2021 ANNUAL HYDROLOGY REPORT

SENECA II-W MINE

PERMIT C-82-057

May 2022

Submitted To: Colorado Division of Reclamation, Mining and Safety
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1.0 INTRODUCTION

This Annual Hydrology Report presents the hydrologic monitoring data collected during the 2021 water year (October 2020 – September 2021) at the Seneca Coal Company's (SCC) Seneca II-W Mine (SIIW). The AHR fulfills the reporting requirements under the Colorado Division of Reclamation, Mining, and Safety (CDRMS) Permit No. C-82-057.

1.1 BACKGROUND

SIIW is a surface coal mine located in Routt County, approximately 9 miles south of Hayden, Colorado (Figure 1). Mining began at SIIW in August 1990. Production ceased in 2005 and the last of the coal at SIIW was removed in January 2006. The mine has been reclaimed and vegetated for many years and SCC is actively pursuing bond release.

2.0 METEOROLOGICAL

Meteorological data for the 2021 water year is presented in Appendix A. The 2021 data was obtained from NOAA weather station USC00053867 located in Hayden, Colorado (www.ncdc.noaa.gov/cdo-wb/). A total of 12.44 inches of precipitation was measured in 2021, which is 5.68 inches less than the 1981-2021 average of 18.12 inches. February and March were slightly wetter than normal (≤ 0.24 inches), but the remaining months were drier than normal. Potential snowpack runoff, as estimated by totaling November through March precipitation, was 6.49 inches, which was 1.04 inches below the 1981-2021 average of 7.53 inches.

3.0 GROUNDWATER

The SIIW groundwater monitoring program includes 14 monitoring wells. The following table includes the wells monitored, the water bearing unit they are screened in, the frequency of monitoring, and the required parameters list. The monitoring well locations are shown on Figure 1. Groundwater monitoring was completed by experienced personnel using accepted monitoring practices. All samples were analyzed by ACZ Laboratories.

Site	Unit	Monitoring Frequency		Parameter List
		Water Level	Water Quality	
DCAL-02	Dry Creek Alluvium	A	A	GW Long
WHAL7-2	Hubberson Gulch Alluvium	A	A	GW Long
WOV14	Wadge Overburden	A	A	GW Long
WOV17	Wadge Overburden	A	A	GW Short
WOV25	Wadge Overburden	A	A	GW Long
WW14	Wadge Coal	A	A	GW Long
WW17	Wadge Coal	A	A	GW Short
WW25	Wadge Coal	A	A	GW Long
WSOV25	Sage Creek Overburden	A	A	GW Long
WSC25	Sage Creek Coal	A	A	GW Long
WWCOV25	Wolf Creek Overburden	A	A	GW Long
WWC17	Wolf Creek Overburden	A	NR	NR
WWC25	Wolf Creek Coal	A	A	GW Long
WWCU25	Wolf Creek Underburden	A	A	GW Long

Note
A: Annual
NR: Not Required
GW Long: Field conductivity, field pH, field temperature, fluoride, dissolved iron, dissolved manganese, nitrate, nitrite, dissolved selenium, sulfate, total dissolved solids
GW Short: Field conductivity, field pH, field temperature, dissolved iron, dissolved manganese, total dissolved solids

3.1 WATER LEVELS

The static water levels measured during the 2021 water year are included with the groundwater quality data in Appendix B. Water level hydrographs for each of the

wells are also provided in Appendix C. The static water level was measured at all wells except for WSC25 and WWC17. The WSC25 well casing was damaged, and a measurement could not be made. The measurement of the static water level at WWC17 was mistakenly overlooked by the third-party contractor in 2021. Water level monitoring at WWC17 will resume in 2022. The water levels measured at the all-remaining wells except for WHAL7-2 and WWCU25 this year were within their respective historic range. The static water level in Wolf Creek Underburden Well WWCU25 (101.79 ft below top of casing (btoc)) was the lowest recorded since its installation but was only 0.33 ft lower than the previous minimum measured in May 2016. Despite this slight drop the water level in WWCU25 has remained fairly stable, ranging from 100.81 – 101.79 ft btoc, since 2015. A historically low water level was also observed in Hubberson Gulch Alluvium Well WHAL7-2 in May 2021. The depth to water in alluvium well WHAL7-2 was 5.65 feet below toc, only 0.06 feet lower than the prior minimum observed in September 2015. There were no changes to the groundwater use in this area and the drop in water level observed at both WHAL7-2 and WWCU25 in 2021 is likely related to the ongoing drought conditions in this region. This area only received 12.44 inches of precipitation during the 2021 water year, approximately 5.68 inches less than the annual average observed during the last 40 years (1981-2021).

Water levels in most of the water bearing units at SIIW exhibit seasonal fluctuations. The water table in the shallow alluvial wells fluctuates in response to seasonal precipitation events, with the water table typically at its highest during the spring snowmelt seasons and then declining through late summer/early fall in response to the dry conditions. The water levels in the bedrock overburden and coal seams also fluctuate in response to recharge from seasonal precipitation but are partially influenced by interactions with groundwater in the reclaimed mine spoil. Due to the bedrock unit depths and lower hydraulic conductivity the water level fluctuations are typically muted relative to the fluctuations observed in the shallow alluvium.

3.2 Groundwater Quality

Monitoring well DCAL-02 serves as the Groundwater Point of Compliance (GWPOC) for SIIW (see Technical Revision 63). This well is screened within the Dry Creek Alluvium

and is located downgradient of the mines permit boundary. Only a small portion of the SIIW mining area is located within the Sage Creek Watershed and a GWPOC for the Sage Creek Alluvium was deemed unnecessary because the spoil ground water flows to the west along the dipping bedrock, away from the Sage Creek tributaries. GWPOC bedrock wells were also deemed unnecessary because of the limited potential for the mine to negatively impact the quality of bedrock groundwater. The low hydraulic conductivity of the bedrock units inhibits groundwater from migrating away from the mine and low permeable confining layers further isolate groundwater at the mine from the nearest aquifer, the Trout Creek Sandstone. Bedrock groundwater has not historically been used in this area because its undisturbed, ambient, quality is marginal to unsuitable for both livestock and irrigation purposes and the yields are low.

Analytical results from the groundwater monitoring conducted in 2021 is provided in Appendix B. Table B.1 provides a comparison of the DCAL-02 samples to the Dry Creek Alluvial GWPOC water quality standards established in TR-63. Table B.2 includes the analytical results for the remaining monitoring wells, however a comparison to water quality standards is not made as these wells are not GWPOC's. The groundwater quality at well DCAL-02 met all applicable water quality standards.

Predictions for the expected TDS increases to be observed at various monitoring wells were made in the Probable Hydrologic Consequences (PHC, Tab 17) section of the SIIW Permit Application Package (PAP). The following table outlines these predictions along with this year's observed value.

Well	Predicted TDS (mg/L)	This Years TDS (mg/L)
WHAL7-2	1299	1080
WOV14	4385	4160
WOV17	4295	4560*
WOV25	-	1870
WW14	2630	4700*
WW17	3002	646
WW25	-	1190

Note
*Indicates value above prediction

In 2021, the TDS at two of the seven wells exceeded the predicted TDS value. Its important to acknowledge that the TDS predictions were intended to demonstrate the magnitude of potential average increases in the postmining groundwater adjacent to the mine pits and were not intended to be compared to a singular well. This is illustrated through the application of the predicted Wadge Overburden TDS value (4295 mg/L) to WOV17. The 4295 mg/L value was calculated by multiplying the predicted 5.5% increase in TDS for this area to the pre-mine TDS average (4072 mg/L) measured at several Wadge Overburden Wells. However, the pre-mine average TDS at WOV17 was 8043 mg/L, which was already significantly greater than the predicted value. In this instance a more appropriate comparison would be to compare the 2021 WOV17 TDS to its baseline average times the estimated 5.5% increase (8043 + 5.5% = 8485 mg/L). This indicates that the 2021 value of 4560 mg/L is a significant improvement and well within the projected value at this location. Regardless, both wells with TDS above the predicted post mine value are screened within the bedrock and the low hydraulic conductivity of these units will continue to limit the extent of the TDS changes to groundwater in close proximity to the mine.

4.0 SURFACE WATER

SIIW lies within the Dry Creek and Sage Creek Watersheds. The majority of the permit area drains to the west towards Hubberson Gulch (a tributary to Dry Creek) and Dry Creek, which flows north to the Yampa River. The remainder of the permit area drains northeast towards Sage Creek, which flows north-northeast to the Yampa River. The following table includes the list of SIIW surface water monitoring points, the watershed they are located in, the frequency of monitoring, and the required parameters list. See Figure 1 for the location of the surface water monitoring points. Surface water monitoring was completed by experienced personnel using accepted monitoring practices. All samples were analyzed by ACZ Laboratories.

Site	Type	Watershed	Monitoring Frequency		Parameter List
			Flow	Water Quality	
WSH9	Surface Water	Dry Creek	June/Sept	June/Sept	SW Short
NPDES17	NPDES	Dry Creek	M	M	NPDES
NPDES16	NPDES	Dry Creek	M	M	NPDES
WSH7*	Surface Water	Dry Creek	NR	NR	NR
NPDES6	NPDES	Dry Creek	M	M	NPDES
WSHF1	Surface Water	Dry Creek	SA	SA	SW Long
NPDES5	NPDES	Dry Creek	M	M	NPDES
WSD5	Surface Water	Dry Creek	SA	SA	SW Long
NPDES15	NPDES	Sage Creek	M	M	NPDES
NPDES9	NPDES	Sage Creek	M	M	NPDES
WSSF3	Surface Water	Sage Creek	SA	SA	SW Long

Note

*Monitoring at WSH7 was suspended per TR-69. However, since samples were collected in 2021 the location is retained on the monitoring list and the results have been reported.

SA: Semiannual during spring snowmelt and summer baseflow

NR: Not Required

M: Monthly

SW Long: Field conductivity, field pH, field temperature, total recoverable iron, dissolved manganese, total mercury, ammonia, nitrate, nitrite, dissolved selenium, sulfate, sulfide, total dissolved solids, total suspended solids

SW Short: Field conductivity, field pH, field temperature, total recoverable iron, dissolved manganese, total suspended solids, total dissolved solids

NPDES: See NPDES permit CO-0000221

The Colorado Water Quality Control Commission (CWQCC) has established segment specific aquatic life water quality standards (CDPHE, Reg. 33) for upper Dry Creek (Yampa River Segment 13d) and Sage Creek (Yampa River Segment 13e). Therefore, the following surface water quality discussion has been organized by drainage basin. The 2021 Water Year surface water quality data is provided in Appendix D. Samples from this year's stream points are compared to both the Colorado Department of Public Health & Environment (CDPHE) surface water agricultural use standards (CDPHE, Reg. 31) and the appropriate segment specific aquatic life water quality standards. Samples from NPDES outfalls are compared to NPDES discharge limits as well as the segment specific aquatic life standards. Additional discussion of the water quality in each stream segment follows.

4.1 Dry Creek

Analytical results for the 2021 surface water monitoring conducted at the four Dry Creek stream points is provided in Table D.1 of Appendix D and the results of the Dry Creek outfalls are included in Tables D.2 through D.5. There were no exceedances of any NPDES discharge limits or Yampa Segment 13d water quality standard at the four Dry Creek NPDES Outfalls in 2021. The stream points were compliant with all agricultural use standards and all Yampa Segment 13d aquatic life standards except for total recoverable iron, sulfide, and mercury.

Total recoverable iron exceeded the Yampa Segment 13d chronic aquatic life standard once at steam point WSH7 and once at WSHF1. Table D.6 provides a statistical summary of the pre-mine total recoverable iron measured at Dry Creek stream points WSH7, WSHF1, and WSD5. Neither of the total recoverable iron exceedances in 2021 fall outside of the range measured prior to mining. Both exceedances occurred during the June 15th monitoring event. Although the NPDES outfalls were not monitored on the same day as the stream points, they were monitored one day prior on June 14th. The watersheds reporting to these basins are fully reclaimed and vegetated and there no active mining related activities were occurring in the Dry Creek watershed. Review of the June Meteorological data in Appendix A also indicates there was no precipitation between the stream and outfall monitoring periods that could have influenced the water quality at the outfalls. Therefore, the iron concentrations

observed at the outfalls on June 14th should be considered representative of the water quality reporting to the streams when they were sampled on the 15th. There were no exceedances of total recoverable iron at Outfalls 006, 016, and 017 during the June 14th event and the iron concentrations were an order of magnitude less than the concentration measured at the downstream points. Total recoverable iron is strongly correlated with suspended solids at stream points WSH7 (r^2: 0.93) and WSHF1 (r^2: 0.97) (Appendix D Figure D.1). SIIW has been vegetated and stable for over a decade and TSS in the mine discharges is typically an order of magnitude less than the concentrations observed at the stream points. This further supports the conclusion that the iron measured at WSH7 and WSHF1 is unrelated to runoff from the reclaimed mine and is the result of natural erosion that is occurring in unaffected areas of the watershed.

The method detection limit for the sulfide analysis (MDL: 0.02 mg/L) conducted by SCC's lab exceeds the 0.002 mg/L CDPHE Yampa Segment 13d aquatic life standard for un-ionized sulfide (H_2S). All of the sulfide samples analyzed in 2021 were non-detect. The analytical method employed by the lab detects both dissolved sulfides and acid-soluble metallic sulfides that are present in suspended matter and provides a single cumulative concentration. Dissolved sulfide includes both the ionized (HS^-) and toxic un-ionized forms of hydrogen sulfide (H_2S). The distribution of sulfide between the un-ionized hydrogen sulfide and ionized form is dependent on the temperature and pH. At low pH most of the dissolved sulfide exists as the toxic un-ionized hydrogen sulfide. In alkaline waters, like those present at SIIW, most of the dissolved sulfide is present as non-toxic ionized sulfide. Therefore, it is not expected that these non detects represent exceedances of the sulfide aquatic life standard.

The method detection limit for mercury (0.2 ug/L) used by SCC's lab for stream points WSHF1 and WSD5 is above the 0.01 ug/L aquatic life standard for mercury. None of the samples collected during 2021 exceeded the labs method detection limit. The CDPHE performed a reasonable potential analysis for the Seneca NPDES outfalls and mercury monitoring was dropped from all outfalls except Outfall 005, which did not have enough sample data for CDPHE to complete the analysis. Based on historic data its not expected that there were true exceedances of the mercury standard.

4.2 SAGE CREEK

Analytical results for the 2021 surface water monitoring conducted at Sage Creek stream point WSSF3 is provided in Table D.7 of Appendix D and the analytical results for the two outfalls that report to Sage Creek outfalls are included in Table D.8. There were no exceedances of the NPDES discharge limits or Yampa Segment 13e aquatic life standards at the two Sage Creek NPDES Outfalls in 2021. As discussed in Section 4.1, the lab used by SCC has a method detection limit for mercury and sulfide that are above the Segment 13e water quality standard. None of the samples collected from WSSF3 in 2021 exceed the labs mercury or sulfide method detection limit. There were no other exceedances of the Yampa Segment 13e water quality standards at WSSF3.

In the Probable Hydrological Consequences (PHC, Tab 17) section of the SIIW PAP, predictions were made for the expected TDS increases to be observed at several stream points. The following table outlines these predictions along with this year's average concentration.

Stream Point	Predicted TDS (mg/L)	Mean TDS (mg/L)*
WSHF1	2527	2902
WSD5	2451	1970
WSSF3	626**	1255

* Duplicates removed from average calculation

** Predicted TDS value does not account for later contributions from Yoast Mine (C-1994-082). Predicted TDS concentration at WSSF3 in Yoast Mine PHC is 2118 mg/L.

The 2021 annual average TDS at Dry Creek monitoring point WSD5 was below the concentrations predicted in the SIIW PHC. The 2021 annual average TDS at Dry Creek point WSHF1 and Sage Creek WSSF3 both exceeded the SIIW PHC predictions. This is the first time that the annual average has exceeded the predicted value at WSHF1. Review of the data indicates that the average value is strongly influenced by the measurement from July, when the flow in the channel was less than 7.5 gallons per minute (gpm). No streamflow was present at upstream points WSH9 or WSH7 or downstream point WSD5 during the July event and it is unclear if the water present at WSHF1 was representative of normal stream conditions or if it was reflective of seepage from the subirrigated farm fields immediately upstream of it. Although the

TDS at Sage Creek monitoring point WSSF3 exceeds the SIIW PHC prediction its important to recognize that this location also receives drainage from the Yoast Mine (C-1994-082). The Yoast Mine was permitted approximately 12 years after SIIW and the contributions from Yoast were not considered at the time of the SIIW PHC predictions. Therefore, a more meaningful comparison of the current TDS at WSSF3 would be to the 2118 mg/L value predicted for WSSF3 in the Yoast Mine PHC. The 1255 mg/L average TDS measured in 2021 remains nearly 1000 mg/L less than the predicted post mine concentration and indicates that neither operation has had a significant impact on the potential use of these surface waters for agriculture or livestock purposes.

5.0 SPRINGS

The SIIW monitoring program includes nine spring sites. The following table includes the list of springs monitored, the frequency of monitoring, and the required parameters list. See Figure 1 for the location of the spring points. Spring monitoring was completed by experienced personnel using accepted monitoring practices. All samples were analyzed by ACZ Laboratories.

Site	Type	Unit	Monitoring Frequency		Parameter List
			Discharge	Water Quality	
S-46 (WSPG46)	Spring	Native	A	A	SW Long
S-47 (WSPG47)	Spring	Native	A	A	SW Short
S-50 (WSPG50)	Spring	Native	A	A	SW Long
S-7 (WSPG7)	Spring	Native	A	A	SW Long
Spoil Spring 1 (WSSPG1)	Spring	Spoils	A	A	SW Short
Spoil Spring 2 (WSSPG2)	Spring	Spoils	A	A	SW Long
Spoil Spring 3 (WSSPG3)	Spring	Spoils	A	A	SW Long
Spoil Spring 4 (WSSPG4)	Spring	Spoils	A	A	SW Long
Spoil Spring 5 (WSSPG5)	Spring	Spoils	A	A	SW Long

Note
A: Annual
SW Long: Field conductivity, field pH, field temperature, total recoverable iron, dissolved manganese, total mercury, ammonia, nitrate, nitrite, dissolved selenium, sulfate, sulfide, total dissolved solids, total suspended solids
SW Short: Field conductivity, field pH, field temperature, total recoverable iron, dissolved manganese, total suspended solids, total dissolved solids

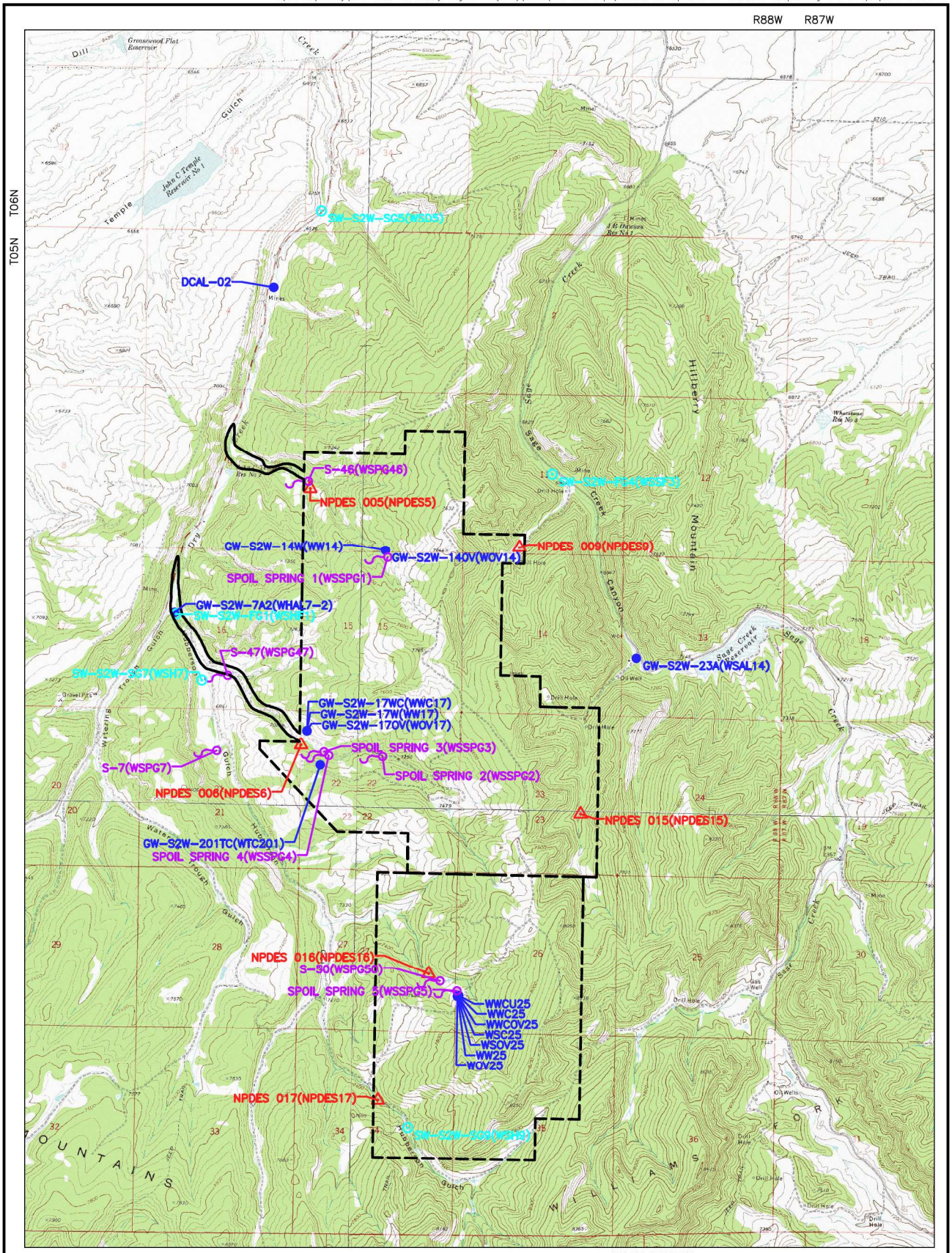
Four native springs and five spoil springs were monitored in 2021. The primary land use in this area, including the reclaimed mine parcels, is livestock grazing and wildlife habitat. Therefore, the water quality data collected from both the native and spoil springs are compared to the CWQCC Agricultural Use standards established in CDPHE Regulation 31.

Table E.1 in Appendix E includes the analytical results for the spring samples collected in 2021. As is described in the approved SIIW Hydrologic Monitoring Plan (see Tab 15, Appendix 15.3A) springs with flow less than 5 gpm should only be analyzed for field parameters. This is because it is often difficult to collect a

representative sample from diffuse flow without disturbing, and inadvertently collecting, sediments and organic matter that can produce false positive metal results. Water from non-flowing, pooled spring water, should also not be collected as stagnant water is often strongly influenced by bacteria and low oxygen conditions that alter the water chemistry. In 2021 all four of the native springs as well as one of the spoil springs had measured flows less than 5 gpm however water quality samples were inadvertently collected from these locations. Although these results should be considered unrepresentative, all of the spring samples were compared to the Agricultural Use Water Quality Standards for discussion purposes. None of the Agricultural Use Standards were exceeded at the native or spoil springs. The 0.2 mg/L Manganese standard is only applicable when irrigation water is applied to acidic soils (<6.0 pH). For alkaline soils, as are found in the SIIW area, a more appropriate standard would be 10 mg/L (EPA, 1976). Therefore, none of the manganese results above 0.2 mg/L were considered exceedances of the standard.

6.0 SUMMARY

No significant hydrologic impacts, attributable to activities at the SIIW, were noted during 2021. Groundwater levels in all monitoring wells except for WHAL7-2 and WWCU25 were within their historic range. There were no known changes to water use in this area and the Historically low water levels observed at WHAL7-2 and WWCU25 were likely associated with the drought conditions. No exceedances of the groundwater quality standards were observed at the GWPOC. Exceedances of the total recoverable iron chronic aquatic life standards occurred at two of the Dry Creek downstream stream monitoring points. However, there were no exceedances of NPDES permit limits or water quality standards at the outfalls indicating the iron was unrelated to runoff from the SIIW. No other exceedances were observed at the stream points in 2021.



GROUNDWATER
SURFACE WATER
NPDES
SPRING
PERMIT BOUNDARY

IMAGE SOURCE:
DIGITAL RASTER GRAPHIC COUNTY MOSAIC BY NRCS OF ROUTT COUNTY, COLORADO FROM GEOSPATIAL DATA GATEWAY (HTTPS://GDG.SC.EGOV.USDA.GOV) DOWNLOADED 10/16

0 3000'
SCALE

DESIGNED BY: JAH	FIGURE 1 MONITORING SITE LOCATIONS
DRAWN BY: SDG	
CHECKED BY: TNS	SENECA II WEST MINE PEABODY SAGE CREEK MINING, LLC PEABODY ENERGY
DATE: 2019	WWC ENGINEERING

APPENDIX A

METEOROLOGICAL DATA

PERIOD OF RECORD PRECIPITATION SUMMARY													
Water Year	**OCT**	**NOV**	**DEC**	**JAN**	**FEB**	**MAR**	**APR**	**MAY**	**JUN**	**JUL**	**AUG**	**SEP**	**TOTAL**
2021	0.87	0.74	1.46	1.03	1.59	1.67	0.5	1.02	0.15	0.86	1.09	1.46	12.44
2020	1.90	1.37	2.60	2.53	2.40	1.67	1.75	1.63	0.77	0.71	0.43	0.43	18.19
2019	2.14	1.81	1.62	2.45	1.46	2.89	1.66	1.88	3.57	0.38	0.44	1.53	21.83
2018	2.45	1.31	1.36	1.65	1.92	1.90	2.95	0.85	0.15	0.15	1.33	0.17	16.19
2017	1.29	0.91	2.06	2.70	1.47	0.84	2.06	1.85	0.13	1.68	0.46	1.74	17.19
2016	1.39	1.90	2.55	2.65	1.16	1.40	3.02	1.94	0.40	0.81	0.19	1.02	18.43
2015	1.60	2.10	1.84	0.55	1.02	1.30	1.60	4.36	0.61	2.36	1.53	0.90	19.77
2014	2.69	1.75	1.42	2.02	0.78	1.96	1.19	2.58	0.72	1.50	3.77	0.87	21.25
2013	0.86	0.46	3.21	1.02	0.73	1.29	3.58	1.67	0.06	0.46	1.48	2.76	17.58
2012	1.41	1.65	0.36	0.87	1.97	0.50	1.13	0.22	0.15	2.43	0.55	1.56	12.80
2011	2.18	1.91	2.98	1.59	2.09	2.52	4.50	3.56	0.85	1.82	0.65	1.14	25.79
2010	1.22	0.77	1.24	0.75	0.90	0.73	1.98	2.80	1.34	1.19	1.56	0.62	15.10
2009	0.53	1.16	1.38	2.80	0.60	1.32	1.40	1.89	2.08	0.51	1.04	0.48	15.19
2008	1.41	0.13	3.36	2.51	1.70	1.64	0.94	1.68	0.37	0.57	0.75	0.91	15.97
2007	2.64	0.76	0.86	1.04	1.34	1.46	0.62	0.87	0.33	0.52	1.12	2.72	14.28
2006	2.27	2.04	2.01	1.78	0.58	1.06	0.95	0.93	0.24	1.48	2.71	2.75	18.80
2005	1.34	1.68	0.50	1.49	0.84	0.99	1.97	1.41	3.36	0.57	1.57	1.30	17.02
2004	0.44	2.90	1.58	0.74	1.64	0.40	1.57	1.26	0.86	1.00	1.44	2.76	16.59
2003	1.88	1.09	1.28	0.74	1.95	0.99	2.57	1.15	1.33	0.47	0.62	1.83	15.90
2002	1.14	1.17	0.54	0.88	0.92	1.06	1.39	0.40	0.37	0.78	1.26	1.94	11.85
2001	0.67	1.60	1.16	0.96	1.41	1.07	1.28	1.15	0.85	1.11	2.06	1.66	14.98
2000	0.43	0.61	1.66	1.66	1.68	1.46	1.84	1.94	0.54	0.75	2.38	2.00	16.95
1999	1.85	0.81	1.13	2.13	0.99	0.57	3.21	2.00	1.39	2.10	1.85	0.78	18.81
1998	2.37	1.08	0.95	1.34	1.93	1.77	1.77	0.62	2.51	1.50	0.48	1.50	17.82
1997	1.79	2.39	1.69	2.88	0.97	0.48	3.19	2.75	1.60	1.05	3.57	5.48	27.84
1996	1.32	2.20	1.26	3.60	2.19	0.99	1.34	2.10	1.00	1.33	0.35	1.37	19.05
1995	0.95	2.09	0.68	1.47	0.97	0.82	3.36	4.48	1.54	1.23	0.73	2.69	21.01
1994	3.02	1.61	1.16	0.69	1.13	0.56	1.85	1.07	0.43	0.24	0.98	0.72	13.46
1993	1.46	1.48	1.33	2.28	1.66	1.53	2.55	1.14	1.29	0.65	1.37	1.39	18.13
1992	1.18	2.79	0.85	0.88	1.16	1.20	1.66	3.08	1.15	4.38	0.95	0.98	20.26
1991	3.20	1.71	1.18	1.75	0.86	2.42	1.09	0.96	1.74	1.59	2.00	1.32	19.82
1990	0.77	1.38	2.08	0.65	1.64	1.54	1.36	1.12	1.38	1.14	0.51	1.22	14.79
1989	0.13	2.79	1.13	1.02	2.50	1.38	0.45	1.39	0.53	1.82	1.33	1.52	15.99
1988	1.27	1.22	2.32	2.80	0.70	1.31	0.83	1.85	1.93	0.60	1.03	2.31	18.17
1987	2.65	1.00	0.56	1.28	1.35	1.50	1.60	1.92	0.64	1.78	1.35	0.46	16.09
1986	3.51	4.19	1.34	0.79	3.01	1.59	2.70	0.99	1.00	1.65	1.96	2.12	24.85
1985	2.61	1.68	1.80	2.40	1.01	2.40	3.77	1.40	0.68	1.28	0.64	1.17	20.84
1984	2.16	2.82	5.03	0.59	0.43	2.31	2.68	1.33	2.36	1.84	2.61	1.31	25.47
1983	1.64	1.52	1.03	1.10	1.66	2.17	2.28	1.57	2.76	1.88	1.08	0.79	19.48
1982	3.76	0.78	2.51	1.71	0.62	2.64	1.92	0.97	0.46	1.60	1.19	2.64	20.80
1981	1.09	0.33	0.43	0.53	0.45	2.50	0.69	3.97	1.65	2.24	1.12	1.33	16.33
AVG	1.69	1.55	1.60	1.57	1.35	1.46	1.92	1.75	1.10	1.27	1.31	1.55	18.12

Note

Data from October 1980 to February 1982, and 2011 Water Year and later, from U.S. Department of Commerce - NOAA - Hayden Station. All other data from Seneca II Mine Meteorological Station with Belfort Weighing Bucket Rain Gage. Site relocated to USGS site on August 31, 1991. Precipitation recorded in inches.

U.S. Department of Commerce
National Oceanic & Atmospheric Administration
National Environmental Satellite, Data, and Information Service

Current Location: Elev: 6467 ft. Lat: 40.4926° N Lon: -107.2548° W
Station: **HAYDEN, CO US USC00053867**

Record of Climatological Observations

These data are quality controlled and may not be identical to the original observations.

Generated on 02/17/2022

National Centers for Environmental Information
151 Patton Avenue
Asheville, North Carolina 28801

Observation Time Temperature: 1800 Observation Time Precipitation: 1800

Year	Month	Day	Temperature (F)			Precipitation					Evaporation		Soil Temperature (F)					
			24 Hrs. Ending at Observation Time		At Obs.	24 Hour Amounts Ending at Observation Time				At Obs. Time	24 Hour Wind Movement (mi)	Amount of Evap. (in)	4 in. Depth			8 in. Depth		
			Max.	Min.		Rain, Melted Snow, Etc. (in)	Flag	Snow, Ice Pellets, Hail (in)	Flag	Snow, Ice Pellets, Hail, Ice on Ground (in)			Ground Cover (see *)	Max.	Min.	Ground Cover (see *)	Max.	Min.
2020	10	01	68	26	61	0.00		0.0		0.0								
2020	10	02	63	29	61	0.00		0.0		0.0								
2020	10	03	66	25	64	0.00		0.0		0.0								
2020	10	04	77	33	71	0.00		0.0		0.0								
2020	10	05	78	28	70	0.00		0.0		0.0								
2020	10	06	77	31	69	0.00		0.0		0.0								
2020	10	07	80	33	70	0.00		0.0		0.0								
2020	10	08	79	32	69	0.00		0.0		0.0								
2020	10	09	78	33	72	0.00		0.0		0.0								
2020	10	10	79	39	68	0.00		0.0		0.0								
2020	10	11	68	31	45	0.22		1.0		0.0								
2020	10	12	63	24	56	0.00		0.0		0.0								
2020	10	13	71	28	63	0.00		0.0		0.0								
2020	10	14	65	35	55	0.00		0.0		0.0								
2020	10	15	55	28	44	0.00		0.0		0.0								
2020	10	16	61	19	57	0.00		0.0		0.0								
2020	10	17	64	33	61	0.00		0.0		0.0								
2020	10	18	66	39	62	0.00		0.0		0.0								
2020	10	19	63	33	57	0.00		0.0		0.0								
2020	10	20	63	33	56	0.00		0.0		0.0								
2020	10	21	72	30	67	0.00		0.0		0.0								
2020	10	22	67	41	41	0.00		0.0		0.0								
2020	10	23	41	9	36	0.00		0.0		0.0								
2020	10	24	50	19	48	0.00		0.0		0.0								
2020	10	25	48	11	11	0.54		7.0		7.0								
2020	10	26	15	2	7	0.11		2.0		8.0								
2020	10	27	28	-10	19	0.00		0.0		7.0								
2020	10	28	34	6	31	0.00		0.0		6.0								
2020	10	29	50	17	45	0.00		0.0		4.0								
2020	10	30	57	25	50	0.00		0.0		1.0								
2020	10	31	57	23	49	0.00		0.0		0.0								
Summary			61	25		0.87		10.0										

Empty, or blank, cells indicate that a data observation was not reported.

*Ground Cover: 1=Grass; 2=Fallow; 3=Bare Ground; 4=Brome grass; 5=Sod; 6=Straw mulch; 7=Grass muck; 8=Bare muck; 0=Unknown

"s" This data value failed one of NCDC's quality control tests. "At Obs." = Temperature at time of observation

"T" values in the Precipitation or Snow category above indicate a "trace" value was recorded.

"A" values in the Precipitation Flag or the Snow Flag column indicate a multiday total, accumulated since last measurement, is being used.

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U.S. Department of Commerce
National Oceanic & Atmospheric Administration
National Environmental Satellite, Data, and Information Service

Current Location: Elev: 6467 ft. Lat: 40.4926° N Lon: -107.2548° W
Station: **HAYDEN, CO US USC00053867**

Record of Climatological Observations

These data are quality controlled and may not be identical to the original observations.

Generated on 02/17/2022

National Centers for Environmental Information
151 Patton Avenue
Asheville, North Carolina 28801

Observation Time Temperature: 1800 Observation Time Precipitation: 1800

Year	Month	Day	Temperature (F)			Precipitation					Evaporation		Soil Temperature (F)					
			24 Hrs. Ending at Observation Time		At Obs.	24 Hour Amounts Ending at Observation Time				At Obs. Time	24 Hour Wind Movement (mi)	Amount of Evap. (in)	4 in. Depth			8 in. Depth		
			Max.	Min.		Rain, Melted Snow, Etc. (in)	Flag	Snow, Ice Pellets, Hail (in)	Flag	Snow, Ice Pellets, Hail, Ice on Ground (in)			Ground Cover (see *)	Max.	Min.	Ground Cover (see *)	Max.	Min.
2020	11	01	64	25	47	0.00		0.0		0.0								
2020	11	02	66	27	49	0.00		0.0		0.0								
2020	11	03	68	28	52	0.00		0.0		0.0								
2020	11	04	66	30	52	0.00		0.0		0.0								
2020	11	05	68	28	50	0.00		0.0		0.0								
2020	11	06	58	30	51	0.00		0.0		0.0								
2020	11	07	65	30	57	0.00		0.0		0.0								
2020	11	08	57	27	31	0.12		0.5		0.0								
2020	11	09	39	23	26	0.09		1.5		1.0								
2020	11	10	32	18	25	0.15		3.0		2.0								
2020	11	11	38	20	30	0.00		0.0		1.0								
2020	11	12	34	17	23	0.10		2.5		2.0								
2020	11	13	48	9	38	0.00		0.0		0.0								
2020	11	14	42	23	24	0.22		2.0		1.0								
2020	11	15	34	12	33	0.00		0.0		1.0								
2020	11	16	56	27	42	0.00		0.0		0.0								
2020	11	17	59	26	46	0.00		0.0		0.0								
2020	11	18	63	29	55	0.00		0.0		0.0								
2020	11	19	55	37	37	0.00		0.0		0.0								
2020	11	20	45	25	34	0.00		0.0		0.0								
2020	11	21	45	20	32	0.00		0.0		0.0								
2020	11	22	45	12	35	0.00		0.0		0.0								
2020	11	23	48	25	37	0.04		0.0		0.0								
2020	11	24	38	27	29	0.00		0.0		0.0								
2020	11	25	43	17	34	0.00		0.0		0.0								
2020	11	26	35	16	22	0.02		T		0.0								
2020	11	27	36	6	21	0.00		0.0		0.0								
2020	11	28	34	8	22	0.00		0.0		0.0								
2020	11	29	42	8	26	0.00		0.0		0.0								
2020	11	30	46	10	30	0.00		0.0		0.0								
Summary			49	21		0.74		9.5										

Empty, or blank, cells indicate that a data observation was not reported.

*Ground Cover: 1=Grass; 2=Fallow; 3=Bare Ground; 4=Brome grass; 5=Sod; 6=Straw mulch; 7=Grass muck; 8=Bare muck; 0=Unknown

"s" This data value failed one of NCDC's quality control tests. "At Obs." = Temperature at time of observation

"T" values in the Precipitation or Snow category above indicate a "trace" value was recorded.

"A" values in the Precipitation Flag or the Snow Flag column indicate a multiday total, accumulated since last measurement, is being used.

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U.S. Department of Commerce
National Oceanic & Atmospheric Administration
National Environmental Satellite, Data, and Information Service

Current Location: Elev: 6467 ft. Lat: 40.4926° N Lon: -107.2548° W
Station: **HAYDEN, CO US USC00053867**

Record of Climatological Observations

These data are quality controlled and may not be identical to the original observations.

Generated on 02/17/2022

National Centers for Environmental Information
151 Patton Avenue
Asheville, North Carolina 28801

Observation Time Temperature: 1800 Observation Time Precipitation: 1800

Year	Month	Day	Temperature (F)			Precipitation					Evaporation		Soil Temperature (F)					
			24 Hrs. Ending at Observation Time		At Obs.	24 Hour Amounts Ending at Observation Time				At Obs. Time	24 Hour Wind Movement (mi)	Amount of Evap. (in)	4 in. Depth			8 in. Depth		
			Max.	Min.		Rain, Melted Snow, Etc. (in)	Flag	Snow, Ice Pellets, Hail (in)	Flag	Snow, Ice Pellets, Hail, Ice on Ground (in)			Ground Cover (see *)	Max.	Min.	Ground Cover (see *)	Max.	Min.
2020	12	01	30	16	24	0.05		0.5		1.0								
2020	12	02	28	7	13	0.00		0.0		1.0								
2020	12	03	33	-1	18	0.00		0.0		1.0								
2020	12	04	41	7	26	0.00		0.0		T								
2020	12	05	41	5	27	0.00		0.0		0.0								
2020	12	06	50	10	30	0.00		0.0		0.0								
2020	12	07	45	9	26	0.00		0.0		0.0								
2020	12	08	51	9	29	0.00		0.0		0.0								
2020	12	09	54	13	33	0.00		0.0		0.0								
2020	12	10	39	16	29	0.00		0.0		0.0								
2020	12	11	32	18	22	0.07		1.0		1.0								
2020	12	12	27	16	19	0.07		1.0		2.0								
2020	12	13	25	-7	13	0.00		0.0		2.0								
2020	12	14	25	8	20	0.19		3.0		4.0								
2020	12	15	24	12	13	T		0.5		4.0								
2020	12	16	25	8	22	0.14		4.0		6.0								
2020	12	17	27	6	25	0.00		0.0		6.0								
2020	12	18	29	22	23	0.13		1.5		6.0								
2020	12	19	29	10	23	0.00		0.0		5.0								
2020	12	20	31	6	28	T		T		4.0								
2020	12	21	44	27	30	0.00		0.0		2.0								
2020	12	22	36	1	15	0.10		1.0		2.0								
2020	12	23	19	1	12	0.04		0.5		2.0								
2020	12	24	26	-6	15	0.00		0.0		2.0								
2020	12	25	35	2	25	0.00		0.0		2.0								
2020	12	26	34	6	31	0.00		0.0		2.0								
2020	12	27	33	22	25	0.01		T		2.0								
2020	12	28	26	8	20	0.07		1.5		3.0								
2020	12	29	23	6	6	0.59		7.0		10.0								
2020	12	30	19	-9	9	0.00		0.0		9.0								
2020	12	31	27	7	20	0.00		0.0		9.0								
Summary			33	8		1.46		21.5										

Empty, or blank, cells indicate that a data observation was not reported.

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"s" This data value failed one of NCDC's quality control tests. "At Obs." = Temperature at time of observation

"T" values in the Precipitation or Snow category above indicate a "trace" value was recorded.

"A" values in the Precipitation Flag or the Snow Flag column indicate a multiday total, accumulated since last measurement, is being used.

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U.S. Department of Commerce
National Oceanic & Atmospheric Administration
National Environmental Satellite, Data, and Information Service

Current Location: Elev: 6467 ft. Lat: 40.4926° N Lon: -107.2548° W
Station: **HAYDEN, CO US USC00053867**

Record of Climatological Observations

These data are quality controlled and may not be identical to the original observations.

Generated on 02/17/2022

National Centers for Environmental Information
151 Patton Avenue
Asheville, North Carolina 28801

Observation Time Temperature: 1800 Observation Time Precipitation: 1800

Year	Month	Day	Temperature (F)			Precipitation					Evaporation		Soil Temperature (F)					
			24 Hrs. Ending at Observation Time		At Obs.	24 Hour Amounts Ending at Observation Time				At Obs. Time	24 Hour Wind Movement (mi)	Amount of Evap. (in)	4 in. Depth			8 in. Depth		
			Max.	Min.		Rain, Melted Snow, Etc. (in)	Flag	Snow, Ice Pellets, Hail (in)	Flag	Snow, Ice Pellets, Hail, Ice on Ground (in)			Ground Cover (see *)	Max.	Min.	Ground Cover (see *)	Max.	Min.
2021	01	01	23	2	10	0.00		0.0		9.0								
2021	01	02	22	-5	17	0.00		0.0		8.0								
2021	01	03	25	0	23	0.05		0.5		8.0								
2021	01	04	33	13	22	0.00		0.0		7.0								
2021	01	05	31	18	27	0.38		6.0		13.0								
2021	01	06	27	1	16	0.00		0.0		12.0								
2021	01	07	27	4	18	0.00		0.0		12.0								
2021	01	08	29	2	13	0.00		0.0		10.0								
2021	01	09	20	-1	14	0.00		0.0		9.0								
2021	01	10	22	10	10	T		T		9.0								
2021	01	11	24	-8	6	0.00		0.0		9.0								
2021	01	12	24	0	12	0.00		0.0		9.0								
2021	01	13	32	10	24	0.00		0.0		9.0								
2021	01	14	29	14	20	0.00		0.0		9.0								
2021	01	15	25	-1	21	0.00		0.0		9.0								
2021	01	16	35	15	23	0.01		0.5		9.0								
2021	01	17	36	15	31	0.00		0.0		9.0								
2021	01	18	35	18	18	0.00		0.0		9.0								
2021	01	19	25	-6	13	0.00		0.0		9.0								
2021	01	20	34	3	18	0.00		0.0		9.0								
2021	01	21	37	9	26	0.00		0.0		9.0								
2021	01	22	38	24	32	T		T		9.0								
2021	01	23	37	26	26	0.16		2.0		11.0								
2021	01	24	33	12	21	0.00		0.0		11.0								
2021	01	25	28	11	19	0.13		2.0		12.0								
2021	01	26	20	1	15	0.02		0.5		12.0								
2021	01	27	25	-1	20	0.00		0.0		12.0								
2021	01	28	37	19	25	0.00		0.0		11.0								
2021	01	29	48	17	41	0.00		0.0		10.0								
2021	01	30	41	26	26	0.28		3.0		13.0								
2021	01	31	28	7	19	T		T		13.0								
Summary			30	8		1.03		14.5										

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U.S. Department of Commerce
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Current Location: Elev: 6467 ft. Lat: 40.4926° N Lon: -107.2548° W
Station: **HAYDEN, CO US USC00053867**

Record of Climatological Observations

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Generated on 02/17/2022

National Centers for Environmental Information
151 Patton Avenue
Asheville, North Carolina 28801

Observation Time Temperature: 1800 Observation Time Precipitation: 1800

Year	Month	Day	Temperature (F)			Precipitation					Evaporation		Soil Temperature (F)					
			24 Hrs. Ending at Observation Time		At Obs.	24 Hour Amounts Ending at Observation Time				At Obs. Time	24 Hour Wind Movement (mi)	Amount of Evap. (in)	4 in. Depth			8 in. Depth		
			Max.	Min.		Rain, Melted Snow, Etc. (in)	Flag	Snow, Ice Pellets, Hail (in)	Flag	Snow, Ice Pellets, Hail, Ice on Ground (in)			Ground Cover (see *)	Max.	Min.	Ground Cover (see *)	Max.	Min.
2021	02	01	33	6	25	0.00		0.0		12.0								
2021	02	02	42	14	35	0.00		0.0		11.0								
2021	02	03	45	25	26	0.10		1.5		13.0								
2021	02	04	28	9	24	0.02		0.5		11.0								
2021	02	05	27	17	27	0.35		6.0		16.0								
2021	02	06	33	20	32	0.00		0.0		14.0								
2021	02	07	41	22	33	0.00		0.0		12.0								
2021	02	08	41	19	33	0.00		0.0		12.0								
2021	02	09	35	14	29	0.04		1.0		13.0								
2021	02	10	41	27	34	0.07		0.5		13.0								
2021	02	11	40	18	36	T		T		12.0								
2021	02	12	37	29	33	0.19		2.0		12.0								
2021	02	13	35	22	22	0.19		2.0		14.0								
2021	02	14	22	-8	-6	0.19		2.5		16.0								
2021	02	15	21	-7	18	0.04		0.5		15.0								
2021	02	16	34	14	23	0.20		3.0		17.0								
2021	02	17	28	14	20	0.04		1.0		17.0								
2021	02	18	22	-5	16	0.00		0.0		16.0								
2021	02	19	28	0	24	0.00		0.0		16.0								
2021	02	20	31	12	26	T		T		16.0								
2021	02	21	30	14	27	0.00		0.0		16.0								
2021	02	22	37	17	27	0.00		0.0		16.0								
2021	02	23	42	7	32	0.00		0.0		15.0								
2021	02	24	36	3	25	0.00		0.0		15.0								
2021	02	25	27	6	18	0.00		0.0		15.0								
2021	02	26	32	5	25	0.00		0.0		14.0								
2021	02	27	26	14	15	0.16		2.0		16.0								
2021	02	28	22	-6	12	0.00		0.0		16.0								
Summary			33	12		1.59		22.5										

Empty, or blank, cells indicate that a data observation was not reported.

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Current Location: Elev: 6467 ft. Lat: 40.4926° N Lon: -107.2548° W
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National Centers for Environmental Information
151 Patton Avenue
Asheville, North Carolina 28801

Observation Time Temperature: 1800 Observation Time Precipitation: 1800

Year	Month	Day	Temperature (F)			Precipitation					Evaporation		Soil Temperature (F)					
			24 Hrs. Ending at Observation Time		At Obs.	24 Hour Amounts Ending at Observation Time				At Obs. Time	24 Hour Wind Movement (mi)	Amount of Evap. (in)	4 in. Depth			8 in. Depth		
			Max.	Min.		Rain, Melted Snow, Etc. (in)	Flag	Snow, Ice Pellets, Hail (in)	Flag	Snow, Ice Pellets, Hail, Ice on Ground (in)			Ground Cover (see *)	Max.	Min.	Ground Cover (see *)	Max.	Min.
2021	03	01	31	0	23	0.00		0.0		15.0								
2021	03	02	39	9	30	0.00		0.0		15.0								
2021	03	03	43	12	36	0.00		0.0		14.0								
2021	03	04	36	22	34	0.07		1.0		14.0								
2021	03	05	42	20	37	0.00		0.0		13.0								
2021	03	06	50	25	40	0.00		0.0		13.0								
2021	03	07	56	26	44	0.00		0.0		11.0								
2021	03	08	49	27	44	0.00		0.0		10.0								
2021	03	09	57	27	44	0.00		0.0		8.0								
2021	03	10	44	23	23	0.38		3.0		10.0								
2021	03	11	40	20	27	0.12		1.0		10.0								
2021	03	12	42	22	36	0.05		1.0		9.0								
2021	03	13	40	17	30	0.11		1.0		9.0								
2021	03	14	40	27	34	0.06		0.5		8.0								
2021	03	15	43	22	40	0.14		2.5		9.0								
2021	03	16	40	22	35	0.10		1.0		9.0								
2021	03	17	42	27	42	0.00		0.0		9.0								
2021	03	18	44	22	42	0.00		0.0		8.0								
2021	03	19	53	22	50	0.00		0.0		3.0								
2021	03	20	60	32	54	0.00		0.0		0.0								
2021	03	21	54	26	38	0.12		1.5		0.0								
2021	03	22	45	22	42	0.00		0.0		0.0								
2021	03	23	43	36	39	T		T		0.0								
2021	03	24	45	16	42	0.00		0.0		0.0								
2021	03	25	42	18	32	T		T		0.0								
2021	03	26	44	28	36	0.45		2.5		2.0								
2021	03	27	43	36	40	0.07		0.5		1.0								
2021	03	28	53	22	51	0.00		0.0		0.0								
2021	03	29	58	36	36	0.00		0.0		0.0								
2021	03	30	40	32	38	0.00		0.0		0.0								
2021	03	31	48	20	46	0.00		0.0		0.0								
Summary			45	23		1.67		15.5										

Empty, or blank, cells indicate that a data observation was not reported.

*Ground Cover: 1=Grass; 2=Fallow; 3=Bare Ground; 4=Brome grass; 5=Sod; 6=Straw mulch; 7=Grass muck; 8=Bare muck; 0=Unknown

"s" This data value failed one of NCDC's quality control tests. "At Obs." = Temperature at time of observation

"T" values in the Precipitation or Snow category above indicate a "trace" value was recorded.

"A" values in the Precipitation Flag or the Snow Flag column indicate a multiday total, accumulated since last measurement, is being used.

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U.S. Department of Commerce
National Oceanic & Atmospheric Administration
National Environmental Satellite, Data, and Information Service

Current Location: Elev: 6467 ft. Lat: 40.4926° N Lon: -107.2548° W
Station: **HAYDEN, CO US USC00053867**

Record of Climatological Observations

These data are quality controlled and may not be identical to the original observations.

Generated on 02/17/2022

National Centers for Environmental Information
151 Patton Avenue
Asheville, North Carolina 28801

Observation Time Temperature: 1800 Observation Time Precipitation: 1800

Year	Month	Day	Temperature (F)			Precipitation					Evaporation		Soil Temperature (F)					
			24 Hrs. Ending at Observation Time		At Obs.	24 Hour Amounts Ending at Observation Time				At Obs. Time	24 Hour Wind Movement (mi)	Amount of Evap. (in)	4 in. Depth			8 in. Depth		
			Max.	Min.		Rain, Melted Snow, Etc. (in)	Flag	Snow, Ice Pellets, Hail (in)	Flag	Snow, Ice Pellets, Hail, Ice on Ground (in)			Ground Cover (see *)	Max.	Min.	Ground Cover (see *)	Max.	Min.
2021	04	01	60		58	0.00		0.0		0.0								
2021	04	02	68	24	64	0.00		0.0		0.0								
2021	04	03	72	28	70	0.00		0.0		0.0								
2021	04	04	70	34	68	0.00		0.0		0.0								
2021	04	05	73	32	68	0.00		0.0		0.0								
2021	04	06	68	32	40	0.01		T		0.0								
2021	04	07	54	33	52	0.05		0.5		0.0								
2021	04	08	63	21	61	0.00		0.0		0.0								
2021	04	09	61	32	46	0.00		0.0		0.0								
2021	04	10	61	22	56	0.00		0.0		0.0								
2021	04	11	56	20	50	0.00		0.0		0.0								
2021	04	12	50	25	44	0.00		0.0		0.0								
2021	04	13	60	22	54	0.00		0.0		0.0								
2021	04	14	54	30	46	0.23		2.0		0.0								
2021	04	15	50	30	38	0.07		T		0.0								
2021	04	16	42	22	40	0.04		0.5		0.0								
2021	04	17	51	16	46	0.00		0.0		0.0								
2021	04	18	59	30	56	0.00		0.0		0.0								
2021	04	19	58	24	38	0.00		0.0		0.0								
2021	04	20	45	8	45	0.00		0.0		0.0								
2021	04	21	45	16	42	T		T		0.0								
2021	04	22	56	28	55	T		T		0.0								
2021	04	23	58	36	54	0.00		0.0		0.0								
2021	04	24	64	28	61	0.00		0.0		0.0								
2021	04	25	72	39	70	0.00		0.0		0.0								
2021	04	26	70	36	57	0.00		0.0		0.0								
2021	04	27	58	32	43	0.06		0.0		0.0								
2021	04	28	62	32	60	0.04		0.0		0.0								
2021	04	29	72	28	70	0.00		0.0		0.0								
2021	04	30	80	39	78	0.00		0.0		0.0								
Summary			60	28		0.50		3.0										

Empty, or blank, cells indicate that a data observation was not reported.

*Ground Cover: 1=Grass; 2=Fallow; 3=Bare Ground; 4=Brome grass; 5=Sod; 6=Straw mulch; 7=Grass muck; 8=Bare muck; 0=Unknown

"s" This data value failed one of NCDC's quality control tests. "At Obs." = Temperature at time of observation

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U.S. Department of Commerce
National Oceanic & Atmospheric Administration
National Environmental Satellite, Data, and Information Service

Current Location: Elev: 6467 ft. Lat: 40.4926° N Lon: -107.2548° W
Station: **HAYDEN, CO US USC00053867**

Record of Climatological Observations

These data are quality controlled and may not be identical to the original observations.

Generated on 02/17/2022

National Centers for Environmental Information
151 Patton Avenue
Asheville, North Carolina 28801

Observation Time Temperature: 1800 Observation Time Precipitation: 1800

Year	Month	Day	Temperature (F)			Precipitation					Evaporation		Soil Temperature (F)					
			24 Hrs. Ending at Observation Time		At Obs.	24 Hour Amounts Ending at Observation Time				At Obs. Time	24 Hour Wind Movement (mi)	Amount of Evap. (in)	4 in. Depth			8 in. Depth		
			Max.	Min.		Rain, Melted Snow, Etc. (in)	Flag	Snow, Ice Pellets, Hail (in)	Flag	Snow, Ice Pellets, Hail, Ice on Ground (in)			Ground Cover (see *)	Max.	Min.	Ground Cover (see *)	Max.	Min.
2021	05	01	78	38	72	0.00		0.0		0.0								
2021	05	02	74	32	50	0.02		0.0		0.0								
2021	05	03	50	39	40	0.40		0.0		0.0								
2021	05	04	54	32	46	0.03		0.0		0.0								
2021	05	05	64	34	64	0.03		0.0		0.0								
2021	05	06	76	27	76	0.00		0.0		0.0								
2021	05	07	80	40	76	0.00		0.0		0.0								
2021	05	08	76	41	60	T		0.0		0.0								
2021	05	09	60	24	54	0.00		0.0		0.0								
2021	05	10	56	32	48	0.02		0.0		0.0								
2021	05	11	48	32	40	0.44		2.5		0.0								
2021	05	12	66	22	62	0.00		0.0		0.0								
2021	05	13	76	30	72	0.00		0.0		0.0								
2021	05	14	79	34	64	0.00		0.0		0.0								
2021	05	15	77	39	70	0.02		0.0		0.0								
2021	05	16	76	34	66	0.00		0.0		0.0								
2021	05	17	72	40	58	0.00		0.0		0.0								
2021	05	18	76	34	74	0.00		0.0		0.0								
2021	05	19	80	34	78	0.00		0.0		0.0								
2021	05	20	80	42	76	0.00		0.0		0.0								
2021	05	21	76	46	68	0.00		0.0		0.0								
2021	05	22	82	39	56	T		0.0		0.0								
2021	05	23	64	38	60	0.05		0.0		0.0								
2021	05	24	66	29	66	0.00		0.0		0.0								
2021	05	25	74	26	70	0.00		0.0		0.0								
2021	05	26	79	40	70	0.00		0.0		0.0								
2021	05	27	78	30	75	T		0.0		0.0								
2021	05	28	82	32	78	0.00		0.0		0.0								
2021	05	29	80	36	68	T		0.0		0.0								
2021	05	30	80	46	54	0.01		0.0		0.0								
2021	05	31	74	34	66	0.00		0.0		0.0								
Summary			72	35		1.02		2.5										

Empty, or blank, cells indicate that a data observation was not reported.

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"T" values in the Precipitation or Snow category above indicate a "trace" value was recorded.

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U.S. Department of Commerce
National Oceanic & Atmospheric Administration
National Environmental Satellite, Data, and Information Service

Current Location: Elev: 6467 ft. Lat: 40.4926° N Lon: -107.2548° W
Station: **HAYDEN, CO US USC00053867**

Record of Climatological Observations

These data are quality controlled and may not be identical to the original observations.

Generated on 02/17/2022

National Centers for Environmental Information
151 Patton Avenue
Asheville, North Carolina 28801

Observation Time Temperature: 1800 Observation Time Precipitation: 1800

Year	Month	Day	Temperature (F)			Precipitation					Evaporation		Soil Temperature (F)					
			24 Hrs. Ending at Observation Time		At Obs.	24 Hour Amounts Ending at Observation Time				At Obs. Time	24 Hour Wind Movement (mi)	Amount of Evap. (in)	4 in. Depth			8 in. Depth		
			Max.	Min.		Rain, Melted Snow, Etc. (in)	Flag	Snow, Ice Pellets, Hail (in)	Flag	Snow, Ice Pellets, Hail, Ice on Ground (in)			Ground Cover (see *)	Max.	Min.	Ground Cover (see *)	Max.	Min.
2021	06	01	77	38	76	0.00		0.0		0.0								
2021	06	02	80	42	80	0.00		0.0		0.0								
2021	06	03	89	46	83	0.00		0.0		0.0								
2021	06	04	93	42	91	0.00		0.0		0.0								
2021	06	05	92	46	62	0.00		0.0		0.0								
2021	06	06	87	52	77	0.00		0.0		0.0								
2021	06	07	88	54	84	0.00		0.0		0.0								
2021	06	08	84	46	75	0.00		0.0		0.0								
2021	06	09	82	39	80	0.00		0.0		0.0								
2021	06	10	80	46	74	0.00		0.0		0.0								
2021	06	11	74	31	71	0.00		0.0		0.0								
2021	06	12	80	37	79	0.00		0.0		0.0								
2021	06	13	85	46	84	0.00		0.0		0.0								
2021	06	14	92	46	91	0.00		0.0		0.0								
2021	06	15	91	46	91	0.00		0.0		0.0								
2021	06	16	92	56	92	0.00		0.0		0.0								
2021	06	17	92	55	91	0.00		0.0		0.0								
2021	06	18	91	54	86	0.00		0.0		0.0								
2021	06	19	87	64	80	0.01		0.0		0.0								
2021	06	20	86	44	83	0.00		0.0		0.0								
2021	06	21	84	45	84	0.00		0.0		0.0								
2021	06	22	90	44	88	0.00		0.0		0.0								
2021	06	23	88	52	78	0.00		0.0		0.0								
2021	06	24	81	52	60	0.03		0.0		0.0								
2021	06	25	72	52	64	0.03		0.0		0.0								
2021	06	26	74	44	66	0.05		0.0		0.0								
2021	06	27	76	42	75	0.00		0.0		0.0								
2021	06	28	80	43	78	0.00		0.0		0.0								
2021	06	29	78	50	77	0.00		0.0		0.0								
2021	06	30	78	49	73	0.03		0.0		0.0								
Summary			84	47		0.15		0.0										

Empty, or blank, cells indicate that a data observation was not reported.

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"s" This data value failed one of NCDC's quality control tests. "At Obs." = Temperature at time of observation

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U.S. Department of Commerce
National Oceanic & Atmospheric Administration
National Environmental Satellite, Data, and Information Service

Current Location: Elev: 6467 ft. Lat: 40.4926° N Lon: -107.2548° W
Station: **HAYDEN, CO US USC00053867**

Record of Climatological Observations

These data are quality controlled and may not be identical to the original observations.

Generated on 02/17/2022

National Centers for Environmental Information
151 Patton Avenue
Asheville, North Carolina 28801

Observation Time Temperature: 1800 Observation Time Precipitation: 1800

Year	Month	Day	Temperature (F)			Precipitation					Evaporation		Soil Temperature (F)					
			24 Hrs. Ending at Observation Time		At Obs.	24 Hour Amounts Ending at Observation Time				At Obs. Time	24 Hour Wind Movement (mi)	Amount of Evap. (in)	4 in. Depth			8 in. Depth		
			Max.	Min.		Rain, Melted Snow, Etc. (in)	Flag	Snow, Ice Pellets, Hail (in)	Flag	Snow, Ice Pellets, Hail, Ice on Ground (in)			Ground Cover (see *)	Max.	Min.	Ground Cover (see *)	Max.	Min.
2021	07	01	82	52	82	0.17		0.0		0.0								
2021	07	02	88	54	80	0.00		0.0		0.0								
2021	07	03	93	52	85	T		0.0		0.0								
2021	07	04	92	52	81	0.00		0.0		0.0								
2021	07	05	92	52	82	0.00		0.0		0.0								
2021	07	06	92	51	86	0.03		0.0		0.0								
2021	07	07	92	56	91	0.00		0.0		0.0								
2021	07	08	96	57	88	0.00		0.0		0.0								
2021	07	09	97	62	92	0.00		0.0		0.0								
2021	07	10	92	44	89	0.00		0.0		0.0								
2021	07	11	90	52	86	0.00		0.0		0.0								
2021	07	12	97	54	94	0.00		0.0		0.0								
2021	07	13	94	62	72	0.00		0.0		0.0								
2021	07	14	84	54	68	0.00		0.0		0.0								
2021	07	15	91	52	82	0.00		0.0		0.0								
2021	07	16	90	52	84	0.00		0.0		0.0								
2021	07	17	92	52	89	0.00		0.0		0.0								
2021	07	18	97	54	96	0.00		0.0		0.0								
2021	07	19	96	62	94	0.00		0.0		0.0								
2021	07	20	94	54	82	0.01		0.0		0.0								
2021	07	21	94	62	88	0.00		0.0		0.0								
2021	07	22	92	62	84	0.00		0.0		0.0								
2021	07	23	88	62	86	0.00		0.0		0.0								
2021	07	24	87	54	83	0.00		0.0		0.0								
2021	07	25	96	62	68	0.23		0.0		0.0								
2021	07	26	94	52	90	0.06		0.0		0.0								
2021	07	27	94	54	93	0.00		0.0		0.0								
2021	07	28	97	54	90	0.00		0.0		0.0								
2021	07	29	90	62	82	0.20		0.0		0.0								
2021	07	30	86	64	78	0.16		0.0		0.0								
2021	07	31	86	54	74	0.00		0.0		0.0								
Summary			92	56		0.86		0.0										

Empty, or blank, cells indicate that a data observation was not reported.

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U.S. Department of Commerce
National Oceanic & Atmospheric Administration
National Environmental Satellite, Data, and Information Service

Current Location: Elev: 6467 ft. Lat: 40.4926° N Lon: -107.2548° W
Station: **HAYDEN, CO US USC00053867**

Record of Climatological Observations

These data are quality controlled and may not be identical to the original observations.

Generated on 02/17/2022

National Centers for Environmental Information
151 Patton Avenue
Asheville, North Carolina 28801

Observation Time Temperature: 1800 Observation Time Precipitation: 1800

Year	Month	Day	Temperature (F)			Precipitation					Evaporation		Soil Temperature (F)					
			24 Hrs. Ending at Observation Time		At Obs.	24 Hour Amounts Ending at Observation Time				At Obs. Time	24 Hour Wind Movement (mi)	Amount of Evap. (in)	4 in. Depth			8 in. Depth		
			Max.	Min.		Rain, Melted Snow, Etc. (in)	Flag	Snow, Ice Pellets, Hail (in)	Flag	Snow, Ice Pellets, Hail, Ice on Ground (in)			Ground Cover (see *)	Max.	Min.	Ground Cover (see *)	Max.	Min.
2021	08	01	83	58	72	0.02		0.0		0.0								
2021	08	02	78	54	78	0.00		0.0		0.0								
2021	08	03	80	57	70	0.30		0.0		0.0								
2021	08	04	84	51	80	0.07		0.0		0.0								
2021	08	05	87	52	87	0.00		0.0		0.0								
2021	08	06	87	54	81	0.02		0.0		0.0								
2021	08	07	81	45	76	0.00		0.0		0.0								
2021	08	08	88	44	87	0.00		0.0		0.0								
2021	08	09	87	50	84	0.00		0.0		0.0								
2021	08	10	87	47	84	0.00		0.0		0.0								
2021	08	11	86	46	86	0.00		0.0		0.0								
2021	08	12	93	52	90	0.00		0.0		0.0								
2021	08	13	90	54	87	0.00		0.0		0.0								
2021	08	14	90	52	88	0.00		0.0		0.0								
2021	08	15	88	54	80	0.00		0.0		0.0								
2021	08	16	88	54	86	0.02		0.0		0.0								
2021	08	17	87	53	82	0.00		0.0		0.0								
2021	08	18	89	56	76	0.00		0.0		0.0								
2021	08	19	76	56	60	0.45		0.0		0.0								
2021	08	20	76	44	76	0.00		0.0		0.0								
2021	08	21	80	46	77	0.00		0.0		0.0								
2021	08	22	82	46	80	0.00		0.0		0.0								
2021	08	23	84	44	84	0.00		0.0		0.0								
2021	08	24	85	46	83	0.00		0.0		0.0								
2021	08	25	83	46	82	0.00		0.0		0.0								
2021	08	26	82	54	66	0.10		0.0		0.0								
2021	08	27	83	44	83	0.11		0.0		0.0								
2021	08	28	84	44	84	0.00		0.0		0.0								
2021	08	29	86	45	83	0.00		0.0		0.0								
2021	08	30	86	42	85	0.00		0.0		0.0								
2021	08	31	85	45	80	0.00		0.0		0.0								
Summary			85	50		1.09		0.0										

Empty, or blank, cells indicate that a data observation was not reported.

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Current Location: Elev: 6467 ft. Lat: 40.4926° N Lon: -107.2548° W
Station: **HAYDEN, CO US USC00053867**

Record of Climatological Observations

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Generated on 02/17/2022

National Centers for Environmental Information
151 Patton Avenue
Asheville, North Carolina 28801

Observation Time Temperature: 1800 Observation Time Precipitation: 1800

Year	Month	Day	Temperature (F)			Precipitation					Evaporation		Soil Temperature (F)					
			24 Hrs. Ending at Observation Time		At Obs.	24 Hour Amounts Ending at Observation Time				At Obs. Time	24 Hour Wind Movement (mi)	Amount of Evap. (in)	4 in. Depth			8 in. Depth		
			Max.	Min.		Rain, Melted Snow, Etc. (in)	Flag	Snow, Ice Pellets, Hail (in)	Flag	Snow, Ice Pellets, Hail, Ice on Ground (in)			Ground Cover (see *)	Max.	Min.	Ground Cover (see *)	Max.	Min.
2021	09	01	80	50	60	0.31		0.0		0.0								
2021	09	02	78	54	74	0.15		0.0		0.0								
2021	09	03	80	46	72	0.00		0.0		0.0								
2021	09	04	78	44	76	0.00		0.0		0.0								
2021	09	05	80	35	76	0.00		0.0		0.0								
2021	09	06	84	40	84	0.00		0.0		0.0								
2021	09	07	88	42	80	0.00		0.0		0.0								
2021	09	08	88	44	86	0.00		0.0		0.0								
2021	09	09	88	44	86	0.00		0.0		0.0								
2021	09	10	89	45	87	0.00		0.0		0.0								
2021	09	11	87	50	65	0.03		0.0		0.0								
2021	09	12	80	44	77	0.00		0.0		0.0								
2021	09	13	82	50	74	0.00		0.0		0.0								
2021	09	14	80	37	74	0.03		0.0		0.0								
2021	09	15	80	42	77	0.00		0.0		0.0								
2021	09	16	82	44	79	0.00		0.0		0.0								
2021	09	17	79	42	78	0.00		0.0		0.0								
2021	09	18	83	44	75	0.00		0.0		0.0								
2021	09	19	77	44	72	0.02		0.0		0.0								
2021	09	20	72	36	52	0.38		0.0		0.0								
2021	09	21	63	28	56	0.00		0.0		0.0								
2021	09	22	74	31	70	0.00		0.0		0.0								
2021	09	23	75	36	73	0.00		0.0		0.0								
2021	09	24	74	36	64	0.00		0.0		0.0								
2021	09	25	78	37	74	0.00		0.0		0.0								
2021	09	26	82	37	73	0.00		0.0		0.0								
2021	09	27	83	36	76	0.00		0.0		0.0								
2021	09	28	82	40	54	0.15		0.0		0.0								
2021	09	29	54	44	48	0.37		0.0		0.0								
2021	09	30	58	44	57	0.02		0.0		0.0								
Summary			79	42		1.46		0.0										

Empty, or blank, cells indicate that a data observation was not reported.

*Ground Cover: 1=Grass; 2=Fallow; 3=Bare Ground; 4=Brome grass; 5=Sod; 6=Straw mulch; 7=Grass muck; 8=Bare muck; 0=Unknown

"s" This data value failed one of NCDC's quality control tests. "At Obs." = Temperature at time of observation

"T" values in the Precipitation or Snow category above indicate a "trace" value was recorded.

"A" values in the Precipitation Flag or the Snow Flag column indicate a multiday total, accumulated since last measurement, is being used.

Data value inconsistency may be present due to rounding calculations during the conversion process from SI metric units to standard imperial units.

APPENDIX B

GROUNDWATER QULITY DATA

Table B.1. Groundwater analytical results for Point of Compliance (POC) well DCAL-02 during water year 2021.

Location	Date	Static Water Level FT BTOC	SPC, Field N UMHOS/CM	pH, Field N S.U.	Temp., Field N DEG-C	Fluoride N MG/L	Iron D MG/L	Manganese D MG/L	Nitrate N. N MG/L	Nitrite N. N MG/L	Selenium D UG/L	Sulfates N MG/L	TDS, Lab N MG/L
DCAL-02	5/13/2021	9.86	1970	7.32	11.2	0.26	0.223	1.46	< 0.02	< 0.01	< 2	664	1540
Groundwater Quality Standards		-	-	6.5 - 8.5[2]	-	2[1]	8.06[3]	2.55[3]	10[2]	1[2]	20[1]	1511[3]	3195[4]

Notes

1 - Colorado Regulation 41 Agricultural Use Groundwater Quality Standard
2 - Colorado Regulation 41 Domestic Use Groundwater Quality Standard
3 - Technical Revision 63 Ambient Groundwater Quality Standard
4 - Regulation 41 Table 4 TDS Groundwater Quality Standard
Bold Exceeds groundwater quality standard

Table B.2. Groundwater analytical results for Non-Point of Compliance wells during water year 2021.

Location	Date	Static Water Level FT BTOC	SPC, Field N UMHOS/CM	pH, Field N S.U.	Temp., Field N DEG-C	Fluoride N MG/L	Iron D MG/L	Manganese D MG/L	Nitrate N. N MG/L	Nitrite N. N MG/L	Selenium D UG/L	Sulfates N MG/L	TDS, Lab N MG/L
WHAL7-2	5/13/2021	5.65	1470	7.26	11	0.19	0.135	0.973	< 0.02	< 0.01	< 2	389	1080
WOV14	5/13/2021	13.37	4170	7.12	10.6	0.46	0.072	1.31	0.05	0.021	< 2	2840	4160
WOV17	5/13/2021	44.32	4910	7.28	11.2	-	0.201	0.068	-	-	-	-	4560
WOV25	5/13/2021	26.83	2040	7.27	9.9	0.17	< 0.06	0.064	< 0.02	< 0.01	< 2	993	1870
WSC25	5/14/2021	-	960	7.25	9.8	< 0.15	0.486	< 0.01	0.05	0.019	< 2	226	662
WSOV25	5/14/2021	11.53	1800	7.31	10.2	< 0.15	1.42	0.086	< 0.02	< 0.01	< 2	139	500
WW14	5/13/2021	11.72	4070	6.92	10.3	1.25	5.12	1.12	0.25	< 0.01	< 2	2980	4700
WW17	5/13/2021	13.53	1090	7.66	10.9	-	< 0.06	< 0.01	-	-	-	-	646
WW25	5/13/2021	26.42	1310	7.96	10.1	0.89	< 0.06	< 0.01	3.37	< 0.01	5.3	647	1190
WWC17	-	-	-	-	-	-	-	-	-	-	-	-	-
WWC25	5/14/2021	9.24	1340	8.28	10.3	0.48	< 0.06	< 0.01	< 0.02	< 0.01	< 2	197	892
WWCOV25	5/14/2021	89.93	2090	7.21	9.5	0.16	0.118	0.204	< 0.02	< 0.01	< 2	892	1880
WWCU25	5/14/2021	101.79	1080	8.46	9.4	1.33	< 0.06	< 0.01	< 0.02	< 0.01	< 2	75	660

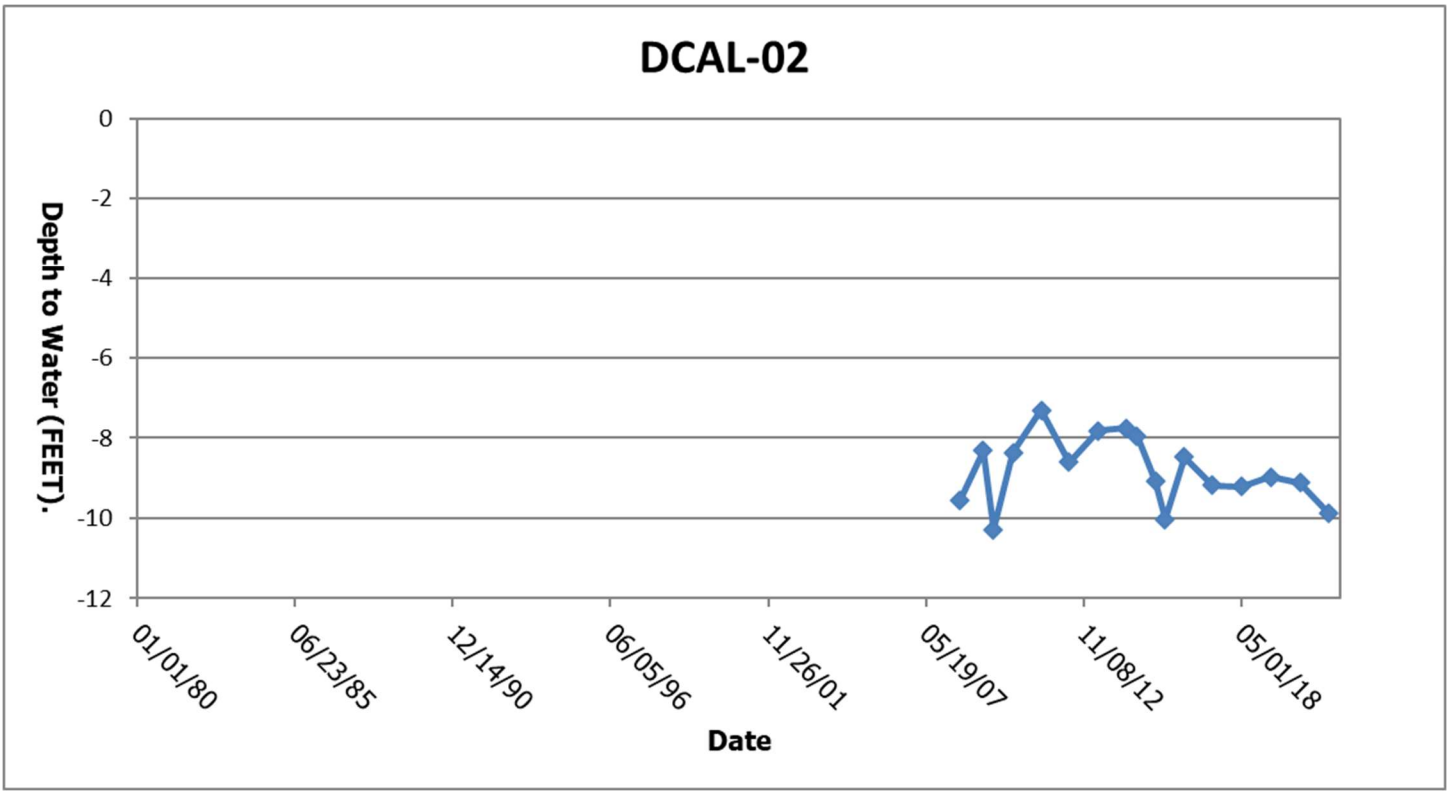
Note

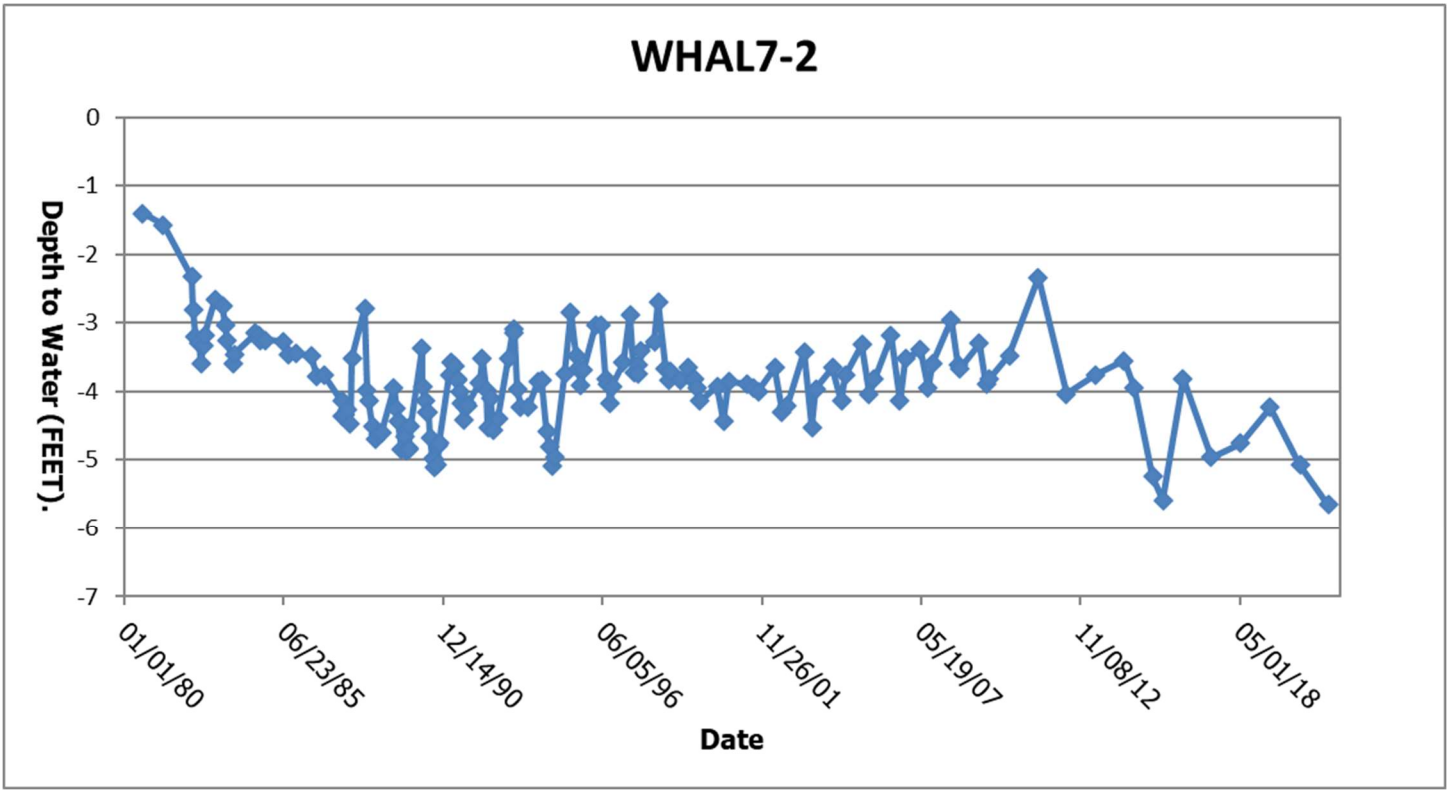
The well casing at WSC25 was damaged and the static water level could not be measured

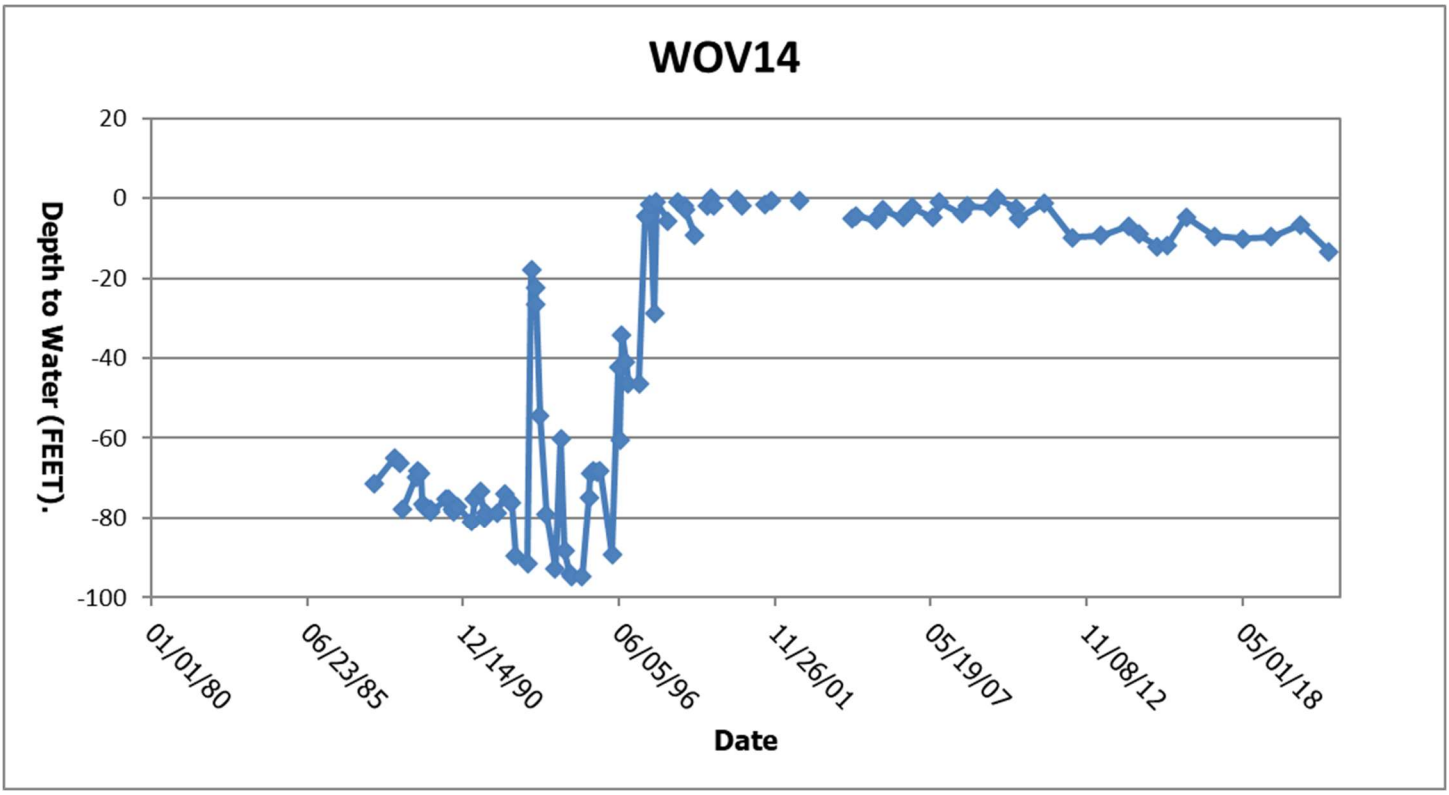
The measurement of the static water level at WWC17 was accidentally missed during the 2021 monitoring season

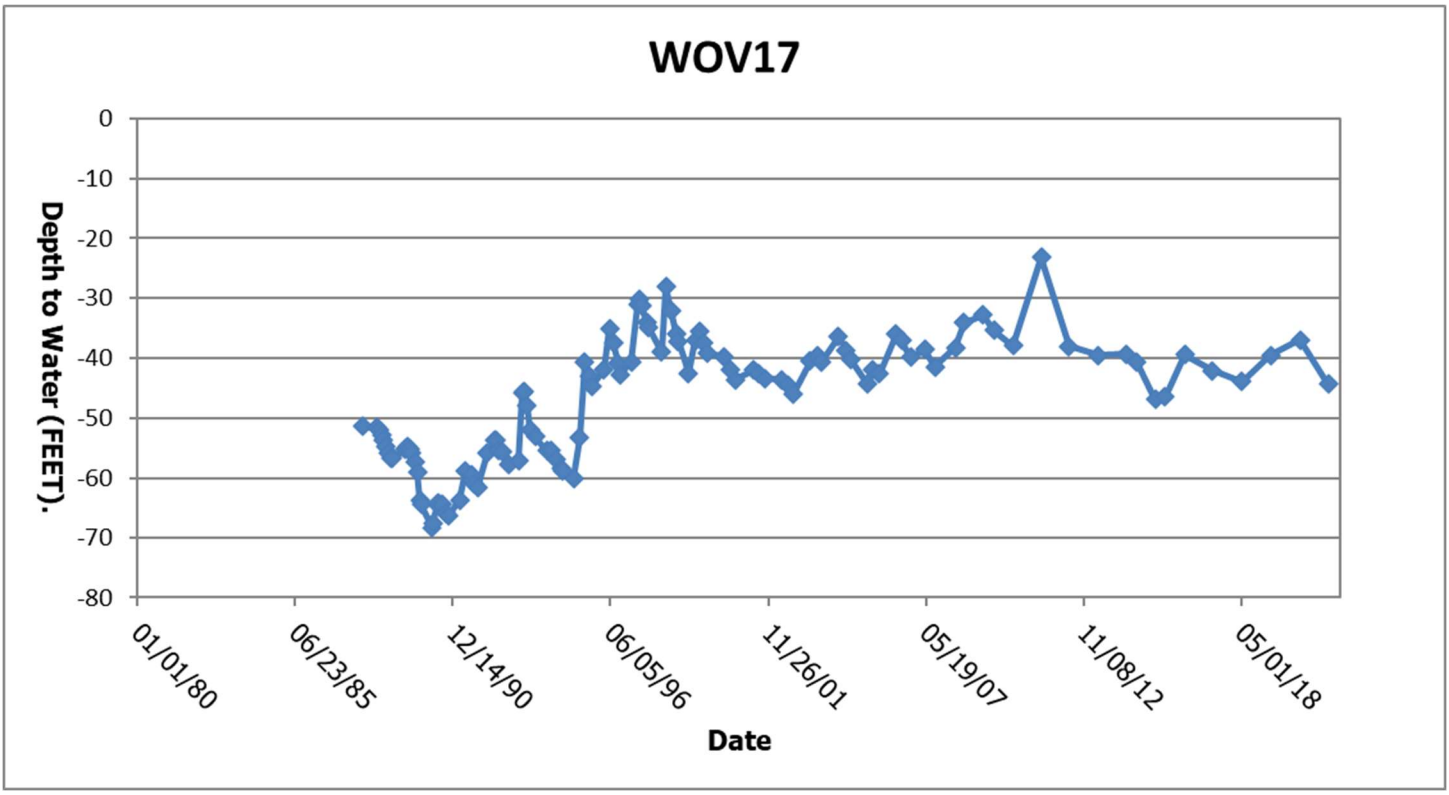
APPENDIX C

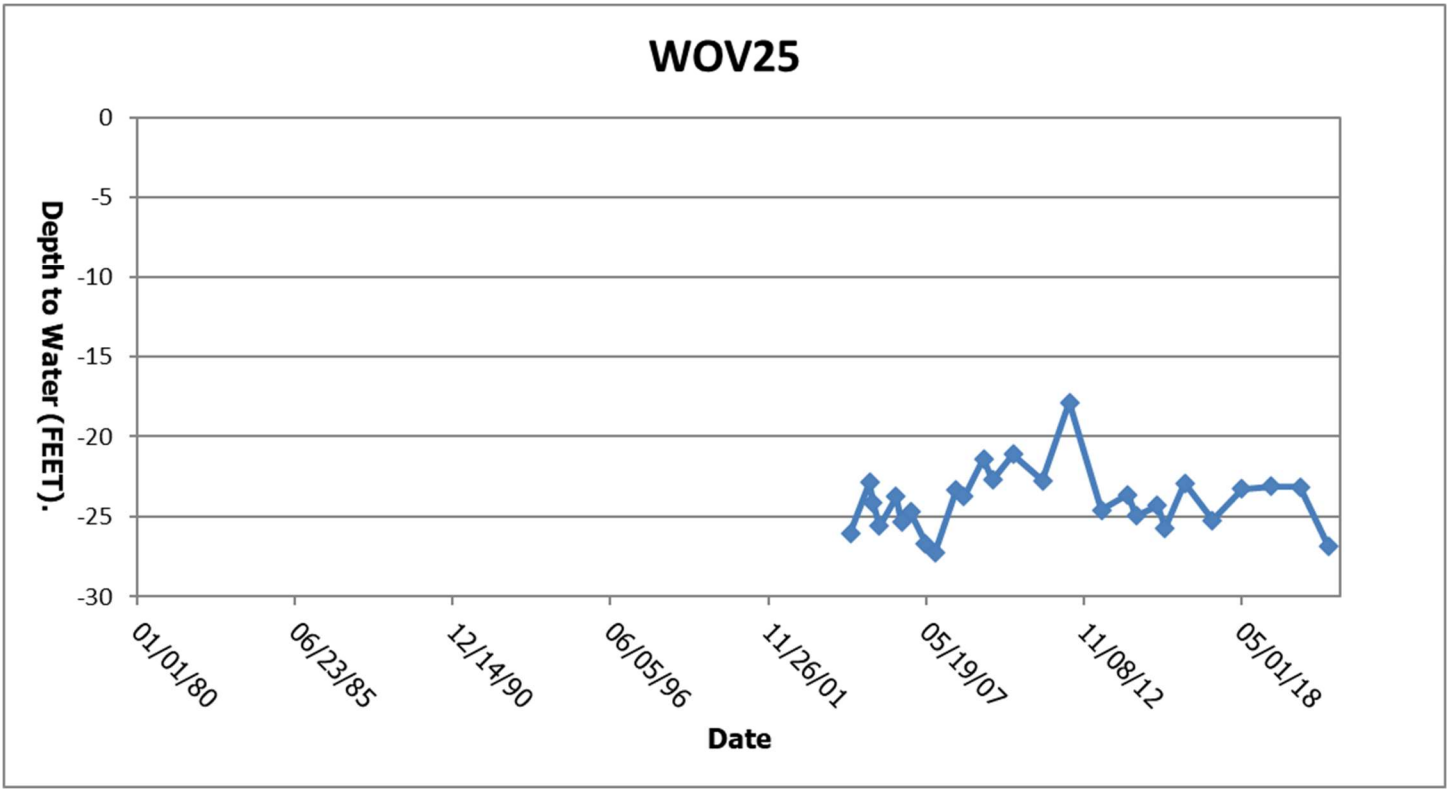
GROUNDWATER HYDROGRAPHS

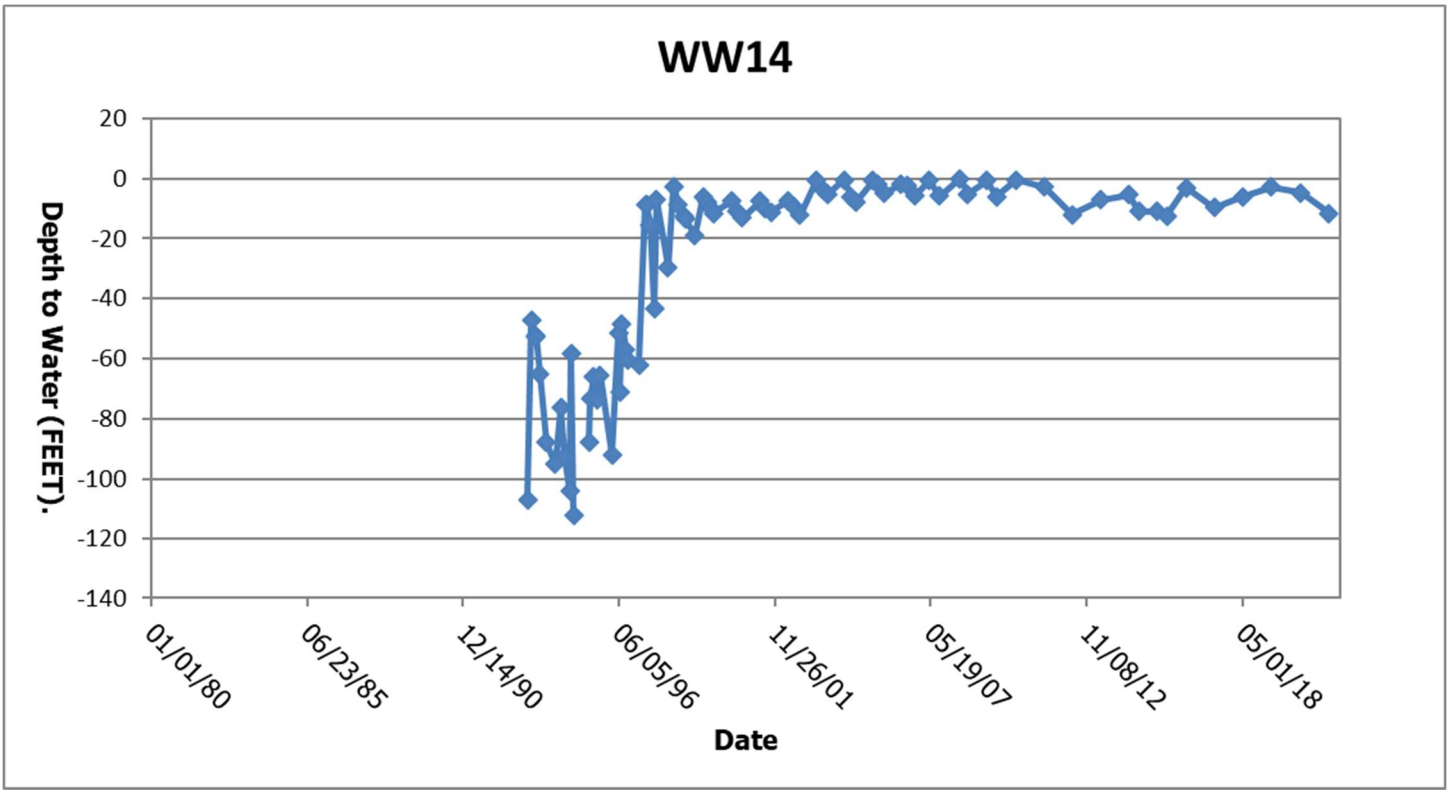

DCAL-02
Depth to Water (FEET).
0
-2
-4
-6
-8
-10
-12
01/01/80
06/23/85
12/14/90
06/05/96
11/26/01
05/19/07
11/08/12
05/01/18
Date

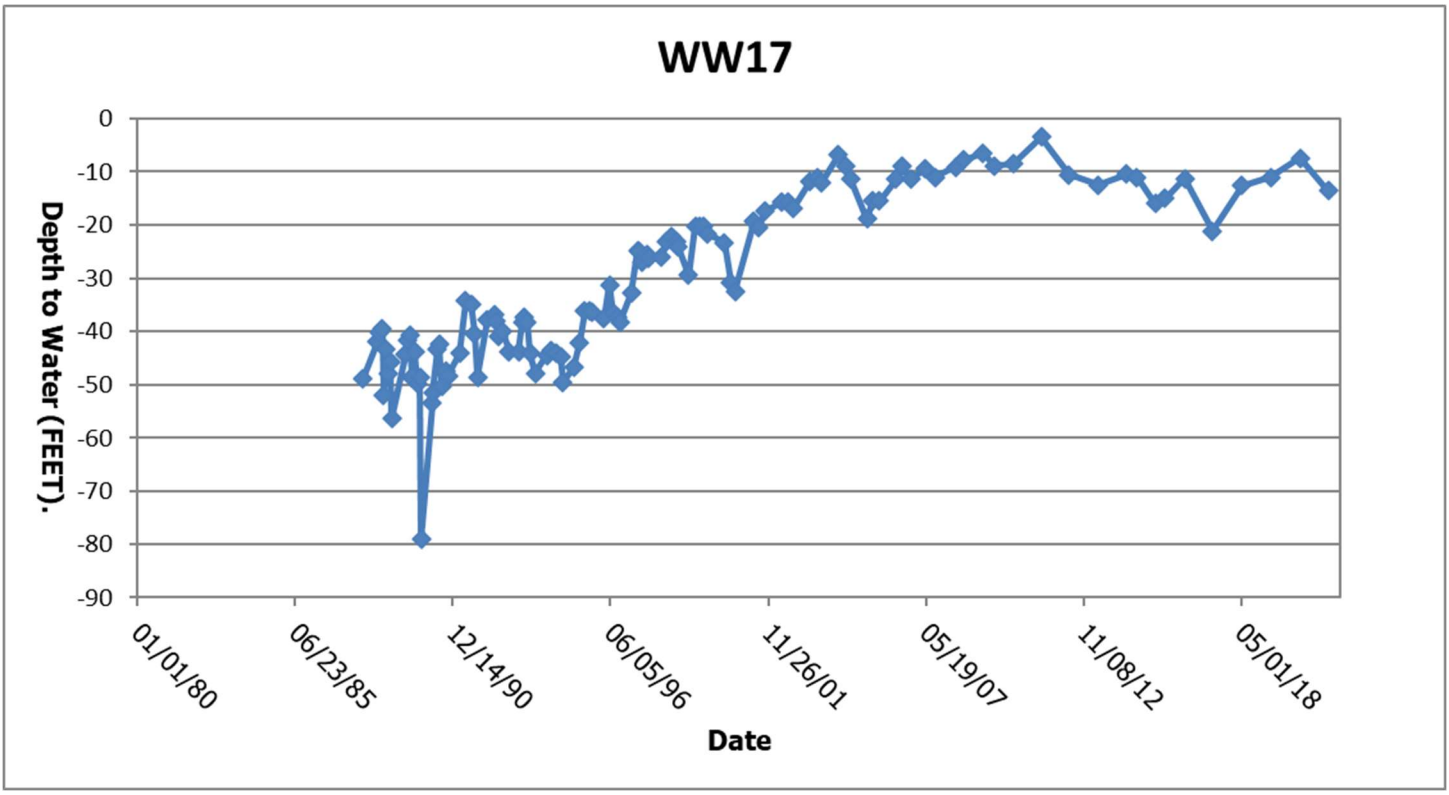

WHAL7-2
Depth to Water (FEET).
0
-1
-2
-3
-4
-5
-6
-7
01/01/80
06/23/85
12/14/90
06/05/96
11/26/01
05/19/07
11/08/12
05/01/18
Date

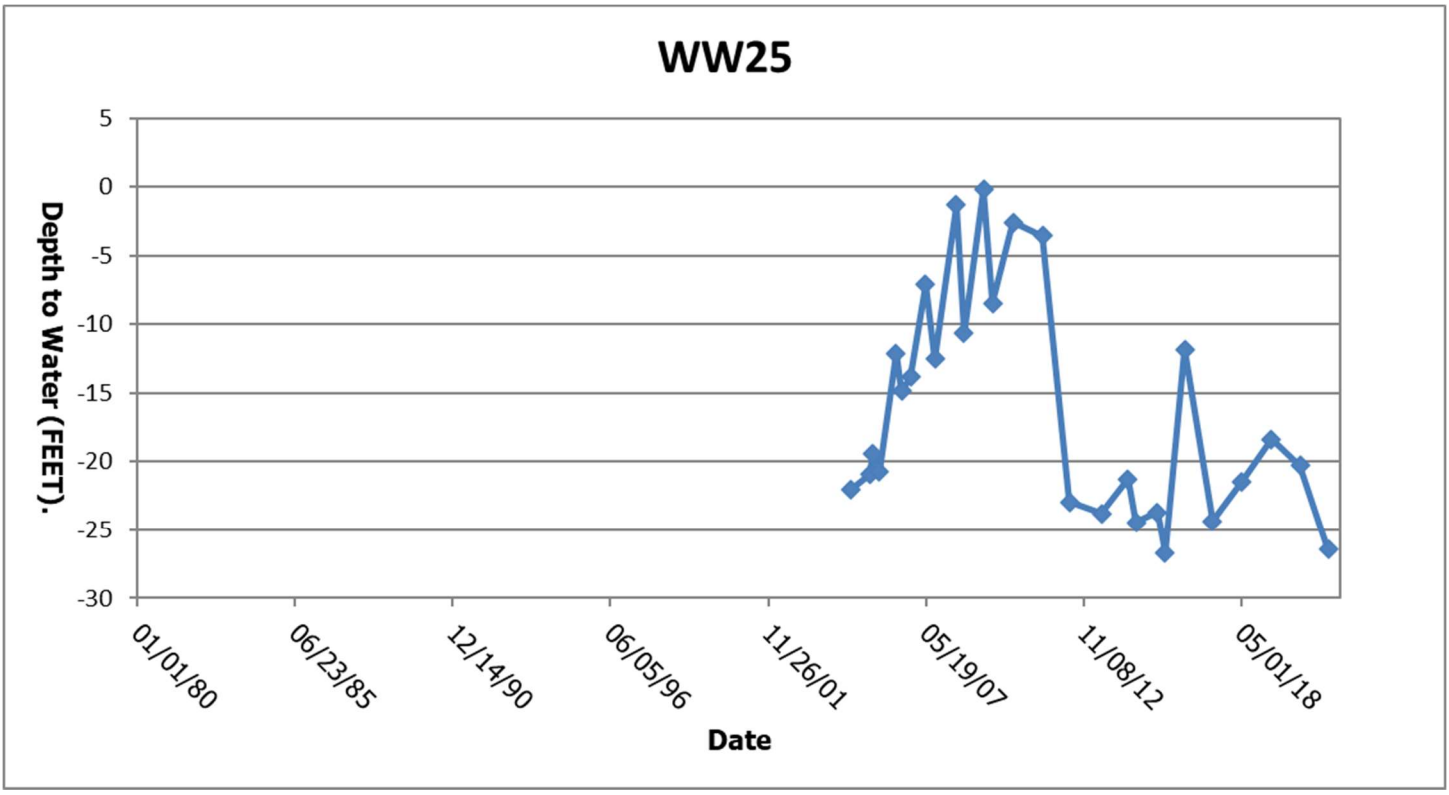

WOV14
Depth to Water (FEET).
20
0
-20
-40
-60
-80
-100
01/01/80
06/23/85
12/14/90
06/05/96
11/26/01
05/19/07
11/08/12
05/01/18
Date

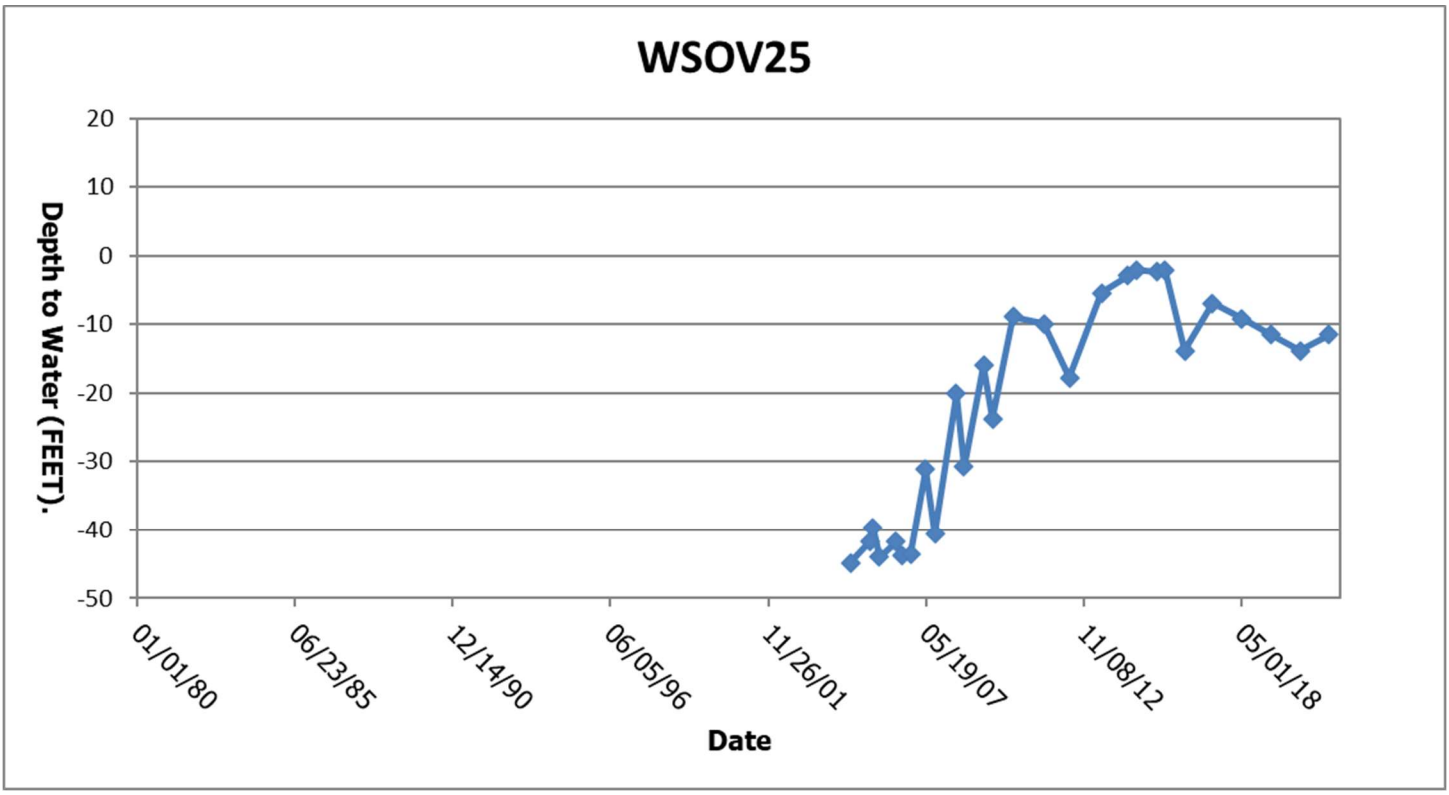

WOV17
Depth to Water (FEET).
0
-10
-20
-30
-40
-50
-60
-70
-80
01/01/80
06/23/85
12/14/90
06/05/96
11/26/01
05/19/07
11/08/12
05/01/18
Date

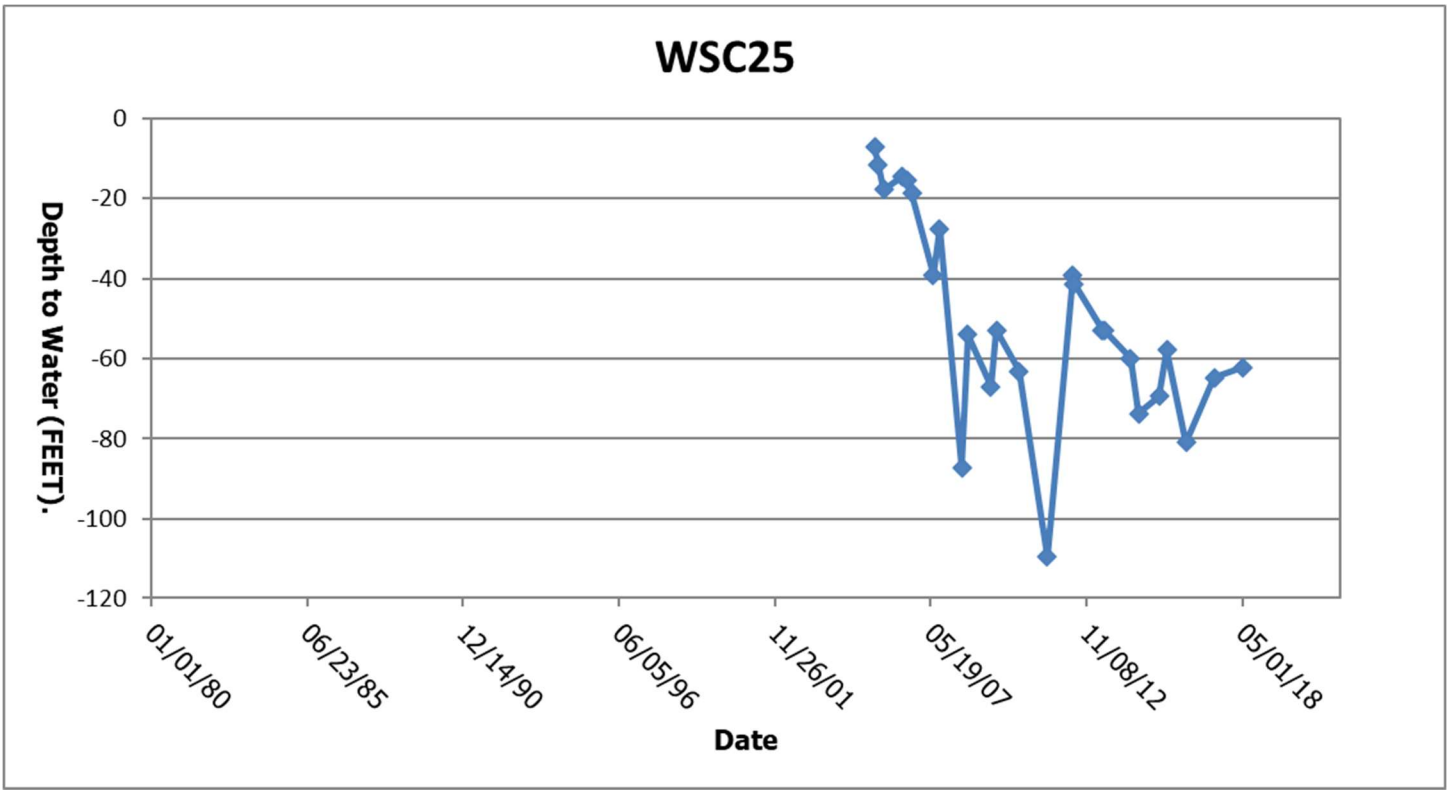

WOV25
0
-5
-10
-15
-20
-25
-30
Depth to Water (FEET).
01/01/80
06/23/85
12/14/90
06/05/96
11/26/01
05/19/07
11/08/12
05/01/18
Date

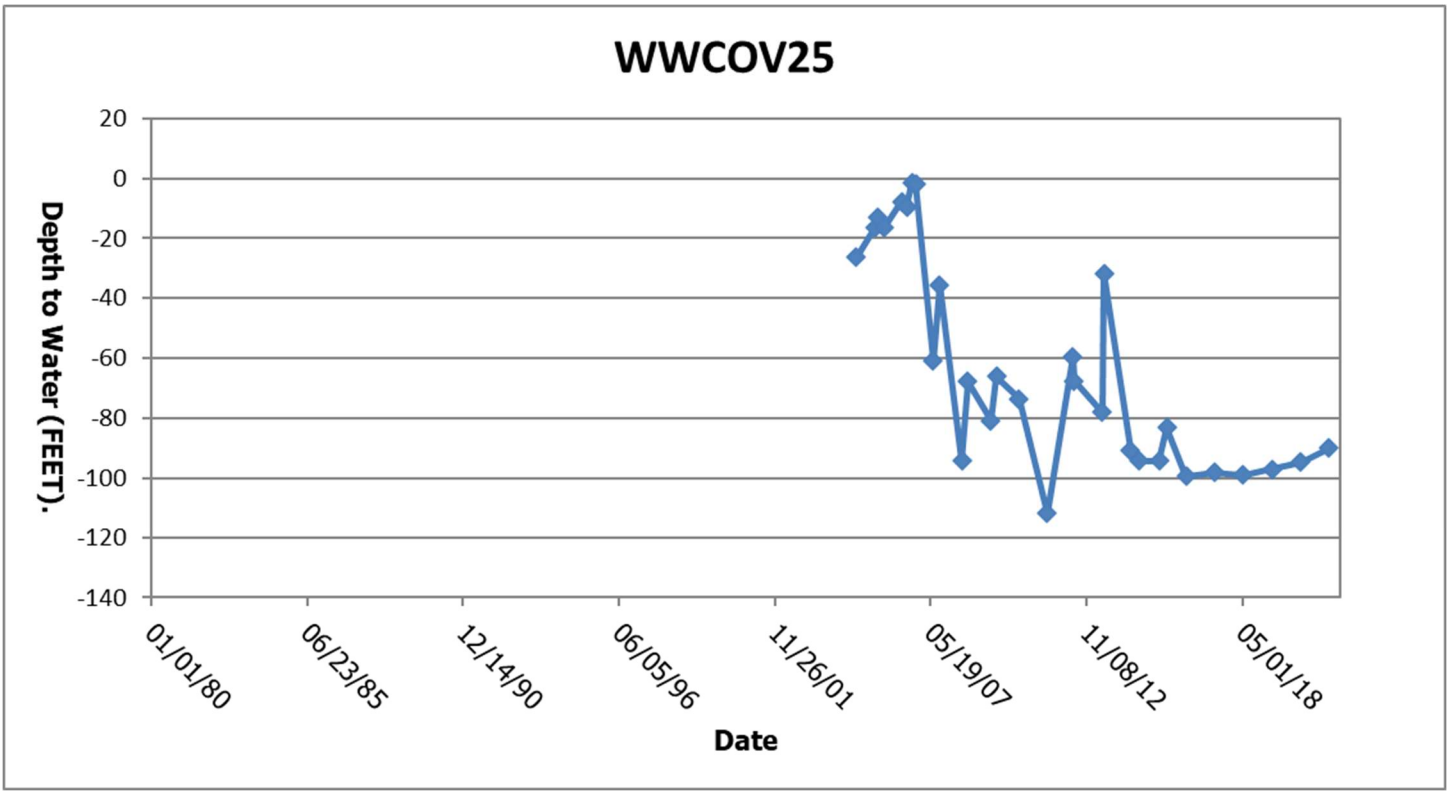

WW14
20
0
-20
-40
-60
-80
-100
-120
-140
Depth to Water (FEET).
01/01/80
06/23/85
12/14/90
06/05/96
11/26/01
05/19/07
11/08/12
05/01/18
Date

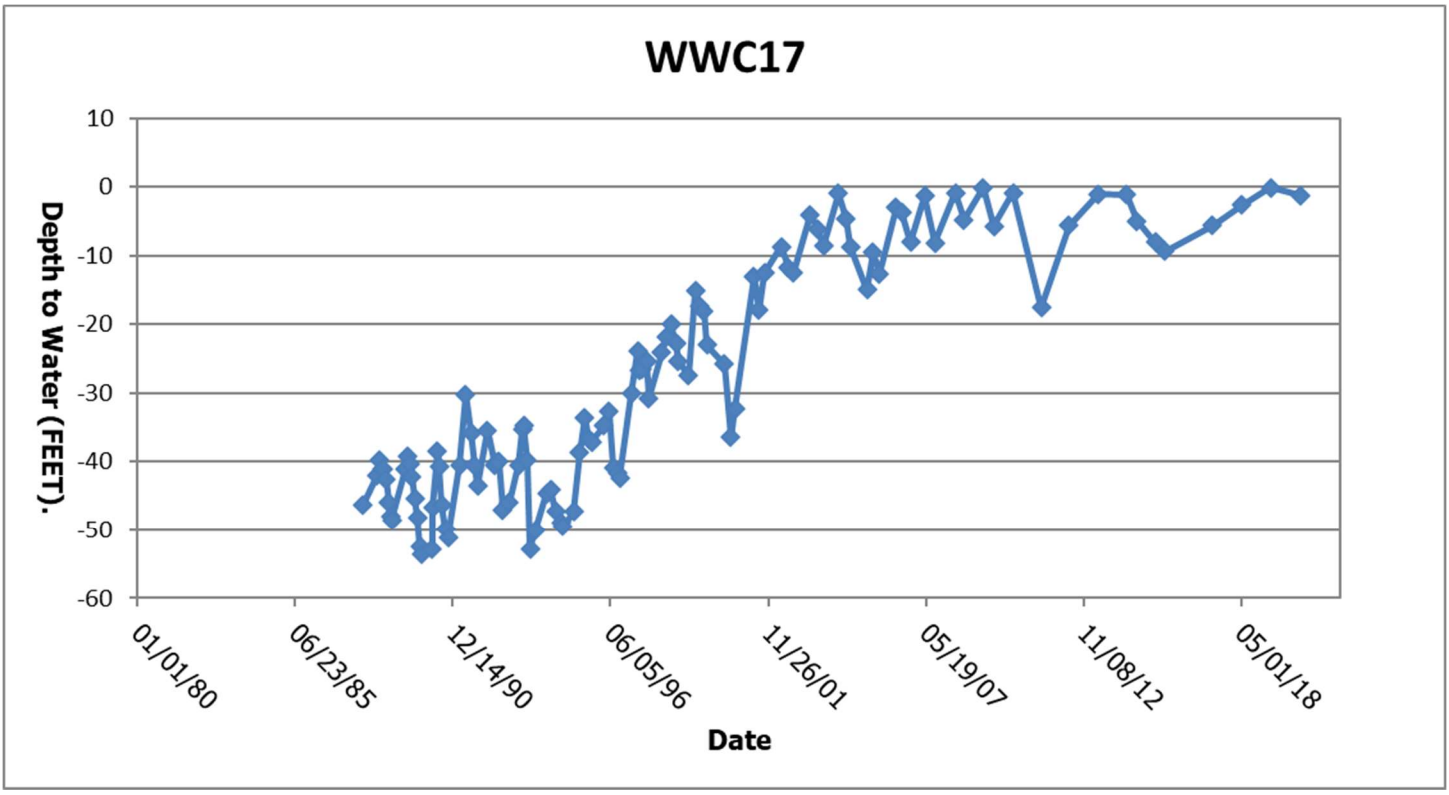

WW17
Depth to Water (FEET).
0
-10
-20
-30
-40
-50
-60
-70
-80
-90
01/01/80
06/23/85
12/14/90
06/05/96
11/26/01
05/19/07
11/08/12
05/01/18
Date

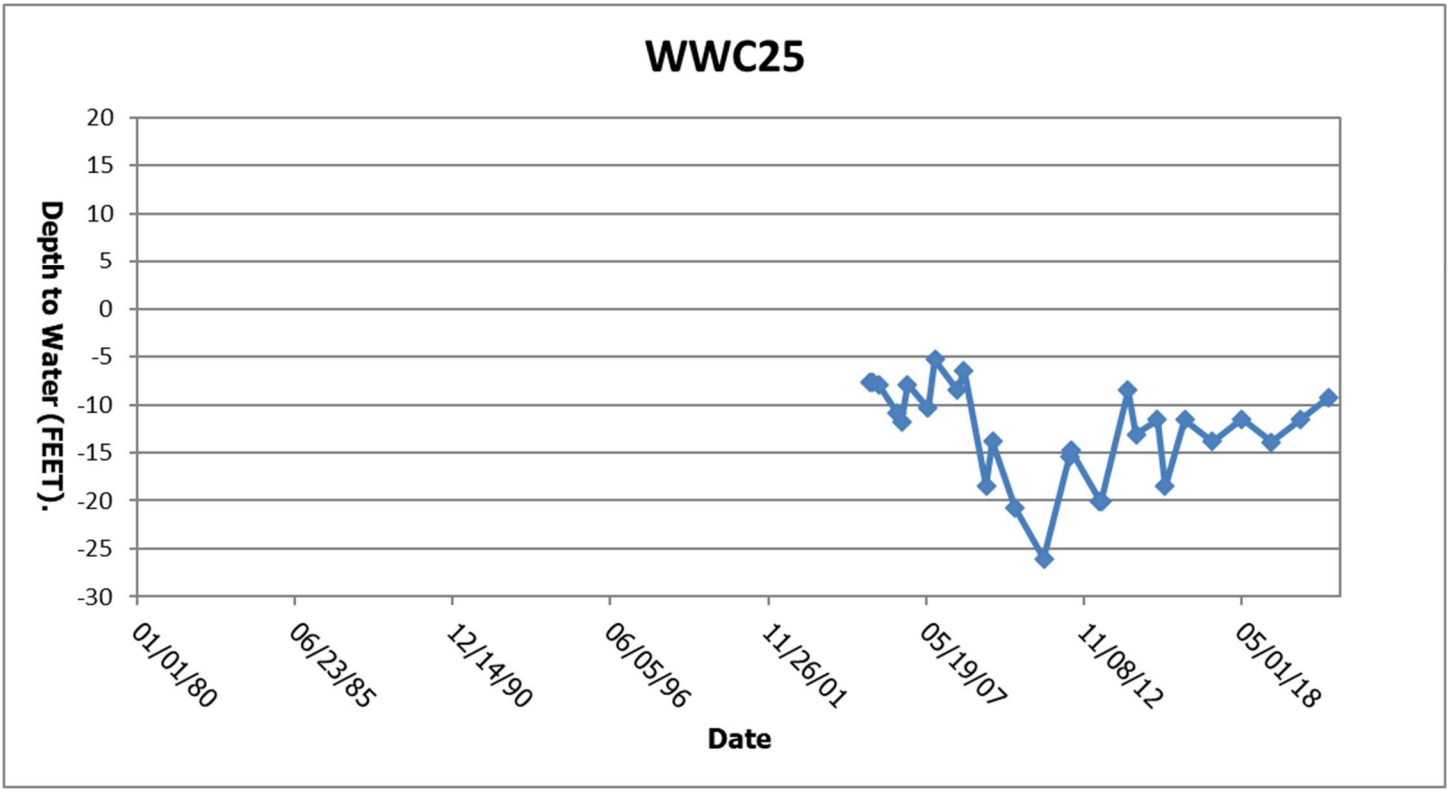

WW25
Depth to Water (FEET).
5
0
-5
-10
-15
-20
-25
-30
01/01/80
06/23/85
12/14/90
06/05/96
11/26/01
05/19/07
11/08/12
05/01/18
Date

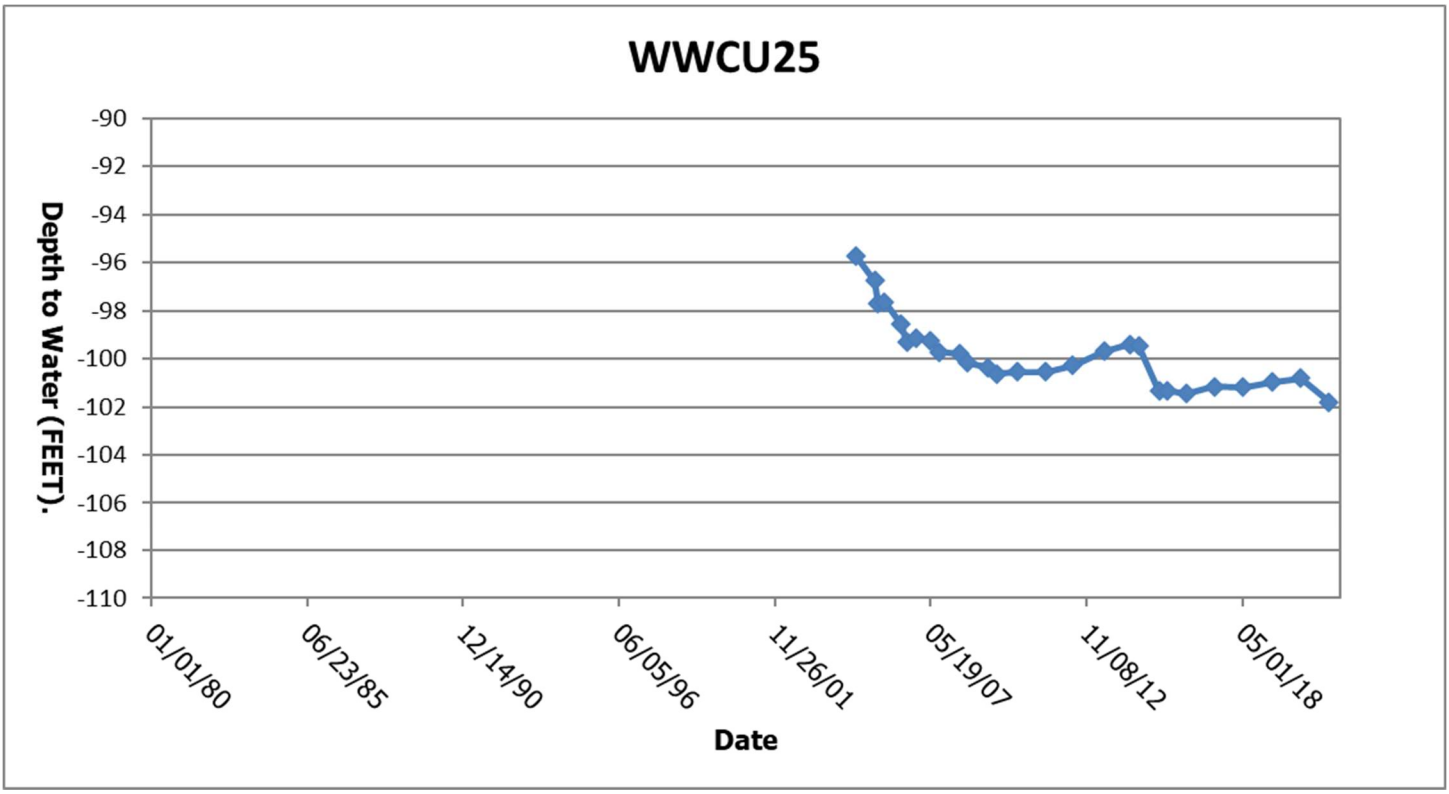

WSOV25
Depth to Water (FEET).
20
10
0
-10
-20
-30
-40
-50
01/01/80
06/23/85
12/14/90
06/05/96
11/26/01
05/19/07
11/08/12
05/01/18
Date


WSC25
Depth to Water (FEET).
0
-20
-40
-60
-80
-100
-120
01/01/80
06/23/85
12/14/90
06/05/96
11/26/01
05/19/07
11/08/12
05/01/18
Date


WWCOV25
Depth to Water (FEET).
20
0
-20
-40
-60
-80
-100
-120
-140
01/01/80
06/23/85
12/14/90
06/05/96
11/26/01
05/19/07
11/08/12
05/01/18
Date


WWC17
Depth to Water (FEET).
10
0
-10
-20
-30
-40
-50
-60
01/01/80
06/23/85
12/14/90
06/05/96
11/26/01
05/19/07
11/08/12
05/01/18
Date


WWC25
20
15
10
5
0
-5
-10
-15
-20
-25
-30
Depth to Water (FEET).
01/01/80
06/23/85
12/14/90
06/05/96
11/26/01
05/19/07
11/08/12
05/01/18
Date


WWCU25
-90
-92
-94
-96
-98
-100
-102
-104
-106
-108
-110
Depth to Water (FEET).
01/01/80
06/23/85
12/14/90
06/05/96
11/26/01
05/19/07
11/08/12
05/01/18
Date

APPENDIX D

SURFACE WATER QUALITY DATA

Table D.1 Dry Creek Yampa Segment 13d stream point analytical data for water year 2021.

Location	Date	Flow N GPM	SPC, Field N UMHOS/CM	pH, Field N S.U.	Temp., Field N C	Iron D MG/L	Iron PD MG/L	Iron TR MG/L	Manganese D MG/L	Mercury T UG/L	Ammonia N. N MG/L	Nitrate N. N MG/L	Nitrite N. N MG/L	Selenium D UG/L
WSH9	4/22/2021	27	1437	8.4	3.5	< 0.06	0.252	0.305						
WSH9	6/15/2021	1.3	1113	8.22	15.6			0.533	0.191					0.4
WSH9	7/21/2021	0												
WSH9	9/9/2021	0												
WSH7	4/22/2021	1320	1758	8.5	3.4	< 0.06	0.171	0.43						
WSH7	4/22/2021	1320	1758	8.5	3.4			0.442	0.168					0.44
WSH7	6/15/2021	3.4	1836	8.35	12.4			**6.48**	0.0382					0.21
WSH7	7/21/2021	0												
WSH7	9/9/2021	0												
WSHF1	4/22/2021	763	2257	8.52	3.5	< 0.12	0.444	0.647						0.35
WSHF1	4/22/2021	763	2257	8.52	3.5			0.571	0.453	**< 0.2**	< 0.05	< 0.02	< 0.01	0.38
WSHF1	6/15/2021	32.3	2947	8.15	12.1			**1.59**	0.919	**< 0.2**	0.117	0.24	0.025	0.22
WSHF1	7/21/2021	7.4	4099	8.09	15.4	0.062	0.414	< 0.3						< 0.5
WSHF1	9/9/2021	0												
WSD5	4/22/2021	798	2194	8.43	3.2	< 0.06	0.22	0.309						0.3
WSD5	4/22/2021	798	2194	8.43	3.2			0.292	0.214	**< 0.2**	< 0.05	< 0.02	< 0.01	0.3
WSD5	6/15/2021	0												
WSD5	7/21/2021	0												
WSD5	9/9/2021	0												
Yampa Segment 13d Standards - Acute		-	-	6.5 - 9.0	-	-	-	-	4.738	0.01**	Varies***	100	0.05	18.4
Yampa Segment 13d Standards - Chronic		-	-	-	-	-	-	1.11 (May-Feb) 3.04 (Mar-Apr)	2.618	-	-	-	-	4.6
Agricultural Use Standards		-	-	-	-	-	-	-	0.2*	-	-	100	10	20

Location	Date	Selenium PD UG/L	Selenium TR UG/L	Sulfates N MG/L	Sulfide N MG/L	TDS, Lab N MG/L	TSS N MG/L
WSH9	4/22/2021					1100	5
WSH9	6/15/2021	0.3	0.4			722	15
WSH9	7/21/2021						
WSH9	9/9/2021						
WSH7	4/22/2021					1510	12
WSH7	4/22/2021	0.41	0.47			1480	12
WSH7	6/15/2021	0.21	0.36			1400	197
WSH7	7/21/2021						
WSH7	9/9/2021						
WSHF1	4/22/2021		0.28	1130		2090	9
WSHF1	4/22/2021	0.4	0.3	1110	**< 0.02**	2040	7
WSHF1	6/15/2021	0.15	0.23	1510	**< 0.02**	2560	29
WSHF1	7/21/2021		0.3	2350		4080	11
WSHF1	9/9/2021						
WSD5	4/22/2021		0.2	1010		1960	7
WSD5	4/22/2021	0.31	0.22	1000	**< 0.02**	1980	7
WSD5	6/15/2021						
WSD5	7/21/2021						
WSD5	9/9/2021						
Yampa Segment 13d Standards - Acute		-	-	-	0.002****	-	-
Yampa Segment 13d Standards - Chronic		-	-	-	-	-	-
Agricultural Use Standards		-	-	-	-	-	-

Notes

* The manganese agricultural use standard is only applicable for areas with acidic soils. This areas soils are alkaline.

** Analytic detection limit is an order of magnitude greater than the 0.01 mg/L mercury standard.

*** Table value standard (TVS) for ammonia varies based on temperature and pH. See WQCC Regulation 33 for equation.

**** Analytic detection limit is an order of magnitude greater than 0.002 mg/L sulfide standard.

Bold Analyte exceeds the Yampa Segment 13d or Agricultural Use Standards

Table D.2. Dry Creek Segment 13d NPDES Outfall 017 analytical data for water year 2021.

Location	Date	Flow N GPM	pH, Field N S.U.	Oil & Grease Y/N	Temp., Field N C	SPC, Field N UMHOS/CM	Iron D MG/L	Iron PD MG/L	Iron TR MG/L	Manganese PD MG/L	Selenium D UG/L	Selenium PD UG/L	Selenium TR UG/L	TSS N MG/L	TDS, Lab N MG/L
NPDES17	10/22/2020	1.6	8.24		10.5	1990			< 0.12			2.31	2.81		2500
NPDES17	11/2/2020	1.9	8.49	N	10.8	1512			0.219			2.17	2.24		2310
NPDES17	12/1/2020	1.2	8.67	N	0.9	1112			< 0.12			1.91	2.26		2470
NPDES17	1/11/2021	1.1	8.21	N	0.7	2758			0.164			2.18	2.26		2360
NPDES17	2/8/2021	1.4	8.31	N	0.5	2160			0.254			1.44	1.57		1750
NPDES17	3/22/2021	3.9	8.29	N	1.3	1671			0.177			1.38	1.33		1450
NPDES17	4/22/2021	43.7	8.59	N	5.6	1951			0.317			1.88	1.95		1680
NPDES17	4/22/2021	43.7	8.59	N	5.6	1951	< 0.06	0.242	0.331		2.24		1.95	12.0	1660
NPDES17	5/17/2021	28.8	8.53	N	14.2	2115			0.218			2.03	2.27		1770
NPDES17	6/14/2021	1	8.36	N	19.4	2240			0.282			1.84	1.97		1820
NPDES17	7/21/2021	0													
NPDES17	8/3/2021	0													
NPDES17	9/9/2021	0													
NPDES Limit	Daily Max		6.5 - 9.0	10*	-	-	-	-	Report	Report	-	Report	-	-	Report
	Monthly Avg.		NA	NA	-	-	-	-	1	Report	-	4.6	-	-	Report
Yampa Segment 13d Standards - Acute			6.5 - 9.0	-	-	-	-	-	-	4.738	18.4	-	-	-	-
Yampa Segment 13d Standards - Chronic			-	-	-	-	-	-	Mar-Apr 3.040 May-Feb 1.110	2.618	4.6	-	-	-	-

Note

* Limit only applicable if presence of oil or grease is detected

Settleable solids data only submitted to SCC database if result exceeds limit. No exceedances occurred during this time period.

Bold Analyte exceeds the NPDES limit or Yampa Segment 13d Standard

Table D.3. Dry Creek Segment 13d NPDES Outfall 016 analytical data for water year 2021.

Location	Date	Flow N GPM	pH, Field N S.U.	Oil & Grease Y/N	Temp., Field N C	SPC, Field N UMHOS/CM	Iron D MG/L	Iron PD MG/L	Iron TR MG/L	Manganese PD MG/L	Selenium D UG/L	Selenium PD UG/L	Selenium TR UG/L	TSS N MG/L	TDS, Lab N MG/L
NPDES16	10/22/2020	73.7	8.27		10	1735			< 0.12			0.7	0.91		2420
NPDES16	11/2/2020	71.8	8.45	N	7.8	1937			< 0.12			1.07	1		2360
NPDES16	12/1/2020	70.2	8.62	N	0.1	1175			< 0.12			1.11	1.19		2530
NPDES16	1/11/2021	67.2	8.26	N	0.2	2742			< 0.12			1.53	1.53		2490
NPDES16	2/8/2021	66.1	8.25	N	0.7	2731			< 0.12			1.4	1.54		2440
NPDES16	3/22/2021	54.3	8.35	N	1.6	2120			0.094			1.92	2		1870
NPDES16	4/22/2021	107.6	8.48	N	6.1	2278			0.153			1.33	1.26		2130
NPDES16	4/22/2021	107.6	8.48	N	6.1	2278	< 0.12	0.100	< 0.12		1.48		1.37	< 5	2130
NPDES16	5/17/2021	87.6	8.34	N	14.1	2416			0.068			0.95	0.95		2140
NPDES16	6/14/2021	63.4	8.17	N	19.8	2628			0.128			0.65	0.8		2320
NPDES16	7/21/2021	28.7	8.3	N	20.3	2607			< 0.12	0.0474		0.3	0.69		2330
NPDES16	7/21/2021	28.7	8.3	N	20.3	2607	< 0.06	< 0.06	< 0.12	0.0493	0.72		0.7	13.0	2340
NPDES16	8/3/2021	27.6	8.48	N	19.7	2083			0.512			0.54	1.04		1810
NPDES16	9/9/2021	17.8	8.47	N	17.8	2263			< 0.06			0.35	0.45		1900
NPDES	Daily Max		6.5 - 9.0	10*	-	-	-	-	Report	Report	-	Report	-	-	Report
Limit	Monthly Avg.		NA	NA	-	-	-	-	1	Report	-	4.6	-	-	Report
Yampa Segment 13d Standards - Acute			6.5 - 9.0	-	-	-	-	-	-	4.738	18.4	-	-	-	-
Yampa Segment 13d Standards - Chronic			-	-	-	-	-	-	Mar-Apr 3.040 May-Feb 1.110	2.618	4.6	-	-	-	-

Note

* Limit only applicable if presence of oil or grease is detected

Settleable solids data only submitted to SCC database if result exceeds limit. No exceedances occurred during this time period.

Bold Analyte exceeds the NPDES limit or Yampa Segment 13d Standard

Table D.4. Dry Creek Segment 13d NPDES Outfall 006 analytical data for water year 2021.

Location	Date	Flow N GPM	pH, Field N S.U.	Oil & Grease Y/N	Temp., Field N C	SPC, Field N UMHOS/CM	Iron D MG/L	Iron PD MG/L	Iron TR MG/L	Manganese PD MG/L	Selenium D UG/L	Selenium PD UG/L	Selenium TR UG/L	TSS N MG/L	TDS, Lab N MG/L
NPDES6	1/11/2021	65.6	8.16	N	0.5	4239			0.244	1.67		0.24	0.25		3990
NPDES6	10/22/2020	78.9	8.13	N	10.2	2799			< 0.3	0.026		< 0.5	< 0.5		4220
NPDES6	11/2/2020	76.7	8.58	N	10.3	2768			< 0.12			0.17	< 0.2		3850
NPDES6	12/1/2020	68.9	8.55	N	0.2	1654			< 0.3			< 0.5	< 0.5		4400
NPDES6	2/8/2021	63.4	8.06	N	1.1	3997			0.228			< 0.1	< 0.2		3850
NPDES6	3/22/2021	48.8	8.12	N	1.8	2314			0.313			0.59	0.51		2100
NPDES6	4/22/2021	78.8	8.33	N	6	3540			0.434	0.274		0.3	0.26		3800
NPDES6	4/22/2021	78.8	8.33	N	6	3540	0.127	0.379	0.380		0.21		0.28	5.0	3800
NPDES6	5/17/2021	69.7	8.09	N	15.1	3897			0.199			0.16	0.22		3860
NPDES6	6/14/2021	42.1	8.04	N	20	4245			< 0.3			< 0.5	< 0.5		4060
NPDES6	7/21/2021	52.6	8.18	N	20.2	4219			< 0.3	0.0368		< 0.1	0.22		4400
NPDES6	7/21/2021	52.6	8.18	N	20.2	4219	0.082	0.119	< 0.3	0.0389	< 0.5		0.17	12.0	4390
NPDES6	8/3/2021	48.7	8.08	N	20.9	4023			0.136			0.17	0.22		3940
NPDES6	9/9/2021	21.2	8.13	N	17.3	4311			0.088			0.18	0.16		3890
NPDES Limit	Daily Max		6.5 - 9.0	10*	-	-	-	-	Report	Report	-	Report	-	-	Report
	Monthly Avg.		NA	NA	-	-	-	-	1	Report	-	4.6	-	-	Report
Yampa Segment 13d Standards - Acute			6.5 - 9.0	-	-	-	-	-	-	4.738	18.4	-	-	-	-
Yampa Segment 13d Standards - Chronic			-	-	-	-	-	-	Mar-Apr 3.040 May-Feb 1.110	2.618	4.6	-	-	-	-

Note

* Limit only applicable if presence of oil or grease is detected

Settleable solids data only submitted to SCC database if result exceeds limit. No exceedances occurred during this time period.

Bold Analyte exceeds the NPDES limit or Yampa Segment 13d Standard

Table D.5. Dry Creek Segment 13d NPDES Outfall 005 analytical data for water year 2021.

Location	Date	Flow N GPM	pH, Field N S.U.	Oil & Grease Y/N	Temp., Field N C	SPC, Field N UMHOS/CM	Iron D MG/L	Iron PD MG/L	Iron TR MG/L	Manganese PD MG/L	Selenium D UG/L	Selenium PD UG/L	Selenium TR UG/L	TSS N MG/L	TDS, Lab N MG/L	Cadmium PD UG/L
NPDES5	10/22/2020	0														
NPDES5	11/2/2020	0														
NPDES5	12/1/2020	0														
NPDES5	1/11/2021	0														
NPDES5	2/8/2021	0														
NPDES5	3/22/2021	0														
NPDES5	4/22/2021	0														
NPDES5	5/17/2021	0														
NPDES5	6/14/2021	0														
NPDES5	7/21/2021	0														
NPDES5	8/3/2021	0														
NPDES5	9/9/2021	0														
NPDES Limit	Daily Max		6.5 - 9.0	10*	-	-	-	-	Report	Report	-	Report	-	-	Report	Report
	Monthly Avg.		NA	NA	-	-	-	-	1	Report	-	4.6	-	-	Report	Report
Yampa Segment 13d Standards - Acute			6.5 - 9.0	-	-	-	-	-	-	4.738	18.4	-	-	-	-	9.2
Yampa Segment 13d Standards - Chronic			-	-	-	-	-	-	Mar-Apr 3.040 May-Feb 1.110	2.618	4.6	-	-	-	-	1.2

Location	Date	Chromium PD UG/L	Copper PD UG/L	Lead PD UG/L	Mercury T UG/L	Nickel PD UG/L	Silver PD UG/L	Zinc PD MG/L
NPDES5	10/22/2020	0						
NPDES5	11/2/2020	0						
NPDES5	12/1/2020	0						
NPDES5	1/11/2021	0						
NPDES5	2/8/2021	0						
NPDES5	3/22/2021	0						
NPDES5	4/22/2021	0						
NPDES5	5/17/2021	0						
NPDES5	6/14/2021	0						
NPDES5	7/21/2021	0						
NPDES5	8/3/2021	0						
NPDES5	9/9/2021	0						
NPDES Limit	Daily Max	Report	Report	Report	Report	Report	Report	Report
	Monthly Avg.	Report	Report	Report	Report	Report	Report	Report
Yampa Segment 13d Standards - Acute		1773	50	281	-	1513	22	0.565
Yampa Segment 13d Standards - Chronic		231	29	11	0.01	168	3.5	0.428

Note

* Limit only applicable if presence of oil or grease is detected

Settleable solids data only submitted to SCC database if result exceeds limit. No exceedances occurred during this time period.

Bold Analyte exceeds the NPDES limit or Yampa Segment 13d Standard

Table D.6. Statistical summary of pre-mine total recoverable iron at SIIW stream monitoring points.

Watershed	Dates	Location	Total Recoverable Iron (mg/L)			
			N	Mean	Min	Max
Dry Creek / Hubberson	Apr 1987 - Sept 1989	WSH7	8	1.90	0.21	7.8
	Apr 1979 - Sept 1989	WSHF1	89	9.10	0.15	240
	Mar 1983 - Sept 1989	WSD5	46	6.18	0.21	106
Sage Creek	May 1991 - Sept 1995	WSSF3	25	0.22	< 0.02	1.09

Note
Non-detect value applied to all censored data for statistical calculations

Table D.7. Sage Creek Segment 13e stream point analytical data for water year 2021.

Location	Date	Flow N GPM	SPC, Field N UMHOS/CM	pH, Field N S.U.	Temp., Field N C	Iron D MG/L	Iron PD MG/L	Iron TR MG/L	Manganese D MG/L	Mercury T UG/L	Ammonia N. N MG/L	Nitrate N. N MG/L	Nitrite N. N MG/L	Selenium D UG/L
WSSF3	4/22/2021	2168	1566	8.32	3.4									0.47
WSSF3	4/22/2021	2168	1566	8.32	3.4			0.211	0.0437	**< 0.2**	< 0.05	< 0.02	< 0.01	0.49
WSSF3	6/15/2021	0												
WSSF3	7/21/2021	0												
WSSF3	9/9/2021	0												
Yampa Segment 13e Standards - Acute		-	-	6.5 - 9.0	-	-	-	-	4.738	0.01**	0.05	100	0.05	18.4
Yampa Segment 13e Standards - Chronic		-	-	-	-	-	-	1	2.618	-	-	-	-	TM***
Agricultural Use Standards		-	-	-	-	-	-	-	0.2*	-	-	100	10	20

Location	Date	Selenium PD UG/L	Selenium TR UG/L	Sulfates N MG/L	Sulfide N MG/L	TDS, Lab N MG/L	TSS N MG/L
WSSF3	4/22/2021		0.48	681		1250	
WSSF3	4/22/2021	0.45	0.46	639	**< 0.02**	1260	< 5
WSSF3	6/15/2021						
WSSF3	7/21/2021						
WSSF3	9/9/2021						
Yampa Segment 13e Standards - Acute		-	-	-	0.002****	-	-
Yampa Segment 13e Standards - Chronic		-	-	-	-	-	-
Agricultural Use Standards		-	-	-	-	-	-

Notes

* The manganese agricultural use standard is only applicable for areas with acidic soils. This areas soils are alkaline.

** Analytic detection limit is an order of magnitude greater than the 0.01 mg/L mercury standard.

*** A current condtions temporary modification is in place for the Segment 13e chronic selenium standard.

**** Analytic detection limit is an order of magnitude greater than 0.002 mg/L sulfide standard.

Bold Analyte exceeds the Yampa Segment 13e or Agricultural Use Standards

Table D.8. Sage Creek Segment 13e NPDES Outfall 009 and 015 analytical data for water year 2021.

Location	Date	Flow N GPM	pH, Field N S.U.	Oil & Grease Y/N	Temp., Field N C	SPC, Field N UMHOS/CM	TDS, Lab N MG/L
NPDES15	1/11/2021	1	8.34	N	0.6	944	558
NPDES15	2/8/2021	1	8.1	N	1	916	556
NPDES15	3/22/2021	2.3	8.1	N	1.2	858	508
NPDES15	4/22/2021	4.3	8.37	N	6.3	876	500
NPDES15	5/17/2021	2.1	8.44	N	14.9	836	528
NPDES15	6/14/2021	0					
NPDES15	7/21/2021	0					
NPDES15	8/3/2021	0					
NPDES15	9/9/2021	0					
NPDES15	10/22/2020	1	8.43		9.4	772	494
NPDES15	11/2/2020	1.3	8.61	N	8.2	780	506
NPDES15	12/1/2020	1.1	8.61	N	0.8	284	544
NPDES9	1/11/2021	0					
NPDES9	2/8/2021	0					
NPDES9	3/22/2021	0					
NPDES9	4/22/2021	0					
NPDES9	5/17/2021	0					
NPDES9	6/14/2021	0					
NPDES9	7/21/2021	0					
NPDES9	8/3/2021	0					
NPDES9	9/9/2021	0					
NPDES9	10/22/2020	0					
NPDES9	11/2/2020	0					
NPDES9	12/1/2020	0					
NPDES Limit	Daily Max		6.5 - 9.0	10*	-	-	Report
	Monthly Avg.		NA	NA	-	-	Report
Yampa Segment 13e Standards - Acute			6.5 - 9.0	-	-	-	-
Yampa Segment 13e Standards - Chronic			-	-	-	-	-

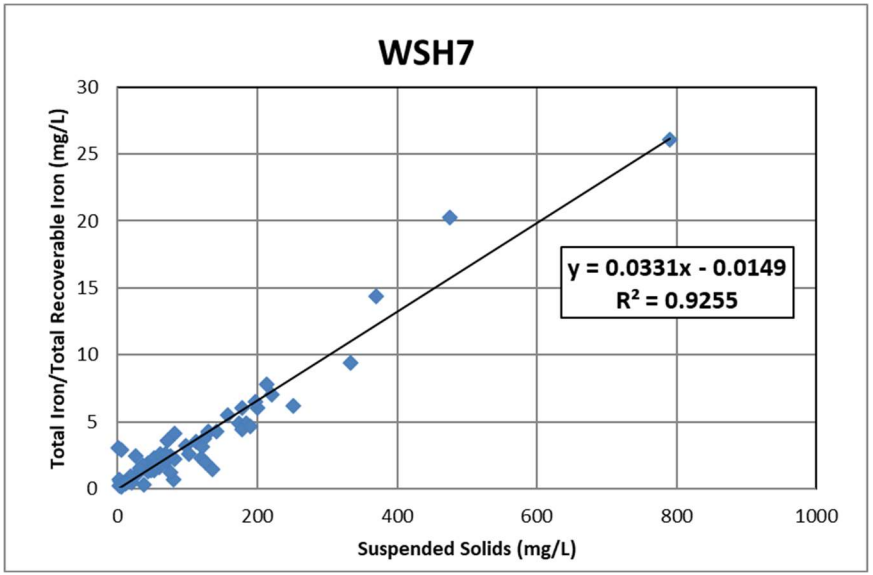
Note

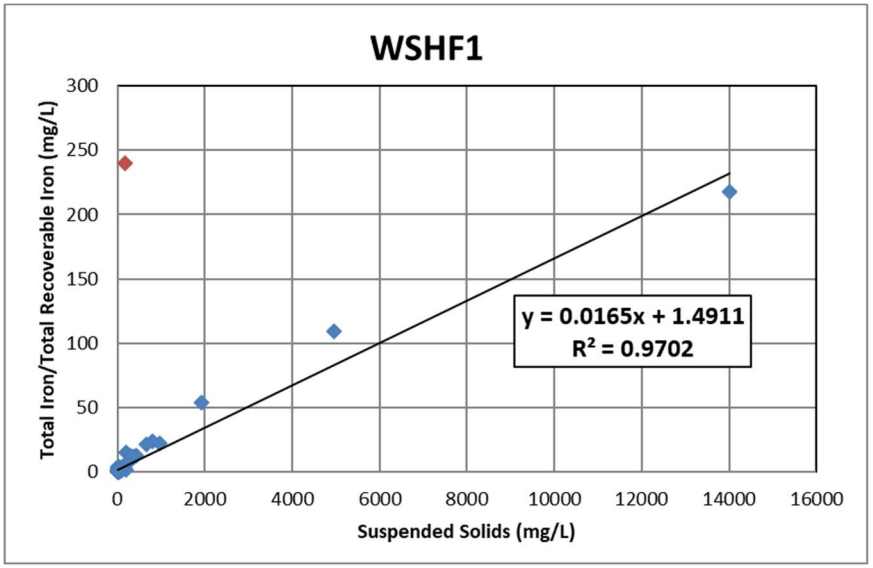
* Limit only applicable if presence of oil or grease is detected

Settleable solids data only submitted to SCC database if result exceeds limit. No exceedances occurred during this time period.

Bold Analyte exceeds the NPDES limit or Yampa Segment 13d Standard

Figure D.1. Suspended solids vs total iron/total recoverable iron at Dry Creek stream points WSH7 and WSHF1. Note that a single sample from WSHF1 collected on April 27, 1979 was determined to be a statistical outlier. This sample is designated in red on the WSHF1 plot and was not included in the correlation analysis.





APPENDIX E

SPRING WATER QUALITY DATA

Table E.1. Analytical data for springs sampled during the 2021 water year.

Location	Date	Flow N GPM	SPC, Field N UMHOS/CM	pH, Field N S.U.	Temp., Field N C	Iron TR MG/L	Manganese D MG/L	Mercury T UG/L	Ammonia N. N MG/L	Nitrate N. N MG/L	Nitrite N. N MG/L	Selenium D UG/L
WSPG7	6/16/2021	1.8	1880	7.2	14.2	0.611	0.0355	< 0.2	< 0.05	0.08	< 0.01	0.27
WSPG46	6/16/2021	0	3329	7.68	13.7	42.9	2.40	< 0.2	1.52	< 0.02	0.026	0.25
WSPG47	6/16/2021	3.6	2211	7.32	12.4	1.60	0.158	-	-	-	-	< 0.1
WSPG50	6/15/2021	1.7	2813	7.71	14.6	1.52	1.49	< 0.2	0.441	0.06	< 0.01	< 0.2
WSSPG1	6/16/2021	0										
WSSPG2	6/16/2021	17.6	4260	7.97	17.2	0.094	0.708	< 0.2	0.067	< 0.02	< 0.01	< 0.5
WSSPG3	6/16/2021	24.2	4139	6.62	11.7	0.434	1.88	< 0.2	0.288	< 0.02	< 0.01	< 0.2
WSSPG4	6/16/2021	21.9	4279	8.07	16.2	< 0.3	0.590	< 0.2	< 0.05	0.04	< 0.01	< 0.5
WSSPG5	6/15/2021	3.4	1836	8.35	12.4	1.33	1.48	< 0.2	0.438	0.04	0.010	< 0.2
Agricultural Use Standards		-	-	-	-	-	0.2*	-	-	100	10	20

Location	Date	Selenium PD UG/L	Selenium TR UG/L	Sulfates N MG/L	Sulfide N MG/L	TDS, Lab N MG/L	TSS N MG/L
WSPG7	6/16/2021	0.21	0.23	663	< 0.02	1400	9.0
WSPG46	6/16/2021	0.11	0.82	1650	< 0.03	2860	6100
WSPG47	6/16/2021	< 0.1	< 0.1	-	-	1620	13.0
WSPG50	6/15/2021	< 0.1	< 0.2	1100	< 0.02	2210	34.0
WSSPG1	6/16/2021						
WSSPG2	6/16/2021	0.16	0.39	2580	< 0.02	4250	10.0
WSSPG3	6/16/2021	< 0.2	< 0.2	2230	< 0.02	3900	10.0
WSSPG4	6/16/2021	< 0.5	< 0.5	2630	< 0.02	4320	7.0
WSSPG5	6/15/2021	< 0.1	< 0.2	1090	< 0.02	2220	15.0
Agricultural Use Standards		-	-	-	-	-	-

Notes

* The manganese agricultural use standard is only applicable where irrigation water is applied to soils with a pH value less than 6.0. The soils in this area are alkaline.

Bold Analyte exceeds the Agricultural Use Water Quality Standard