J. E. STOVER & ASSOCIATES, INC.

2352 NORTH 7TH STREET, UNIT B
GRAND JUNCTION, COLORADO 81501
PHONE: (970) 245-4101, FAX 242-7908

MINE ENGINEERING
MINE RECLAMATION

CIVIL ENGINEERING
CONST. MANAGEMENT

March 4, 2020

Mr. Clayton Wein
Division of Reclamation, Mining and Safety
1313 Sherman Street, Room 215
Denver, CO 80203

RE: Snowcap Coal Company, Inc.
Annual Hydrology Report – 2019WY
Permit No. C-1981-041

Dear Mr. Wein:

On behalf of Snowcap Coal Company, Inc., enclosed is a copy of its annual hydrology report for the 2019 water year. This submission is designed to supplement previous submissions and should be added to the 3-ring binder provided in 1993. The index pages should replace the previous index pages; the report, diagrams, tables and map should be inserted following the 2019 tab page; and the data pages should be added to or replace existing pages in the data pages binder.

Sincerely,

Tonya K. Hammond

Tonya K. Hammond
Owner's Representative
Snowcap Coal Company, Inc.

Enclosures

cc: SCC File

SNOWCAP COAL COMPANY, INC.
ANNUAL HYDROLOGY REPORT INDEX

Surface Water

SA-# - Rapid Creek, quality monitored near SWGS-04 (Discontinued 1986)
SB-# - Upper Colorado River, quality (Discontinued 1993)
SC-# - Lower Colorado River, quality (Discontinued 1993)
SD-# - Outfall 001, weekly and monthly field and lab data (Discontinued 2002)
SE-# - Outfall 002, weekly and monthly field and lab data (Discontinued 2002)
SF-# - Outfall 004, weekly and monthly field and lab data (Discontinued 2001)
SG-# - SWSG-01, Lower Rapid Creek, daily flows and hydrograph (Discontinued 2016)
SH-# - SWGS-02, Cottonwood Creek, daily flows and hydrographs (Discontinued 2016)
SI-# - SWGS-03, Upper Rapid Creek, daily flows and hydrographs (Discontinued 2016)
SJ-# - SWGS-04, Lower Rapid Creek, daily flows and hydrographs (Discontinued 1986)
SK-# - SWGS-05, Upper Cottonwood Creek, daily flows and hydrographs (Discontinued 1998)
SL-# - Outfalls 001, 002 & 016, WET test (Discontinued 2005)
SM-# - Outfall 004, WET test (Discontinued 1999)
SN-# - Outfall 001, quality (Discontinued 2001)
SO-# - Outfall 002, quality (Discontinued 2001)
SP-# - Outfall 004, quality (Discontinued 1999)
SQ-# - Colorado River, USGS station 09095500 data
SR-# - Coal Canyon Drainage, SWGS-06 & -07, flows (Discontinued 2016)
SS-# - Jerry Creek, SWGS-08 & -09, flows (Discontinued 2011)
ST-# - Spring and Seep Surveys (Discontinued 2005)
SU-# - Outfall 016, quality
SV-# - Outfall 016, Weekly and monthly field and laboratory data

Ground Water

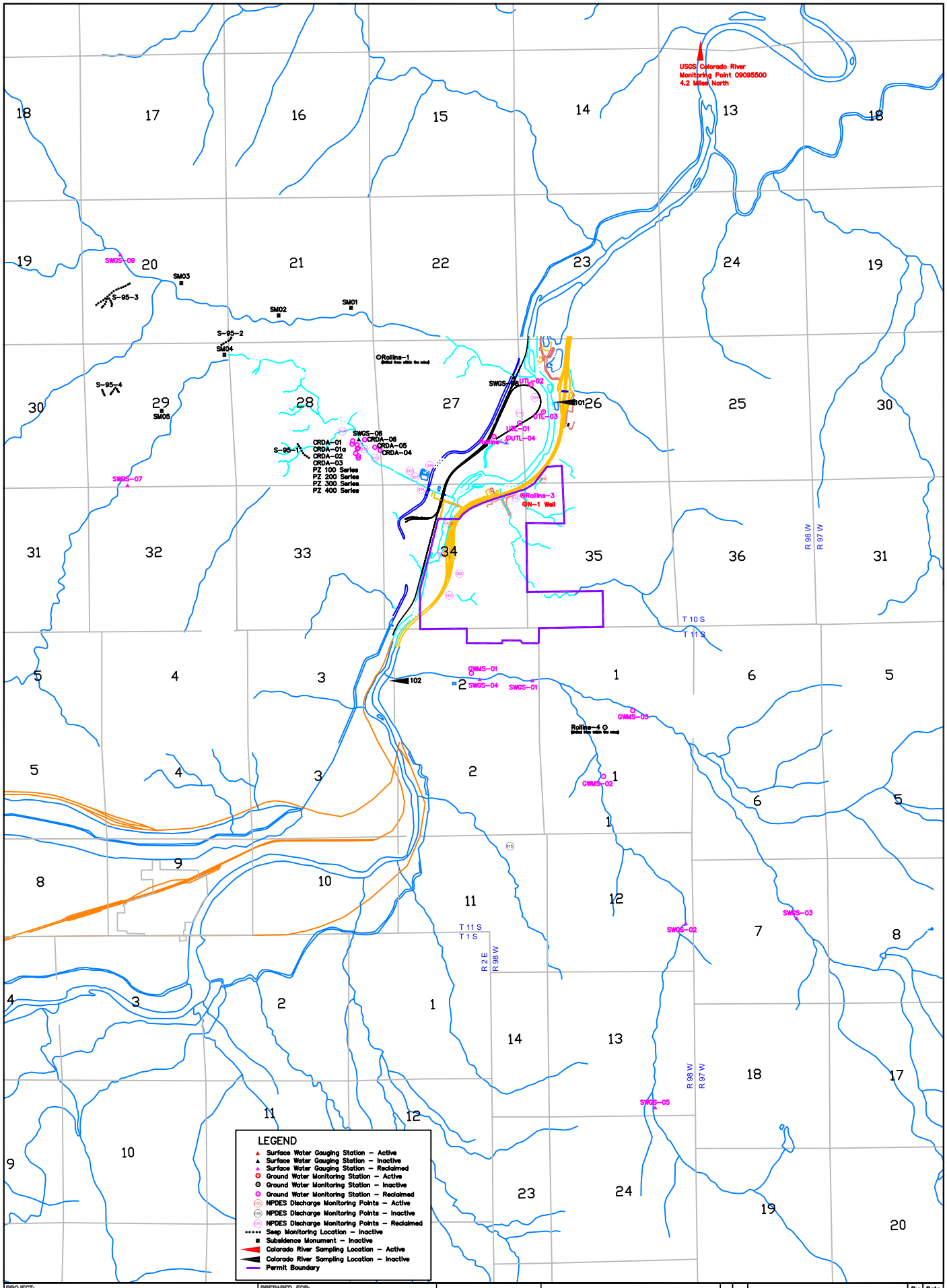
GA-# - Cottonwood Creek and Rapid Creek Groundwater Levels GWMS 01A, 01B, 02A, 02, 03A, 03B (Discontinued 2016)
GB-# - Unit Train Loadout Groundwater Level UTL-01, 02, 03, 04 (Discontinued 2011)
GC-# - Cameo Refuse Disposal Area Ground Water CRDA & PZ #s (Discontinued 2016)
GD-# - Water Quality Data UTL-02 UTL-04 (Discontinued 2010)
GE-# - Rollins Sandstone Wells depth to water and water quality Rollins-1, 2, 3, 4 (Discontinued 2011)

Mine Inflows

MA-# - South Portal inflow and quality data (Discontinued 1999)
MB-# - North Portal inflow and quality data (Discontinued 1999)

Consumptive Use

CA-# - Palisade Domestic Water and Preparation Plant, meter readings (Discontinued 2000)



PROJECT: SNOWCAP COAL COMPANY, INC.

TITLE: ROADSIDE NORTH AND SOUTH MINES MONITORING LOCATION MAP

DWG. NAME: 2019 AHR

DRMS I.D. No. C-1981-041

SCALE: 1" = 2000'

PREPARED FOR:
SNOWCAP COAL COMPANY, INC.
P.O. Box 1430
Palisade, CO 81526
(970) 241-8118

PREPARED BY: J. E. STOVER & ASSOCIATES
2020 N 7th St., Unit B
Grand Jct., CO 81501

ONE INCH

DIGITIZED	TKH	03/03/04
DRAWN:		
CHECKED:	JES	03/03/04

REVISIONS			By	Date
	1	2019 Annual Hydrologic Map (Oct 2018 thru Sept 2019)	TKH	03/20

REFERENCES
C:\D_Drive\Spars\Old-D-Drive\PowderhornCoal\Powderhorn\ahr\2019MonitoringLocationMap

SNOWCAP COAL COMPANY, INC.
2019 ANNUAL HYDROLOGIC REPORT
OCTOBER 1, 2018 THROUGH SEPTEMBER 30, 2019

Introduction

During the 2019 Water Year, the Year, the mines were idle. Mining ceased at the Roadside Portals on December 2, 1999. The North Mine was sealed on February 10, 2000. The Roadside South Mine was sealed on April 12, 2000. The South Fan was sealed May 22, 2000. The 2 West Portals were sealed on April 24, 2000. Production at the Roadside North utilized room and pillar mining with a continuous miner and shuttle cars.

Reclamation of CRDA-2 was completed in 2002. The sediment retained by the drop structures in Coal Canyon was harvested for cover material. Material excavated during construction of the upper diversion ditch was also used as cover material. A small amount of cover material was obtained from CBA-1. Topsoil was obtained from Topsoil Stockpiles 2, 7, 8 and 9. Reclamation of CRDA-1 was also completed in 2002. Cover material was obtained from CBA-2. The road to CRDA-1 was left open to accept coal and refuse material from other ongoing reclamation activities. The road begins at the west end of Haul Rd No. 5 and extends to the top of CRDA-1.

The North Portal was regraded to approximate original contour during 2002. Backfill material came from areas filled near Coal Creek and around the coal stockpile area.

During 2002 the RSRDA was graded to final contours. The existing cover was graded off of the slope and used as cover below the first bench. Refuse material was cut from the pile to establish two 10' - 15' wide benches on 30' to 40' elevation intervals. This refuse material was placed in an extension of the pile to the north. Cover material was obtained from the RSRDA borrow area.

During 2003, a portion of the conveyor corridor was regraded and seeded. This work extended from the culvert under Excel's frontage road to the culvert under the railroad loop. The conveyor bridge over the Colorado River was removed during the year.

During 2004, the conveyor corridor, from the Xcel culvert south to Transfer Building #2 and east of the Colorado River where the conveyor tube crossed the river, was graded to approximate original contours and seeded.

No reclamation was performed in 2005 or 2006.

During 2007, a permit revision (PR3) was approved to change the land use at the South Portal from Fish and Wildlife to Industrial/Commercial. Final grading was completed for the approved reclamation plan.

During 2008, seeding was completed at the South Portal and the "G" Substation was removed, graded to approximate original contours and seeded.

During 2009, the rail spur lying south of I.9 Road was reclaimed, graded and seeded. A phase III bond release (SL5) was approved on the reclaimed conveyor corridor lying south of I.9 Road, and a permit revision (PR4) was approved to change the land use at the Unit Train Loadout from Fish and Wildlife to Industrial/Commercial. Halliburton Energy Services purchased the UTL and began construction of their commercial sand plant operations.

During 2010 coal fines from the UTL were hauled to CRDA-1 and reclamation of CRDA-1 road was finalized in September. Ponds 1 and 2, sewage lagoons, topsoil pile 4 along with other areas of the UTL were reclaimed, regraded and reseeded. A phase III bond release (SL6) was approved for the Commercial/Industrial portion of the South Portal.

During 2011 Pond 7, sumps and ditches at the North Decline and Pond 8 at the South Portal were reclaimed, regraded and reseeded. A phase III bond release (SL7) was approved for the UTL, Railroad Loop, the remainder of the conveyor corridor and the permanent flood control dike.

During 2012 Ponds 6, 10, 11 and 13, CBA#1 Sump and miscellaneous sedimentation control features at the North Portal and along Coal Creek were reclaimed, regraded and reseeded. A permit revision (PR5) was approved allowing Coal Creek and Coal Gulch to remain in their present alignment and allows for the North Portal upper diversion ditch and a portion of Topsoil Pile 2 to remain as permanent features.

During 2013 Pond 9 was reclaimed, regraded and reseeded.

No reclamation was performed in 2014.

No reclamation was performed in 2015.

No reclamation was performed in 2016. Bond release application SL8 was approved on November 14, 2015. With this approval 128 surface disturbed acres achieved Phase III release; 136.5 surface disturbed acres achieved Phase II release and 22.2 surface disturbed acres achieved Phase I release. Also released with SL-8 were 1288.9 unaffected acres and 744 undisturbed acres overlying underground workings.

No reclamation was performed in 2017. A permit revision (PR6) was approved to change the land use at the Roadside North Portal Area from Fish and Wildlife to Industrial/Commercial. Bond release applications SL9 and SL10 were approved releasing 13.1 acres from Phase II liability and 13.6 acres from Phase III liability. Also released were 0.2 acres of undisturbed acres overlying underground workings.

No reclamation was performed in 2018.

During 2019 a hydrologic communication repair above the South Portal Mine was completed as approved by TR69. This repair generated a disturbance of 0.4 acres which was regraded, seeded and mulched.

The general format of this report is the same as in previous years.

Surface Water

Water flow and quality on the Colorado River is monitored by the U.S. Geologic Survey (USGS) at various locations. The closest location is Station No. 09095500, which is located upstream approximately 7 miles north east of the mine site. Water quality and flow from this site are used as a general representation of the Colorado River up gradient of the mining operation. There is a diversion to the Government Highline Canal, the addition of Plateau Creek and the addition of other minor drainages between the monitoring site and the mine site. Data Pages SQ-114 through SQ-117 includes information supplied by USGS on this site during the 2018 Water Year. The total flow at this site for the Year was 3,421,900 acre-feet which is 117% of the normal average flow for the period 1934 - 2019 (2,768,328). The estimated TDS load for the Year was 1.39 million tons. This estimate is made by converting values for conductivity reported on page SQ-117 to TDS per acre feet and multiplying by the monthly flow in acre feet. The low flow for the Year was recorded as 924 CFS on January 4, 2019. The river was carrying approximately 1.06 tons of TDS per acre-foot on January 4, 2019. This flow and TDS load equates to approximately 1943 tons of Total Dissolved Solids, TDS, being carried by the river past the mine that day. The mine discharge on January 7, 2019 (the closest monthly analysis), was 184.2 gpm @ 1220 mg/l TDS; resulting in approximately 1.35 tons of TDS being discharged. Comparing the calculated TDS load in the River at low flow and the mine discharge near the same date, the maximum increase in the River's TDS as a result of mine discharge would have been 0.07%.

The surface water monitoring points on Cottonwood and Rapid Creeks were suspended from monitoring with the approval of TR67 on February 23, 2016, therefore no current of future monitored will be conducted. Past monitoring of these points can be found on data pages SG-61, SG-62, SH-28 and SI-28. The Cottonwood and Rapid Creek flumes associated with SWGS 01, SWGS 02 and SWGS 03 were removed in August 2016.

Monitoring on Coal Creek and Jerry Creek started in 1995. The crest stage gages installed in Coal Canyon drainage and Jerry Creek in 1996 were destroyed by a storm in the summer of 1998. Discussions with DRMS indicated there was no need to monitor the upstream locations SWGS 07 and 09. The creeks were then only monitored at the lower monitoring points. The ephemeral flow in Coal Creek was measured at culverts located between the two refuse disposal areas, SWGS 06. These culverts provided a stable cross section and were accessible throughout the year. The intermittent flow in Jerry Creek was measured at the culvert near the Highline Canal, SWGS 08. Beginning July 1999, instantaneous flows were monitored monthly. Monitoring was suspended for Jerry Creek (SWGS 08) with the approval of TR62 on 11/8/11. Monitoring was suspended for Coal Creek (SWGS 06) with the approval of TR67 on February 23, 2016. Therefore, no monitoring was performed during the Year.

There were four seeps included in the hydrologic monitoring in 1995. The locations of the seeps are shown on the Hydrologic Monitoring Map. They are located adjacent to Coal Canyon

drainage and Jerry Creek. They are primarily evident by the white staining on the hillsides from evaporation of the seeps. None of them flow to the creek channel but generally evaporate within a couple of hundred feet of the source. On April 19, 2006, Snowcap Coal Company submitted a technical revision, TR50, requesting to discontinue seep monitoring. The request was approved by the Division on July 25, 2006. Therefore, no monitoring was performed during the Year.

There was no discharge from CDPS discharge points 005 thru 015 during the Year. These outfalls cover sediment pond discharges. Discharge point 015, now inactive, was permitted to allow pumping water from the south end of the Roadside South Portal out the 2 West portals. Discharge point 016 is permitted for gravity discharge from the northwest intake pool. It replaced outfalls 001 and 002 on March 31, 2002.

Discharge point 001 was primarily used as an overflow to a mine water system for the preparation plant during mine operations. During March and April 2000, a discharge pipe was installed from the No. 2 South Mains sump to outfall 001. The routing of this 4-inch diameter pipe is presented on permit Figure 14-6. The capacity of this discharge pipe was about 75 gpm. Flow ceased at discharge point 001 on March 31, 2002. Discharge point 001 was reclaimed during the 1st quarter of 2008 and is no longer operational.

Discharge point 002 was water siphoned from the reclaimed Northwest Intake Portal at the Roadside South Portals. Mine inflows that were not pumped to the preparation plant were routed to an abandoned portion of the mine for discharge from this point. The preparation plant was shut down during December 1999 so all mine inflows in excess of those handled by outfall 001, flow north to the lower portion of the mine where they were handled by the siphon, outfall 002. Flow ceased at discharge point 002 on March 31, 2002.

The following table presents the total dissolved solids concentration in Outfall 002.

Average TDS from Pages SE-8 ≡ SE-11 Outfall 002				
Water Year	1999	2000	2001	2002
TDS (mg/l)	1558	1560	1500	1500

Discharge point 016 was put into service April 1, 2002. Discharge began April 3, 2002. This gravity discharge point handles all of the water that flows into the sealed South Portal. Since it is a gravity discharge point, the flow discharged will equal the flow into the mine. Table M19-1 presents a summary of the monthly flow from the mine. Data page SV-18 presents a listing of flow and water quality monitoring performed at this site during the Year. Data page SU-6 includes a full suite analysis performed on a sample collected during the Year. The average

TDS value at discharge point 016 for the Year was 1233 mg/l.

Whole Effluent Toxicity (WET) tests were not performed during the Year. On May 3, 2005, Snowcap Coal Company requested, via letter to the CDPHE, the WET tests be terminated. This request was granted and the CDPS Permit was amended on June 27, 2005, becoming effective on August 1, 2005.

Ground Water

The ground water monitoring points on Cottonwood and Rapid Creeks were suspended from monitoring with the approval of TR67 on February 23, 2016, therefore no monitored was conducted for the Year. The monitoring wells associated with GWMS01 A&B, GWMS02 A&B, and GWMS03 A&B were plugged and abandoned on August 24, 2016. A copy of the abandonment report was included in the 2016 AHR.

Piezometers CRDA-01 thru 06 at the Cameo Refuse Disposal Areas (CRDA) No. 1 and No. 2 were not monitored during the Year. The monitoring was suspended for these piezometers with the approval of TR67 on February 23, 2016. The piezometers were removed and backfilled in May 2016 as specified on page 14-31 of SCC's permit document. Past monitoring shows the water levels in the piezometers were consistently below their critical depths and information can be found on data pages GC-1 through GC-25.

The past results of water level measurements at the unit train loadout are listed on Data page GB-2. Monitoring of these piezometers was discontinued with the approval of SL7 in April 2011 and the UTL-01, UTL-02, UTL-03 and UTL-04 piezometers were sealed and reclaimed on May 17, 2011. The Well Abandonment Reports were included in DRMS's quarterly report dated July 7, 2011. No monitoring was performed during the Year.

A former mine dewatering hole (N-1) located at the North Decline area of the mine is used to monitor the water level in the abandoned portions of the Roadside South Portal. Since discharge point 016 was put into service, the water level in N-1 is virtually constant and it is expected to stay at an elevation of about 4758. The results of monitoring N-1 are presented in Table M19-2.

In order to characterize the Rollins Sandstone two surface and two underground wells were installed during June 1997. The surface wells, Rollins-2 and Rollins-3, were installed at the unit train loadout and the north decline respectively. The underground wells, Rollins-1 and Rollins-4, were installed in the North and South Portals respectively. Depth to water ranged from 56.5 feet below grade in the North Decline well to artesian in the North Portal well. Monitoring of these wells was performed in accordance with permit requirements. Prior depth to water data is presented on data page GE-1-1. Rollins-1 was sealed in December 1999 and Rollin-4 was sealed in April 2000. Rollins-2 and 3, with the approval of SL-7, were sealed in May 2011. The Well Abandonment Reports were included in DRMS's quarterly report dated July 7, 2011. No

monitoring was performed during the Year.

Mine Water

There was no annual mine inflow study performed during the Year since the North and South Portals have been sealed. The last annual mine inflow was performed during December 1999 and reported in the 1999 report.

Discharge Monitoring Reports (DMRs)

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.

Consumptive Use

Consumptive use during the Year was for dust suppression and hydro-seeding during the TR69 hydrologic repair. No records of this minor amount of consumptive use are available.

Impacts

The average total dissolved solids for the mine discharges calculated with total flow for the Year yields the tons of TDS discharged for the year. Outfall 016 discharged a total of 566 tons of TDS to the river during the Year.

The 2019 TDS discharge represents 0.041% of the 1.39 million tons calculated to be carried by the River. At the Roadside South Portal, water is expected to perpetually discharge through outfall 016.

There are no detectable effects of mining on flows in Cottonwood and Rapid Creeks. Mining ceased at the Roadside Portals on December 2, 1999. No further mining from either portal is anticipated in the foreseeable future.

Consumptive use will be insignificant in the future because mining and washing of coal has ceased. Consumptive use will be for hydro-seeding and dust control during reclamation operations.

ROADSIDE SOUTH PORTAL DISCHARGE

2019 WATER YEAR

OUTFALL 016

DATE	DAYS	METER	K-GAL.	GPM
9/12/18		237,819		
10/1/18	19	245,254	7435	271.7
10/9/18	8	248,348	3094	268.6
11/5/18	27	258,936	10588	272.3
11/13/18	8	262,068	3132	271.9
12/3/18	20	269,884	7816	271.4
12/11/18	8	273,037	3153	273.7
1/7/19	27	280,199	7162	184.2
1/9/19	2	281,190	991	344.1
1/11/19	2	282,036	846	293.8
1/15/19	4	283,769	1733	300.9
2/4/19	20	292,152	8383	291.1
2/12/19	8	295,491	3339	289.8
3/5/19	21	304,336	8845	292.5
3/18/19	13	309,647	5311	283.7
4/1/19	14	315,342	5695	282.5
4/9/19	8	318,665	3323	288.5
5/1/19	22	327,792	9127	288.1
5/13/19	12	332,690	4898	283.4
6/3/19	21	337,116	4426	146.4
6/17/19	14	339,337	2221	110.2
7/1/19	14	341,573	2236	110.9
7/10/19	9	343,017	1444	111.4
7/15/19	5	343,871	854	118.6
7/17/19	2	344,159	288	100.0
7/19/19	2	344,505	346	120.1
7/22/19	3	344,994	489	113.2
7/29/19	7	346,124	1130	112.1
8/5/2019	7	347,246	1122	111.3
8/13/2019	8	348,524	1278	110.9
8/26/2019	13	350,862	2338	124.9
9/3/2019	8	352,359	1,497	129.9
9/17/2019	14	354,923	2564	127.2
Total	370		**117104**	**219.8**

File TM3

Snowcap Coal Company, Inc.

N-1 Monitoring Well
North Decline
2019

N-1 Top of Pipe - Elevation 4833

Date	Depth to Water	Elevation
10/1/2018	75.42	4757.58
10/9/2018	75.40	4757.60
11/5/2018	75.43	4757.57
11/13/2018	75.47	4757.53
12/11/2018	75.39	4757.61
1/7/2019	74.91	4758.09
1/9/2019	75.07	4757.93
1/11/2019	75.16	4757.84
1/15/2019	75.30	4757.70
1/18/2019	75.31	4757.69
1/22/2019	75.36	4757.64
1/28/2019	75.36	4757.64
2/4/2019	75.35	4757.65
3/5/2019	75.35	4757.65
3/18/2019	75.40	4757.60
4/1/2019	75.37	4757.63
4/9/2019	75.36	4757.64
5/1/2019	75.38	4757.62
5/13/2019	75.38	4757.62
5/20/2019	75.35	4757.65
5/23/2019	75.40	4757.60
5/28/2019	75.40	4757.60
6/3/2019	75.39	4757.61
6/6/2019	75.40	4757.60
6/17/2019	75.42	4757.58
6/26/2019	75.42	4757.58
7/1/2019	75.42	4757.58
7/5/2019	75.41	4757.59
7/10/2019	75.40	4757.60
7/15/2019	75.38	4757.62
7/17/2019	75.40	4757.60
7/19/2019	75.40	4757.60
7/22/2019	75.39	4757.61
7/29/2019	75.41	4757.59
8/5/2019	75.42	4757.58
8/13/2019	75.40	4757.60
8/26/2019	75.35	4757.65
9/3/2019	75.36	4757.64
9/17/2019	75.37	4757.63
Min	74.91	4757.53
Max	75.47	4758.09
Average	75.36	4757.64

Desired Range 4755 to 4762

Water-Data Report 2019
09095500 COLORADO RIVER NEAR CAMEO, CO -- Continued

DISCHARGE, CUBIC FEET PER SECOND
YEAR 2018-10-01 to 2019-09-30
DAILY MEAN VALUES

Day	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	2018	2018	2018	2019	2019	2019	2019	2019	2019	2019	2019	2019
1	1,340	1,640	1,480	1,250	1,080	1,850	1,750	7,810	6,550	21,200	6,040	2,660
2	1,430	1,650	1,390	1,060	1,180	1,900	1,720	6,820	7,690	23,000	5,740	2,670
3	1,410	1,580	1,290	970	1,650	2,010	1,750	5,740	9,160	21,800	5,510	2,670
4	1,500	1,660	1,320	924	1,590	1,570	1,800	5,170	10,100	20,900	5,230	2,650
5	1,550	1,700	1,170	944	1,520	1,370	1,860	5,020	11,300	19,700	5,310	2,620
6	1,810	1,700	1,190	1,160	1,560	1,540	2,010	5,130	12,700	18,500	5,440	2,580
7	2,460	1,600	1,280	1,380	1,390	2,510	2,070	5,460	14,900	17,100	5,000	2,650
8	1,960	1,550	1,470	1,400	1,240	2,270	2,210	5,960	17,200	16,200	4,770	2,740
9	1,800	1,500	1,440	1,410	1,000	1,980	2,320	6,290	18,800	15,900	4,700	2,820
10	1,820	1,420	1,360	1,320	1,110	1,580	2,630	5,990	17,900	14,500	4,490	2,890
11	1,980	1,380	1,200	1,260	1,250	1,480	2,950	5,430	16,200	13,600	4,280	2,920
12	1,930	1,400	1,190	1,310	1,290	1,520	2,610	5,020	15,800	13,000	4,200	2,980
13	1,840	1,400	1,200	1,320	1,220	2,160	2,430	4,910	16,700	12,400	4,120	2,950
14	1,770	1,350	1,210	1,190	1,280	1,620	2,220	5,310	18,600	12,200	3,900	2,910
15	1,710	1,420	1,140	1,080	2,050	1,520	2,130	6,180	20,100	12,500	3,690	2,870
16	1,730	1,430	1,160	1,120	1,690	1,360	2,050	7,530	19,200	12,800	3,420	2,810
17	1,670	1,450	1,180	1,300	1,340	1,420	2,180	9,520	18,700	12,700	3,220	2,730
18	1,650	1,420	1,190	1,410	1,190	1,450	2,540	9,720	19,300	12,100	3,120	2,670
19	1,660	1,400	1,220	1,370	1,150	1,520	2,720	8,530	20,200	11,000	2,950	2,610
20	1,620	1,370	1,340	1,300	1,240	1,550	2,870	7,390	20,800	10,200	2,830	2,550
21	1,600	1,330	1,230	1,310	1,190	1,540	3,280	7,110	21,200	9,690	2,750	2,530
22	1,580	1,320	1,220	1,280	1,210	1,540	3,530	6,960	21,800	9,200	2,560	2,470
23	1,530	1,280	1,240	1,240	1,220	1,520	3,540	6,500	19,600	8,810	2,510	2,520
24	1,510	1,380	1,130	1,210	1,210	1,540	3,770	6,290	16,700	8,390	2,540	2,520
25	1,630	1,430	1,210	1,190	1,140	1,530	4,120	5,970	14,200	8,000	2,570	2,530
26	1,630	1,310	1,270	1,280	1,180	1,490	4,510	5,930	13,500	7,630	2,570	2,480
27	1,590	1,230	1,260	1,250	1,210	1,530	5,260	6,220	14,200	7,240	2,510	2,500
28	1,610	1,160	1,190	1,230	1,400	1,610	6,560	6,450	16,300	6,990	2,470	2,520
29	1,570	1,360	1,080	1,230		1,780	6,940	6,590	18,400	6,840	2,380	2,460
30	1,610	1,530	1,030	1,130		1,920	7,930	6,500	20,000	6,290	2,370	2,410
31	1,580		1,110	999		1,870		6,340		6,140	2,520	
Total	52,080	43,350	38,390	37,830	36,780	52,049	94,260	199,800	487,800	396,500	115,700	79,890
Mean	1,680	1,445	1,238	1,220	1,314	1,679	3,142	6,445	16,260	12,790	3,733	2,663
Max	2460	1700	1480	1410	2050	2510	7930	9720	21800	23000	6040	2980
Min	1340	1160	1030	924	1000	1360	1720	4910	6550	6140	2370	2410
Ac-ft	103,300	85,980	76,140	75,030	72,950	103,200	187,000	396,300	967,500	786,500	229,500	158,500

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1934 - 2019, BY WATER YEAR (WY)

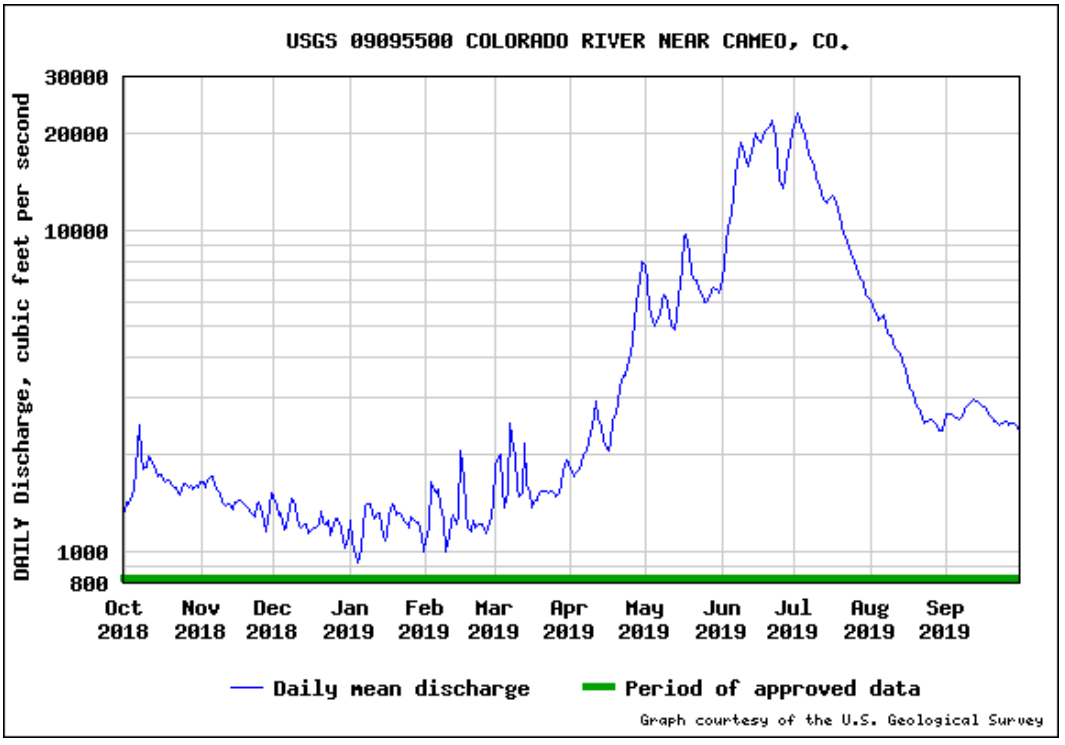
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Mean	2,201	1,933	1,675	1,572	1,588	1,810	3,138	8,796	12,210	5,749	2,843	2,269
Max	3,731	3,253	3,002	2,621	2,775	3,365	8,615	20,290	25,829	17,430	6,571	4,271
(WY)	(1985)	(1985)	(1985)	(1985)	(1986)	(1986)	(1962)	(1984)	(1984)	(1957)	(1984)	(1984)
Min	1,084	1,038	1,004	940	941	1,019	1,428	2,536	2,606	1,515	1,332	1,243
(WY)	(1935)	(1935)	(1935)	(1964)	(1935)	(1935)	(2013)	(1977)	(2002)	(1934)	(1940)	(1934)

Water-Data Report 2019
09095500 COLORADO RIVER NEAR CAMEO, CO -- Continued

SUMMARY STATISTICS

	Water Year 2019		Water Years 1934 - 2019	
Annual total	1,634,000			
Annual mean	4,478		3,821	
Highest annual mean			7,605	1984
Lowest annual mean			1,751	2002
Highest daily mean	23,000	Jul 02	38,000	May 26, 1984
Lowest daily mean	924.0	Jan 04	608.0	Dec 23, 2012
Annual 7-day minimum	1,041	Dec 30	852.4	Dec 24, 1939
Maximum peak flow	23,400[a]	Jul 02	39,300[a]	May 26, 1984
Maximum peak stage	11.87	Jul 02	14.36	May 26, 1984
Annual runoff (cfsm)	0.561		0.478	
Annual runoff (inches)	7.61		6.50	
10 percent exceeds	12,880		9,150	
50 percent exceeds	2,010		2,170	
90 percent exceeds	1,210		1,370	

[a] Discharge affected to unknown degree by Regulation or Diversion



Water-Data Report 2019

09095500 COLORADO RIVER NEAR CAMEO, CO -- Continued

SPECIFIC CONDUCTANCE, WATER, UNFILTERED, MICROSIEMENS PER CENTIMETER AT 25 DEGREES CELSIUS
YEAR 2018-10-01 to 2019-09-30
DAILY MEAN VALUES

Day	Oct 2018	Nov 2018	Dec 2018	Jan 2019	Feb 2019	Mar 2019	Apr 2019	May 2019	Jun 2019	Jul 2019	Aug 2019	Sep 2019
1	1,250	1,120	1,130	1,380	1,420	1,120	1,070	427	508	249	490	844
2	1,260	1,070	1,100	1,310	1,400	1,060	1,090	446	464	245	510	815
3	1,230	1,050	1,130	1,310	1,230	1,030	1,080	493	393	247	527	807
4	---	1,060	1,170	1,380	1,040	1,100	1,060	529	365	247	540	807
5	---	1,050	1,190	1,480	1,100	1,130	1,010	550	343	252	556	807
6	---	1,060	1,230	1,500	1,070	1,150	965	550	323	257	538	810
7	---	1,080	1,290	1,330	1,100	1,090	928	531	289	263	545	818
8	---	1,100	1,260	1,250	1,130	1,030	909	505	267	272	577	803
9	---	1,100	1,210	1,220	1,170	1,020	883	479	253	274	584	791
10	---	1,120	1,180	1,190	1,260	1,060	834	485	254	283	591	775
11	---	1,180	1,190	1,210	1,320	1,110	767	518	262	290	602	787
12	---	1,220	1,240	1,220	1,240	1,140	730	548	266	293	611	747
13	---	1,240	1,300	1,190	1,190	1,110	771	570	263	298	611	752
14	---	1,250	1,330	1,220	1,180	1,140	814	561	254	349	623	759
15	---	1,290	1,360	1,240	1,040	1,170	860	513	247	317	639	760
16	---	1,270	1,370	1,320	993	1,190	871	457	255	307	661	773
17	---	1,260	1,410	1,330	1,080	1,230	897	399	251	307	714	786
18	---	1,270	1,410	1,270	1,150	1,230	858	372	260	316	748	804
19	---	1,270	1,410	1,190	1,190	1,230	795	399	259	329	763	820
20	---	1,240	1,390	1,230	1,250	1,220	776	437	260	352	777	838
21	---	1,230	1,280	1,260	1,230	1,210	767	465	261	366	792	852
22	---	1,240	1,270	1,270	1,240	1,220	752	479	274	378	803	858
23	---	1,240	1,290	1,290	1,260	1,220	717	503	288	390	839	867
24	---	1,260	1,260	1,300	1,240	1,200	694	521	308	401	843	856
25	---	1,230	1,280	1,320	1,230	1,170	625	537	332	511	836	850
26	---	1,180	1,290	1,350	1,240	1,170	571	541	340	541	836	851
27	---	1,200	1,250	1,320	1,240	1,190	509	529	323	459	839	865
28	---	1,240	1,220	1,300	1,220	1,190	448	514	294	458	851	862
29	---	1,300	1,220	1,300		1,200	416	502	266	460	853	857
30	---	1,210	1,290	1,290		1,130	427	502	255	482	875	864
31	1,140		1,340	1,320		1,090		511		491	887	
Max		1300	1410	1500	1420	1230	1090	570	508	541	887	867
Min		1050	1100	1190	993	1020	416	372	247	245	490	747
Mean		1188	1267	1293	1195	1147	796	496	299	345	692	816

NPDES POINT 016 — Chemical Analysis — SU-6

Field Parameters		8/20/2018	8/26/2019
pH	SU	7.18	7.32
Conductivity	umhos/cm	2000	2100
Temperature	(C)	20.9	21.2

Laboratory Results		8/20/2018	8/26/2019
Carbonate (CO_3^{-2})	mg/l	54.3	14.6
Aluminum, Dissolved	mg/l	<0.03	<0.05
Arsenic, Dissolved	mg/l	<0.0002	<0.0002
Barium, Dissolved	mg/l	1.14	1.52
Boron, Dissolved	mg/l	0.82	0.86
Cadmium, Dissolved	mg/l	<0.0001	<0.00005
Calcium, Dissolved	mg/l	11.1	11
Chloride, Dissolved	mg/l	26.9	23.6
Chromium, Dissolved	mg/l	<0.0005	<0.0005
Copper, Dissolved	mg/l	<0.01	<0.01
Fluoride, Dissolved	mg/l	1.8	1.6
Hardness, (as Ca Co3)	mg/l	28.0	28.0
Iron, Dissolved	mg/l	<0.02	<0.03
Lead, Dissolved	mg/l	<0.0001	0.0006
Magnesium, Dissolved	mg/l	5.6	5.4
Manganese, Dissolved	mg/l	0.027	0.03
Mercury, Dissolved	mg/l	<0.0002	<0.0002
Molybdenum, Dissolved	mg/l	<0.02	<0.02
Nickel, Dissolved	mg/l	<0.008	<0.008
Nitrate ($N0_3^{-1}$)	mg/l	<0.02	<0.02
Phosphate (PO_4^{-3}, as P)	mg/l	0.5	0.47
Potassium, Dissolved	mg/l	3.0	3.2
Selenium, Dissolved	mg/l	<0.0001	0.0001
Sodium, Dissolved	mg/l	495	511
Solids, Total Dissolved	mg/l	1250	1240
Solids, Total Suspended	mg/l	<5.0	<5.0
Sulfate, SO4	mg/l	38.6	5.3
Zinc, Dissolved	mg/l	<0.01	<0.01
Ammonia, Nitrogen, NH_3	mg/l	0.66	0.64
Bicarbonate (HCO_3^{-1})	mg/l	1060	1100
SAR	Ratio	31.0	32.0

ROADSIDE SOUTH PORTAL DISCHARGE
OUTFALL 016 - CPDS #CO - 0027146

DATE	METER	FLOW	PH	COND	TEMP C	TSS Month	Unit	TDS **Qrtly**	Unit	Iron (TR) **Qrtly**	Unit	Arsenic (T) 2/Mo	Unit	Cadmium (PD) 2/Mo	Unit	Copper (PD) 2/Mo	Unit	Cyanide (WAD) 2/Mo	Unit	Lead (PD) 2/Mo	Unit	Selenium (PD) 2/Mo	Unit	Silver (PD) 2/Mo	Unit	Sulfide (H2S) 2/Mo	Unit
9/12/2018	237,819,000																										
10/1/2018	245,254,000	271.7	7.1	2100	20.7	< 5.0	mg/l	1250	mg/l	18	ug/l	< 0.20	ug/l	< 0.10	ug/l	< 2.0	ug/l	< 3.0	ug/l	= 0.50	ug/l	< 0.20	ug/l	< 0.20	ug/l	0.35	mg/l
10/9/2018	248,348,000	268.6	7.2	2100	19.7							< 0.20	ug/l	< 0.10	ug/l	< 2.0	ug/l	< 20.0	ug/l	< 0.20	ug/l	< 0.20	ug/l	< 0.20	ug/l	0.23	mg/l
11/5/2018	258,936,000	272.3	7.1	2100	18.8	< 5.0	mg/l					< 0.20	ug/l	= 0.10	ug/l	< 2.0	ug/l	< 3.0	ug/l	< 0.20	ug/l	= 0.30	ug/l	< 0.20	ug/l	0.13	mg/l
11/13/2018	262,068,000	271.9	7.1	2100	18.9							< 0.20	ug/l	< 0.10	ug/l	< 2.0	ug/l	< 3.0	ug/l	< 0.20	ug/l	< 0.20	ug/l	< 0.20	ug/l	0.65	mg/l
12/3/2018	269,884,000	271.4	7.0	2100	18.3	< 5.0	mg/l					< 0.20	ug/l	< 0.05	ug/l	< 0.8	ug/l	< 3.0	ug/l	< 0.10	ug/l	< 0.10	ug/l	< 0.10	ug/l	0.29	mg/l
12/11/2018	273,037,000	273.7	7.5	2100	17.9							< 0.20	ug/l	< 0.05	ug/l	< 0.8	ug/l	< 20.0	ug/l	< 0.10	ug/l	= 0.20	ug/l	< 0.10	ug/l	0.16	mg/l
1/7/2019	280,199,000	184.2	7.5	2100	19.5	< 5.0	mg/l	1220	mg/l	19	ug/l	< 0.20	ug/l	< 0.05	ug/l	= 1.8	ug/l	< 3.0	ug/l	= 0.70	ug/l	< 0.10	ug/l	< 0.10	ug/l	0.26	mg/l
1/9/2019	281,190,000	344.1																									
1/11/2019	282,036,000	293.8																									
1/15/2019	283,769,000	300.9	7.5	2100	18.1							< 0.20	ug/l	< 0.05	ug/l	= 1.1	ug/l	< 3.0	ug/l	= 0.60	ug/l	< 0.10	ug/l	< 0.10	ug/l	0.23	mg/l
2/4/2019	292,152,000	291.1	7.1	2100	19.0	< 5.0	mg/l					< 0.20	ug/l	< 0.05	ug/l	< 0.8	ug/l	< 3.0	ug/l	< 0.10	ug/l	< 0.10	ug/l	< 0.10	ug/l	0.34	mg/l
2/12/2019	295,491,000	289.8	7.2	2100	17.4							< 0.20	ug/l	< 0.05	ug/l	= 0.8	ug/l	< 3.0	ug/l	= 0.20	ug/l	< 0.10	ug/l	< 0.10	ug/l	0.07	mg/l
3/5/2019	304,336,000	292.5	7.2	2100	20.8	< 5.0	mg/l					< 0.20	ug/l	< 0.05	ug/l	< 0.8	ug/l	< 3.0	ug/l	= 0.20	ug/l	< 0.10	ug/l	< 0.10	ug/l	0.42	mg/l
3/18/2019	309,647,000	283.7	7.1	2100	18.1							< 0.20	ug/l	< 0.05	ug/l	< 0.8	ug/l	< 3.0	ug/l	= 0.20	ug/l	< 0.10	ug/l	< 0.10	ug/l	0.05	mg/l
4/1/2019	315,342,000	282.5	7.2	2100	19.2	< 5.0	mg/l	1230	mg/l	12	ug/l	< 0.20	ug/l	< 0.05	ug/l	< 0.8	ug/l	< 3.0	ug/l	= 0.40	ug/l	< 0.10	ug/l	< 0.10	ug/l	< 0.02	mg/l
4/9/2019	318,665,000	288.5	7.1	2100	19.3							< 0.20	ug/l	< 0.05	ug/l	< 0.8	ug/l	< 20.0	ug/l	= 0.20	ug/l	= 0.10	ug/l	< 0.10	ug/l	0.15	mg/l
5/1/2019	327,792,000	288.1	7.0	2100	20.9	< 5.0	mg/l					< 0.20	ug/l	< 0.05	ug/l	< 0.8	ug/l	< 3.0	ug/l	< 0.10	ug/l	< 0.10	ug/l	< 0.10	ug/l	0.50	mg/l
5/13/2019	332,690,000	283.4	7.1	2100	20.8							< 0.20	ug/l	< 0.05	ug/l	< 0.8	ug/l	< 3.0	ug/l	= 0.20	ug/l	< 0.10	ug/l	< 0.10	ug/l	0.90	mg/l
6/3/2019	337,116,000	146.4	7.0	2100	20.8	< 5.0	mg/l					< 0.20	ug/l	< 0.05	ug/l	= 6.6	ug/l	< 3.0	ug/l	= 10.20	ug/l	< 0.10	ug/l	< 0.10	ug/l	0.04	mg/l
6/17/2019	339,337,000	110.2	7.4	1980	22.1							< 0.20	ug/l	< 0.05	ug/l	= 1.0	ug/l	< 20.0	ug/l	= 0.20	ug/l	< 0.10	ug/l	< 0.10	ug/l	0.06	mg/l
7/1/2019	341,573,000	110.9	7.3	2000	21.5	< 5.0	mg/l	1230	mg/l	19	ug/l	< 0.20	ug/l	< 0.05	ug/l	< 0.8	ug/l	< 3.0	ug/l	= 0.20	ug/l	< 0.10	ug/l	< 0.10	ug/l	0.08	mg/l
7/10/2019	343,017,000	111.4	7.5	2000	21.1							< 0.20	ug/l	< 0.05	ug/l	< 0.8	ug/l	< 3.0	ug/l	< 0.10	ug/l	< 0.10	ug/l	< 0.10	ug/l	0.08	mg/l
7/15/2019	343,871,000	118.6																									
7/17/2019	344,159,000	100.0																									
7/19/2019	344,505,000	120.1																									
7/22/2019	344,994,000	113.2																									
7/29/2019	346,124,000	112.1																									
8/5/2019	347,246,000	111.3	7.2	2000	21.2	< 5.0	mg/l					< 0.20	ug/l	< 0.05	ug/l	< 0.8	ug/l	< 3.0	ug/l	= 0.30	ug/l	< 0.10	ug/l	< 0.10	ug/l	0.10	mg/l
8/13/2019	348,524,000	110.9	7.3	2100	20.7							< 0.20	ug/l	< 0.05	ug/l	< 0.8	ug/l	< 20.0	ug/l	= 0.50	ug/l	< 0.10	ug/l	< 0.10	ug/l	0.09	mg/l
8/26/2019	350,862,000	124.9	7.3	2100	21.2																						
9/3/2019	352,359,000	129.9	7.3	2100	21.2	< 5.0	mg/l					< 0.20	ug/l	= 0.07	ug/l	< 0.8	ug/l	< 20.0	ug/l	= 0.30	ug/l	< 0.10	ug/l	< 0.10	ug/l	0.03	mg/l
9/17/2019	354,923,000	127.2	7.2	2000	21.3							< 0.20	ug/l	< 0.05	ug/l	< 0.8	ug/l	< 3.0	ug/l	= 0.30	ug/l	< 0.10	ug/l	< 0.10	ug/l	0.56	mg/l
2019	**Averages**	**209.4**	**7.2**	**2079**	**19.9**	**< 5.0**	**mg/l**	**1233**	**mg/l**	**17**	**ug/l**	**< 0.20**	**ug/l**	**< 0.06**	**ug/l**	**< 1.3**	**ug/l**	**< 7.3**	**ug/l**	**< 0.68**	**ug/l**	**< 0.13**	**ug/l**	**< 0.12**	**ug/l**	**0.24**	**mg/l**

Effective February 1, 2012 monitoring frequencies were changed as follows:
Flow, pH, TSS - Monthly TDS, Iron, Oil & Grease - Quarterly Arsenic, Cadmium, Copper, Cyanide, Lead, Selenium, Silver & Sulfide - 2 Days/Month