	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Beryllium (Be),Total (mg/L)	–	–	–	–	–	–	–	–	–	–	–
Bicarbonate (mg/L)	66	87.4	93.4	21.6	17.2	21.8	65.5	92.7	91.3	75.7	92.9
Boron (B),Total (mg/L)	<0.02	<0.02	<0.02	<0.02	<0.02	0.028	<0.02	<0.02	0.022	<0.02	<0.02
Cadmium (Cd),Dissolved (mg/L)	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Cadmium (Cd),Total (mg/L)	–	–	–	–	–	–	–	–	–	–	–
Calcium (Ca),Dissolved (mg/L)	22.6	33.3	28.7	6.53	4.5	6.09	31.6	58.2	46.6	34	42.9
Carbonate (mg/L)	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
Cations (meq/L)	1.62	2.3	2.22	0.558	0.417	0.536	2.33	4.36	3.57	2.52	3.18
Chloride (Cl-) (mg/L)	6.5	8	7	1.75	3.25	1	5.1	8.25	9.84	7.72	10.7
Chromium (Cr),Dissolved (mg/L)	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Chromium (Cr),Total (mg/L)	–	–	–	–	–	–	–	–	–	–	–
Cobalt (Co),Dissolved (mg/L)	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Cobalt (Co),Total (mg/L)	–	–	–	–	–	–	–	–	–	–	–
Copper (Cu),Dissolved (mg/L)	0.00525	<0.005	0.0109	<0.005	0.00816	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Copper (Cu),Total (mg/L)	–	–	–	–	–	–	–	–			
Cyanide, Free (mg/L)	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.02	<0.01	<0.01
Cyanide, Total (mg/L)	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Cyanide, WAD (mg/L)	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Electrical Conductivity (µmhos/cm)	187	230	236	67.3	48.9	60.1	262	407	345	276	340
Field Conductivity (µmhos/cm)	170	–	–	45.4	–	70	200	273	260	270	510
Field ORP (mV)	–	–	–	–	–	–	–	167	–	–	–
Field Oxygen (O2) (mg/L)	–	–	–	–	–	–	–	7.94	–	–	–
Field pH (SU)	8.21	–	–	8.35	–	6.97	7.36	7.4	7.63	7.51	7.92
Field Temperature (° C)	7.3	–	–	6.9	–	9.7	10.1	8.5	10.3	8.1	5.1
Fluoride (mg/L)	0.572	0.692	0.735	0.185	0.183	0.197	0.417	0.709	0.758	0.576	0.683

Table 6. Updated Terry Peak Water Quality 2010 (Page 2 of 2)

Parameter	1/21/2010	2/25/2010	3/31/2010	4/29/2010	5/25/2010	6/30/2010	7/28/2010	8/31/2010	9/30/2010	11/11/2010	11/24/2010
Gold (Au),Dissolved (mg/L)	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0.005	0.005	0.003	0.003	0.002
Gold (Au),Total (mg/L)	–	–	–	–	–	–	–	–	–	–	–
Hardness (mg/L)	73	64.4	89.7	22.4	15.4	20.5	105	204	155	114	145
Iron (Fe),Dissolved (mg/L)	<0.05	<0.05	0.29	0.133	0.183	0.13	<0.05	<0.05	<0.05	<0.05	0.059
Iron (Fe),Total (mg/L)	–	–	–	–	–	–	–	–	–	–	–
Lead (Pb),Dissolved (mg/L)	<0.001	<0.001	0.00115	0.0011	0.00159	0.00134	<0.001	<0.001	<0.001	<0.001	<0.001
Lead (Pb),Total (mg/L)	–	–	–	–	–	–	–	–	–	–	–
Lithium (Li),Dissolved (mg/L)	0.0029	0.001	0.00575	<0.002	<0.002	<0.02	<0.002	0.0056	0.006	0.005	0.00439
Magnesium (Mg),Dissolved (mg/L)	4.02	5.66	4.38	1.48	1.01	1.29	6.27	10.7	9.49	7.12	9.14
Manganese (Mn),Dissolved (mg/L)	<0.01	<0.01	0.0114	0.0146	0.0163	0.0278	0.014	0.0123	0.01	<0.01	0.0731
Manganese (Mn),Total (mg/L)	–	–	–	–	–	–	–	–	–	–	–
Mercury (Hg),Total (mg/L)	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Molybdenum (Mo),Dissolved (mg/L)	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Molybdenum (Mo),Total (mg/L)	–	–	–	–	–	–	–	–	–	–	–
Nickel (Ni),Dissolved (mg/L)	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Nickel (Ni),Total (mg/L)	–	–	–	–	–	–	–	–	–	–	–
Nitrogen, Ammonia (NH3) (mg/L)	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Nitrogen, Nitrate (NO3) (mg/L)	2.26	2.46	1.79	1.12	0.76	1.42	5.84	10.7	7.75	6.12	7.19
Nitrogen, Nitrite (NO2) (mg/L)	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.05	<0.05	<0.05
pH (SU)	7.7	7.63	7.56	7.21	7.11	6.94	7.49	7.72	7.68	7.64	7.65
Potassium (K),Dissolved (mg/L)	0.963	1.13	1.69	0.898	0.764	1	1.87	1.8	1.93	1.38	1.57
Selenium (Se),Dissolved (mg/L)	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.00828	0.00957	0.006	<0.005	0.00579
Selenium (Se),Total (mg/L)	–	–	–	–	–	–	–	–	–	–	–
Silicon (Si),Dissolved (mg/L)	3.28	6.63	7.09	2	5.73	6.28	6.56	6.99	8.51	7.06	7.3
Silicon (Si),Total (mg/L)	–	–	–	–	–	–	–	–	–	–	–
Silver (Ag),Dissolved (mg/L)	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Silver (Ag),Total (mg/L)	–	–	–	–	–	–	–	–	–	–	–
Sodium (Na),Dissolved (mg/L)	3.14	3.2	8.81	2	2.05	2.29	4.41	5.62	9.53	4.73	5.71
Strontium (Sr),Dissolved (mg/L)	0.0697	0.107	0.0926	0.0467	0.029	0.0507	0.152	0.189	0.161	0.119	0.288
Strontium (Sr),Total (mg/L)	–	–	–	–	–	–	–	–	–	–	–
Sulfate (SO4) (mg/L)	15	20.1	19.7	<10	<10	<10	42.1	73	51.1	37.8	49.6
Total Dissolved Solids (mg/L)	98	148	111	57	64	27	170	267	200	161	189
Total Suspended Solids (mg/L)	<10	22.4	16	16	<10	<10	24	<10	<10	<10	<10
Turbidity (NTU)	2	5.2	4.5	9	7.7	14	15	1.7	0.7	2.2	0.55
Vanadium (V),Dissolved (mg/L)	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Vanadium (V),Total (mg/L)	–	–	–	–	–	–	–	–	–	–	–
Zinc (Zn),Dissolved (mg/L)	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Zinc (Zn),Total (mg/L)	–	–	–	–	–	–	–	–	–	–	–

Table 7. MW-59 Well Check Events

Date	Status
2/24/2010	Dry
4/7/2010	Dry
5/5/2010	Dry
6/15/2010	Dry
7/28/2010	Dry
8/26/2010	Dry
9/24/2010	Dry
10/27/2010	Dry
11/24/2010	Dry
12/16/2010	Dry
1/12/2011	Dry

Note: No water level or water-quality samples were collected from Well MW-59 as the well was dry during every monitoring event from the time of completion (February 24, 2010) through January 2011.