2017
ANNUAL HYDROLOGIC REPORT

BOWIE RESOURCES, LLC

BOWIE RESOURCES, LLC
BOWIE NO. 2 MINE
P.O. BOX 483
PAONIA, COLORADO 81428
PERMIT C-1996-083

PREPARED BY:

2017 Annual Hydrology Report

Bowie Resources, LLC

Bowie No. 2 Mine

Permit Number C-1996-083

Paonia, Colorado

Introduction

The Bowie No. 2 Mine was built and opened by Bowie Resources during the spring and summer months of 1997 with coal production/development beginning on August 15, 1997. This room and pillar operation began developing a main and submain system of underground entries to provide the ventilation, haulage and coal conveyor support for years to come. These entries are driven carefully on projections, held to minimum widths with larger than normal coal pillars left in place to assure adequate support for the life of the mine. The mine began longwall production during November 1999.

The following 2017 Annual Hydrology Report describes the hydrologic monitoring for surface and ground water within the permit and adjacent area of the Bowie No. 2 Mine and presents baseline data for the natural mine plan progression.

In this report, springs, ponds and streams (including ditches, rivers, and canals) are considered surface water. Alluvial wells and drill holes are sampled and analyzed as ground water. Please refer to the permit application for a discussion of the methods employed during the gathering of field parameters. Permit Map-09 (attached as an exhibit in this report) indicates the location of all monitoring points referred to in this report.

At the request of the Division, we have included baseline data for all Springs, Streams, Drill Holes and Alluvial Wells on the annual tabulation figures. Previously, parameters not tested and tested but found below the Method Detection Limit (MDL) were left blank. Blank cells represent a "not tested" condition, while a "<MDL" notation is made for the condition where a parameter falls below the Method Detection Limit. Additional requests from the Division during the approval process for PR-04 have added other improvements to the tables, including minimum/maximum/average values for the baseline period and minimum/maximum/average values for the operational influenced period of the monitoring point.

Table 1 (immediately following this narrative) defines the monitoring points by type and sample frequency, field parameter sampling schedule and laboratory parameter sampling schedule.

Table 2 contains a listing of the laboratory parameters for surface and ground water to be tested in accordance with the mining permit application. Laboratory analysis are performed by Accutest Laboratories, Inc., 4036 Youngfield Street, Wheat Ridge, CO 80033 and Enviro-Chem Analytical, Inc., 685 West Gunnison Avenue, Grand Junction, CO.

Table 3 contains a listing of the field parameters and their application to the Springs, Streams, Drill Holes and Ponds within the permit boundary. Flow readings for springs and small streams are reported in gallons per minute. Stream and river flows are reported in cubic feet per second.

Table 4 contains local precipitation data for the year. This data is available from the internet at www.wrcc.dri.edu/summary/Climsmco.html select Paonia 1 SW (056306). The average precipitation for the period of record (1893 through 2016) is 15.39 inches. Precipitation during 2016 totaled 11.61 inches which is below average. Data for 2017 was not collected, however at the Bowie No. 2 mine site, 8.63 inches was recorded which is about half of the annual average.

Table 5 contains a listing of all monitoring points, with descriptions of their locations and a reference to the Monitoring Point Figure that contains this year's monitoring data. The included charts are given a figure number. During 2015 and 2016, approval of Technical Revision Nos. 103 and 107 eliminated, or temporarily suspended forty-seven (47) monitoring points. Table 5 hi-lights the changes to the monitoring program.

Monitoring point figures follow this introduction. Each Monitoring Point has an individual table which tabulates the annual data collection and reports Minimum, Maximum, Average and Baseline data. A reference in each footnote explains the period used for baseline data.

Flow data for the North Fork of the Gunnison River is obtained from the USGS from a website http://nwis-colo.cr.usgs.gov/historic.html. This flow reading is obtained telemetrically from a station near Somerset, CO and is reflective of upper river flows only. This monitoring point is identified by the USGS as 09132500.

Flow data for the Fire Mountain Canal is obtained from Mr. Trey Dennison, member of the Fire Mountain Canal and Reservoir Company, whose phone number is (970) 527-5166 or cell (970) 589-2857. This flow is representative of the upper and lower flows.

Monitoring point identifiers near the mine portals are historic and follow no specific naming convention. Monitoring points located in other areas typically follow a convention where the first letter(s) designates a water source type, such as "S" for Spring or "SP" for Spring and Pond. The numeral(s) following the first letter designate what Section the water source is located, for instance, SP34-2 would be a spring and pond in Section 34. The numeral separated with a dash indicates an index number for that point. SP34-2 would be the second monitoring point found in Section 34.

CDPS Monitoring Points

DMRs are submitted monthly to the Colorado Department of Public Health and Environment with copies to the Division of Reclamation, Mining and Safety and are included herein by reference.

North Fork Alluvium Monitoring Wells

Alluvial monitoring wells AW-1 through AW-6 are located near the mine entrance along the north side of Bowie Road. These wells are monitored quarterly for field parameters and semi-annually for full suite laboratory parameters during the second and fourth quarters in accordance with the permit application. Alluvial monitoring wells AW-7 through AW-9 are located near the mine entrance along the south side of Bowie Road. AW-10 cannot be reliably sampled due to a collapse of the casing, and was eliminated from the monitoring plan. These wells were installed as a requirement of PR-03 which allowed the mine operator to relocate Sediment Pond B to the south side of the highway. Alluvial Wells 11 through 13 were installed during the fall of 2000 to monitor the alluvium in the area where the new coal loadout (PR-06) was constructed. Alluvial well 13 was eliminated by the construction of the unit train loadout. Alluvial well 14 was installed during 2003 west of Pond K. Alluvial wells 15 through 17 were installed during the fourth quarter of 2003 and are located north of Bowie Road below coal mine waste disposal area #2.

The 2017 sampling season provides results consistent with baseline information provided in the permit application, showing no adverse impact to groundwater during the construction of the mine except for alluvial wells 16 and 17. These two alluvial wells located south of the gob pile have conductivity values significantly higher than baseline conditions. There has not been any significant degradation of alluvial wells 11 and 12 which are located below gob pile #3. Alluvial well 6 had a very high conductivity value for the 4Q, it is likely due to bad laboratory data, but will be observed next year to determine if the high conductivity is a trend or a one-time high value. Alluvial well 3's conductivity values are trending higher, but it is unknown why. The well is located below the coal stockpile pad, which has not held a significant amount of coal for the last two years.

Surface Water Monitoring Stations: PONDS

Ponds were sampled for water quality when discharging or inflows/outflows were occurring. Ponds are typically spring-fed or seep-fed and exhibit diffuse non-concentrated areas of inflow. Often the pond outlets present the only point of concentrated flow at which flow measurements and field parameters can be obtained. Where possible, quality measurements are obtained at the pond inlet. Stagnant water in ponds is not sampled since water quality results would show the effects of evaporation and stock use and could not be used to evaluate potential mine affects.

Ponds are monitored quarterly. The following information is collected for the ponds; 1) inflow; 2) outflow; and 3) water level below spillway outlet or depth of water in pond measured from the bottom of the pond. Field data collected during the 2017 sampling season is consistent with baseline information provided in the permit application.

Surface Water Monitoring Stations: SPRINGS

Forty-nine springs and springs with ponds were monitored during the 2017 monitoring season in accordance with the Hydrologic Monitoring Plan. This plan indicates that identified springs will be inspected quarterly for field parameters with full suite laboratory parameters required on springs with flows greater than five (5) gallons per minute. During the construction phase of the mine, four (4) springs (S-6, S-7, S-9 and S-15) were eliminated by road and portal bench construction activities. The 2017 field and laboratory analysis are consistent with baseline data provided in the permit application. There has been a trend in many of the springs that shows the conductivity increases as the flow decreases. This trend is most likely caused by the increased time the water is in contact with the alluvium because of the lower flows.

Surface Water Monitoring Stations: STREAMS AND DITCHES

Twenty-three surface water monitoring stations including the North Fork of the Gunnison, Terror Creek, Hubbard Creek, Freeman Gulch, the Deer Trail Ditch, Stephens Draw, and the Fire Mountain Canal are monitored quarterly for field parameters and semi-annually for full suite analysis. The results of the 2017 field and laboratory studies are consistent with baseline information supplied in the permit application.

The USGS, with right of way permission from the USDA-Forest Service, installed continuous monitoring stations on both Hubbard and Terror Creeks. Similar stations are installed near each creek's confluence with the North Fork of the Gunnison River. These stations have been calibrated by the USGS's hydrology department and now provide accurate readings for the Annual Hydrology Reports. The USGS did not collect flow data for their station during 2017. Flow data for the creeks were determined by Resource Engineering during 2017.

Surface Water Monitoring Stations: SMALL AREA EXEMPTIONS

The locations of the small area exemptions are presented on Map 20. The Applicant will monitor the flow from the small area exemptions to assure compliance with 4.05.2(3). The Applicant will use its best efforts to obtain samples. The samples will be analyzed for pH, conductivity and total settleable solids. Samples will be in compliance if they contain settleable solid levels of 0.5 ml/l or less and the pH is greater than 6.5 and less than 9.0. No small area exemption sampling was performed during the year.

Coal Member of Mesaverde

Eleven bedrock wells were monitored during the 2017 sampling season. These holes were monitored quarterly for field parameters and semi-annually for full suite laboratory analysis. Data collected and evaluated is consistent with the baseline information provided in the permit application except for DH-39 which is adjacent to the repaired DH-15. DH-39 had very high conductivity for all four quarters. The trend in increased conductivity began after DH-15 was sealed and replaced with DH-15A, see description in the following paragraph. The mine construction work during 1997 required the elimination of four monitored drill holes. These holes are DH 42, DH 52, DH 54 and DH 55 and were located near the mine portals. Drill Holes DH-13 and DH-34b were eliminated by mining. Drill hole DH-34c was damaged by ground movement. DH-16 is blocked at 60-feet so no monitoring can be performed. Drill Holes DH-57, 57a and DH-58, 58a were added in conjunction with the Terror Creek Coal Exploration Plan, with monitoring beginning in the fall of 1999. Drill holes DH-57 and DH57a were destroyed by longwall mining during 2001. DH-58 and 58a were eliminated by mining during late 2003 so they are no longer monitored.

D-Seam monitoring wells DH-15, DH-25 and DH-38 can no longer be monitored since all three have damaged well casings. During 2016, DH-15 was sealed and replaced by new D-Seam monitoring well DH-15A. The new well is located near the old monitoring well. Monitoring of DH-15A began the fourth quarter of 2016.

Drill holes DH-65, DH-66, DH-67D, DH-67blw and DH-67abv were added in conjunction with the Iron Point Federal coal lease, with some monitoring beginning during the fall of 2000. DH-67D was damaged during 2003 so no monitoring was performed. The DH-67 holes were refurbished during 2004. DH-66 was eliminated by mining during early 2004 so it is no longer monitored. DH-67blw had a pinched casing so a new DH-67blw was drilled during 2014. Obtaining a sample from DH 67B has been challenging. No samples were obtained during 2017. However, the Operator was able to obtain a sample during the 1Q 2018 and results will be included in the 2018 AHR.

Drill holes DD-NM4X98-27, 28 and 29 were in-mine monitoring holes which were added to the monitoring program during 2003. The three monitoring points were abandoned when the mine activity retreated from the east mains in mid 2004. TC-03-01, 02 and 03 were added to the monitoring program during 2003. TC-03-03 was sealed in 2010 because a ventilation shaft was constructed where TC-03-03 was located. Monitoring wells TC-03-01 and TC-03-02 could not be rehabilitated during 2014. The wells could be used as water level piezometers but the wells are not functional for water quality data. Monitoring results for these well is of questionable value.

Drill holes CWI-DH-58 and CWI-DH-60 were added to the monitoring program in 2011 with the approval of permit revision 12 to cover the area west of Terror Creek. Monitoring well CWI-DH-60 was cleaned and rehabilitated between August 20 and August 23, 2014. On August 22, 2014, the well was evacuated using the airlift and bailing techniques and the water quality showed a pH of 7.70 s.u., conductivity of 863 µS/cm, and temperature of 20.5° C. After a 12 hour recovery period, the SWL was measured at 892.0 feet btoc (August 23, 2014).

A new well CWI-DH-58a was drilled to replace CWI-DH-58 late in 2014. The Applicant drilled DH-2010-1SS and DH-2010-1B during 2011. DH-2010-1B is completed in the B-Seam and DH-2010-1SS is completed in a water bearing zone above the B-Seam. Drill hole 2010-1B was refurbished during 2014. After the 2014 well rehabilitation work, 2010-1B had the following water quality: pH 9.75 su, conductivity 277 umhos/cm, total iron 4.31 mg/l, manganese 0.0621 mg/l.

Conclusion

The results of the hydrologic monitoring conducted during the 2017 season indicate consistent chemical and physical properties when compared with the baseline values provided in the permit application. Longwall mining is the focus of all mining operations at Bowie No. 2 Mine. Longwall mining ceased February 26, 2016 so there was no mining during the calendar year. Prior mining has not affected the local hydrology during the current year. Water quality at all monitored sites remains good overall and no chemical or physical impacts have been noted. Except as noted above, none of the field or laboratory parameter results indicate an adverse impact associated with the mining operations of the Bowie No. 2 Mine on the local hydrology.

Many sites require four quarters of sampling for field parameters (Terror Creek Drainage system, Dove Gulch, nearly all of the Ponds, many of the S-Series Springs, etc.). However, due to a heavy snowpack, many sites were not accessible until the second quarter of 2017. In those cases, the first quarter data has been left off of the summary sheet, so there are only three quarters of data available.

Summary of Hydrology Monitoring Stations

Station Number	Station Name	Elevation (ft.)	Depth (ft.)	Frequency of Measurements		Report Frequency	Report Format		Comments
				Field Par.	Lab. Par.		AHR	DMR	
Surface Water Monitoring - SPRINGS WITH PONDS									
SP5-1	Terror Creek-Spring/Pond 5-1	7400		Quarterly	Quarterly	Annually	Yes	No	No winter monitoring - Lab analysis >5gpm, List 1
SP6-4	Terror Creek-Spring/Pond 6-4	8040		Quarterly	Quarterly	Annually	Yes	No	Temporarily Suspended TR-103
SP7-1	Terror Creek-Spring/Pond 7-1	7780		Quarterly	Quarterly	Annually	Yes	No	No winter monitoring - Lab analysis >5gpm, List 1
SP7-5	Stevens Gulch-Spring/Pond 7-5	8300		Quarterly	Quarterly	Annually	Yes	No	No winter monitoring - Lab analysis >5gpm, List 1
SP12-4	Stevens Gulch-Spring/Pond12-4	8040		Quarterly	Quarterly	Annually	Yes	No	Permanently Suspended TR-103
SP16	Terror Creek-Spring/Pond 16	7780		Quarterly	Quarterly	Annually	Yes	No	Temporarily Suspended TR-103
SP17	Terror Creek-Spring/Pond 17	7520		Quarterly	Quarterly	Annually	Yes	No	No winter monitoring - Lab analysis >5gpm, List 1
SP18	Terror Creek-Spring/Pond 18	7280		Quarterly	Quarterly	Annually	Yes	No	No winter monitoring - Lab analysis >5gpm, List 1
SP19	Stevens Gulch-Spring/Pond 19	8240		Quarterly	Quarterly	Annually	Yes	No	No winter monitoring - Lab analysis >5gpm, List 1
SP20	Terror Creek-Spring/Pond 20	7840	4	Quarterly	Quarterly	Annually	Yes	No	No winter monitoring - Lab analysis >5gpm, List 1
SP22	Terror Creek-Spring/Pond 22	7560		Quarterly	Quarterly	Annually	Yes	No	No winter monitoring - Lab analysis >5gpm, List 1
SP23	Stevens Gulch-Spring/Pond 23	7480		Quarterly	Quarterly	Annually	Yes	No	No winter monitoring - Lab analysis >5gpm, List 1
SP34-11	Sheep Corral-Spring/Pond 34-11	7440	3	Quarterly	Quarterly	Annually	Yes	No	No winter monitoring - Lab analysis >5gpm, List 1
ST36-2	Flat Tanks	8160		Quarterly	Quarterly	Annually	Yes	No	Temporarily Suspended TR-103
ST36-4	Oak Hills Spring Lower Tank	8040		Quarterly	Quarterly	Annually	Yes	No	Temporarily Suspended TR-103
ST36-5	Oak Hiles Spring Upper Tank	8240		Quarterly	Quarterly	Annually	Yes	No	Temporarily Suspended TR-103
Surface Water Monitoring - SPRINGS									
S-1	B Gulch-Spring 1	6990	N/A	Quarterly	Quarterly	Annually	Yes	No	No winter monitoring - Lab analysis >5gpm, List 1
S-2	Freeman Gulch-Spring 2	7920	N/A	Quarterly	Quarterly	Annually	Yes	No	No winter monitoring - Lab analysis >5gpm, List 1
S-3	Freeman Gulch-Spring 3	7920	N/A	Quarterly	Quarterly	Annually	Yes	No	No winter monitoring - Lab analysis >5gpm, List 1
S-4	Terror Creek-Spring 4	7880	N/A	Quarterly	Quarterly	Annually	Yes	No	No winter monitoring - Lab analysis >5gpm, List 1
S-4a	Terror Creek-Spring 4a	7910	N/A	Quarterly	Quarterly	Annually	Yes	No	No winter monitoring - Lab analysis >5gpm, List 1
S-5	Sheep Corral-Spring 5	7800	N/A	Quarterly	Quarterly	Annually	Yes	No	No winter monitoring - Lab analysis >5gpm, List 1
S-5a	Sheep Corral-Spring 5a	7860	N/A	Quarterly	Quarterly	Annually	Yes	No	No winter monitoring - Lab analysis >5gpm, List 1
S-5b	Sheep Corral-Spring 5b	7860	N/A	Quarterly	Quarterly	Annually	Yes	No	No winter monitoring - Lab analysis >5gpm, List 1
S-8	C Gulch-Spring 8	7220	N/A	Quarterly	Quarterly	Annually	Yes	No	No winter monitoring - Lab analysis >5gpm, List 1
S-10	Steven's Draw-Spring 10	7550	N/A	Quarterly	Quarterly	Annually	Yes	No	No winter monitoring - Lab analysis >5gpm, List 1
S-11	Steven's Draw-Spring 11	7940	N/A	Quarterly	Quarterly	Annually	Yes	No	No winter monitoring - Lab analysis >5gpm, List 1
S-12	B Gulch-Spring 12	7650	N/A	Quarterly	Quarterly	Annually	Yes	No	No winter monitoring - Lab analysis >5gpm, List 1
S-13	Freeman Gulch-Spring 13	7500	N/A	Quarterly	Quarterly	Annually	Yes	No	No winter monitoring - Lab analysis >5gpm, List 1
S-14	Steven's Draw-Spring 14	7100	N/A	Quarterly	Quarterly	Annually	Yes	No	No winter monitoring - Lab analysis >5gpm, List 1
S-16	Terror Creek-Spring 16	7750	N/A	Quarterly	Quarterly	Annually	Yes	No	No winter monitoring - Lab analysis >5gpm, List 1
S-17	Freeman Gulch-Spring 17	7110	N/A	Quarterly	Quarterly	Annually	Yes	No	No winter monitoring - Lab analysis >5gpm, List 1
S-18	Terror Creek-Spring 18	7750	N/A	Quarterly	Quarterly	Annually	Yes	No	No winter monitoring - Lab analysis >5gpm, List 1

Summary of Hydrology Monitoring Stations (Continued)

Station Number	Station Name	Elevation (ft.)	Depth (ft.)	Frequency of Measurements		Report Frequency	Report Format		Comments
				Field Par.	Lab. Par.		AHR	DMR	
Surface Water Monitoring Stations - SPRINGS (cont.)									
S1-3	Terror Creek-Spring 1-3	7860	N/A	Quarterly	Quarterly	Annually	Yes	No	Temporarily Suspended TR-103
S1-5	Terror Creek-Spring 1-5	8020	N/A	Quarterly	Quarterly	Annually	Yes	No	Temporarily Suspended TR-103
S2-2	Hubbard Creek-Spring 2-2	6740	N/A	Quarterly	Quarterly	Annually	Yes	No	No winter monitoring - Lab analysis >5gpm, List 1
S2-3	Hubbard Creek-Spring 2-3	6740	N/A	Quarterly	Quarterly	Annually	Yes	No	No winter monitoring - Lab analysis >5gpm, List 1
S2-9	Hubbard Creek-Spring 2-9	6320	N/A	Quarterly	Quarterly	Annually	Yes	No	No winter monitoring - Lab analysis >5gpm, List 1
S2-10	Hubbard Creek-Spring 2-10	6320	N/A	Quarterly	Quarterly	Annually	Yes	No	No winter monitoring - Lab analysis >5gpm, List 1
S3-1	Sheep Corral-Spring 3-1	6840	N/A	Quarterly	Quarterly	Annually	Yes	No	No winter monitoring - Lab analysis >5gpm, List 1
S5-2	Seep West of Terror Creek Road	7200	N/A	Quarterly	Quarterly	Annually	Yes	No	No winter monitoring - Lab analysis >5gpm, List 1
S5-3	Red's Spring & Pipeline	7200	N/A	Quarterly	Quarterly	Annually	Yes	No	No winter monitoring - Lab analysis >5gpm, List 1
S5-4	Hugh's Family Pipe & Spring	7320	N/A	Quarterly	Quarterly	Annually	Yes	No	No winter monitoring - Lab analysis >5gpm, List 1
S6-1	Terror Creek-Spring 6-1	7720	N/A	Quarterly	Quarterly	Annually	Yes	No	Temporarily Suspended TR-103
S6-6	Terror Creek-Spring 6-6	7860	N/A	Quarterly	Quarterly	Annually	Yes	No	No winter monitoring - Lab analysis >5gpm, List 1
S6-7	West Fork Terror Ck Concrete Box	7600	N/A	Quarterly	Quarterly	Annually	Yes	No	No winter monitoring - Lab analysis >5gpm, List 1
S7-4	Stevens Gulch-Spring 7-4	8190	N/A	Quarterly	Quarterly	Annually	Yes	No	No winter monitoring - Lab analysis >5gpm, List 1
S7-9	Terror Creek-Spring 7-9	7800	N/A	Quarterly	Quarterly	Annually	Yes	No	No winter monitoring - Lab analysis >5gpm, List 1
S7-10	Terror Creek-Spring 7-10	7880	N/A	Quarterly	Quarterly	Annually	Yes	No	No winter monitoring - Lab analysis >5gpm, List 1
S8-5	Terror Creek-Spring 8-5	7800	N/A	Quarterly	Quarterly	Annually	Yes	No	No winter monitoring - Lab analysis >5gpm, List 1
S21	Terror Creek-Spring 21	7100	N/A	Quarterly	Quarterly	Annually	Yes	No	No winter monitoring - Lab analysis >5gpm, List 1
S33-4	Sheep Corral-Spring 33-4	7790	N/A	Quarterly	Quarterly	Annually	Yes	No	No winter monitoring - Lab analysis >5gpm, List 1
S34-7	Sheep Corral-Spring 34-7	7390	N/A	Quarterly	Quarterly	Annually	Yes	No	No winter monitoring - Lab analysis >5gpm, List 1
S34-10	Dove Gulch-Spring 34-10	6640	N/A	Quarterly	Quarterly	Annually	Yes	No	No winter monitoring - Lab analysis >5gpm, List 1
S34-19	Hubbard Creek-Spring 34-19	6460	N/A	Quarterly	Quarterly	Annually	Yes	No	No winter monitoring - Lab analysis >5gpm, List 1
S34-20	Hubbard Creek-Spring 34-20	6440	N/A	Quarterly	Quarterly	Annually	Yes	No	No winter monitoring - Lab analysis >5gpm, List 1
S34-21	Hubbard Creek-Spring 34-21	6430	N/A	Quarterly	Quarterly	Annually	Yes	No	No winter monitoring - Lab analysis >5gpm, List 1
S34-22	Hubbard Creek-Spring 34-22	6700	N/A	Quarterly	Quarterly	Annually	Yes	No	No winter monitoring - Lab analysis >5gpm, List 1
S34-23	Hubbard Creek-Spring 34-23	6650	N/A	Quarterly	Quarterly	Annually	Yes	No	No winter monitoring - Lab analysis >5gpm, List 1
S34-24	Hubbard Creek-Spring 34-24	6390	N/A	Quarterly	Quarterly	Annually	Yes	No	No winter monitoring - Lab analysis >5gpm, List 1
S34-25	Dove Gulch-Spring 34-25	6680	N/A	Quarterly	Quarterly	Annually	Yes	No	No winter monitoring - Lab analysis >5gpm, List 1
S36-7	Seeps 11 Below Stevens Gulch Rd	8120	N/A	Quarterly	Quarterly	Annually	Yes	No	Temporarily Suspended TR-103

Summary of Hydrology Monitoring Stations (Continued)

Station Number	Station Name	Elevation (ft.)	Depth (ft.)	Frequency of Measurements		Report Frequency	Report Format		Comments
				Field Par.	Lab. Par.		AHR	DMR	
Surface Water Monitoring Stations - STREAMS AND DITCHES									
A-Gulch-lo	Drainage System	5960	N/A	Quarterly	Semi-Annually	Annually	Yes	No	Permanently Suspended TR-103
B-Gulch-lo	Drainage System	5960	N/A	Quarterly	Semi-Annually	Annually	Yes	No	Permanently Suspended TR-103
B-Gulch-up	Drainage System	7080	N/A	Quarterly	Semi-Annually	Annually	Yes	No	Permanently Suspended TR-103
C-Gulch-lo	Drainage System	5960	N/A	Quarterly	Semi-Annually	Annually	Yes	No	Permanently Suspended TR-103
C-Gulch-up	Drainage System	7120	N/A	Quarterly	Semi-Annually	Annually	Yes	No	Permanently Suspended TR-103
D2-1	Sheep Corral-Drainage System	6360	N/A	Quarterly	Semi-Annually	Annually	Yes	No	No winter monitoring - 2nd & 4th Qrt, List 1
D21-1	Terror Creek-Confluence w/NFG	5760	N/A	Quarterly	Semi-Annually	Annually	Yes	No	No winter monit-2nd & 4th Qrt, List 1-Flow USGS
D32-4	Terror Creek-Drainage System	7480	N/A	Quarterly	Semi-Annually	Annually	Yes	No	No winter monit-2nd & 4th Qrt, List 1-Flow USGS
D33-14	Upper Sheep Corral Gulch	7320	N/A	Quarterly	Semi-Annually	Annually	Yes	No	No winter monitoring - 2nd & 4th Qrt, List 1
D34-13	Dove Gulch-Drainage System	6440	N/A	Quarterly	Semi-Annually	Annually	Yes	No	No winter monitoring - 2nd & 4th Qrt, List 1
D34-14	Hubbard Creek-Drainage System	6560	N/A	Quarterly	Semi-Annually	Annually	Yes	No	No winter monit-2nd & 4th Qrt, List 1-Flow USGS
Deer-low	Canal-Deer Trail Ditch	5920	N/A	Quarterly	Semi-Annually	Annually	Yes	No	No winter monit-2nd & 4th Qrt, List 1-Aug, List 2
Deer-up	Canal-Deer Trail Ditch	5960	N/A	Quarterly	Semi-Annually	Annually	Yes	No	No winter monit-2nd & 4th Qrt, List 1-Aug, List 2
D-Gulch-lo	Drainage System	5960	N/A	Quarterly	Semi-Annually	Annually	Yes	No	Permanently Suspended TR-103
D-Gulch-up	Drainage System	7160	N/A	Quarterly	Semi-Annually	Annually	Yes	No	Permanently Suspended TR-103
FMC-Low	Canal-Fire Mountain Canal	5920	N/A	May/Jul/Sep	Semi-Annually	Annually	Yes	No	No winter monitoring - 1st & 3rd Qrt, List 1
FMC-up	Canal-Fire Mountain Canal	5960	N/A	May/Jul/Sep	Semi-Annually	Annually	Yes	No	No winter monitoring - 1st & 3rd Qrt, List 1
Free-low	Freeman Gulch-Drainage System	7560	N/A	Quarterly	Semi-Annually	Annually	Yes	No	No winter monitoring - 2nd & 4th Qrt, List 1
Free-up	Freeman Gulch-Drainage System	6360	N/A	Quarterly	Semi-Annually	Annually	Yes	No	No winter monitoring - 2nd & 4th Qrt, List 1
Hub-low	Hubbard Creek-Drainage System	5880	N/A	Quarterly	Semi-Annually	Annually	Yes	No	No winter monit-2nd & 4th Qrt, List 1-Flow USGS
Hub-up	Hubbard Creek-Drainage System	6320	N/A	Quarterly	Semi-Annually	Annually	Yes	No	Permanently Suspended TR-103
NFG-low	North Fork-Drainage System	5680	N/A	Quarterly	Semi-Annually	Annually	Yes	No	2nd & 4th Qrt, List 1 - August, List 2 - Flow USGS
NFG-up	North Fork-Drainage System	5880	N/A	Quarterly	Semi-Annually	Annually	Yes	No	2nd & 4th Qrt, List 1 - August, List 2 - Flow USGS
Steph-low	Steven's Draw-Drainage System	7000	N/A	Quarterly	Semi-Annually	Annually	Yes	No	No winter monitoring - 2nd & 4th Qrt, List 1
Steph-up	Steven's Draw-Drainage System	7920	N/A	Quarterly	Semi-Annually	Annually	Yes	No	No winter monitoring - 2nd & 4th Qrt, List 1
SW-01	**West Fork Terror Ck-Downstream**	7140	N/A	Quarterly	Semi-Annually	Annually	Yes	No	No winter monitoring - 2nd & 4th Qrt, List 1
SW-02	Terror Creek-Mid Stream	7040	N/A	Quarterly	Semi-Annually	Annually	Yes	No	No winter monitoring - 2nd & 4th Qrt, List 1
SW-04	West Terror Creek Trib -Upstream	7880	N/A	Quarterly	Semi-Annually	Annually	Yes	No	No winter monitoring - 2nd & 4th Qrt, List 1
SW-05	Stevens Gulch-Downstream	6600	N/A	Quarterly	Semi-Annually	Annually	Yes	No	No winter monitoring - 2nd & 4th Qrt, List 1
SW-10	Terror Ditch	6480	N/A	Quarterly	Semi-Annually	Annually	Yes	No	No winter monitoring - 2nd & 4th Qrt, List 1
SW-11	Stevens Gulch-Upstream	8084	N/A	Quarterly	Semi-Annually	Annually	Yes	No	No winter monitoring - 2nd & 4th Qrt, List 1
SW-12	West Fork Terror Ck-Upstream	7920	N/A	Quarterly	Semi-Annually	Annually	Yes	No	No winter monitoring - 2nd & 4th Qrt, List 1
EF-1	West Fork Ephemeral Channels	Varies	N/A	Quarterly	Semi-Annually	Annually	Yes	No	No winter monitoring - 2nd & 4th Qrt, List 1
EF-2 thru 9	West Fork Ephemeral Channels	Varies	N/A	Quarterly	Semi-Annually	Annually	Yes	No	Temporarily Suspended TR-103
EF-7 thru 9	West Fork Ephemeral Channels	Varies	N/A	Quarterly	Semi-Annually	Annually	Yes	No	No winter monitoring - 2nd & 4th Qrt, List 1

Summary of Hydrology Monitoring Stations (Continued)

Station Number	Station Name	Elevation (ft.)	Depth (ft.)	Frequency of Measurements		Report Frequency	Report Format		Comments
				Field Par.	Lab. Par.		AHR	DMR	
Coal Member of Mesaverde									
DH-15	Steven's Draw-Drill Hole	7143	218	Quarterly	Semi-Annually	Annually	Yes	No	Permanently Suspended TR-103
DH-25	C Gulch-Drill Hole	7144	325	Quarterly	N/A	Annually	Yes	No	Permanently Suspended TR-103
DH-38	D Gulch-Drill Hole	7245	454	Quarterly	N/A	Annually	Yes	No	Permanently Suspended TR-103
DH-15a	Steven's Draw-Drill Hole	7143	218	Quarterly	Semi-Annually	Annually	Yes	No	Permanently Suspended TR-103
DH-39	Steven's Draw-Drill Hole	7143	181	Quarterly	Semi-Annually	Annually	Yes	No	No winter monitoring-Lab analysis 2nd & 4th Qrts
DH-49	B Gulch-Drill Hole	7203	324	Quarterly	Semi-Annually	Annually	Yes	No	No winter monitoring-Lab analysis 2nd & 4th Qrts
DH-67B	Hubbard Creek-Monitoring Well	6451	594	Quarterly	Semi-Annually	Annually	Yes	No	No winter monitoring-Lab analysis 2nd & 4th Qrts
DH-67D	Hubbard Creek-Monitoring Well	6450	325	Quarterly	Semi-Annually	Annually	Yes	No	No winter monitoring-Lab analysis 2nd & 4th Qrts
DH-67abv	Hubbard Creek-Monitoring Well	6451	193	Quarterly	Semi-Annually	Annually	Yes	No	No winter monitoring-Lab analysis 2nd & 4th Qrts
DH-67blw	Hubbard Creek-Monitoring Well	6451	360	Quarterly	Semi-Annually	Annually	Yes	No	No winter monitoring-Lab analysis 2nd & 4th Qrts
TC-03-01(B)	Terror Creek - Monitoring Well-Upper	7118	713	Quarterly	Semi-Annually	Annually	Yes	No	Permanently Suspended TR-103
TC-03-02	Terror Creek - Monitoring Well	7095	586	Quarterly	Semi-Annually	Annually	Yes	No	Permanently Suspended TR-103
CWI-DH-58A	Upper B Seam	7442	575	Quarterly	Semi-Annually	Annually	Yes	No	No winter monitoring-Lab analysis 2nd & 4th Qrts
CWI-DH-60	Upper B Seam (B1)	7921	1085	Quarterly	Semi-Annually	Annually	Yes	No	No winter monitoring-Lab analysis 2nd & 4th Qrts
DH2010-1B	Above Upper B Seam - Deep	7545	1220	Quarterly	Semi-Annually	Annually	Yes	No	No winter monitoring-Lab analysis 2nd & 4th Qrts
DH2010-1SS	Upper B Seam - Shallow	7545	1140	Quarterly	Semi-Annually	Annually	Yes	No	No winter monitoring-Lab analysis 2nd & 4th Qrts
North Fork Alluvium Monitoring Wells									
AW-1	Alluvial Well	5978	120	Quarterly	Semi-Annually	Annually	Yes	No	Lab anlaysis 2nd & 4th Qrts
AW-2	Alluvial Well	5967	50.4	Quarterly	Semi-Annually	Annually	Yes	No	Lab anlaysis 2nd & 4th Qrts
AW-3	Alluvial Well	5963	150	Quarterly	Semi-Annually	Annually	Yes	No	Lab anlaysis 2nd & 4th Qrts
AW-4	Alluvial Well	5978	60	Quarterly	Semi-Annually	Annually	Yes	No	Lab anlaysis 2nd & 4th Qrts
AW-5	Alluvial Well	5982	100	Quarterly	Semi-Annually	Annually	Yes	No	Lab anlaysis 2nd & 4th Qrts
AW-6	Alluvial Well	5981	112	Quarterly	Semi-Annually	Annually	Yes	No	Lab anlaysis 2nd & 4th Qrts
AW-7	Alluvial Well	5950	188	Quarterly	Semi-Annually	Annually	Yes	No	Installed Fall of 1999 - Lab 2nd & 4th Qrts
AW-8	Alluvial Well	5950	60	Quarterly	Semi-Annually	Annually	Yes	No	Installed Fall of 1999 - Lab 2nd & 4th Qrts
AW-9	Alluvial Well	5946	80	Quarterly	Semi-Annually	Annually	Yes	No	Installed Fall of 1999 - Lab 2nd & 4th Qrts
AW-11	Alluvial Well	5884	60.86	Quarterly	Semi-Annually	Annually	Yes	No	Installed Fall of 2000 - Lab 2nd & 4th Qrts
AW-12	Alluvial Well	5878	45.38	Quarterly	Semi-Annually	Annually	Yes	No	Installed Fall of 2000 - Lab 2nd & 4th Qrts
AW-14	Alluvial Well	5822	30	Quarterly	Semi-Annually	Annually	Yes	No	Installed Summer of 2003 - Lab 2nd & 4th Qrts
AW-15	Alluvial Well	5973	86	Quarterly	Semi-Annually	Annually	Yes	No	Installed Winter of 2003 - Lab 2nd & 4th Qrts
AW-16	Alluvial Well	5965	75	Quarterly	Semi-Annually	Annually	Yes	No	Installed Winter of 2003 - Lab 2nd & 4th Qrts
AW-17	Alluvial Well	5951	62	Quarterly	Semi-Annually	Annually	Yes	No	Installed Winter of 2003 - Lab 2nd & 4th Qrts

Summary of Hydrology Monitoring Stations (Continued)

Station Number	Station Name	Elevation (ft.)	Depth (ft.)	Frequency of Measurements		Report Frequency	Report Format		Comments
				Field Par.	Lab. Par.		AHR	DMR	
Surface Water Monitoring Stations - PONDS									
P-1	Steven's Draw-Pond 1	7080	5	Quarterly	N/A	Annually	Yes	No	No winter monitoring-Reprt Inflow, Outflow, Depth
P-2	Freeman Gulch-Pond 2	7600	5	Quarterly	N/A	Annually	Yes	No	No winter monitoring-Reprt Inflow, Outflow, Depth
P-3	Terror Creek-Pond 3	7730	4.5	Quarterly	N/A	Annually	Yes	No	No winter monitoring-Reprt Inflow, Outflow, Depth
P-4	Terror Creek-Pond 4	7880	3.5	Quarterly	N/A	Annually	Yes	No	No winter monitoring-Reprt Inflow, Outflow, Depth
P-5	Sheep Corral-Pond 5	7800	8	Quarterly	N/A	Annually	Yes	No	No winter monitoring-Reprt Inflow, Outflow, Depth
P-6	Terror Creek-Pond 6	7880	3	Quarterly	N/A	Annually	Yes	No	No winter monitoring-Reprt Inflow, Outflow, Depth
P1-4	W Fork Terror Creek-Pond 1-4	7960		Quarterly	N/A	Annually	Yes	No	Temporarily Suspended TR-103
P1-6	W Fork Terror Creek-Pond 1-6	7980		Quarterly	N/A	Annually	Yes	No	Temporarily Suspended TR-103
P1-11	W Fork Terror Creek-Pond 1-11	8000		Quarterly	N/A	Annually	Yes	No	Temporarily Suspended TR-103
P1-12	W Fork Terror Creek-Pond 1-12	7860		Quarterly	N/A	Annually	Yes	No	Temporarily Suspended TR-103
P5-5	Hugh's Pipe & Pond	7320		Quarterly	N/A	Annually	Yes	No	Temporarily Suspended TR-103
P6-2	W Fork Terror Creek-Pond 6-2	8000		Quarterly	N/A	Annually	Yes	No	Temporarily Suspended TR-103
P6-5	W Fork Terror Creek-Pond 6-5	8020		Quarterly	N/A	Annually	Yes	No	No winter monitoring-Reprt Inflow, Outflow, Depth
P7-2	Stevens Gulch-Pond 7-2	8190		Quarterly	N/A	Annually	Yes	No	No winter monitoring-Reprt Inflow, Outflow, Depth
P7-7	Stevens Gulch-Pond 7-7	8380		Quarterly	N/A	Annually	Yes	No	No winter monitoring-Reprt Inflow, Outflow, Depth
P7-11	Stevens Gulch-Pond 7-11	8400		Quarterly	N/A	Annually	Yes	No	No winter monitoring-Reprt Inflow, Outflow, Depth
P8-4	Terror Creek-Pond 8-4	6980		Quarterly	N/A	Annually	Yes	No	No winter monitoring-Reprt Inflow, Outflow, Depth
P12-1	Stevens Gulch-Pond 12-1	7950		Quarterly	N/A	Annually	Yes	No	No winter monitoring-Reprt Inflow, Outflow, Depth
P12-2	Stevens Gulch-Pond 12-2	8030		Quarterly	N/A	Annually	Yes	No	No winter monitoring-Reprt Inflow, Outflow, Depth
P12-9	Stevens Gulch-Pond 12-9	7800		Quarterly	N/A	Annually	Yes	No	Permanently Suspended TR-103
P12-10	Stevens Gulch-Pond 12-10	7820		Quarterly	N/A	Annually	Yes	No	No winter monitoring-Reprt Inflow, Outflow, Depth
P12-11	Stevens Gulch-Pond 12-11	7800		Quarterly	N/A	Annually	Yes	No	Permanently Suspended TR-103
P17-1	Coal Gulch-Pond 17-1	7340		Quarterly	N/A	Annually	Yes	No	No winter monitoring-Reprt Inflow, Outflow, Depth
P18-1	Coal Gulch-Pond 18-1	7760		Quarterly	N/A	Annually	Yes	No	No winter monitoring-Reprt Inflow, Outflow, Depth
P18-4	Stevens Gulch-Pond 18-4	8350		Quarterly	N/A	Annually	Yes	No	No winter monitoring-Reprt Inflow, Outflow, Depth
P81	Stevens Gulch-Pond 81	8640		Quarterly	N/A	Annually	Yes	No	No winter monitoring-Reprt Inflow, Outflow, Depth
P82	Terror Creek-Pond 82	7580		Quarterly	N/A	Annually	Yes	No	No winter monitoring-Reprt Inflow, Outflow, Depth
P83	Coal Gulch-Pond 83	7820	2.5	Quarterly	N/A	Annually	Yes	No	No winter monitoring-Reprt Inflow, Outflow, Depth
P33-3	Sheep Corral-Pond 33-3	7760	5.5	Quarterly	N/A	Annually	Yes	No	No winter monitoring-Reprt Inflow, Outflow, Depth
P31-1	Dry Pond Below Stevens Gulch Rd	8120		Quarterly	N/A	Annually	Yes	No	Temporarily Suspended TR-103
P36-1	Flat Pond Above Stevens Gulch Rd	8120		Quarterly	N/A	Annually	Yes	No	Temporarily Suspended TR-103
P36-3	Meadow Pond	8140		Quarterly	N/A	Annually	Yes	No	Temporarily Suspended TR-103
P36-6	Dry Pond 11	8140		Quarterly	N/A	Annually	Yes	No	Temporarily Suspended TR-103

LAB PARAMETER LIST

SURFACE WATER LIST 1

Field Parameters	
Flow Rate (gpm)	
Water Level	
pH (Standard Units)	
Conductivity (umhos/cm)	
Temerature (C)	
*Dissolved Oxygen (mg/l)	
Lab Parameters	
Wet Chemistry	**MDL**
Bicarbonate (HCO_3) (mg/l)	2 mg/L
Chloride (Cl^-) (mg/l)	0.5 mg/L
Conductivity (umhos/cm)	1 umhos/cm
Nitrate/Nitrite (mg/l)	0.1 mg/L
pH (Standard Units)	0.1 s.u.
Hardness (mg/l)	1 mg/L
Phosphate (PO_4^{-3} as P) (mg/l)	0.02 mg/L
Residue, Filterable (TDS) @180 C (mg/l)	0.5 mg/L
Residue, NonFilterable (TSS) (mg/l)	0.5 mg/L
Sodium Absorption Ratio in Water	0.15
Sulfate (SO_4^{--}) (mg/l)	0.6 mg/L
Metals	
Aluminum (Al), total recoverable (mg/l)	0.05 mg/L
Arsenic (As), total recoverable (mg/l)	0.002 mg/L
Cadmium (Cd), total recoverable (mg/l)	0.0002 mg/L
Calcium (Ca^{+2}), total recoverable (mg/l)	0.2 mg/L
Copper (Cu), total recoverable (mg/l)	0.01 mg/L
Iron (Fe), total recoverable & Diss (mg/l)	0.01 mg/L
Lead (Pb), total recoverable (mg/l)	0.02 mg/L
Magnesium (Mg^{+2}), total recoverable (mg/l)	0.2 mg/L
Manganese (Mn), total recoverable (mg/l)	0.01 mg/L
Mercury (Hg), total recoverable (mg/l)	0.000025 mg/L
Molybdenum (Mo), total recoverable (mg/l)	0.02 mg/L
Selenium (Se), total recoverable (mg/l)	0.001 mg/L
Sodium (NA^+), total recoverable (mg/l)	0.2 mg/L
Zinc (Zn), total recoverable (mg/l)	0.005 mg/L
Organic Analysis	
Oil and Grease (mg/l)	0.5 mg/L

SURFACE WATER LIST 2

Field Parameters	
Flow Rate (gpm)	
Water Level	
pH (Standard Units)	
Conductivity (umhos/cm)	
Temerature (C)	
*Dissolved Oxygen (mg/l)	
Lab Parameters	
Wet Chemistry	**MDL**
pH (Standard Units)	0.1 s.u.
Residue, Filterable (TDS) @180 C (mg/l)	0.5 mg/L
Ammonia (NH_3) (mg/l)	0.1 mg/L
Chloride (Cl) (mg/l)	0.5 mg/L
Cyanide (CN) (mg/l)	0.2 mg/L
Dissolved Oxygen (mg/l)	Report
Hardness (mg/l)	1 mg/L
Nitrate (NO_3) (mg/l)	0.1 mg/L
Nitrite (NO_2) (mg/l)	0.01 mg/L
Sulfide (S) (mg/l)	0.2 mg/L
Sulfate (SO_4^{--})(mg/l)	0.1 mg/L
Metals	
Arsenic (As), total recoverable (ug/l)	0.002 mg/L
Boron, total recoverabel (mg/l)	0.1 mg/L
Cadmium (Cd), total recoverable (ug/l)	0.0002 mg/L
Chromium III CrIII (ug/l)	0.01 mg/L
Chromium VI CrIV (ug/l)	0.02 mg/L
Copper (Cu), total recoverable (ug/l)	0.01 mg/L
Iron (Fe), dissolved (ug/l)	0.005 mg/L
Iron (Fe), total recoverable (ug/l)	0.001 mg/L
Lead (Pb), total recoverable (ug/l)	0.01 mg/L
Manganese (Mn), dissolved (ug/l)	0.01 mg/L
Manganese (Mn), total recoverable (ug/l)	0.01 mg/L
Mercury (Hg), total recoverable (ug/l)	0.000025 mg/L
Nickel, total recoverable (ug/l)	0.02 mg/L
Selenium (Se), total recoverable (ug/l)	0.001 mg/L
Silver (Ag), total recoverable (ug/l)	0.001 mg/L
Zinc (Zn), total recoverable (ug/l)	0.005 mg/L

GROUND WATER

Field Parameters	
Water Elevation (Feet)	
Depth to Water (Feet)	
pH (Standard Units)	
Conductivity (umhos/cm)	
Temperature (C)	
Lab Parameters	
Wet Chemistry	**MDL**
Bicarbonate (HCO_3) (mg/l)	2 mg/L
Carbonate (CO_3) (mg/l)	2 mg/L
Chloride (Cl^-) (mg/l)	0.5 mg/L
Conductivity (umhos/cm)	1 umhos/cm
Nitrate/Nitrite (mg/l)	0.1 mg/L
Ammonia (NH_3) (mg/l)	0.1 mg/L
pH (Lab Units)	0.1 mg/L
Hardness (mg/l)	1 mg/L
Phosphate (PO_4^{-3} as P) (mg/l)	0.02 mg/L
Residue, Filterable (TDS) @180 C (mg/l)	0.5 mg/L
Sulfate (SO_4^{--}) (mg/l)	0.6 mg/L
Metals	
Arsenic (As), dissolved (mg/l)	0.002 mg/L
Cadmium (Cd), dissolved (mg/l)	0.0002 mg/L
Calcium (Ca^{+2}), dissolved (mg/l)	0.2 mg/L
Iron (Fe), dissolved (mg/l)	0.01 mg/L
Iron (Fe), total recoverable (mg/l)	0.01 mg/L
Magnesium (Mg^{+2}), dissolved (mg/l)	0.2 mg/L
Manganese (Mn), dissolved (mg/l)	0.01 mg/L
Manganese (Mn), total recoverable (mg/l)	0.01 mg/L
Mercury (Hg), dissolved (mg/l)	0.000025 mg/L
Selenium (Se), dissolved (mg/l)	0.001 mg/L
Sodium (NA^+), dissolved (mg/l)	0.2 mg/L
Zinc (Zn), dissolved (mg/l)	0.005 mg/L

Refer to Pages 2.05-134 and 2.05-135 of Permit Application

Surface Water List 2 is applicable annually for North Fork Gunnison and Deer Trail Ditch only

NOTE: Springs are considered Surface Water

**Dissolved Oxygen is reported for Deer Trail Ditch, Fire Mountain Canal and North Fork Gunnison*

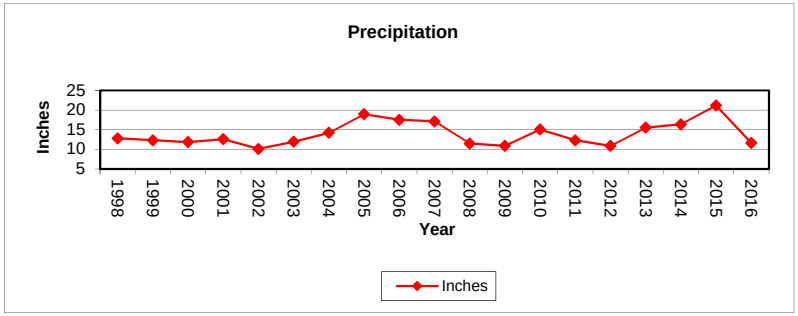
FIELD PARAMETER LIST

Parameter	Unit	Wells	Ponds	Streams	Springs
Conductivity	umhos/cm	Yes	Yes	Yes	Yes
Flow Rate	CFS/GPM	No	Yes	Yes	Yes
pH	Standard	Yes	Yes	Yes	Yes
Temperature	C	Yes	Yes	Yes	Yes
Water Level	Feet	Yes	Yes	No	No

PRECIPITATION VALUES

Monthly Precipitation Values

Month	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
January	1.13	1.08	1.93	0.73	0.55	0.26	1.31	2.05	0.81	0.68	1.67	0.91	0.42	0.49	1.22	1.83	0.66	1.02	0.9
February	0.83	0.38	1.27	1.06	0.11	1.35	1.46	1.38	0.28	0.92	1.1	1	1.66	0.87	1.41	0.89	2.16	1	0.85
March	1.43	0.42	1.03	0.42	1.03	1.17	0.14	1.93	1.58	1.39	0.54	0.89	1.2	1.22	0.3	1.14	0.77	0.76	0.3
April	1.43	2.54	0.42	0.57	0.61	0.49	3.3	1.37	0.83	1.2	0.77	1.09	0.51	1.68	0.62	1.3	1.31	1.75	1.21
May	0.16	1.00	0.67	1.75	0.28	1.81	0	1.22	0.17	1.18	0.64	2.73	1.68	0.83	0.09	1.24	1.71	3.86	1.33
June	0.47	0.94	0.86	0.39	0.04	0.48	0.34	1.64	0.5	0.99	0.67	0.63	0.55	0.32	0.05	0	0.21	1.05	0.51
July	0.66	2.7	0.89	1.31	0.28	0.76	0.02	0.4	3.06	0.85	0.24	0.27	1.44	1.74	1.26	1.37	1.11	2.43	0.8
August	1.18	1.42	1.27	2.35	0.66	0.46	0.48	1.71	0.87	1.16	2.07	0.33	2.09	0.46	2.35	0.78	2.13	1.96	1.81
September	0.75	1.16	1.27	0.34	2.43	1.93	2.85	2.84	2.32	3.2	0.62	0.32	1.15	1.2	0.92	3.28	2.96	1.2	1.07
October	1.88	0.05	0.75	0.84	2.53	0.46	1.37	2.11	5.08	1.37	0.74	0.58	1.84	1.55	0.64	2.12	1.17	1.94	0.49
November	1.87	0.07	0.73	1.85	0.9	1.74	1.72	0.84	1.39	0	0.91	0.77	0.58	0.96	0.61	0.91	0.65	1.48	0.16
December	1.00	0.57	0.78	0.99	0.71	1.03	1.26	1.47	0.65	4.20	1.55	1.36	1.91	1.01	1.41	0.69	1.56	2.70	2.18
Minimum	0.16	0.05	0.42	0.34	0.04	0.26	0.00	0.40	0.17	0.00	0.24	0.27	0.42	0.32	0.05	0.00	0.21	0.76	0.16
Average	1.07	1.03	0.99	1.05	0.84	1.00	1.19	1.58	1.46	1.43	0.96	0.91	1.25	1.03	0.91	1.30	1.37	1.76	0.97
Maximum	1.88	2.7	1.93	2.35	2.53	1.93	3.30	2.84	5.08	4.20	2.07	2.73	2.09	1.74	2.35	3.28	2.96	3.86	2.18
Total	12.79	12.33	11.87	12.60	10.13	11.94	14.25	18.96	17.54	17.14	11.52	10.88	15.03	12.33	10.88	15.55	16.40	21.15	11.61



This data is obtained from the internet at www.wrcc.dri.edu/summary/Climsmco.html select Paonia 1 SW (056306).

** No data recorded during the 2017 water year

Bowie Resources, LLC
Bowie No. 2 Mine
2017 Annual Hydrology Report

Table 5

Monitoring Point Reports
Table of Contents

Bowie Resources, LLC
Bowie No. 2 Mine
2017 Annual Hydrology Report

Table 5

Monitoring Point Reports
Table of Contents

Surface Water Monitoring Stations - STREAMS AND DITCHES

Bowie Resources, LLC
Bowie No. 2 Mine
2017 Annual Hydrology Report

Table 5

Monitoring Point Reports
Table of Contents

				Chart Fig No.
SW-05	Stevens Gulch - Downstream	Monitoring Point Report Figure No.	88	89
SW-10	Terror Ditch	Monitoring Point Report Figure No.	90	91
SW-11	Stevens Gulch - Upstream	Monitoring Point Report Figure No.	92	
SW-12	West Fork Terror Creek - Upstream	Monitoring Point Report Figure No.	93	
EFH-1	Ephemeral Channel in Spruce Stomp Lease	Monitoring Point Report Figure No.		
EFH-2	Ephemeral Channel in Spruce Stomp Lease	Monitoring Point Report Figure No.		
EFH-3	Ephemeral Channel in Spruce Stomp Lease	Monitoring Point Report Figure No.		
EFH-4	Ephemeral Channel in Spruce Stomp Lease	Monitoring Point Report Figure No.		
EFH-5	Ephemeral Channel in Spruce Stomp Lease	Monitoring Point Report Figure No.		
EFH-6	Ephemeral Channel in Spruce Stomp Lease	Monitoring Point Report Figure No.		
EFH-7	Ephemeral Channel in Spruce Stomp Lease	Monitoring Point Report Figure No.		
EFH-8	Ephemeral Channel in Spruce Stomp Lease	Monitoring Point Report Figure No.		
EFH-9	Ephemeral Channel in Spruce Stomp Lease	Monitoring Point Report Figure No.		

Coal Member of Mesaverde

DH-15	Stevens Draw - Drill Hole	Monitoring Point Report Figure No.		
DH-25	C Gulch - Drill Hole	Monitoring Point Report Figure No.		
DH-38	D Gulch - Drill Hole	Monitoring Point Report Figure No.		
DH-15a	Stevens Draw - Drill Hole	Monitoring Point Report Figure No.	94	
DH-39	Stevens Draw - Drill Hole	Monitoring Point Report Figure No.	95	96
DH-49	B Gulch - Drill Hole	Monitoring Point Report Figure No.	97	98
DH-67B	Hubbard Creek - Monitoring Well	Monitoring Point Report Figure No.	99	
DH-67D	Hubbard Creek - Monitoring Well	Monitoring Point Report Figure No.	100	
DH-67abv	Hubbard Creek - Monitoring Well	Monitoring Point Report Figure No.	101	
DH-67blw	Hubbard Creek - Monitoring Well	Monitoring Point Report Figure No.	102	
TC-03-01 Upper (B)	Terror Creek - Monitoring Well	Monitoring Point Report Figure No.		
TC-03-02	Terror Creek - Monitoring Well	Monitoring Point Report Figure No.		
CWI-DH-58A	Upper B Seam & Above (B1)	Monitoring Point Report Figure No.	103	
CWI-DH-60	Upper B Seam (B1)	Monitoring Point Report Figure No.	104	
DH-2010-1B	B Seam	Monitoring Point Report Figure No.	105	
DH-2010-1SS	Above B Seam	Monitoring Point Report Figure No.	106	

North Fork Alluvium Monitoring Wells

AW-1	Alluvial Well	Monitoring Point Report Figure No.	107	108
AW-2	Alluvial Well	Monitoring Point Report Figure No.	109	
AW-3	Alluvial Well	Monitoring Point Report Figure No.	110	111
AW-4	Alluvial Well	Monitoring Point Report Figure No.	112	113
AW-5	Alluvial Well	Monitoring Point Report Figure No.	114	115
AW-6	Alluvial Well	Monitoring Point Report Figure No.	116	117
AW-7	Alluvial Well	Monitoring Point Report Figure No.	118	
AW-8	Alluvial Well	Monitoring Point Report Figure No.	119	
AW-9	Alluvial Well	Monitoring Point Report Figure No.	120	
AW-11	Alluvial Well	Monitoring Point Report Figure No.	121	
AW-12	Alluvial Well	Monitoring Point Report Figure No.	122	
AW-14	Alluvial Well	Monitoring Point Report Figure No.	123	
AW-15	Alluvial Well	Monitoring Point Report Figure No.	124	
AW-16	Alluvial Well	Monitoring Point Report Figure No.	125	
AW-17	Alluvial Well	Monitoring Point Report Figure No.	126	

Bowie Resources, LLC
Bowie No. 2 Mine
2017 Annual Hydrology Report

Table 5

Monitoring Point Reports
Table of Contents

Surface Water Monitoring Stations: PONDS

SP5-1
Terror Creek - Pond Spring 5-1
Elevation - 7400

Initiated	7/18/1985	7/18/1985	7/18/1985
Activated	3/31/2015	3/31/2015	3/31/2015
Date	11/22/2017	9/7/2017	4/6/2017

Summary Information

Field Parameters	UNITS	Baseline Min	Baseline Ave	Baseline Max	Operation Min	Operation Ave	Operation Max			
Outflow	GPM	0.00	0.94	7.36	0.47	2.29	4.12	Seep	Seep	4.12
Inflow	GPM	0.00	0.00	0.00	0.02	1.02	2.96	Seep	0.02	2.96
Freeboard	Feet	0.00	0.00	0.00	0.00	0.00	0.00			
Temperature	Celsius	4.1	12.8	23.2	3.80	9.80	16.20	3.8	11.8	6
Conductivity	umhos/cm	490	672	804	750.00	791.67	830.00	830	805	781
pH	su	7.3	8.2	9.0	7.91	8.14	8.40	7.91	8.15	8.16
Field Comments										
Lab Parameters	UNITS									
Bicarbonate	mg/L	256.0	383.5	441.6	453.00	467.50	482.00			453
Carbonate	mg/L	16.0	16.0	16.0	0.00	0.00	0.00			
Chloride	mg/L	2.0	6.4	10.0	3.90	4.27	4.50			4.5
Conductivity	umhos/cm	552.0	656.8	974.0	680.00	690.67	700.00			680
Hardness	mg/L	182.0	250.8	287.0	246.00	250.33	256.00			246
Acidity	mg/L	14.0	14.0	14.0	-410.00	-390.00	-380.00			-380
pH	su	6.4	7.9	8.7	7.58	7.84	8.05			7.88
ResidueFilterable-TDS	mg/L	320.0	374.9	451.0	428.00	442.67	457.00			428
ResidueNonFilterable-TSS	mg/L	2.0	128.0	742.0	91.30	119.15	147.00			147
SAR		1.2	1.7	2.5	2.31	2.42	2.52			2.31
Sulfate	mg/L	16.0	34.3	70.0	16.90	18.37	19.80			19.8
Calcium (Dissolved)	mg/L	30.0	57.8	69.0	0.00	0.00	0.00			
Magnesium (Total)	mg/L	18.0	25.9	28.0	22.00	23.27	23.90			22
Sodium (Dissolved)	mg/L	43.0	61.0	76.0	0.00	0.00	0.00			
Iron (Total)	mg/L	0.4	0.4	0.4	0.25	0.60	0.98			0.979
Iron (Dissolved)	mg/L	0.1	0.1	0.1	0.01	0.03	0.05			0.0103
Manganese (Total)	mg/L	0.06	0.06	0.06	0.05	0.11	0.16			0.112

The area of concern for monitoring point SP5-1 was affected by the mining operation on or about March 31, 2015.

Negative value of acidity indicates alkalinity

Baseline Information Collection initiated on 7/18/85 and completed on March 31, 2015.
Point SP5-1 has been influenced by mining.

SP7-1
Terror Creek - Pond Spring 7-1
Depth 3'
Elevation - 7780

Initiated	7/25/1985	7/25/1985	7/25/1985
Activated	6/1/2013	6/1/2013	6/1/2013
Date	10/13/2017	8/24/2017	4/5/2017

Summary Information

Field Parameters	UNITS	Baseline Min	Baseline Ave	Baseline Max	Operation Min	Operation Ave	Operation Max			
Outflow	GPM	0	3.35	30	0	3.13	16.91	1.03	2.5	16.91
Inflow	GPM	0	0.00	0	0	2.51	10.9	Seep	Seep	10.9
Freeboard	Feet	0	1.07	3	0	0.19	0.51	0	0	0
Temperature	Celsius	10.3	16.68	32	7.4	14.38	22.8	7.4	15.9	8.2
Conductivity	umhos/cm	353	602.53	928	580	621.44	654	654	637	608
pH	su	6.7	7.95	9.4	7.57	8.24	8.63	8.09	7.57	8.43
Field Comments										
Lab Parameters	UNITS									
Bicarbonate	mg/L	226	382.24	603	253.3	318.57	368			336
Chloride	mg/L	2	8.98	54.59	2.3	5.27	13.08			2.5
Conductivity	umhos/cm	450	633.06	1120	475	523.00	585			515
Hardness	mg/L	145	233.44	295	190.3	227.57	254			235
Nitrate-Nitrite	mg/L	0.3	0.30	0.3	0.031	0.03	0.031			<MDL
Oil and Grease	mg/L	0	<MDL	0	0	<MDL	0			<MDL
pH	su	7	7.81	8.4	7.18	7.95	8.22			8.21
Phosphate	mg/L	0	<MDL	0	0.073	0.09	0.11			0.11
ResidueFilterable-TDS	mg/L	280	404.33	808	348	366.50	382			348
ResidueNonFilterable-TSS	mg/L	2	85.47	580	7	40.78	81.2			18.9
SAR		1.2	1.70	2.9	1.37	2.01	3.681			1.43
Sulfate	mg/L	10	20.32	39	27.99	29.97	33.6			29.2
Aluminum (TREC)	mg/L	0.034	0.03	0.034	0.12	249.86	999			0.187
Arsenic (TREC)	mg/L	0.06	0.06	0.06	0.002	0.00	0.002			<MDL
Cadmium (TREC)	mg/L	0.02	0.02	0.02	0.002	0.00	0.002			<MDL
Calcium (TREC)	mg/L	33	50.86	70.6	41.9	52.93	58.8			57.4
Copper (TREC)	mg/L	0.003	0.00	0.003	0.009	0.01	0.009			<MDL
Iron (TREC)	mg/L	1.24	1.24	1.24	0.157	0.48	1.19			0.243
Lead (TREC)	mg/L	0.02	0.02	0.02	0.02	0.02	0.02			<MDL
Magnesium (TREC)	mg/L	13.9	25.89	37	20.8	23.15	26.1			22.2
Manganese (TREC)	mg/L	0.376	0.38	0.376	0.03	0.06	0.09			0.0904
Mercury (TREC)	mg/L	0.00003	0.00	0.00003	2E-05	0.00	2E-05			<MDL
Molybdenum (TREC)	mg/L	0.007	0.01	0.007	0.001	0.00	0.001			<MDL
Selenium (TREC)	mg/L	0.003	0.00	0.003	0.002	0.00	0.002			<MDL
Sodium (TREC)	mg/L	78.1	78.10	78.1	45.2	67.73	116.7			52.7
Zinc (TREC)	mg/L	0.01	0.01	0.01	0.02	0.02	0.02			<MDL

The area of concern for monitoring point SP7-1was activated on or about 06/1/2013.

Baseline Information Collection initiated on 7/25/85 and not yet completed.
Point SP7-1 has not been influenced by mining.

SP7-5
Steven's Gulch - Pond Spring 7-5
Elevation - 8300

Initiated	7/6/1983	7/6/1983	7/6/1983
Activated			
Date	10/20/2017	8/7/2017	6/27/2017

Summary Information

Field Parameters	UNITS	Baseline Min	Baseline Ave	Baseline Max	Operation Min	Operation Ave	Operation Max			
Inflow	GPM	0.00	1.04	4.49				Seep	Seep	0.390
Outflow	GPM	0.00	0.15	0.75				0.000	0.010	0.280
Freeboard	Feet	0.00	0.34	2.20				0.4	0	0
Temperature	Celsius	3.5	9.9	21.7				3.5	9.2	7.75
Conductivity	umhos/cm	202	328	800				354	341	344
pH	su	6.4	7.6	9.0				7.68	7.45	7.75
Field Comments										
Lab Parameters	**UNITS**									
Bicarbonate	mg/L	71.81	183.45	227.00						
Chloride	mg/L	<MDL	4.39	19.82						
Conductivity	umhos/cm	184	298	430						
Hardness	mg/L	74.97	154.5	228.0						
Nitrate-Nitrite	mg/L	<MDL	0.256	0.256						
Oil & Grease	mg/L	<MDL	<MDL	<MDL						
pH	su	6.7	7.4	8.4						
Phosphate	mg/L	<MDL	<MDL	<MDL						
ResidueFilterable-TDS	mg/L	163	204	260						
ResidueNonFilterable-TSS	mg/L	<MDL	42	236						
SAR		0.250	0.350	0.933						
Sulfate	mg/L	<MDL	18.2	154.0						
Aluminum (TREC)	mg/L	<MDL	0.022	0.022						
Arsenic (TREC)	mg/L	<MDL	0.04	0.04						
Cadmium (TREC)	mg/L	<MDL	0.01	0.01						
Calcium (TREC)	mg/L	19.8	27.7	35.6						
Copper (TREC)	mg/L	<MDL	0.02	0.02						
Iron (TREC)	mg/L	0.10	0.31	0.62						
Lead (TREC)	mg/L	<MDL	0.05	0.05						
Magnesium (TREC)	mg/L	6.2	16.1	27.0						
Manganese (TREC)	mg/L	<MDL	0.02	0.02						
Mercury (TREC)	mg/L	<MDL	0.00004	0.00004						
Molybdenum (TREC)	mg/L	<MDL	0.006	0.006						
Selenium (TREC)	mg/L	<MDL	0.023	0.023						
Sodium (TREC)	mg/L	8.50	17.53	26.56						
Zinc (TREC)	mg/L	<MDL	0.006	0.006						

The area of concern for monitoring point SP7-5 has not been affected by the mining operation. Therefore, all recorded monitoring events are considered Baseline.

Baseline Information Collection initiated on 7/6/83 and not yet considered complete.
Point SP7-5 has not been influenced by mining.

SP17
Terror Creek - Pond Spring 17
Depth 4'
Elevation - 7520

Initiated	4/15/1983	4/15/1983	4/15/1983
Activated			
Date	10/20/2017	8/8/2017	4/6/2017

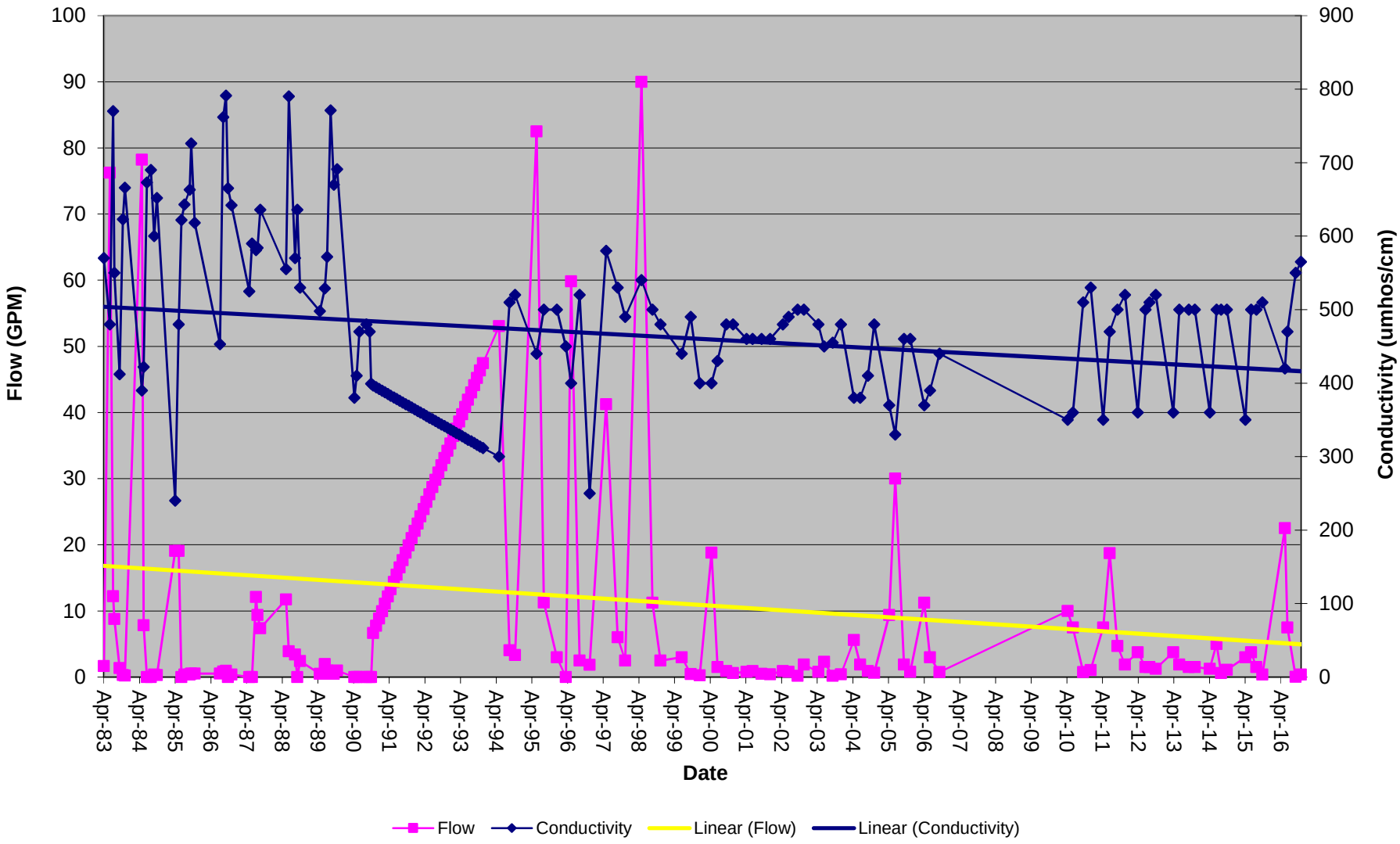
Field Parameters	UNITS	Summary Information Baseline Min	Ave	Max	Operation Min	Ave	Max			
Outflow	GPM	0	2.42	22.5				0	0	19.5
Inflow	GPM	0	11.97	90				0.16	1.19	20.6
Freeboard	Feet	0	0	0.1				0.1	0	0
Temperature	Celsius	3.6	9.7	25				8.1	9.8	7.5
Conductivity	umhos/cm	240	469	791				517	544	457
pH	su	6.8	7.6	9.3				7.53	7.48	7.66
Field Comments										
Lab Parameters	UNITS									
Bicarbonate	mg/L	186.0	263.2	361.0						236
Chloride	mg/L	<MDL	5	34.74						3.5
Conductivity	umhos/cm	340	487	686						377
Hardness	mg/L	17.00	175.34	232.00						150
Nitrate-Nitrite	mg/L	<MDL	0.63	1.1						1.1
Oil and Grease	mg/L	<MDL	<MDL	<MDL						<MDL
pH	su	6.8	7.6	8.3						7.24
Phosphate	mg/L	<MDL	<MDL	<MDL						0.017
ResidueFilterable-TDS	mg/L	145	287	430						255
ResidueNonFilterable-TSS	mg/L	<MDL	17	74						<MDL
SAR		1.08	2.61	41.10						1.37
Sulfate	mg/L	5.35	27.27	68						18.8
Aluminum (TREC)	mg/L	<MDL	242.112	1210						<MDL
Arsenic (TREC)	mg/L	<MDL	0.01	0.02						<MDL
Cadmium (TREC)	mg/L	<MDL	0.01	0.01						<MDL
Calcium (TREC)	mg/L	37.9	44.6	56.2						40.6
Copper (TREC)	mg/L	<MDL	0.01	0.01						<MDL
Iron (TREC)	mg/L	0.0197	0.34	2.25						0.0329
Lead (TREC)	mg/L	<MDL	0.03	0.04						<MDL
Magnesium (TREC)	mg/L	11.7	15.5	18.9						11.7
Manganese (TREC)	mg/L	<MDL	0.024	0.0862						<MDL
Mercury (TREC)	mg/L	<MDL	0.00008	0.00022						<MDL
Molybdenum (TREC)	mg/L	<MDL	0.003	0.006						<MDL
Selenium (TREC)	mg/L	<MDL	0.00531	0.014						<MDL
Sodium (TREC)	mg/L	36.3	52.3	112.6						38.5
Zinc (TREC)	mg/L	<MDL	0.010	0.02						<MDL

The area of concern for monitoring point SP17 has not been affected by the mining operation. Therefore, all recorded monitoring events are considered Baseline.

A diffuse flow from an area of approximately 30' x 20' discharges into a pond measuring approximately 30' x 50'. (Hanna, 99)

Baseline Information Collection initiated on 4/15/83 and not yet considered complete.
Point SP17 has not been influenced by mining.

Plot of Flow and Conductivity



SP17 - Terror Creek Spring Pond 17

Figure 5

SP18
Terror Creek - Pond Spring 18
Elevation - 7280

Initiated	4/15/1983	4/15/1983	4/15/1983
Activated			
Date	11/22/2017	9/7/2017	4/6/2017

Summary Information

Field Parameters	UNITS	Baseline Min	Baseline Ave	Baseline Max	Operation Min	Operation Ave	Operation Max			
Outflow	GPM	0.17	1.36	3.96				1.83	1.52	3.96
Inflow	GPM	0.09	2.84	17.50				2.37	2.17	8.71
Freeboard	Feet	0.00	0.00	0.00				0	0	0
Temperature	Celsius	3.0	10.4	21.3				6.0	10.7	7.1
Conductivity	umhos/cm	260	623	832				690	669	616
pH	su	7.7	8.3	8.9				8.2	8.5	
Field Comments										
Lab Parameters	UNITS									
Bicarbonate	mg/L	133.0	343.7	408.7						347
Chloride	mg/L	3.00	7.94	62.04						3.2
Conductivity	umhos/cm	230	606	892						525
Hardness	mg/L	86.00	235.68	277.00						231
Nitrate-Nitrite	mg/L	<MDL	0.5	0.8						0.81
Oil and Grease	mg/L	<MDL	<MDL	<MDL						<MDL
pH	su	7.2	8.0	8.3						8.1
Phosphate	mg/L	<MDL	0.023	0.024						0.02
ResidueFilterable-TDS	mg/L	110	344	678						345
ResidueNonFilterable-TSS	mg/L	2	39	171						102
SAR		0.89	1.39	1.84						1.36
Sulfate	mg/L	10	27	53						17.3
Aluminum (TREC)	mg/L	0.028	260.405	806.000						234
Arsenic (TREC)	mg/L	<MDL	0.04	0.04						<MDL
Cadmium (TREC)	mg/L	<MDL	0.01	0.01						<MDL
Calcium (TREC)	mg/L	57.9	62.4	66.8						57.9
Copper TREC)	mg/L	<MDL	0.003	0.003						<MDL
Iron (TREC)	mg/L	0.24	1.24	4.51						0.309
Lead (TREC)	mg/L	0.03	0.03	0.03						<MDL
Magnesium (TREC)	mg/L	21.0	24.7	28.1						21
Manganese (TREC)	mg/L	0.01	3.04	21.20						0.0132
Mercury (TREC)	mg/L	<MDL	0.00007	0.00007						<MDL
Molybdenum (TREC)	mg/L	<MDL	0.010	0.010						0.0104
Selenium (TREC)	mg/L	<MDL	0.012	0.012						<MDL
Sodium (TREC)	mg/L	49.1	56.7	69.7						49.1
Zinc (TREC)	mg/L	<MDL	0.004	0.004						<MDL

The area of concern for monitoring point SP18 has not been affected by the mining operation. Therefore, all recorded monitoring events are considered Baseline.

Baseline Information Collection initiated on 4/15/83 and not yet considered complete.
Point SP18 has not been influenced by mining.

SP19
Steven's Gulch - Pond Spring 19
Elevation - 8240

Initiated	8/22/1983	8/22/1983	8/22/1983
Activated	2/28/2015	2/28/2015	2/28/2015
Date	10/20/2017	8/7/2017	5/11/2017

Summary Information

Field Parameters	UNITS	Baseline Min	Baseline Ave	Baseline Max	Operation Min	Operation Ave	Operation Max			
Outflow	GPM	0	0.41	8.62	0	0.69	3.75	0		3.17
Inflow	GPM	0	0.03	0.49	0	0.42	2.50	0	Dry	1.68
Freeboard	Feet	0	1.45	2.70	0	0.97	1.71	1.1	1.2	0
Temperature	Celsius	-1.4	17.66	27.50	12.5	15.20	17.90			12.5
Conductivity	umhos/cm	110	286.89	545.00	140	146.75	153.50			153.5
pH	su	7.7	8.43	10.00	8.1	8.23	8.35			8.35
Field Comments								Dry		
Lab Parameters	UNITS									
Bicarbonate	mg/L	84.2	166.2	256.2						
Carbonate	mg/L									
Chloride	mg/L	<MDL	3	7						
Conductivity	umhos/cm	150	272	410						
Hardness	mg/L	61	120	185						
pH	su	6.9	7.5	8.4						
ResidueFilterable-TDS	mg/L	100	174	256						
ResidueNonFilterable-TSS	mg/L	6	64	396						
SAR		0.15	0.37	1.00						
Sulfate	mg/L	<MDL	24	101						
Calcium (Dissolved)	mg/L	16	28	41						
Magnesium (Total)	mg/L	5	12	20						
Sodium (Dissolved)	mg/L	3	9	23						

The area of concern for monitoring point SP19 was affected by the mining operation on or about February 28, 2015.

Baseline Information Collection initiated on 8/22/83 and complete February 28, 2015.
Point SP19 has been influenced by mining.

SP20
Terror Creek - Pond Spring 20
Depth 4'
Elevation - 7840

Initiated	5/15/1983	5/15/1983	5/15/1983
Activated	6/30/2013	6/30/2013	6/30/2013
Date	11/27/2017	8/24/2017	4/5/2017

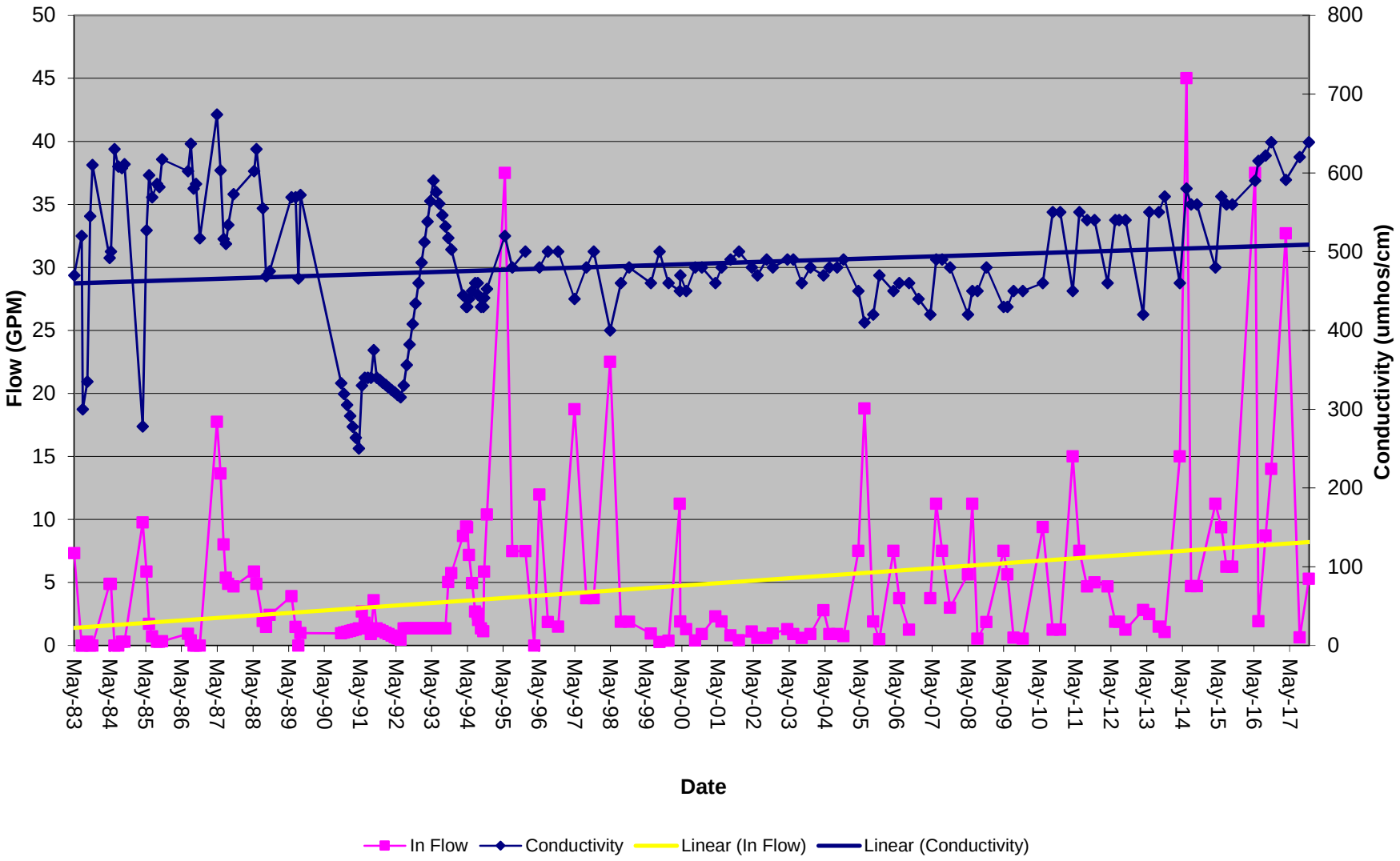
		Summary Information								
Field		Baseline			Operation					
Parameters	UNITS	Min	Ave	Max	Min	Ave	Max			
Outflow	GPM	0.0	0.6	2.3	0.5	10.7	42.2	13.08	7.40	42.20
Inflow	GPM	0.0	3.5	37.5	0.6	14.4	45.0	5.3	0.634	32.7
Freeboard	Feet	0.0	0.0	0.8	0.0	0.0	0.0			
Temperature	Celsius	2.0	8.8	27.7	6.7	7.8	9.6	8	8.3	8.2
Conductivity	umhos/cm	250.0	471.2	674.0	460.0	574.8	639.0	639	620	591
pH	su	5.3	7.5	8.9	7.0	7.3	7.8	7.4	7.47	7.46
Field Comments										
Lab Parameters	UNITS									
Bicarbonate	mg/L	144.7	289.9	342.0	247.4	331.4	385.0	385	341	320
Chloride	mg/L	0.0	5.0	28.3	2.3	2.7	4.6	2.5	2.5	2.5
Conductivity	umhos/cm	311.5	513.5	714.0	484.0	524.5	591.0	591	484	520
Hardness	mg/L	108.0	207.6	511.9	197.0	224.4	243.0	224	214	218
Nitrate-Nitrite	mg/L	<MDL	0.3	0.3	<MDL	<MDL	0.1	<MDL	0.054	0.073
Oil and Grease	mg/L	<MDL	<MDL	0.0	<MDL	<MDL	0.0	<MDL	<MDL	<MDL
pH	su	6.7	7.4	8.5	7.0	7.3	7.6	7.35	7.56	7.31
Phosphate	mg/L	<MDL	<MDL	0.0	<MDL	0.0	0.0	0.021	0.027	0.021
ResidueFilterable-TDS	mg/L	240.0	318.8	460.0	337.0	361.4	438.0	350	351	344
ResidueNonFilterable-TSS	mg/L	<MDL	88.9	1800.0	<MDL	9.0	9.0	<MDL	<MDL	<MDL
SAR		0.5	1.3	2.3	1.2	2.2	5.4	1.37	5.36	1.44
Sulfate	mg/L	0.8	12.5	60.0	0.0	26.5	30.9	30.9	0.0292	30.5
Aluminum (TREC)	mg/L	<MDL	0.2	0.5	<MDL	93.1	186.0	<MDL	<MDL	<MDL
Arsenic (TREC)	mg/L	<MDL	0.0	0.0	<MDL	0.0	0.0	<MDL	<MDL	<MDL
Cadmium (TREC)	mg/L	<MDL	0.0	0.0	<MDL	0.0	0.0	<MDL	<MDL	<MDL
Calcium (TREC)	mg/L	36.3	69.1	128.3	42.1	53.6	59.8	53.5	51.7	53.2
Copper (TREC)	mg/L	<MDL	0.0	0.0	<MDL	0.0	0.0	<MDL	<MDL	<MDL
Iron (TREC)	mg/L	0.0	0.1	0.2	0.0	0.1	0.3	<MDL	0.01258	0.0194
Lead (TREC)	mg/L	<MDL	0.0	0.0	<MDL	0.0	0.0	<MDL	<MDL	<MDL
Magnesium (TREC)	mg/L	17.2	28.6	46.5	20.7	22.2	22.9	22	20.7	<MDL
Manganese (TREC)	mg/L	<MDL	0.0	0.0	<MDL	0.0	0.0	<MDL	<MDL	<MDL
Mercury (TREC)	mg/L	<MDL	0.0	0.0	<MDL	0.0	0.0	<MDL	<MDL	<MDL
Molybdenum (TREC)	mg/L	<MDL	0.0	0.0	<MDL	0.0	0.0	<MDL	<MDL	<MDL
Selenium (TREC)	mg/L	<MDL	0.0	0.0	<MDL	0.0	0.0	<MDL	<MDL	<MDL
Sodium (TREC)	mg/L	40.2	47.6	53.1	43.6	55.1	124.8	44.7	45.4	45.3
Zinc (TREC)	mg/L	<MDL	0.0	0.0	<MDL	0.0	0.0	<MDL	<MDL	<MDL

Activated 6/30/2013

This spring and pond consists of an area of approximately 20' x 20' of diffuse flow which is collected in a pond of approximately 30' x 60'. (Hanna, 99)

Baseline Information Collection initieated on 5/15/83 and not yet considered complete.
Point SP20 has not been influenced by mining.

Plot of Flow and Conductivity



SP20 - Terror Creek Spring Pond 20

Figure 9

SP22
Terror Creek - Pond Spring 22
Depth 4'
Elevation - 7480

Initiated	7/18/1983	7/18/1983	7/18/1983
Activated	8/5/2012	8/5/2012	8/5/2012
Date	10/13/2017	8/24/2017	4/5/2017

Summary Information

Field Parameters	UNITS	Baseline Min	Baseline Ave	Baseline Max	Operation Min	Operation Ave	Operation Max			
Inflow	GPM	0.00	0.33	5.63	0.00	0.29	5.81	0.00	0.00	5.81
Outflow	GPM	0.00	0.00	0.00	0.00	0.01	0.20	0.00	0.00	0.07
Freeboard	Feet	0.0	1.1	4.0	0.00	0.22	0.43	0.00	0.00	0.00
Temperature	Celsius	6.9	16.9	28.6						6.3
Conductivity	umhos/cm	343	661	915						429
pH	su	7.3	8.3	9.7						8.4
Field Comments								Dry	Dry	
Lab Parameters	**UNITS**									
Bicarbonate	mg/L	165.9	343.4	584						241
Carbonate	mg/L	<MDL	1.928	11.71						
Chloride	mg/L	1	7.621	13						3.2
Conductivity	umhos/cm	390	629.2	878						347
Hardness	mg/L	132	277.6	377						191
pH	su	7.3	8.013	8.56						8.1
ResidueFilterable-TDS	mg/L	145	377.3	564						250
ResidueNonFilterable-TSS	mg/L	4	20.58	65						52.2
SAR		0.53	1.087	1.897						0.64
Sulfate	mg/L	14	48.52	230						11.8
Calcium (Dissolved)	mg/L	17	57.89	90						48.40
Magnesium (Total)	mg/L	12	32.36	51						16.6
Sodium (Dissolved)	mg/L	14	40.51	63						20.20

The monitoring point for Spring and Pond 22 is located on an east facing slope that drains down toward Terror Creek.

Baseline Information is derived from monitoring events beginning on 7/18/83 through 8/5/2012,
Point SP22 influenced by mining on 8/5/12.

SP23
Stevens Gulch - Pond Spring 23
Elevation - 8300

Initiated	8/22/1983	8/22/1983	8/22/1983
Activated	7/15/2014	7/15/2014	7/15/2014
Date	10/20/2017	8/7/2017	5/11/2017

Summary Information

Field Parameters	UNITS	Baseline Min	Baseline Ave	Baseline Max	Operation Min	Operation Ave	Operation Max			
Outflow	GPM	0.00	1.05	9.29	0.00		62.50	0.06	62.50	4.75
Inflow	GPM							Seep	Seep	Seep
Freeboard	Feet	0.00	0.02	0.28	0.00	0.22	2.20	0	0	0
Temperature	Celsius	-0.10	10.07	21.70	3.50	10.19	16.20		16.2	12.5
Conductivity	umhos/cm	220.00	403.91	891.00	220	395	521		509	425
pH	su	6.80	7.42	9.60	6.9	7.5	9.4		7.9	7.6
Field Comments										
Lab Parameters	**UNITS**									
Bicarbonate	mg/L	91.9	254.6	424.6						
Chloride	mg/L	<MDL	5.15	17.37						
Conductivity	umhos/cm	236	424	670						
Hardness	mg/L	105.00	209.37	322.00						
Nitrate-Nitrite	mg/L	0.11	0.11	0.11						
Oil and Grease	mg/L	<MDL	<MDL	<MDL						
pH	su	6.4	7.3	8.4						
Phosphate	mg/L	<MDL	<MDL	<MDL						
ResidueFilterable-TDS	mg/L	156	270	380						
ResidueNonFilterable-TSS	mg/L	2	61	216						
SAR		0.120	0.437	1.010						
Sulfate	mg/L	<MDL	10.08	43.00						
Aluminum (TREC)	mg/L	0.0210	0.0210	0.0210						
Arsenic (TREC)	mg/L	0.0200	0.0200	0.0200						
Cadmium (TREC)	mg/L	0.0100	0.0100	0.0100						
Calcium (TREC)	mg/L	41.300	41.300	41.300						
Copper (TREC)	mg/L	0.003	0.003	0.003						
Iron (TREC)	mg/L	0.15	0.54	1.15						
Lead (TREC)	mg/L	0.05	0.05	0.05						
Magnesium (TREC)	mg/L	11.0	23.4	38.0						
Manganese (TREC)	mg/L	0.010	0.067	0.110						
Mercury (TREC)	mg/L	0.00008	0.00008	0.00008						
Molybdenum (TREC)	mg/L	0.0030	0.0030	0.0030						
Selenium (TREC)	mg/L	0.0180	0.0180	0.0180						
Sodium (TREC)	mg/L	15.78	15.78	15.78						
Zinc (TREC)	mg/L	0.010	0.010	0.010						

**Multiple Seeps Inflow - Unmeasurable*

Activated 7/15/2014

Baseline Information Collection initiated on 8/22/83.
Point SP23 was influenced by mining 7/15/2014.

SP34-11
Sheep Corral - Spring/Pond 34-11
Elevation - 7440
Depth - 3'

Initiated	10/27/1997	10/27/1997	10/27/1997
Activated	6/1/2002	6/1/2002	6/1/2002
Date	10/6/2017	8/9/2017	5/4/2017

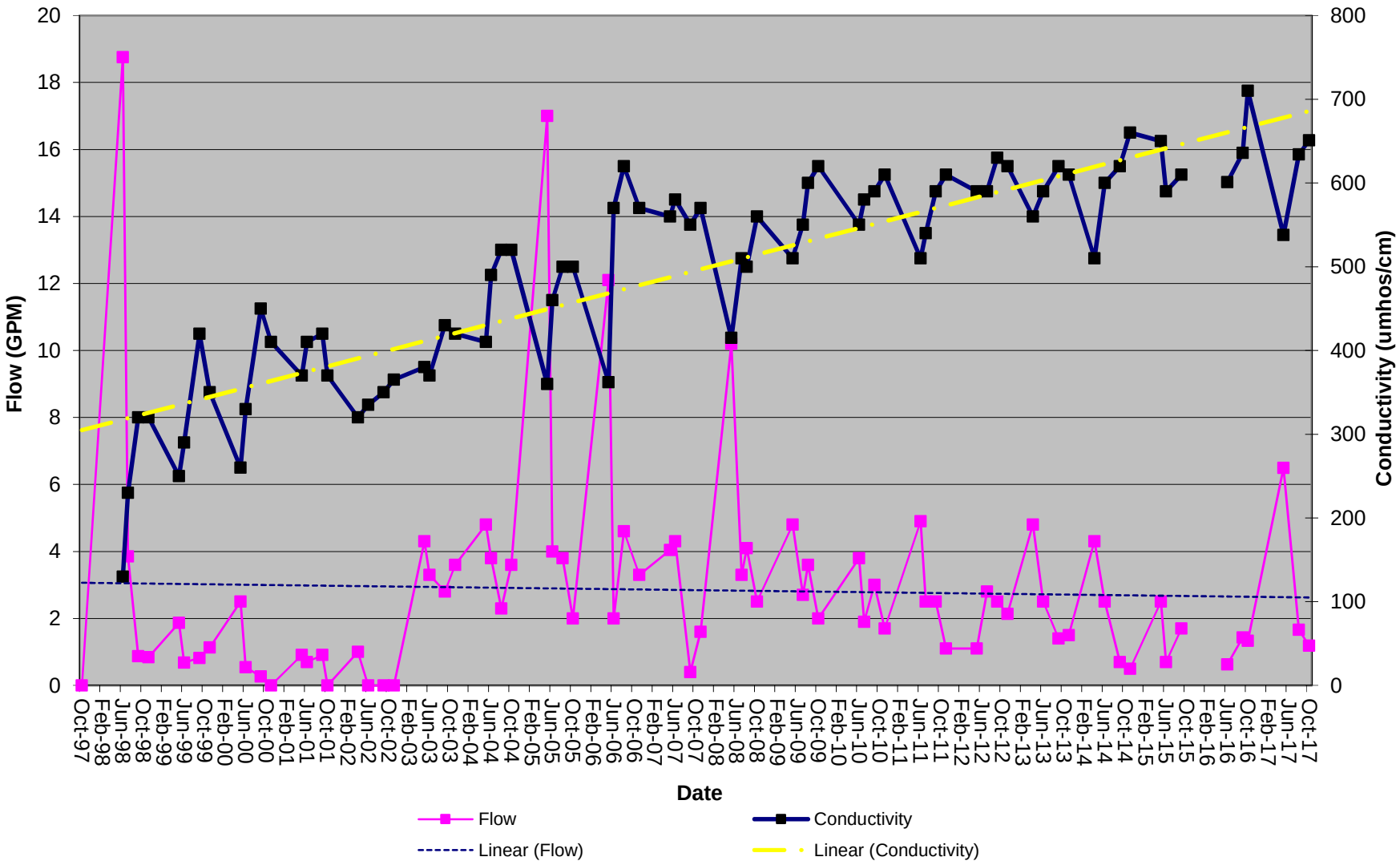
Summary Information

Field Parameters	UNITS	Baseline Min	Baseline Ave	Baseline Max	Operation Min	Operation Ave	Operation Max			
Outflow	GPM	0.0	2.2	18.8	0.0	3.21	17.00	2.38	1.65	9.51
Inflow	GPM				0.0	2.19	6.49	1.19	1.66	6.49
FieldComment										
ph	su	6.9	7.5	8.0	6.9	7.65	8.50	7.73	7.96	7.73
Conductivity	umhos/cm	130	325	450	360	550	710	651	634	538
Temperature	Celsius	6.1	10.0	15.1	4.5	8.0	12.8	7.8	7.6	5.7
Lab Parameters	UNITS									
Bicarbonate	mg/L	165	197	217	137.9	236.3	331.0			287
Chloride	mg/L	<MDL	2	3	<MDL	5.30	11.79			2.1
Conductivity	umhos/cm	324	412	482	367.8	469.8	554.0			485
Hardness	mg/L	92	103	111	100.0	121.4	152.5			100
Nitrate-Nitrite	mg/L	<MDL	0.03	0.09	<MDL	1.744	2.580			0.077
Oil and Grease	mg/L	<MDL	<MDL	<MDL	<MDL	0.077	0.077			<MDL
pH	su	6.9	7.5	8.0	6.23	7.21	8.09			7.43
Phosphate	mg/L	<MDL	<MDL	<MDL	<MDL	0.048	0.072			0.072
ResidueFilterable-TDS	mg/L	180	247	290	55.5	230.1	371.0			303
ResidueNonFilterable-TSS	mg/L	<MDL	51	154	<MDL	31.4	60.5			9.6
SAR		<MDL	<MDL	<MDL	2.09	3.25	4.75			3.02
Sulfate	mg/L	30	33	40	26.34	41.42	57.42			35.3
Aluminum	mg/L	0.04	2.15	6.34	<MDL	56.59	226.00			0.251
Arsenic	mg/L	<MDL	0.0003	0.001	0.009	0.013	0.015			<MDL
Cadmium	mg/L	<MDL	<MDL	<MDL	<MDL	0.004	0.006			<MDL
Calcium	mg/L	27.5	30.3	32.1	7.7	30.4	43.6			30.1
Copper	mg/L	<MDL	0.31	0.92	<MDL	<MDL	<MDL			<MDL
Iron (Total)	mg/L	0.04	2.35	6.89	0.01	0.16	0.38			0.347
Lead	mg/L	<MDL	<MDL	<MDL	<MDL	0.03	0.03			<MDL
Magnesium	mg/L	5.7	6.7	7.5	3.41	7.02	10.60			6.08
Manganese (Total)	mg/L	<MDL	0.046	0.137	<MDL	0.01	0.02			0.0068
Mercury	mg/L	<MDL	<MDL	<MDL	<MDL	0.0001	0.0002			<MDL
Molyebdenum	mg/L	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL			<MDL
Selenium	mg/L	<MDL	<MDL	<MDL	0.0010	0.0205	0.0560			<MDL
Sodium	mg/L	30.8	49.5	64.1	59.7	216.9	807.0			807
Zinc	mg/L	<MDL	0.01	0.04	0.01	0.02	0.02			<MDL

The monitoring point for SP34-11 is along the old coal exploration road winding down Sheep Corral Gulch. The spring in sandstone just above the pond surface.

Baseline Information for Point SP34-11 is derived from events beginning on 10/27/97 through 6/1/02.
Point influenced by mining on 6/1/02.

Plot of Flow and Conductivity



SP34-11 - Sheep Corral Spring and Pond 34-11

Figure 13

S-1
B Gulch - Spring 1
Elevation - 6990

Initiated	6/12/1995	6/12/1995	6/12/1995	6/12/1995
Activated	3/30/1997	3/30/1997	3/30/1997	3/30/1997
Date	10/6/2017	8/9/2017	5/3/2017	3/24/2017

Summary Information

Field Parameters	UNITS	Baseline Min	Baseline Ave	Baseline Max	Operation Min	Operation Ave	Operation Max				
Flow	GPM	0.00	0.38	1.25	0.00	0.02	0.75	0	0	0	0
FieldComment								Dry	Damp	Dry	Dry
ph	su	8.4	8.6	8.7	8.1	8.3	8.5				
Conductivity	umhos/cm	1520	2053	2300	2000	2067	2200				
Temperature	Celsius	2.4	10.5	17.1	12.8	17.2	20.1				
Lab Parameters	**UNITS**										
Bicarbonate	mg/L	784	784	784							
Chloride	mg/L	28	28	28							
Conductivity	umhos/cm	2140	2140	2140							
Hardness	mg/L	570	570	570							
Nitrate-Nitrite	mg/L	<MDL	<MDL	<MDL							
Oil and Grease	mg/L	<MDL	<MDL	<MDL							
pH	su	7.5	7.5	7.5							
Phosphate	mg/L	<MDL	<MDL	<MDL							
ResidueFilterable-TDS	mg/L	1480	1480	1480							
ResidueNonFilterable-TSS	mg/L	30	30	30							
SAR		5.66	5.66	5.66							
Sulfate	mg/L	490	490	490							
Aluminum	mg/L	0.89	0.89	0.89							
Arsenic	mg/L	<MDL	<MDL	<MDL							
Cadmium	mg/L	<MDL	<MDL	<MDL							
Calcium	mg/L	52	52	52							
Copper	mg/L	<MDL	<MDL	<MDL							
Iron (Total)	mg/L	1.01	1.01	1.01							
Lead	mg/L	<MDL	<MDL	<MDL							
Magnesium	mg/L	107	107	107							
Manganese (Total)	mg/L	0.017	0.017	0.017							
Mercury	mg/L	<MDL	<MDL	<MDL							
Molyebdenum	mg/L	<MDL	<MDL	<MDL							
Selenium	mg/L	0.002	0.002	0.002							
Sodium	mg/L	307	307	307							
Zinc	mg/L	0.01	0.01	0.01							

The S-1 monitoring point location is along the Stevens Draw road where it crosses B Gulch. This spring is located on the upper side of the road, discharges along the road and eventually contributes its flow through Sediment Pond B.

Baseline Information for Point S-1 is derived from events beginning on 6/12/95 through 3/30/97.
Point influenced by mining on 3/20/97.

S-2
Freeman Gulch - Spring 2
Elevation - 7920

Initiated	6/12/1995	6/12/1995	6/12/1995
Activated	11/10/2001	11/10/2001	11/10/2001
Date	10/6/2017	8/9/2017	5/8/2017

Summary Information

Field Parameters	UNITS	Baseline Min	Baseline Ave	Baseline Max	Operation Min	Operation Ave	Operation Max			
Flow	GPM	0.00	0.22	1.88	0.00	0.00	0.30	0	0	0
FieldComment								Dry	Dry	Dry
ph	su	6.8	7.3	7.8						
Conductivity	umhos/cm	40	106	525						
Temperature	Celsius	1.2	10.2	19.1						
Lab Parameters	**UNITS**									
Bicarbonate	mg/L	57	57	57						
Chloride	mg/L	1	1	1						
Conductivity	umhos/cm	126	126	126						
Hardness	mg/L	44	44	44						
Nitrate-Nitrite	mg/L	0.51	0.51	0.51						
Oil and Grease	mg/L	<MDL	<MDL	<MDL						
pH	su	6.0	6.0	6.0						
Phosphate	mg/L	<MDL	<MDL	<MDL						
ResidueFilterable-TDS	mg/L	90	90	90						
ResidueNonFilterable-TSS	mg/L	<MDL	<MDL	<MDL						
SAR		0.43	0.43	0.43						
Sulfate	mg/L	<MDL	<MDL	<MDL						
Aluminum	mg/L	0.10	0.10	0.10						
Arsenic	mg/L	0.002	0.002	0.002						
Cadmium	mg/L	<MDL	<MDL	<MDL						
Calcium	mg/L	14.2	14.2	14.2						
Copper	mg/L	<MDL	<MDL	<MDL						
Iron (Total)	mg/L	0.71	0.71	0.71						
Lead	mg/L	<MDL	<MDL	<MDL						
Magnesium	mg/L	2.1	2.1	2.1						
Manganese (Total)	mg/L	0.063	0.063	0.063						
Mercury	mg/L	<MDL	<MDL	<MDL						
Molyebdenum	mg/L	<MDL	<MDL	<MDL						
Selenium	mg/L	<MDL	<MDL	<MDL						
Sodium	mg/L	6.5	6.5	6.5						
Zinc	mg/L	<MDL	<MDL	<MDL						

The monitoring point for S-2 is located along the old coal exploration road which leads down into Freeman Gulch, to Pond 2, Drill holes 34B and 34C and the monitoring point for the Upper end of Freeman Gulch.

Baseline Information for Point S-2 is derived from events beginning on 6/12/95 through 11/10/01.
Point influenced by mining on 11/10/01.

S-3
Freeman Gulch - Spring 3
Elevation - 7920

Initiated	6/12/1995	6/12/1995	6/12/1995
Activated	10/15/2001	10/15/2001	10/15/2001
Date	10/6/2017	8/9/2017	5/8/2017

Summary Information

Field Parameters	UNITS	Baseline Min	Baseline Ave	Baseline Max	Operation Min	Operation Ave	Operation Max			
Flow	GPM	0.00	0.29	3.75	0.00	0.00	0.00	0	0	0
FieldComment								Dry	Dry	Dry
ph	su	6.7	7.8	8.5						
Conductivity	umhos/cm	120	222	443						
Temperature	Celsius	7.6	15.6	28.7						
Lab Parameters	**UNITS**									
Bicarbonate	mg/L	77	77	77						
Chloride	mg/L	4	4	4						
Conductivity	umhos/cm	164	164	164						
Hardness	mg/L	72	72	72						
Nitrate-Nitrite	mg/L	0.05	0.05	0.05						
Oil and Grease	mg/L	<MDL	<MDL	<MDL						
pH	su	7.5	7.5	7.5						
Phosphate	mg/L	<MDL	<MDL	<MDL						
ResidueFilterable-TDS	mg/L	110	110	110						
ResidueNonFilterable-TSS	mg/L	8	8	8						
SAR		0.34	0.34	0.34						
Sulfate	mg/L	<MDL	<MDL	<MDL						
Aluminum	mg/L	0.35	0.35	0.35						
Arsenic	mg/L	<MDL	<MDL	<MDL						
Cadmium	mg/L	<MDL	<MDL	<MDL						
Calcium	mg/L	21.7	21.7	21.7						
Copper	mg/L	<MDL	<MDL	<MDL						
Iron (Total)	mg/L	0.37	0.37	0.37						
Lead	mg/L	<MDL	<MDL	<MDL						
Magnesium	mg/L	4.2	4.2	4.2						
Manganese (Total)	mg/L	0.014	0.014	0.014						
Mercury	mg/L	<MDL	<MDL	<MDL						
Molyebdenum	mg/L	<MDL	<MDL	<MDL						
Selenium	mg/L	<MDL	<MDL	<MDL						
Sodium	mg/L	6.6	6.6	6.6						
Zinc	mg/L	<MDL	<MDL	<MDL						

The monitoring point for S-3 is located along the old coal exploration road which leads down into Freeman Gulch, to Pond 2, Drill Holes 34B and 34C and the monitoring point for the Upper end of Freeman Gulch.

Baseline Information for Point S-3 is derived from events beginning on 6/12/95 through 10/15/01.
Point influenced by mining on 10/15/01.

S-4
Terror Creek - Spring 4
Elevation - 7880

Initiated	6/12/1995	6/12/1995	6/12/1995
Activated	1/15/2001	1/15/2001	1/15/2001
Date	10/13/2017	8/10/2017	5/2/2017

Summary Information

Field Parameters	UNITS	Baseline Min	Baseline Ave	Baseline Max	Operation Min	Operation Ave	Operation Max			
Flow	GPM	0.00	0.24	3.75	0.00	0.25	2.37	0.178		2.37
FieldComment									Seep	
ph	su	6.4	7.4	9.0	7.1	7.5	7.8	7.41		7.4
Conductivity	umhos/cm	80	268	433	300	383	537	537		462
Temperature	Celsius	1.2	10.0	24.0	1.8	6.5	10.7	6.8		6
Lab Parameters	UNITS									
Bicarbonate	mg/L	56	56	56	231.8	231.8	231.8			
Chloride	mg/L	2	2	2	49.63	49.63	49.63			
Conductivity	umhos/cm	99	99	99	438	441	443			
Hardness	mg/L	44	44	44	150.69	150.69	150.69			
Nitrate-Nitrite	mg/L	0.62	0.62	0.62	0.32	0.32	0.32			
Oil and Grease	mg/L	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL			
pH	su	6.7	6.7	6.7	6.8	6.9	7.1			
Phosphate	mg/L	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL			
ResidueFilterable-TDS	mg/L	60	60	60	236	245	253			
ResidueNonFilterable-TSS	mg/L	16	16	16	1	19	36			
SAR		0.29	0.29	0.29	1.85	1.85	1.85			
Sulfate	mg/L	<MDL	<MDL	<MDL	60.51	60.51	60.51			
Aluminum (TREC)	mg/L	0.98	0.98	0.98	0.039	0.039	0.039			
Arsenic (TREC)	mg/L	<MDL	<MDL	<MDL	0.03	0.03	0.03			
Cadmium (TREC)	mg/L	<MDL	<MDL	<MDL	0.01	0.01	0.01			
Calcium (TREC)	mg/L	13.6	13.6	13.6	46	46	46			
Copper (TREC)	mg/L	<MDL	<MDL	<MDL	0.01	0.01	0.01			
Iron (TREC)	mg/L	0.88	0.88	0.88	0.15	0.56	0.97			
Lead (TREC)	mg/L	<MDL	<MDL	<MDL	0.03	0.03	0.03			
Magnesium (TREC)	mg/L	2.4	2.4	2.4	8.7	8.7	8.7			
Manganese (TREC)	mg/L	0.03	0.03	0.03	0.020	0.026	0.032			
Mercury (TREC)	mg/L	0.0002	0.0002	0.0002	0.00006	0.00006	0.00006			
Molyebdenum (TREC)	mg/L	<MDL	<MDL	<MDL	0.005	0.005	0.005			
Selenium (TREC)	mg/L	<MDL	<MDL	<MDL	0.008	0.008	0.008			
Sodium (TREC)	mg/L	4.5	4.5	4.5	52.9	52.9	52.9			
Zinc (TREC)	mg/L	<MDL	<MDL	<MDL	0.005	0.005	0.005			

The monitoring point for S-4 is located along an unmarked road in an un-named gulch leading down from the broad ridge that separates Sheep Corral and Freeman Gulches from Terror Creek. This spring feeds P-4.

Baseline Information for Point S-4 is derived from events beginning on 6/12/95 through 1/15/01.
Point influenced by mining on 1/15/01.

S-4a
Terror Creek - Spring 4a
Elevation - 7910

Initiated	11/9/1995	11/9/1995	11/9/1995
Activated	1/15/2001	1/15/2001	1/15/2001
Date	10/13/2017	8/10/2017	5/2/2017

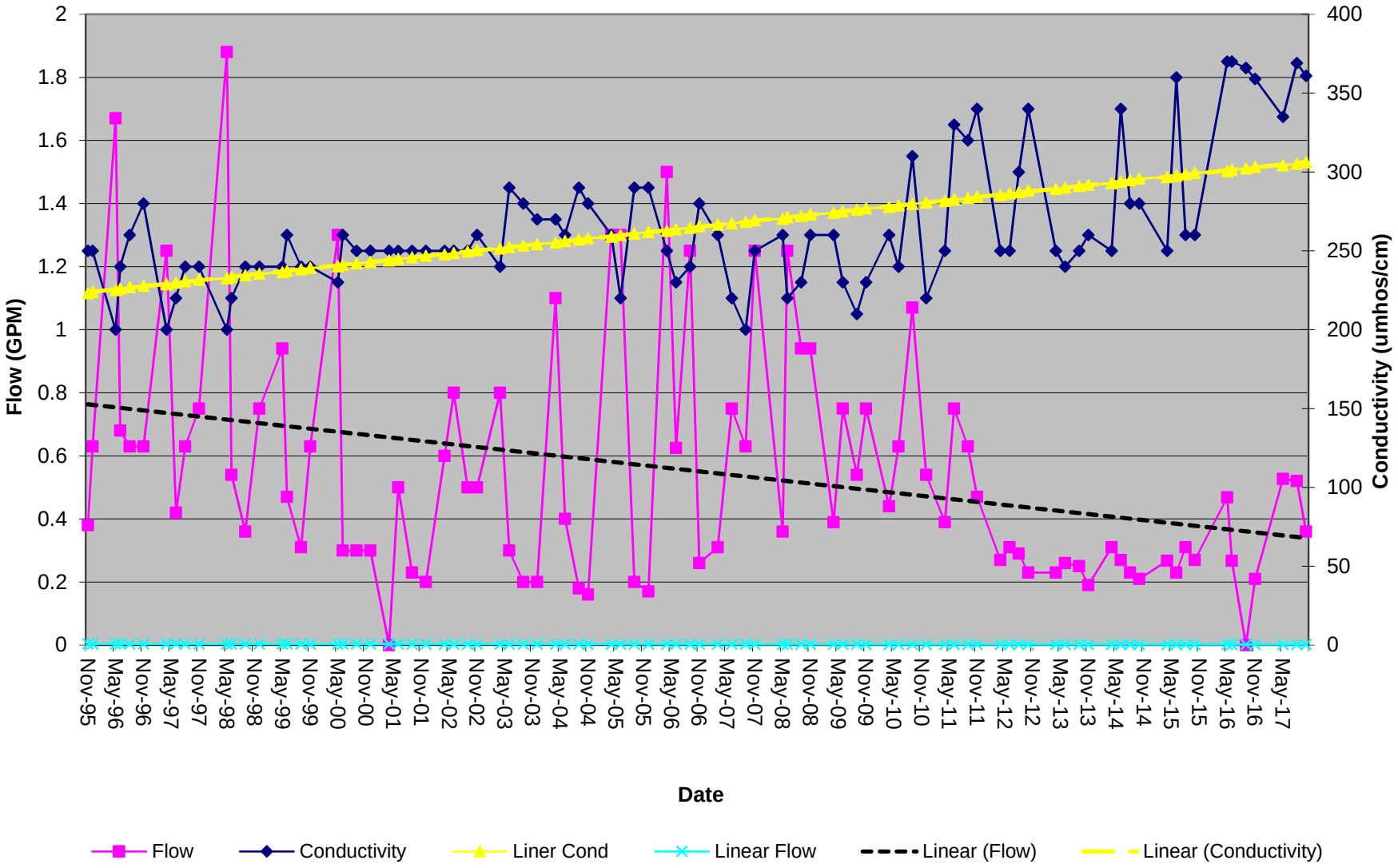
Summary Information

Field Parameters	UNITS	Baseline Min	Baseline Ave	Baseline Max	Operation Min	Operation Ave	Operation Max			
Flow	GPM	0.30	0.72	1.88	0.00	0.51	1.50	0.36	0.52	0.527
FieldComment										
ph	su	7.2	7.8	8.5	6.3	7.5	8.1	7.43	7.65	7.77
Conductivity	umhos/cm	200	239	280	200	273	370	361	369	335
Temperature	Celsius	2.4	7.4	14.2	4.3	6.5	8.7	7.6	7.9	5.5
Lab Parameters	UNITS									
Bicarbonate	mg/L	146	146	146	204.9	204.9	204.9			
Chloride	mg/L	2	2	2	47.15	47.15	47.15			
Conductivity	umhos/cm	289	289	289	313	321	330			
Hardness	mg/L	125	125	125	131.95	131.95	131.95			
Nitrate-Nitrite	mg/L	0.16	0.16	0.16	0.31	0.31	0.31			
Oil and Grease	mg/L	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL			
pH	su	7.30	7.30	7.30	7.1	7.3	7.5			
Phosphate	mg/L	0.08	0.08	0.08	<MDL	<MDL	<MDL			
ResidueFilterable-TDS	mg/L	200	200	200	196	226	263			
ResidueNonFilterable-TSS	mg/L	<MDL	<MDL	<MDL	2	27	48			
SAR		0.49	0.49	0.49	0.658	0.658	0.658			
Sulfate	mg/L	13	13	13	14.41	14.41	14.41			
Aluminum (TREC)	mg/L	0.88	0.88	0.88	0.023	0.023	0.023			
Arsenic (TREC)	mg/L	<MDL	<MDL	<MDL	0.005	0.005	0.005			
Cadmium (TREC)	mg/L	<MDL	<MDL	<MDL	0.006	0.006	0.006			
Calcium (TREC)	mg/L	43.10	43.10	43.10	44.4	44.4	44.4			
Copper (TREC)	mg/L	<MDL	<MDL	<MDL	0.002	0.002	0.002			
Iron (TREC)	mg/L	1.23	1.23	1.23	0.08	0.54	1.24			
Lead (TREC)	mg/L	<MDL	<MDL	<MDL	0.03	0.03	0.03			
Magnesium (TREC)	mg/L	4.30	4.30	4.30	5.12	5.12	5.12			
Manganese (TREC)	mg/L	0.02	0.02	0.02	0.01	0.02	0.03			
Mercury (TREC)	mg/L	<MDL	<MDL	<MDL	0.00008	0.00008	0.00008			
Molyebdenum (TREC)	mg/L	<MDL	<MDL	<MDL	0.007	0.007	0.007			
Selenium (TREC)	mg/L	<MDL	<MDL	<MDL	0.008	0.008	0.008			
Sodium (TREC)	mg/L	12.5	12.5	12.5	17.6	17.6	17.6			
Zinc (TREC)	mg/L	0.03	0.03	0.03	0.006	0.006	0.006			

The monitoring point for S-4a is located along an unmarked road in an un-named gulch leading down from the broad ridge that separates Sheep Corral and Freeman Gulches from Terror Creek. This spring feeds P-4.

Baseline Information for Point S-4a is derived from events beginning on 11/9/95 through 1/15/01.
Point influenced by mining on 1/15/01.

Plot of Flow and Conductivity



S-4a - Terror Creek Spring 4a

Figure 19

S-5
Sheep Corral - Spring 5
Elevation - 7800

Initiated	6/12/1995	6/12/1995	6/12/1995
Activated	12/1/2001	12/1/2001	12/1/2001
Date	10/13/2017	9/7/2017	5/2/2017

Summary Information

Field Parameters	UNITS	Baseline Min	Baseline Ave	Baseline Max	Operation Min	Operation Ave	Operation Max			
Flow	GPM	0.00	0.27	0.80	0.00	0.21	1.88	0	0	0.38
FieldComment								Dry	Dry	
ph	su	7.2	7.6	8.1	7.1	7.4	7.8			7.83
Conductivity	umhos/cm	190	332	400	310	358	430			412
Temperature	Celsius	4.0	7.2	11.8	5.0	6.6	8.9			5.8
Lab Parameters	UNITS									
Bicarbonate	mg/L	188	191	193	203.5	203.5	203.5			
Chloride	mg/L	2	2	2	32.26	32.26	32.26			
Conductivity	umhos/cm	406	407	407	414	414	414			
Hardness	mg/L	113	118	123	132.93	132.93	132.93			
Nitrate-Nitrite	mg/L	<MDL	0.08	0.15	0.31	0.31	0.31			
Oil and Grease	mg/L	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL			
pH	su	6.90	7.00	7.10	7.08	7.08	7.08			
Phosphate	mg/L	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL			
ResidueFilterable-TDS	mg/L	220	225	230	268	268	268			
ResidueNonFilterable-TSS	mg/L	<MDL	14	28	6	6	6			
SAR		1.51	1.52	1.53	1.78	1.78	1.78			
Sulfate	mg/L	17	23	29	33.75	33.75	33.75			
Aluminum (TREC)	mg/L	<MDL	0.16	0.32	0.028	0.028	0.028			
Arsenic (TREC)	mg/L	<MDL	0.001	0.001	0.006	0.006	0.006			
Cadmium (TREC)	mg/L	<MDL	<MDL	<MDL	0.008	0.008	0.008			
Calcium (TREC)	mg/L	34.00	35.55	37.10	40.9	40.9	40.9			
Copper (TREC)	mg/L	<MDL	<MDL	<MDL	0.002	0.002	0.002			
Iron (TREC)	mg/L	<MDL	0.32	0.64	0.05	0.05	0.05			
Lead (TREC)	mg/L	<MDL	<MDL	<MDL	0.03	0.03	0.03			
Magnesium (TREC)	mg/L	6.70	7.00	7.30	7.48	7.48	7.48			
Manganese (TREC)	mg/L	0.017	0.027	0.037	0.003	0.003	0.003			
Mercury (TREC)	mg/L	<MDL	<MDL	<MDL	0.00006	0.00006	0.00006			
Molyebdenum (TREC)	mg/L	<MDL	<MDL	<MDL	0.011	0.011	0.011			
Selenium (TREC)	mg/L	<MDL	<MDL	<MDL	0.012	0.012	0.012			
Sodium (TREC)	mg/L	36.50	37.45	38.40	47.8	47.8	47.8			
Zinc (TREC)	mg/L	<MDL	0.005	0.010	0.006	0.006	0.006			

The monitoring point location for S-5 is locate along an unmapped road which leads down an un-named gulch which leads into Sheep Corral Gulch. This spring feeds Pond 5.

Baseline Information for Point S-5 is derived from events beginning on 6/12/95 through 12/1/01.
Point influenced by mining on 12/1/01.

S-5a
Sheep Corral - Spring 5A
Elevation - 7860

Initiated	6/12/1995	6/12/1995	6/12/1995
Activated	12/1/2001	12/1/2001	12/1/2001
Date	10/13/2017	9/7/2017	5/2/2017

Summary Information

Field Parameters	UNITS	Baseline Min	Baseline Ave	Baseline Max	Operation Min	Operation Ave	Operation Max			
Flow	GPM	0.13	0.89	4.30	0.00	0.22	2.37	0	0	2.37
FieldComment								Dry	Dry	
ph	su	6.9	7.4	8.0	7.0	7.3	8.3			7.4
Conductivity	umhos/cm	160	301	400	340	388	448			448
Temperature	Celsius	4.0	6.7	9.1	5.1	6.6	7.8			6.5
Lab Parameters	**UNITS**									
Bicarbonate	mg/L	184.00	185.00	186.00						
Chloride	mg/L	2.00	2.00	2.00						
Conductivity	umhos/cm	388	391	393						
Hardness	mg/L	125.00	128.00	131.00						
Nitrate-Nitrite	mg/L	<MDL	0.03	0.05						
Oil and Grease	mg/L	<MDL	<MDL	<MDL						
pH	su	6.90	7.40	7.90						
Phosphate	mg/L	<MDL	<MDL	<MDL						
ResidueFilterable-TDS	mg/L	190.00	205.00	220.00						
ResidueNonFilterable-TSS	mg/L	<MDL	17.00	34.00						
SAR		1.10	1.11	1.12						
Sulfate	mg/L	21.00	25.00	29.00						
Aluminum	mg/L	<MDL	0.34	0.69						
Arsenic	mg/L	<MDL	<MDL	<MDL						
Cadmium	mg/L	<MDL	<MDL	<MDL						
Calcium	mg/L	37.80	38.70	39.60						
Copper	mg/L	<MDL	<MDL	<MDL						
Iron (Total)	mg/L	0.02	0.48	0.95						
Lead	mg/L	<MDL	<MDL	<MDL						
Magnesium	mg/L	7.50	7.70	7.90						
Manganese (Total)	mg/L	<MDL	0.019	0.037						
Mercury	mg/L	<MDL	<MDL	<MDL						
Molyebdenum	mg/L	<MDL	<MDL	<MDL						
Selenium	mg/L	<MDL	<MDL	<MDL						
Sodium	mg/L	28.10	28.60	29.10						
Zinc	mg/L	0.02	0.02	0.02						

The monitoring point location for S-5a is located along an unmapped road which is down an un-named gulch which leads into Sheep Corral Gulch. This spring feeds Pond 5.

Baseline Information for Point S-5a is derived from events beginning on 9/27/95 through 12/1/01.
Point influenced by mining on 12/1/01.

S-5b
Sheep Corral - Spring 5B
Elevation - 7860

Initiated	6/12/1995	6/12/1995	6/12/1995
Activated	12/1/2001	12/1/2001	12/1/2001
Date	10/13/2017	9/7/2017	5/2/2017

Summary Information

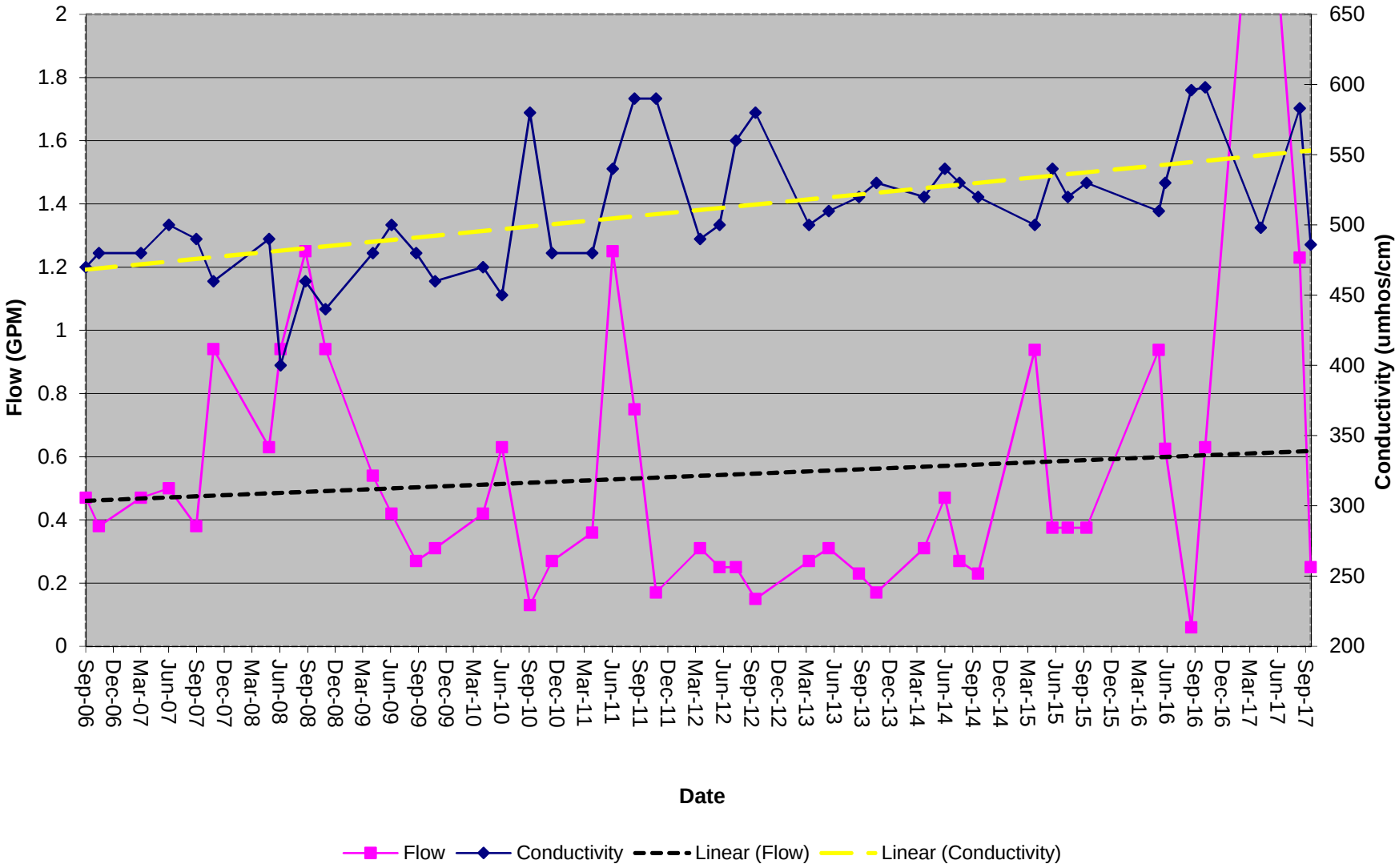
Field Parameters	UNITS	Baseline Min	Baseline Ave	Baseline Max	Operation Min	Operation Ave	Operation Max			
Flow	GPM				0.06	0.54	2.80	0.25	1.23	2.8
FieldComment										
ph	su				7.6	7.9	8.5	8.4	8.5	7.9
Conductivity	umhos/cm				400	510	598	486	583	498
Temperature	Celsius				5.5	8.0	12.8	7.5	9.2	7.4
Lab Parameters	UNITS									
Bicarbonate	mg/L				277.8	277.8	277.8			
Chloride	mg/L				22.33	22.33	22.33			
Conductivity	umhos/cm				541	562	580			
Hardness	mg/L				114.78	114.78	114.78			
Nitrate-Nitrite	mg/L				0.32	0.32	0.32			
Oil and Grease	mg/L				<MDL	<MDL	<MDL			
pH	su				7.30	7.54	7.77			
Phosphate	mg/L				<MDL	<MDL	<MDL			
ResidueFilterable-TDS	mg/L				312	353	406			
ResidueNonFilterable-TSS	mg/L				14	30	60			
SAR					3.62	3.62	3.62			
Sulfate	mg/L				41.98	41.98	41.98			
Aluminum (TREC)	mg/L				0.034	0.034	0.034			
Arsenic (TREC)	mg/L				0.055	0.055	0.055			
Cadmium (TREC)	mg/L				0.01	0.01	0.01			
Calcium (TREC)	mg/L				33.4	33.4	33.4			
Copper (TREC)	mg/L				0.01	0.01	0.01			
Iron (TREC)	mg/L				0.24	0.51	0.81			
Lead (TREC)	mg/L				0.02	0.02	0.02			
Magnesium (TREC)	mg/L				7.62	7.62	7.62			
Manganese (TREC)	mg/L				0.083	0.118	0.180			
Mercury (TREC)	mg/L				0.00004	0.00004	0.00004			
Molyebdenum (TREC)	mg/L				0.013	0.013	0.013			
Selenium (TREC)	mg/L				0.004	0.004	0.004			
Sodium (TREC)	mg/L				90.5	90.5	90.5			
Zinc (TREC)	mg/L				0.005	0.005	0.005			

The area of concern for monitoring point S-5b was affected by the mining operation before its establishment. Therefore, all recorded monitoring events are considered Operational.

The monitoring point location for S-5b is located along an unmapped road which is down an un-named gulch which leads into Sheep Corral Gulch. It is located across the draw from Springs 5 and 5a to the west.

There is no baseline information collection possible for points initiated after the influence of mining.

Plot of Flow and Conductivity



S-5b - Sheep Corral Spring 5b

Figure 23

S-8
C Gulch - Spring 8
Elevation - 7220

Initiated	6/12/1995	6/12/1995	6/12/1995	6/12/1995
Activated	11/1/2002	11/1/2002	11/1/2002	11/1/2002
Date	10/6/2017	8/9/2017	6/28/2017	3/23/2017

Summary Information

Field Parameters	UNITS	Baseline Min	Baseline Ave	Baseline Max	Operation Min	Operation Ave	Operation Max				
Flow	GPM	0.00	0.08	2.50	0.00	0.00	0.00	0	0	0	0
FieldComment								Dry	Dry	Dry	Dry
ph	su	6.90	6.90	6.90							
Conductivity	umhos/cm	1380	1380	1380							
Temperature	Celsius	13.70	13.70	13.70							
Lab Parameters	UNITS										
Bicarbonate	mg/L										
Chloride	mg/L										
Conductivity	umhos/cm										
Hardness	mg/L										
Nitrate-Nitrite	mg/L										
Oil and Grease	mg/L										
pH	su										
Phosphate	mg/L										
ResidueFilterable-TDS	mg/L										
ResidueNonFilterable-TSS	mg/L										
SAR											
Sulfate	mg/L										
Aluminum	mg/L										
Arsenic	mg/L										
Cadmium	mg/L										
Calcium	mg/L										
Copper	mg/L										
Iron (Total)	mg/L										
Lead	mg/L										
Magnesium	mg/L										
Manganese (Total)	mg/L										
Mercury	mg/L										
Molyebdenum	mg/L										
Selenium	mg/L										
Sodium	mg/L										
Zinc	mg/L										

The monitoring point for S-8 is located just above the mine portal road which crosses over the mine portals on the utility bench of the mine.

Baseline Information for Point S-8 is derived from events beginning on 6/12/95 through 11/1/02.
Point influenced by mining on 11/1/02.

S-10
Stevens Draw - Spring 10
Elevation - 7550

Initiated	7/12/1995	7/12/1995	7/12/1995	7/12/1995
Activated	11/1/2002	11/1/2002	11/1/2002	11/1/2002
Date	10/6/2017	8/10/2017	5/3/2017	3/24/2017

Summary Information

Field Parameters	UNITS	Baseline Min	Baseline Ave	Baseline Max	Operation Min	Operation Ave	Operation Max				
Flow	GPM	0.00	0.17	2.50	0.00	0.00	0.00	0	0	0	0
FieldComment								Dry	Dry	Dry	Dry
ph	su	8.40	8.50	8.60							
Conductivity	umhos/cm	620	640	660							
Temperature	Celsius	19.80	21.10	22.40							
Lab Parameters	UNITS										
Bicarbonate	mg/L										
Chloride	mg/L										
Conductivity	umhos/cm										
Hardness	mg/L										
Nitrate-Nitrite	mg/L										
Oil and Grease	mg/L										
pH	su										
Phosphate	mg/L										
ResidueFilterable-TDS	mg/L										
ResidueNonFilterable-TSS	mg/L										
SAR											
Sulfate	mg/L										
Aluminum	mg/L										
Arsenic	mg/L										
Cadmium	mg/L										
Calcium	mg/L										
Copper	mg/L										
Iron (Total)	mg/L										
Lead	mg/L										
Magnesium	mg/L										
Manganese (Total)	mg/L										
Mercury	mg/L										
Molyebdenum	mg/L										
Selenium	mg/L										
Sodium	mg/L										
Zinc	mg/L										

The monitoring point for S-10 is located along the Stevens Draw road and is located on the lower side of the road.

Baseline Information for Point S-10 is derived from events beginning on 7/12/95 through 11/1/02.
Point influenced by mining on 11/1/02.

S-11
Stevens Draw - Spring 11
Elevation - 7940

Initiated	7/12/1995	7/12/1995	7/12/1995	7/12/1995
Activated	1/15/2001	1/15/2001	1/15/2001	1/15/2001
Date	10/6/2017	8/10/2017	6/28/2017	3/24/2017

Summary Information

Field Parameters	UNITS	Baseline Min	Baseline Ave	Baseline Max	Operation Min	Operation Ave	Operation Max				
Flow	GPM	0.00	0.00	0.00	0.00	0.01	0.94	0	0	0	0
FieldComment								Dry	Dry	Dry	Snow Cover
ph	su				7.6	7.6	7.6				
Conductivity	umhos/cm				160	160	160				
Temperature	Celsius				7.7	7.7	7.7				
Lab Parameters	UNITS										
Bicarbonate	mg/L										
Chloride	mg/L										
Conductivity	umhos/cm										
Hardness	mg/L										
Nitrate-Nitrite	mg/L										
Oil and Grease	mg/L										
pH	su										
Phosphate	mg/L										
ResidueFilterable -TDS	mg/L										
ResidueNonFilterable-TSS	mg/L										
SAR											
Sulfate	mg/L										
Aluminum	mg/L										
Arsenic	mg/L										
Cadmium	mg/L										
Calcium	mg/L										
Copper	mg/L										
Iron (Total)	mg/L										
Lead	mg/L										
Magnesium	mg/L										
Manganese (Total)	mg/L										
Mercury	mg/L										
Molyebdenum	mg/L										
Selenium	mg/L										
Sodium	mg/L										
Zinc	mg/L										

The monitoring point for S-11 is located along the Stevens Draw road and is located on the lower side of the road.

Baseline Information for Point S-11 is derived from events beginning on 7/12/95 through 1/15/01.
Point influenced by mining on 1/15/01.

S-12
B Gulch - Spring 12
Elevation - 7650

Initiated	7/12/1995	7/12/1995	7/12/1995	7/12/1995
Activated	7/1/2004	7/1/2004	7/1/2004	7/1/2004
Date	10/6/2017	8/9/2017	4/6/2017	3/24/2017

Summary Information

Field Parameters	UNITS	Baseline Min	Baseline Ave	Baseline Max	Operation Min	Operation Ave	Operation Max				
Flow	GPM	0.00	0.00	0.00	0.00	0.00	0.00	0	0	0	0
FieldComment								Dry	Dry	Dry	Dry
ph	su										
Conductivity	umhos/cm										
Temperature	Celsius										
Lab Parameters	**UNITS**										
Bicarbonate	mg/L										
Chloride	mg/L										
Conductivity	umhos/cm										
Hardness	mg/L										
Nitrate-Nitrite	mg/L										
Oil and Grease	mg/L										
pH	su										
Phosphate	mg/L										
ResidueFilterable-TDS	mg/L										
ResidueNonFilterable -TSS	mg/L										
SAR											
Sulfate	mg/L										
Aluminum	mg/L										
Arsenic	mg/L										
Cadmium	mg/L										
Calcium	mg/L										
Copper	mg/L										
Iron (Total)	mg/L										
Lead	mg/L										
Magnesium	mg/L										
Manganese (Total)	mg/L										
Mercury	mg/L										
Molyebdenum	mg/L										
Selenium	mg/L										
Sodium	mg/L										
Zinc	mg/L										

The monitoring point for S-12 is located along a switchback road that ascends the southern facing exposure of the canyon wall of the North Fork of the Gunnison River. The road leads to the broad ridge which separates the Hubbard Creek and Terror Creek drainage systems.

Baseline Information for Point S-12 is derived from events beginning on 7/12/95 through 7/1/04.
Point Influenced by mining on 7/1/04.

S-13
Freeman Gulch - Spring 13
Elevation - 7500

Initiated	9/27/1995	9/27/1995	9/27/1995	9/27/1995
Activated	11/18/1999	11/18/1999	11/18/1999	11/18/1999
Date	10/6/2017	8/9/2017	5/3/2017	3/30/2017

Summary Information

Field Parameters	UNITS	Baseline Min	Baseline Ave	Baseline Max	Operation Min	Operation Ave	Operation Max				
Flow	GPM	0.00	0.01	0.27	0.00	0.01	0.94	0	0	0	0
FieldComment								Dry	Dry	Dry	Damp
ph	su	8.2	8.2	8.2							
Conductivity	umhos/cm	300	300	300							
Temperature	Celsius	10.0	10.0	10.0							
Lab Parameters	UNITS										
Bicarbonate	mg/L										
Chloride	mg/L										
Conductivity	umhos/cm										
Hardness	mg/L										
Nitrate-Nitrite	mg/L										
Oil and Grease	mg/L										
pH	su										
Phosphate	mg/L										
ResidueFilterable-TDS	mg/L										
ResidueNonFilterable-TSS	mg/L										
SAR											
Sulfate	mg/L										
Aluminum	mg/L										
Arsenic	mg/L										
Cadmium	mg/L										
Calcium	mg/L										
Copper	mg/L										
Iron (Total)	mg/L										
Lead	mg/L										
Magnesium	mg/L										
Manganese (Total)	mg/L										
Mercury	mg/L										
Molyebdenum	mg/L										
Selenium	mg/L										
Sodium	mg/L										
Zinc	mg/L										

The monitoring point for S-13 is located along an old coal exploration road which eventually reaches Drillhole 13. This spring is located on the northern facing slopes of Freeman Gulch.

Baseline Information for Point S-13 is derived from events beginning on 9/27/95 through 11/18/99.
Point influenced by mining on 11/18/99.

S-14
Stevens Draw - Spring 14
Elevation - 7100

Initiated	9/27/1995	9/27/1995	9/27/1995	9/27/1995
Activated				
Date	10/6/2017	9/7/2017	5/3/2017	3/24/2017

Summary Information

Field Parameters	UNITS	Baseline Min	Baseline Ave	Baseline Max	Operation Min	Operation Ave	Operation Max				
Flow	GPM	0.00	0.15	1.50				0	0	0	0
FieldComment								Dry	Dry	Dry	Dry
ph	su	7.6	8.1	8.6							
Conductivity	umhos/cm	1020	1124	1300							
Temperature	Celsius	3.1	11.2	22.2							
Lab Parameters	UNITS										
Bicarbonate	mg/L	472	472	472							
Chloride	mg/L	16	16	16							
Conductivity	umhos/cm	1220	1220	1220							
Hardness	mg/L	414	414	414							
Nitrate-Nitrite	mg/L	<MDL	<MDL	<MDL							
Oil and Grease	mg/L	<MDL	<MDL	<MDL							
pH	su	7.2	7.2	7.2							
Phosphate	mg/L	<MDL	<MDL	<MDL							
ResidueFilterable -TDS	mg/L	780	780	780							
ResidueNonFilterable-TSS	mg/L	22	22	22							
SAR		2.55	2.55	2.55							
Sulfate	mg/L	209.0	209.0	209.0							
Aluminum	mg/L	0.24	0.24	0.24							
Arsenic	mg/L	0.002	0.002	0.002							
Cadmium	mg/L	<MDL	<MDL	<MDL							
Calcium	mg/L	80.1	80.1	80.1							
Copper	mg/L	<MDL	<MDL	<MDL							
Iron (Total)	mg/L	1.68	1.68	1.68							
Lead	mg/L	<MDL	<MDL	<MDL							
Magnesium	mg/L	51.9	51.9	51.9							
Manganese (Total)	mg/L	0.184	0.184	0.184							
Mercury	mg/L	<MDL	<MDL	<MDL							
Molyebdenum	mg/L	<MDL	<MDL	<MDL							
Selenium	mg/L	<MDL	<MDL	<MDL							
Sodium	mg/L	118	118	118							
Zinc	mg/L	<MDL	<MDL	<MDL							

The area of concern for monitoring point S-14 has not been affected by the mining operation. Therefore, all recorded monitoring events are considered Baseline.

The monitoring point for S-14 is located on a fork of the Stevens Draw road just above Pond 1. Spring seeps from the east bank of drainage along about 100' sections. (Hanna, 1995)

Baseline Information Collection initiated on 9/27/95 and not yet considered complete.
Point S-14 has not been influenced by mining.

S-16
Terror Creek - Spring 16
Elevation - 7750

Initiated	10/11/1995	10/11/1995	10/11/1995
Activated	1/15/2001	1/15/2001	1/15/2001
Date	10/13/2017	8/10/2017	5/2/2017

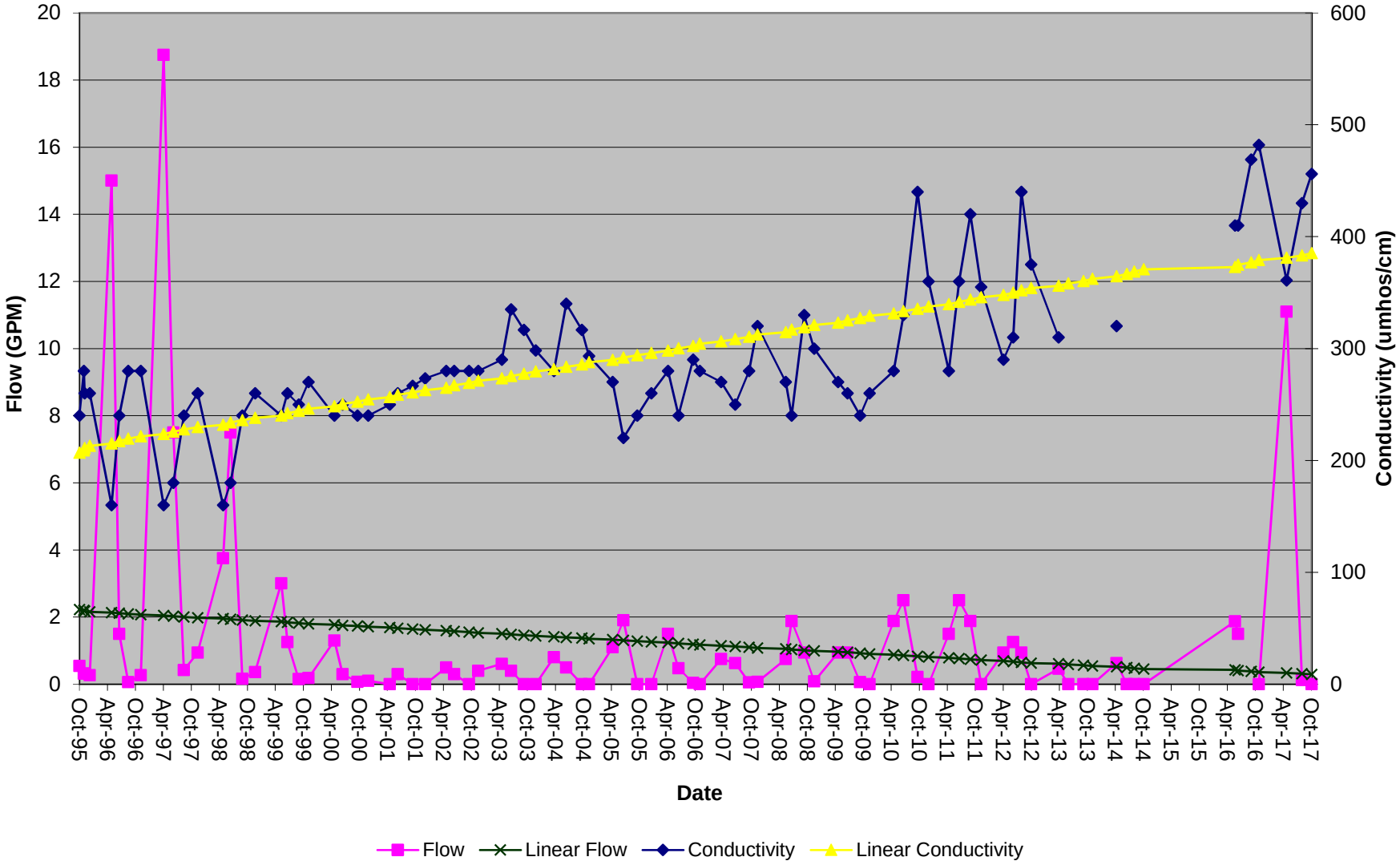
Summary Information

Field Parameters	UNITS	Baseline Min	Baseline Ave	Baseline Max	Operation Min	Operation Ave	Operation Max			
Flow	GPM	0.06	2.67	18.75	0.00	0.72	11.10		0.12	11.1
FieldComment								seep		
ph	su	6.9	7.2	7.6	6.7	7.4	7.9	7.33	7.74	7.94
Conductivity	umhos/cm	160	236	280	220	321	482	456	430	361
Temperature	Celsius	4.5	7.0	12.0	5.2	6.9	9.3	7.5	9.1	5.7
Lab Parameters	**UNITS**									
Bicarbonate	mg/L	107	129	159	178.0	185.9	193.8			178
Chloride	mg/L	<MDL	2	5	1.70	19.46	37.22			1.7
Conductivity	umhos/cm	230	260	296	317	381	449			317
Hardness	mg/L	59	93	114	115.00	116.36	117.72			115
Nitrate-Nitrite	mg/L	<MDL	0.10	0.24	<MDL	0.31	0.31			<MDL
Oil and Grease	mg/L	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL			<MDL
pH	su	6.4	6.9	7.5	6.69	6.92	7.25			7.25
Phosphate	mg/L	<MDL	0.07	0.33	<MDL	<MDL	<MDL			<MDL
ResidueFilterable-TDS	mg/L	140	164	190	192	237	284			204
ResidueNonFilterable-TSS	mg/L	<MDL	2	8	2	8	21			20.6
SAR		0.60	0.70	0.75	1.33	1.38	1.42			1.33
Sulfate	mg/L	<MDL	3.4	12.0	19.60	29.15	38.69			19.6
Aluminum (TREC)	mg/L	0.03	0.07	0.17	0.017	0.017	0.017			<MDL
Arsenic (TREC)	mg/L	<MDL	<MDL	<MDL	0.005	0.005	0.005			<MDL
Cadmium (TREC)	mg/L	<MDL	<MDL	<MDL	0.007	0.007	0.007			<MDL
Calcium (TREC)	mg/L	18.2	28.7	35.1	35.7	35.8	35.9			35.9
Copper (TREC)	mg/L	<MDL	0.002	0.010	<MDL	0.003	0.003			<MDL
Iron (TREC)	mg/L	0.03	0.15	0.49	0.02	0.18	0.42			0.113
Lead (TREC)	mg/L	<MDL	<MDL	<MDL	0.02	0.02	0.02			<MDL
Magnesium (TREC)	mg/L	3.2	5.3	6.5	<MDL	6.52	6.94			6.1
Manganese (TREC)	mg/L	<MDL	0.005	0.017	<MDL	0.014	0.030			<MDL
Mercury (TREC)	mg/L	<MDL	<MDL	<MDL	<MDL	0.0001	0.0001			<MDL
Molyebdenum (TREC)	mg/L	<MDL	<MDL	<MDL	<MDL	0.009	0.009			<MDL
Selenium (TREC)	mg/L	<MDL	<MDL	<MDL	<MDL	0.002	0.002			<MDL
Sodium (TREC)	mg/L	10.5	15.4	18.2	32.9	34.5	36.1			32.9
Zinc (TREC)	mg/L	<MDL	0.01	0.02	<MDL	0.007	0.007			<MDL

The monitoring point for S-16 is located on an un-mapped road in an un-named gulch which discharges eventually into Terror Creek. The flow from S-16 contributes to Pond 3, which is just below it.

Baseline Information for Point S-16 is derived from events beginning on 10/11/95 through 1/15/02.
Point influenced by mining on 1/15/01.

Plot of Flow and Conductivity



S-16 - Terror Creek Spring 16

Figure 31

S-17
Freeman Gulch - Spring 17
Elevation - 7110

Initiated	5/9/1996	5/9/1996	5/9/1996
Activated	12/7/2000	12/7/2000	12/7/2000
Date	10/6/2017	8/9/2017	5/8/2017

Summary Information

Field Parameters	UNITS	Baseline Min	Baseline Ave	Baseline Max	Operation Min	Operation Ave	Operation Max			
Flow	GPM	0.00	2.11	20.00	0.00	0.00	0.00	0	0	0
FieldComment								Dry	Dry	Damp
ph	su	8.40	8.61	8.80						
Conductivity	umhos/cm	480.00	532.50	580.00						
Temperature	Celsius	8.40	16.33	25.00						
Lab Parameters	UNITS									
Bicarbonate	mg/L	266.00	280.25	298.00						
Chloride	mg/L	2.00	2.50	3.00						
Conductivity	umhos/cm	511.00	538.25	586.00						
Hardness	mg/L	177.00	200.00	216.00						
Nitrate-Nitrite	mg/L	<MDL	0.02	0.04						
Oil and Grease	mg/L	<MDL	<MDL	<MDL						
pH	su	8.10	8.25	8.40						
Phosphate	mg/L	<MDL	0.01	0.03						
ResidueFilterable-TDS	mg/L	300.00	342.50	380.00						
ResidueNonFilterable-TSS	mg/L	<MDL	72.00	134.00						
SAR		1.15	1.50	2.08						
Sulfate	mg/L	20.00	27.50	30.00						
Aluminum	mg/L	0.10	2.52	5.42						
Arsenic	mg/L	<MDL	0.001	0.005						
Cadmium	mg/L	<MDL	<MDL	<MDL						
Calcium	mg/L	42.00	50.33	55.00						
Copper	mg/L	<MDL	0.003	0.01						
Iron (Total)	mg/L	0.10	2.80	6.08						
Lead	mg/L	<MDL	0.01	0.02						
Magnesium	mg/L	17.50	18.05	19.00						
Manganese (Total)	mg/L	<MDL	0.04	0.09						
Mercury	mg/L	<MDL	<MDL	<MDL						
Molyebdenum	mg/L	<MDL	<MDL	<MDL						
Selenium	mg/L	<MDL	0.0003	0.001						
Sodium	mg/L	38.30	47.70	62.70						
Zinc	mg/L	<MDL	0.02	0.04						

Baseline Closed at end of 2000 Monitoring Season

The monitoring point location for S-17 is located on the southern facing slopes of Freeman Gulch and is accessed by foot from trails that originate on the Hubbard Creek Road.

Baseline Information for Point S-17 is derived from events beginning on 5/9/96 through 12/7/00.
Point influenced by mining on 12/7/00.

S-18
Terror Creek - Spring 18
Elevation - 7750

Initiated	6/28/1999	6/28/1999	6/28/1999
Activated			
Date	10/13/2017	8/10/2017	5/4/2017

Summary Information

Field Parameters	UNITS	Baseline Min	Baseline Ave	Baseline Max	Operation Min	Operation Ave	Operation Max			
Flow	GPM	0.00	0.74	5.00				0.21	1.11	1.11
FieldComment										
ph	su	6.7	8.0	10.2				8.3	8.59	7.75
Conductivity	umhos/cm	220	378	670				415	389	557
Temperature	Celsius	2.9	10.5	17.8				7.2	17.3	6.7
Lab Parameters	UNITS									
Bicarbonate	mg/L	167.7	248.2	401.0						241
Chloride	mg/L	<MDL	<MDL	<MDL						2.2
Conductivity	umhos/cm	331.1	426.0	600.0						403
Hardness	mg/L	115.9	165.6	266.0						129
Nitrate-Nitrite	mg/L	<MDL	1.09	2.13						0.057
Oil and Grease	mg/L	<MDL	<MDL	<MDL						<MDL
pH	su	6.52	7.72	8.33						7.98
Phosphate	mg/L	<MDL	<MDL	<MDL						<MDL
ResidueFilterable-TDS	mg/L	117.5	229.6	377.0						251
ResidueNonFilterable-TSS	mg/L	1	22	64						<MDL
SAR		1.35	1.49	1.68						1.68
Sulfate	mg/L	14.41	21.34	25.73						24.9
Aluminum	mg/L	<MDL	0.86	1.59						<MDL
Arsenic	mg/L	<MDL	0.008	0.010						<MDL
Cadmium	mg/L	<MDL	0.002	0.002						<MDL
Calcium	mg/L	30.0	43.7	66.8						36.8
Copper	mg/L	<MDL	<MDL	<MDL						<MDL
Iron (Total)	mg/L	0.023	0.750	1.800						0.165
Lead	mg/L	<MDL	0.01	0.01						<MDL
Magnesium	mg/L	8.92	13.76	24.20						8.92
Manganese (Total)	mg/L	<MDL	0.02	0.02						<MDL
Mercury	mg/L	<MDL	0.00004	0.00004						<MDL
Molyebdenum	mg/L	<MDL	<MDL	<MDL						<MDL
Selenium	mg/L	<MDL	0.070	0.086						0.0531
Sodium	mg/L	36.0	44.0	53.8						47.6
Zinc	mg/L	0.01	0.02	0.03						<MDL

The area of concern for monitoring point S-18 has not been affected by the mining operation. Therefore, all recorded monitoring events are considered Baseline.

The monitoring point for S-18 is located on an unmapped road in an un-named gulch which discharges eventually into Terror Creek. The flow from S-18 contributes to Pond 6, which is just below it.

Baseline Information Collection initiated on 6/28/99 and not yet considered complete.
Point S-18 has not been influenced by mining.

S2-2
Hubbard Creek - Spring 2-2
Elevation - 6740

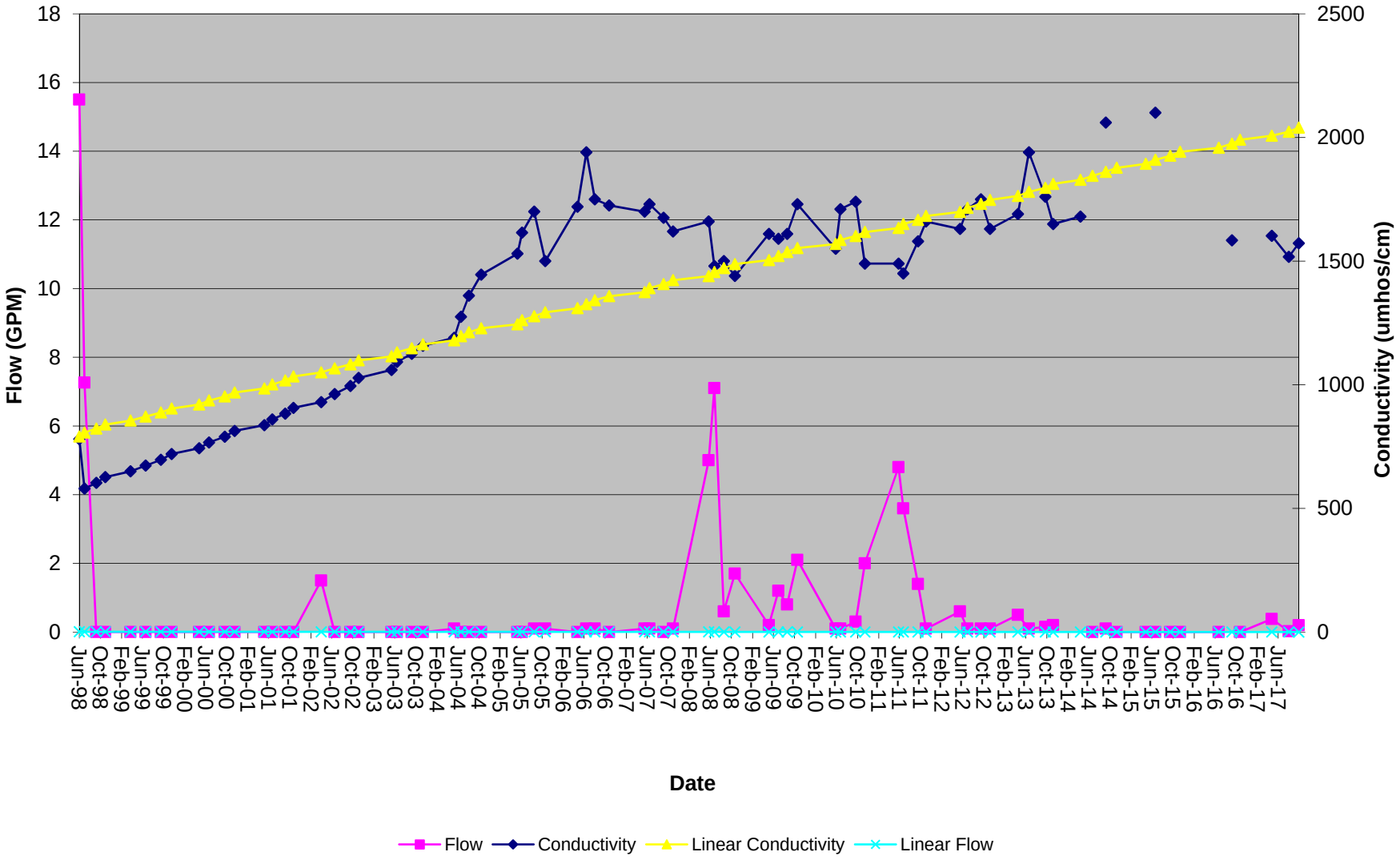
Initiated	6/9/1998	6/9/1998	6/9/1998
Activated	9/15/2001	9/15/2001	9/15/2001
Date	10/6/2017	8/9/2017	5/3/2017

Summary Information

Field Parameters	UNITS	Baseline Min	Baseline Ave	Baseline Max	Operation Min	Operation Ave	Operation Max			
Flow	GPM	0.0	1.5	15.5	0.0	0.6	7.1	0.198	0.021	0.38
FieldComment										
ph	su	6.9	7.5	8.0	7.4	8.7	9.3	8.76	8.95	8.92
Conductivity	umhos/cm	580	680	780	930	1631	2100	1572	1517	1602
Temperature	Celsius	11.5	12.3	13.2	0.1	14.7	26.3	8.5	15.6	7.1
Lab Parameters	**UNITS**									
Bicarbonate	mg/L	339	350	361	489.6	536.9	584.2			
Carbonate	mg/L	<MDL	<MDL	<MDL	15.6	19.5	23.4			
Chloride	mg/L	2	3	3	<MDL	2.5	2.5			
Conductivity	umhos/cm	685	702	718	1042.2	1142.9	1243.7			
Hardness	mg/L	208	212	215	132.5	144.6	156.7			
Nitrate-Nitrite	mg/L	0.07	0.09	0.12	<MDL	<MDL	<MDL			
Oil and Grease	mg/L	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL			
pH	su	7.7	7.8	7.8	8.5	8.7	8.8			
Phosphate	mg/L	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL			
ResidueFilterable-TDS	mg/L	390.0	420.0	450.0	941	964	987			
ResidueNonFilterable-TSS	mg/L	38.0	49.0	60.0	130	252	374			
SAR		<MDL	<MDL	<MDL	8.6	10.4	12.3			
Sulfate	mg/L	40.0	40.0	40.0	179.5	199.0	218.6			
Aluminum	mg/L	1.94	2.15	2.36	0.19	0.48	0.77			
Arsenic	mg/L	<MDL	<MDL	<MDL	0.077	0.092	0.107			
Cadmium	mg/L	<MDL	<MDL	<MDL	0.010	0.011	0.012			
Calcium	mg/L	51.5	52.5	53.6	24.70	27.91	31.11			
Copper	mg/L	<MDL	<MDL	<MDL	<MDL	0.013	0.013			
Iron (Total)	mg/L	1.56	1.90	2.25	0.375	1.948	3.520			
Lead	mg/L	<MDL	<MDL	<MDL	<MDL	0.06	0.06			
Magnesium	mg/L	19.4	19.6	19.8	17.19	18.19	19.18			
Manganese (Total)	mg/L	0.017	0.021	0.024	0.012	0.023	0.034			
Mercury	mg/L	<MDL	<MDL	<MDL	0.0001	0.0002	0.0003			
Molyebdenum	mg/L	<MDL	<MDL	<MDL	<MDL	0.005	0.005			
Selenium	mg/L	<MDL	<MDL	<MDL	0.005	0.076	0.146			
Sodium	mg/L	69.4	78.6	87.8	247.8	273.4	299.0			
Zinc	mg/L	0.02	0.02	0.02	0.02	0.03	0.03			

Baseline Information for Point S2-2 is derived from events beginning on 6/9/98 through 9/15/2001.
Point influenced by mining on 9/15/01.

Plot of Flow and Conductivity



S2-2 - Hubbard Creek Spring 2-2

Figure 35

S2-3
Hubbard Creek - Spring 2-3
Elevation - 6740

Initiated	6/9/1998	6/9/1998	6/9/1998
Activated	9/24/1999	9/24/1999	9/24/1999
Date	10/6/2017	8/9/2017	5/8/2017

Summary Information

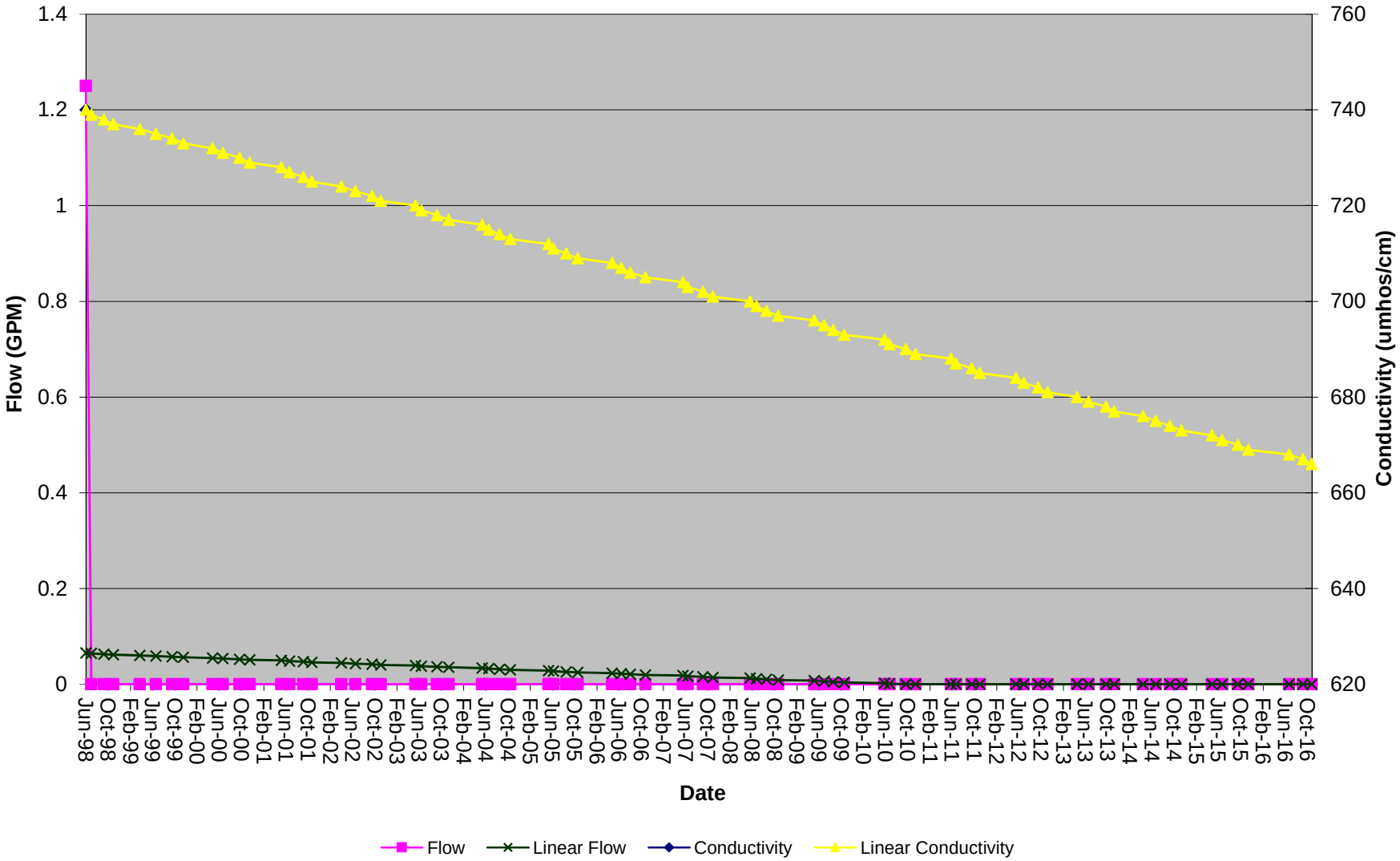
Field Parameters	UNITS	Baseline Min	Baseline Ave	Baseline Max	Operation Min	Operation Ave	Operation Max			
Flow	GPM	0.0	0.2	1.3	0.0	0.00	0.00	0	0	0
FieldComment								Dry	Dry	Dry
ph	su	7.8	7.8	7.8						
Conductivity	umhos/cm	740	740	740						
Temperature	Celsius	12.1	12.1	12.1						
Lab Parameters	UNITS									
Bicarbonate	mg/L									
Chloride	mg/L									
Conductivity	umhos/cm									
Hardness	mg/L									
Nitrate-Nitrite	mg/L									
Oil and Grease	mg/L									
pH	su									
Phosphate	mg/L									
ResidueFilterable -TDS	mg/L									
ResidueNonFilterable-TSS	mg/L									
SAR										
Sulfate	mg/L									
Aluminum	mg/L									
Arsenic	mg/L									
Cadmium	mg/L									
Calcium	mg/L									
Copper	mg/L									
Iron (Total)	mg/L									
Lead	mg/L									
Magnesium	mg/L									
Manganese (Total)	mg/L									
Mercury	mg/L									
Molyebdenum	mg/L									
Selenium	mg/L									
Sodium	mg/L									
Zinc	mg/L									

Influenced by the disturbance of Freeman Gulch

The monitoring point for S2-3 is located along the same old coal exploration road used to access S2-2. It is located near the bottom of Freeman Gulch, along the upper edge of the road.

Baseline Information for Point S2-3 is derived from events beginning on 6/9/98 through 9/24/99.
Point influenced by mining on 9/24/99.

Plot of Flow and Conductivity



S2-3 - Hubbard Creek Spring 2-3

Figure 37

S2-9
Hubbard Creek - Spring 2-9
Elevation - 6320'

Initiated	4/1/1999	4/1/1999	4/1/1999	4/1/1999
Activated	9/24/1999	9/24/1999	9/24/1999	9/24/1999
Date	10/24/2017	9/5/2017	5/5/2017	3/31/2017

Summary Information

Field Parameters	UNITS	Baseline Min	Baseline Ave	Baseline Max	Operation Min	Operation Ave	Operation Max				
Flow	GPM	0.0	1.3	3.8	0.0	0.00	0.00	0	0	0	0
FieldComment								Dry	Dry	Dry	Dry
ph	su	7.5	7.5	7.5							
Conductivity	umhos/cm	1340	1340	1340							
Temperature	Celsius	4.6	4.6	4.6							
Lab Parameters	UNITS										
Bicarbonate	mg/L										
Chloride	mg/L										
Conductivity	umhos/cm										
Hardness	mg/L										
Nitrate-Nitrite	mg/L										
Oil and Grease	mg/L										
pH	su										
Phosphate	mg/L										
Residue Filterable-TDS	mg/L										
Residue NonFilterable-TSS	mg/L										
SAR											
Sulfate	mg/L										
Aluminum	mg/L										
Arsenic	mg/L										
Cadmium	mg/L										
Calcium	mg/L										
Copper	mg/L										
Iron (Total)	mg/L										
Lead	mg/L										
Magnesium	mg/L										
Manganese (Total)	mg/L										
Mercury	mg/L										
Molyebdenum	mg/L										
Selenium	mg/L										
Sodium	mg/L										
Zinc	mg/L										

The monitoring point for S2-9 is found along the Hubbard Creek road near the mouth of Freeman Gulch. The flow and field parameters are measured at the outlet end of a 24" culvert that directs this runoff from this spring into Hubbard Creek.

Baseline Information for Point S2-9 is derived from events beginning on 4/1/99 through 9/24/99.
Point influenced by mining on 9/24/99.

S2 - 10
Hubbard Creek - Spring 2-10
Elevation - 6320'

Initiated	4/1/1999	4/1/1999	4/1/1999
Activated	9/24/1999	9/24/1999	9/24/1999
Date	10/24/2017	9/5/2017	5/5/2017

Summary Information

Field Parameters	UNITS	Baseline Min	Baseline Ave	Baseline Max	Operation Min	Operation Ave	Operation Max			
Flow	GPM	0.0	0.9	3.6	0.0	0.1	4.2	0	0	0
FieldComment								Dry	Dry	Dry
ph	su	7.4	7.4	7.4	8.0	8.6	10.2			
Conductivity	umhos/cm	840	840	840	940	1294	1670			
Temperature	Celsius	4.9	4.9	4.9	4.0	17.2	24.6			
Lab Parameters	UNITS									
Bicarbonate	mg/L				570.7	570.7	570.7			
Chloride	mg/L				<MDL	<MDL	<MDL			
Conductivity	umhos/cm				1048.5	1048.5	1048.5			
Hardness	mg/L				375.48	375.48	375.48			
Nitrate-Nitrite	mg/L				<MDL	<MDL	<MDL			
Oil and Grease	mg/L				11.39	11.39	11.39			
pH	su				8.34	8.34	8.34			
Phosphate	mg/L				<MDL	<MDL	<MDL			
Residue Filterable-TDS	mg/L				1052	1052	1052			
Residue NonFilterable-TSS	mg/L				15	15	15			
SAR					0.29	0.29	0.29			
Sulfate	mg/L				205.39	205.39	205.39			
Aluminum	mg/L				0.25	0.25	0.25			
Arsenic	mg/L				0.0066	0.0066	0.0066			
Cadmium	mg/L				<MDL	<MDL	<MDL			
Calcium	mg/L				53.4	53.4	53.4			
Copper	mg/L				0.06	0.06	0.06			
Iron (Total)	mg/L				0.51	0.51	0.51			
Lead	mg/L				0.08	0.08	0.08			
Magnesium	mg/L				58.8	58.8	58.8			
Manganese (Total)	mg/L				0.03	0.03	0.03			
Mercury	mg/L				0.0002	0.0002	0.0002			
Molyebdenum	mg/L				<MDL	<MDL	<MDL			
Selenium	mg/L				0.0068	0.0068	0.0068			
Sodium	mg/L				12.94	12.94	12.94			
Zinc	mg/L				0.055	0.055	0.055			

Influenced by the disturbance of Freeman Gulch.

The monitoring point for S2-10 is found along the Hubbard Creek road near the mouth of Freeman Gulch. The flow and field parameters are measured where the flow crosses the Hubbard Creek road, just before it enters Hubbard Creek.

Baseline information for Point S2-10 is derived from events beginning on 4/1/99 through 11/25/99.
Point influenced by mining on 11/25/99.

S3-1
Sheep Corral - Spring 3-1
Elevation - 6840

Initiated	5/21/2003	5/21/2003	5/21/2003
Activated	5/21/2003	5/21/2003	5/21/2003
Date	10/6/2017	8/9/2017	5/4/2017

Summary Information

Field Parameters	UNITS	Baseline Min	Baseline Ave	Baseline Max	Operation Min	Operation Ave	Operation Max			
Flow	GPM				0.00	0.64	6.34			6.34
FieldComment								Damp	Seep	
ph	su				7.2	8.0	8.6			8.01
Conductivity	umhos/cm				968	1244	1520			968
Temperature	Celsius				4.1	10.6	19.5			8.7
Lab Parameters	UNITS									
Bicarbonate	mg/L				489.0	489.0	489.0			489
Chloride	mg/L				3.0	3.0	3.0			3
Conductivity	umhos/cm				845.0	845.0	845.0			845
Hardness	mg/L				326.0	326.0	326.0			326
Nitrate-Nitrite	mg/L				0.2	0.2	0.2			0.17
Oil and Grease	mg/L				0.0	<MDL	0.0			<MDL
pH	su				7.8	7.8	7.8			7.82
Phosphate	mg/L				0.0	<MDL	0.0			<MDL
Residue Filterable-TDS	mg/L				557.0	557.0	557.0			557
Residue NonFilterable-TSS	mg/L				0.0	<MDL	0.0			<MDL
SAR					2.2	2.2	2.2			2.21
Sulfate	mg/L				96.3	96.3	96.3			96.3
Aluminum	mg/L				0.0	<MDL	0.0			<MDL
Arsenic	mg/L				0.0	<MDL	0.0			<MDL
Cadmium	mg/L				0.0	0.0	0.0			0.0186
Calcium	mg/L				83.3	83.3	83.3			83.3
Copper	mg/L				0.0	<MDL	0.0			<MDL
Iron (Total)	mg/L				0.0	<MDL	0.0			
Lead	mg/L				0.0	<MDL	0.0			<MDL
Magnesium	mg/L				28.6	28.6	28.6			28.6
Manganese (Total)	mg/L				0.0	<MDL	0.0			
Mercury	mg/L				0.0	<MDL	0.0			<MDL
Molyebdenum	mg/L				0.0	0.0	0.0			0.0129
Selenium	mg/L				0.1	0.1	0.1			0.0777
Sodium	mg/L				108.0	108.0	108.0			108
Zinc	mg/L				0.0	<MDL	0.0			<MDL

The area of concern for monitoring point S3-1 was affected by the mining operation before its establishment. Therefore, all recorded monitoring events are considered Operational.

There is no baseline collection possible for points initiated after the influence of mining.

S5-2
Powerline Seep - Spring 5-2
Elevation - 7200

Initiated								10/29/2012	10/29/2012	10/29/2012	10/29/2012
Activated											
Date								10/13/2017	7/12/2017	5/2/2017	3/30/2017

Summary Information

Field		Baseline			Operation						
Parameters	UNITS	Min	Ave	Max	Min	Ave	Max				
Flow	GPM	0.34	0.34	0.34				Dry	Dry	Dry	
Temperature	Celsius	9.2	9.2	9.2							
Conductivity	umhos/cm	850	850	850							
pH	su	7.6	7.6	7.6							
Field Comments											Wet Area
Lab											

The area of concern for monitoring point S5-2 has not been affected by the mining operation. Therefore, all recorded monitoring events are considered Baseline.

S6-6
Terror Creek - Spring 6-6
Elevation - 7860

Initiated	7/19/1983	7/19/1983	7/19/1983
Activated	7/22/2012	7/22/2012	7/22/2012
Date	10/13/2017	8/8/2017	5/8/2017

Summary Information

Field Parameters	UNITS	Baseline Min	Baseline Ave	Baseline Max	Operation Min	Operation Ave	Operation Max			
Flow	GPM	0.00	0.14	3.10				0	0	0
Temperature	Celsius	15.8	18.3	21.1						
Conductivity	umhos/cm	239	298	432						
pH	su	7.8	8.3	8.7						
Field Comments								Dry	Damp	Dry
Lab Parameters	UNITS									
Bicarbonate	mg/L	117.1	117.1	117.1						
Carbonate	mg/L									
Chloride	mg/L	1	1	1						
Conductivity	umhos/cm	235	235	235						
Hardness	mg/L	95	95	95						
pH	su	7.9	7.9	7.9						
Residue Filterable-TDS	mg/L	132	132	132						
ResidueNon Filterable-TSS	mg/L	32	32	32						
SAR		0.71	0.71	0.71						
Sulfate	mg/L	10	10	10						
Calcium (Dissolved)	mg/L	25	25	25						
Magnesium (Total)	mg/L	8	8	8						
Sodium (Dissolved)	mg/L	16	16	16						
Potassium	mg/L									
TDS Ratio (grav./calc.)										

The area of concern for monitoring point S6-6 has not been affected by the mining operation. Therefore, all recorded monitoring events are considered Baseline.

Baseline Information Collection initiated on 7/5/83 and not yet considered complete.
Point S6-6 has not been influenced by mining.

S7-10
Terror Creek - Spring 7-10
Elevation - 7880

Initiated	8/1/1983	8/1/1983	8/1/1983
Activated	12/31/2013	12/31/2013	12/31/2013
Date	10/13/2017	9/7/2017	5/8/2017

		Summary Information								
		Baseline			Operation					
Field Parameters	UNITS	Min	Ave	Max	Min	Ave	Max			
Flow	GPM	0.00	1.56	18.75	0.68	1.86	3.75	0.68	0.80	1.47
Temperature	Celsius	1.6	7.81	21.7	6.40	7.38	8.80	7.8	8.8	7
Conductivity	umhos/cm	190	480	660	420.00	573.17	673.00	673	651	606
pH	su	7.0	7.6	8.4	6.80	7.41	7.67	7.63	7.59	7.67
Field Comments										
Lab Parameters	UNITS									
Bicarbonate	mg/L	142.00	259.51	384.00	241.77	296.89	352.00			
Chloride	mg/L	<MDL	6.8	54.6	4.6	7.8	10.9			
Conductivity	umhos/cm	292	487	722	542	561	580			
Hardness	mg/L	3.00	203.62	258.00	214.04	220.02	226.00			
Nitrate-Nitrite	mg/L	0.3	0.3	0.31	<MDL					
Oil & Grease	mg/L	<MDL	<MDL	<MDL	<MDL					
pH	su	6.76	7.58	8.59	7.08	7.22	7.35			
Phosphate	mg/L	<MDL	<MDL	<MDL	<MDL					
Residue Filterable-TDS	mg/L	190	319	476	358	394	430			
Residue NonFilterable-TSS	mg/L	<MDL	57	272	14	14	14			
SAR		0.470	0.920	3.959	1.610	2.785	3.959			
Sulfate	mg/L	0.4	22.0	49.8	35.9	42.9	49.8			
Aluminum (TREC)	mg/L	0.023	0.023	0.110	0.110	0.110	0.110			
Arsenic (TREC)	mg/L	0.0100	0.0100	0.0100	0.0010	0.0010	0.0010			
Cadmium (TREC)	mg/L	0.020	0.020	0.020	0.002	0.002	0.002			
Calcium (TREC)	mg/L	36.1	36.1	54.9	43.5	49.2	54.90			
Copper (TREC)	mg/L	0.0010	0.0010	0.0120	0.0120	0.0120	0.0120			
Iron (TREC)	mg/L	0.06	0.22	0.49	0.02	0.17	0.31			
Magnesium (TREC)	mg/L	24.70	24.70	25.60	21.50	23.55	25.60			
Manganese (TREC)	mg/L	<MDL	0.0123	0.0260	0.0260	0.0260	0.03			
Mercury (TREC)	mg/L	0.0000	0.0000	0.0000	0.00002	0.00002	0.00002			
Molybdenum (TREC)	mg/L	0.003	0.003	0.003	0.001	0.001	0.001			
Selenium (TREC)	mg/L	0.023	0.023	0.023	0.003	0.003	0.003			
Sodium (TREC)	mg/L	32.3	32.3	133.1	55.8	94.5	133.1			
Zinc (TREC)	mg/L	0.006	0.006	0.011	0.011	0.011	0.011			

This spring consists of a small 2' x 5' area of exposed rocks. Spring water bubbles up through the rocks. (Hanna, 99)

Activated December 31, 2013

Baseline Information Collection initiated on 8/1/83.
Point S7-10 was influenced by mining 12/31/2013.

S7-4
Steven's Gulch - Spring 7-4
Elevation - 7780

Initiated	7/19/1983	7/19/1983	7/19/1983
Activated			
Date	10/20/2017	8/7/2017	06/27/2017

Summary Information

Field Parameters	UNITS	Baseline Min	Baseline Ave	Baseline Max	Operation Min	Operation Ave	Operation Max			
Flow	GPM	0.00	1.80	11.13						
Temperature	Celsius	8.1	12.1	24.3					12.9	11
Conductivity	umhos/cm	250	336	530					371	380
pH	su	6.6	7.5	8.2					7.4	7.41
Field Comments								Dry	Seep	
Lab Parameters	**UNITS**									
Bicarbonate	mg/L	40.9	155.3	225.7						
Chloride	mg/L	<MDL	7.58	22.33						
Conductivity	umhos/cm	226	286	353						
Hardness	mg/L	124.53	149.11	184.00						
Nitrate-Nitrite	mg/L	<MDL	<MDL	<MDL						
Oil and Grease	mg/L	<MDL	<MDL	<MDL						
pH	su	6.6	7.4	8.2						
Phosphate	mg/L	<MDL	<MDL	<MDL						
Residue Filterable-TDS	mg/L	172	218	305						
ResidueNon Filterable-TSS	mg/L	11	35	52						
SAR		0.25	0.77	2.63						
Sulfate	mg/L	<MDL	8.71	14.82						
Aluminum (TREC)	mg/L	<MDL	0.024	0.024						
Arsenic (TREC)	mg/L	<MDL	0.026	0.026						
Cadmium (TREC)	mg/L	<MDL	0.02	0.02						
Calcium (TREC)	mg/L	25.30	25.30	25.30						
Copper (TREC)	mg/L	0.01	0.01	0.01						
Iron (TREC)	mg/L	0.35	0.47	0.58						
Lead (TREC)	mg/L	0.04	0.04	0.04						
Magnesium (TREC)	mg/L	13.0	15.0	18.0						
Manganese (TREC)	mg/L	0.01	0.01	0.01						
Mercury (TREC)	mg/L	<MDL	0.00007	0.00007						
Molybdenum (TREC)	mg/L	<MDL	0.002	0.002						
Selenium (TREC)	mg/L	<MDL	0.018	0.018						
Sodium (TREC)	mg/L	12.99	12.99	12.99						
Zinc (TREC)	mg/L	<MDL	0.01	0.01						

The area of concern for monitoring point S7-4 has not been affected by the mining operation. Therefore, all recorded monitoring events are considered Baseline.

Baseline Information Collection initiated on 7/1/83 and net yet considered complete.
Point S7-4 has not been influenced by mining.

S7-9
Terror Creek - Spring 7-9
Elevation - 7800

Initiated	7/19/1983	7/19/1983	7/19/1983
Activated	7/22/2012	7/22/2012	7/22/2012
Date	10/13/2017	9/7/2017	6/28/2017

Summary Information

Field Parameters	UNITS	Baseline Min	Baseline Ave	Baseline Max	Operation Min	Operation Ave	Operation Max			
Flow	GPM	0.00	0.01	0.27	0.00	0.00	0.00	0.00	0.00	0.00
Temperature	Celsius	8.6	11.3	15.2						
Conductivity	umhos/cm	271	614	791						
pH	su	7.0	7.5	8.0						
Field Comments								Dry	Dry	Dry
Lab Parameters	UNITS									
Bicarbonate	mg/L	139.1	326.2	427.0						
Carbonate	mg/L									
Chloride	mg/L	1.0	5.7	11.0						
Conductivity	umhos/cm	259.0	522.3	678.0						
Hardness	mg/L	104.0	264.3	347.0						
pH	su	6.7	7.5	8.0						
Residue Filterable-TDS	mg/L	144.0	327.0	425.0						
ResidueNon Filterable-TSS	mg/L	94.0	129.3	170.0						
SAR		0.1	0.6	0.9						
Sulfate	mg/L	4.0	26.0	43.0						
Calcium (Dissolved)	mg/L	30.0	68.0	88.0						
Magnesium (Total)	mg/L	7.0	23.0	31.0						
Sodium (Dissolved)	mg/L	3.0	24.7	38.0						
Potassium	mg/L									
TDS Ratio (grav./calc.)										

The monitoring point for Spring 7-9 is located on an east facing slope that drains down toward Terror Creek.

Baseline Information is derived from monitoring events beginning on 7/19/83 through 7/22/2012.
Point S7-9 influenced by mining on 7/22/12.

S8-5
Terror Creek - Spring 8-5
Elevation - 7800

Initiated	7/19/1983	7/19/1983	7/19/1983
Activated	7/15/2012	7/15/2012	7/15/2012
Date	10/13/2017	8/8/2017	5/8/2017

Summary Information

Field Parameters	UNITS	Baseline Min	Baseline Ave	Baseline Max	Operation Min	Operation Ave	Operation Max			
Flow	GPM	0	0.55	8.62	0.00	0.00	3.00	0	1	2
Temperature	Celsius	7.5	13.80	24.4						
Conductivity	umhos/cm	660	746.00	920						
pH	su	7.3	8.01	8.8						
Field Comments								Damp	Dry	Dry
Lab Parameters	UNITS									
Bicarbonate	mg/L	334	397.13	475						
Carbonate	mg/L									
Chloride	mg/L	6	8.50	11						
Conductivity	umhos/cm	606	686.00	774						
Hardness	mg/L	247	315.13	380						
pH	su	7.0	7.89	8.2						
Residue Filterable-TDS	mg/L	355	404.38	460						
Residue NonFilterable-TSS	mg/L	4	146.00	502						
SAR		0.89	0.99	1.24						
Sulfate	mg/L	30	40.13	56						
Calcium (Dissolved)	mg/L	64.1	75.60	96.7						
Magnesium (Total)	mg/L	21.1	30.71	36.0						
Sodium (Dissolved)	mg/L	31.9	40.14	48						
Potassium	mg/L	1.10	1.10	1.10						
TDS Ratio (grav./calc.)		1.11	1.11	1.11						

The monitoring point for Spring 8.5 is located on an east facing slope that drains down toward Terror Creek.

Baseline Information is derived from monitoring events beginning on 7/19/83 through 7/15/2012.
Point S8-5 influenced by mining 7/15/12.

S21
Terror Creek - Spring 21
Elevation - 7100

Initiated	4/15/1983	4/15/1983	4/15/1983	4/15/1983
Activated	12/1/2010	12/1/2010	12/1/2010	12/1/2010
Date	10/13/2017	8/24/2017	4/5/2017	3/30/2017

Summary Information

Field Parameters	UNITS	Baseline Min	Baseline Ave	Baseline Max	Operation Min	Operation Ave	Operation Max				
Flow	GPM	0	1.03	7.5	0	0.93	9.11			9.11	4.56
Temperature	Celsius	2.5	12.1	20.2	4	9.71	16.2			4.5	4.0
Conductivity	umhos/cm	360	687	907	1011	1165.00	1404			1011	1020
pH	su	7.2	7.9	8.5	7.65	9.48	17.1			8.3	8.2
Field Comments					0	#DIV/0!	0	Damp	Damp		
Lab Parameters	**UNITS**										
Bicarbonate	mg/L	268	388.56	456	93.08	294.04	495			495	
Carbonate	mg/L	<MDL	0.23	3.5							
Chloride	mg/L	2	8.78	14	10.4	16.10	21.8			10.4	
Conductivity	umhos/cm	555	679.72	775	434	636.00	838			838	
Hardness	mg/L	279	350.00	442	323	335.31	347.625			323	
Nitrate-Nitrite	mg/L				0.1	0.10	0.1			<MDL	
Oil/Grease	mg/L				<MDL	<MDL	<MDL			<MDL	
pH	su	7	7.88	8.4	7.76	7.93	8.09			8.1	
ResidueFilterable-TDS	mg/L	330	408.44	535	340	463.50	587			587	
ResidueNonFilterable-TSS	mg/L	2	24.92	106	6.6	11.80	17			6.6	
SAR		0.48	0.65	1	2.259	2.785	3.31			3.31	
Sulfate	mg/L	30	50.22	91	89.6	96.66	103.72			89.6	
Calcium (Dissolved)	mg/L	58	84.47	108							
Magnesium (Total)	mg/L	25	33.81	42	35.4	43.90	52.4			35.4	
Sodium (Dissolved)	mg/L	22	27.92	44							
Potassium	mg/L	2	2.00	2							
TDS Ratio (grav./calc.)		1	1.00	1							
Aluminum, TREC	mg/L				<MDL	0.20	0.2			<MDL	
Arsenic, TREC	mg/L				<MDL	0.00	0.001			<MDL	
Cadmium, TREC	mg/L				<MDL	0.00	0.002			<MDL	
Calcium, TREC	mg/L				52.8	64.00	75.2			75.2	
Copper, TREC	mg/L				<MDL	0.01	0.01			<MDL	
Iron, TREC	mg/L				0.0855	0.18	0.27			0.0855	
Lead, TREC	mg/L				<MDL	0.06	0.06			<MDL	
Manganese, TREC	mg/L				0.0108	0.04	0.06			0.0108	
Mercury, TREC	mg/L				<MDL	3.000E-05	3.000E-05			<MDL	
Molybdenum, TREC	mg/L				<MDL	0.00	0.001			<MDL	
Selenium, TREC	mg/L				<MDL	0.01	0.007			<MDL	
Sodium, TREC	mg/L				96.8	111.90	127			127	
Zinc, TREC	mg/L				<MDL	0.01	0.01			<MDL	

Baseline Information for Point S21 is derived from events beginning on 4/15/83 through 12/1/10.
Point influenced by mining on 12/1/10.

S34-7
Sheep Corral - Spring 34-7
Elevation - 7390

Initiated	10/27/1997	10/27/1997	10/27/1997	10/27/1997
Activated	6/1/2002	6/1/2002	6/1/2002	6/1/2002
Date	10/6/2017	8/9/2017	5/3/2017	10/31/2016

Summary Information

Field Parameters	UNITS	Baseline Min	Baseline Ave	Baseline Max	Operation Min	Operation Ave	Operation Max				
Flow	GPM	0.00	0.30	4.41	0.0	0.03	1.00				
FieldComment								Dry	Dry	Damp	Dry
ph	su	6.8	7.5	8.0	7.2	7.9	8.4				
Conductivity	umhos/cm	160	258	300	330	625	1170				
Temperature	Celsius	5.9	11.2	19.8	3.7	13.6	24.5				
Lab Parameters	**UNITS**										
Bicarbonate	mg/L	200	200	200							
Chloride	mg/L	4	4	4							
Conductivity	umhos/cm	420	420	420							
Hardness	mg/L	129	129	129							
Nitrate-Nitrite	mg/L	<MDL	<MDL	<MDL							
Oil and Grease	mg/L	4	4	4							
pH	su	8.0	8.0	8.0							
Phosphate	mg/L	<MDL	<MDL	<MDL							
ResidueFilterable-TDS	mg/L	230	230	230							
ResidueNonFilterable-TSS	mg/L	138	138	138							
SAR		<MDL	<MDL	<MDL							
Sulfate	mg/L	30.0	30.0	30.0							
Aluminum	mg/L	3.51	3.51	3.51							
Arsenic	mg/L	0.001	0.001	0.001							
Cadmium	mg/L	<MDL	<MDL	<MDL							
Calcium	mg/L	37.0	37.0	37.0							
Copper	mg/L	<MDL	<MDL	<MDL							
Iron (Total)	mg/L	3.58	3.58	3.58							
Lead	mg/L	<MDL	<MDL	<MDL							
Magnesium	mg/L	8.9	8.9	8.9							
Manganese (Total)	mg/L	0.113	0.113	0.113							
Mercury	mg/L	<MDL	<MDL	<MDL							
Molyebdenum	mg/L	<MDL	<MDL	<MDL							
Selenium	mg/L	<MDL	<MDL	<MDL							
Sodium	mg/L	41.0	41.0	41.0							
Zinc	mg/L	0.03	0.03	0.03							

The monitoring point for S34-7 is located just to the south of an old coal exploration road which winds down Sheep Corral Gulch.

Baseline Information for Point S34-7 is derived from events beginning on 10/27/97 through 6/1/02.
Point influenced by mining on 6/1/02.

S33-4
Sheep Corral - Spring 33-4
Elevation - 7790

Initiated	10/30/1997	10/30/1997	10/30/1997	10/30/1997
Activated	12/1/2001	12/1/2001	12/1/2001	12/1/2001
Date	10/6/2017	8/9/2017	5/3/2017	10/31/2016

Summary Information

Field Parameters	UNITS	Baseline Min	Baseline Ave	Baseline Max	Operation Min	Operation Ave	Operation Max				
Flow	GPM	0.0	0.0	0.0	0.0	0.0	0.0	0	0	0	0
FieldComment								Dry	Dry	Dry	Dry
ph	su										
Conductivity	umhos/cm										
Temperature	Celsius										
Lab Parameters	**UNITS**										
Bicarbonate	mg/L										
Chloride	mg/L										
Conductivity	umhos/cm										
Hardness	mg/L										
Nitrate-Nitrite	mg/L										
Oil and Grease	mg/L										
pH	su										
Phosphate	mg/L										
ResidueFilterable-TDS	mg/L										
ResidueNonFilterable-TSS	mg/L										
SAR											
Sulfate	mg/L										
Aluminum	mg/L										
Arsenic	mg/L										
Cadmium	mg/L										
Calcium	mg/L										
Copper	mg/L										
Iron (Total)	mg/L										
Lead	mg/L										
Magnesium	mg/L										
Manganese (Total)	mg/L										
Mercury	mg/L										
Molyebdenum	mg/L										
Selenium	mg/L										
Sodium	mg/L										
Zinc	mg/L										

This spring was found during the fall of 1997 and was not locatable after 1998.

The monitoring point for S33-4 (Spring 33-4) is located above P33-3 in a roadless fork. Evidence of a dry spring was found in October 1997 and has not been relocated.

Baseline Information for Point S33-4 is derived from events beginning on 10/30/97 through 12/1/01.
Point influenced by mining on 12/1/01.

S34-10
Dove Gulch - Spring 34-10
Elevation - 6640

Initiated	6/2/1998	6/2/1998	6/2/1998	6/2/1998
Activated				
Date	10/27/2017	9/5/2017	5/5/2017	3/17/2017

Summary Information

Field Parameters	UNITS	Baseline Min	Baseline Ave	Baseline Max	Operation Min	Operation Ave	Operation Max				
Flow	GPM	0.0	0.6	11.0	0.0	0.4	16.4			0.48	
FieldComment								Damp	Damp		Damp
ph	su	7.3	7.4	7.4	8.2	8.4	8.7			8.38	
Conductivity	umhos/cm	320	435	550	1160	1340	1689			1689	
Temperature	Celsius	8.2	9.1	10.6	6.7	11.6	19.6			6.7	
Lab Parameters	UNITS										
Bicarbonate	mg/L	325	335	344	284.2	284.2	284.2				
Carbonate	mg/L	<MDL	<MDL	<MDL	3.6	3.6	3.6				
Chloride	mg/L	5	5	5	0.86	0.86	0.86				
Conductivity	umhos/cm	622	681	740	1032.1	1032.1	1032.1				
Hardness	mg/L	170	186	202	236.3	236.3	236.3				
Nitrate-Nitrite	mg/L	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL				
Oil and Grease	mg/L	<MDL	<MDL	<MDL	2.43	2.43	2.43				
pH	su	7.8	7.8	7.8	8.43	8.43	8.43				
Phosphate	mg/L	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL				
ResidueFilterable-TDS	mg/L	370	400	430	751	751	751				
ResidueNonFilterable-TSS	mg/L	<MDL	31	62	29	29	29				
SAR		<MDL	<MDL	<MDL	3.39	3.39	3.39				
Sulfate	mg/L	40	50	60	194.69	194.69	194.69				
Aluminum	mg/L	0.07	1.96	3.86	0.25	0.25	0.25				
Arsenic	mg/L	<MDL	0.001	0.001	0.064	0.064	0.064				
Cadmium	mg/L	<MDL	<MDL	<MDL	0.015	0.015	0.015				
Calcium	mg/L	40.1	43.4	46.8	55.4	55.4	55.4				
Copper	mg/L	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL				
Iron (Total)	mg/L	0.05	1.65	3.26	0.102	0.102	0.102				
Lead	mg/L	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL				
Magnesium	mg/L	16.9	18.8	20.7	23.8	23.8	23.8				
Manganese (Total)	mg/L	<MDL	0.027	0.055	<MDL	<MDL	<MDL				
Mercury	mg/L	<MDL	<MDL	<MDL	0.0001	0.0001	0.0001				
Molyebdenum	mg/L	<MDL	<MDL	<MDL	0.01	0.01	0.01				
Selenium	mg/L	0.001	0.001	0.001	0.0036	0.0036	0.0036				
Sodium	mg/L	70.2	77.4	84.6	119.8	119.8	119.8				
Zinc	mg/L	<MDL	0.01	0.03	0.011	0.011	0.011				

The monitoring point for S34-10 is located high on the northern facing slopes that forms the Dove Gulch Canyon. It is accessed on foot from the remnants of an old coal exploration road in the mouth of Dove Gulch. It is one of three springs found in this location, originating in the sandstone outcrop and discharges via sheet flow into Dove Gulch.

Baseline Information for Point S34-10 is derived from events beginning on 10/31/97 through 12/1/03.
Point influenced by mining on 12/1/03.

S34-19
Hubbard Creek - Spring 34-19
Elevation - 6460

Initiated	6/9/1998	6/9/1998	6/9/1998	6/9/1998
Activated				
Date	9/5/2017	9/5/2017	6/28/2017	3/31/2017

Summary Information

Field Parameters	UNITS	Baseline Min	Baseline Ave	Baseline Max	Operation Min	Operation Ave	Operation Max				
Flow	GPM	0.0	0.2	7.5							
FieldComment								No Flow	No Flow	No Flow	
ph	su	7.1	7.9	8.6							8.61
Conductivity	umhos/cm	149	1008	2400							148.6
Temperature	Celsius	3.3	13.5	22.4							3.3
Lab Parameters	**UNITS**										
Bicarbonate	mg/L	434	434	434							
Chloride	mg/L	9	9	9							
Conductivity	umhos/cm	911	911	911							
Hardness	mg/L	197	197	197							
Nitrate-Nitrite	mg/L	0.1	0.1	0.1							
Oil and Grease	mg/L	<MDL	<MDL	<MDL							
pH	su	7.6	7.6	7.6							
Phosphate	mg/L	<MDL	<MDL	<MDL							
ResidueFilterable-TDS	mg/L	550	550	550							
ResidueNonFilterable-TSS	mg/L	<MDL	<MDL	<MDL							
SAR		<MDL	<MDL	<MDL							
Sulfate	mg/L	290.0	290.0	290.0							
Aluminum	mg/L	0.2	0.2	0.2							
Arsenic	mg/L	<MDL	<MDL	<MDL							
Cadmium	mg/L	<MDL	<MDL	<MDL							
Calcium	mg/L	44.7	44.7	44.7							
Copper	mg/L	<MDL	<MDL	<MDL							
Iron (Total)	mg/L	0.2	0.2	0.2							
Lead	mg/L	<MDL	<MDL	<MDL							
Magnesium	mg/L	20.8	20.8	20.8							
Manganese (Total)	mg/L	0.006	0.006	0.006							
Mercury	mg/L	<MDL	<MDL	<MDL							
Molyebdenum	mg/L	<MDL	<MDL	<MDL							
Selenium	mg/L	0.002	0.002	0.002							
Sodium	mg/L	132.0	132.0	132.0							
Zinc	mg/L	<MDL	<MDL	<MDL							

The area of concern for monitoring point S34-19 has not been affected by the mining operation. Therefore, all recorded monitoring events are considered Baseline.

The monitoring point fos S34-19 is found along the Hubbard Creek Trail. It is a diverse flow along the upper edge of the trail.

Baseline Information Collection initiated on 6/9/98 and not yet considered complete.
Point S34-19 has not been influenced by mining.

S34-20
Hubbard Creek - Spring 34-20
Elevation - 6440

Initiated	6/2/1998	6/2/1998	6/2/1998	6/2/1998
Activated				
Date	10/24/2017	9/6/2017	5/5/2017	3/31/2017

Summary Information

Field Parameters	UNITS	Baseline Min	Baseline Ave	Baseline Max	Operation Min	Operation Ave	Operation Max				
Flow	GPM	0.0	0.0	0.6				0	0	0	0
FieldComment								Dry	Dry	Dry	Damp
ph	su	7.6	7.8	8.2							
Conductivity	umhos/cm	860	1140	1320							
Temperature	Celsius	12.5	18.4	24.1							
Lab Parameters	UNITS										
Bicarbonate	mg/L										
Chloride	mg/L										
Conductivity	umhos/cm										
Hardness	mg/L										
Nitrate-Nitrite	mg/L										
Oil and Grease	mg/L										
pH	su										
Phosphate	mg/L										
ResidueFilterable-TDS	mg/L										
ResidueNonFilterable-TSS	mg/L										
SAR											
Sulfate	mg/L										
Aluminum	mg/L										
Arsenic	mg/L										
Cadmium	mg/L										
Calcium	mg/L										
Copper	mg/L										
Iron (Total)	mg/L										
Lead	mg/L										
Magnesium	mg/L										
Manganese (Total)	mg/L										
Mercury	mg/L										
Molyebdenum	mg/L										
Selenium	mg/L										
Sodium	mg/L										
Zinc	mg/L										

The area of concern for monitoring point S34-20 has not been affected by the mining operation. Therefore, all recorded monitoring events are considered Baseline.

The monitoring point for S34-20 is found along the Hubbard Creek Trail. It is a diverse flow along the upper edge of the trail.

Baseline Information Collection initiated on 6/2/98 and not yet considered complete.
Point S34-20 has not been influenced by mining.

S34-21
Hubbard Creek - Spring 34-21
Elevation - 6430

Initiated	6/2/1998	6/2/1998	6/2/1998	6/2/1998
Activated				
Date	10/24/2017	9/6/2017	5/5/2017	3/31/2017

Summary Information

Field Parameters	UNITS	Baseline Min	Baseline Ave	Baseline Max	Operation Min	Operation Ave	Operation Max				
Flow	GPM	0.0	0.5	10.7	0.0	0.1	3.2	0	0	0	0
FieldComment								Dry	Dry	Dry	Damp
ph	su	7.6	7.6	7.6	7.4	7.8	8.4				
Conductivity	umhos/cm	620	620	620	700	1531	1980				
Temperature	Celsius	18.7	18.7	18.7	15.3	19.7	26.4				
Lab Parameters	**UNITS**										
Bicarbonate	mg/L	454	454	454							
Chloride	mg/L	6	6	6							
Conductivity	umhos/cm	831	831	831							
Hardness	mg/L	226	226	226							
Nitrate-Nitrite	mg/L	0.2	0.2	0.2							
Oil and Grease	mg/L	3.0	3.0	3.0							
pH	su	8.1	8.1	8.1							
Phosphate	mg/L	<MDL	<MDL	<MDL							
ResidueFilterable-TDS	mg/L	490	490	490							
ResidueNonFilterable-TSS	mg/L	<MDL	<MDL	<MDL							
SAR		<MDL	<MDL	<MDL							
Sulfate	mg/L	70	70	70							
Aluminum	mg/L	0.18	0.18	0.18							
Arsenic	mg/L	<MDL	<MDL	<MDL							
Cadmium	mg/L	<MDL	<MDL	<MDL							
Calcium	mg/L	52.9	52.9	52.9							
Copper	mg/L	<MDL	<MDL	<MDL							
Iron (Total)	mg/L	0.14	0.14	0.14							
Lead	mg/L	<MDL	<MDL	<MDL							
Magnesium	mg/L	22.9	22.9	22.9							
Manganese (Total)	mg/L	<MDL	<MDL	<MDL							
Mercury	mg/L	<MDL	<MDL	<MDL							
Molyebdenum	mg/L	<MDL	<MDL	<MDL							
Selenium	mg/L	<MDL	<MDL	<MDL							
Sodium	mg/L	105.0	105.0	105.0							
Zinc	mg/L	<MDL	<MDL	<MDL							

The monitoring point for S34-21 is found along the Hubbard Creek Trail. It is a diverse flow along the upper edge of the trail.

Baseline Information for Point S34-21 is derived from events beginning on 6/9/98 through 11/10/03.
Point influenced by mining on 11/10/03.

S34-22
Hubbard Creek - Spring 34-22
Elevation - 6700

Initiated	6/2/1998	6/2/1998	6/2/1998	6/2/1998
Activated				
Date	10/27/2017	9/5/2017	5/5/2017	3/17/2017

Summary Information

Field Parameters	UNITS	Baseline Min	Baseline Ave	Baseline Max	Operation Min	Operation Ave	Operation Max				
Flow	GPM	0.0	1.5	35.0	0.0	0.3	13.6	0	0	0	0
FieldComment								Damp	Damp	Seep	Snow Cover
ph	su	7.2	7.3	7.4	7.8	8.0	8.4			7.84	
Conductivity	umhos/cm	230	230	230	1260	1499	1808			1808	
Temperature	Celsius	17.2	17.2	17.2	8.5	9.9	12.1			8.5	
Lab Parameters	UNITS										
Bicarbonate	mg/L	302	302	302	285.4	285.4	285.4				
Carbonate	mg/L	12	15	18	18.1	18.1	18.1				
Chloride	mg/L	4	4	4	<MDL	<MDL	<MDL				
Conductivity	umhos/cm	602	602	602	1011.5	1011.5	1011.5				
Hardness	mg/L	171	171	171	238.8	238.8	238.8				
Nitrate-Nitrite	mg/L	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL				
Oil and Grease	mg/L	<MDL	<MDL	<MDL	2.41	2.41	2.41				
pH	su	8.2	8.2	8.2	8.8	8.8	8.8				
Phosphate	mg/L	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL				
ResidueFilterable-TDS	mg/L	380	380	380	854	854	854				
ResidueNonFilterable-TSS	mg/L	<MDL	<MDL	<MDL	40	40	40				
SAR		<MDL	<MDL	<MDL	4.19	4.19	4.19				
Sulfate	mg/L	50	50	50	223.91	223.91	223.91				
Aluminum	mg/L	0.31	0.31	0.31	0.23	0.23	0.23				
Arsenic	mg/L	<MDL	<MDL	<MDL	0.064	0.064	0.064				
Cadmium	mg/L	<MDL	<MDL	<MDL	0.026	0.026	0.026				
Calcium	mg/L	38.3	38.3	38.3	53.9	53.9	53.9				
Copper	mg/L	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL				
Iron (Total)	mg/L	0.27	0.27	0.27	0.187	0.187	0.187				
Lead	mg/L	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL				
Magnesium	mg/L	18.3	18.3	18.3	25.3	25.3	25.3				
Manganese (Total)	mg/L	<MDL	<MDL	<MDL	0.1	0.1	0.1				
Mercury	mg/L	<MDL	<MDL	<MDL	0.0001	0.0001	0.0001				
Molyebdenum	mg/L	<MDL	<MDL	<MDL	0.01	0.01	0.01				
Selenium	mg/L	<MDL	<MDL	<MDL	0.0048	0.0048	0.0048				
Sodium	mg/L	74.4	74.4	74.4	149	149	149				
Zinc	mg/L	<MDL	<MDL	<MDL	0.006	0.006	0.006				

The monitoring point for S34-22 is located high on the northern facing slopes that forms the Dove Gulch Canyon. It is accessed on foot from the remnants of an old coal exploration road in the mouth of Dove Gulch. It is one of three springs found in this location, originating in the sandstone outcrop and discharges via sheet flow into Dove Gulch.

Baseline Information for Point S34-22 is derived from events beginning on 6/9/98 through 11/20/03.
Point influenced by mining on 11/20/03.

S34-23
Hubbard Creek - Spring 34-23
Elevation - 6650

Initiated	6/2/1998	6/2/1998	6/2/1998	6/2/1998
Activated				
Date	10/27/2017	9/5/2017	5/5/2017	3/17/2017

Summary Information

Field Parameters	UNITS	Baseline Min	Baseline Ave	Baseline Max	Operation Min	Operation Ave	Operation Max				
Flow	GPM	0.0	3.5	75.0	0.0	0.1	4.6	0	0	0	0
FieldComment								Dry	Dry	Dry	Snow cover
ph	su	7.6	7.8	8.0	8.5	8.5	8.5				
Conductivity	umhos/cm	320	390	460	900	900	900				
Temperature	Celsius	12.1	14.0	15.9	9.0	9.0	9.0				
Lab Parameters	**UNITS**										
Bicarbonate	mg/L	249	268	287							
Chloride	mg/L	2	3	4							
Conductivity	umhos/cm	537	545	552							
Hardness	mg/L	169	171	173							
Nitrate-Nitrite	mg/L	<MDL	0.01	0.02							
Oil and Grease	mg/L	<MDL	<MDL	<MDL							
pH	su	8.1	8.3	8.4							
Phosphate	mg/L	<MDL	<MDL	<MDL							
ResidueFilterable-TDS	mg/L	330	335	340							
ResidueNonFilterable-TSS	mg/L	<MDL	11	22							
SAR		<MDL	<MDL	<MDL							
Sulfate	mg/L	30	40	50							
Aluminum	mg/L	0.32	0.95	1.57							
Arsenic	mg/L	<MDL	<MDL	<MDL							
Cadmium	mg/L	<MDL	<MDL	<MDL							
Calcium	mg/L	40.5	41.8	43.1							
Copper	mg/L	<MDL	<MDL	<MDL							
Iron (Total)	mg/L	0.25	0.77	1.29							
Lead	mg/L	<MDL	<MDL	<MDL							
Magnesium	mg/L	15.9	16.1	16.4							
Manganese (Total)	mg/L	<MDL	0.013	0.026							
Mercury	mg/L	<MDL	<MDL	<MDL							
Molyebdenum	mg/L	<MDL	<MDL	<MDL							
Selenium	mg/L	0.001	0.001	0.001							
Sodium	mg/L	59.8	61.1	62.4							
Zinc	mg/L	<MDL	0.005	0.010							

The monitoring point for S34-23 is located high on the northern facing slopes that forms the Dove Gulch Canyon. It is accessed on foot drom the remnants of an old coal exploration road in the mouth of Dove Gulch. It in one of three springs found in this location, orginating in the sandstone outcrops and discharges via sheet flow into Dove Gulch.

Baseline Information for Point S34-23 is derived from events beginning on 6/9/98 through 12/8/03.
Point influenced by mining on 12/8/03.

S34-24
Hubbard Creek - Spring 34-24
Elevation - 6390

Initiated	6/2/1998	6/2/1998	6/2/1998	6/2/1998
Activated	4/1/2002	4/1/2002	4/1/2002	4/1/2002
Date	10/27/2017	9/5/2017	5/5/2017	10/24/2016

Summary Information

Field Parameters	UNITS	Baseline Min	Baseline Ave	Baseline Max	Operation Min	Operation Ave	Operation Max				
Flow	GPM	0.00	0.06	0.91	0.0	0.00	0.10	0	0	0	0
FieldComment								Dry	Dry	Dry	Dry
ph	su	7.8	7.8	7.8	7.8	8.0	8.2				
Conductivity	umhos/cm	1010	1010	1010	1210	1740	2400				
Temperature	Celsius	19.0	19.0	19.0	9.0	20.3	24.8				
Lab Parameters	UNITS										
Bicarbonate	mg/L										
Chloride	mg/L										
Conductivity	umhos/cm										
Hardness	mg/L										
Nitrate-Nitrite	mg/L										
Oil and Grease	mg/L										
pH	su										
Phosphate	mg/L										
ResidueFilterable-TDS	mg/L										
ResidueNonFilterable-TSS	mg/L										
SAR											
Sulfate	mg/L										
Aluminum	mg/L										
Arsenic	mg/L										
Cadmium	mg/L										
Calcium	mg/L										
Copper	mg/L										
Iron (Total)	mg/L										
Lead	mg/L										
Magnesium	mg/L										
Manganese (Total)	mg/L										
Mercury	mg/L										
Molyebdenum	mg/L										
Selenium	mg/L										
Sodium	mg/L										
Zinc	mg/L										

The monitoring point for S34-24 is found along the Hubbard Creek Trail. It is a diverse flow along the upper edge of the trail.

Baseline Information for Point S34-24 is derived from events beginning on 6/2/98 through 4/1/02.
Point influenced by mining on 4/1/02.

Initiated	6/2/1998	6/2/1998	6/2/1998	6/2/1998
Activated	10/30/2008	10/30/2008	10/30/2008	10/30/2008
Date	10/27/2017	9/5/2017	5/5/2017	3/17/2017

Summary Information

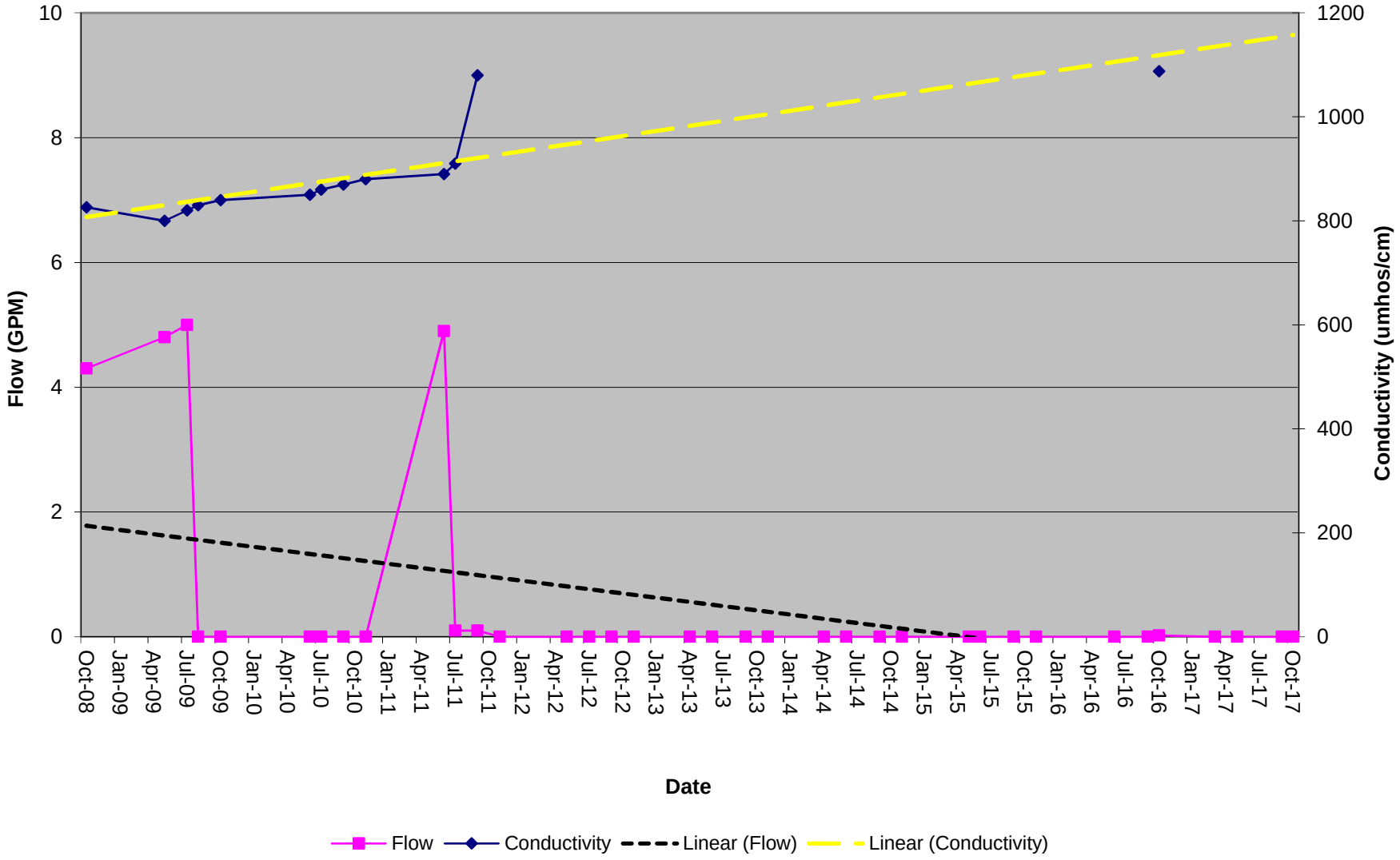
Field Parameters	UNITS	Baseline Min	Baseline Ave	Baseline Max	Operation Min	Operation Ave	Operation Max				
Flow	GPM				0.0	0.5	5.0	0	0	0	0
FieldComment								Dry	Dry	Dry	Snow Cover
ph	su				8.1	8.4	8.8				
Conductivity	umhos/cm				800	916	1088				
Temperature	Celsius				5.0	10.5	17.9				
Lab Parameters	UNITS										
Bicarbonate	mg/L				335	335	335				
Carbonate	mg/L				37	37	37				
Chloride	mg/L				3	3	3				
Conductivity	umhos/cm				759	759	759				
Hardness	mg/L				120	120	120				
Nitrate-Nitrite	mg/L				0.03	0.03	0.03				
Oil and Grease	mg/L				<MDL	<MDL	<MDL				
pH	su				8.8	8.8	8.8				
Phosphate	mg/L				<MDL	<MDL	<MDL				
ResidueFilterable-TDS	mg/L				490	490	490				
ResidueNonFilterable-TSS	mg/L				19	19	19				
SAR					5.99	5.99	5.99				
Sulfate	mg/L				67	67	67				
Aluminum	mg/L				0.61	0.61	0.61				
Arsenic	mg/L				<MDL	<MDL	<MDL				
Cadmium	mg/L				<MDL	<MDL	<MDL				
Calcium	mg/L				27.6	27.6	27.6				
Copper	mg/L				<MDL	<MDL	<MDL				
Iron (Total)	mg/L				0.51	0.51	0.51				
Lead	mg/L				0.0004	0.0004	0.0004				
Magnesium	mg/L				12.4	12.4	12.4				
Manganese (Total)	mg/L				<MDL	<MDL	<MDL				
Mercury	mg/L				<MDL	<MDL	<MDL				
Molyebdenum	mg/L				<MDL	<MDL	<MDL				
Selenium	mg/L				0.0016	0.0016	0.0016				
Sodium	mg/L				149	149	149				
Zinc	mg/L				<MDL	<MDL	<MDL				

The area of concern for monitoring point S34-25 was affected by the mining operation before its establishment. Therefore, all recorded monitoring events are considered operational.

The monitoring point for S34-25 is found on drill site GVB-8A-A, 8A & 9D in the Dove Gulch drainage.

There is no baseline collection possible for points initiated after the influence of mining.

Plot of Flow and Conductivity



S34-25 - Dove Gulch Spring and Pond 34-25

Figure 58

D2-1
Sheep Corral - Drainage System
Elevation - 6360

Initiated	11/6/1998	11/6/1998	11/6/1998	11/6/1998
Activated	11/1/2003	11/1/2003	11/1/2003	11/1/2003
Date	10/24/2017	7/14/2017	5/5/2017	3/16/2017

Field Parameters	UNITS	Summary Information Baseline Min	Ave	Max	Operation Min	Ave	Max				
Flow	GPM	0.00	0.32	4.55	0.00	0.47	13.60	0	0	0	0
FieldComment								Dry	Dry	Dry	Dry
ph	su	7.1	7.8	8.4	7.4	8.1	8.6				
Conductivity	umhos/cm	940	1210	1640	1140	1499	2000				
Temperature	Celsius	4.1	11.1	19.4	5.0	16.8	25.4				
Lab Parameters	UNITS										
Bicarbonate	mg/L	540	540	540	398.95	593.87	772.59				
Chloride	mg/L	11	11	11	<MDL	15.41	20.81				
Conductivity	umhos/cm	1230	1230	1230	1173.0	1508.7	1847.3				
Hardness	mg/L	291	291	291	228.45	325.43	372.55				
Nitrate-Nitrite	mg/L	<MDL	<MDL	<MDL	<MDL	1.866	2.730				
Oil and Grease	mg/L	<MDL	<MDL	<MDL	<MDL	2.060	4.050				
pH	su	8.2	8.2	8.2	7.8	8.4	8.9				
Phosphate	mg/L	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL				
ResidueFilterable-TDS	mg/L	790	790	790	824	1060	1321				
ResidueNonFilterable-TSS	mg/L	<MDL	<MDL	<MDL	1.0	64.9	296.0				
SAR		5.3	5.3	5.3	1.34	5.08	11.30				
Sulfate	mg/L	190	190	190	230.00	275.24	380.32				
Aluminum	mg/L	0.39	0.39	0.39	0.057	0.377	1.23				
Arsenic	mg/L	<MDL	<MDL	<MDL	0.0017	0.054	0.142				
Cadmium	mg/L	<MDL	<MDL	<MDL	<MDL	0.006	0.015				
Calcium	mg/L	49.8	49.8	49.8	36.9	55.3	66.6				
Copper	mg/L	<MDL	<MDL	<MDL	<MDL	0.284	0.552				
Iron (Total)	mg/L	0.3	0.3	0.3	0.10	0.49	1.22				
Lead	mg/L	<MDL	<MDL	<MDL	<MDL	0.03	0.05				
Magnesium	mg/L	40.6	40.6	40.6	33.1	45.5	57.3				
Manganese (Total)	mg/L	0.01	0.01	0.01	<MDL	0.053	0.084				
Mercury	mg/L	<MDL	<MDL	<MDL	<MDL	0.0001	0.0002				
Molyebdenum	mg/L	<MDL	<MDL	<MDL	<MDL	0.003	0.003				
Selenium	mg/L	<MDL	<MDL	<MDL	0.0002	0.0492	0.1680				
Sodium	mg/L	205	205	205	54.8	200.8	393.8				
Zinc	mg/L	<MDL	<MDL	<MDL	<MDL	0.032	0.090				

The D2-1 Monitoring point is at the lower extreme of Sheep Corral Gulch. It is located just below the Hubbard Creek Road, just north of the Blue Ribbon Mine.

Baseline Information for Point D2-1 is derived from events beginning on 10/31/97 through 4/1/02.
Point influenced by mining on 4/1/02.

D21-1
Terror Creek - Confluence w/NFG
Elevation - 5760

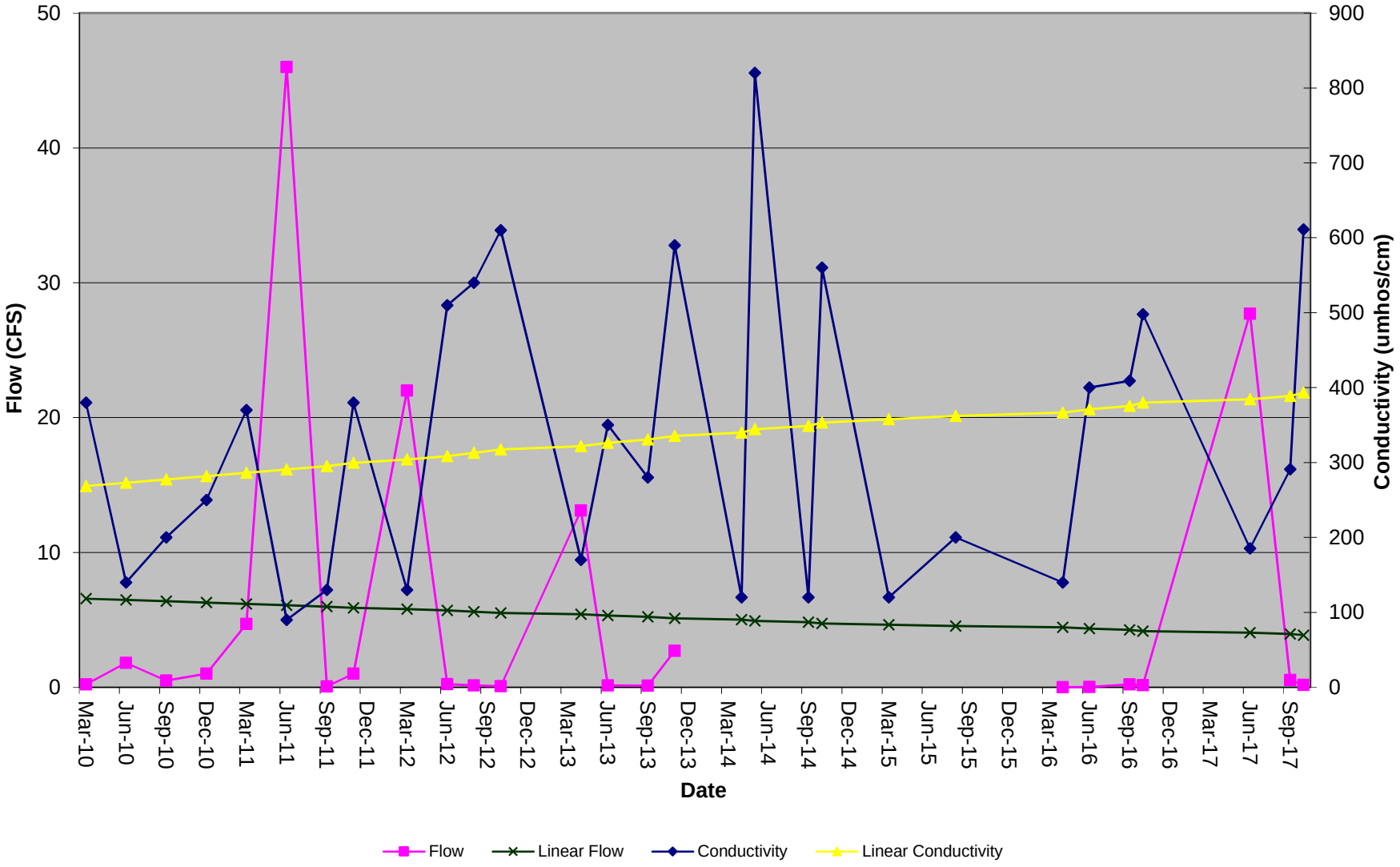
Initiated								3/23/2010	3/23/2010	3/23/2010	3/23/2010
Activated											
Date								10/19/2017	9/13/2017	6/13/2017	3/31/2017
		Summary Information									
Field		Baseline			Operation						
Parameters	UNITS	Min	Ave	Max	Min	Ave	Max				
Flow	CFS	0.02	5.41	46.00				0.17	0.54	27.69	
FieldComment											
ph	su	7.9	8.5	9.0				8.59	8.58	8.14	7.98
Conductivity	umhos/cm	90	326	820				611	297	185.5	127.5
Temperature	Celsius	0.4	10.5	20.6				5.9	14	10.3	4.5
Lab											
Parameters	UNITS										
Bicarbonate	mg/L	45.70	143.04	292.00				292	147	97.9	70.5
Chloride	mg/L	0.6	45.7	188.5				2	0.99	0.99	1.1
Conductivity	umhos/cm	84	345	744				537	255	140	116
Hardness	mg/L	33.06	158.60	297.20				263	121	76.3	
Nitrate-Nitrite	mg/L	<MDL	0.212	0.570				<MDL	<MDL	<MDL	<MDL
Oil and Grease	mg/L	<MDL	<MDL	<MDL				<MDL	<MDL	<MDL	<MDL
pH	su	6.77	7.88	8.53				8.53	8.46	8.15	7.68
Phosphate	mg/L	<MDL	0.069	0.280				0.027	0.021	0.069	0.022
ResidueFilterable-TDS	mg/L	1	258	494				332	184	146	1.1
ResidueNonFilterable-TSS	mg/L	<MDL	45	302				<MDL	<MDL	106	<MDL
SAR		0.34	0.79	1.70				0.722	0.417	0.448	0.34
Sulfate	mg/L	1.23	31.19	72.03				59.1	21.6	7.4	3.9
Aluminum (TREC)	mg/L	0.008	0.540	1.750				<MDL	<MDL	1.45	1.05
Arsenic (TREC)	mg/L	0.001	0.017	0.060				<MDL	<MDL	<MDL	<MDL
Cadmium (TREC)	mg/L	0.002	0.006	0.020				<MDL	<MDL	<MDL	<MDL
Calcium (TREC)	mg/L	6.05	32.14	67.30				42.8	26.5	18.7	14.2
Copper (TREC)	mg/L	0.002	0.007	0.017				<MDL	<MDL	<MDL	<MDL
Iron (TREC)	mg/L	0.06	0.54	3.34				0.0856	0.159	1.23	0.83
Lead (TREC)	mg/L	0.00	0.01	0.05				<MDL	<MDL	<MDL	<MDL
Magnesium (TREC)	mg/L	4.36	17.81	44.40				37.8	13.3	7.18	4.47
Manganese (TREC)	mg/L	<MDL	0.024	0.076				0.0061	0.0082	0.0445	0.0163
Mercury (TREC)	mg/L	0.00001	0.00006	0.00012				<MDL	<MDL	<MDL	<MDL
Molyebdenum (TREC)	mg/L	0.000	0.003	0.008				<MDL	<MDL	<MDL	<MDL
Selenium (TREC)	mg/L	<MDL	0.01014	0.03600				<MDL	<MDL	<MDL	<MDL
Sodium (TREC)	mg/L	6.18	22.55	67.50				25.1	9.75	9.04	6.51
Zinc (TREC)	mg/L	0.003	0.025	0.110				<MDL	<MDL	<MDL	<MDL

The area of concern for monitoring point D21-1 has not been affected by the mining operation. Therefore, all recorded monitoring events are considered Baseline.

The D21-1 Monitoring point is at downstream Terror Creek-Confluence w/NFG.

Baseline Information Collection initiated 3/23/10 and not yet considered complete.
Point D21-1 has not been influence by mining.

Plot of Flow and Conductivity



D21-1 - Terror Creek Drainage System

Figure 61

D32-4
Terror Creek - Drainage System
Elevation - 7480

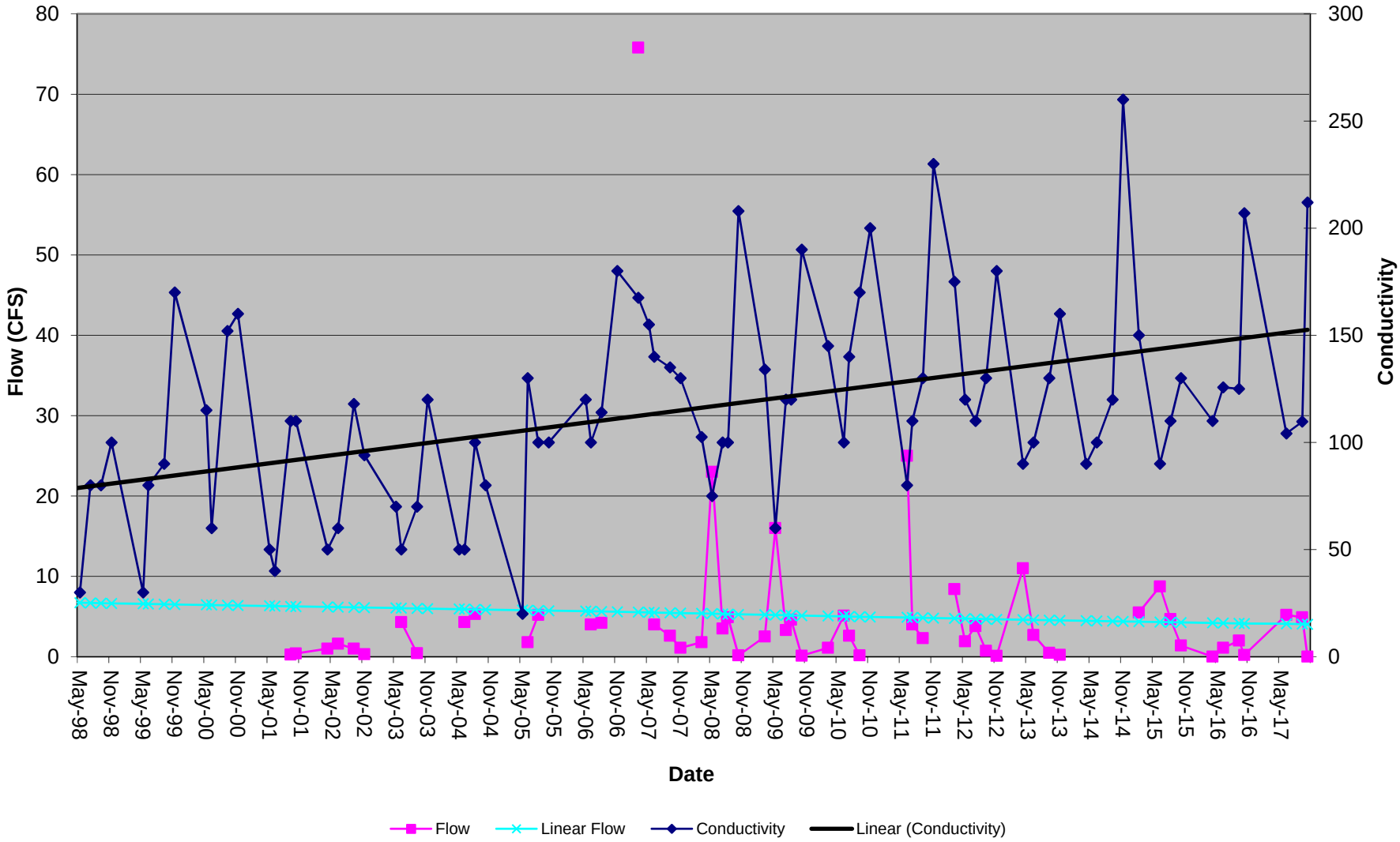
Initiated								10/31/1997	10/31/1997	10/31/1997	10/31/1997
Activated											
Date								10/19/2017	9/13/2017	6/13/2017	5/1/2017
		Summary Information									
Field		Baseline			Operation						
Parameters	UNITS	Min	Ave	Max	Min	Ave	Max				
Flow	CFS	0.04	5.38	75.80				0.0	4.9	5.2	
FieldComment											
ph	su	7.0	8.1	8.8				8.5	8.3	8.1	
Conductivity	umhos/cm	20	114	260				212	109.7	104.2	
Temperature	Celsius	0.1	10.1	19.0				7.2	16.8	8.3	
Lab											
Parameters	UNITS										
Bicarbonate	mg/L	1.7	62.8	144.6				110	43.1	52.8	63.1
Chloride	mg/L	<MDL	5.2	76.9				1.3	<MDL	<MDL	0.72
Conductivity	umhos/cm	60.8	133.3	429.0				178	60.8	75.7	102
Hardness	mg/L	22.3	58.0	192.3				83.4	48.0	48.9	48.9
Nitrate-Nitrite	mg/L	<MDL	0.7	8.1				<MDL	<MDL	<MDL	<MDL
Oil & Grease	mg/L	<MDL	2.4	6.4				<MDL	<MDL	<MDL	<MDL
pH	su	6.6	7.5	8.3				8.09	7.83	8.03	7.7
Phosphate	mg/L	<MDL	0.16	1.37				0.0420	0.1600	0.0330	0.0330
ResidueFilterable-TDS	mg/L	37	119	342				119	88	105	91
ResidueNonFilterable-TSS	mg/L	<MDL	31	450				<MDL	21.2000	15.0000	<MDL
SAR		<MDL	0.83	28.16				0.4240	0.1960	0.2540	0.2490
Sulfate	mg/L	<MDL	8.5	54.8				6.9	2.4	2.5	2.5
Aluminum (TREC)	mg/L	<MDL	1.31	11.17				<MDL	0.22	1.2	0.77
Arsenic (TREC)	mg/L	<MDL	0.0105	0.1680				<MDL	<MDL	<MDL	<MDL
Cadmium (TREC)	mg/L	<MDL	0.0724	2.0700				<MDL	<MDL	<MDL	<MDL
Calcium (TREC)	mg/L	<MDL	14.1	65.4				19.1	12.6	10.9	12.5
Copper (TREC)	mg/L	<MDL	0.005	0.050				<MDL	<MDL	<MDL	<MDL
Iron (Dissolved)	mg/L	<MDL	7.24	165.00				0.215	0.109	0.101	0.318
Iron (TREC)	mg/L	0.020	0.943	5.420				0.144	0.426	0.924	0.628
Lead (TREC)	mg/L	<MDL	0.0087	0.0500				<MDL	<MDL	<MDL	<MDL
Magnesium (TREC)	mg/L	<MDL	5.43	11.10				8.66	4.01	4.16	4.29
Manganese (TREC)	mg/L	<MDL	0.044	0.277				0.0153	0.0614	0.0319	0.0138
Mercury (TREC)	mg/L	<MDL	0.00007	0.00027				<MDL	<MDL	<MDL	<MDL
Molyebdenum (TREC)	mg/L	<MDL	0.037	0.900				<MDL	<MDL	<MDL	<MDL
Selenium (TREC)	mg/L	<MDL	0.005	0.024				<MDL	<MDL	<MDL	<MDL
Sodium (TREC)	mg/L	2.3	5.4	20.3				8.27	2.57	3.9	4.78
Zinc (TREC)	mg/L	<MDL	0.023	0.160				<MDL	<MDL	<MDL	<MDL

The area of concern for monitoring point D32-4 has not been affected by the mining operation. Therefore, all recorded monitoring events are considered Baseline.

The D32-4 Monitoring Point is on upper Terror Creek. It is located at the Cottonwood Stomp ford. This point is used to obtain conductivity, pH and temperature readings. The irregular stream channel found at this location does not provide an adequate method of determining flow values. Flow values are taken by Resource Engineering.

Baseline Information Collection initiated on 10/31/97 and not yet considered complete.
Point D32-4 has not been influenced by mining.

Plot of Flow and Conductivity



D32-4 Terror Creek Drainage System

Figure 63

D33-14
Upper Sheep Corral Gulch
Elevation - 7320

Initiated	11/6/1998	11/6/1998	11/6/1998
Activated	11/1/2003	11/1/2003	11/1/2003
Date	10/6/2017	8/9/2017	5/4/2017

Field Parameters	UNITS	Summary Information Baseline Min	Baseline Ave	Baseline Max	Operation Min	Operation Ave	Operation Max			
Flow	GPM	0.00	0.00	0.00	0.00	0.19	6.18	1.1	0.31	6.18
FieldComment										
ph	su				7.6	7.8	8.2	7.58	7.75	7.75
Conductivity	umhos/cm				330	578	782	782	642	557
Temperature	Celsius				6.7	12.2	26.5	6.8	8.8	6.7
Lab Parameters	**UNITS**									
Bicarbonate	mg/L				124.0	205.9	302.0	124		302
Chloride	mg/L				1.2	1.6	2.0	1.2		2
Conductivity	umhos/cm				192.0	341.8	474.0	192		474
Hardness	mg/L				82	99	118	81.9		96.9
Nitrate-Nitrite	mg/L				<MDL	1.09	2.13	<MDL		0.054
Oil and Grease	mg/L				<MDL	0.82	0.82	<MDL		<MDL
pH	su				6.82	7.54	8.30	8.3		7.5
Phosphate	mg/L				<MDL	0.02	0.02	0.022		<MDL
ResidueFilterable-TDS	mg/L				126	191	312	136		312
ResidueNonFilterable-TSS	mg/L				<MDL	3	3	<MDL		<MDL
SAR					0.71	2.13	3.85	0.713		3.85
Sulfate	mg/L				6.50	20.41	32.50	6.5		32.5
Aluminum	mg/L				<MDL	<MDL	<MDL	<MDL		<MDL
Arsenic	mg/L				0.009	0.009	0.009	<MDL		<MDL
Cadmium	mg/L				<MDL	<MDL	<MDL	<MDL		<MDL
Calcium	mg/L				23.9	28.7	32.7	23.9		29.4
Copper	mg/L				<MDL	<MDL	<MDL	<MDL		<MDL
Iron (Total)	mg/L				0.08	0.08	0.08			<MDL
Lead	mg/L				<MDL	<MDL	<MDL	<MDL		<MDL
Magnesium	mg/L				5.39	6.62	8.78	5.39		5.7
Manganese (Total)	mg/L				0.01	0.01	0.02	0.0178		<MDL
Mercury	mg/L				<MDL	<MDL	<MDL	<MDL		<MDL
Molyebdenum	mg/L				<MDL	<MDL	<MDL	<MDL		<MDL
Selenium	mg/L				0.035	0.043	0.051	<MDL		0.0511
Sodium	mg/L				12.1	50.4	93.8	12.1		93.8
Zinc	mg/L				<MDL	<MDL	<MDL	<MDL		<MDL

The location for monitoring point D33-14 can be found just to the south of an old coal exploration road winding through Sheep Corral Gulch. It is just above Spring and Pond SP34-11.

Baseline Information for Point D33-14 is derived from events beginning on 11/6/98 through 11/1/03.
Point influenced by mining on 11/1/03.

D34-13
Dove Gulch - Drainage System
Elevation - 6440

Initiated	10/31/1997	10/31/1997	10/31/1997
Activated			
Date	10/24/2017	9/5/2017	5/6/2017

		Summary Information								
Field		Baseline			Operation					
Parameters	UNITS	Min	Ave	Max	Min	Ave	Max			
Flow	GPM	0.00	0.00	0.00				0	0	0
FieldComment								Dry	Dry	Dry
ph	su									
Conductivity	umhos/cm									
Temperature	Celsius									
Lab										
Parameters	UNITS									
Bicarbonate	mg/L									
Chloride	mg/L									
Conductivity	umhos/cm									
Hardness	mg/L									
Nitrate-Nitrite	mg/L									
Oil and Grease	mg/L									
pH	su									
Phosphate	mg/L									
ResidueFilterable-TDS	mg/L									
ResidueNonFilterable-TSS	mg/L									
SAR										
Sulfate	mg/L									
Aluminum	mg/L									
Arsenic	mg/L									
Cadmium	mg/L									
Calcium	mg/L									
Copper	mg/L									
Iron (Total)	mg/L									
Lead	mg/L									
Magnesium	mg/L									
Manganese (Total)	mg/L									
Mercury	mg/L									
Molyebdenum	mg/L									
Selenium	mg/L									
Sodium	mg/L									
Zinc	mg/L									

The area of concern for monitoring point D34-13 has not been affected by the mining operation. Therefore, all recorded monitoring events are considered Baseline.

The location for D34-13 is at the lower extreme of Dove Gulch, along the western edge of Hubbard Creek Trail.

Baseline Information Collection initiated on 10/31/97 and not yet considered complete.
Point D34-13 has not been influenced by mining.

D34-14
Hubbard Creek - Drainage System
Elevation - 6560

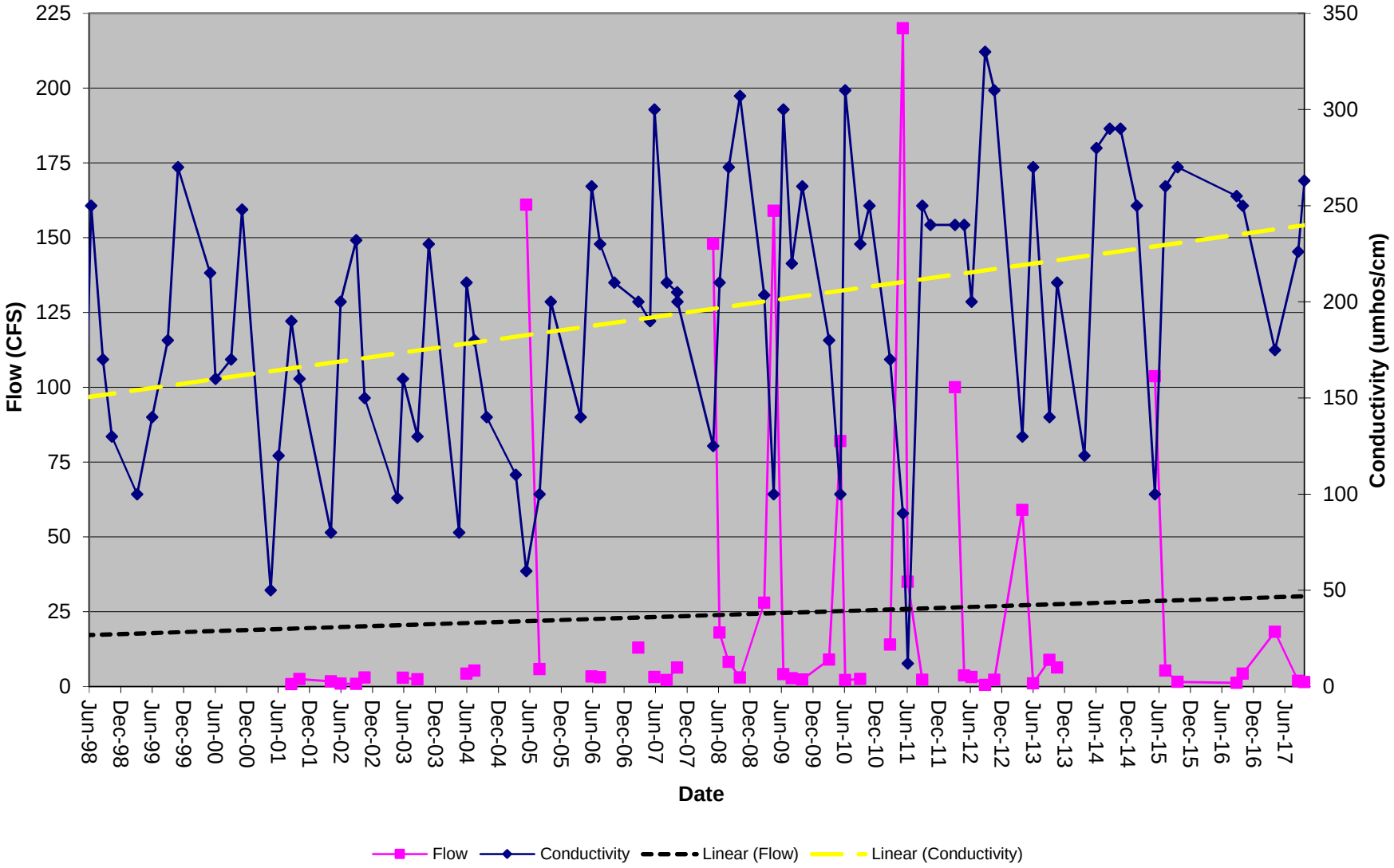
Initiated								9/30/1996	9/30/1996	9/30/1996	9/30/1996
Activated								4/1/2002	4/1/2002	4/1/2002	4/1/2002
Date								10/19/2017	9/13/2017	5/1/2017	3/16/2017
		Summary Information									
Field		Baseline			Operation						
Parameters	UNITS	Min	Ave	Max	Min	Ave	Max				
Flow	CFS	0.49	23.73	220.00				1.5	1.9	48.3	
FieldComment											
ph	su	7.0	8.1	8.9				8.7	8.5	8.3	8.52
Conductivity	umhos/cm	50	197	330				263	226	175	203.0
Temperature	Celsius	0.2	9.7	20.9				2.6	11.3	5.4	3.7
Lab Parameters	UNITS										
Bicarbonate	mg/L	36.1	102.7	187.0				136		91.4	
Chloride	mg/L	<MDL	5.11	84.89				1.3		0.97	
Conductivity	umhos/cm	87.7	205.0	439.0				216		145	
Hardness	mg/L	<MDL	86.46	150.00				95.2		74	
Nitrate-Nitrite	mg/L	<MDL	1.755	41.530				<MDL		<MDL	
Oil & Grease	mg/L	<MDL	1.095	2.330				<MDL		<MDL	
Phosphate	mg/L	<MDL	0.72	8.33				0.023		0.023	
ResidueFilterable-TDS	mg/L	33	147	353				128		106	
ResidueNonFilterable-TSS	mg/L	<MDL	19.3	166.0				<MDL		10	
SAR		<MDL	1.18	20.50				0.697		0.318	
Sulfate	mg/L	<MDL	32.20	1234.8				9.3		5.8	
Aluminum (TREC)	mg/L	<MDL	0.648	9.690				<MDL		0.293	
Arsenic (TREC)	mg/L	<MDL	0.0077	0.1290				<MDL		<MDL	
Cadmium (TREC)	mg/L	<MDL	0.0040	0.0500				<MDL		<MDL	
Calcium (TREC)	mg/L	4.57	24.11	43.60				26.6		22.1	
Copper (TREC)	mg/L	<MDL	0.009	0.200				<MDL		<MDL	
Iron (Dissolved)	mg/L	<MDL	<MDL	<MDL						0.108	
Iron (TREC)	mg/L	0.010	0.531	13.600				0.173		0.296	
Lead (TREC)	mg/L	<MDL	0.012	0.140				<MDL		<MDL	
Magnesium (TREC)	mg/L	0.42	6.66	16.30				6.98		4.6	
Manganese (TREC)	mg/L	<MDL	0.109	3.900				0.088		0.011	
Mercury (TREC)	mg/L	<MDL	0.00009	0.00079				<MDL		<MDL	
Molyebdenum (TREC)	mg/L	<MDL	0.042	1.130				<MDL		<MDL	
Selenium (TREC)	mg/L	<MDL	0.0046	0.0710				<MDL		<MDL	
Sodium (TREC)	mg/L	3.16	12.91	42.00				14.4		7.2	
Zinc (TREC)	mg/L	<MDL	0.016	0.116				<MDL		<MDL	

The area of concern for monitoring point D34-14 has not been affected by the mining operation. Therefore, all recorded monitoring events are considered Baseline.

The location for the D34-14 monitoring point is on Hubbard creek just below the igneous intrusion noted as Iron Point. The location can be found where a sapling has been painted white. The point where field parameters were taken did not provide an adequate method to determine flow values. Flow values are taken by Resource Engineering.

Baseline Information Collection initiated on 10/31/97 and not yet considered complete.
Point D34-14 has not been influenced by mining.

Plot of Flow and Conductivity



D34-14 - Hubbard Creek Drainage System

Figure 67

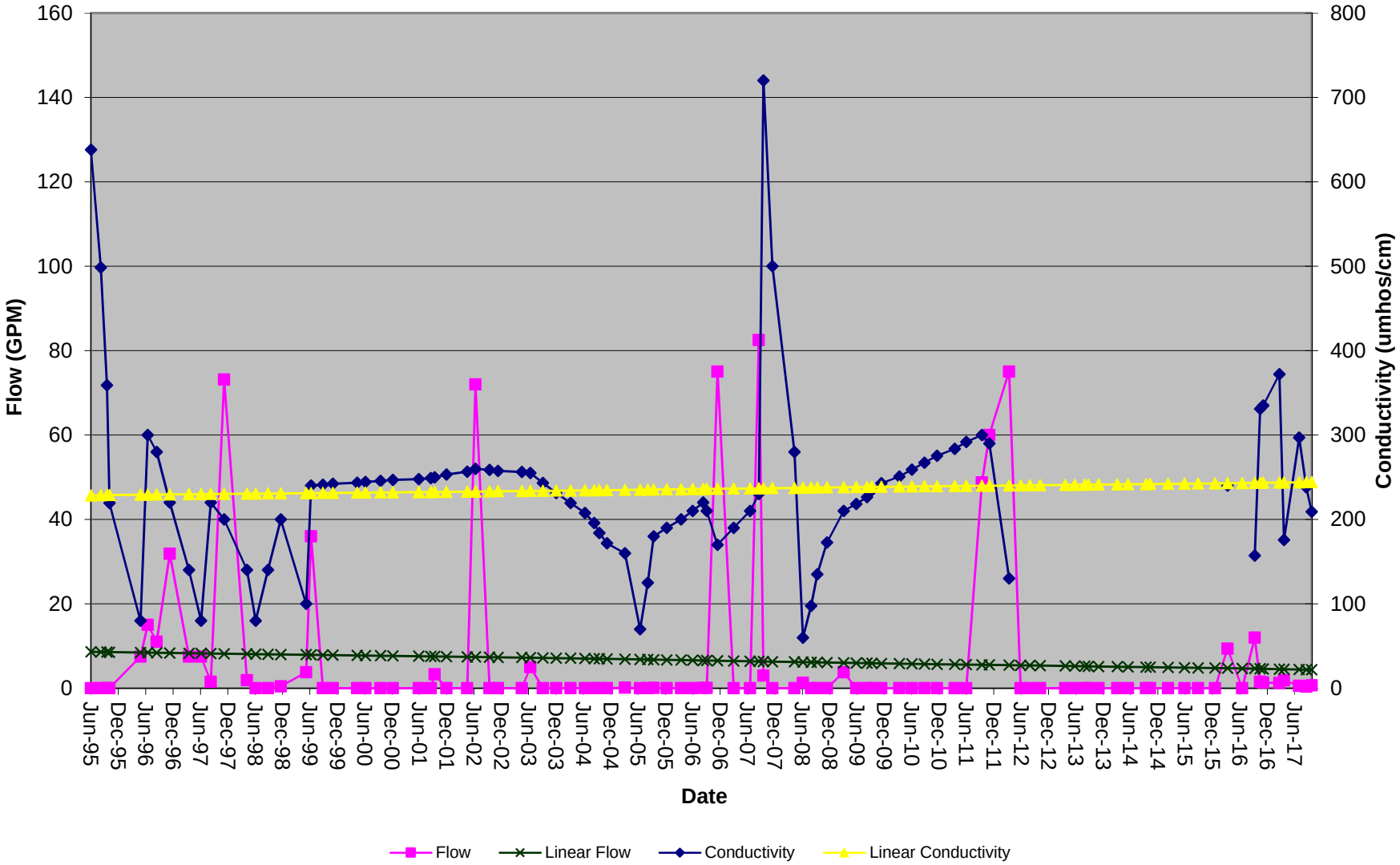
Deer-low
Canal - Deer Trail Ditch
Elevation - 5920

Initiated								6/14/1995	6/14/1995	6/14/1995	6/14/1995	6/14/1995
Activated								3/30/1997	3/30/1997	3/30/1997	3/30/1997	3/30/1997
Date								10/5/2017	8/30/2017	7/14/2017	4/4/2017	3/3/2017
		Summary Information										
Field		Baseline			Operation							
Parameters	UNITS	Min	Ave	Max	Min	Ave	Max					
Flow	GPM	0	8	32	0	6	83	0.66	0.38	0.56	1.93	1.24
Water Level in Flume	Feet				0.00	0.12	0.40	0.2	0.14	0.18	0.4	0.3
FieldComment												
ph	su	6.8	8.3	9.0	7.1	8.4	9.2	8.3	8.5	8.4	7.1	8.7
Conductivity	umhos/cm	80	276	638	60	222	720	209	238	297	176	372
Temperature	Celsius	4.9	13.1	21.2	3.1	11.3	21.5	9.3	14.2	17.9	3.8	3.1
DO	mg/L	0.0	3.7	10.7	0.0	6.5	12.1	8.09	7.45		9.96	
Lab												
Parameters	UNITS											
Bicarbonate	mg/L	41	70	118	39	95	127	111			84.3	
Chloride	mg/L	<MDL	1	2	<MDL	1.8	4.0	1.2	1.7		1.00	
Chromium III CrIII	mg/L				<MDL	<MDL	<MDL	<MDL	<MDL		<MDL	
Chromium VI CrIV	mg/L				<MDL	<MDL	<MDL	<MDL	<MDL		<MDL	
Cyanide, Total	mg/L				<MDL	<MDL	<MDL	<MDL	<MDL		<MDL	
Conductivity	umhos/cm	97	148	238	98	200	308	186			139	
Hardness	mg/L	48	67	96	33	83	119	77.4	108		66.7	
Nitrate-Nitrite	mg/L	<MDL	0.07	0.17	<MDL	0.01	0.04	<MDL	<MDL		<MDL	
Nitrate	mg/L	<MDL	0.08	0.17	<MDL	0.54	2.69		<MDL			
Nitrite	mg/L	<MDL	0.01	0.02	<MDL	0.00	0.01		<MDL			
Ammonia	mg/L				0.10	0.18	0.25	<MDL	<MDL		<MDL	
Oil and Grease	mg/L	<MDL	<MDL	<MDL	<MDL	2	2	<MDL	<MDL		<MDL	
pH	su	7.5	7.8	8.0	7.7	8.1	8.6	8.21	8.33		8	
Phosphate	mg/L	<MDL	0.03	0.08	<MDL	0.03	0.08	0.023			0.051	
ResidueFilterable-TDS	mg/L	30	93	150	70	171	302	133	187		129	
ResidueNonFilterable-TSS	mg/L	6	101	286	<MDL	16	41	7			11.3	
SAR		0.21	0.38	0.68	<MDL	0.43	1.13	0.422			0.448	
Sulfate	mg/L	<MDL	7	10	<MDL	11	20	6.4	11.5		6.9	
Sulfide S	mg/L				<MDL	<MDL	<MDL		<MDL			
Aluminum (TREC)	mg/L	0.25	3.03	7.68	0.14	0.56	1.32	0.189			0.707	
Arsenic (TREC)	mg/L	<MDL	0.001	0.002	<MDL	0.0024	0.0150	<MDL	<MDL		<MDL	
Boron	mg/L				0.78	0.78	0.78		<MDL			
Cadmium (TREC)	mg/L	<MDL	0.001	0.003	<MDL	0.01	0.05	<MDL	<MDL		<MDL	
Calcium (TREC)	mg/L	13.4	18.8	26.9	9.1	22.9	33.8	22	31		19.3	
Copper (TREC)	mg/L	<MDL	<MDL	<MDL	<MDL	0.004	0.017	<MDL	<MDL		<MDL	
Iron (Dissolved)	mg/L	<MDL	<MDL	<MDL	<MDL	0.05	0.15	0.0783	0.0356		0.145	
Iron (TREC)	mg/L	0.45	3.83	9.79	0.10	0.49	1.01	0.369	0.758		0.601	
Lead (TREC)	mg/L	<MDL	<MDL	<MDL	<MDL	0.0074	0.0400	<MDL	<MDL		<MDL	
Magnesium (TREC)	mg/L	3.4	4.9	6.9	2.5	6.3	8.6	5.46	7.45		5.08	
Manganese (Dissolved)	mg/L	<MDL	<MDL	<MDL	<MDL	1.6	6.2		<MDL		4.5	
Manganese (TREC)	mg/L	0.012	0.075	0.193	0.001	0.036	0.107	0.094	0.0291		0.0202	
Mercury (TREC)	mg/L	<MDL	0.00007	0.0002	<MDL	0.00005	0.0002	<MDL	<MDL		<MDL	
Molyebdenum (TREC)	mg/L	<MDL	<MDL	<MDL	<MDL	0.0003	0.0010	<MDL	<MDL		<MDL	
Nickel	mg/L				<MDL	<MDL	<MDL		<MDL			
Selenium (TREC)	mg/L	<MDL	<MDL	<MDL	<MDL	0.002	0.010	<MDL	<MDL		<MDL	
Silver	mg/L				<MDL	<MDL	<MDL		<MDL			
Sodium (TREC)	mg/L	3.7	7.6	15.3	3.9	11.6	31.5	9.2			7.7	
Zinc (TREC)	mg/L	0.03	0.03	0.04	<MDL	0.02	0.05	<MDL	<MDL		<MDL	

The lower end of Deer Trail Ditch is monitored at a point where the ditch empties into the Fire Mountain Canal.

Baseline Information for Point Deer-low is derived from events beginning on 6/14/95 through 3/30/97.
Point influenced by mining on 3/30/97.

Plot of Flow and Conductivity



Deer-low - Canal - Deer Trail Ditch

Figure 69

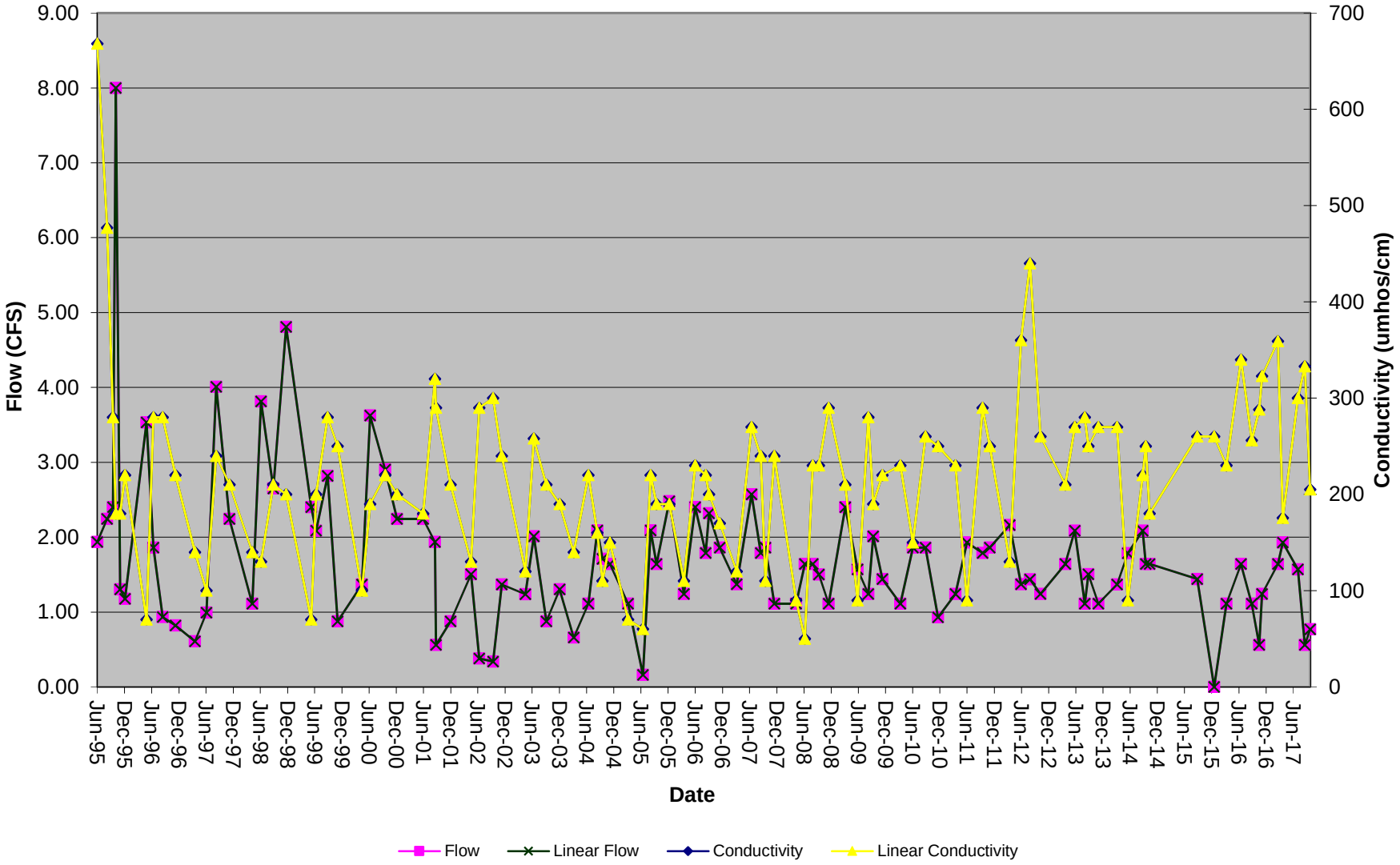
Deer-up
Canal - Deer Trail Ditch
Elevation - 5960

Initiated								6/14/1995	6/14/1995	6/14/1995	6/14/1995	6/14/1995	
Activated								3/30/1997	3/30/1997	3/30/1997	3/30/1997	3/30/1997	
Date								10/5/2017	8/30/2017	7/14/2017	4/4/2017	3/3/2017	
		Summary Information											
Field		Baseline			Operation								
Parameters	UNITS	Min	Ave	Max	Min	Ave	Max						
Flow	CFS	0.8	1.8	3.5	0.2	1.6	4.8	0.77	0.56	1.57	1.93	1.64	
Water Level in Flume	Feet	0.23	0.37	0.59	0.08	0.35	0.72	0.22	0.18	0.35	0.4	0.36	
FieldComment													
ph	su	6.4	8.5	9.1	7.4	8.4	9.1	8.4	8.7	8.6	7.7	8.8	
Conductivity	umhos/cm	70	286	668	50	211	440	205	333	300	176	359	
Temperature	Celsius	0.8	11.4	20.3	0.2	9.8	22.1	7.9	14.3	16.4	2.9	1.6	
DO	mg/L	0.0	3.5	7.7	0.0	9.1	12.0	8.55	8.71		10.8		
Lab Parameters	UNITS												
Bicarbonate	mg/L	51.0	73.0	117.0	28.6	108.8	176.0	109			84.4		
Hydroxide	mg/L	0	0	0	0	0	0						
Chloride	mg/L	<MDL	1.67	3.00	<MDL	21.98	190.50	1.4	1.9		0.97		
Chromium III CrIII	mg/L				<MDL	<MDL	<MDL		<MDL				
Chromium VI CrIV	mg/L				<MDL	0.01	0.01		<MDL				
Cyanide, Total	mg/L				<MDL	<MDL	<MDL		<MDL				
Conductivity	umhos/cm	100	148	235	85	257	573	185			142		
Hardness	mg/L	42	61	94	<MDL	98	168				66.7		
Nitrate-Nitrite	mg/L	<MDL	0.02	0.07	<MDL	0.20	1.25	<MDL			<MDL		
Nitrate	mg/L	<MDL	0.02	0.07	<MDL	0.36	2.87	<MDL			<MDL		
Nitrite	mg/L	<MDL	0.01	0.02	<MDL	0.003	0.016	<MDL			<MDL		
Ammonia	mg/L				<MDL	0.149	0.290		<MDL				
Oil and Grease	mg/L				<MDL	4.3	5.5	<MDL	<MDL		<MDL		
pH	su	7.6	7.8	8.1	6.4	8.0	8.7	8.2	8.6		8.0		
Phosphate	mg/L	<MDL	0.01	0.03	<MDL	7.85	141.00	0.024			141		
ResidueFilterable-TDS	mg/L	50	100	150	60	190	475	133	197		141		
ResidueNonFilterable-TSS	mg/L	<MDL	25	52	<MDL	12	40	18.3			19.4		
SAR		0.24	0.37	0.62	<MDL	0.76	2.29				0.47		
Sulfate	mg/L	<MDL	10	20	<MDL	12.6	37.5	6.4	12.7		6.9		
Sulfide S	mg/L				<MDL	0.13	0.13		<MDL				
Aluminum (TREC)	mg/L	0.24	1.09	1.77	<MDL	0.35	2.03	0.266			0.789		
Arsenic (TREC)	mg/L	<MDL	0.0003	0.0010	<MDL	0.0054	0.0300	<MDL	<MDL		<MDL		
Boron	mg/L				<MDL	0.82	1.40		<MDL				
Cadmium (TREC)	mg/L	<MDL	<MDL	<MDL	<MDL	0.006	0.040	<MDL	<MDL		<MDL		
Calcium (TREC)	mg/L	11.8	17.2	26.5	8.29	29.32	134.00	21.5	32.4		19.5		
Copper (TREC)	mg/L	<MDL	<MDL	<MDL	<MDL	0.004	0.019	<MDL	<MDL		<MDL		
Iron (Dissolved)	mg/L	<MDL	<MDL	<MDL	<MDL	0.07	0.25		0.0408		0.166		
Iron (TREC)	mg/L	0.38	1.19	1.85	0.03	12.04	618.00	0.46	0.16		0.68		
Lead (TREC)	mg/L	<MDL	<MDL	<MDL	<MDL	0.0104	0.1000	<MDL	<MDL		<MDL		
Magnesium (TREC)	mg/L	3.0	4.4	6.7	2.5	8.0	17.6	5.7	7.7		4.4		
Manganese (Dissolved)	mg/L	<MDL	<MDL	<MDL	<MDL	0.8	6.7		<MDL				
Manganese (TREC)	mg/L	0.02	0.03	0.03	0.002	0.977	26.700	0.0195	0.0261		23.9		
Mercury (TREC)	mg/L	<MDL	0.0001	0.0002	<MDL	0.00007	0.0004	<MDL	<MDL		<MDL		
Molyebdenum (TREC)	mg/L	<MDL	<MDL	<MDL	<MDL	0.003	0.011	<MDL			<MDL		
Nickel	mg/L				<MDL	0.0088	0.0120		<MDL				
Selenium (TREC)	mg/L	<MDL	<MDL	<MDL	<MDL	0.0039	0.0230	<MDL	<MDL		<MDL		
Silver	mg/L				<MDL	0.0030	0.0030		<MDL				
Sodium (TREC)	mg/L	3.6	7.1	13.8	3.8	19.6	66.5	9.0			7.9		
Zinc (TREC)	mg/L	0.01	0.02	0.03	<MDL	0.01	0.04	<MDL	<MDL		<MDL		

The upper end of Deer Trail Ditch is monitored at the headgate located on Hubbard Creek. This monitoring point is fitted with a 2' Parshall Flume.

Baseline Information for Point Deer-up is derived from events beginning on 6/14/95 through 3/30/97.
Point influenced by mining on 3/30/97.

Plot of Flow and Conductivity



Deer-up - Canal - Deer Trail Ditch

Figure 71

FMC-low
Canal - Fire Mountain Canal
Elevation - 5920'

Initiated								5/19/1999	5/19/1999
Activated								5/19/1999	5/19/1999
Date								7/25/2017	5/1/2017
		Summary Information							
Field		Baseline			Operation				
Parameters	UNITS	Min	Ave	Max	Min	Ave	Max		
Flow	CFS				44	161	182	165**	165**
FieldComment									
ph	su				6.8	8.2	8.9	8.2	8.1
Conductivity	umhos/cm				40	143	280	143	180
Temperature	Celsius				5.5	12.2	22.1	16.5	5.5
DO	mg/L				0.0	7.7	11.2		
Lab Parameters	UNITS								
Bicarbonate	mg/L				25	80.5	133.8	96.70	89.50
Chloride	mg/L				<MDL	8.3	37.5	1.4	1.3
Conductivity	umhos/cm				71	177	346	144	161
Hardness	mg/L				27.58	82.43	521.00	71.7	72.8
Nitrate-Nitrite	mg/L				<MDL	0.38	2.70	<MDL	<MDL
Oil and Grease	mg/L				<MDL	46.51	68.00	<MDL	<MDL
pH	su				6.4	7.7	8.4	8.3	7.81
Phosphate	mg/L				<MDL	0.06	0.24	0.014	0.041
ResidueFilterable-TDS	mg/L				40	123	300	107	108
ResidueNonFilterable-TSS	mg/L				<MDL	67	474	6.7	29.4
SAR					<MDL	0.55	1.55	0.387	0.335
Sulfate	mg/L				<MDL	13.48	51.86	5.5	9
Aluminum (TREC)	mg/L				<MDL	1.27	12.70	0.132	0.545
Arsenic (TREC)	mg/L				<MDL	0.0057	0.1000	<MDL	<MDL
Cadmium (TREC)	mg/L				<MDL	0.0068	0.1000	<MDL	<MDL
Calcium (TREC)	mg/L				7.45	20.0	37.1	22.5	22.3
Copper (TREC)	mg/L				<MDL	0.015	0.149	<MDL	<MDL
Iron (TREC)	mg/L				0.02	1.42	12.30	0.114	0.464
Lead (TREC)	mg/L				<MDL	0.0076	0.0500	<MDL	<MDL
Magnesium (TREC)	mg/L				1.87	4.63	15.20	3.76	4.15
Manganese (TREC)	mg/L				0.007	0.043	0.222	0.019	0.0189
Mercury (TREC)	mg/L				<MDL	0.000186	0.003000	<MDL	<MDL
Molybdenum (TREC)	mg/L				<MDL	0.004	0.02	<MDL	<MDL
Selenium (TREC)	mg/L				<MDL	0.0025	0.0120	<MDL	<MDL
Sodium (TREC)	mg/L				3.2	12.4	41.4	6.86	7.05
Zinc (TREC)	mg/L				<MDL	0.038	0.630	<MDL	<MDL

The area of concern for monitoring point FMC-low was affected by the mining operation before its establishment. Therefore, all recorded monitoring events are considered operational.

The lower monitoring point for the Fire Mountain Canal is located at a point just south of its crossing under old State Hwy 133. Flow data is received from Fire Mountain Canal records (Trey Dennison 970-527-5166 or cell 970-589-2857).

*** Average flow values from last five years*

Note: The Fire Mountain Canal was dry before field parameters could be obtained 3Q (2017)

There is no baseline collection possible for points initiated after the influence of mining.

~~*Revised 11/17*~~

FMC-up
Canal - Fire Mountain Canal
Elevation - 5960'

								Initiated	5/19/1999	5/19/1999
								Activated	5/19/1999	5/19/1999
								Date	7/25/2017	5/1/2017
		Summary Information								
Field		Baseline			Operation					
Parameters	UNITS	Min	Ave	Max	Min	Ave	Max			
Flow	CFS				13	156	182		165**	165**
FieldComment										
ph	su				7.0	8.2	8.9		8.3	8.3
Conductivity	umhos/cm				40	140	290		149	182
Temperature	Celsius				5.8	12.2	22.2		16.7	5.8
DO	mg/L				0.0	7.7	11.2		8.8	10.4
Lab										
Parameters	UNITS									
Bicarbonate	mg/L				28.90	79.18	147.00		97.1	94.6
Chloride	mg/L				<MDL	12.8	103		1.5	1.4
Conductivity	umhos/cm				64	181	402		138	159
Hardness	mg/L				27.78	71.44	172.49		74.4	75.4
Nitrate-Nitrite	mg/L				<MDL	0.30	2.15		<MDL	<MDL
Oil and Grease	mg/L				<MDL	<MDL	<MDL		<MDL	<MDL
pH	su				6.6	7.7	8.6		8.3	7.9
Phosphate	mg/L				<MDL	0.05	0.24		0.013	0.045
ResidueFilterable-TDS	mg/L				40	121	269		111	111
ResidueNonFilterable-TSS	mg/L				<MDL	70	472		9.1	41.7
SAR					<MDL	0.52	1.77		0.35	0.38
Sulfate	mg/L				<MDL	12.75	51.86		5.5	9
Aluminum (TREC)	mg/L				<MDL	1.28	14.00		0.184	0.305
Arsenic (TREC)	mg/L				<MDL	0.0052	0.0450		<MDL	<MDL
Cadmium (TREC)	mg/L				<MDL	0.0022	0.0100		<MDL	<MDL
Calcium (TREC)	mg/L				2.3	20.3	45.0		2.3	23.4
Copper (TREC)	mg/L				<MDL	0.0150	0.1440		<MDL	<MDL
Iron (TREC)	mg/L				0.03	1.42	13.30		0.17	0.27
Lead (TREC)	mg/L				<MDL	0.0060	0.0300		<MDL	<MDL
Magnesium (TREC)	mg/L				1.8	4.6	14.6		3.9	4.1
Manganese (TREC)	mg/L				0.007	0.044	0.250		0.0363	0.0204
Mercury (TREC)	mg/L				<MDL	0.00004	0.00018		<MDL	<MDL
Molybdenum (TREC)	mg/L				<MDL	0.004	0.030		<MDL	<MDL
Selenium (TREC)	mg/L				<MDL	0.0024	0.0110		<MDL	<MDL
Sodium (TREC)	mg/L				3.0	11.5	36.6		6.7	7.5
Zinc (TREC)	mg/L				<MDL	0.015	0.090		<MDL	<MDL

The area of concern for monitoring point FMC-up was affected by the mining operation before its establishment. Therefore, all recorded monitoring events are considered operational.

The upper monitoring point for the Fire Mountain Canal is located where the ditch crosses Hubbard Creek. Flow data is received from Fire Mountain Canal records (Trey Dennison 970-527-5166 or cell 970-589-2857).

*** Average flow values from last five years*

Note: The Fire Mountain Canal was dry before field parameters could be obtained 3Q (2017)

There is no baseline collection possible for points initiated after the influence of mining.

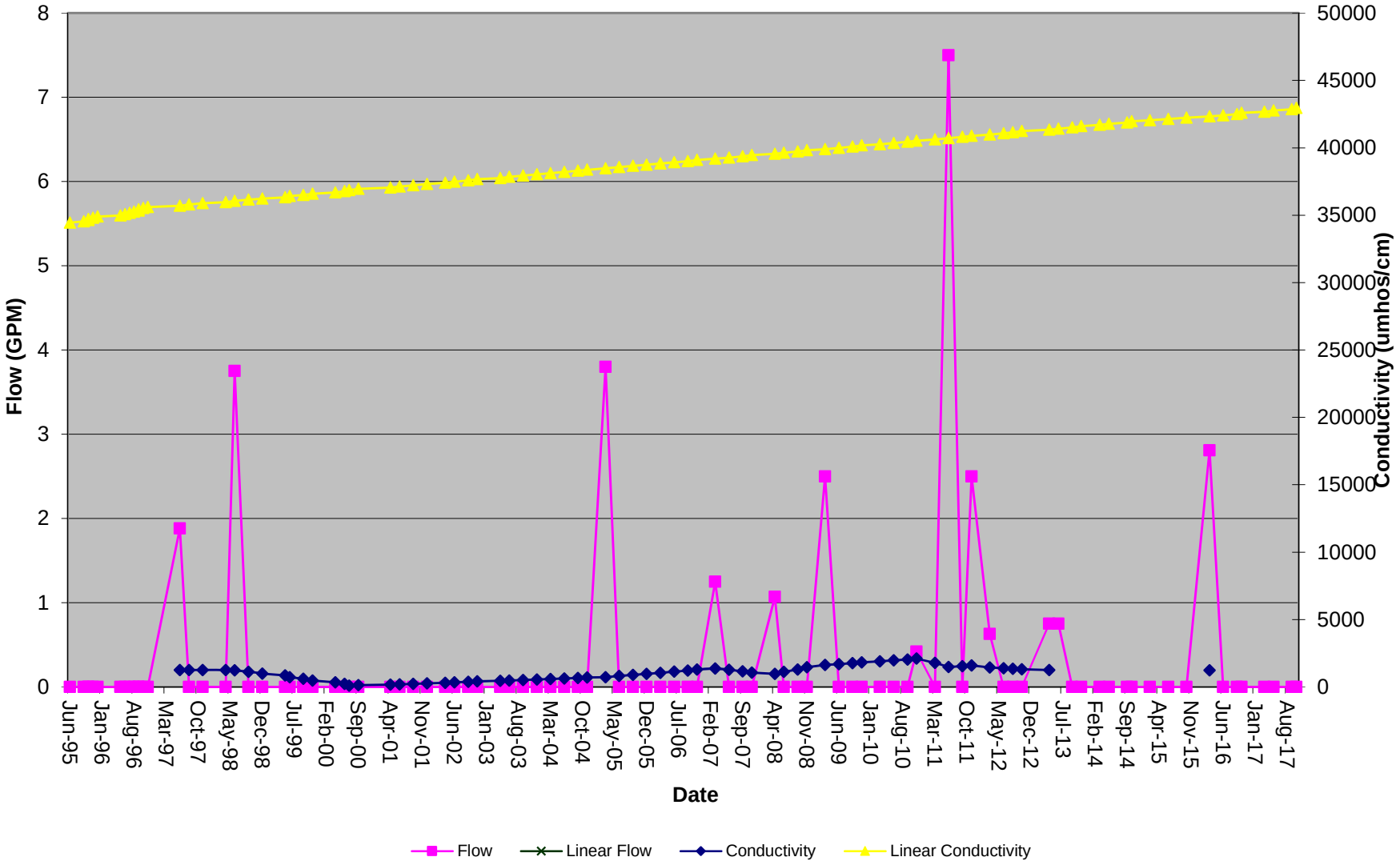
Free-low
Freeman Gulch - Drainage System
Elevation - 7560

Initiated	6/12/1995	6/12/1995	6/12/1995	6/12/1995
Activated	6/23/1999	6/23/1999	6/23/1999	6/23/1999
Date	10/24/2017	9/5/2017	5/5/2017	3/16/2017

		Summary Information									
Field		Baseline			Operation						
Parameters	UNITS	Min	Ave	Max	Min	Ave	Max				
Flow	GPM	0.00	0.24	3.75	0.00	0.33	7.50	0	0	0	0
FieldComment								Dry	Dry	Dry	Dry
ph	su	8.3	8.5	8.6	7.3	8.2	8.6				
Conductivity	umhos/cm	1240	1250	1260	90	1303	2100				
Temperature	Celsius	18.4	19.8	21.2	0.6	12.3	23.0				
Lab											
Parameters	UNITS										
Bicarbonate	mg/L	594	604	614	238.6	342.4	543.9				
Chloride	mg/L	16	18	19	3.06	8.13	11.41				
Conductivity	umhos/cm	1170	1190	1210	1321	1754	2470				
Hardness	mg/L	404	430	456	308.0	404.7	578.9				
Nitrate-Nitrite	mg/L	<MDL	<MDL	<MDL	0.48	0.48	0.48				
Oil and Grease	mg/L	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL				
pH	su	8.3	8.3	8.4	7.6	7.7	7.8				
Phosphate	mg/L	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL				
ResidueFilterable-TDS	mg/L	730	765	800	1056	1263	1590				
ResidueNonFilterable-TSS	mg/L	<MDL	3	6	6	36	90				
SAR		2.48	2.63	2.78	2.91	4.45	5.30				
Sulfate	mg/L	130	130	130	316.9	382.4	507.5				
Aluminum (TREC)	mg/L	0.13	0.21	0.29	<MDL	0.40	0.61				
Arsenic (TREC)	mg/L	<MDL	<MDL	<MDL	0.002	0.005	0.006				
Cadmium (TREC)	mg/L	<MDL	<MDL	<MDL	0.002	0.005	0.010				
Calcium (TREC)	mg/L	56.4	61.2	65.9	50.80	66.93	98.40				
Copper (TREC)	mg/L	<MDL	0.005	0.01	0.01	0.02	0.02				
Iron (TREC)	mg/L	0.11	0.15	0.19	0.06	0.08	0.10				
Lead (TREC)	mg/L	<MDL	<MDL	<MDL	0.02	0.03	0.03				
Magnesium (TREC)	mg/L	64.1	67.5	70.8	44.0	57.7	80.9				
Manganese (TREC)	mg/L	0.010	0.013	0.016	0.00	0.03	0.06				
Mercury (TREC)	mg/L	<MDL	<MDL	<MDL	0.00001	0.00006	0.00008				
Molyebdenum (TREC)	mg/L	<MDL	<MDL	<MDL	<MDL	0.003	0.005				
Selenium (TREC)	mg/L	<MDL	<MDL	<MDL	<MDL	0.016	0.018				
Sodium (TREC)	mg/L	120	124	127	163.0	199.3	223.5				
Zinc (TREC)	mg/L	<MDL	0.01	0.03	<MDL	0.03	0.06				

Baseline Information for Point Free-low is derived from events beginning 6/12/95 through 6/23/99.
Point influenced by mining on 6/23/99.

Plot of Flow and Conductivity



Free-low - Freeman Gulch Drainage System

Figure 75

Free-up
Freeman Gulch - Drainage System
Elevation - 6360

Initiated	6/12/1995	6/12/1995	6/12/1995
Activated	6/28/1999	6/28/1999	6/28/1999
Date	10/6/2017	8/9/2017	5/8/2017

Field Parameters	UNITS	Summary Information Baseline Min	Baseline Ave	Baseline Max	Operation Min	Operation Ave	Operation Max			
Flow	GPM	0.00	0.00	0.00	0.00	0.16	8.71			8.71
FieldComment								Dry	Dry	
ph	su				7.50	7.77	8.00			7.8
Conductivity	umhos/cm				710.00	726.33	759.00			759
Temperature	Celsius				7.20	8.73	11.50			7.2
Lab Parameters	UNITS									
Bicarbonate	mg/L				360.00	360.00	360.00			360
Chloride	mg/L				<MDL	<MDL	0.00			<MDL
Conductivity	umhos/cm				519.00	519.00	519.00			519
Hardness	mg/L				245.00	245.00	245.00			245
Nitrate-Nitrite	mg/L				0.00	<MDL	0.00			<MDL
Oil and Grease	mg/L				0.00	<MDL	0.00			<MDL
pH	su				7.37	7.37	7.37			7.37
Phosphate	mg/L				0.00	<MDL	0.00			<MDL
ResidueFilterable-TDS	mg/L				429.00	429.00	429.00			429
ResidueNonFilterable-TSS	mg/L				0.00	<MDL	0.00			<MDL
SAR					1.86	1.86	1.86			1.86
Sulfate	mg/L				0.00	<MDL	0.00			<MDL
Aluminum	mg/L				0.00	<MDL	0.00			<MDL
Arsenic	mg/L				0.00	<MDL	0.00			<MDL
Cadmium	mg/L				0.02	0.02	0.02			0.0159
Calcium	mg/L				67.70	67.70	67.70			67.7
Copper	mg/L				0.00	<MDL	0.00			<MDL
Iron (Total)	mg/L				0.03	0.03	0.03			0.0279
Lead	mg/L				0.00	<MDL	0.00			<MDL
Magnesium	mg/L				18.50	18.50	18.50			18.5
Manganese (Total)	mg/L				0.01	0.01	0.01			0.005
Mercury	mg/L				0.00	<MDL	0.00			<MDL
Molyebdenum	mg/L				0.00	<MDL	0.00			<MDL
Selenium	mg/L				0.08	0.08	0.08			0.0751
Sodium	mg/L				68.20	68.20	68.20			68.2
Zinc	mg/L				0.00	<MDL	0.00			<MDL

Upper Freeman Gulch is monitored just below Pond 2 at the upper end of Freeman Gulch, near drill holes DH34-B and DH34-C.

Note: Site was not accessible during 1Q 2017

Baseline Information for Point Free-up is derived from events beginning 6/12/95 through 6/28/99.
Point influenced by mining on 6/28/99.

HUB-low
Hubbard Creek - Drainage System
Elevation - 5880

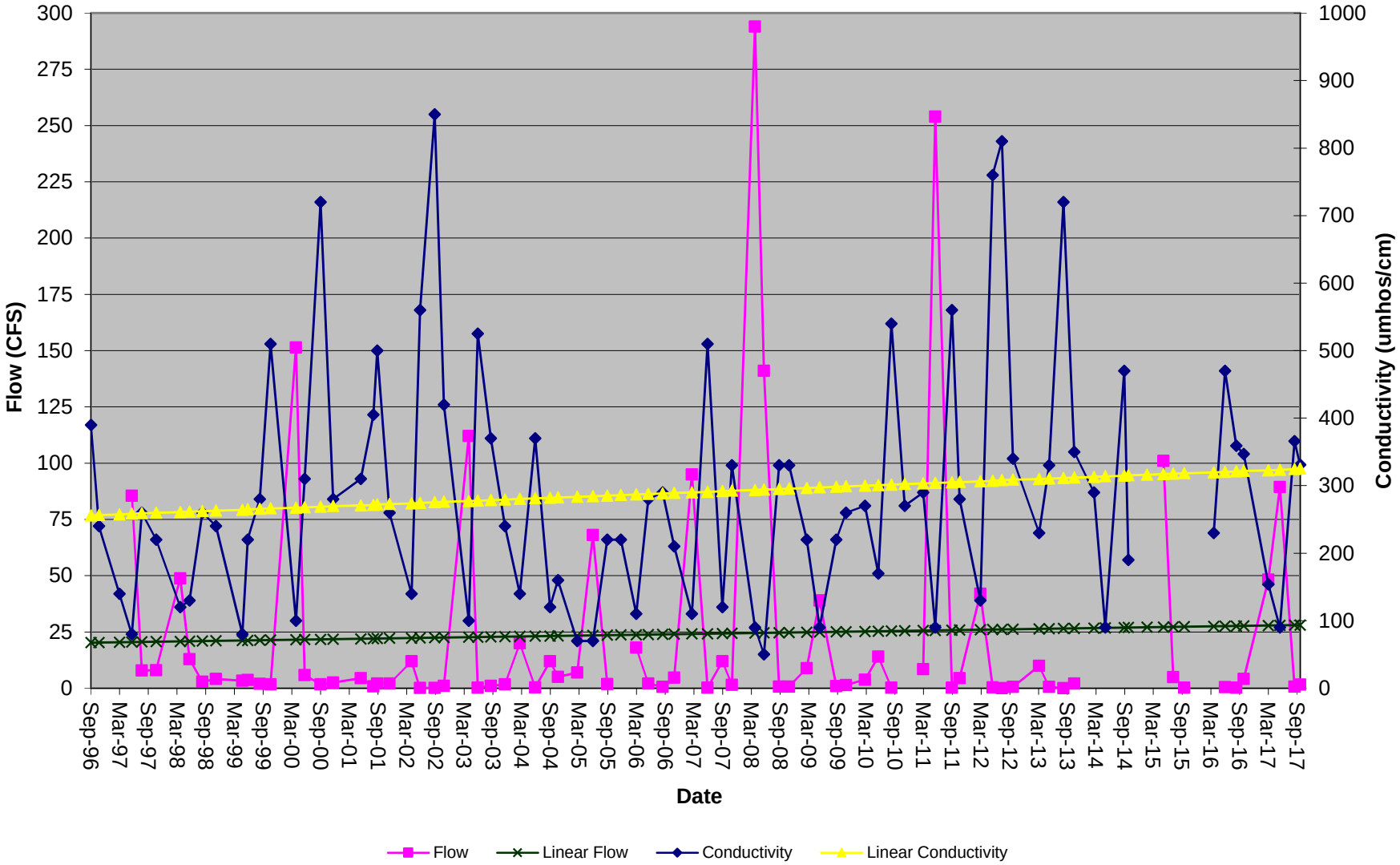
Initiated								9/30/1996	9/30/1996	9/30/1996	9/30/1996
Activated								6/23/1999	6/23/1999	6/23/1999	6/23/1999
Date								10/19/2017	9/13/2017	6/13/2017	3/31/2017
		Summary Information									
Field		Baseline			Operation						
Parameters	UNITS	Min	Ave	Max	Min	Ave	Max				
Flow	CFS	2.90	19.67	85.51	0.04	24.68	294.00	1.62	0.65	89.4	48.26
FieldComment											
ph	su	8.0	8.5	9.3	7.1	8.3	9.0	8.3	8.5	7.5	8.3
Conductivity	umhos/cm	80	198	390	50	302	850	331	366	90	154
Temperature	Celsius	2.3	11.1	20.2	0.3	9.7	21.7	4.2	13.4	6.4	4.2
Lab											
Parameters	UNITS										
Bicarbonate	mg/L	62	115	155	28	148	690	161		95.6	
Chloride	mg/L	<MDL	1.7	3.0	<MDL	30.3	203.6	2.5		0.91	
Conductivity	umhos/cm	118	254	406	92	342	711	281		158	
Hardness	mg/L	49	96	138	31.28	131.74	315.52	112		77.6	
Nitrate-Nitrite	mg/L	<MDL	0.05	0.29	<MDL	0.17	1.62	<MDL		<MDL	
Oil and Grease	mg/L	<MDL	3.0	3.0	<MDL	3.0	3.0	<MDL		<MDL	
pH	su	7.5	7.9	8.3	6.9	8.0	8.4	8.3		7.9	
Phosphate	mg/L	<MDL	0.004	0.030	<MDL	0.04	0.27	0.016		0.029	
ResidueFilterable-TDS	mg/L	100	163	260	60	247	563	164		117	
ResidueNonFilterable-TSS	mg/L	<MDL	33	170	<MDL	21	200	<MDL		9.3	
SAR		<MDL	0.47	1.04	<MDL	0.91	2.62	0.99		0.37	
Sulfate	mg/L	<MDL	17	50	<MDL	35	102	20		7.5	
Aluminum (TREC)	mg/L	0.05	0.58	1.91	<MDL	0.31	1.18	<MDL		0.42	
Arsenic (TREC)	mg/L	<MDL	0.0004	0.0010	<MDL	0.0083	0.0600	<MDL		<MDL	
Cadmium (TREC)	mg/L	<MDL	<MDL	<MDL	<MDL	0.010	0.040	<MDL		<MDL	
Calcium (TREC)	mg/L	13.8	26.2	36.7	8.5	33.5	70.7	30.2		23.0	
Copper (TREC)	mg/L	<MDL	0.001	0.010	<MDL	0.008	0.060	<MDL		<MDL	
Iron (TREC)	mg/L	0.09	0.54	1.44	0.06	0.29	1.28	0.17		0.45	
Lead (TREC)	mg/L	<MDL	<MDL	<MDL	<MDL	0.0146	0.0700	<MDL		<MDL	
Magnesium (TREC)	mg/L	3.6	7.4	11.2	2.4	11.9	34.6	9.0		4.9	
Manganese (TREC)	mg/L	0.009	0.016	0.034	<MDL	0.022	0.080	0.0131		0.0182	
Mercury (TREC)	mg/L	<MDL	<MDL	<MDL	<MDL	0.00007	0.00018	<MDL		<MDL	
Molyebdenum (TREC)	mg/L	<MDL	<MDL	<MDL	<MDL	0.006	0.030	<MDL		<MDL	
Selenium (TREC)	mg/L	<MDL	0.001	0.010	<MDL	0.0046	0.0200	<MDL		<MDL	
Sodium (TREC)	mg/L	5.3	15.9	27.6	3.6	27.1	73.0	21.7		8.9	
Zinc (TREC)	mg/L	<MDL	0.01	0.04	<MDL	0.009	0.037	<MDL		<MDL	

Note 1: USGS did not collect flow values.

The Lower Hubbard Creek monitoring point is located at a concrete box culvert under the Union Pacific railroad track just above the North Fork of the Gunnison. Flow values are taken by Resource Engineering Inc.

Baseline Information for Point Hub-low is derived from events beginning on 9/30/96 through 6/23/99.
Point influenced by mining on 6/23/99.

Plot of Flow and Conductivity



Hub-low - Hubbard Creek Drainage System

Figure 78

NFG-low
North Fork - Drainage System
Elevation - 5680

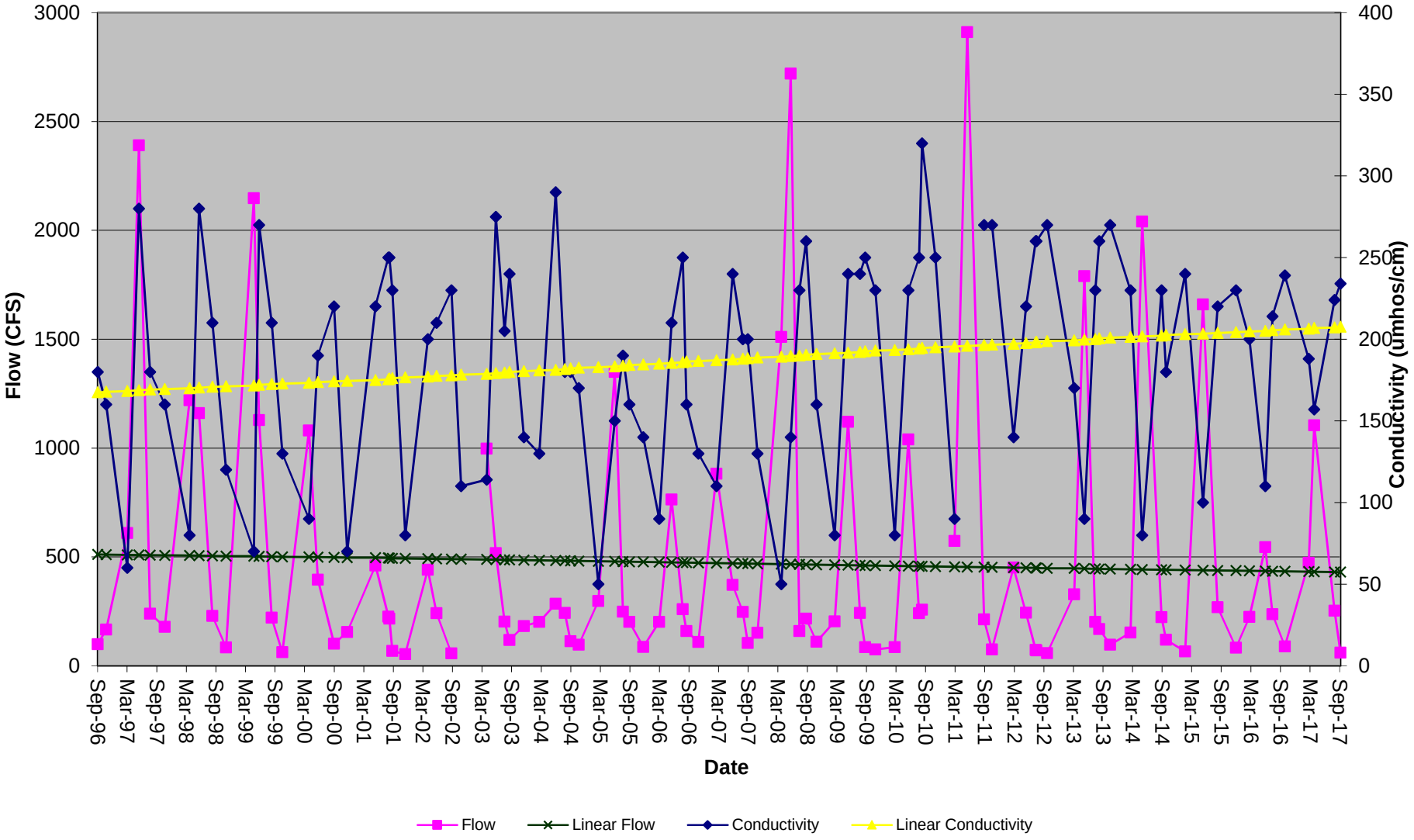
Initiated								9/30/1996	9/30/1996	9/30/1996	9/30/1996
Activated								3/31/1997	3/31/1997	3/31/1997	3/31/1997
Date								10/5/2017	8/30/2017	4/26/2017	3/23/2017
		Summary Information									
Field		Baseline			Operation						
Parameters	UNITS	Min	Ave	Max	Min	Ave	Max				
Flow	CFS	99	292	610	53	477	2910	60.9	252.5	1105	472.7
FieldComment											
ph	su	8.1	8.4	8.7	7.6	8.3	9.1	8.3	8.5	8.0	8.4
Conductivity	umhos/cm	160	180	200	50	188	320	234	238	157	188
Temperature	Celsius	4.0	8.5	14.6	0.3	11.3	22.6	9.8	14.2	4.5	5.2
DO	mg/L				0.0	8.6	11.5			10.45	
Lab											
Parameters	UNITS										
Bicarbonate	mg/L	95	100	105	28.1	85.3	148.0	148			
Chloride	mg/L	2.00	2.50	3.00	<MDL	27.37	288.30	3	2.2	0.96	
Chromium III CrIII	mg/L				<MDL	<MDL	<MDL		<MDL	<MDL	
Chromium VI CrIV	mg/L				<MDL	<MDL	<MDL		<MDL	<MDL	
Cyanide, Total	mg/L				<MDL	<MDL	<MDL		<MDL	<MDL	
Conductivity	umhos/cm	201	222	242	78	220	754				
Hardness	mg/L	84	85	85	<MDL	86.19	270.40		96.1	63.7	
Nitrate	mg/L	<MDL	0.08	0.16	<MDL	0.34	3.90	0.045	<MDL	0.043	
Nitrate-Nitrite	mg/L	0.00	0.08	0.16	<MDL	<MDL	<MDL				
Nitrite	mg/L	<MDL	<MDL	<MDL	<MDL	0.002	0.010	<MDL	<MDL	<MDL	
Ammonia	mg/L	<MDL	<MDL	<MDL	<MDL	0.06	0.31		<MDL	<MDL	
Oil & Grease	mg/L	<MDL	<MDL	<MDL	<MDL	4	5	<MDL	<MDL	<MDL	
pH	su	8.0	8.0	8.0	7.0	7.9	8.8	7.97	8.41	7.72	
Phosphate	mg/L	<MDL	<MDL	<MDL	<MDL	0.13	1.50	1.5			
ResidueFilterable-TDS	mg/L	130	140	150	50	162	692	138	132	119	
ResidueNonFilterable-TSS	mg/L	<MDL	3	6	<MDL	20	141				
SAR		0.55	0.61	0.66	<MDL	0.64	2.42				
Sulfate	mg/L	10.0	15.0	20.0	<MDL	16.6	82.5	13.2	8.5	7.3	
Sulfide S	mg/L				<MDL	0.04	0.04		<MDL	<MDL	
Aluminum (TREC)	mg/L	0.10	0.15	0.21	<MDL	0.36	1.32				
Arsenic (TREC)	mg/L	<MDL	0.001	0.001	<MDL	0.0061	0.0500	<MDL	<MDL	<MDL	
Boron	mg/L				0.02	0.56	1.35		<MDL	<MDL	
Cadmium (TREC)	mg/L	<MDL	<MDL	<MDL	<MDL	0.0029	0.0180	<MDL	<MDL	<MDL	
Calcium (TREC)	mg/L	24.6	24.8	25.0	6.9	27.7	132.0	69	29	19.4	
Copper (TREC)	mg/L	<MDL	<MDL	<MDL	<MDL	0.012	0.198	0.054	<MDL	<MDL	
Iron, Dissolved	mg/L	<MDL	<MDL	<MDL	<MDL	0.39	12.90		0.0124	0.0425	
Iron (TREC)	mg/L	0.14	0.21	0.27	<MDL	0.40	4.17		0.348	0.793	
Lead (TREC)	mg/L	<MDL	0.010	0.020	<MDL	0.0120	0.1500	<MDL	<MDL	<MDL	
Magnesium (TREC)	mg/L	5.30	5.50	5.70	2.00	6.28	18.80	15.7	5.74	3.7	
Manganese (Dissolved)	mg/L	<MDL	<MDL	<MDL	<MDL	0.168	2.900		<MDL	0.0066	
Manganese (TREC)	mg/L	0.021	0.090	0.160	0.007	0.047	0.802	0.802	0.029	0.035	
Mercury (TREC)	mg/L	<MDL	<MDL	<MDL	<MDL	0.00007	0.00030	<MDL	<MDL	<MDL	
Molyebdenum (TREC)	mg/L	<MDL	<MDL	<MDL	<MDL	0.004	0.030	<MDL			
Nickel	mg/L				<MDL	0.010	0.010		<MDL	<MDL	
Selenium (TREC)	mg/L	<MDL	<MDL	<MDL	<MDL	0.004	0.034	<MDL	<MDL	<MDL	
Silver	mg/L				<MDL	<MDL	<MDL		<MDL	<MDL	
Sodium (TREC)	mg/L	11.5	12.2	12.9	3.0	15.7	91.5	14.0			
Zinc (TREC)	mg/L	0.02	0.02	0.03	<MDL	0.02	0.16	0.162	<MDL	<MDL	

Field parameters, except flow, for the Lower North Fork of the Gunnison River are taken on the river approximately 1500' below the confluence of Terror Creek and the North Fork of the Gunnison. Flow data for the North Fork of the Gunnison river is obtained from USGS station #09132500.

Data out of range

Baseline Information for Point NFG-low is derived from events beginning on 9/30/96 through 3/31/97. Point influenced by mining on 3/31/97.

Plot of Flow and Conductivity



NFG-low - North Fork Drainage System

Figure 80

NFG-up
North Fork - Drainage System
Elevation - 5880

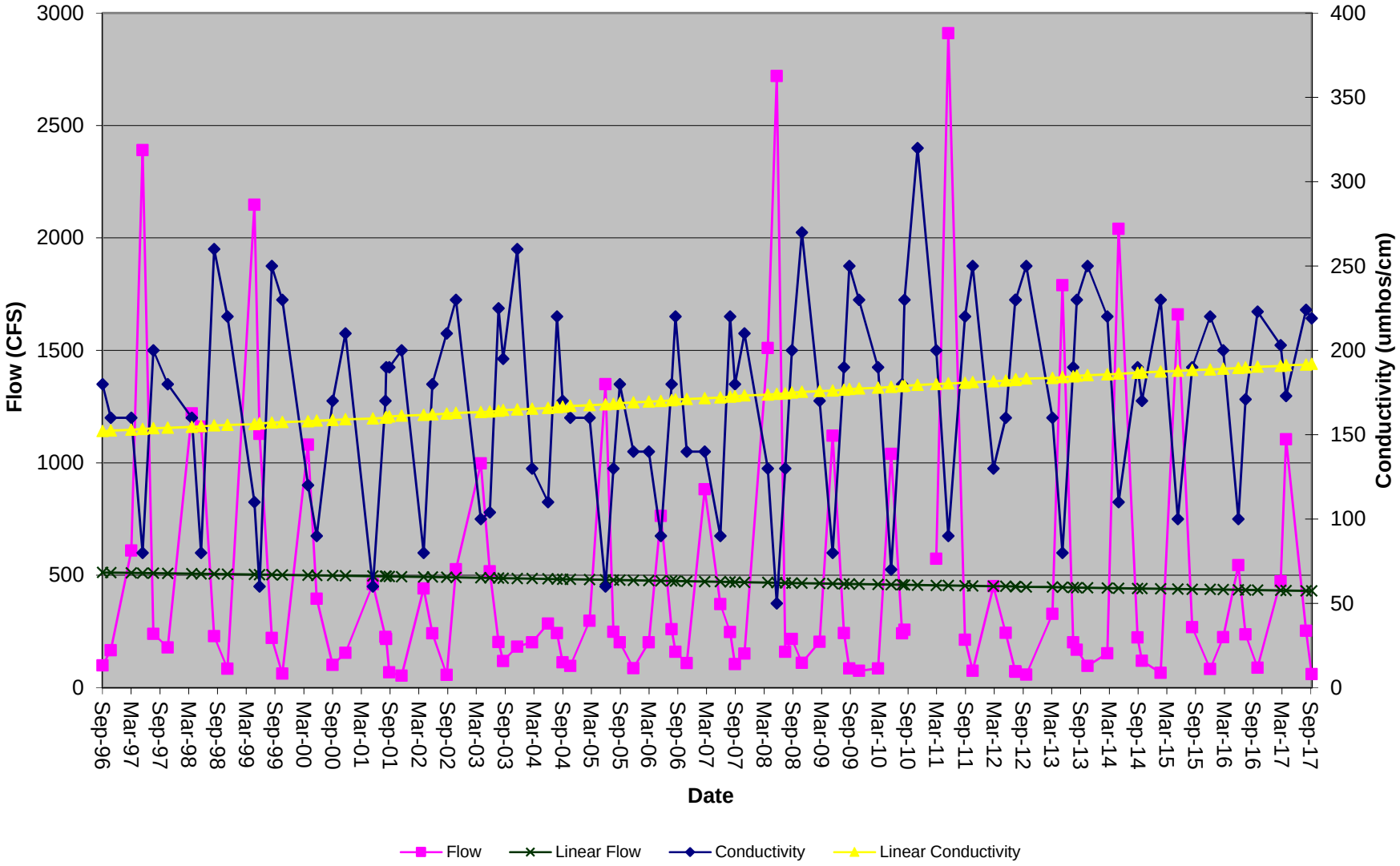
Initiated								9/30/1996	9/30/1996	9/30/1996	9/30/1996
Activated								3/31/1997	3/31/1997	3/31/1997	3/31/1997
Date								10/5/2017	8/30/2017	4/26/2017	3/23/2017
		Summary Information									
Field		Baseline			Operation						
Parameters	UNITS	Min	Ave	Max	Min	Ave	Max				
Flow	CFS	99	292	610	53	477	2910	60.9	252.5	1105	472.7
FieldComment											
ph	su	8.1	8.5	8.8	7.5	8.3	9.7	8.4	8.7	8.3	8.3
Conductivity	umhos/cm	160	167	180	50	172	320	219	224	173	203
Temperature	Celsius	3.6	7.3	13.7	0.2	10.7	22.6	8.9	15.3	4.7	5.3
DO	mg/L				7.2	9.3	11.8	8.68		10.32	
Lab Parameters	UNITS										
Bicarbonate	mg/L	88	93	98	31	85	203	142			
Chloride	mg/L	2.0	2.5	3.0	<MDL	33.9	471.5	2.7	2.1	1.5	
Chromium III CrIII	mg/L				<MDL	<MDL	<MDL		<MDL	<MDL	
Chromium VI CrIV	mg/L				<MDL	0.008	0.008		<MDL	<MDL	
Cyanide, Total	mg/L				<MDL	0.067	0.081		<MDL	<MDL	
Conductivity	umhos/cm	185	205	225	7	208	668	194			
Hardness	mg/L	74	77	79	26.5	80.7	253.0	253.00	91.30	71.00	
Nitrate	mg/L	<MDL	0.05	0.09	<MDL	0.38	3.47		<MDL	<MDL	
Nitrate/Nitrite	mg/L	0.00	0.05	0.09	<MDL	0.3	3	<MDL			
Nitrite	mg/L	<MDL	<MDL	<MDL	<MDL	0.004	0.017		<MDL	<MDL	
Ammonia	mg/L	<MDL	<MDL	<MDL	<MDL	0.04	0.23		<MDL		
Oil & Grease	mg/L	<MDL	<MDL	<MDL	<MDL	7	11	<MDL	<MDL	<MDL	
pH	su	7.9	8.0	8.0	6.9	7.9	9.0	8.17	8.54	8.03	
Phosphate	mg/L	<MDL	<MDL	<MDL	<MDL	0.15	1.90	1.9			
ResidueFilterable-TDS	mg/L	120	130	140	9	150	522	126	133	125	
ResidueNonFilterable-TSS	mg/L	10	11	12	<MDL	21	131				
SAR		0.42	0.60	0.78	<MDL	0.67	2.39	0.706			
Sulfate	mg/L	10	15	20	<MDL	19	80	11.3	6.4	9.8	
Sulfide S	mg/L				<MDL	0.05	0.05		<MDL	<MDL	
Aluminum (TREC)	mg/L	0.08	0.18	0.27	<MDL	0.46	2.78				
Arsenic (TREC)	mg/L	<MDL	<MDL	<MDL	<MDL	0.0043	0.0350	<MDL	<MDL	<MDL	
Boron	mg/L				0.02	0.49	1.20		<MDL	<MDL	
Cadmium (TREC)	mg/L	<MDL	<MDL	<MDL	<MDL	0.007	0.031	<MDL	<MDL	<MDL	
Calcium (TREC)	mg/L	21.9	22.9	24.0	7.0	25.2	138.0	74.2	28	21.6	
Copper (TREC)	mg/L	<MDL	<MDL	<MDL	<MDL	0.012	0.197	<MDL	<MDL	<MDL	
Iron, Dissolved	mg/L				<MDL	0.85	22.80	0.0808	0.0113	0.0263	
Iron (TREC)	mg/L	0.09	0.09	0.09	0.03	2.24	81.00	17.7	0.325	1.69	
Lead (TREC)	mg/L	<MDL	<MDL	<MDL	<MDL	0.0121	0.1200	<MDL	<MDL	<MDL	
Magnesium (TREC)	mg/L	4.70	4.70	4.70	1.88	5.70	23.40	16.4	5.19	4.14	
Manganese (Dissolved)	mg/L	<MDL	<MDL	<MDL	<MDL	0.28	2.90		<MDL	0.0071	
Manganese (TREC)	mg/L	0.011	0.015	0.019	<MDL	0.192	7.600	0.958	0.0297	0.0408	
Mercury (TREC)	mg/L	<MDL	<MDL	<MDL	<MDL	0.00006	0.00022	<MDL	<MDL	<MDL	
Molyebdenum (TREC)	mg/L	<MDL	<MDL	<MDL	<MDL	0.004	0.030	<MDL			
Nickel	mg/L				<MDL	0.01	0.01		<MDL	<MDL	
Selenium (TREC)	mg/L	<MDL	<MDL	<MDL	<MDL	0.003	0.027	<MDL	<MDL	<MDL	
Silver	mg/L				<MDL	<MDL	<MDL		<MDL	<MDL	
Sodium (TREC)	mg/L	8.6	12.0	15.3	3.3	15.4	73.5	13.1			
Zinc (TREC)	mg/L	0.020	0.025	0.030	<MDL	0.015	0.143	0.143	<MDL	<MDL	

Field parameters, except flow in the Upper North Fork of the Gunnison River monitoring point are taken on the river just above its confluence with Hubbard Creek. Flow data for the North Fork of the Gunnison river is obtained from USGS station #09132500.

Data out of range

Baseline Information for Point NFG-up is derived from events beginning on 9/30/96 through 3/31/97.
Point influenced by mining on 3/31/97.

Plot of Flow and Conductivity



Steph-low
Stevens Draw - Drainage System
Elevation - 7000'

Initiated	7/12/1995	7/12/1995	7/12/1995	7/12/1995
Activated	7/1/2002	7/1/2002	7/1/2002	7/1/2002
Date	10/6/2017	8/10/2017	5/3/2017	3/24/2017

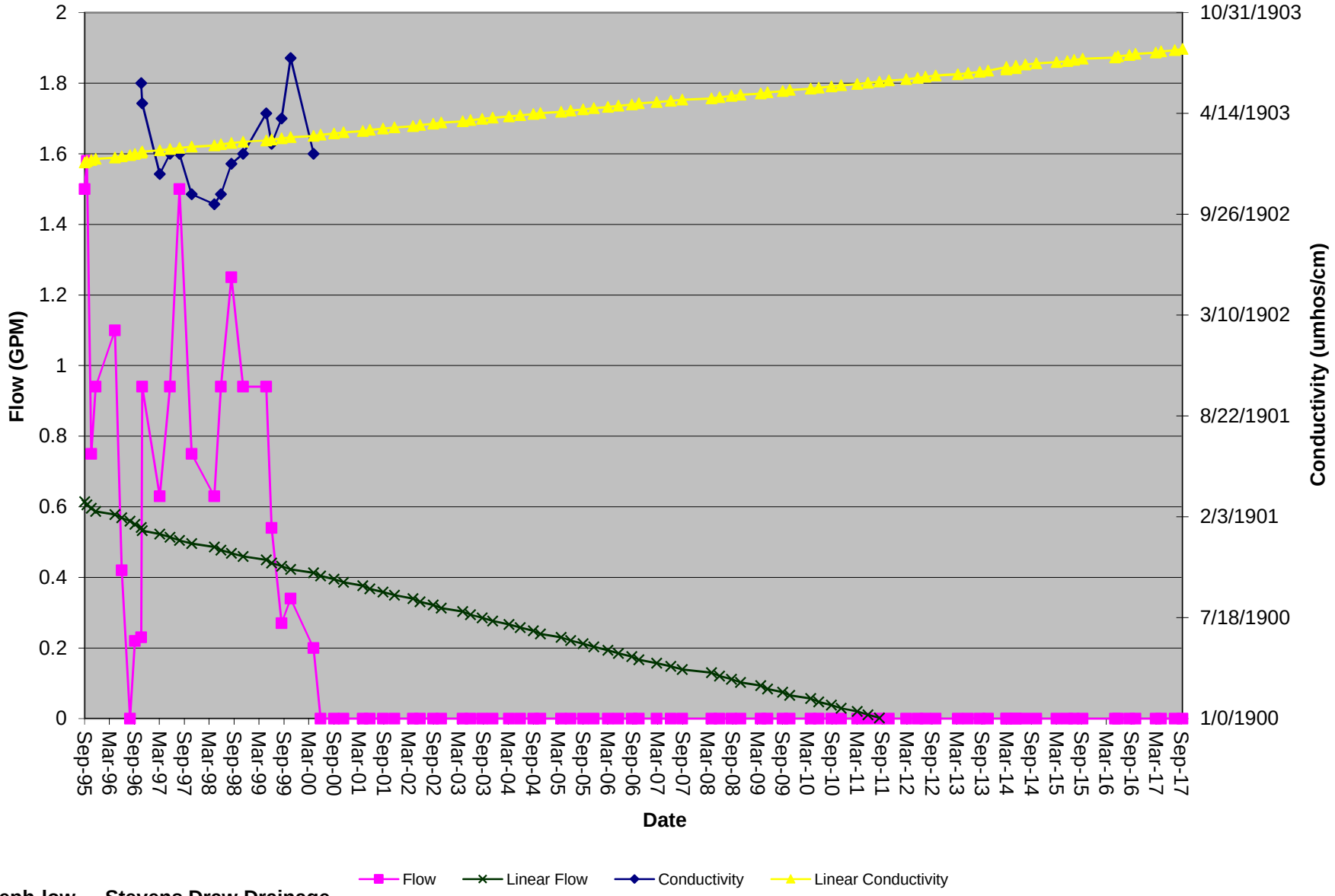
		Summary Information									
		Baseline			Operation						
Field Parameters	UNITS	Min	Ave	Max	Min	Ave	Max				
Flow	GPM	0.00	0.19	1.58				0	0	0	0
FieldComment								Dry	Dry	Dry	Dry
ph	su	7.9	8.2	8.4							
Conductivity	umhos/cm	1020	1139	1310							
Temperature	Celsius	3.8	10.8	17.2							
Lab Parameters	UNITS										
Bicarbonate	mg/L	452	495	554							
Chloride	mg/L	14	16	20							
Conductivity	umhos/cm	1020	1093	1180							
Hardness	mg/L	343	382	433							
Nitrate-Nitrite	mg/L	0.02	0.20	0.97							
Oil and Grease	mg/L	<MDL	1	4							
pH	su	8.0	8.2	8.3							
Phosphate	mg/L	<MDL	<MDL	<MDL							
ResidueFilterable-TDS	mg/L	660	718	780							
ResidueNonFilterable-TSS	mg/L	<MDL	21	58							
SAR		<MDL	2.28	3.22							
Sulfate	mg/L	150	170	190							
Aluminum	mg/L	0.05	0.53	1.71							
Arsenic	mg/L	<MDL	0.001	0.002							
Cadmium	mg/L	<MDL	<MDL	<MDL							
Calcium	mg/L	49.4	59.6	72.4							
Copper	mg/L	<MDL	0.002	0.010							
Iron (Total)	mg/L	0.27	0.82	2.57							
Lead	mg/L	<MDL	<MDL	<MDL							
Magnesium	mg/L	41.3	55.9	66.2							
Manganese (Total)	mg/L	0.070	0.211	0.566							
Mercury	mg/L	<MDL	<MDL	<MDL							
Molyebdenum	mg/L	<MDL	<MDL	<MDL							
Selenium	mg/L	<MDL	0.0002	0.001							
Sodium	mg/L	99.8	120.0	152.0							
Zinc	mg/L	<MDL	0.01	0.03							

The area of concern for monitoring point Steph-low has not been affected by the mining operation. Therefore, all recorded monitoring events are considered Baseline.

The monitoring point location for Lower Stevens Draw is located in Stevens Draw, just below Pond 1 and Spring 14. It is accessed by a southern fork of the Stevens Draw road.

Baseline Information Collection initiated on 9/27/95 and not yet considered complete.
Point Steph-low has not been influenced by mining.

Plot of Flow and Conductivity



Steph-low - Stevens Draw Drainage System

Figure 84

Steph-up
Stevens Draw - Drainage System
Elevation - 7920'

Initiated								7/12/1995	7/12/1995	7/12/1995	7/12/1995
Activated								7/1/2002	7/1/2002	7/1/2002	7/1/2002
Date								10/6/2017	8/10/2017	5/3/2017	3/24/2017
		Summary Information									
Field		Baseline			Operation						
Parameters	UNITS	Min	Ave	Max	Min	Ave	Max				
Flow	GPM	0.00	0.15	5.00	0.00	0.06	3.75	0	0	0	0
FieldComment								Dry	Dry	Damp	Dry
ph	su				7.7	7.7	7.7				
Conductivity	umhos/cm				200	200	200				
Temperature	Celsius				11.2	11.2	11.2				
Lab											
Parameters	UNITS										
Bicarbonate	mg/L										
Chloride	mg/L										
Conductivity	umhos/cm										
Hardness	mg/L										
Nitrate-Nitrite	mg/L										
Oil and Grease	mg/L										
pH	su										
Phosphate	mg/L										
ResidueFilterable-TDS	mg/L										
ResidueNonFilterable-TSS	mg/L										
SAR											
Sulfate	mg/L										
Aluminum	mg/L										
Arsenic	mg/L										
Cadmium	mg/L										
Calcium	mg/L										
Copper	mg/L										
Iron (Total)	mg/L										
Lead	mg/L										
Magnesium	mg/L										
Manganese (Total)	mg/L										
Mercury	mg/L										
Molyebdenum	mg/L										
Selenium	mg/L										
Sodium	mg/L										
Zinc	mg/L										

The monitoring point for Upper Stevens Draw is located in Stevens Draw, just below Spring 11. It is accessed by the Stevens Draw road.

Baseline Information for Point Steph-up is derived from events beginning 7/12/95 through 7/1/02.
Point influenced by mining on 7/1/02.

Bowie Resources, LLC
Bowie No. 2 Mine
2017 Annual Hydrology Report

Surface Water

SW-01
West Terror Creek - Downstream
Elevation - 7140

Initiated								10/24/2013	10/24/2013	10/24/2013	10/24/2013
Activated											
Date								10/23/2017	7/12/2017	4/5/2017	3/30/2017
		Summary Information									
Field		Baseline			Operation						
Parameters	UNITS	Min	Ave	Max	Min	Ave	Max				
Flow	CFS	0.40	4.60	52.00				0.99	0.64	2.85	3.70
Water Level in Flume	Feet	0.100	0.624	2.000				0.4	0.3	0.8	0.95
Temperature	Celsius	0	6.3	16.4				1.2	16.4	0.4	1.1
Conductivity	umhos/cm	100	138	190				166	115.6	147.9	132.5
pH	su	7.78	8.3	8.9				8.26	8.31	8.1	7.78
Field Comments											
Lab											
Parameters	UNITS										
Bicarbonate	mg/L	59.3	77.3	90.6				85.3		72.8	
Chloride	mg/L	0.56	0.84	1.30				0.86		1.1	
Conductivity	umhos/cm	87.3	114	139				139		114	
Hardness	mg/L	46.7	57.43	69.90				62.4		52.5	
Acidity	mg/L	-76	-59.47	-44.80				-55		-54	
Nitrate-Nitrite	mg/L	<MDL	<MDL	<MDL				<MDL		<MDL	
Oil and Grease	mg/L	<MDL	<MDL	<MDL				<MDL		<MDL	
Phosphate	mg/L	0.018	0.07	0.23				0.036		0.047	
ResidueFilterable-TDS	mg/L	86.7	106	144				111		106	
ResidueNonFilterable-TSS	mg/L	<MDL	13	34				5.9		5.9	
SAR		0.226	0.343	0.505				0.353		0.505	
Sulfate	mg/L	2.1	3.3	4.3				3.7		4.1	
Aluminum (TREC)	mg/L	<MDL	10.578	101.000				<MDL		0.69	
Arsenic (TREC)	mg/L	<MDL	<MDL	<MDL				<MDL		<MDL	
Cadmium (TREC)	mg/L	<MDL	<MDL	<MDL				<MDL		<MDL	
Calcium (TREC)	mg/L	12.5	14.9	18.0				16.3		14	
Calcium (Dissolved)	mg/L	12.0	15.4	18.2							
Copper (TREC)	mg/L	<MDL	<MDL	<MDL				<MDL		<MDL	
Iron (Dissolved)	mg/L	0.0310	4.2305	41.6000				0.0972			
Iron (TREC)	mg/L	0.097	0.397	1.180				0.0968		0.536	
Lead (TREC)	mg/L	<MDL	<MDL	<MDL				<MDL		<MDL	
Magnesium (TREC)	mg/L	3.77	4.91	6.07				5.26		4.26	
Magnesium (Dissolved)	mg/L	3.59	5.10	6.09							
Manganese (TREC)	mg/L	0.0058	0.0135	0.0280				0.0095		0.0167	
Mercury (TREC)	mg/L	<MDL	<MDL	<MDL				<MDL		<MDL	
Molybdenum (TREC)	mg/L	<MDL	<MDL	<MDL				<MDL		<MDL	
Selenium (TREC)	mg/L	<MDL	<MDL	<MDL				<MDL		<MDL	
Sodium (TREC)	mg/L	4.03	5.94	8.50				6.31		8.01	
Sodium (Dissolved)	mg/L	3.48	5.78	8.66							
Zinc (TREC)	mg/L	<MDL	<MDL	<MDL				<MDL		<MDL	

The area of concern for monitoring point SW-01 has not been affected by the mining operation. Therefore, all recorded monitoring events are considered Baseline.
Negative acidity value indicates equivalent value of alkalinity

SW-02
Terror Creek - Mid Stream
Elevation - 7040

Initiated								10/24/2013	10/24/2013	10/24/2013	10/24/2013
Activated											
Date								10/23/2017	7/12/2017	4/5/2017	3/30/2017
		Summary Information									
Field		Baseline			Operation						
Parameters	UNITS	Min	Ave	Max	Min	Ave	Max				
Flow	CFS	0.00	5.84	81.22				0.297	2.650	2.650	5.702
Water Level in Flume	Feet	0.00	0.36	2.80				0.080	0.320	0.320	0.520
Temperature	Celsius	-0.7	9.1	20.3				1.7	13.3	0.8	1.1
Conductivity	umhos/cm	2.9	124	320				2.9	114.7	159.4	125.9
pH	su	5.3	8.2	10.2				8.47	8.26	8.25	8.48
Field Comments											
Lab Parameters	UNITS										
Bicarbonate	mg/L	38	87	148				148		73.9	
Chloride	mg/L	0.87	27.92	198.50				2.1		1.7	
Conductivity	umhos/cm	77	191	548				235		118	
Hardness	mg/L	29.02	73.70	157.58				99.2		54.3	
Nitrate-Nitrite	mg/L	<MDL	0.24	0.61				<MDL		<MDL	
Oil and Grease	mg/L	<MDL	<MDL	<MDL				<MDL		<MDL	
pH	su	6.7	7.7	8.8				8.23		7.86	
Phosphate	mg/L	<MDL	1.15	7.79				0.038		0.032	
ResidueFilterable-TDS	mg/L	70	154	430				172		112	
ResidueNonFilterable-TSS	mg/L	<MDL	28	174				<MDL		<MDL	
SAR		0.11	0.50	2.22				0.751		0.504	
Sulfate	mg/L	2.03	11.30	35.00				10.2		4.4	
Aluminum (TREC)	mg/L	<MDL	0.592	1.290				<MDL		0.97	
Arsenic (TREC)	mg/L	<MDL	0.023	0.075				<MDL		<MDL	
Cadmium (TREC)	mg/L	<MDL	0.008	0.020				<MDL		<MDL	
Calcium (TREC)	mg/L	5.42	19.75	42.00				25.2		13.6	
Copper (TREC)	mg/L	<MDL	0.004	0.010				<MDL		<MDL	
Iron (TREC)	mg/L	0.033	0.536	1.250				0.226		0.755	
Lead (TREC)	mg/L	<MDL	0.013	0.050				<MDL		<MDL	
Magnesium (TREC)	mg/L	3.76	9.58	18.10				8.81		4.94	
Manganese (TREC)	mg/L	0.01	0.03	0.05				0.0405		0.0233	
Mercury (TREC)	mg/L	<MDL	0.00006	0.00016				<MDL		<MDL	
Molybdenum (TREC)	mg/L	<MDL	0.004	0.006				<MDL		<MDL	
Selenium (TREC)	mg/L	<MDL	0.00614	0.02300				<MDL		<MDL	
Sodium (TREC)	mg/L	4.1	15.9	64.0				15.9		8.12	
Zinc (TREC)	mg/L	<MDL	0.027	0.060				<MDL		<MDL	

The area of concern for monitoring point SW-02 has not been affected by the mining operation. Therefore, all recorded monitoring events are considered Baseline.

SW-02 is located on the East Fork of Terror Creek in the NW1/4 SE1/4 Sec 5, T13S, R91W, of the 6th P.M. A 48" Parshall flume manufactured by the Thompson Pipe and Steel Company of Denver, Colorado was installed at this location.

SW-05
Stevens Gulch - Downstream
Elevation - 6600

Initiated	1/1/1983	1/1/1983	1/1/1983	1/1/1983
Activated				
Date	10/5/2017	7/31/2017	4/26/2017	3/28/2017

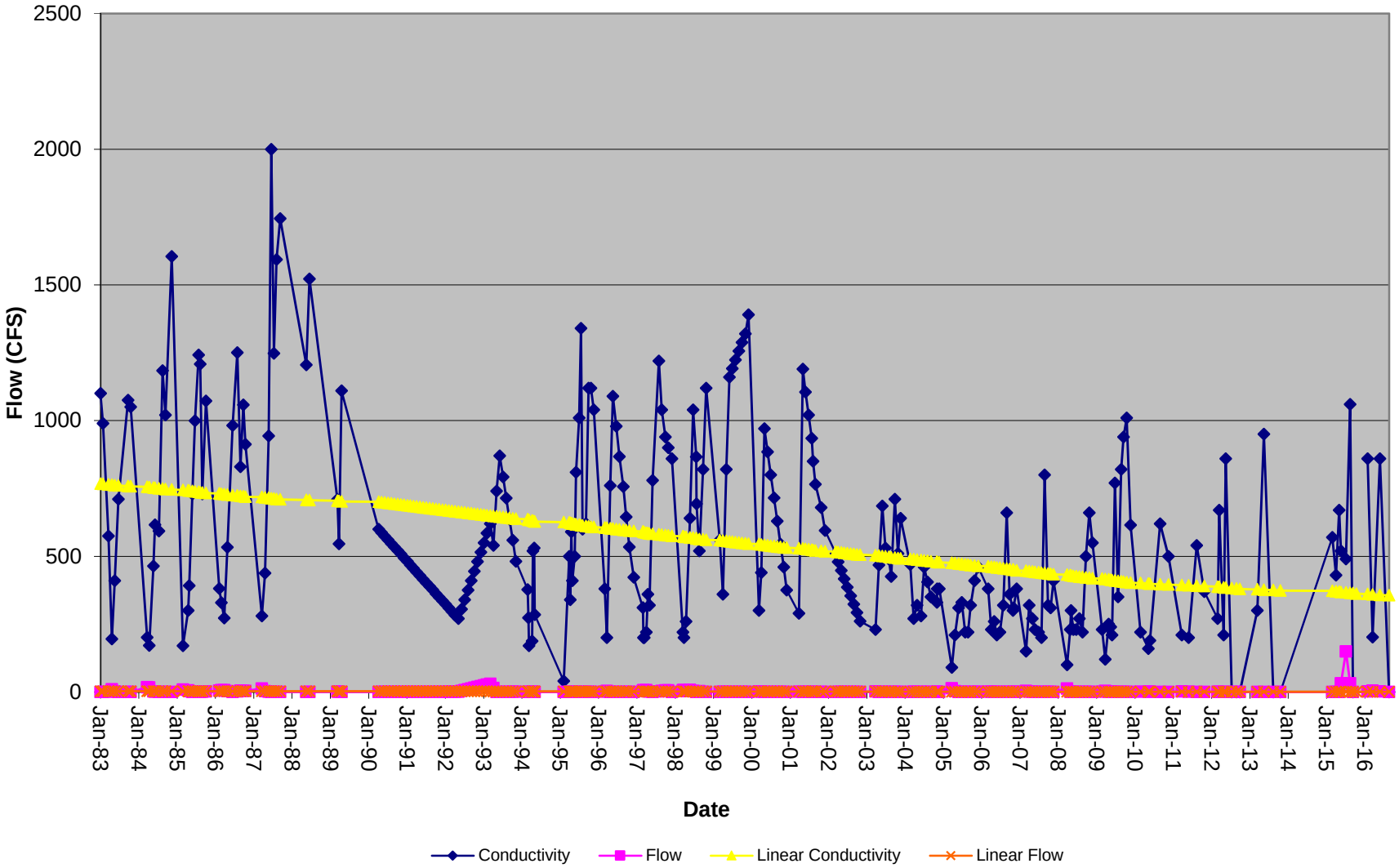
Summary Information

Field Parameters	UNITS	Baseline Min	Baseline Ave	Baseline Max	Operation Min	Operation Ave	Operation Max				
Flow	CFS	0.00	1.61	30.13					1.20000	0.89051	4.57175
Water Level in Flume	Feet	0.00	0.08	1.06						0.19	0.54
Temperature	Celsius	-0.5	10.2	23.7					19.2	5.4	3.5
Conductivity	umhos/cm	0	555	2000					815	344	190.2
pH	su	0.0	8.3	9.9					8.5	8.56	8.55
Field Comments								Dry			
Lab Parameters	UNITS										
Bicarbonate	mg/L	66	225	456						156	104
Chloride	mg/L	<MDL	21.09	223.41						4.8	4.6
Conductivity	umhos/cm	149	593	1560						306	221
Hardness	mg/L	35.6	253.6	625.7						130	95.6
Nitrate-Nitrite	mg/L	<MDL	0.34	0.88						<MDL	<MDL
Oil and Grease	mg/L	<MDL	<MDL	<MDL						<MDL	<MDL
pH	su	6.8	8.1	8.7						8.23	8.18
Phosphate	mg/L	<MDL	0.17	0.47						0.045	
ResidueFilterable-TDS	mg/L	106	395	1130						205	167
ResidueNonFilterable-TSS	mg/L	<MDL	34	438						<MDL	8.9
SAR		0.23	1.05	2.06						0.785	0.631
Sulfate	mg/L	<MDL	100.5	450.0						21.5	
Aluminum (TREC)	mg/L	0.022	0.280	0.530						0.294	
Arsenic (TREC)	mg/L	0.001	0.020	0.040						<MDL	
Cadmium (TREC)	mg/L	0.002	0.007	0.010						<MDL	
Calcium (TREC)	mg/L	8.81	51.86	103.00						35.5	
Copper (TREC)	mg/L	0.002	0.008	0.020						<MDL	
Iron (TREC)	mg/L	0.03	0.38	1.46						0.337	1.46
Lead (TREC)	mg/L	0.00	0.02	0.04						<MDL	
Magnesium (TREC)	mg/L	7.10	28.26	61.20						11.5	
Manganese (TREC)	mg/L	0.01	0.55	7.30						7.3	0.0366
Mercury (TREC)	mg/L	0.00002	0.00011	0.00027						<MDL	
Molybdenum (TREC)	mg/L	0.002	0.006	0.015						<MDL	
Selenium (TREC)	mg/L	<MDL	0.007	0.018						<MDL	
Sodium (TREC)	mg/L	9.60	34.97	64.00						19.8	
Zinc (TREC)	mg/L	0.005	0.009	0.020						<MDL	

The area of concern for monitoring point SW-05 has not been affected by the mining operation. Therefore, all recorded monitoring events are considered Baseline.

The Stevens Gulch stream gauge, SW-05, is located near Bowie No. 1 mine's timber storage area in the NE1/4NW1/4, Sec 25, T13S, R92W, of the 6th P.M. A 36" Parshall flume was installed at this locations.

Plot of Flow and Conductivity



SW-05 Stevens Gulch Drainage

Figure 89

SW-10
Terror Ditch
Elevation - 6480

Initiated	7/1/1983	7/1/1983	7/1/1983
Activated			
Date	11/8/2016	9/12/2016	6/28/2016

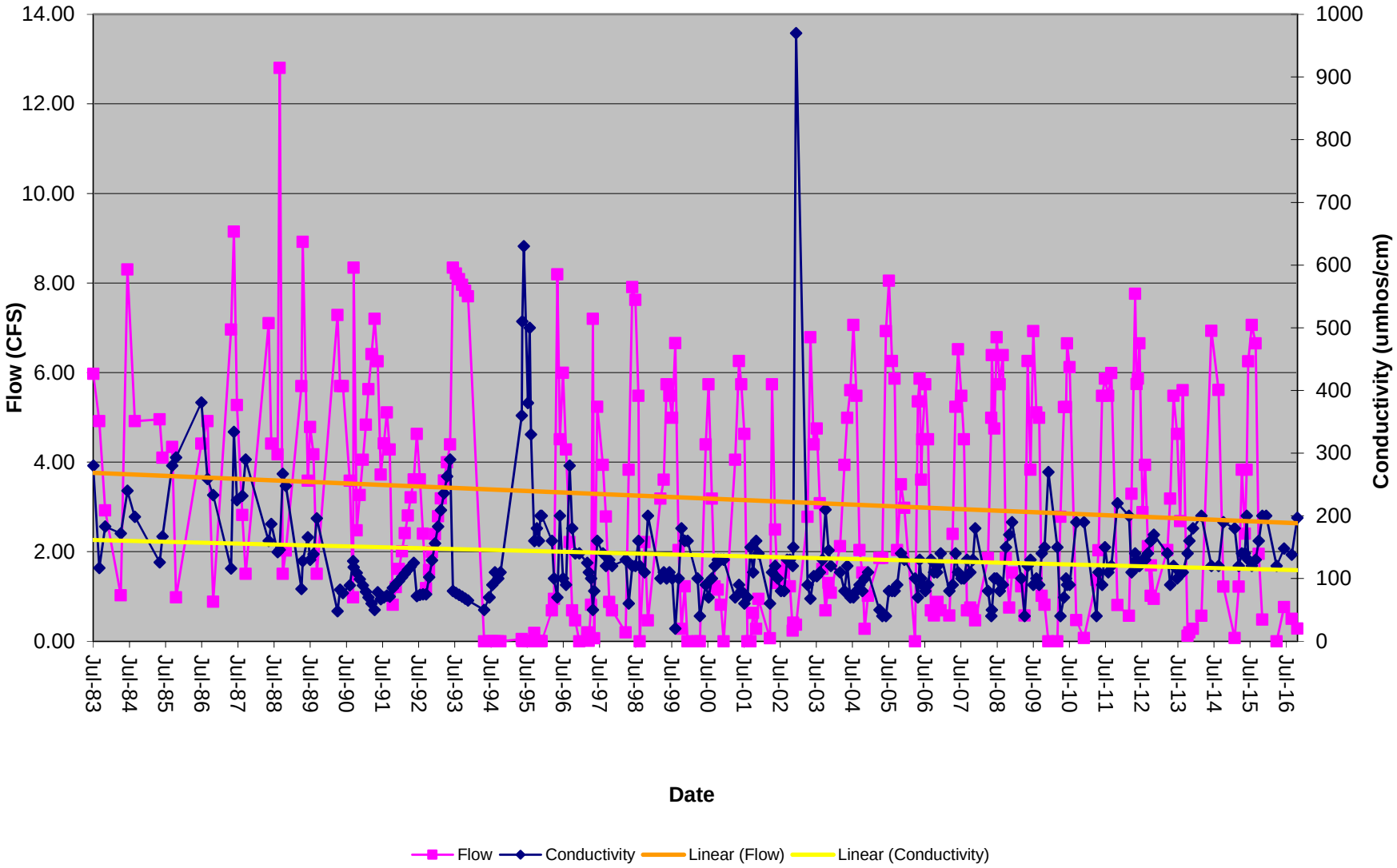
Field Parameters	UNITS	Summary Information Baseline Min	Ave	Max	Operation Min	Ave	Max			
Flow	CFS	0.00	3.18	12.80				0.28	0.50	0.76
Water Level in Flume	Feet	0.00	0.43	0.87				***	***	***
Temperature	Celsius	0.1	9.2	21.3				2.6	13	13.2
Conductivity	umhos/cm	20	138	970				196.8	138	147.8
pH	su	5.6	8.2	9.2				8.93	8.51	8.46
Field Comments								changed chart	changed chart	changed chart
Lab Parameters	**UNITS**									
Bicarbonate	mg/L	25.3	81.5	188.0				102		78.5
Chloride	mg/L	<MDL	19.4	186.1				1.2		0.74
Conductivity	umhos/cm	53	177	756				164		121
Hardness	mg/L	32	67	141						61.8
Nitrate-Nitrite	mg/L	<MDL	0.18	0.54				<MDL		<MDL
Oil and Grease	mg/L	<MDL	<MDL	<MDL				<MDL		<MDL
pH	su	6.9	7.7	8.5				8.06		8.2
Phosphate	mg/L	<MDL	<MDL	<MDL				<MDL		0.029
ResidueFilterable-TDS	mg/L	50	133	610				113		106
ResidueNonFilterable-TSS	mg/L	<MDL	24.5	136.0				<MDL		11.5
SAR		0.11	0.66	6.43						0.419
Sulfate	mg/L	<MDL	12.03	68.50				4.2		4.6
Aluminum (TREC)	mg/L	<MDL	22.480	154.000				<MDL		0.949
Arsenic (TREC)	mg/L	<MDL	0.013	0.030				<MDL		<MDL
Cadmium (TREC)	mg/L	<MDL	0.010	0.022				<MDL		<MDL
Copper (TREC)	mg/L	<MDL	0.006	0.010				<MDL		<MDL
Calcium (TREC)	mg/L	6.07	17.18	22.00				19.5		15.8
Iron (TREC)	mg/L	0.014	0.401	1.730				0.143		0.921
Lead (TREC)	mg/L	0.002	0.017	0.060				<MDL		<MDL
Magnesium (TREC)	mg/L	4.35	9.20	21.00				6.78		5.42
Manganese (TREC)	mg/L	0.010	0.022	0.072				0.0158		0.028
Mercury (TREC)	mg/L	<MDL	0.00007	0.00020				<MDL		<MDL
Molybdenum (TREC)	mg/L	<MDL	0.0022	0.0060				<MDL		<MDL
Selenium (TREC)	mg/L	<MDL	0.005	0.018				<MDL		<MDL
Sodium (TREC)	mg/L	4.50	22.58	144.00				9.68		7.13
Zinc (TREC)	mg/L	<MDL	0.014	0.050				<MDL		<MDL

The area of concern for monitoring point SW-10 has not been affected by the mining operation. Therefore, all recorded monitoring events are considered Baseline.

A stilling well and recorder were installed on a 30" Parshall flume on the Terror Ditch. This stream gauge is located in the NE1/4NE1/4, Sec 17, T

**** No data in the field notes*

Plot of Flow and Conductivity



SW-10 - Terror Ditch

Figure 91

SW-11
Stevens Gulch - Upstream
Elevation - 8084

Initiated	6/6/2010	6/6/2010	6/6/2010
Activated			
Date	10/5/2017	9/15/2017	4/4/2017

Summary Information

Field Parameters	UNITS	Baseline Min	Baseline Ave	Baseline Max	Operation Min	Operation Ave	Operation Max			
Flow	CFS	0	0.1	3.8						0.026
Water Level in Flume	Feet	0	0.0	0.0						
Temperature	Celsius									2.9
Conductivity	umhos/cm									129.7
pH	su									7.5
Field Comments								Dry	Dry	
Lab Parameters	**UNITS**									
Bicarbonate	mg/L	55.9	55.9	55.9						55.9
Carbonate	mg/L	0.0	0.0	0.0						
Chloride	mg/L	<MDL	3.0	3.0						3
Conductivity	umhos/cm	98.7	99	99						98.7
Hardness	mg/L	43.60	43.60	43.60						43.6
Acidity	mg/L	-38	-38.00	-38.00						-38.0
Nitrate-Nitrite	mg/L	<MDL	0.00	0.00						<MDL
Oil and Grease	mg/L	<MDL	<MDL	<MDL						<MDL
pH	su	7.2	7.2	7.2						7.16
Phosphate	mg/L	<MDL	0.13	0.13						0.13
ResidueFilterable-TDS	mg/L	120	120	120						120
ResidueNonFilterable-TSS	mg/L	<MDL	19	19						19.2
SAR		0.40	0.40	0.40						0.4
Aluminum (TREC)	mg/L	0.549	0.549	0.549						0.549
Arsenic (TREC)	mg/L	<MDL	<MDL	0.000						<MDL
Cadmium (TREC)	mg/L	<MDL	<MDL	0.00						<MDL
Calcium (TREC)	mg/L	12.6	12.60	12.60						12.6
Calcium (Dissolved)	mg/L	0	0.00	0.00						
Copper (TREC)	mg/L	<MDL	<MDL	0.00						<MDL
Iron (Dissolved)	mg/L	0.24	0.24	0.24						0.239
Iron (TREC)	mg/L	0.42	0.42	0.42						0.416
Lead (TREC)	mg/L	<MDL	<MDL	0.00						<MDL
Magnesium (TREC)	mg/L	2.94	2.94	2.94						2.94
Manganese (TREC)	mg/L	0.03	0.03	0.03						0.0339
Mercury (TREC)	mg/L	<MDL	<MDL	0						<MDL
Molybdenum (TREC)	mg/L	<MDL	<MDL	0.000						<MDL
Selenium (TREC)	mg/L	<MDL	<MDL	0.000						<MDL
Sodium (TREC)	mg/L	5.94	5.94	5.94						5.94
Sodium (Dissolved)	mg/L	0	0.00	0.00						
Zinc (TREC)	mg/L	<MDL	<MDL	0.00						<MDL

SW-12
West Fork Terror Creek - Upstream
Elevation - 7920

								Initiated	5/16/1983	5/16/1983	5/16/1983
								Activated			
								Date	10/5/2017	8/31/2017	4/25/2017
		Summary Information									
Field		Baseline			Operation						
Parameters	UNITS	Min	Ave	Max	Min	Ave	Max				
Flow	CFS	0.35	4.54	52.00					1.39	0.35	
Water Level in Flume	Feet	0.190	0.619	2.000					0.5	0.2	
Temperature	Celsius	0.1	6.5	14.9					4.9	10.6	2.7
Conductivity	umhos/cm	80	120	180					126.8	123	80.5
pH	su	7.7	8.2	8.9					8.0	8.1	8.0
Field Comments											High flow
Lab											over small weir
Parameters	UNITS										
Bicarbonate	mg/L	40.3	64.2	83.4							40.3
Chloride	mg/L	<MDL	0.65	0.90							<MDL
Conductivity	umhos/cm	61.5	89.8	110.0							61.5
Hardness	mg/L	33.5	49.2	61.9							33.5
Acidity	mg/L	-64.0	-49.5	-23.0							-23
Nitrate-Nitrite	mg/L	<MDL	<MDL	<MDL							<MDL
Oil and Grease	mg/L	<MDL	<MDL	<MDL							<MDL
Phosphate	mg/L	<MDL	0.04	0.12							0.021
ResidueFilterable-TDS	mg/L	72	88	108							89.0
ResidueNonFilterable-TSS	mg/L	<MDL	19.3	37.0							<MDL
SAR		0.174	0.252	0.342							0.241
Sulfate	mg/L	1.7	2.5	3.1							1.7
Aluminum (TREC)	mg/L	0.104	0.532	1.710							1.71
Arsenic (TREC)	mg/L	<MDL	<MDL	<MDL							<MDL
Cadmium (TREC)	mg/L	<MDL	<MDL	<MDL							<MDL
Calcium (TREC)	mg/L	11.9	796.3	8630.0							8630
Calcium (Dissolved)	mg/L	11.2	13.3	14.6							
Copper (TREC)	mg/L	<MDL	<MDL	<MDL							<MDL
Iron (Dissolved)	mg/L	0.0300	3.7553	#####							0.413
Iron (TREC)	mg/L	0.112	0.520	1.370							1.37
Lead (TREC)	mg/L	<MDL	<MDL	<MDL							<MDL
Magnesium (TREC)	mg/L	2.89	4.32	5.58							2.89
Magnesium (Dissolved)	mg/L	3.38	4.53	5.21							
Manganese (TREC)	mg/L	0.0067	0.0133	0.03							0.0167
Mercury (TREC)	mg/L	<MDL	<MDL	<MDL							<MDL
Molybdenum (TREC)	mg/L	<MDL	<MDL	<MDL							<MDL
Selenium (TREC)	mg/L	<MDL	<MDL	<MDL							<MDL
Sodium (TREC)	mg/L	3.10	4.26	6.72							3.83
Sodium (Dissolved)	mg/L	2.69	4.25	5.97							
Zinc (TREC)	mg/L	<MDL	<MDL	<MDL							<MDL

The area of concern for monitoring point SW-12 has not been affected by the mining operation. Therefore, all recorded monitoring events are considered Baseline.

Negative acidity value indicates equivalent value of alkalinity

Bowie Resources, LLC
Bowie No. 2 Mine
2017 Annual Hydrology Report

Ground Water

DH-15a
Stevens Draw - Drill Hole
Pipe Elevation - 7143.3
Pipe 1.8' above ground
Depth - 215'

Initiated	6/12/1995	6/12/1995	6/12/1995	6/12/1995
Activated				
Date	10/23/2017	7/12/2017	4/24/2017	3/23/2017

Field Parameters	UNITS	Summary Information Baseline Min	Baseline Ave	Baseline Max	Operation Min	Operation Ave	Operation Max				
Static Water Level	Feet				187.50	191.55	193.80	193.8	193.1	192.5	191.8
Water Elevation	Feet				6949.50	6951.75	6955.80	6949.5	6950.2	6950.8	6951.5
FieldComment											
ph	su				7.54	7.70	8.00	7.5	7.6	7.7	7.7
Conductivity	umhos/cm				2880.00	3466.67	3920.00	3920	3800	3610	3560
Temperature	Celsius				7.77	12.28	14.20	12.4	7.8	13.1	12.7
Lab Parameters	**UNITS**										
Bicarbonate	mg/L				1250.00	1333.33	1380.00	1250		1370	
Carbonate	mg/L				<MDL	<MDL	0.00	<MDL		<MDL	
Chloride	mg/L				34.20	35.20	36.80	36.8		34.6	
Conductivity	umhos/cm				2740.00	3236.67	3650.00	3650		3320	
Hardness	mg/L				323.00	519.67	688.00	688		548	
Nitrate-Nitrite	mg/L				<MDL	<MDL	0.00	<MDL		<MDL	
Ammonia	mg/L				0.29	0.62	0.86	0.86		0.72	
pH	su				7.53	7.68	7.79	7.8		7.5	
Phosphate	mg/L				0.04	0.09	0.13	0.098		0.13	
ResidueFilterable-TDS	mg/L				1980.00	2433.33	2840.00	2840		2480	
Sulfate	mg/L				556.00	869.00	1160.00	1160		891	
Arsenic (Dissolved)	mg/L				<MDL	<MDL	0.03	0.0333		<MDL	
Cadmium (Dissolved)	mg/L				<MDL	<MDL	0.00	<MDL		<MDL	
Calcium (Dissolved)	mg/L				50.20	87.37	120.00	120.0		91.9	
Iron (Dissolved)	mg/L				<MDL	<MDL	0.12	0.119		0.0813	
Iron (TREC)	mg/L				0.39	18.32	53.90	0.68		0.39	
Magnesium (Dissolved)	mg/L				43.10	71.53	94.20	94.2		77.3	
Manganese (Dissolved)	mg/L				0.10	0.13	0.17	0.169		0.131	
Manganese (TREC)	mg/L				0.13	0.15	0.18	0.181		0.139	
Mercury (Dissolved)	mg/L				<MDL	<MDL	0.00	<MDL		<MDL	
Selenium (Dissolved)	mg/L				<MDL	<MDL	0.00	<MDL		<MDL	
Sodium (Dissolved)	mg/L				547.00	674.67	771.00	706		771	
Zinc (Dissolved)	mg/L				<MDL	<MDL	0.00	<MDL		<MDL	

DH-15a is a replacment well for DH-15. All data is considered operational.

Drill Hole 15a is located on the western edge of the Stevens Draw road.

Baseline Information Collection initiated on 6/12/95 and not yet considered complete.
Point DH-15 has not been influenced by mining.

Bowie Resources, LLC
Bowie No. 2 Mine
2017 Annual Hydrology Report

Ground Water

DH-39
Stevens Draw - Drill Hole
Pipe Elevation - 7142.65
Pipe 1.2' above ground
Depth - 181'

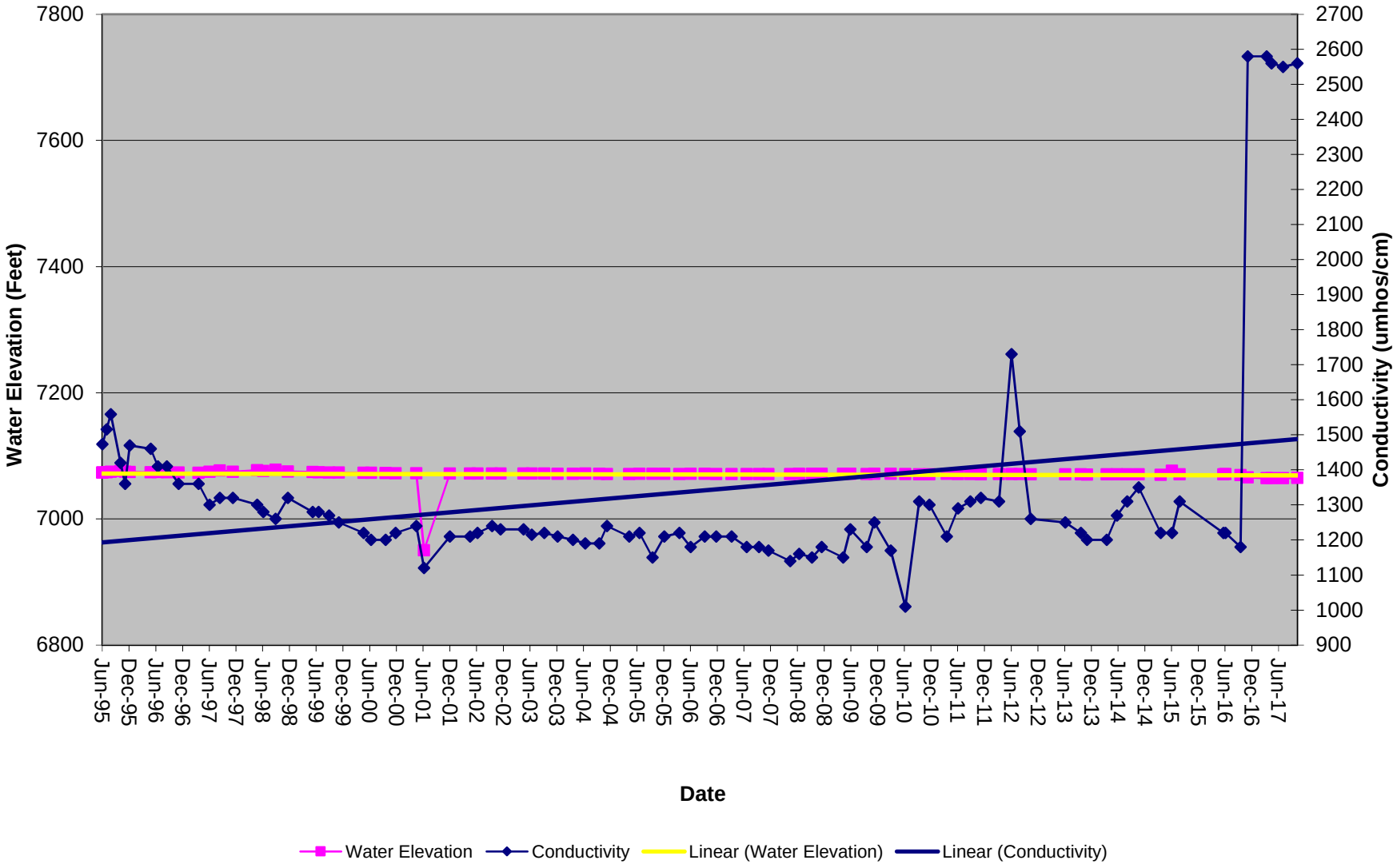
Initiated								6/12/1995	6/12/1995	6/12/1995	6/12/1995
Activated											
Date								10/18/2017	7/12/2017	4/24/2017	3/23/2017
		Summary Information									
Field		Baseline			Operation						
Parameters	UNITS	Min	Ave	Max	Min	Ave	Max				
Static Water Level	Feet	64.55	72.20	192.55				77.5	77.9	78	77.9
Water Elevation	Feet	6950.1	7070.5	7078.1				7065.15	7064.75	7064.65	7064.75
FieldComment											
ph	su	6.8	7.3	7.9				7.83	7.77	7.74	7.76
Conductivity	umhos/cm	1010	1332	2580				2560	2550	2560	2580
Temperature	Celsius	8.1	10.4	14.3				9.5	12.9	10.3	10.9
Lab											
Parameters	UNITS										
Bicarbonate	mg/L	384.69	541.30	786.00				762		753	
Carbonate	mg/L	<MDL	0.77	10.83				<MDL		<MDL	
Chloride	mg/L	1.36	16.98	47.14				26.4		25.7	
Conductivity	umhos/cm	1025	1422	3340				2300		2280	
Hardness	mg/L	<MDL	425.79	771.50				449		475	
Nitrate-Nitrite	mg/L	<MDL	0.76	7.06				<MDL		<MDL	
Ammonia	mg/L	<MDL	0.29	1.00				0.89		0.67	
pH	su	7.0	7.5	8.5				7.78		7.58	
Phosphate	mg/L	<MDL	0.02	0.09				0.091		<MDL	
ResidueFilterable-TDS	mg/L	443	954	2655				1720		1720	
Sulfate	mg/L	101.25	214.76	746.00				736		742	
Arsenic (Dissolved)	mg/L	<MDL	0.0108	0.1730				0.027		<MDL	
Cadmium (Dissolved)	mg/L	<MDL	0.007	0.035				<MDL		<MDL	
Calcium (Dissolved)	mg/L	6.5	82.0	136.8				95.6		99.9	
Iron (Dissolved)	mg/L	<MDL	0.70	13.00				0.0208		0.0104	
Iron (TREC)	mg/L	0.01	11.62	43.70				0.094		0.0347	
Magnesium (Dissolved)	mg/L	<MDL	60.2	146.0				51.1		54.8	
Manganese (Dissolved)	mg/L	<MDL	1.502	60.100				0.369		0.257	
Manganese (TREC)	mg/L	0.026	0.430	2.470				0.372		0.259	
Mercury (Dissolved)	mg/L	<MDL	0.000264	0.00550				<MDL		<MDL	
Selenium (Dissolved)	mg/L	<MDL	0.006	0.021				<MDL		<MDL	
Sodium (Dissolved)	mg/L	95.8	182.1	460.0				439		460	
Zinc (Dissolved)	mg/L	<MDL	0.01	0.10				<MDL		<MDL	

The area of concern for monitoring point DH-39 has not been affected by the mining operation. Therefore, all recorded monitoring events are considered Baseline.

Drill Hole 39 is located in Stevens Draw right next to Drill Hole 15. It is accessed by the Stevens Draw road.

Baseline Information Collection initiated on 6/12/95 and not yet considered complete.
Point DH-39 has not been influenced by mining.

Plot of Conductivity and Water Level



DH-39 - Stevens Draw Drill Hole

Figure 96

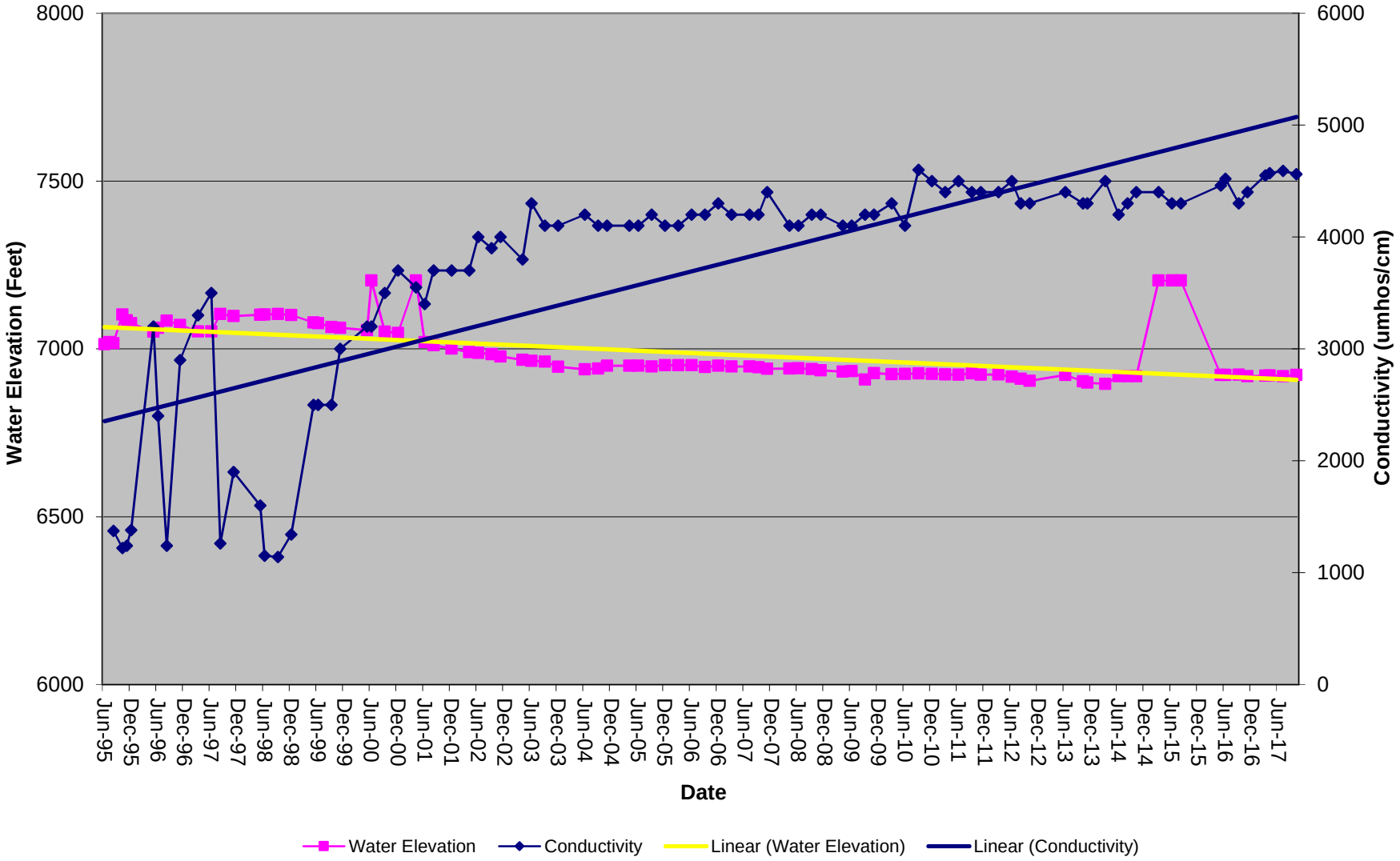
DH-49
B Gulch - Drill Hole
Pipe Elevation - 7203.4
Pipe 0.7' above ground
Depth - 324'

Initiated								6/12/1995	6/12/1995	6/12/1995	6/12/1995
Activated								3/30/1997	3/30/1997	3/30/1997	3/30/1997
Date								10/18/2017	7/12/2017	4/24/2017	3/23/2017
		Summary Information									
Field		Baseline			Operation						
Parameters	UNITS	Min	Ave	Max	Min	Ave	Max				
Static Water Level	Feet	100.84	145.8	189.79	99.57	239.2853	311.46	281.1	284.6	282.7	283.5
Water Elevation	Feet	7013.6	7057.6	7102.6	6891.9	6964.1	7103.8	6922.3	6918.8	6920.7	6919.9
FieldComment											
ph	su	7.1	7.3	7.5	6.9	7.4	8.2	7.61	7.61	7.56	7.55
Conductivity	umhos/cm	1220	2028	3300	1140	3882	4600	4560	4590	4570	4550
Temperature	Celsius	10	11.9	13.5	10.8	13.5	16.5	13.5	15.2	14.1	15.1
Lab											
Parameters	UNITS										
Bicarbonate	mg/L	496	834	1090	313.4	1396.754	2120	2120		1560	
Carbonate	mg/L	<MDL	<MDL	<MDL	<MDL	9.66	79.46	<MDL		<MDL	
Chloride	mg/L	14	15	16	<MDL	41.1	344.61	18.8		18.5	
Conductivity	umhos/cm	1250	2023	2470	1160	3601.065	5920	4350		4140	
Hardness	mg/L	34	300	491	<MDL	191	463			193	
Nitrate-Nitrite	mg/L	0.63	1.0	1.43	0.028	4.26	8.9	8.1		8.8	
Ammonia	mg/L	0.14	1.9	3.8	<MDL	1.23	5	<MDL		<MDL	
pH	su	7.1	7.4	7.7	7.2	7.7	8.7	7.9		7.45	
Phosphate	mg/L	<MDL	<MDL	<MDL	<MDL	0.11	0.72	0.12		0.067	
ResidueFilterable (TDS)	mg/L	790	1347	1790	700	2608	3411	3240		3240	
Sulfate	mg/L	216	362	470	180	625.81	828	777		813	
Arsenic (Dissolved)	mg/L	<MDL	0.001	0.002	<MDL	0.047	0.560	<MDL		<MDL	
Cadmium (Dissolved)	mg/L	<MDL	<MDL	<MDL	<MDL	0.011	0.040	<MDL		<MDL	
Calcium (Dissolved)	mg/L	11	62	100	0.55	34.5	98.4	29.6		33.3	
Iron (Dissolved)	mg/L	0.05	0.4	1.1	<MDL	0.144	1.12	0.0166		0.0415	
Iron (TREC)	mg/L	0.2	12.4	29.4	0.0186	3.53	17.8	2.05		0.416	
Magnesium (Dissolved)	mg/L	1.6	35.1	58.6	18.7	31.6	71.5	23.9		26.7	
Manganese (Dissolved)	mg/L	<MDL	0.038	0.105	<MDL	0.066	0.35	<MDL		0.0065	
Manganese (TREC)	mg/L	0.007	0.19	0.308	<MDL	0.63	7.32	0.121		0.0369	
Mercury (Dissolved)	mg/L	<MDL	<MDL	<MDL	<MDL	0.00008	0.00050	<MDL		<MDL	
Selenium (Dissolved)	mg/L	<MDL	0.003	0.007	<MDL	0.037385	0.283	<MDL		<MDL	
Sodium (Dissolved)	mg/L	5.2	230.7	556	109	892	2070	1140		1090	
Zinc (Dissolved)	mg/L	<MDL	0.003	0.01	<MDL	0.017	0.04	0.0338		0.0331	

Drill Hole 49 is located just above Stevens Draw road approximately 1000 feet southwest of the mine portals. It is accessed by the Stevens Draw road.

Baseline Information for Point DH-49 is derived from events beginning on 6/12/95 through 3/30/97.
Point influenced by mining on 3/30/97.

Plot of Conductivity and Water Level



DH-49 - B Gulch Drill Hole

Figure 98

DH-67B
Hubbard Creek - B Seam Monitoring Well
Elevation - 6451
Depth - 594'

								Initiated	6/29/2004	6/29/2004	6/29/2004	6/29/2004
								Activated				
								Date	10/24/2017	7/14/2017	5/6/2017	3/16/2017
		Summary Information										
Field		Baseline			Operation							
Parameters	UNITS	Min	Ave	Max	Min	Ave	Max					
Static Water Level	Feet	146.9	266.0	498.4					256.9	256.9	256.9	256.9
Water Elevation	Feet	5952.6	6189.0	6451.0					6194.1	6194.1	6194.1	6194.1
FieldComment									Note 2	Note 2	Note 2	Note 2
ph	su	6.5	7.7	8.8								
Conductivity	umhos/cm	2570	6128.4	7500								
Temperature	Celsius	13.4	18.8	26.5								
Lab Parameters	UNITS											
Bicarbonate	mg/L	1486.3	2945.6	3838.0								
Carbonate	mg/L	<MDL	131.67	725.4								
Chloride	mg/L	3.92	326.63	489								
Conductivity	umhos/cm	497	5323	7810								
Hardness	mg/L	3.59	44.43	198								
Nitrate-Nitrite	mg/L	<MDL	1.80	7.4								
Ammonia	mg/L	0.102	4.12	9.48								
pH	su	7.35	8.05	9.37								
Phosphate	mg/L	<MDL	0.64	5.96								
ResidueFilterable-TDS	mg/L	2186	3996.7	8131								
Sulfate	mg/L	<MDL	17.53	91.58								
Arsenic (Dissolved)	mg/L	<MDL	0.119	0.545								
Cadmium (Dissolved)	mg/L	<MDL	0.029	0.07								
Calcium (Dissolved)	mg/L	0.24	9.46	53.7								
Iron (Dissolved)	mg/L	0.01	0.25	0.903								
Iron (TREC)	mg/L	0.011	2.92	31.8								
Magnesium (Dissolved)	mg/L	0.73	5.06	29.9								
Manganese (Dissolved)	mg/L	<MDL	0.024	0.102								
Manganese (TREC)	mg/L	0.01	0.109	1.129								
Mercury (Dissolved)	mg/L	<MDL	0.00009	0.00044								
Selenium (Dissolved)	mg/L	0.003	0.152	1.595								
Sodium (Dissolved)	mg/L	3.885	1384	2291.2								
Zinc (Dissolved)	mg/L	<MDL	0.06	0.4								

The area of concern for monitoring point DH-67B has not been affected by the mining operation. Therefore, all recorded monitoring events are considered Baseline.

Note 2: Special bailer for this well broke, could not get sample.

Baseline Information Collection initiated on 6/29/04 and not yet considered complete.
Point DH-67B has not been influenced by mining.

Bowie Resources, LLC
Bowie No. 2 Mine
2017 Annual Hydrology Report

Ground Water

DH-67D (Reb)
Hubbard Creek - D - Seam Monitoring Well
Elevation - 6450'
Depth - 324.8'

Initiated								11/30/2000	11/30/2000	11/30/2000	11/30/2000
Activated											
Date								12/20/2017	7/14/2017	5/9/2017	3/16/2017
		Summary Information									
Field		Baseline			Operation						
Parameters	UNITS	Min	Ave	Max	Min	Ave	Max				
Static Water Level	Feet	123.4	217.759	253.85				244.6	243.2	243.1	243.8
Water Elevation	Feet	6196.2	6232.2	6326.6				6205.4	6206.8	6206.9	6206.2
FieldComment											
ph	su	7.9	9.4	10.6				9.46	9.45	9.39	9.6
Conductivity	umhos/cm	6.68	6309	7200				6.68	6700	6770	6610
Temperature	Celsius	11.2	16.2	19.2				16.1	17.4	19.2	16.4
Lab											
Parameters	UNITS										
Bicarbonate	mg/L	<MDL	2694.57	3930				2830		<MDL	
Carbonate	mg/L	<MDL	362.045	1160				541		<MDL	
Chloride	mg/L	6.76	392.347	610				421		421	
Conductivity	umhos/cm	2908	5769.08	13132				6130		5290	
Hardness	mg/L	<MDL	18.79	51.55				7.2		8.2	
Nitrate-Nitrite	mg/L	<MDL	5.449	60.03				<MDL		<MDL	
Ammonia	mg/L	0.188	5.046	30.5				4.7		3.4	
pH	su	7.61	8.94	9.63				9.23		9.22	
Phosphate	mg/L	<MDL	2.564	48.2				0.31		0.3	
ResidueFilterable-TDS	mg/L	1886	3979	5188				4420		4280	
Sulfate	mg/L	<MDL	32.30	300				15.9		17.4	
Arsenic (Dissolved)	mg/L	<MDL	0.1735	0.915				<MDL		<MDL	
Cadmium (Dissolved)	mg/L	<MDL	0.779	16.6				<MDL		16.6	
Calcium (Dissolved)	mg/L	<MDL	4.65	36.7				1.61		2.13	
Iron (Dissolved)	mg/L	0.01	0.21	3.13				0.0806		0.103	
Iron (TREC)	mg/L	0.0251	3.74	99.3				0.221		0.247	
Magnesium (Dissolved)	mg/L	<MDL	2.45	10.2				0.777		0.703	
Manganese (Dissolved)	mg/L	<MDL	0.038	0.417				0.0063		0.0086	
Manganese (TREC)	mg/L	<MDL	0.956	22.7				0.0091		0.0172	
Mercury (Dissolved)	mg/L	<MDL	0.00009	0.00042				<MDL		<MDL	
Selenium (Dissolved)	mg/L	<MDL	0.15096	1.064				<MDL		<MDL	
Sodium (Dissolved)	mg/L	784	1603.96	3576.25				1660		1780	
Zinc (Dissolved)	mg/L	0.006	0.043	0.206				<MDL		<MDL	

The area of concern for monitoring point DH-67D has not been affected by the mining operation. Therefore, all recorded monitoring events are considered Baseline.

Baseline Information Collection initiated on 11/30/00 and not yet considered complete.
Point DH-67D has not been influenced by mining.

DH-67abv
Hubbard Creek - Monitoring Well
Elevation - 6450.5
Depth - 193'

Initiated								6/26/2005	6/26/2005	6/26/2005	6/26/2005
Activated											
Date								10/24/2017	7/14/2017	5/6/2017	3/16/2017
		Summary Information									
Field		Baseline			Operation						
Parameters	UNITS	Min	Ave	Max	Min	Ave	Max				
Static Water Level	Feet	29.5	44.6	59.7				41.9	41.8	40.65	41
Water Elevation	Feet	6391	6406.0	6421.0				6409.1	6409.2	6410.35	6410
FieldComment											
ph	su	7.1	7.6	8.1				8.14	8.07	8.06	8.12
Conductivity	umhos/cm	2000	2705	3700				2350	2330	2310	2350
Temperature	Celsius	5.6	10.3	12.3				9.3	11.9	11.9	10.2
Lab											
Parameters	UNITS										
Bicarbonate	mg/L	1.44	2076.52	#######				1.44			1470
Carbonate	mg/L	<MDL	58.2	138.5				<MDL			<MDL
Chloride	mg/L	<MDL	94.8	407.0				36.9			37.1
Conductivity	umhos/cm	1370	2896	5850				2160			1790
Hardness	mg/L	8.54	47.04	145.95				37.6			41
Nitrate-Nitrite	mg/L	<MDL	3.2	32.3				<MDL			<MDL
Ammonia	mg/L	<MDL	0.9	2.5				0.58			0.75
pH	su	7.1	7.9	9.1				8.28			7.82
Phosphate	mg/L	<MDL	0.4	1.8				0.28			0.31
ResidueFilterable-TDS	mg/L	794	1950	3900				1440			1400
Sulfate	mg/L	<MDL	22.11	288.00				28.5			28.5
Arsenic (Dissolved)	mg/L	<MDL	0.055	0.415				<MDL			<MDL
Cadmium (Dissolved)	mg/L	<MDL	0.02	0.07				<MDL			0.0116
Calcium (Dissolved)	mg/L	<MDL	21.5	115.0				104			115
Iron (Dissolved)	mg/L	<MDL	0.11	0.80				0.0592			0.0846
Iron (TREC)	mg/L	0.01	0.56	1.82				0.467			0.645
Magnesium (Dissolved)	mg/L	<MDL	4.7	18.1				2.82			2.99
Manganese (Dissolved)	mg/L	<MDL	3.236	86.700				0.0514			0.0531
Manganese (TREC)	mg/L	0.006	0.036	0.132				0.0595			0.074
Mercury (Dissolved)	mg/L	<MDL	0.00008	0.00036				<MDL			<MDL
Selenium (Dissolved)	mg/L	<MDL	0.030	0.149				<MDL			<MDL
Sodium (Dissolved)	mg/L	218	862	2093				535			532
Zinc (Dissolved)	mg/L	<MDL	0.022	0.067				<MDL			<MDL

The area of concern for monitoring point DH-67abv has not been affected by the mining operation. Therefore, all recorded monitoring events are considered Baseline.

Baseline Information Collection initiated on 10/12/00 and not yet considered complete.
Point DH-67abv has not been influenced by mining.

Bowie Resources, LLC
Bowie No. 2 Mine
2017 Baseline

Ground Water

DH-67blw
Hubbard Creek - Monitoring Well
Elevation - 6466
Depth - 357'
Replacement Well 9/26/14

					9/26/2014	9/26/2014	9/26/2014	9/26/2014
					10/24/2017	7/14/2017	5/6/2017	3/16/2017
		Summary Information						
Field Parameters	UNITS	Baseline Min	Ave	Max				
Static Water Level	Feet	244	263.817	318.55	251.9	252.2	252.1	252.6
Water Elevation	Feet	6147.5	6202.2	6222.0	6214.1	6213.8	6213.9	6213.4
FieldComment								
ph	su	7.9	8.4	8.5	8.41	8.38	8.34	8.48
Conductivity	umhos/cm	6.79	5699	6800	6.79	6700	6800	6720
Temperature	Celsius	16.1	17.8143	21.1	16.1	17.6	19.1	17.4
Lab Parameters	UNITS							
Bicarbonate	mg/L	1460	3435.71	4150	4050		4150	
Carbonate	mg/L	<MDL	<MDL	<MDL	<MDL		<MDL	
Chloride	mg/L	0.414	263	409	0.414		403	
Conductivity	umhos/cm	2020	4972.5	6470	6470		5340	
Hardness	mg/L	20.4	37.5286	55.1			30.5	
Nitrate-Nitrite	mg/L	<MDL	<MDL	<MDL	<MDL		<MDL	
Ammonia	mg/L	0.39	2.0	7.1	1.2		1	
pH	su	7.92	8.29625	9.35	8.38		8.19	
Phosphate	mg/L	0.12	0.19	0.36	0.16		0.13	
Residue Filterable-TDS	mg/L	1380	3618.75	4840	4840		4390	
Sulfate	mg/L	<MDL	20.4667	26.9	<MDL		<MDL	
Arsenic	mg/L	<MDL	<MDL	<MDL	<MDL		<MDL	
Cadmium	mg/L	<MDL	<MDL	<MDL	<MDL		0.0201	
Calcium	mg/L	6.79	9.99	15.60	6.82		8.11	
Iron (Dissolved)	mg/L	0.0358	0.07811	0.103	0.0912		0.103	
Iron (Total)	mg/L	0.104	0.832	1.37	0.928		0.623	
Magnesium	mg/L	0.825	2.74688	3.920	2.53		2.49	
Manganese (Dissolved)	mg/L	0.0115	0.03764	0.0899	0.0115		0.0119	
Manganese (Total)	mg/L	0.0014	84.2915	#######	0.00139		0.0217	
Mercury	mg/L	<MDL	<MDL	<MDL	<MDL		<MDL	
Selenium	mg/L	<MDL	<MDL	<MDL	<MDL		<MDL	
Sodium (Dissolved)	mg/L	514	1484.25	1770	1740		1730	
Zinc	mg/L	<MDL	0.0826	0.0826	<MDL		<MDL	

The area of concern for monitoring point DH-67blw has not been affected by the mining oper
monitoring events are considered Baseline.

Replacement well constructed September 2014

Baseline Information collection re-initiated on 9/26/2014 and not yet considered complete.
Point DH-67blw has not been influenced by mining.

Bowie Resources, LLC
Bowie No. 2 Mine
2017 Baseline

Ground Water

CWI-DH-58A
Upper B Seam
Elevation -7442.2
Depth - 575'

		Summary Information Baseline			3/17/2015	3/17/2015	3/17/2015	3/17/2015
Field Parameters	UNITS	Min	Ave	Max	10/18/2017	9/14/2017	6/26/2017	4/13/2017
Static Water Level	Feet	512.6	532.7	536.1	534.7	534.1	536.1	534.1
Water Elevation	Feet	6906.1	6909.5	6929.6	6907.5	6908.1	6906.1	6908.1
FieldComment					7.7			
ph	su	7.7	8.9	17.7	7.7	7.73	7.74	7.86
Conductivity	umhos/cm	1050	1437	1836	1836	1801	1778	1746
Temperature	Celsius	17.9	20.1	26.2	20.1	20	21.9	26.2
Lab Parameters	UNITS							
Bicarbonate	mg/L	635	855	1180	1180		1070	1100
Carbonate	mg/L	<MDL	20.0	29.9	<MDL		<MDL	<MDL
Chloride	mg/L	16.4	19.4	22.7	21.1		21.8	22.7
Conductivity	umhos/cm	866	1229	1650	1650		1470	1580
Hardness	mg/L	8.2	25.5	65.7	32.0		30.8	30.3
Nitrate-Nitrite	mg/L	<MDL	0.08	0.08	<MDL		<MDL	<MDL
Ammonia	mg/L	0.03	0.85	1.60	1.6		1.1	1.2
pH	su	7.59	8.21	9.03	8.19		7.59	7.79
Phosphate	mg/L	1.70	2.82	5.00	2.4		2.4	2.6
ResidueFilterable-TDS	mg/L	744	954	1330	1120		1090	1080
Sulfate	mg/L	<MDL	1.9	3.5	<MDL		<MDL	<MDL
Arsenic	mg/L	<MDL	0.00670	0.00670	<MDL		<MDL	<MDL
Cadmium	mg/L	<MDL	<MDL	<MDL	<MDL		<MDL	<MDL
Calcium	mg/L	<MDL	7.6	10.9	10.9		10.6	10.3
Iron (Dissolved)	mg/L	0.012	0.186	1.750	0.033		0.0251	0.0462
Iron (Total)	mg/L	0.573	2.507	9.270	2.26		1.9	1.77
Magnesium (Dissolved)	mg/L	0.052	0.724	1.190	1.17		1.06	1.11
Manganese (Dissolved)	mg/L	0.0133	0.2736	2.3300	0.245		2.33	0.22
Manganese (Total)	mg/L	0.0699	0.2290	0.6240	0.312		0.271	0.277
Mercury	mg/L	<MDL	<MDL	<MDL	<MDL		<MDL	<MDL
Selenium	mg/L	<MDL	<MDL	<MDL	<MDL		<MDL	<MDL
Sodium	mg/L	141	321	472	472		416	407
Zinc	mg/L	<MDL	0.0219	0.0219	<MDL		<MDL	<MDL

The area of concern for monitoring point CWI-DH-58A has not been affected by the mining operation. Therefore, all recorded monitoring events are considered Baseline.

New Well beginning in December 2014.

Baseline information collection initiated on March 17, 2015.
Point CWI-DH-58A has not and will not be influenced by mining.

Bowie Resources, LLC
Bowie No. 2 Mine
2017 Baseline

Ground Water

CWI-DH-60
Upper B Seam
Elevation - 7921
Depth - 1085'

		Summary Information Baseline			10/20/2014	10/20/2014	10/20/2014	10/20/2014
					10/18/2017	9/14/2017	6/26/2017	4/13/2017
Field Parameters	UNITS	Min	Ave	Max				
Static Water Level	Feet	943.7	947.2	948.9	946.9	946.8	948.2	948.4
Water Elevation	Feet	6972.1	6973.8	6977.3	6974.1	6974.2	6972.8	6972.6
FieldComment								
ph	su	8.0	8.3	8.4	8.23	8.19	8.21	8.28
Conductivity	umhos/cm	1062	7570	10980	1109	1096	1108	1062
Temperature	Celsius	18.6	21.3	22.7	21.1	21.5	22.7	20.8
Lab Parameters	UNITS							
Bicarbonate	mg/L	5620	7360	8330	7830		8020	8120
Carbonate	mg/L	<MDL	<MDL	<MDL	<MDL		<MDL	<MDL
Chloride	mg/L	240	289	337	316		319	327
Conductivity	umhos/cm	7820	9097	10200	9640		9240	9940
Hardness	mg/L	65.8	78.2	86.2	76.3		65.8	85.2
Nitrate-Nitrite	mg/L	<MDL	<MDL	<MDL	0.25		<MDL	<MDL
Ammonia	mg/L	0.84	1.44	2.40	1.60		2.40	1.10
pH	su	7.96	8.08	8.29	8.29		8.08	8.12
Phosphate	mg/L	0.05	0.19	0.31	0.12		0.15	0.21
ResidueFilterable-TDS	mg/L	6070	7332	8110	7640		7780	8110
Sulfate	mg/L	<MDL	18.2	18.2	<MDL		<MDL	<MDL
Arsenic	mg/L	<MDL	0.00045	0.00045	<MDL		<MDL	<MDL
Cadmium	mg/L	<MDL	0.0018	0.0018	<MDL		<MDL	<MDL
Calcium	mg/L	14.9	17.3	21.2	18.0		14.9	21.2
Iron (Dissolved)	mg/L	0.216	41.315	532.000	0.459		532	0.522
Iron (Total)	mg/L	0.84	2.34	3.73	0.874		0.835	1.24
Magnesium (Dissolved)	mg/L	6.95	8.46	9.57	7.62		6.95	7.83
Manganese (Dissolved)	mg/L	0.0103	0.0141	0.0176	0.0155		0.0127	0.0134
Manganese (Total)	mg/L	0.0131	0.0292	0.0548	0.023		0.0169	0.0186
Mercury	mg/L	<MDL	<MDL	<MDL	<MDL		<MDL	<MDL
Selenium	mg/L	<MDL	<MDL	<MDL	<MDL		<MDL	<MDL
Sodium	mg/L	315	2707	3430	3070		3070	3430
Zinc	mg/L	<MDL	<MDL	<MDL	<MDL		<MDL	<MDL

The area of concern for monitoring point CWI-DH-60 has not been affected by the mining operation. Therefore, all recorded monitoring events are considered Baseline.

CWI-DH-60 is located southwest of projected mining. It will not be impacted by Bowie No. 2 Mine workings.

CWI-DH-60 was cemented to the bottom of the upper B-Seam during September 2010.

Baseline Information collection re-initiated on 03/18/15.
Point CWI-DH-60 has not and will not be influenced by mining.

Bowie Resources, LLC
Bowie No. 2 Mine
2017 Baseline

Ground Water

DH-2010-1B
B Seam
Elevation - 7544.6
Depth - 1220'

					10/16/2014	10/16/2014	10/16/2014	10/16/2014
					10/23/2017	9/14/2017	6/26/2017	4/13/2017
		Summary Information						
Field Parameters	UNITS	Baseline Min	Ave	Max				
Static Water Level	Feet	1092.4	1094.6	1097.2	1097.2	1097	1096.9	1097.1
Water Elevation	Feet	6450	6452	6455	6449.8	6450	6450.1	6449.9
FieldComment								
ph	su	9.8	11.5	23.3	11.4	11.4	11.3	11.4
Conductivity	umhos/cm	378	1438	2360	2360	2330	2310	2310
Temperature	Celsius	11.6	24.1	26.3	25.5	25.8	21.5	26.1
Lab Parameters	UNITS							
Bicarbonate	mg/L	<MDL	217.2	1040.0	0		<MDL	<MDL
Carbonate	mg/L	45	224	441	245		441	439
Chloride	mg/L	6.30	77.56	143.00	143		132	140
Conductivity	umhos/cm	336	1165	2080	2070		1940	2080
Hardness	mg/L	0.0	7.8	15.4	6.5		7.5	9.4
Nitrate-Nitrite	mg/L	<MDL	0.62	1.60	<MDL		<MDL	<MDL
Ammonia	mg/L	0.5	14.3	25.1	25.0		25.1	21.5
pH	su	9.48	10.36	11.58	11.36		11.5	11.45
Phosphate	mg/L	0.05	0.14	0.27	0.23		0.07	0.12
ResidueFilterable-TDS	mg/L	253	860	1310	1310		1300	1290
Sulfate	mg/L	10.0	67.9	120.0	120		106	119
Arsenic (Dissolved)	mg/L	<MDL	0.0052	0.0052	<MDL		<MDL	<MDL
Cadmium (Dissolved)	mg/L	<MDL	<MDL	<MDL	<MDL		<MDL	<MDL
Calcium (Dissolved)	mg/L	1.54	3.18	6.00	2.6		2.93	3.75
Iron (Dissolved)	mg/L	0.0787	0.1194	0.1940	0.116		0.122	0.107
Iron (Total)	mg/L	0.46	1.72	4.31	0.644		0.455	0.562
Magnesium (Dissolved)	mg/L	<MDL	<MDL	<MDL	<MDL		<MDL	<MDL
Manganese (Dissolved)	mg/L	<MDL	0.0055	0.0071	<MDL		<MDL	<MDL
Manganese (Total)	mg/L	0.0117	0.0338	0.0766	0.077		0.012	0.015
Mercury (Dissolved)	mg/L	<MDL	<MDL	<MDL	<MDL		<MDL	<MDL
Selenium (Dissolved)	mg/L	<MDL	<MDL	<MDL	<MDL		<MDL	<MDL
Sodium (Dissolved)	mg/L	74	252	417	417		391	395
Zinc (Dissolved)	mg/L	<MDL	<MDL	<MDL	<MDL		<MDL	<MDL

The area of concern for monitoring point DH-2010-1B has not been affected by the mining operation. Therefore, all recorded monitoring events are considered Baseline.

DH-2010-1B is located in Section 5 It will be impacted by future Bowie No. 2 Mine workings.
DH-2010-1B was rehabilitated in 2014. Baseline inforamtion is collected beginning October 2014.

Baseline Information collection re-initiated on 10/16/14 and not yet considered complete.
Point DH-2010-1B has not been influenced by mining.

Bowie Resources, LLC
Bowie No. 2 Mine
2017 Baseline

Ground Water

DH-2010-1SS
Sanstone Above B-Seam
Elevation - 7544.4
Depth - 1140'

					3/18/2015	3/18/2015	3/18/2015	3/18/2015
					10/23/2017	9/14/2017	6/26/2017	4/13/2017
		Summary Information						
Field Parameters	UNITS	Baseline Min	Ave	Max				
Static Water Level	Feet	1088.3	1094.4	1097.6	1097.6	1088.3	1097.1	1096.8
Water Elevation	Feet	6449.4	6452.6	6458.7	6449.4	6458.7	6449.9	6450.2
FieldComment								
ph	su	7.0	7.3	8.9	7.3	7.2	7.3	7.3
Conductivity	umhos/cm	1330	1474	1610	1610	1610	1588	1568
Temperature	Celsius	7.3	24.8	26.9	7.3	26.5	26.7	26.2
Lab Parameters	UNITS							
Bicarbonate	mg/L	536	644	750	750		717	721
Carbonate	mg/L	<MDL	<MDL	<MDL	<MDL		<MDL	<MDL
Chloride	mg/L	110	149	416	141		142	137
Conductivity	umhos/cm	1110	1264	1470	1470		1320	1400
Hardness	mg/L	34.0	40.3	49.6	44.1			49.6
Nitrate-Nitrite	mg/L	<MDL	<MDL	<MDL	<MDL		<MDL	<MDL
Ammonia	mg/L	5.0	6.4	7.6	6.8		7.0	6.0
pH	su	7.10	7.20	7.41	7.41		7.18	7.33
Phosphate	mg/L	1.4	1.6	1.8	1.4		1.6	1.6
ResidueFilterable-TDS	mg/L	780	934	1120	990		986	996
Sulfate	mg/L	<MDL	4.17	5.40	<MDL		<MDL	<MDL
Arsenic (Dissolved)	mg/L	0.17	0.23	0.29	0.172		0.168	0.222
Cadmium (Dissolved)	mg/L	<MDL	<MDL	<MDL	<MDL		<MDL	<MDL
Calcium (Dissolved)	mg/L	0.1	12.9	17.2	15.4		14.4	17.2
Iron (Dissolved)	mg/L	0.096	0.150	0.323	0.227		0.121	0.0959
Iron (Total)	mg/L	0.75	2.94	4.94	2.98		2.89	0.745
Magnesium (Dissolved)	mg/L	0.971	1.262	1.610	1.37		1.34	1.61
Manganese (Dissolved)	mg/L	0.0832	0.1011	0.1300	0.114		0.104	0.13
Manganese (Total)	mg/L	0.095	0.121	0.145	0.137		0.131	0.141
Mercury (Dissolved)	mg/L	<MDL	<MDL	<MDL	<MDL		<MDL	<MDL
Selenium (Dissolved)	mg/L	<MDL	0.0044	0.0044	<MDL		<MDL	<MDL
Sodium (Dissolved)	mg/L	274	298	340	331		317	340
Zinc (Dissolved)	mg/L	<MDL	0.0631	0.0631	<MDL		<MDL	<MDL

The area of concern for monitoring point DH-2010-1SS has not been affected by the mining operation. Therefore, all recorded monitoring events are considered Baseline.

DH-2010-1SS is located in Section 5. It will be impacted by future Bowie No. 2 Mine workings.

Lab analysis is required semi-annually

Baseline Information collection re-initiated on 03/18/15 and not yet considered complete.
Point DH-2010-1B has not been influenced by mining.

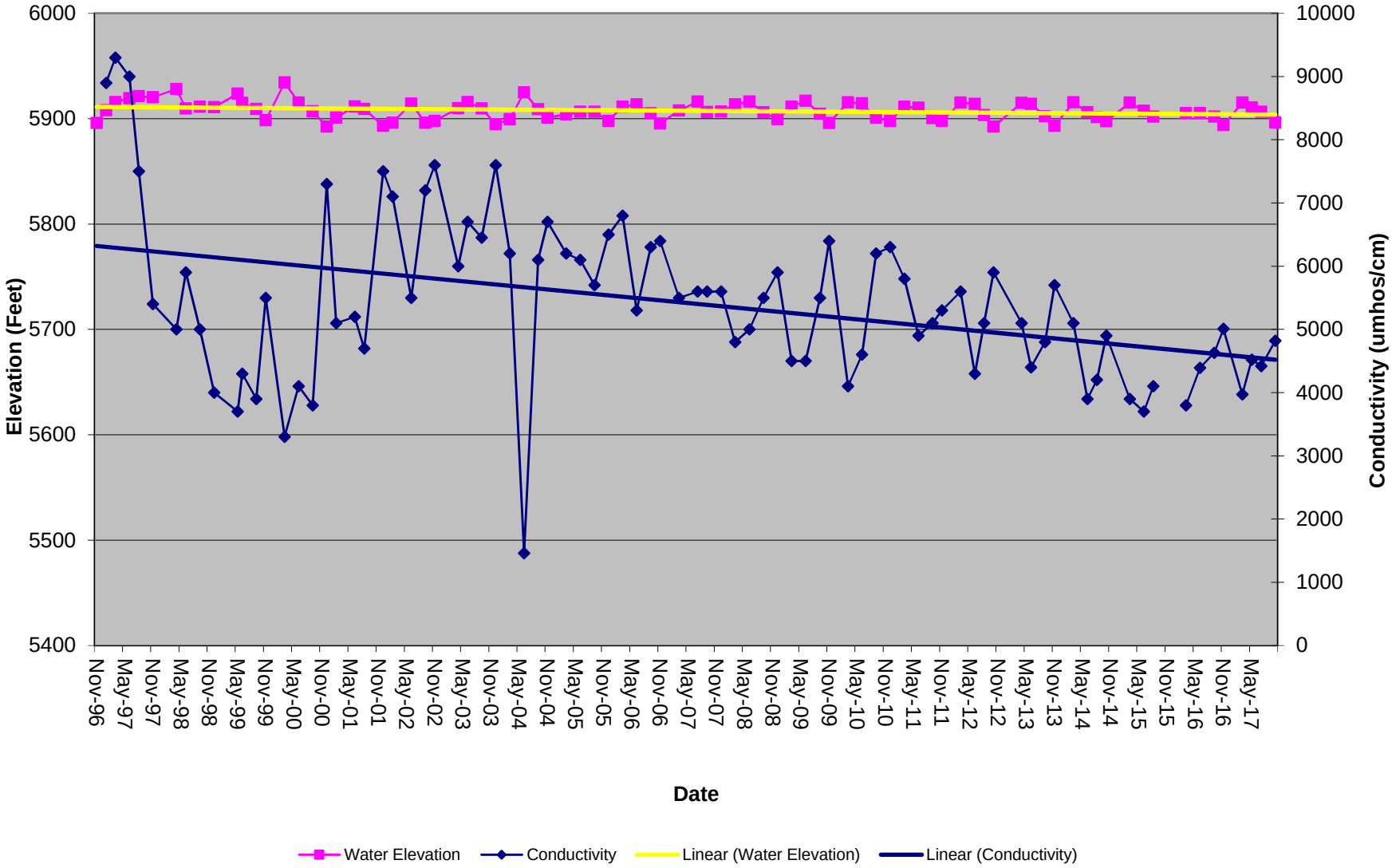
AW-1
Alluvial Well
Top of Pipe Elevation - 5977.76'
Depth - 120'
Pipe 1.06' Above Ground

Initiated								11/23/1996	11/23/1996	11/23/1996	11/23/1996
Activated								3/27/1997	3/27/1997	3/27/1997	3/27/1997
Date								10/4/2017	7/11/2017	5/9/2017	3/1/2017
		Summary Information									
Field		Baseline			Operation						
Parameters	UNITS	Min	Ave	Max	Min	Ave	Max				
Static Water Level	Feet	61.92	71.25	82.01	43.44	70.20	85.31	81.4	71.2	67.1	62.60
Water Elevation	Feet	5895.7	5906.5	5915.8	5892.5	5907.6	5934.3	5896.36	5906.56	5910.66	5,915.16
FieldComment											
ph	su	7.1	7.2	7.3	7.0	7.3	7.8	7.38	7.37	7.43	7.43
Conductivity	umhos/cm	8900	9100	9300	1460	5330	9000	4820	4420	4520	3970
Temperature	Celsius	10.2	11.3	12.4	8.7	12.9	15.0	14.9	15	12.9	11.7
Lab											
Parameters	UNITS										
Bicarbonate	mg/L	641	649	657	214.0	593.4	1165.2	745		784	
Carbonate	mg/L	<MDL	<MDL	<MDL	<MDL	0.83	10.76	<MDL		<MDL	
Chloride	mg/L	77	78	79	8.5	150.2	318.5	225		222	
Conductivity	umhos/cm	6480	7230	7980	894	5205	8610	4520		3500	
Hardness	mg/L	2750	2895	3040	<MDL	1469	4511	1060		1350	
Nitrate-Nitrite	mg/L	5.7	6.5	7.3	<MDL	3.74	11.20	0.18		1.9	
Ammonia	mg/L	0.07	0.11	0.14	<MDL	0.25	1.09	<MDL		<MDL	
pH	su	7.4	7.6	7.8	6.8	7.5	8.5	7.8		7.3	
Phosphate	mg/L	<MDL	<MDL	<MDL	<MDL	0.03	0.22	0.025		0.019	
ResidueFilterable-TDS	mg/L	7990	8200	8410	787	4563	8710	3830		3410	
Sulfate	mg/L	5140	5220	5300	135	2461	8330	1830		1710	
Arsenic (Dissolved)	mg/L	<MDL	0.001	0.001	<MDL	0.091	0.553	<MDL		<MDL	
Cadmium (Dissolved)	mg/L	<MDL	<MDL	<MDL	<MDL	0.016	0.050	<MDL		0.0415	
Calcium (Dissolved)	mg/L	316	327	338	23.4	175.0	360.0	127		160	
Iron (Dissolved)	mg/L	<MDL	<MDL	<MDL	<MDL	0.10	1.75	<MDL		0.117	
Iron (TREC)	mg/L	0.13	0.41	0.70	0.01	0.60	2.37	0.971		0.123	
Magnesium (Dissolved)	mg/L	476	505	533	53.8	290.8	961.5	181		231	
Manganese (Dissolved)	mg/L	<MDL	0.03	0.05	<MDL	0.032	0.490	<MDL		0.01	
Manganese (TREC)	mg/L	0.01	0.03	0.06	<MDL	1.410	7.440	4.05		0.015	
Mercury (Dissolved)	mg/L	<MDL	<MDL	<MDL	<MDL	0.00005	0.00024	<MDL		<MDL	
Selenium (Dissolved)	mg/L	0.026	0.031	0.035	0.001	0.236	7.400	<MDL		0.102	
Sodium (Dissolved)	mg/L	1550	1625	1700	253.0	917.7	1867.5	773		689	
Zinc (Dissolved)	mg/L	<MDL	<MDL	<MDL	<MDL	0.02	0.11	<MDL		0.0398	

Alluvial Wells AW-1 through AW-6 are located north of Old State Highway 133, near the entrance to the mine.

There is no Baseline Collection possible for points initiated after the influence of mining.

Plot of Conductivity and Water Level



AW-1 - Alluvial Well

Figure 108

AW-2
Alluvial Well
Top of Pipe Elevation - 5966.2'
Depth - 50.4'
Pipe 1.32' Above Ground

Initiated	11/23/1996	11/23/1996	11/23/1996	11/23/1996
Activated	3/27/1997	3/27/1997	3/27/1997	3/27/1997
Date	10/4/2017	7/11/2017	4/26/2017	3/1/2017

Field Parameters	UNITS	Summary Information Baseline Min	Baseline Ave	Baseline Max	Operation Min	Operation Ave	Operation Max				
Static Water Level	Feet	50.35	50.65	50.81	35.55	47.59	54.90	54.9	44.6	44.2	44.1
Water Elevation	Feet	5915.8	5916.0	5916.3	5911.7	5919.0	5931.1	5911.72	5922.02	5922.42	5922.52
FieldComment			Damp								
ph	su				6.9	7.1	7.5	7.22	7.16	7.17	7.24
Conductivity	umhos/cm				1075	7295	10200	9340	9180	9380	9200
Temperature	Celsius				11.8	14.7	18.4	15.7	15.9	13.8	13.3
Lab Parameters	UNITS										
Bicarbonate	mg/L				345.18	757.81	1024.30	1020		972	
Carbonate	mg/L				<MDL	11.29	26.98	<MDL		<MDL	
Chloride	mg/L				54.50	169.97	370.63	155		159	
Conductivity	umhos/cm				3770	7631	12510	8750		9020	
Hardness	mg/L				241.87	2631.14	4402.97	3790		3650	
Nitrate-Nitrite	mg/L				<MDL	3.26	9.65	<MDL		<MDL	
Ammonia	mg/L				<MDL	1.56	4.60	<MDL		<MDL	
pH	su				6.7	7.4	8.4	7.6		7.0	
Phosphate	mg/L				<MDL	0.06	0.25	0.029		<MDL	
ResidueFilterable-TDS	mg/L				319	6860	10906	10800		9640	
Sulfate	mg/L				235	3582	6408	6030		5580	
Arsenic (Dissolved)	mg/L				<MDL	0.188	1.795	0.0497		0.0311	
Cadmium (Dissolved)	mg/L				<MDL	0.0345	0.1100	<MDL		<MDL	
Calcium (Dissolved)	mg/L				33	305	518	430		507	
Iron (Dissolved)	mg/L				0.02	0.10	0.26	0.036		0.0172	
Iron (TREC)	mg/L				0.04	0.67	3.20	0.633		0.318	
Magnesium (Dissolved)	mg/L				170	506	970	659		578	
Manganese (Dissolved)	mg/L				<MDL	0.15	0.89	0.893		0.311	
Manganese (TREC)	mg/L				0.01	0.39	3.90	0.822		0.329	
Mercury (Dissolved)	mg/L				<MDL	0.00008	0.00022	<MDL		<MDL	
Selenium (Dissolved)	mg/L				0.00	0.06	0.54	<MDL		<MDL	
Sodium (Dissolved)	mg/L				21.0	1071.5	2212.5	1490		1340	
Zinc (Dissolved)	mg/L				<MDL	0.04	0.08	0.0408		0.0579	

Alluvial Wells AW-1 through AW-6 are located north of Old State Highway 133, near the entrance to the mine.

There is no Baseline Collection possible for points initiated after the influence of mining.

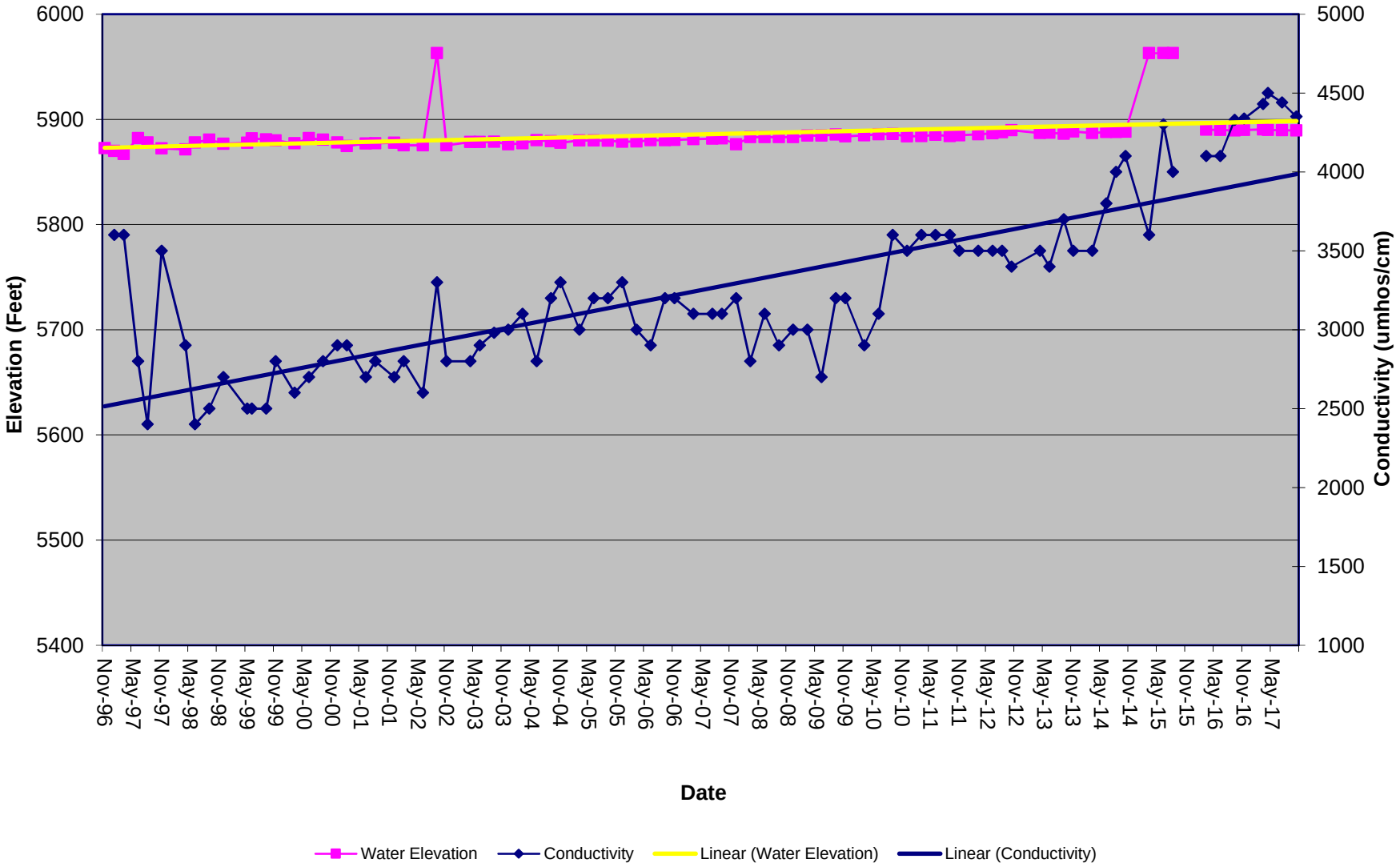
AW-3
Alluvial Well
Top of Pipe Elevation - 5962.96'
Depth - 150'
Pipe 1.16' Above Ground

Initiated								11/23/1996	11/23/1996	11/23/1996	11/23/1996
Activated								3/27/1997	3/27/1997	3/27/1997	3/27/1997
Date								10/4/2017	7/11/2017	4/24/2017	3/1/2017
		Summary Information									
Field		Baseline			Operation						
Parameters	UNITS	Min	Ave	Max	Min	Ave	Max				
Static Water Level	Feet	90.23	92.97	95.82	0.00	79.51	91.54	73.6	73.2	73.1	72.6
Water Elevation	Feet	5867.1	5870.0	5872.7	5871.4	5883.5	5963.0	5889.36	5889.76	5889.86	5890.36
FieldComment											
ph	su	6.9	7.0	7.1	6.8	8.0	77.1	7.31	7.23	7.3	7.43
Conductivity	umhos/cm	3600	3600	3600	2400	3242	4500	4350	4440	4500	4430
Temperature	Celsius	11.2	12.8	14.4	11.0	13.7	15.8	12.5	14.6	13.9	11.7
Lab											
Parameters	UNITS										
Bicarbonate	mg/L	851	976	1100	40	591	1080	764		718	
Carbonate	mg/L	<MDL	<MDL	<MDL	<MDL	0.83	10.76	<MDL		<MDL	
Chloride	mg/L	119	128	136	33.77	125.78	310.00	310		298	
Conductivity	umhos/cm	2800	2975	3150	1817	3162	4580	4070		4110	
Hardness	mg/L	1280	1325	1370	<MDL	1617	3354	2090		2940	
Nitrate-Nitrite	mg/L	<MDL	<MDL	<MDL	0.03	2.75	10.20	10.2		<MDL	
Ammonia	mg/L	1.66	1.90	2.13	<MDL	0.38	2.00	0.29		<MDL	
pH	su	7.2	7.3	7.5	6.9	7.5	8.5	7.3		7.1	
Phosphate	mg/L	<MDL	<MDL	<MDL	<MDL	0.02	0.08	0.078		<MDL	
ResidueFilterable-TDS	mg/L	2390	2415	2440	1750	2678	4130	3520		4020	
Sulfate	mg/L	870	875	880	760	1257	2030	1760		1900	
Arsenic (Dissolved)	mg/L	<MDL	0.001	0.001	<MDL	0.045	0.401	<MDL		<MDL	
Cadmium (Dissolved)	mg/L	<MDL	<MDL	<MDL	<MDL	0.010	0.040	<MDL		<MDL	
Calcium (Dissolved)	mg/L	201	206	210	90.5	246.6	505.0	340		505	
Iron (Dissolved)	mg/L	0.19	0.33	0.46	<MDL	0.53	8.22	0.0119		<MDL	
Iron (TREC)	mg/L	8.00	8.23	8.46	0.03	2.86	27.50	0.125		0.099	
Magnesium (Dissolved)	mg/L	189	197	205	136	263	661	302		407	
Manganese (Dissolved)	mg/L	0.10	0.11	0.13	<MDL	0.101	0.855	0.204		0.855	
Manganese (TREC)	mg/L	0.12	0.12	0.12	0.008	3.580	111.000	4.57		0.359	
Mercury (Dissolved)	mg/L	<MDL	<MDL	<MDL	<MDL	0.00007	0.00035	<MDL		<MDL	
Selenium (Dissolved)	mg/L	<MDL	<MDL	<MDL	<MDL	0.017	0.134	<MDL		<MDL	
Sodium (Dissolved)	mg/L	421	433	445	105	229	682	289		<MDL	
Zinc (Dissolved)	mg/L	<MDL	<MDL	<MDL	<MDL	0.02	0.10	<MDL		<MDL	

Alluvial Wells AW-1 through AW-6 are located north of Old State Highway 133, near the entrance to the mine.

There is no Baseline Collection possible for points initiated after the influence of mining.

Plot of Conductivity and Water Level



AW-3 - Alluvial Well

Figure 111

AW-4
Alluvial Well
Top of Pipe Elevation - 5977.2'
Depth - 60'
Pipe 1.12' Above Ground

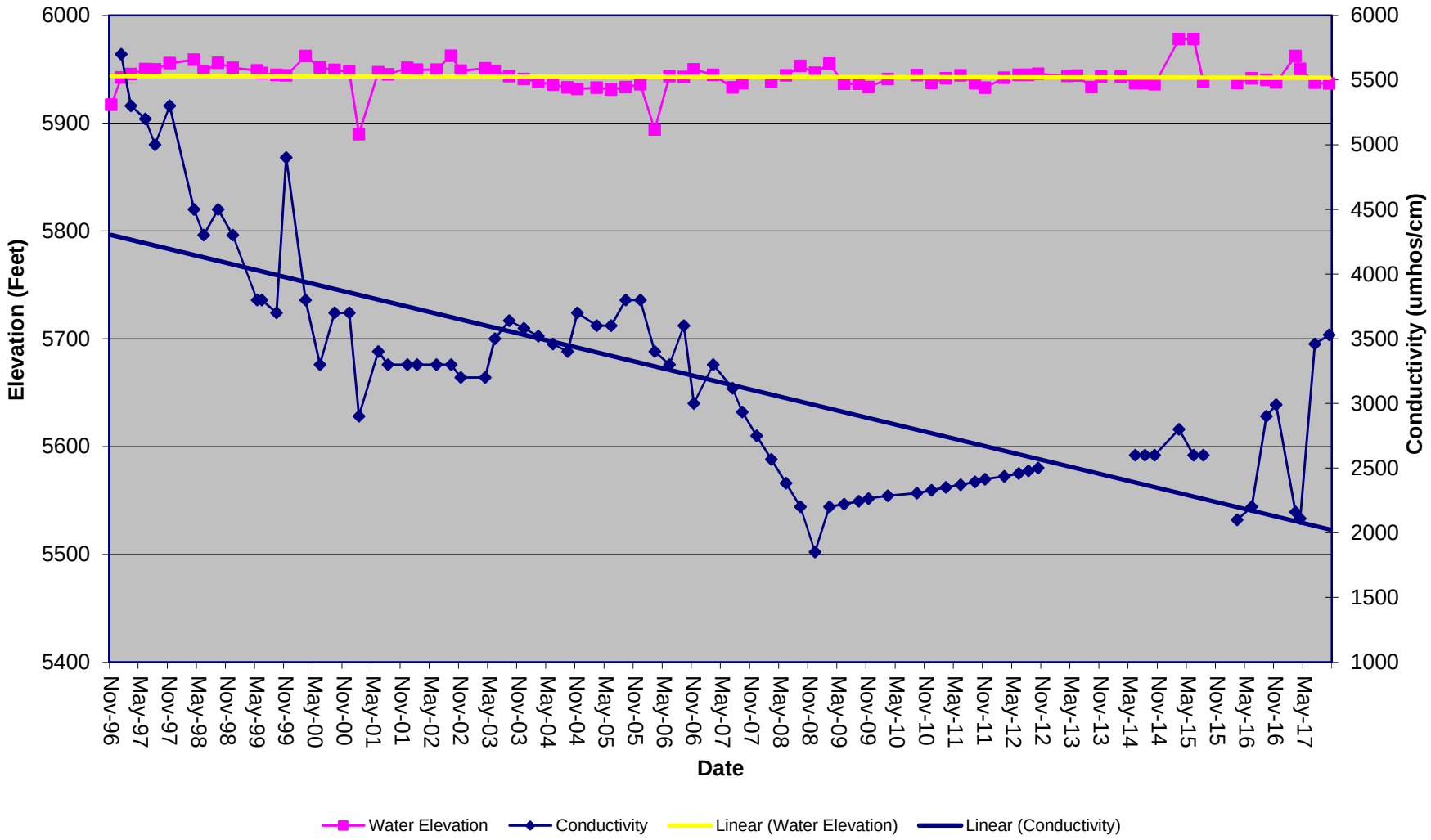
Initiated	11/23/1996	11/23/1996	11/23/1996	11/23/1996
Activated	3/27/1997	3/27/1997	3/27/1997	3/27/1997
Date	10/4/2017	7/11/2017	4/25/2017	3/3/2017

		Summary Information									
Field		Baseline			Operation						
Parameters	UNITS	Min	Ave	Max	Min	Ave	Max				
Static Water Level	Feet	32.42	42.94	60.78	15.54	35.20	88.38	41.2	40.6	27.55	15.75
Water Elevation	Feet	5917.1	5935.0	5945.5	5889.5	5942.7	5962.4	5936.72	5937.32	5950.37	5962.17
FieldComment											
ph	su	6.8	6.9	7.0	6.7	7.2	8.0	7.76	7.77	7.57	7.97
Conductivity	umhos/cm	5300	5500	5700	1850	3339	5300	2530	3460	2110	2160
Temperature	Celsius	11.2	11.9	12.6	8.0	12.5	15.5	10.6	14.2	9.1	8
Lab											
Parameters	UNITS										
Bicarbonate	mg/L	624	707	790	316.1	555.2	758.0	444		374	
Carbonate	mg/L	<MDL	<MDL	<MDL	<MDL	0.37	4.49	<MDL		<MDL	
Chloride	mg/L	57	60	63	31	140	227	192		117	
Conductivity	umhos/cm	3880	4495	5110	1723	3502	9490	3200		1880	
Hardness	mg/L	2650	2670	2690	<MDL	1078	2730	958		645	
Nitrate-Nitrite	mg/L	0.10	0.21	0.32	<MDL	0.58	6.75	<MDL		0.1	
Ammonia	mg/L	0.09	0.22	0.34	<MDL	0.42	1.13	0.29		<MDL	
pH	su	7.1	7.3	7.5	7.1	7.5	8.3	8.0		7.6	
Phosphate	mg/L	<MDL	<MDL	<MDL	<MDL	0.05	0.31	0.11		0.31	
ResidueFilterable-TDS	mg/L	4830	5080	5330	1372	2840	4990	2680		1440	
Sulfate	mg/L	2620	2920	3220	448	1348	2760	1410		654	
Arsenic	mg/L	<MDL	<MDL	<MDL	<MDL	0.004	0.042	<MDL		<MDL	
Cadmium	mg/L	<MDL	<MDL	<MDL	<MDL	0.00469	0.03000	<MDL		<MDL	
Calcium	mg/L	465	481	496	19.8	223.2	496.0	171		133	
Iron (Dissolved)	mg/L	<MDL	0.04	0.07	<MDL	0.10	0.73	0.0328		<MDL	
Iron (TREC)	mg/L	0.10	0.14	0.17	0.07	3.24	69.20	4.08		0.0906	
Magnesium (Dissolved)	mg/L	353	357	361	71	170	362	129		76.1	
Manganese (Dissolved)	mg/L	0.22	0.43	0.64	<MDL	0.59	1.52	0.662		<MDL	
Manganese (TREC)	mg/L	0.18	0.40	0.62	0.15	74.13	1270.00	0.753		0.15	
Mercury	mg/L	<MDL	<MDL	<MDL	<MDL	0.00006	0.00030	<MDL		<MDL	
Selenium	mg/L	<MDL	0.0005	0.0010	<MDL	0.0019	0.0100	<MDL		<MDL	
Sodium	mg/L	590	646	702	199	381	684	442		243	
Zinc	mg/L	<MDL	<MDL	<MDL	<MDL	0.02	0.07	<MDL		<MDL	

Alluvial Wells AW-1 through AW-6 are located north of Old State Highway 133, near the entrance to the mine.

There is no Baseline Collection possible for points initiated after the influence of mining.

Plot of Conductivity and Water Level



AW-4 - Alluvial Well

Figure 113

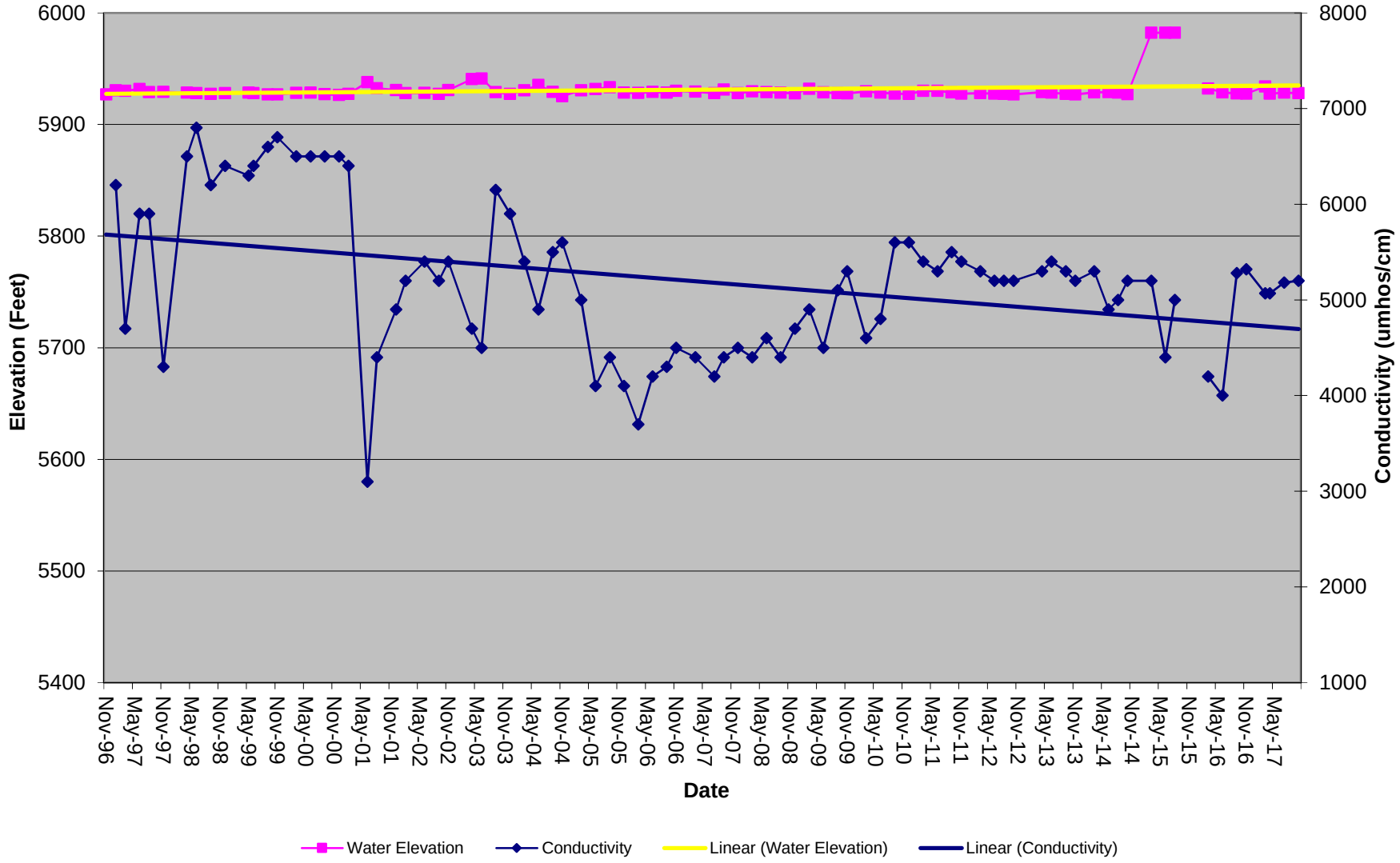
AW-5 Alluvial Well
Top of Pipe Elevation - 5982.14'
Depth - 100'
Pipe 1.14' Above Ground

Initiated								11/23/1996	11/23/1996	11/23/1996	11/23/1996
Activated								3/27/1997	3/27/1997	3/27/1997	3/27/1997
Date								10/4/2017	7/11/2017	4/26/2017	3/3/2017
		Summary Information									
Field		Baseline			Operation						
Parameters	UNITS	Min	Ave	Max	Min	Ave	Max				
Static Water Level	Feet	51.65	52.95	55.26	41.03	52.76	55.72	54.2	53.7	54.6	48.1
Water Elevation	Feet	5926.9	5929.2	5930.5	5926.4	5929.4	5941.1	5927.94	5928.44	5927.54	5934.04
FieldComment											
ph	su	7.1	7.2	7.3	6.6	7.6	51.8	7.2	7.2	51.8	7.2
Conductivity	umhos/cm	4700	5450	6200	3100	5183	6800	5200	5180	5070	5070
Temperature	Celsius	12.8	13.7	14.6	11.0	14.3	16.9	13	16.6	13.2	11
Lab											
Parameters	UNITS										
Bicarbonate	mg/L	566	658	750	99.05	714.87	1090.00	1080		1060	
Carbonate	mg/L	<MDL	<MDL	<MDL	<MDL	0.98	10.76	<MDL		<MDL	
Chloride	mg/L	49	51	52	29.0	236.0	636.5	350		368	
Conductivity	umhos/cm	4270	4890	5510	378	5026	6650	4790		4820	
Hardness	mg/L	3330	3380	3430	<MDL	2557	5318	2540		2540	
Nitrate-Nitrite	mg/L	34.4	35.2	36.0	<MDL	14.98	46.70	13.5		12.5	
Ammonia	mg/L	0.10	0.11	0.13	<MDL	0.61	2.03	<MDL		<MDL	
pH	su	7.2	7.4	7.6	6.7	7.4	8.4	7.7		7.0	
Phosphate	mg/L	<MDL	<MDL	<MDL	<MDL	0.154	3.240	0.013		<MDL	
ResidueFilterable-TDS	mg/L	5390	5580	5770	3270	4831	6760	4220		4200	
Sulfate	mg/L	3140	3385	3630	977	2399	4550	2170		2000	
Arsenic (Dissolved)	mg/L	<MDL	<MDL	<MDL	<MDL	0.068	0.552	<MDL		<MDL	
Cadmium (Dissolved)	mg/L	<MDL	<MDL	<MDL	<MDL	0.01522	0.0690	<MDL		<MDL	
Calcium (Dissolved)	mg/L	291	298	305	27.6	252.7	451.0	267		307	
Iron (Dissolved)	mg/L	<MDL	0.03	0.06	<MDL	0.038	0.106	0.0123		<MDL	
Iron (TREC)	mg/L	0.10	0.11	0.12	<MDL	0.32	3.79	0.151		0.264	
Magnesium (Dissolved)	mg/L	633	642	650	253	531	1158	454		430	
Manganese (Dissolved)	mg/L	<MDL	0.01	0.02	<MDL	0.012	0.044	0.0081		<MDL	
Manganese (TREC)	mg/L	0.01	0.01	0.02	<MDL	0.023	0.220	0.0129		0.0117	
Mercury (Dissolved)	mg/L	<MDL	<MDL	<MDL	<MDL	0.00005	0.00035	<MDL		<MDL	
Selenium (Dissolved)	mg/L	0.03	0.03	0.03	0.002	0.032	0.250	<MDL		<MDL	
Sodium (Dissolved)	mg/L	523	531	539	204	426	825	373		451	
Zinc (Dissolved)	mg/L	<MDL	0.01	0.03	<MDL	0.025	0.070	0.0339		0.0443	

Alluvial Wells AW-1 through AW-6 are located north of Old State Highway 133, near the entrance to the mine.

There is no Baseline Collection possible for points initiated after the influence of mining.

Plot of Conductivity and Water Level



AW-5 - Alluvial Well

Figure 115

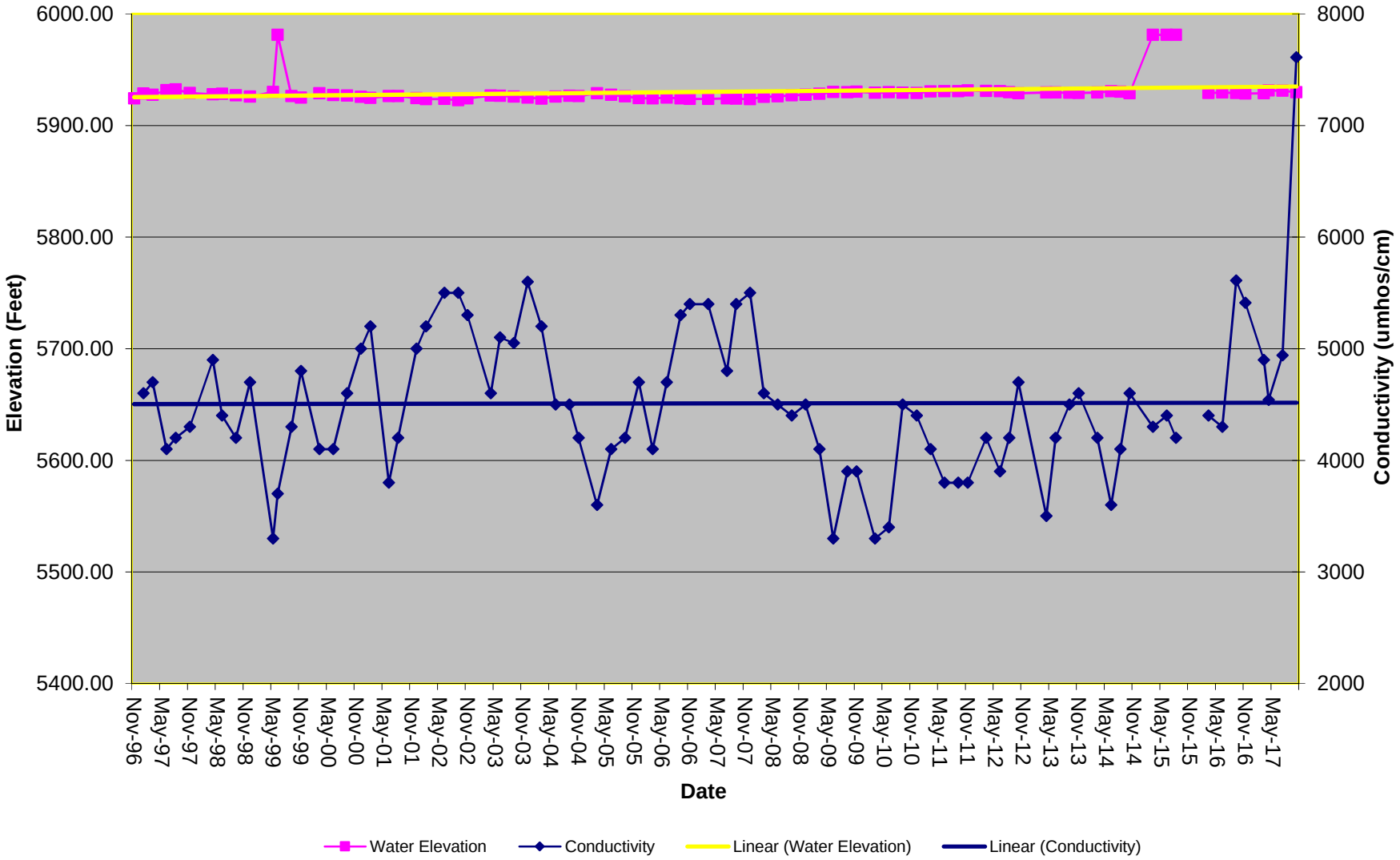
AW-6
Alluvial Well
Top of Pipe Elevation - 5981.18'
Depth - 112'
Pipe 1.38' Above Ground

Initiated								11/23/1996	11/23/1996	11/23/1996	11/23/1996
Activated								3/27/1997	3/27/1997	3/27/1997	3/27/1997
Date								10/4/2017	7/11/2017	4/25/2017	3/3/2016
		Summary Information									
Field		Baseline			Operation						
Parameters	UNITS	Min	Ave	Max	Min	Ave	Max				
Static Water Level	Feet	52.62	54.37	56.82	0.00	52.84	58.61	51.4	50.1	49.7	52.2
Water Elevation	Feet	5924.4	5926.8	5928.6	5922.6	5928.3	5981.2	5929.78	5931.08	5931.48	5928.98
FieldComment											
ph	su	7.3	7.4	7.4	7.0	7.3	7.7	7.43	7.36	7.31	7.55
Conductivity	umhos/cm	4600	4650	4700	3300	4507	7610	7610	4940	4540	4900
Temperature	Celsius	12.4	13.5	14.6	11.7	14.1	17.8	12.2	16.6	12.5	11.7
Lab											
Parameters	UNITS										
Bicarbonate	mg/L	278	317	355	217.4	384.8	521.0	521		466	
Carbonate	mg/L	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL		<MDL	
Chloride	mg/L	107	114	120	54.5	136.3	577.8	176		157	
Conductivity	umhos/cm	2580	3305	4030	3125	4427	7450	5200		4150	
Hardness	mg/L	1880	1925	1970	<MDL	1730	4787	2280		1930	
Nitrate-Nitrite	mg/L	7.3	8.1	8.8	0.0	5.1	9.0	4.3		0.028	
Ammonia	mg/L	0.07	0.07	0.07	<MDL	0.37	1.56	<MDL		<MDL	
pH	su	7.5	7.6	7.7	7.0	7.5	8.3	7.4		7.2	
Phosphate	mg/L	<MDL	<MDL	<MDL	<MDL	0.02	0.06	0.016		<MDL	
ResidueFilterable-TDS	mg/L	3910	3995	4080	2440	4076	5770	5770		3960	
Sulfate	mg/L	2300	2300	2300	968	2164	3150	3120		2300	
Arsenic (Dissolved)	mg/L	<MDL	<MDL	<MDL	<MDL	0.094	0.650	<MDL		<MDL	
Cadmium (Dissolved)	mg/L	<MDL	<MDL	<MDL	<MDL	0.011	0.040	<MDL		<MDL	
Calcium (Dissolved)	mg/L	248	254	260	37	226	312	312		280	
Iron (Dissolved)	mg/L	<MDL	0.14	0.27	<MDL	0.06	0.26	<MDL		0.017	
Iron (TREC)	mg/L	0.26	0.31	0.37	0.06	0.52	4.74	0.186		0.242	
Magnesium (Dissolved)	mg/L	307	315	322	0.0	306.6	1015.6	365		299	
Manganese (Dissolved)	mg/L	0.07	0.18	0.29	<MDL	0.545	15.500	0.139		0.037	
Manganese (TREC)	mg/L	0.11	0.20	0.29	<MDL	0.107	0.350	0.161		0.0967	
Mercury (Dissolved)	mg/L	<MDL	<MDL	<MDL	<MDL	0.00008	0.00070	<MDL		<MDL	
Selenium (Dissolved)	mg/L	0.05	0.06	0.06	0.001	0.062	0.380	<MDL		<MDL	
Sodium (Dissolved)	mg/L	501	514	526	306.9	533.5	965.0	630		548	
Zinc (Dissolved)	mg/L	<MDL	0.05	0.11	<MDL	0.02	0.07	<MDL		0.0308	

Alluvial Wells AW-1 through AW-6 are located north of Old State Highway 133, near the entrance to the mine.

There is no Baseline Collection possible for points initiated after the influence of mining.

Plot of Conductivity and Water Level



AW-6 - Alluvial Well

Figure 117

AW-7
Alluvial Well
Top of Pipe Elevation - 5950'
Depth - 188'
Pipe 2.17' Above Ground

Initiated	9/9/1999	9/9/1999	9/9/1999	9/9/1999
Activated	9/9/1999	9/9/1999	9/9/1999	9/9/1999
Date	12/11/2017	7/11/2017	5/22/2017	3/1/2017

		Summary Information									
		Baseline			Operation						
Field Parameters	UNITS	Min	Ave	Max	Min	Ave	Max				
Static Water Level	Feet				50.59	74.43	97.52	91.9	71.7	69.4	82.35
Water Elevation	Feet				5852.5	5875.6	5899.4	5858.1	5878.3	5880.6	5867.65
FieldComment											
ph	su				7.1	7.7	8.4	8.06	7.6	7.86	7.72
Conductivity	umhos/cm				300	1877	3100	2450	2450	2410	2470
Temperature	Celsius				10.3	12.3	14.5	11.3	13.2	12.5	11
Lab Parameters	UNITS										
Bicarbonate	mg/L				<MDL	335.0	511.2	458		444	
Carbonate	mg/L				<MDL	41.6	341.5	<MDL		<MDL	
Chloride	mg/L				13.0	129.8	539.0	190		213	
Conductivity	umhos/cm				359	1927	3645	2370		2020	
Hardness	mg/L				<MDL	462.10	1093.20	431		448	
Nitrate-Nitrite	mg/L				<MDL	1.58	7.92	0.77		**	
Ammonia	mg/L				<MDL	0.148	1.120	<MDL		<MDL	
pH	su				7.1	7.8	8.6	8.0		7.9	
Phosphate	mg/L				<MDL	0.05	0.31	0.31		<MDL	
ResidueFilterable-TDS	mg/L				200	1409	2254	1530		1580	
Sulfate	mg/L				40.00	584.03	1110.00	716		638	
Arsenic (Dissolved)	mg/L				<MDL	0.033	0.255	<MDL		<MDL	
Cadmium (Dissolved)	mg/L				<MDL	0.007	0.023	<MDL		<MDL	
Calcium (Dissolved)	mg/L				12.8	65.7	157.0	65.4		<MDL	
Iron (Dissolved)	mg/L				<MDL	0.04	0.28	0.0315		<MDL	
Iron (TREC)	mg/L				<MDL	0.25	1.01	0.181		0.067	
Magnesium (Dissolved)	mg/L				6.3	70.7	225.2	65.1		65.8	
Manganese (Dissolved)	mg/L				<MDL	0.012	0.060	0.0103		<MDL	
Manganese (TREC)	mg/L				<MDL	0.164	1.660	1.55		0.0277	
Mercury (Dissolved)	mg/L				<MDL	0.00006	0.00031	<MDL		<MDL	
Selenium (Dissolved)	mg/L				<MDL	0.072	1.500	<MDL		<MDL	
Sodium (Dissolved)	mg/L				46.7	350.3	1705.0	385		367	
Zinc (Dissolved)	mg/L				<MDL	0.020	0.040	<MDL		<MDL	

The area of concern for monitoring point AW-7 was affected by the mining operation before its establishment. Therefore, all recorded monitoring events are considered Operational.

Alluvial Wells AW-7 through AW-9 are located south of Old State Highway 133, near the entrance to the mine. They were installed in 1999 as the result of PR-03.

*** Lab. data not provided*

There is no Baseline Collection possible for points initiated after the influence of mining.

AW-8
Alluvial Well
Top of Pipe Elevation - 5950'
Depth - 60'
Pipe 1.97' Above Ground

Initiated								9/9/1999	9/9/1999	9/9/1999	9/9/1999
Activated								9/9/1999	9/9/1999	9/9/1999	9/9/1999
Date								12/11/2017	7/11/2017	5/22/2017	3/1/2017
		Summary Information									
Field		Baseline			Operation						
Parameters	UNITS	Min	Ave	Max	Min	Ave	Max				
Static Water Level	Feet				11.84	20.56	73.23	20.8	20	19.8	19.8
Water Elevation	Feet				5876.8	5929.4	5938.2	5929.2	5930	5930.2	5930.2
FieldComment								Dry	Dry	Dry	Dry
ph	su				8.2	9.0	9.8				
Conductivity	umhos/cm				260	360	460				
Temperature	Celsius				13.2	13.9	14.7				
Lab Parameters	UNITS										
Bicarbonate	mg/L				<MDL	444.0	444.0			444	
Carbonate	mg/L				<MDL	#####	0.0			<MDL	
Chloride	mg/L				<MDL	213.0	213.0			213	
Conductivity	umhos/cm				<MDL	2020.0	2020.0			2020	
Hardness	mg/L				<MDL	448.0	448.0			448	
Nitrate-Nitrite	mg/L				<MDL	0.0	0.0			*	
Ammonia	mg/L				<MDL	0.0	0.0			<MDL	
pH	su				<MDL	7.9	7.9			7.9	
Phosphate	mg/L				<MDL	0.0	0.0			*	
ResidueFilterable (TDS)	mg/L				<MDL	1580.0	1580.0			1580	
Sulfate	mg/L				<MDL	638.0	638.0			638	
Arsenic	mg/L				<MDL	0.0	0.0			<MDL	
Cadmium	mg/L				<MDL	0.0	0.0			<MDL	
Calcium	mg/L				<MDL	710.0	710.0			710	
Iron (Dissolved)	mg/L				<MDL	0.0	0.0			<MDL	
Iron (TREC)	mg/L				<MDL	0.1	0.1			0.067	
Magnesium	mg/L				<MDL	65.8	65.8			65.8	
Manganese (Dissolved)	mg/L				<MDL	0.0	0.0			<MDL	
Manganese (Total)	mg/L				<MDL	0.0	0.0			0.0277	
Mercury	mg/L				<MDL	0.0	0.0			<MDL	
Selenium	mg/L				<MDL	0.0	0.0			<MDL	
Sodium	mg/L				<MDL	367.0	367.0			367	
Zinc	mg/L				<MDL	0.0	0.0			<MDL	

The area of concern for monitoring point AW-8 was affected by the mining operation before its establishment. Therefore, all recorded monitoring events are considered Operational.

Alluvial Wells AW-7 through AW-9 are located south of Old State Highway 133, near the entrance to the mine. They were installed in 1999 as the result of PR-03.

** Lab. data not provided*

There is no Baseline Collection possible for points initiated after the influence of mining.

AW-9
Alluvial Well
Top of Pipe Elevation - 5946
Depth - 80'
Pipe 1.15' Above Ground

Initiated	10/1/1999	10/1/1999	10/1/1999	10/1/1999
Activated	10/1/1999	10/1/1999	10/1/1999	10/1/1999
Date	10/4/2017	7/11/2017	5/23/2017	3/1/2017

		Summary Information									
		Baseline			Operation						
Field Parameters	UNITS	Min	Ave	Max	Min	Ave	Max				
Static Water Level	Feet				32.42	54.31	80.29	75.5	48.7	43.95	60.5
Water Elevation	Feet				51.1	5810.8	5913.6	5870.5	5897.3	5902.05	5885.5
FieldComment											
ph	su				7.3	7.8	8.3	7.99	7.8	8	7.96
Conductivity	umhos/cm				260	1742	4400	1685	1243	1290	1597
Temperature	Celsius				7.6	11.5	14.9	10.5	12.6	12	10.7
Lab Parameters	UNITS										
Bicarbonate	mg/L				39.6	298.9	479.0	384		315	
Carbonate	mg/L				<MDL	5.00	10.88	<MDL		<MDL	
Chloride	mg/L				3.0	134.0	544.5	154		89.7	
Conductivity	umhos/cm				519	1782	4350	1560		1070	
Hardness	mg/L				<MDL	499.8	1530.0	310		267	
Nitrate-Nitrite	mg/L				<MDL	2.20	7.92	1		**	
Ammonia	mg/L				<MDL	0.17	1.10	0.05		<MDL	
pH	su				7.4	7.9	8.5	8.0		7.9	
Phosphate	mg/L				<MDL	0.18	1.70	1.7		<MDL	
ResidueFilterable-TDS	mg/L				330	1283	3800	968		750	
Sulfate	mg/L				21.8	488.5	2100.0	378		215	
Arsenic (Dissolved)	mg/L				<MDL	0.0419	0.2880	<MDL		<MDL	
Cadmium (Dissolved)	mg/L				<MDL	0.00671	0.0220	<MDL		<MDL	
Calcium (Dissolved)	mg/L				29.0	71.7	230.0	47.5		42.6	
Iron (Dissolved)	mg/L				<MDL	0.19	3.59	0.0592		0.0108	
Iron (TREC)	mg/L				<MDL	4.88	122.00	11.5		122	
Magnesium (Dissolved)	mg/L				29.1	82.8	280.0	46.4		39	
Manganese (Dissolved)	mg/L				<MDL	0.018	0.155	<MDL		<MDL	
Manganese (TREC)	mg/L				<MDL	0.519	11.400	0.974		11.4	
Mercury (Dissolved)	mg/L				<MDL	0.00007	0.00036	<MDL		<MDL	
Selenium (Dissolved)	mg/L				<MDL	0.128	3.100	<MDL		<MDL	
Sodium (Dissolved)	mg/L				22.1	323.2	1998.0	22.1		168	
Zinc (Dissolved)	mg/L				<MDL	0.02	0.11	<MDL		<MDL	

The area of concern for monitoring point AW-9 was affected by the mining operation before its establishment. Therefore, all recorded monitoring events are considered Operational.

Alluvial Wells AW-7 through AW-9 are located south of Old State Highway 133, near the entrance to the mine. They were installed in 1999 as the result of PR-03.

*** Lab. data not provided*

There is no Baseline Collection possible for points initiated after the influence of mining.

AW-11
Alluvial Well
Elevation - 5884
Depth - 60.86'

Initiated	12/20/2000	12/20/2000	12/20/2000	12/20/2000
Activated	2/28/2002	2/28/2002	2/28/2002	2/28/2002
Date	12/11/2017	7/11/2017	5/9/2017	3/3/2017

		Summary Information									
Field		Baseline			Operation						
Parameters	UNITS	Min	Ave	Max	Min	Ave	Max				
Static Water Level	Feet	11.92	38.20	50.31	19.13	43.45	52.51	52.2	36.6	43.3	51.6
Water Elevation	Feet	5833.7	5845.8	5872.1	5831.5	5840.6	5864.9	5831.8	5847.4	5840.7	5832.4
FieldComment											
ph	su	6.7	7.3	7.5	6.9	7.5	8.0	7.58	7.79	7.55	7.62
Conductivity	umhos/cm	390	760	1060	480	1014	1719	1620	1059	1719	1600
Temperature	Celsius	11.2	13.4	15.7	10.0	12.9	15.3	11.2	14.5	13	10
Lab											
Parameters	UNITS										
Bicarbonate	mg/L	350	367	384	177.3	309.1	536.0	509		536	
Carbonate	mg/L	<MDL	<MDL	<MDL	<MDL	4.59	6.88	<MDL		<MDL	
Chloride	mg/L	2	3	3	<MDL	39.6	255.2	145		172	
Conductivity	umhos/cm	671	850	1030	661	1113	2870	1560		1340	
Hardness	mg/L	587	587	587	265.0	547.4	911.7	763		829	
Nitrate-Nitrite	mg/L	0.10	0.28	0.56	<MDL	0.65	2.70	<MDL		2.2	
Ammonia	mg/L	<MDL	0.05	0.08	<MDL	0.13	0.43	<MDL		<MDL	
pH	su	7.2	7.5	7.8	7.1	7.7	8.5	7.9		7.4	
Phosphate	mg/L	<MDL	0.14	0.39	<MDL	0.08	0.21	0.14		0.019	
ResidueFilterable-TDS	mg/L	360	553	690	350	765	2150	976		1100	
Sulfate	mg/L	20	150	250	4.94	211.51	510.00	277		257	
Arsenic (Dissolved)	mg/L	<MDL	<MDL	<MDL	<MDL	0.022	0.280	<MDL		<MDL	
Cadmium (Dissolved)	mg/L	<MDL	<MDL	<MDL	<MDL	0.010	0.030	<MDL		0.0283	
Calcium (Dissolved)	mg/L	70.6	92.9	110.0	30.8	134.6	765.0	143		159	
Iron (Dissolved)	mg/L	0.02	0.04	0.05	<MDL	0.19	2.46	0.0424		<MDL	
Iron (TREC)	mg/L	0.07	4.93	9.97	<MDL	2.67	24.30	0.355		0.221	
Magnesium (Dissolved)	mg/L	46.2	64.6	75.8	37.5	117.7	748.0	98.5		105	
Manganese (Dissolved)	mg/L	<MDL	0.02	0.03	<MDL	0.403	5.400	0.0077		<MDL	
Manganese (TREC)	mg/L	<MDL	0.34	0.57	<MDL	0.415	2.540	0.194		0.0406	
Mercury (Dissolved)	mg/L	<MDL	<MDL	<MDL	<MDL	0.00008	0.00027	<MDL		<MDL	
Selenium (Dissolved)	mg/L	<MDL	0.001	0.002	<MDL	0.012	0.116	<MDL		0.116	
Sodium (Dissolved)	mg/L	12.70	19.37	22.9	11.0	43.7	125.0	34.9		33.2	
Zinc (Dissolved)	mg/L	<MDL	0.01	0.02	<MDL	0.02	0.07	<MDL		0.032	

Alluvial Wells AW-11 through AW-13 are located north of the Union Pacific Railroad. They were installed in 2000 to develop baseline data for a new train loadout.

Baseline Information for AW-11 is derived from events beginning on 12/20/00 through 2/28/02.
Point influenced by mining on 2/28/02.

AW-12
Alluvial Well
Elevation - 5878
Depth - 45.38'

Initiated	12/20/2000	12/20/2000	12/20/2000	12/20/2000
Activated	2/28/2002	2/28/2002	2/28/2002	2/28/2002
Date	12/11/2017	7/11/2017	5/9/2017	3/3/2017

		Summary Information									
Field		Baseline			Operation						
Parameters	UNITS	Min	Ave	Max	Min	Ave	Max				
Static Water Level	Feet	6.49	26.72	37.03	5.31	24.64	39.58	36.4	8.9	20.6	34.8
Water Elevation	Feet	5841.0	5851.3	5871.5	5838.4	5853.4	5872.7	5841.6	5869.1	5857.4	5843.2
FieldComment											
ph	su	7.1	7.5	7.7	6.7	7.5	7.8	7.67	7.62	7.73	7.78
Conductivity	umhos/cm	490	567	610	485	684	1640	696	752	705	682
Temperature	Celsius	10.4	13.0	16.1	10.7	12.9	16.0	11.7	16	12.9	10.7
Lab											
Parameters	UNITS										
Bicarbonate	mg/L	297	336.3	371	265.95	365.26	471.43	434		415	
Carbonate	mg/L	<MDL	<MDL	<MDL	<MDL	5.69	8.99	<MDL		<MDL	
Chloride	mg/L	2	2	2	<MDL	14.7	119.0	2		2.3	
Conductivity	umhos/cm	548	571	609	473	775	3170	634		522	
Hardness	mg/L	318	318	318	237.0	361.6	674.3	289		304	
Nitrate-Nitrite	mg/L	0.45	0.473	0.51	<MDL	0.68	2.15	0.55		0.65	
Ammonia	mg/L	<MDL	0.09	0.27	<MDL	0.12	0.52	<MDL		<MDL	
pH	su	7.4	7.633	7.9	7.1	7.7	8.5	7.73		7.54	
Phosphate	mg/L	<MDL	0.017	0.05	<MDL	0.19	1.04	0.18		0.011	
ResidueFilterable-TDS	mg/L	310	330	340	221	484	2450	369		372	
Sulfate	mg/L	10	13.33	20	<MDL	20.7	42.4	15.3		20.4	
Arsenic (Dissolved)	mg/L	<MDL	<MDL	<MDL	<MDL	0.011	0.140	<MDL		<MDL	
Cadmium (Dissolved)	mg/L	<MDL	<MDL	<MDL	<MDL	0.011	0.040	<MDL		0.0162	
Calcium (Dissolved)	mg/L	51.9	54.8	57.4	3.8	157.9	673.0	603		629	
Iron (Dissolved)	mg/L	0.02	8.317	24.9	<MDL	0.63	10.28	0.0777		<MDL	
Iron (TREC)	mg/L	0.05	42.55	83.7	0.01	31.06	806.00	806		0.286	
Magnesium (Dissolved)	mg/L	<MDL	25.43	42.4	<MDL	85.6	368.0	335		358	
Manganese (Dissolved)	mg/L	<MDL	<MDL	<MDL	<MDL	0.078	0.621	<MDL		<MDL	
Manganese (TREC)	mg/L	<MDL	0.864	2.050	<MDL	4.850	119.000	119		0.0158	
Mercury (Dissolved)	mg/L	<MDL	<MDL	<MDL	<MDL	0.00008	0.00028	<MDL		<MDL	
Selenium (Dissolved)	mg/L	<MDL	<MDL	<MDL	<MDL	0.007	0.060	<MDL		0.0603	
Sodium (Dissolved)	mg/L	19.5	20.63	21.2	13.8	47.9	202.0	181		19.2	
Zinc (Dissolved)	mg/L	<MDL	0.003	0.01	<MDL	0.02	0.08	<MDL		<MDL	

Alluvial Wells AW-11 through AW-13 are located north of the Union Pacific Railroad. They were installed in 2000 to develop baseline data for a new train loadout.

Baseline Information for AW-12 is derived from events beginning on 12/20/00 through 2/28/02.
Point influenced by mining on 2/28/02.

AW-14
Alluvial Well
Depth - 30'
Elevation - 5822
Pipe 0.78' Above Ground

Initiated	7/24/2003	7/24/2003	7/24/2003	7/24/2003		
Activated	7/24/2003	7/24/2003	7/24/2003	7/24/2003		
Date	12/11/2017	7/11/2017	5/9/2017	3/3/2017		

		Summary Information										
		Baseline			Operation							
Field Parameters	UNITS	Min	Ave	Max	Min	Ave	Max					
Static Water Level	Feet				4.98	7.55	12.10	8.5	6.8	6.5	8	
Water Elevation	Feet				5809.9	5814.4	5817.0	5813.5	5815.2	5815.5	5814	
FieldComment												
ph	su				7.0	7.4	8.0	7.57	7.54	7.57	7.95	
Conductivity	umhos/cm				875	1650	2400	1787	2120	1924	1285	
Temperature	Celsius				7.6	12.0	15.7	12.3	15.1	11.1	8.1	
Lab Parameters	UNITS											
Bicarbonate	mg/L				238.2	366.0	552.3	448		453		
Carbonate	mg/L				<MDL	12.4	20.0	<MDL		<MDL		
Chloride	mg/L				2.0	136.5	397.0	148		110		
Conductivity	umhos/cm				650	1592	2860	1730		1580		
Hardness	mg/L				237.0	797.5	1770.2	739		804		
Nitrate-Nitrite	mg/L				<MDL	0.9	2.7	0.27		0.22		
Ammonia	mg/L				<MDL	0.73	7.61	<MDL		<MDL		
pH	su				6.9	7.6	8.5	7.61		7.34		
Phosphate	mg/L				<MDL	0.10	0.21	0.13		0.069		
ResidueFilterable-TDS	mg/L				610	1191	1910	1180		1380		
Sulfate	mg/L				67.6	385.5	661.0	445		558		
Arsenic (Dissolved)	mg/L				0.0003	0.046	0.922	<MDL		<MDL		
Cadmium (Dissolved)	mg/L				<MDL	0.012	0.030	<MDL		0.0295		
Calcium (Dissolved)	mg/L				41.6	126.3	241.0	132		147		
Iron (Dissolved)	mg/L				0.01	0.96	7.80	0.0536		0.0731		
Iron (TREC)	mg/L				0.27	9.54	28.10	16.8		20.4		
Magnesium-Dissolved	mg/L				7.7	148.3	914.0	99.5		106		
Manganese-Dissolved	mg/L				0.004	0.552	2.160	0.0562		0.273		
Manganese (TREC)	mg/L				0.004	1.623	6.780	0.339		1.02		
Mercury (Dissolved)	mg/L				<MDL	0.00010	0.00052	<MDL		<MDL		
Selenium (Dissolved)	mg/L				<MDL	0.021	0.116	<MDL		0.0892		
Sodium (Dissolved)	mg/L				40.7	136.0	991.0	110		116		
Zinc (Dissolved)	mg/L				<MDL	0.07	0.99	<MDL		<MDL		

The area of concern for monitoring point AW-14 was affected by the mining operation before its establishment. Therefore all recorded monitoring events are considered operational.

Alluvial Well AW-14 is located southwest of Pond K.

There is no baseline collection possible for points initiated after the influence of mining.

AW-15
Alluvial Well
Top of Pipe Elevation - 5972.52
Depth - 86
Pipe 0.3' Above Ground

Initiated	12/29/2003	12/29/2003	12/29/2003	12/29/2003
Activated	9/27/2004	9/27/2004	9/27/2004	9/27/2004
Date	12/11/2017	7/11/2017	4/24/2017	3/3/2017

		Summary Information									
Field		Baseline			Operation						
Parameters	UNITS	Min	Ave	Max	Min	Ave	Max				
Static Water Level	Feet	84.86	85.27	86.00	75.10	84.19	89.43	85	85	79.9	75.1
Water Elevation	Feet	5886.5	5887.3	5887.7	5883.1	5888.3	5897.4	5887.52	5887.52	5892.62	5897.42
FieldComment		Dry & Damp						*	*		
ph	su				7.0	7.3	7.7			7.28	7.38
Conductivity	umhos/cm				3800	4577	5300			4900	4700
Temperature	Celsius				8.4	14.5	19.1			14.5	12
Lab											
Parameters	UNITS										
Bicarbonate	mg/L				507.3	595.5	750.0			750	
Carbonate	mg/L				<MDL	5.61	6.88			<MDL	
Chloride	mg/L				119.91	223.90	418.00			418	
Conductivity	umhos/cm				4416	4776	5412			4500	
Hardness	mg/L				292.0	1037.0	1486.4			292	
Nitrate-Nitrite	mg/L				<MDL	6.26	11.30			11.3	
Ammonia	mg/L				0.269	0.458	0.647			<MDL	
pH	su				7.11	7.82	8.36			7.11	
Phosphate	mg/L				0.08	0.11	0.14			0.078	
ResidueFilterable-TDS	mg/L				3388.0	3990.4	4793.3			3790	
Sulfate	mg/L				1563.7	2050.03	2786.42			1800	
Arsenic	mg/L				<MDL	0.019	0.019			<MDL	
Cadmium	mg/L				<MDL	0.030	0.030			<MDL	
Calcium	mg/L				46.50	160.27	231.80			46.5	
Iron (Dissolved)	mg/L				0.07	1.20	2.84			0.0721	
Iron (TREC)	mg/L				1.56	2.20	3.12			1.56	
Magnesium (Dissolved)	mg/L				42.7	154.7	220.4			42.7	
Manganese (Dissolved)	mg/L				0.007	0.237	0.664			0.0073	
Manganese (TREC)	mg/L				0.060	0.294	0.701			0.0597	
Mercury	mg/L				0.00003	0.00006	0.00010			<MDL	
Selenium	mg/L				0.039	0.058	0.077			<MDL	
Sodium	mg/L				428.25	853.75	1510.00			623	
Zinc	mg/L				0.018	0.048	0.070			0.0701	

**Not enough water for field or lab parameters*

Alluvial Wells AW-15 through AW-17 are located north of Old State Highway 133, below the GOB Pile.

Baseline Information for AW-15 is derived from events beginning on 12/29/03 through 9/27/04.
Point influenced by mining on 9/27/04.

Bowie Resources, LLC
Bowie No. 2 Mine
2017 Annual Hydrology Report

Ground Water

AW-16
Alluvial Well
Top of Pipe Elevation - 5964.67
Depth - 75
Pipe 0.8' Above Ground

Initiated	12/29/2003	12/29/2003	12/29/2003	12/29/2003
Activated	9/27/2004	9/27/2004	9/27/2004	9/27/2004
Date	10/4/2017	7/11/2017	4/24/2017	3/3/2017

		Summary Information									
		Baseline			Operation						
Field Parameters	UNITS	Min	Ave	Max	Min	Ave	Max				
Static Water Level	Feet	68.00	69.23	70.48	61.65	71.57	76.55	68.2	70.5	71.85	72.35
Water Elevation	Feet	5894.2	5895.4	5896.7	5888.1	5893.1	5903.0	5896.47	5894.17	5892.82	5892.32
FieldComment										**	
ph	su	7.9	7.9	7.9	7.0	7.4	8.6	7.14	7.46		8.64
Conductivity	umhos/cm	740	740	740	750	3795	7610	7610	5920		5260
Temperature	Celsius	13.7	13.7	13.7	10.2	13.7	16.9	12.2	16.9		14
Lab Parameters	UNITS										
Bicarbonate	mg/L				558.0	610.0	661.9				
Carbonate	mg/L				<MDL	<MDL	<MDL				
Chloride	mg/L				43.6	49.1	54.5				
Conductivity	umhos/cm				5313.4	5876.3	6439.2				
Hardness	mg/L				2304.4	2531.6	2758.8				
Nitrate-Nitrite	mg/L				<MDL	1.49	1.49				
Ammonia	mg/L				<MDL	4.0	4.0				
pH	su				7.7	7.8	8.0				
Phosphate	mg/L				0.60	1.72	2.84				
ResidueFilterable-TDS	mg/L				5604	5770	5935				
Sulfate	mg/L				2903.8	2949.7	2995.6				
Arsenic	mg/L				0.021	0.084	0.146				
Cadmium	mg/L				0.034	0.042	0.050				
Calcium	mg/L				328.8	343.9	359.0				
Iron (Dissolved)	mg/L				0.08	0.08	0.08				
Iron (TREC)	mg/L				0.12	10.08	20.04				
Magnesium (Dissolved)	mg/L				380.3	416.3	452.3				
Manganese (Dissolved)	mg/L				0.0	0.258	0.510				
Manganese (Total)	mg/L				0.0	1.126	2.240				
Mercury	mg/L				0.00005	0.00006	0.00007				
Selenium	mg/L				0.009	0.025	0.040				
Sodium	mg/L				181.8	769.1	1356.5				
Zinc	mg/L				0.02	0.30	0.57				

Alluvial Wells AW-15 through AW-17 are located north of Old State Highway 133, below the GOB Pile.

***Not enough water for parameters*

Baseline Information for AW-16 is derived from events beginning on 12/29/03 through 9/27/04.
Point influenced by mining on 9/27/04.

AW-17
Alluvial Well
Top of Pipe Elevation - 5950.81
Depth - 62
Pipe Flush with Ground

Initiated	12/29/2003	12/29/2003	12/29/2003	12/29/2003
Activated	9/27/2004	9/27/2004	9/27/2004	9/27/2004
Date	10/4/2014	7/11/2017	4/24/2017	3/1/2017

		Summary Information									
Field		Baseline			Operation						
Parameters	UNITS	Min	Ave	Max	Min	Ave	Max				
Static Water Level	Feet	38.40	46.51	59.00	26.40	57.07	61.74	26.4	42.8	44.6	56.2
Water Elevation	Feet	5891.8	5904.3	5912.4	5889.1	5893.7	5924.4	5924.41	5908.01	5906.21	5894.61
FieldComment											
ph	su	8.5	8.9	9.7	7.1	7.6	8.1	7.76	7.66	7.65	7.66
Conductivity	umhos/cm	200	264	320	870	3417	5000	3370	3150	3060	2930
Temperature	Celsius	1.9	7.1	12.2	9.2	12.2	19.8	12.5	15.6	12.8	10.7
Lab											
Parameters	UNITS										
Bicarbonate	mg/L	114.6	114.6	114.6	162.54	352.06	641.70	382		392	
Carbonate	mg/L	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL		<MDL	
Chloride	mg/L	2.57	2.57	2.57	43.6	158.5	224.7	127		104	
Conductivity	umhos/cm	271.7	271.7	271.7	827	3390	5230	3120		2750	
Hardness	mg/L	76	76	76	462	1173	1836	1050		1110	
Nitrate-Nitrite	mg/L	3.05	3.05	3.05	<MDL	2.03	4.07	2.6		1.8	
Ammonia	mg/L	2.78	2.78	2.78	<MDL	0.45	0.83	<MDL		<MDL	
pH	su	8.5	8.5	8.5	6.9	7.4	8.2	7.71		7.37	
Phosphate	mg/L	<MDL	<MDL	<MDL	<MDL	0.057	0.100	0.029		<MDL	
ResidueFilterable-TDS	mg/L	185	185	185	503	2717	4046	2460		2440	
Sulfate	mg/L	2.1	2.1	2.1	126.36	1334.14	1946.87	1440		1330	
Arsenic (Dissovled)	mg/L	0.016	0.016	0.016	<MDL	0.009	0.018	<MDL		<MDL	
Cadmium (Dissolved)	mg/L	0.0003	0.0003	0.0003	<MDL	0.023	0.060	<MDL		<MDL	
Calcium (Dissolved)	mg/L	17.26	17.26	17.26	91.1	224.6	358.8	196		226	
Iron (Dissolved)	mg/L	0.029	0.029	0.029	0.016	0.160	0.832	0.0162		0.0452	
Iron (TREC)	mg/L	0.117	0.117	0.117	0.090	92.772	823.000	823		0.0902	
Magnesium (Dissolved)	mg/L	8.09	8.09	8.09	56.90	147.21	228.25	137		133	
Manganese (Dissolved)	mg/L	<MDL	<MDL	<MDL	<MDL	0.011	0.023	<MDL		0.0055	
Manganese (TREC)	mg/L	0.041	0.041	0.041	0.007	26.297	236.000	236		0.0114	
Mercury (Dissolved)	mg/L	<MDL	<MDL	<MDL	0.00002	0.00006	0.00013	<MDL		<MDL	
Selenium (Dissolved)	mg/L	0.014	0.014	0.014	0.004	0.016	0.046	<MDL		<MDL	
Sodium (Dissolved)	mg/L	12	12	12	40.60	326.59	565.00	410		400	
Zinc (Dissolved)	mg/L	0.005	0.005	0.005	0.010	0.020	0.036	<MDL		0.0359	

Alluvial Wells AW-15 through AW-17 are located north of Old State Highway 133, below the GOB Pile.

** Not enough water for field or lab parameters*
***Not enough water for lab sample*
**** Site was not accessible during 4Q 2015 due to inclement weather conditions*

Baseline Information for AW-17 is derived from events beginning on 12/29/03 through 9/27/04.
Point influenced by mining on 9/27/04.

P-1
Stevens Draw - Pond 1
Depth - 5'
Elevation - 7080

	Date	10/6/2017	8/10/2017	5/3/2017	3/24/2017
Field Parameters	UNITS				
Pond Inflow	GPM	0	0	0	0
Pond Outflow	GPM	0	0	0	0
Freeboard	FT	0	0	0	0
Water Depth	FT	0	0	0	0
Water Level	%	0	0	0	0
Field Comments		Dry	Dry	Dry	Dry

Pond 1 (P-1) results from the discharge of Spring 14 (S-14) and is located in Stevens Draw location of DH-15, DH-39 and the Lower Stevens Draw monitoring point.

Point P-1 has not been influenced by mining.

P-2
Freeman Gulch - Pond 2
Depth - 3'
Elevation - 7600

	Date	10/6/2017	8/9/2017	5/8/2017
Field Parameters	UNITS			
Pond Inflow	GPM	0	0	0
Pond Outflow	GPM	0	0	0
Freeboard	FT	3	3	1.1
Water Depth	FT	0	0	1.9
Water Level	%	0	0	0
Field Comments		Dry	Dry	No Flow

Pond 2 (P-2) is located in Freeman Gulch, near the Upper Freeman Gulch monitoring point and is fed by the discharge of Spring 3 (S-3).

Baseline Information for Point P-2 is derived from events beginning on 11/14/95 through 9/19/99.
Point influenced by mining on 9/19/99.

P-3
Terror Creek - Pond 3
Depth - 6.5'
Elevation - 7730

	Date	10/13/2017	8/10/2017	5/2/2017
Field Parameters	UNITS			
Pond Inflow	GPM	0	0	10.75
Pond Outflow	GPM	0	0	0
Freeboard	FT	4.9	3.3	1.1
Water Depth	FT	1.6	3.2	5.4
Water Level	%	23	46	77
Field Comments		No outflow	No outflow	No outflow

Pond 3 (P-3) is located in an un-named gulch which leads to Terror Creek. This pond is fed by Spring 16 (S-16) and is accessible by a road that passes Pond 4 (P-4). This road is not shown on the map.

Point influenced by mining on 1/15/01.

P-4
Terror Creek - Pond 4
Depth - 3.5'
Elevation - 7880

Date	10/13/2017	8/10/2017	4/6/2017

Field Parameters	UNITS			
Pond Inflow	GPM	0	0	0
Pond Outflow	GPM	0.38	0.74	4.75
Freeboard	FT	0	0	0
Water Depth	FT	3.5	3.5	3.5
Water Level	%	100	100	100
Field Comments				

Pond 4 (P-4) is located in an un-named gulch which leads to Terror Creek. This pond receives water from Springs 4 (S-4) and 4a (S-4a). It is accessible by an old exploration road.

Baseline Information for Point P-4 is derived from events beginning on 9/27/95 through 1/15/01.
Point influenced by mining on 1/15/01.

P-5
Sheep Corral - Pond 5
Depth - 8'
Elevation - 7800

	Date	10/13/2017	9/7/2017	5/2/2017
Field Parameters	UNITS			
Pond Inflow	GPM	0		2.8
Pond Outflow	GPM	0		0
Freeboard	FT	4.2	4.9	2.85
Water Depth	FT	3.8	3.1	5.15
Water Level	%	48	39	64
Field Comments		No flow	No flow	

Pond 5 (P-5) is located in an un-named gulch which feeds into Sheep Corral Gulch. This pond is fed by Springs 5 (S-5), 5a (S-5a) and 5b (S-5b) and is accessible by an old coal exploration road.

Point influenced by mining on 11/15/01.

P-6
Terror Creek - Pond 6
Depth - 3'
Elevation - 7880

	Date	10/13/2017	8/10/2017	5/4/2017
Field Parameters	UNITS			
Pond Inflow	GPM	0	0	0.665
Pond Outflow	GPM	0.0	0.0	0.0
Freeboard	FT	3.0	3.0	3.0
Water Depth	FT	0	0	0
Water Level	%	0.00	0.00	0.00
Field Comments		Dry	Dry	

Pond 6 (P-6) is located in an un-named gulch which leads to Terror Creek. This pond rece water from Spring 18 (S-18).

Point P-6 was influenced by mining in 2007.

P33-3
Sheep Corral - Pond 33-3
Depth - 5.5'
Elevation - 7760

	Date	10/6/2017	8/9/2017	5/3/2017
Field Parameters	UNITS			
Pond Inflow	GPM	0	0	0
Freeboard	FT	6.5	6.5	6.5
Water Depth	FT	0	0	0
Water Level	%	0	0	0
Field Comments		Dry	Dry	Dry

Pond 33-3 (P33-3) is located in an un-named drainage which discharges into Sheep Corra
This pond apparently has no spring, and catches only run-off water in the early spring.

Baseline Information for Point P33-3 is derived from events beginning on 10/30/97 through 12/1/01.
Point influenced by mining on 12/1/01.

P6-5
W. Fork of Terror Creek - Pond 6-5
Elevation - 8020

Initiated	7/19/1985	7/19/1985	7/19/1985
Activated			
Date	10/20/2017	8/8/2017	5/2/2017

Summary Information

Field Parameters	UNITS	Baseline Min	Baseline Ave	Baseline Max				Operation		
Outflow	GPM	0.00	0.15	2.56				1.0		
Inflow	GPM	0.00	0.00	0.00				0.0		
Freeboard	Feet								1.7	
Temperature	Celsius	12.7	15.6	24.7						
Conductivity	umhos/cm	280	452	791						
pH	su	6.2	7.8	8.5						
Field Comments										Dry
Lab Parameters	UNITS									
Bicarbonate	mg/L	164.7	290.7	420.9						
Carbonate	mg/L									
Chloride	mg/L	1	6	11						
Conductivity	umhos/cm	285	446	629						
Hardness	mg/L	127	199	320						
pH	su	7.3	7.5	7.9						
ResidueFilterable-TDS	mg/L	22	240	432						
ResidueNonFilterable-TSS	mg/L	10	185	830						
SAR		0.43	0.56	0.9						
Sulfate	mg/L	<MDL	7.7	14.0						
Calcium (Dissolved)	mg/L	31	50	74						
Magnesium (Total)	mg/L	12	22	33						
Sodium (Dissolved)	mg/L	13	19	29						
Potassium	mg/L									
TDS Ratio (grav./calc.)										

The area of concern for monitoring point P6-5 has not been affected by the mining operation. Therefore, all recorded monitoring events are considered Baseline.

Baseline Information Collection initiated on 7/19/85 and not yet considered complete.
Point P6-5 has not been influenced by mining.

P7-2
Steven's Gulch - Pond 7-2
Elevation - 8190

Initiated	7/29/1985	7/29/1985	7/29/1985
Activated	6/10/2014	6/10/2014	6/10/2014
Date	10/20/2017	8/7/2017	5/11/2017

Summary Information

Field Parameters	UNITS	Baseline Min	Baseline Ave	Baseline Max	Operation		Operation			
Outflow	GPM	0	0.67	15.39	11.25		11.25			
Inflow	GPM	0	0.27	3.75	0.00		0.00			
Freeboard	Feet	0	1.32	3.42	3.25		3.25	1.8	1.8	1.8
Temperature	Celsius	10	16.71	27.80	15.10		15.10			
Conductivity	umhos/cm	160	248.77	321.00	170.00		170.00			
pH	su	7.2	8.46	9.70	7.7		7.7			
Field Comments								No flow	No flow	No flow
Lab Parameters	**UNITS**									
Bicarbonate	mg/L	119.6	158.9	223.0						
Carbonate	mg/L									
Chloride	mg/L	<MDL	2.7	5.0						
Conductivity	umhos/cm	204.0	251.3	320.0						
Hardness	mg/L	92.0	117.0	142.0						
pH	su	6.8	7.5	8.3						
ResidueFilterable-TDS	mg/L	118.0	169.7	234.0						
ResidueNonFilterable-TSS	mg/L	10.0	100.0	538.0						
SAR		0.20	0.41	1.00						
Sulfate	mg/L	<MDL	11.3	49.0						
Calcium (Dissolved)	mg/L	22.0	27.9	35.0						
Magnesium (Total)	mg/L	9.0	11.5	15.0						
Sodium (Dissolved)	mg/L	5.0	10.0	22.0						
Potassium	mg/L									
TDS Ratio (grav./calc.)										

Activated 6/10/14

Baseline Information Collection initiated on 7/29/85.
Point P7-2 was influenced by mining June 10, 2014.

P7-7
Steven's Gulch - Pond 7-7
Elevation - 8380

Initiated	7/25/1985	7/25/1985	7/25/1985
Activated			
Date	10/20/2017	8/7/2017	6/14/2017

Summary Information

Field Parameters	UNITS	Baseline Min	Baseline Ave	Baseline Max						
Inflow	GPM	0.0	0.0	0.0						
Outflow	GPM	0.0	0.0	0.4				0	0	0
Freeboard	Feet	0.00	1.56	4.80				**	0.08	1.25
Temperature	Celsius	3.1	14.6	27.1						
Conductivity	umhos/cm	227.0	381.2	829.0						
pH	su	6.4	7.6	8.1						
Field Comments								Damp	Dry	No flow
Lab Parameters	UNITS									
Bicarbonate	mg/L	126.9	190.5	244.0						
Carbonate	mg/L									
Chloride	mg/L	<MDL	1.6	3.0						
Conductivity	umhos/cm	219.0	303.1	460.0						
Hardness	mg/L	117.0	151.2	183.0						
pH	su	6.4	7.3	7.9						
ResidueFilterable-TDS	mg/L	142.0	204.8	276.0						
ResidueNonFilterable-TSS	mg/L	2.0	65.1	252.0						
SAR		0.2	0.4	1.0						
Sulfate	mg/L	<MDL	6.8	10.0						
Calcium (Dissolved)	mg/L	24.0	34.8	42.0						
Magnesium (Total)	mg/L	11.0	15.6	19.0						
Sodium (Dissolved)	mg/L	4.0	10.8	29.0						
TDS Ratio (grav./calc.)										

The area of concern for monitoring point P7-7 has not been affected by the mining operation. Therefore, all recorded monitoring events are considered Baseline.

**Dam Gone*
*** Data not provided in field notes*

Baseline Information Collection initiated on 7/25/85 and not yet considered complete.
Point P7-7 has not been influenced by mining.

P7-11
Steven's Gulch - Pond 7-11
Elevation - 8400

Initiated	7/25/1985	7/25/1985	7/25/1985
Activated			
Date	10/20/2017	8/7/2017	6/14/2017

Summary Information

Field Parameters	UNITS	Baseline Min	Baseline Ave	Baseline Max	Operation					
Outflow	GPM	0.00	0.22	7.99				0	0	0
Inflow	GPM	0.00	0.31	7.99				0	0	0
Freeboard	Feet	0.00	1.32	2.61						
Temperature	Celsius	3.6	15.9	29.9						
Conductivity	umhos/cm	138	288	495						
pH	su	6.4	7.6	9.2						
Field Comments								Dry	Damp	Dry
Lab Parameters	UNITS									
Bicarbonate	mg/L	105	320	2116						
Carbonate	mg/L	<MDL	<MDL	<MDL						
Chloride	mg/L	<MDL	3	4						
Conductivity	umhos/cm	202	262	346						
Hardness	mg/L	79	122	172						
pH	su	6.3	7.4	8.3						
ResidueFilterable-TDS	mg/L	144	190	260						
ResidueNonFilterable-TSS	mg/L	2	277	3033						
SAR		0.34	0.54	1.78						
Sulfate	mg/L	<MDL	18	121						
Calcium (Dissolved)	mg/L	3.66	26.50	41.00						
Magnesium (Total)	mg/L	7.0	12.4	19.7						
Sodium (Dissolved)	mg/L	8	13	42						
TDS Ratio (grav./calc.)		1.01	1.04	1.07						

The area of concern for monitoring point P7-11 has not been affected by the mining operation. Therefore, all recorded monitoring events are considered Baseline.

Baseline Information Collection initiated on 7/25/85 and not yet considered complete.
Point P7-11 has not been influenced by mining.

P8-4
Terror Creek - Pond 8-4
Elevation - 6980

Initiated								1987	1987	1987	1987
Activated											
Date								10/13/2017	8/21/2017	5/10/2017	3/3/2017
		Summary Information									
Field		Baseline									
Parameters	UNITS	Min	Ave	Max							
Outflow	GPM	0.0	0.0	0.0				0	0	0	0
Inflow	GPM	0.0	0.15	0.94				0	0	0	0
Freeboard	Feet	0.35	0.38	0.41				Breached/Dry	Breached/Dry	Breached/Dry	Breached/Dry
Temperature	Celsius	6.8	10.8	18.3							
Conductivity	umhos/cm	1140	1188	1220							
pH	su	8.4	8.5	8.6							
Field Comments											
Lab											
Parameters	UNITS										
Bicarbonate	mg/L										
Chloride	mg/L										
Conductivity	umhos/cm										
Hardness	mg/L										
pH	su										
ResidueFilterable-TDS	mg/L										
ResidueNonFilterable-TSS	mg/L										
SAR											
Sulfate	mg/L										
Calcium (Dissolved)	mg/L										
Magnesium (Total)	mg/L										
Sodium (Dissolved)	mg/L										
Potassium	mg/L										
TDS Ratio (grav./calc.)											

The area of concern for monitoring point P8-4 has not been affected by the mining operation. Therefore, all recorded monitoring events are considered Baseline.

Baseline Information Collection initiated in 1987 and not yet considered complete.
Point P8-4 has not been influenced by mining.

P12-1
Steven's Gulch - Pond 12-1
Elevation -7950

Initiated	7/30/1985	7/30/1985	7/30/1985
Activated	4/1/2014	4/1/2014	4/1/2014
Date	11/27/2017	8/7/2017	6/14/2017

Summary Information

Field Parameters	UNITS	Baseline Min	Baseline Ave	Baseline Max	Operation					
Outflow	GPM	0.00	0.29	3.75	9.375	0.781	9.375			
Inflow	GPM	0.00	0.00	0.00	3.75	0.341	3.75			
Freeboard	Feet	0.00	1.58	3.35	3.80	1.84	3.80	3.8	1.8	1.2
Temperature	Celsius	5.9	17.7	28.8	15.2		15.2			
Conductivity	umhos/cm	283	360	493	260		260			
pH	su	6.6	8.2	10.8	7.9		7.9			
Field Comments								No Flow	No Flow	No Flow
Lab Parameters	UNITS									
Bicarbonate	mg/L	88.0	168.4	269.6						
Carbonate	mg/L	12.4	12.4	12.4						
Chloride	mg/L	<MDL	4.5	7.0						
Conductivity	umhos/cm	256	341	487						
Hardness	mg/L	86.0	122.9	159.0						
pH	su	7.1	7.8	8.9						
ResidueFilterable-TDS	mg/L	154	215	288						
ResidueNonFilterable-TSS	mg/L	<MDL	38	160						
SAR		0.600	0.943	1.550						
Sulfate	mg/L	4.0	36.5	109.0						
Calcium (Dissolved)	mg/L	28.0	35.8	49.0						
Magnesium (Total)	mg/L	4.0	10.3	14.0						
Sodium (Dissolved)	mg/L	16.0	24.8	41.0						
TDS Ratio (grav./calc.)										

Activated 4/1/14

Baseline Information Collection initiated on 7/30/85.
Point P12-1 was influenced by mining 4/1/14.

P12-2
Steven's Gulch - Pond 12-2
Elevation - 8030

Initiated	7/6/1983	7/6/1983	7/6/1983
Activated	5/15/2014	5/15/2014	5/15/2014
Date	10/20/2017	8/7/2017	6/27/2017

Summary Information

Field Parameters	UNITS	Baseline Min	Baseline Ave	Baseline Max	Operation Min	Operation Ave	Operation Max			
Outflow	GPM	0	0.31	4.94	1.25		1.25			
Inflow	GPM	0	0.19	0.38	0.00		0.00			
Freeboard	Feet	0	0.10	0.56	1.80		1.80	0.2	0.2	0.6
Temperature	Celsius	5.4	16.33	26.30	17.20		17.20			
Conductivity	umhos/cm	239	380.35	520.00	350.00		350.00			
pH	su	6.4	8.03	9.40	7.7		7.7			
Field Comments								No flow	No flow	No flow
Lab Parameters	UNITS									
Bicarbonate	mg/L	200.0	253.6	336.0						
Carbonate	mg/L	5.9	8.85	11.80						
Chloride	mg/L	2.0	4.1	9.0						
Conductivity	umhos/cm	317	395	456						
Hardness	mg/L	144.00	192.08	238.00						
Acidity	mg/L	16.0	16.0	16.0						
pH	su	7.3	7.9	8.6						
ResidueFilterable-TDS	mg/L	168	244	292						
ResidueNonFilterable-TSS	mg/L	2	330	3332						
SAR		0.330	0.613	1.260						
Sulfate	mg/L	<MDL	19.57	113.00						
Calcium (Dissolved)	mg/L	20.0	41.7	54.0						
Iron (Total)	mg/L	1.42	1.42	1.42						
Iron (Dissolved)	mg/L	0.04	0.04	0.04						
Magnesium (Total)	mg/L	16.0	21.4	29.0						
Manganese (Total)	mg/L	0.320	0.320	0.320						
Sodium (Dissolved)	mg/L	10	19.17	36.00						
TDS Ratio (grav./calc.)	%									

Activated May 15, 2014

**Large Seep Area - Unmeasurable*

Baseline Information Collection initiated on 7/6/83.
Point P12-2 was influenced by mining 05/15/2014.

P12-10
Steven's Gulch - Pond 12-10
Elevation - 7820

Initiated	7/30/1985	7/31/1985	8/1/1985
Activated			
Date	11/27/2017	8/7/2017	6/14/2017

Summary Information

Field Parameters	UNITS	Baseline Min	Baseline Ave	Baseline Max	Operation Min	Operation Ave	Operation Max			
Outflow	GPM	0.0	2.6	48.07						
Inflow	GPM	0.0	0.4	15.00						
Freeboard	Feet							4.1	2.1	0.9
Temperature	Celsius	4.4	16.8	25.5						
Conductivity	umhos/cm	270	347	466						
pH	su	6.7	8.2	10.4						
Field Comments								No Flow	No Flow	No Flow
Lab Parameters	**UNITS**									
Bicarbonate	mg/L	122	188.8	309						
Carbonate	mg/L	6	9	12						
Chloride	mg/L	<MDL	6.3	17						
Conductivity	umhos/cm	217	333	463						
Hardness	mg/L	98	146	209						
pH	su	7.6	8.2	9.8						
ResidueFilterable-TDS	mg/L	146	208	288						
ResidueNonFilterable-TSS	mg/L	<MDL	26.6	120						
SAR		<MDL	0.73	1.07						
Sulfate	mg/L	4	19	41						
Calcium (Dissolved)	mg/L	28	37	48						
Magnesium (Total)	mg/L	6	13	29						
Sodium (Dissolved)	mg/L	9	20	32						
TDS Ratio (grav./calc.)										

The area of concern for monitoring point P12-10 has not been affected by the mining operation. Therefore, all recorded monitoring events are considered Baseline.

Corrected monitoring information from 4/28/10 to 11/29/11.
Contractor has been monitoring Pond 12-9 as 12-10, but realized his error during 4/10/12 monitoring.
Found remnants of Pond 12-10 on 4/10/12 - has been washed out for a long time. No evidence of flow.

Baseline Information Collection initiated on 7/30/85 and not yet considered complete.
Point P12-10 has not been influenced by mining.

P17-1
Coal Gulch - Pond 17-1
Elevation - 7340

Initiated	12/22/2004	12/22/2004	12/22/2004	12/22/2004
Activated				
Dated	10/18/2017	8/8/2017	5/8/2017	3/24/2017

Summary Information

Field Parameters	UNITS	Baseline Min	Baseline Ave	Baseline Max	Operation						
Outflow	GPM	0.0	2.4	30				0	0	0	3.85
Inflow	GPM	0.0	0.0	0.0				0	0	0	
Freeboard	Feet	0.0	0.1	0.5							0
Temperature	Celsius	0.5	9.0	17.5							11
Conductivity	umhos/cm	40.0	151.7	570							101.8
pH	su	7.6	8.0	8.4							8.31
Field Comments								Dry	Dry	Dry	
Lab Parameters	UNITS										
Bicarbonate	mg/L	40.5	56	84							
Carbonate	mg/L	<MDL	<MDL	<MDL							
Chloride	mg/L	1	3	4							
Conductivity	umhos/cm	77.8	104	146							
Hardness	mg/L	26.8	47	75							
pH	su	7.5	7.7	7.9							
ResidueFilterable-TDS	mg/L	61	80	100							
ResidueNonFilterable-TSS	mg/L	16	25	36							
SAR		0.16	0.17	0.19							
Sulfate	mg/L	<MDL	5.35	5.35							
Calcium (Dissolved)	mg/L	5.83	11.98	19.80							
Magnesium (Total)	mg/L	2.98	4.26	6.30							
Sodium (Dissolved)	mg/L	2.21	2.64	3.40							
TDS Ratio (grav./calc.)		1.07	1.36	1.82							

The area of concern for monitoring point P17-1 has not been affected by the mining operation. Therefore, all recorded monitoring events are considered Baseline.

Baseline Information Collection initiated on 12/22/04 and not yet considered complete.
Point P17-1 has not been influenced by mining.

Initiate	7/6/1983	7/6/1983	7/6/1983
Activate			
Date	10/20/2017	8/7/2017	6/14/2017

Summary Information

Field Parameters	UNITS	Baseline Min	Baseline Ave	Baseline Max				Operation	Operation	Operation
Inflow	GPM	0.00	0.36	15.71				0	0	0
Outflow	GPM	0.00	0.00	0.00				0	0	0
Freeboard	Feet	0.48	1.87	3.2				3.20	1.80	1.70
Temperature	Celsius	2.2	16.0	29						
Conductivity	umhos/cm	206	329	500						
pH	su	5.9	7.4	8.8						
Field Comments								Empty	No Flow	No Flow
Lab Parameters	UNITS									
Bicarbonate	mg/L	109.8	187.5	268						
Carbonate	mg/L	<MDL	<MDL	<MDL						
Chloride	mg/L	<MDL	6.45	30						
Conductivity	umhos/cm	197	324	581						
Hardness	mg/L	11	128	210						
pH	su	6.8	7.3	8.3						
ResidueFilterable-TDS	mg/L	126	211	402						
ResidueNonFilterable-TSS	mg/L	6	59	158						
SAR		0.34	0.65	1.58						
Sulfate	mg/L	<MDL	18.12	119						
Calcium (Dissolved)	mg/L	23	35	56						
Magnesium (Total)	mg/L	8	12	17						
Sodium (Dissolved)	mg/L	8	18	39						
TDS Ratio (grav./calc.)		1.05	1.05	1.05						

The area of concern for monitoring point P18-4 has not been affected by the mining operation. Therefore, all recorded monitoring events are considered Baseline.

Baseline Information Collection initiated on 7/6/83 and not yet considered complete.
Point P18-4 has not been influenced by mining.

P18-1
Coal Gulch - Pond 18-1
Elevation - 7760

Initiated	7/19/1985	7/19/1985	7/19/1985
Activated	6/6/2012	6/6/2012	6/6/2012
Date	10/13/2017	9/14/2017	5/8/2017

Summary Information

Field Parameters	UNITS	Baseline Min	Baseline Ave	Baseline Max	Operation Min	Operation Ave	Operation Max			
Outflow	GPM	0.00	0.20	2.11	0.00	0.09	0.94	0	0	0
Inflow	GPM	0.00	0.31	1.88	0.00	0.46	4.10	4.1	2.7	0.2
Freeboard	Feet	0.00	2.07	2.91	0.00	0.76	2.88			
Temperature	Celsius	9.8	16.2	26.7	11.20	17.85	23.10			
Conductivity	umhos/cm	115	211	378	557.00	600.00	620.00			
pH	su	6.3	7.8	9.2	8.10	8.43	8.68			
Field Comments								No flow	No flow	No flow
Lab Parameters	UNITS									
Bicarbonate	mg/L	49.0	125.4	201.3						
Carbonate	mg/L	0.6	0.6	0.6						
Chloride	mg/L	<MDL	7	11						
Conductivity	umhos/cm	120	244	398						
Hardness	mg/L	54	94	153						
pH	su	6.2	7.0	7.6						
ResidueFilterable-TDS	mg/L	86	169	280						
ResidueNonFilterable-TSS	mg/L	12	178	552						
SAR		<MDL	0.21	0.47						
Sulfate	mg/L	<MDL	15	39						
Calcium (Dissolved)	mg/L	15	25	40						
Magnesium (Total)	mg/L	4	7	13						
Sodium (Dissolved)	mg/L	<MDL	5	10						
TDS Ratio (grav./calc.)										

The monitoring point for Pond 18-1 is located on a south facing slope that drains down toward the North Fork of the Gunnison River.

Baseline Information is derived from monitoring events beginning on 7/19/85 through 6/6/2012.
Point P18-1 influenced by mining 6/6/12.

Initiated	6/14/1983	6/14/1983	6/14/1983
Activated			
Date	11/27/2017	9/14/2017	6/29/2017

Summary Information

Field Parameters	UNITS	Baseline Min	Baseline Ave	Baseline Max				Operation	Operation	Operation
Inflow	GPM	0.0	0.0	0				0	0	0
Outflow	GPM	0.0	0.1	4.488				0	0	0
Freeboard	Feet	0.18	1.03	2.55				*	*	0.6
Temperature	Celsius	4.2	16.9	29						
Conductivity	umhos/cm	62.0	247.1	968						
pH	su	7.0	8.3	9.8						
Field Comments								Empty/Dry	Empty/Dry	No Flow
Lab Parameters	UNITS									
Bicarbonate	mg/L	53.7	140.7	478.2						
Carbonate	mg/L									
Chloride	mg/L	<MDL	20.0	120						
Conductivity	umhos/cm	95.0	271.8	885						
Hardness	mg/L	44.0	103.3	331						
pH	su	6.3	7.2	8						
ResidueFilterable-TDS	mg/L	90.0	200.5	372						
ResidueNonFilterable-TSS	mg/L	14.0	125.0	624						
SAR		0.1	0.4	1.74						
Sulfate	mg/L	<MDL	19.6	62						
Calcium (Dissolved)	mg/L	11.0	25.3	83						
Magnesium (Total)	mg/L	3.0	9.7	30						
Sodium (Dissolved)	mg/L	1.0	10.8	50						
Potassium	mg/L									
TDS Ratio (grav./calc.)										

The area of concern for monitoring point P81 has not been affected by the mining operation. Therefore, all recorded monitoring events are considered Baseline.

** Data not provided in field notes*

Baseline Information Collection initiated on 6/14/83 and not yet considered complete.
Point P81 has not been influenced by mining.

P82
Steven's Gulch - Pond 82
Elevation - 7580

Initiated	7/18/1990	7/18/1990	7/18/1990	7/18/1990
Activated				
Date	10/13/2017	8/8/2017	5/8/2017	3/24/2017

Summary Information

Field Parameters	UNITS	Baseline Min	Baseline Ave	Baseline Max				Operation			
Outflow	GPM	0.00	0.13	4.90				0	0	0	4.9
Inflow	GPM	0.00	0.00	0.00				0	0	0	0
Freeboard	Feet	0.00	1.29	4.80				*	*	2.3	0
Temperature	Celsius	7.8	17.9	28.0							8.5
Conductivity	umhos/cm	91	237	569							122.3
pH	su	6.4	8.5	10.0							8.26
Field Comments								Dry	Dry	No flow	
Lab Parameters	UNITS										
Bicarbonate	mg/L	51.2	134	290							
Carbonate	mg/L	1	1	1							
Chloride	mg/L	<MDL	8	25							
Conductivity	umhos/cm	104	258	623							
Hardness	mg/L	36	89	158							
pH	su	6.4	7.1	8.4							
ResidueFilterable-TDS	mg/L	75	225	566							
ResidueNonFilterable-TSS	mg/L	28	155	450							
SAR		<MDL	0.22	0.49							
Sulfate	mg/L	4	22	78							
Calcium (Dissolved)	mg/L	11	24	45							
Magnesium (Total)	mg/L	2	7	13							
Sodium (Dissolved)	mg/L	<MDL	5	14							
Potassium	mg/L										
TDS Ratio (grav./calc.)											

The area of concern for monitoring point P82 has not been affected by the mining operation. Therefore, all recorded monitoring events are considered Baseline.

** Data not provided in field notes*

Baseline Information Collection initiated on 7/18/90 and not yet considered complete.
Point P82 has not been influenced by mining.

P83
Coal Gulch - Pond 83
Depth - 2.5'
Elevation -7820

Initiated	7/18/1983	7/18/1983	7/18/1983
Activated	7/15/2013	7/15/2013	7/15/2013
Date	10/13/2017	9/14/2017	5/8/2017

Summary Information

Field Parameters	UNITS	Baseline Min	Baseline Ave	Baseline Max	Operation					
Outflow	GPM	0.00	0.24	6.24	0.00	0.00	0.00	0	0	0
Inflow	GPM	0.00	0.00	0.00	0.00	0.00	0.00	0	0	0
Freeboard	Feet	0.57	2.30	2.54	1.25	2.32	2.54	*	*	*
Temperature	Celsius	9.4	18.6	27.8						
Conductivity	umhos/cm	148	354	485						
pH	su	6.9	74.7	803.0						
Field Comments								Dry	Dry	Dry
Lab Parameters	UNITS									
Bicarbonate	mg/L	75.6	203.8	280.6						
Carbonate	mg/L	39.5	39.5	39.5						
Chloride	mg/L	<MDL	7	14						
Conductivity	umhos/cm	160	357	499						
Hardness	mg/L	70	162	234						
pH	su	6.9	7.8	9.4						
ResidueFilterable-TDS	mg/L	95	202	270						
ResidueNonFilterable-TSS	mg/L	4	77	536						
SAR		0.21	0.42	0.71						
Sulfate	mg/L	<MDL	14	29						
Calcium (Dissolved)	mg/L	13	30	54						
Magnesium (Total)	mg/L	6	21	29						
Sodium (Dissolved)	mg/L	4	13	21						
Potassium	mg/L									
TDS Ratio (grav./calc.)										

** No data provided in field notes*

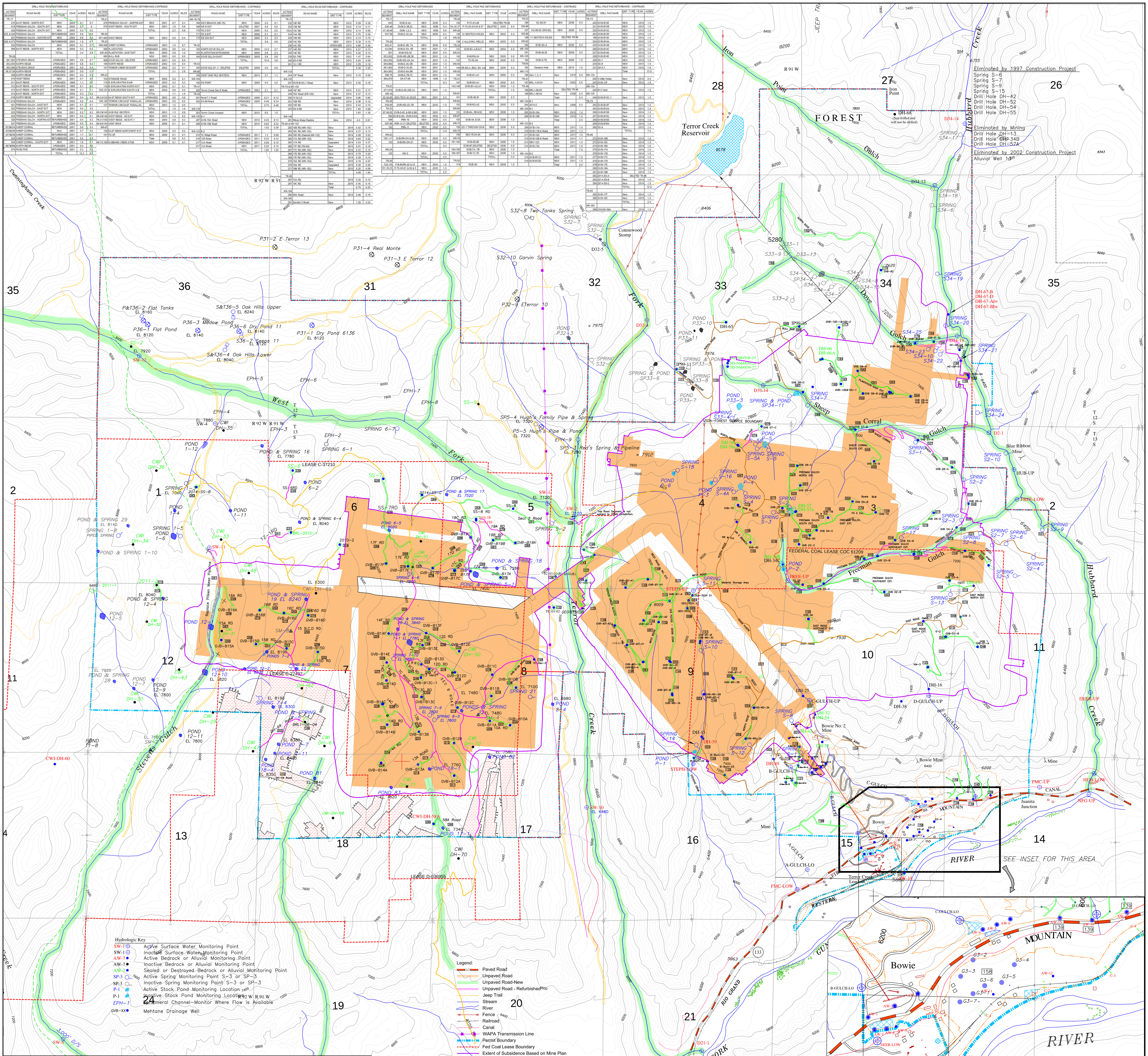
Baseline Information Collection initiated on 7/18/83 .
Point P83 was influenced by mining on or about July 15, 2013.

2017
MAPS

BOWIE RESOURCES, LLC

BOWIE RESOURCES, LLC
BOWIE NO. 2 MINE
P.O. BOX 483
PAONIA, COLORADO 81428
PERMIT C-1996-083

PREPARED BY:



	No.	Description	BY	DATE
REVISIONS	82	TR-107 Suspend Monitoring at Some Sites, Show outline of mining to date and new extent of subsidence.	J.E.S.	04/15/16
	81	TR-103 Suspend Monitoring at Some Sites	J.E.S.	08/18/15
	80	TR-100 Mine Plan Update and Sequence	J.E.S.	05/06/15
	79	TR-99 Delete 2015-1B and 2015-1SS	J.E.S.	02/18/15
	78	MR-174 Update Drill Road Locations and Acreage	J.E.S.	01/30/15
	77	TR-96 Delete Drill Holes P-TC-03-06, BRL-1-08-03, 2014-SS-A and 11 Geotech Holes	J.E.S.	11/21/14
	76	MR-165 Section 5 Road	J.E.S.	11/04/14
	75	MR-164 Replace CWI-DH-58 with new DH-58A	J.E.S.	10/02/14
	74	PR-14 Federal Coal Lease COC-75916, Point of compliance wells, Stream buffer zones.	J.E.S.	10/03/14
	73	TR-90 Two New GVBs	J.E.S.	06/13/14
	72	MR-152 Move 11 Gob Vent Holes	J.E.S.	06/18/14

REFERENCES

ENGINEER'S CERTIFICATION

I hereby certify that this drawing was done by me or under my direct supervision and that all of the information presented on this drawing is true and correct to the best of my knowledge and belief.

James E. Stover   Date
Colorado P.E. 19230

PREPARED FOR:
BRL
BOWIE RESOURCES, LLC
BOWIE NO. 2 MINE
P.O. BOX 483
PAONIA, COLORADO 81428

PREPARED BY: J. E. STOVER & ASSOCIATES
2352 N. 7th Street, Unit B
Grand Jct., CO 81501

N W E S
ONE INCH

DESIGNED: T.K.B. 11/09
DRAWN:
CHECKED:

PROJECT: BOWIE NO. 2 MINE

TITLE: HYDROLOGICAL MONITORING LOCATION MAP

DRMS I.D. No. C - 1996 - 083

SCALE: 1" = 1000'

DWG. NAME: Map 09