Natural Soda LLC

2024 Project Status Report
&
Annual Plan of Development
January 2025

Please note CONFIDENTIAL data sections of this document

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1.0 Introduction and Project Summary

This 2024 Project Status Report and Annual Plan of Development is submitted to fulfill the requirements of BLM sodium leases, COC-00118326, COC-00118327, COC-0119986, and COC-37474 as stated in Federal Regulations 43 CFR, Subpart 3591 and 3592 and the Project Record of Decision dated January 20, 1987. This report is also submitted to the Colorado Division of Reclamation Mining and Safety (DRMS) to meet the requirements for an Annual Report per State permit number M-1983-194, and in part to meet the requirements contained in the EPA UIC Class III Area Permits: CO30358-00000.

This report summarizes the Natural Soda LLC (NS) 2024 process operations, production activities, reclamation status, geotechnical and environmental monitoring results, as well as the status of surface facilities and wells. Proposed operations for 2025 will be described in this report, including the permitting of two new production wells, 19H-1V and 19H-IR-E. NS will also complete the connection of two production wells, the 18H-1V and the 18H-IR-W well drilled in 2024. Groundwater monitor wells (GMWs) and water supply wells (WSWs) will be maintained in 2025.

2.0 Description of Project Area

2.1. Location and Regional Setting

The four NS federal sodium leases are located in the Piceance Creek Basin in Rio Blanco County in northwestern Colorado (Figure 1 and Figure 2). The sodium leases are located primarily between the Yellow Creek and Piceance Creek drainages, approximately 41 miles from Meeker, Colorado, and 53 miles from Rifle, Colorado. The climate is semi-arid with annual precipitation averaging 12-14 inches. Precipitation generally occurs as snow from November to March and as rain during the remainder of the year. The vegetation is predominantly pinyon pine, sagebrush, Utah juniper, western wheatgrass, and needle-and-thread grass. The total area contained within the four sodium leases is 8,379 acres more or less. The principal area of current operations is located in and around Section 26, T1S, R98W, 6th Principal Meridian. Figure 1 shows the NS leases and regional setting. Figure 2 shows sodium leases within the Piceance Creek Basin. Figure 3 and Figure 4 show the NS well locations and proposed well locations.

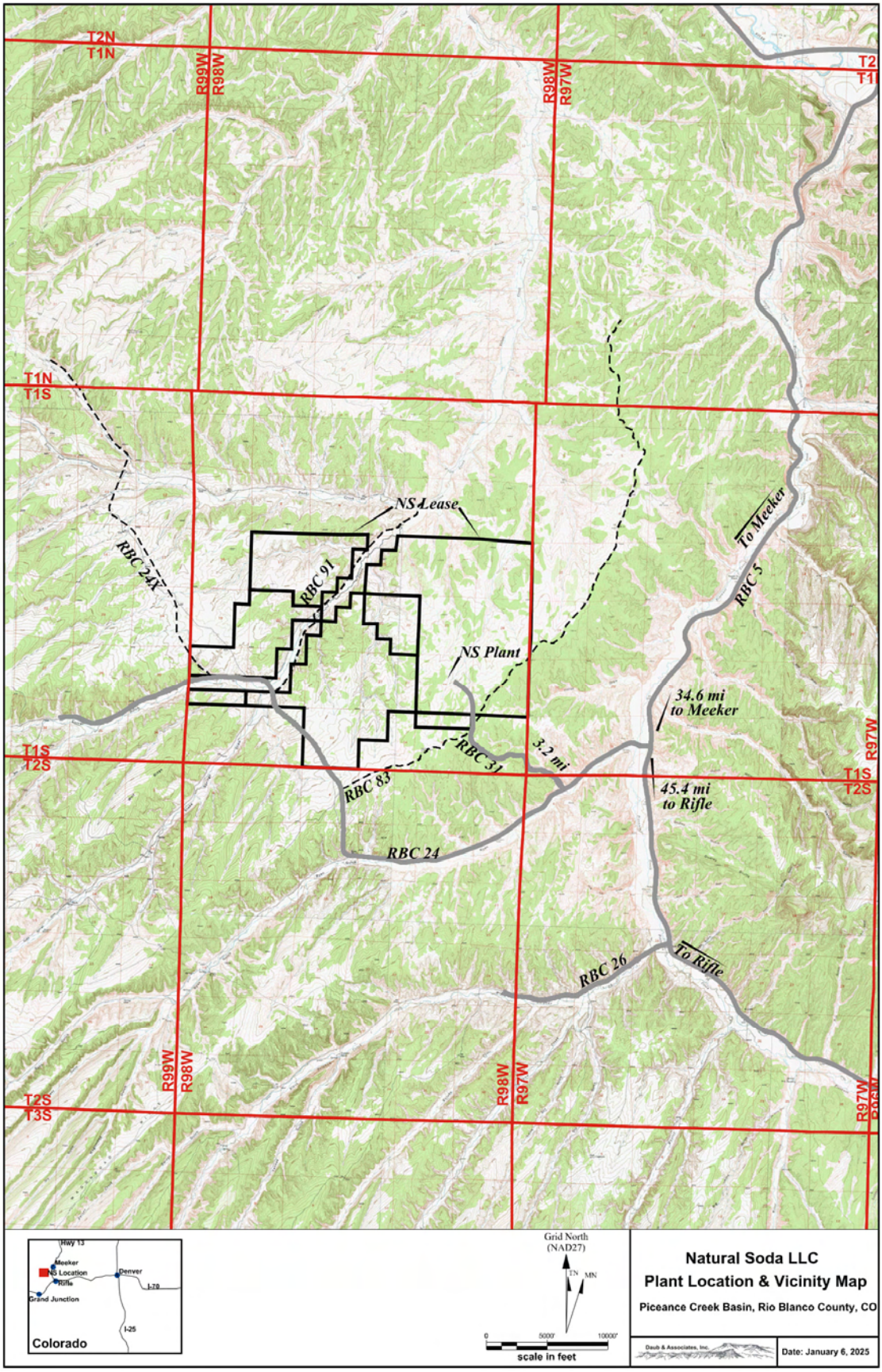

Figure 1: Natural Soda LLC Vicinity Map

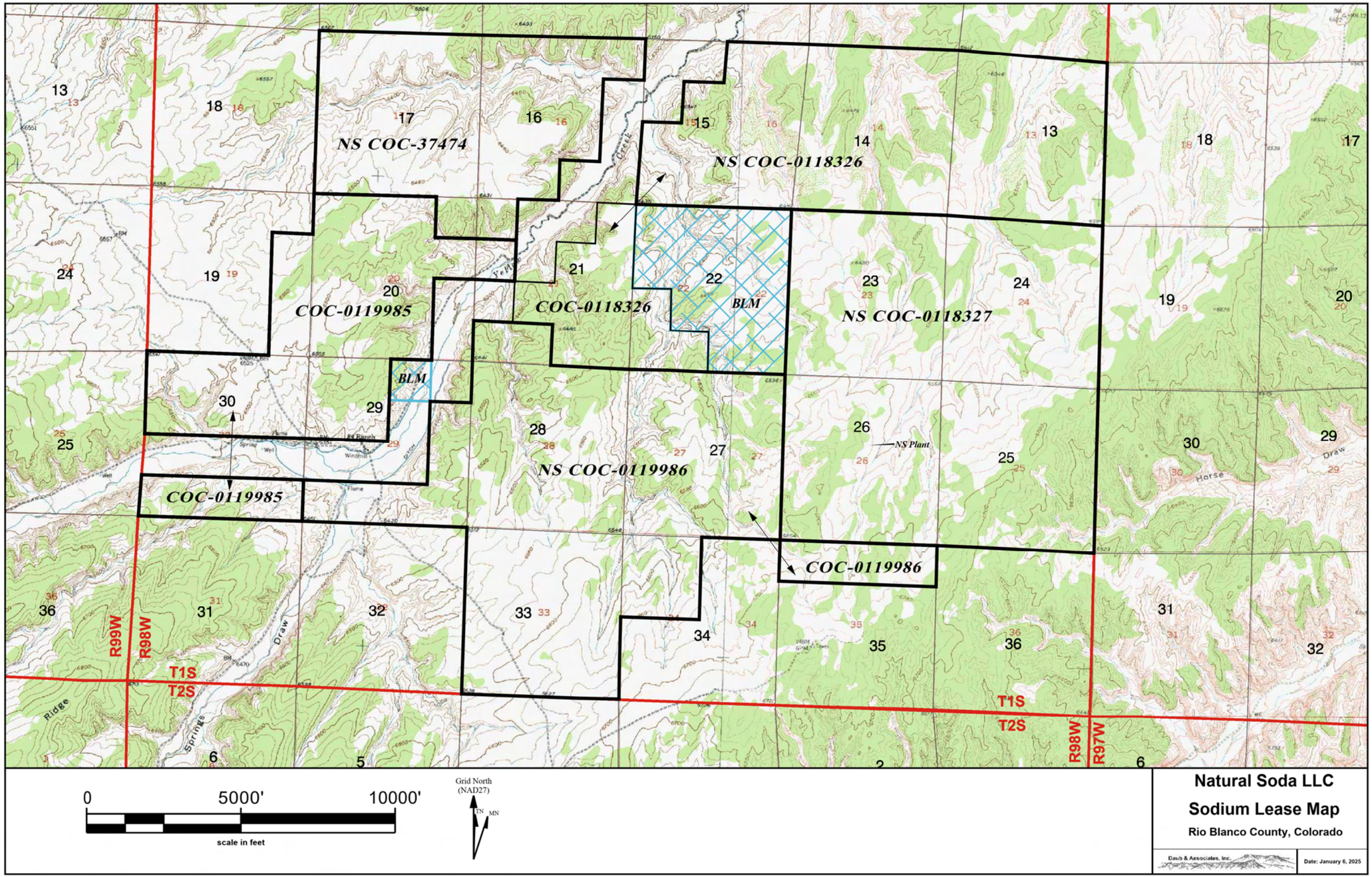

Figure 2: NS Sodium Leases Map

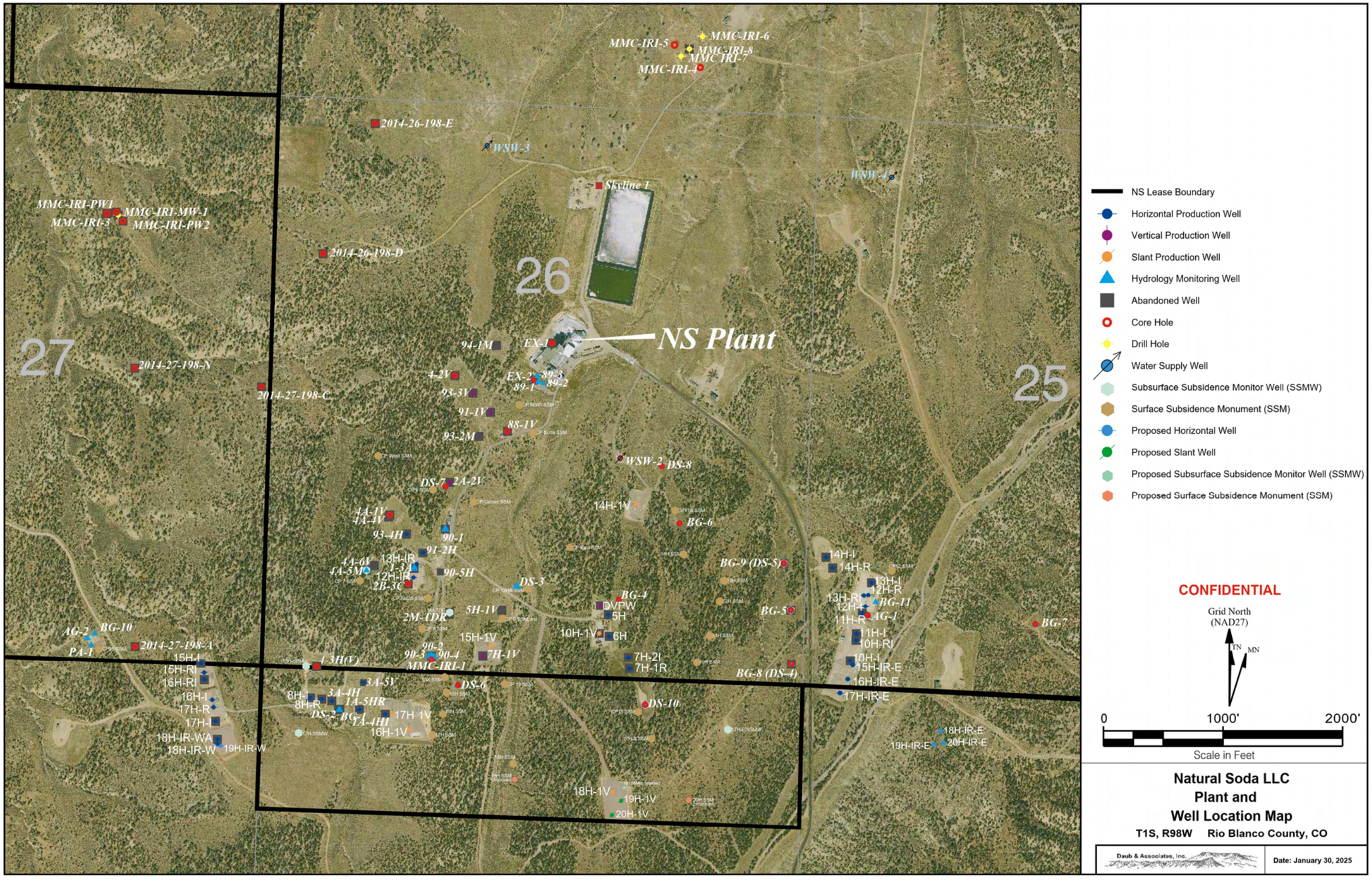

Figure 3: NS Plant and Well Location Map, Section 26 Detail.

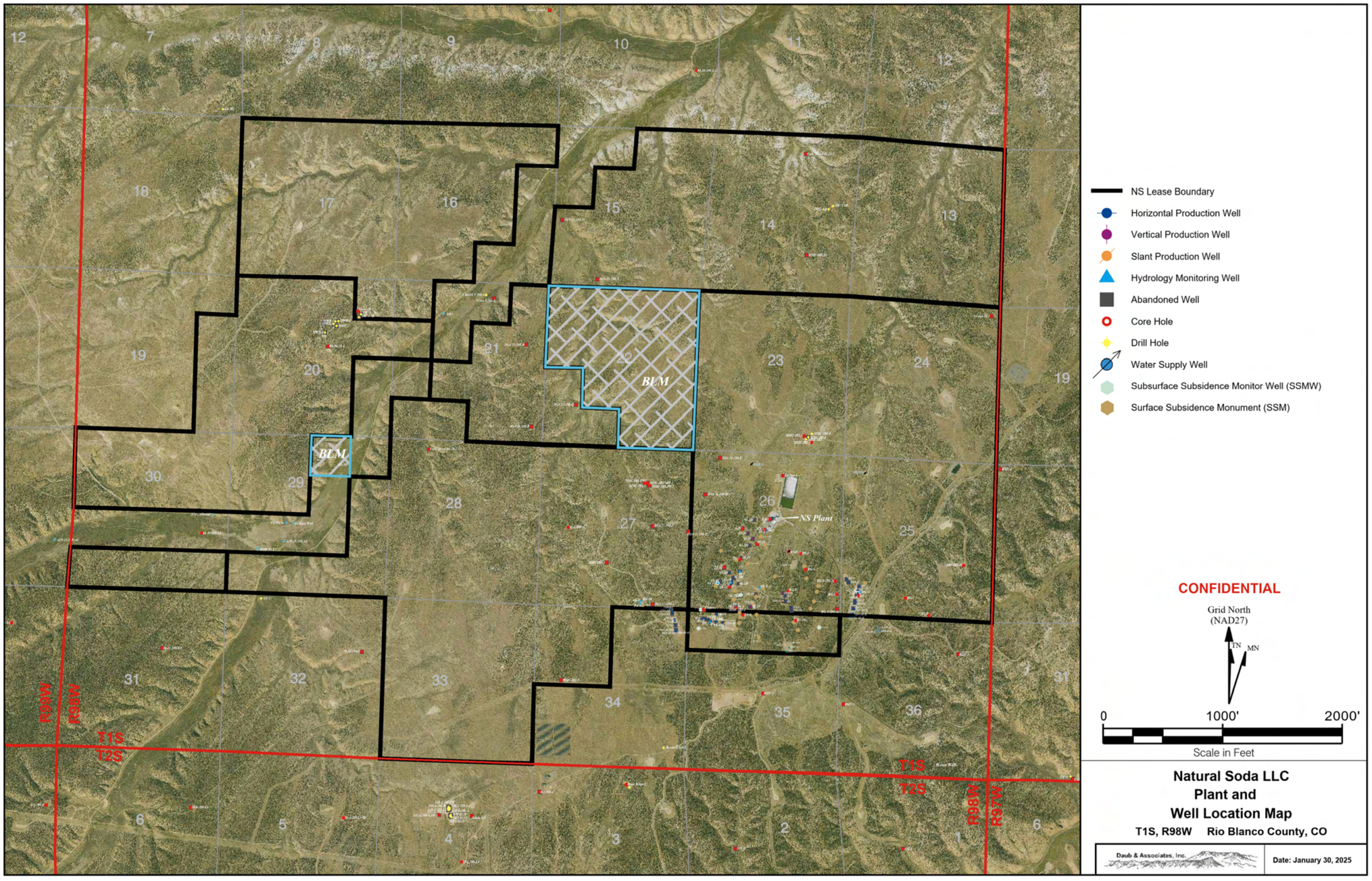

Figure 4: NS Plant and Well Location Map, Expanded View

2.2. Leasehold Status

The original four NS sodium leases were renewed by the BLM in 2021 for a period of ten years. Annual rental and royalty payments have been submitted to the Mineral Management Service. The NS leases comprise approximately 8,379 acres. NS plans to renew the leases again in 2031 for an additional period of ten years.

3.0 Project Status

3.1. 2024 Project Activities (Confidential)

(See Figure 3 & Table 4: Plant and Well Location Maps)

In 2024 NS produced 239,410 tons of sodium bicarbonate and generated 240,902 tons in annual sales. Table 1 presents the monthly sodium bicarbonate production, sales, and inventory summary for 2024. This product was produced from the 12H, 13H, 15H, 16H, and 17H mining intervals. The 2024 and lifetime sodium bicarbonate production for the mining intervals is presented in Table 2. Routine boil outs were performed in 2024. NS completed a project to remove and replace the truck scale with minimal disruption to operations. NS is planning additional capital expenditures to upgrade equipment over the next few years. Various short shutdowns were required for routine maintenance, equipment repair, and/or replacement throughout the year.

3.1.1. Items of Significance (Confidential)

- NS drilled two production wells in 2024, the 18H-1V slant production well and the 18H-IR-W horizontal well which will establish the West 18H mining interval. The two wells will be hydrologically connected in 2025. One production well, the 18H-IR-WA was drilled and then abandoned in 2024 due to casing damage and cementing issues.
- Production of sodium bicarbonate was continuous throughout all months of 2024.

3.1.2. 2024 Monthly Bicarbonate Summary (Confidential)

Table 1: Monthly Production, Sales, and Inventory Summary in Tons (Confidential)

Month	Beginning Inventory	Production	Sales	Ending Inventory
January	5,902	21,557	21,179	6,281
February	6,281	19,265	20,367	5,179
March	5,179	22,118	20,844	6,584
April	6,584	20,379	20,760	6,203
May	6,203	20,890	20,371	6,722
June	6,722	16,042	17,256	5,514
July	5,514	21,234	21,166	5,582
August	5,582	18,807	17,796	6,594
September	6,594	20,537	18,756	8,699
October	8,699	18,464	21,552	5,611
November	5,611	19,140	20,194	4,557
December	4,557	20,976	20,663	5,044
TOTALS		**239,410**	**240,902**	

3.1.3. Mining Interval Bicarbonate Production (Confidential)

Table 2: Mining Interval Annual and Lifetime Production (Confidential)

Tons Mined in 2024	Mining Interval 12H	Mining Interval 13H	Mining Interval 15H	Mining Interval 16H	Mining Interval 17H
	21,407	12,463	70,337	85,428	49,775
Total Production (Tons) as of Dec 31, 2024	373,823	274,662	474,844	421,966	269,466

3.1.4. Regulatory Review (Confidential)

NS submitted routine Sundry Notices, monthly, quarterly, and annual reports to the appropriate agencies. The following summarizes other regulatory related activities:

Bureau of Land Management (BLM)

- March 5, 2024, NS reported an Undesirable Event to the BLM with regards to a pinhole leak in the brine pipeline that leaked sodium bicarbonate brine onto undisturbed ground. NS contained the leaked fluids with a soil berm and cleaned up the affected soil and reclaimed the area per agency guidelines.
- In April 2024 NS submitted an APD application package for the 19H-1V and 19H-IR-E proposed production wells.
- In May 2024 NS reported two notifications (May 6 and 14th) of migratory waterfowl encounters to the U.S. Fish and Wildlife Service (FWS) at the time of the events. BLM requested to be notified of the same events moving forward and were notified of these events on July 9, 2024.
- All required drilling commencement and cementing operational notifications were supplied to the BLM by NS as required for the 18H-1V and 18H-IR-W production well operations in June 2024.
- NS submitted BLM a request for the P&A of the 18H-IR-WA production well July 1, 2024, the BLM granted approval July 29, 2024. NS submitted P&A completion documents following the 18H-IR-WA P&A operations in August 2024.
- NS submitted an APD application for the 18H-IR-W production well redrill operation in July 2024, the BLM approved the APD on August 1, 2024. The 18H-IR-W production well was redrilled in October 2024.
- In August 2024 NS submitted a Use Permit Application to the BLM for Lot Three of Section 36 to maintain access to the proposed 19H East pad location to be constructed in 2025.
- Completion data and Form 3160-4 (well completion) were submitted to the BLM for the 18H-1V Slant Production well in December 2024.

United States Environmental Protection Agency (EPA)

- January 11, 2024, NS sent EPA all documentation for the DS-3 Subsurface Subsidence Monitor Well (SSMW) geophysical logging and analysis required for the 12H and 13H mining intervals. Logging occurred on January 9, 2024, and indicated no subsurface subsidence.
- NS submitted an application package to add the proposed 19H-IR-E Horizontal Production well to the NS UIC area permit CO30358-00000 on April 10, 2024. The application was approved by the EPA on June 22, 2024, and assigned injection permit # C030358-12756 to the 19H-IR-E well.

- In November 2024 NS submitted a request for Injection Approval for the 18H-IR-W well drilled in October 2024. EPA approved the request and assigned Permit C030358-12525 to the 18H-IR-W well December 19, 2024.
- May 10, 2024, NS sent in additional documentation with regards to the 14H-1V Production well's conversion to a SSMW well. The 14H-1V was originally converted in September 2022 and NS notified EPA at that time, this documentation was requested in addendum to the original notification. NS supplied an additional Well P&A Form 7520-19 to the EPA in July 2024.
- NS requested Injection Approval for the 15H-1V production well from the EPA July 8, 2024. The 15H-1V has been used as a recovery only well since it was drilled and completed in July 2019.
- The routine, EPA mandated MIT Part 1 (5 Year) pressure test and MIT Part 2 (5 Year) temperature logging reports for the 15H-IR-E well were sent to the EPA on October 22, 2024.

Colorado Division of Reclamation, Mining and Safety (DRMS)

- NS submitted annual reports and fees for DRMS Permits M 1983-194 and M-1999-051 in January 2024.
- DRMS conducted an offsite 1st quarter inspection on March 26, 2024. DRMS conducted a records review of NS Nahcolite Project through February and March. D&A supported this review and supplied documentation including disturbed acreage evaluation and earthwork volumes to DRMS as requested. No additional problems or violations were noted during this inspection.
- July 1, 2024, DRMS conducted an onsite 2nd quarter inspection focused on the reclamation success of recently reclaimed areas, and the recently drilled 18H production wells. DRMS visited the BG-1/DS-2 location and the 14H I&R location both recently reclaimed. Pad G, WSW-3 pipeline, and WSW-4 pipeline reclamation were also inspected, DRMS recognized the Pad G and the WSW-3 and WSW-4 pipelines to be reclaimed following a BLM review of the three sites. No problems or violations were noted during this inspection.
- DRMS conducted an onsite 3rd quarter inspection on October 11, 2024, to inspect the wellfield. The 18H production well pads, 19H East pad proposed location and pipeline route were inspected. DRMS recommend a more aggressive weed abatement program to battle the Russian Thistle that was noticed within the wellfield. DRMS also recommended seeding of the topsoil piles on the 18H locations as soon as possible. No additional problems or violations were noted during the inspection.

- On December 19, 2024, DRMS conducted the 4th quarter onsite inspection of the NS operation with BLM Tom Cummings from White River Field Office (WRFO) in attendance. This site visit was records inspection and to explain how the Division determines Financial Warranty. No wellfield observations or plant inspections were conducted during this visit. No additional problems or violations were noted during this inspection.

Colorado Division of Water Resources (DWR)

- A senior water right holder placed a call on the White River effective, December 1, 2022. NS initiated its surface water augmentation plan (88CW420) on December 19, 2022. NS periodically released water during January 2024 from the WSW-3 and WSW-4 to meet obligations for White River surface runoff requirements. NS released 119,600 gallons in 2024.

Colorado Department of Public Health & Environment (CDPHE)

- Per CDPHE requirements, in 2024 NS completed the following actions:
  - Cleaned out traps and wattles (15H, 12H, 13H, 15H-1V and 16H-1V Locations), clean sediment from wattles and install new wattles where needed.
  - Cleaned out the ditch and traps on 14H-1V location.
  - 15H-IR location was graded for improved stormwater drainage.
  - NS opened the stormwater drainages on 15-IR-E and 16H-1V locations.
- In 2024 NS submitted updated Stormwater Management Plan (SWMP) and Environmental Monitoring Plans to the CDPHE.
- NS submitted the COG-500000 Annual Stormwater Report to the CDPHE in 2024.

Rio Blanco County (RBC)

- In April 2024 NS submitted application and payment for the Temporary Living Quarters (TLQ) to RBC to support the 18H production well drilling. RBC approved the application and subsequently conducted inspections of the TLQ and granted Building Occupation & Septic permits in June 2024. NS submitted an additional application and payment for a TLQ permit in September 2024 for the 18H-IR-W redrill operation, RBC approved the TLQ and conducted the required inspections and permitting in October 2024.
- NS submitted amendments to the existing Special Use Permit (SUP) 12-04 for the 2024 drilling and P&A operations in June and October. RBC approved all SUP amendments.

3.2. Proposed 2025 Activities and Schedule (Confidential)

3.2.1. Processing (Confidential)

NS anticipates sodium bicarbonate production of approximately 250,000 tons in 2025. Brief, routine shut-downs for periodic boil-outs and maintenance activities will occur as necessary.

3.2.2. Well field (Confidential)

- NS plans on connecting the 18H-1V and 18H-IR-W production wells drilled in late 2024 to establish the western portion of the 18H mining interval during the winter/summer of 2025.
- NS will complete the permitting process, during 2025, for two new production wells, the proposed 19H-1V slant production well to be drilled as the first well of the 19H mining interval and the proposed 19H-IR-E production well to be drilled east of 19H-1V. The 19H-IR-E will intersect the 19H-1V well, forming the eastern portion of a new 19H mining interval.
- Once BLM conditions of approval are met (i.e.: raptor and pinyon jay surveys) construction of the 19H East drill pad location will be started in May of 2025. This drill pad will be 3.76 acres in size and will be used for the proposed 19H-IR-E well and eventually the 18H-IR-E and 20H-IR-E production wells. All agency requirements and conditions will be followed throughout the construction process.
- It is a possibility that NS could drill and complete the proposed 19H-1V slant production well and the 19H-IR-E horizontal production well in 2025. These two wells would establish the East portion of the 19H mining interval.
- If the 19H proposed production wells are drilled, NS will drill the 19H SSMW for subsurface subsidence monitoring of the 19H mining interval in 2025, or early 2026.
- Following completion of a final subsurface subsidence logging operation NS will P&A the 14H-1V SSMW in 3rd or 4th quarter 2025. The 14H-1V SSMW monitors the retired 14H mining interval.

3.2.3. EPA Notification – Schedule of Planned Mechanical Integrity Test (MIT) (Confidential)

- Per EPA UIC Permit C030358-00000 requirements, the following routine injection well (initial, 5-year, or 10-year) MIT Part 1 pressure testing and MIT Part 2 temperature logging is planned for 2025.
    - o 15H-1V (Initial) MIT P1 and P2 testing/logging is planned to occur during the second and fourth quarter 2025 for the completion of EPA ATI requirements.

- 18H-IR-W MIT P2 (initial) will be conducted, as appropriate following connection of the well with the 18H-1V well in 2025.

3.2.4. EPA Notification – Schedule of Planned Surface Subsidence Monuments (SSM) Survey (Confidential)

- NS will conduct the biennial surface subsidence monument survey in the second quarter of 2025. The results will be reported in section 4.4.2 of the annual report in January of 2026 in accordance with UIC Permit C030358-00000 requirements.

3.2.5. EPA Notification – Schedule of Planned Subsurface Subsidence Monitor Well (SSMW) Logging (GR/CCL) (Confidential)

- Per EPA UIC Permit C030358-00000 requirements; routine subsurface subsidence monitor well (SSMW) logging (GR/CCL) is planned for 2025 or the first quarter of 2026:
  - NS will log the 14H-1V SSMW in the 3rd or 4th quarter of 2025. This will be the final SSMW log for this well that monitors the P&A'ed 14H mining interval. Following logging, the 14H-1V SSMW will be P&A'ed.
  - Per UIC Permit, SSMW logging is determined based on mining interval production, NS will notify the EPA of upcoming SSMW logging as production milestones come into focus.

4.0 2024 Project Activities

4.1. On-Site Facilities and Process Description

4.1.1. General Arrangement

(Figure 5 provides an overview of the NS process flow.)

4.1.2. Lab Operation / Sanitation / ISO

In 2024, activities continued in the NS laboratory to provide analysis for process control, quality assurance, and regulatory requirements.

- Plant operators performed process control analyses.
- Chloride levels were monitored by both operations and laboratory personnel on USP grades to ensure USP standards were met.
- The USP test for insoluble materials was conducted on a per lot basis by laboratory personnel and a filter test for insoluble materials was conducted on the dry product once per shift by NS operators.
- Pests were controlled with the use of two UV bug lights and rodent traps around the interior and exterior walls of the plant. Bait stations replaced external traps at the Rifle warehouse.
- GMP/ISO/Sanitation training was provided for employees as required.
- A food safety audit for FSSC 22000 was conducted for which NS maintained GFSI certification.
- CDPHE, NSF, OMRI, Kosher, Halal, Non-GMO, CleanGredients and ISO 9001 certifications were maintained.

4.1.3. Process, Utilities, Facilities

- On March 5, 2024, NS noted a pinhole leak in the barren pipeline fitting weld. This small leak affected soil near the southwest portion of the parking lot area and was contained within a soil berm. The leak was repaired, and the affected soil was disposed of properly. NS submitted a Report of Undesirable Event to BLM and DRMS the same day the leak was identified and followed up with agencies on remediation options.
- June 10 – 17, the NS plant underwent the yearly common outage, where all production wells were shutdown. NS boiled out both production trains and completed annual maintenance and inspections on common systems (boilers, electrical switchgear, cooling tower, wellfield pipelines, etc.).
- The NS truck scale removal and replacement project began on June 10th. The replacement was successful, and the scale began operations on June 20th.

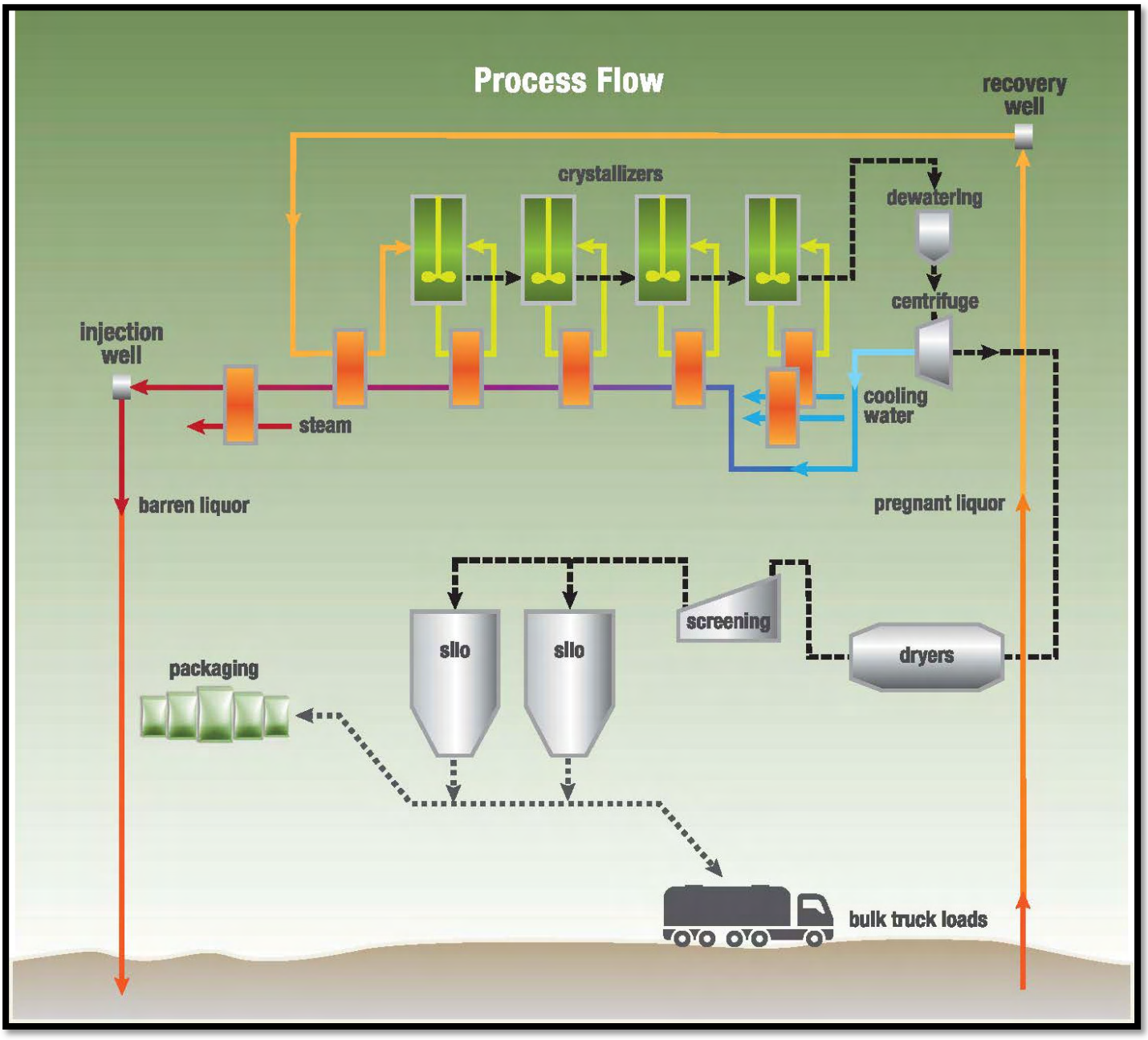

Figure 5: General Flow Process

4.1.4. Wells Associated with the NS Project (Confidential)

The following well-field related activities occurred in 2024: Refer ***Figure 3 &*** Figure 4 ***Plant and Well Location Map***.

- The 89-2 A-Groove groundwater monitoring well sampling equipment was experiencing difficulties during sampling events in late 2023. NS removed the nitrogen lift pump (NLP) and tubing on February 20, 2024. The NLP and tubing were replaced with new components and the equipment was tested for proper post installation operations.
- On May 1st, construction of a cuttings pit for the 18H drilling operations commenced on the 18H-1V pad. Additional location preparation for 18H-1V and 18H-IR-W drilling operations continued the first two weeks of May 2024.
- A new production well, the 18H-1V Slant Well, was spudded on May 15th with the Capstar Drilling Rig #321. The 18H-1V production well was drilled and completed to its final total depth on May 26, 2024.
- The 18H-IR-WA production well was spudded on May 29th, 2024. Drilling operations ceased on June 19th in 18H-IR-WA production well, due to cement plug and casing damage issues. All equipment was rigged down and demobilized from the location. The NS 18H-IR-WA well was Plugged and Abandoned (P&A) July 15th through July 18th, 2024. The 9 5/8" casing was perforated at 5 depths below ground level: 180', 360', 830', 1,125' and 1,620'. Five cement stages were pumped, to P&A the well, from 1,708' to surface. The casing was cut off below ground level and a plaque installed to identify the well per regulation.
- NS conducted discrete zone water sampling of the DS-3, DS-6, DS-7, and DS-10 wells for annual water quality analysis on June 25, 2024.
- Between September 9th and 12th Red Rock Well Service worked on the 12H-IR well to clear a sediment obstruction in the wellbore. 12H-IR well returned to service on the 13th.
- The NS 18H-IR-W redrill production well drilling operations started on October 8th, 2024. Drilling operations were completed on October 28th and the Capstar Drilling Rig #330 rig was released to be demobilized off the NS lease. Hydraulic connection of the 18H-IR-W and 18H-1V production wells was not immediately established at the end of drilling operations. Completion operations to connect the 18H-1V and 18H-IR-W production wells continued in November and December with the Red Rock Well Service workover rig but were unsuccessful. Additional connection operations will be undertaken during the second quarter of 2025.
- NS pulled the recovery pump from the 12H-IR production well and installed it in the 12H-R production well. Going forward, the 12H-IR will be the injection well and the 12H-R will be the recovery well, the mining direction will be from West to East.

The current status of wells associated with the NS Project is presented in Table 3: *List and Status of Wells Associated with NS.*

4.1.5. Other Activities

Continuous water level monitoring of proximal DS aquifer monitor wells, using fluid level indicators (pressure transducers), provided real time data for the management of active production mining interval operations. Throughout 2024, injection and recovery rates were adjusted to maintain water levels of these monitoring wells near target zones.

Table 3: List and Status of Wells Associated with NS (Confidential)

Well Name	Initial Well Type	Current Well Status	Section	Town-ship	Range	Latitude (NAD 27)	Longitude (NAD 27)	Initial TD, (MD, ft)	Current TD, (MD, ft)	Comments
12H-I	Horizontal-Injection	Horizontal-Production	25	1S	98W	39.929304000	108.348621000	4189.0	4189	TVD TD=~1985’
12H-R	Horizontal-Recovery	Horizontal-Recovery	25	1S	98W	39.929598000	108.348538000	2623.0	2623	TVD TD=~2007'
12H-IR	Horizontal-Production (Inj/Rec)	Horizontal-Production	26	1S	98W	39.929667896	108.363801054	3464.7	3464.7	TVD TD=-1972’
13H-R(I)	Horizontal-Production (Inj/Rec)	Horizontal-Production	25	1S	98W	39.929583170	108.348684400	2549	2549	TVD TD=~2013’
13H-IR	Horizontal-Production (Inj/Rec)	Horizontal-Production	26	1S	98W	39.930014690	108.363712457	3423.7	3423.7	TVD TD=-1964’
14H-1V	Slant Production (Rec)	Subsurface Subsidence Monitoring)	26	1S	98W	39.931733549	108.35641781	2095.5	2095.5	
15H-R(I)	Horizontal Production (Inj/Rec)	Horizontal-Production	34	1S	98W	39.927050806	108.370714984	2698	2698	TVD TD=~1850’
15H-1V	Slant Production (Rec)	Slant Production (Rec)	26	1S	98W	39.92797980	108.36112812	2079.1	2079.1	TVD TD=~1922’
15H-IR-E	Horizontal Production (Inj/Rec)	Horizontal Production	25	1S	98W	39.92778393	108.34898748	4032.4	4032.4	TVD TD=~1960’
15H-SSMW	Subsurface Subsidence Monitoring	Subsurface Subsidence Monitoring	26	1S	98W	39.927297800	108.367304200	1760.5	1760.5	
16H-I	Horizontal Injection	Horizontal-Injection	34	1S	98W	39.926332533	108.371061443	5425	5425	TVD TD=~1910’
16H-1V	Slant Production (Rec)	Slant Production (Rec)	35	1S	98W	39.925742470	108.363769248	2086	2086	TVD TD= ~1945’
16H-IR-E	Horizontal Production (Inj/Rec)	Horizontal Production	25	1S	98W	39.927419470	108.349138051	4025	4011	TVD TD= ~1959’
17H-1V	Slant Production (Rec)	Slant Production (Rec)	35	1S	98W	2376.7	2376.7	2376.7	2376.7	TVD TD= ~1961’
17H-IR-E	Horizontal-Production (Inj/Rec)	Horizontal-Production (Inj/Rec)	36	1S	98W	39.9270577	108.349382	3994.7	3994.7	TVD TD=-1965’
17H-R(I)	Horizontal-Recovery	Horizontal-Recovery	34	1S	98W	39.926171184	108.370365216	2431.7	2431.7	TVD TD=-1872’
17H-E SSMW	Subsurface Subsidence Monitoring	Subsurface Subsidence Monitoring	35	1S	98W	39.92601271	108.3531506	1828	1828	
17H-SSMW	Subsurface Subsidence Monitoring	Subsurface Subsidence Monitoring	35	1S	98W	39.925620961	108.367424479	1731.0	1720.6	
18H-1V	Slant Production (Rec)	Subsurface Subsidence Monitoring)	35	1S	98W	39.924318000	108.356904000	2432.0	2432.0	TVD TD = ~1999’
18H-IR-W	Horizontal-Production (Inj/Rec)	Horizontal-Production (Inj/Rec)	34	1S	98W	39.925250827	108.370220309	4526.3	4526.3	TVD TD = ~1924
18H-IR-WA	Horizontal Production (Inj/Rec) (P&A 2024)	Horizontal Production	34	1S	98W	39.925357110	108.370197700	2201.4	0	TVD TD = ~1869 P&A July 2024
89-1	Hydrology Monitoring	Hydrology Monitoring Well	26	1S	98W	39.934818008	108.359830288	1989	1570	
89-2	Hydrology Monitoring	Hydrology Monitoring Well	26	1S	98W	39.934771572	108.359655360	1409	1389	
89-3	Hydrology Monitoring	Hydrology Monitoring Well	26	1S	98W	39.934959857	108.359876003	400	390	Periodic sampling issues
WSW-2 (2010-26-198-2C)	Core Hole	Water Supply	26	1S	98W	39.932913043	108.357000636	1964	1402	Cored July 2010
WSW-3	Water Supply	Water Supply	26	1S	98W	39.940837450	108.361799400	1440	1440	Drilled August 2014
WSW-4	Water Supply	Water Supply	26	1S	98W	39.940358200	108.348198508	1437	1437	Drilled August 2014
90-3	Hydrology Monitoring	Hydrology Monitoring Well	26	1S	98W	39.927659529	108.363196386	1577	1556	

Table 3: List and Status of Wells Associated with NS (continued) (Confidential)

Well Name	Initial Well Type	Current Well Status	Section	Town-ship	Range	Latitude (NAD 27)	Longitude (NAD 27)	Initial TD, (MD, ft)	Current TD, (MD, ft)	Comments
90-4	Hydrology Monitoring	Hydrology Monitoring Well	26	1S	98W	39.927654857	108.363040763	1392	1371	Cleaned out to TD August 2021
AG-1	Core Hole 2014-25-198-J	Hydrology Monitoring Well	25	1S	98W	39.929116963	108.348465043	2061	1487	Cemented up to groundwater monitoring well level
AG-2	Hydrology Monitoring	Hydrology Monitoring Well	27	1S	98W	39.927814	108.375312	1275	1275	Drilled & Completed August 2021
BG-4	Hydrology Monitoring	Hydrology Monitoring Well	26	1S	98W	39.929278506	108.356901248	1999.5	1603	
BG-6 (2010-26-198-6C)	Core Hole	Hydrology Subsidence Monitoring Well	26	1S	98W	39.931301816	108.354997679	1978	1577	
BG-7	Core Hole 2014-25-198-K	Hydrology Monitoring Well	25	1S	98W	39.928987896	108.432905289	1967	1593.1	Cemented up to groundwater monitoring well level
BG-10	Hydrology Monitoring	Hydrology Monitoring Well	27	1S	98W	39.927930	108.375072	1461	1461	Drilled & Completed August 2021
BG-11	Hydrology Monitoring	Hydrology Monitoring Well	25	1S	98W	39.929399	108.348929	1685.5	1685.5	Drilled & Completed February 2021
DS-3	Hydrology Monitoring	Hydrology Monitoring Well	26	1S	98W	39.929529067	108.360329121	2100	1874.5	Sample pump replaced with NLP in 2018
DS-6	Core Hole	Hydrology Monitoring Well	35	1S	98W	39.926942000	108.362195000	2962.6	1870	Cemented up to groundwater monitoring well level
DS-7	Core Hole	Hydrology Subsidence Monitoring Well	26	1S	98W	39.932036903	108.362826421	1980	1875	Cemented up to groundwater monitoring well level
DS-8	Core Hole 2014-26-198-I	Hydrology Monitoring Well	26	1S	98W	39.932738295	108.355594975	2000	1881.7	Cemented up to groundwater monitoring well level
DS-9	Core Hole 2014-25-198-M	Hydrology Monitoring Well	25	1S	98W	39.927447860	108.340064803	1916.5	1842	Cemented up to groundwater monitoring well level
DS-10	Hydrology Subsidence Monitoring Well	Hydrology Subsidence Monitoring Well	35	1S	98W	39.92659671	108.35590409	1995	1925	
MMC-IRI-1	Core Hole	Hydrology Monitoring Well	26	1S	98W	39.927580161	108.363115621	2981	397	Cemented up to groundwater monitoring well level
MMC-IRI-4	Core Hole	Hydrology Monitoring Well	23	1S	98W	39.942950000	108.355333333	3001	1411	Cemented up to groundwater monitoring well level
MMC-IRI-5	Hydrology Monitoring	Hydrology Monitoring Well	23	1S	98W	39.943578031	108.355623039	2983	378	
MMC-IRI-6	Hydrology Monitoring	Hydrology Monitoring Well	23	1S	98W	39.943733333	108.355316667	1878	1394	
MMC-IRI-7	Hydrology Monitoring	Hydrology Monitoring Well	23	1S	98W	39.943516667	108.356033333	1880	1395	
MMC-IRI-11	Core Hole	Hydrology Monitoring Well	25	1S	98W	39.931608050	108.336010982	2963	1550	Cemented up to groundwater monitoring well level
O-GMW-A	Core Hole 2014-27-198-O	Hydrology Monitoring Well (Inactive)	27	1S	98W	39.934483259	108.383446479	1786	1294	Cemented up to groundwater monitoring well level
PA-1	Hydrology Monitoring	Hydrology Monitoring Well	27	1S	98W	39.927639	108.375175	435	435	Drilled & Completed August 2021
TH75-6A	Hydrology Monitoring	Hydrology Monitoring Well	14	1S	98W	39.964492958	108.353578053	1260	1260	USGS Well
TH75-6B	Hydrology Monitoring	Hydrology Monitoring Well	14	1S	98W	39.964807700	108.353045189	1755	1755	USGS Well
TH75-11A	Hydrology Monitoring	Hydrology Monitoring Well	20	1S	98W	39.952321958	108.409207410	1080	1080	USGS Well
TH75-11B	Hydrology Monitoring	Hydrology Monitoring Well	20	1S	98W	39.953286260	108.409494700	1498	1498	USGS Well

4.2. New Findings or Developments (Confidential)

- NS drilled three new production wells in 2024. Two of the wells were completed, 18H-1V & 18H-IR-W, but have not yet been hydrologically connected. One well the 18H-IR-WA was not drilled to completion and was P&A'ed in October.
- NS completed reclamation and seeding work on the P&A'ed GMW well pads and access roads associated with the Rock School Lease.

4.3. 2024 Operation Results (Confidential)

Mining and production activities were continuous in 2024. The following Table 4 provides a summary of mining and process results:

Table 4: Mine and Process Data (Confidential)

2024	Recovery	Recovery	Assay	Assay	Tons	Tons	Tons	Tons	Tons	Monthly
Month	*Avg GPM*	*Temp.*	*Bicarb g/l*	*NaCl g/l*	*Mining Interval #12H*	*Mining Interval #13H*	*Mining Interval #15H*	*Mining Interval #16H*	*Mining Interval #17H*	*Total Tons*
Jan-2024	2,018	183	201	14	1,648	1,364	5,914	7,789	4,843	21,557
Feb-2024	1,894	184	203	14	3,017	0	5,961	6,079	4,208	19,265
Mar-2024	2,032	184	203	14	1,032	1,813	6,391	8,413	4,469	22,118
Apr-2024	1,900	185	206	13	2,962	0	5,528	7,920	3,969	20,379
May-2024	1,806	184	207	13	3,417	0	6,034	7,459	3,980	20,890
Jun-2024	1,516	183	205	13	1,640	0	4,506	6,797	3,099	16,042
Jul-2024	2,000	181	202	15	2,111	812	6,702	7,441	4,168	21,234
Aug-2024	1,812	181	200	14	29	2,575	6,269	5,702	4,232	18,807
Sep-2024	2,007	181	201	14	1,928	964	6,087	7,254	4,305	20,537
Oct-2024	1,843	180	197	14	586	2,111	5,514	6,122	4,132	18,464
Nov-2024	1,919	182	200	14	0	2,335	5,768	7,119	3,918	19,140
Dec-2024	1,900	183	203	14	3,038	488	5,665	7,333	4,452	20,976
AVERAGE	1,887	183	202	14	1,784	1,039	5,861	7,119	4,148	19,951
TOTAL					21,407	12,463	70,337	85,428	49,775	239,410

Key to the above headings:	Recovery - Monthly average house flow rate and pregnant liquor temperature during process operations.
	Assay - g/L sodium bicarbonate (as total bicarbonate) and sodium chloride in the pregnant liquor.
	(Total bicarbonate = bicarbonate g/L + 1.58 x carbonate g/L)
	Tons - Total monthly bicarbonate production from each mining interval.
	Temp. - Temperature in degrees F recovered at the pregnant liquor tank.
	Avg GPM - Monthly average injection flow rate during process operations.

Figure 6 illustrates 2024 pregnant liquor analytical results along with monthly averages of sodium bicarbonate production (tons/day). Figure 7 represents monthly and cumulative annual production for 2024. NS produced and processed their sodium bicarbonate product throughout 2024.

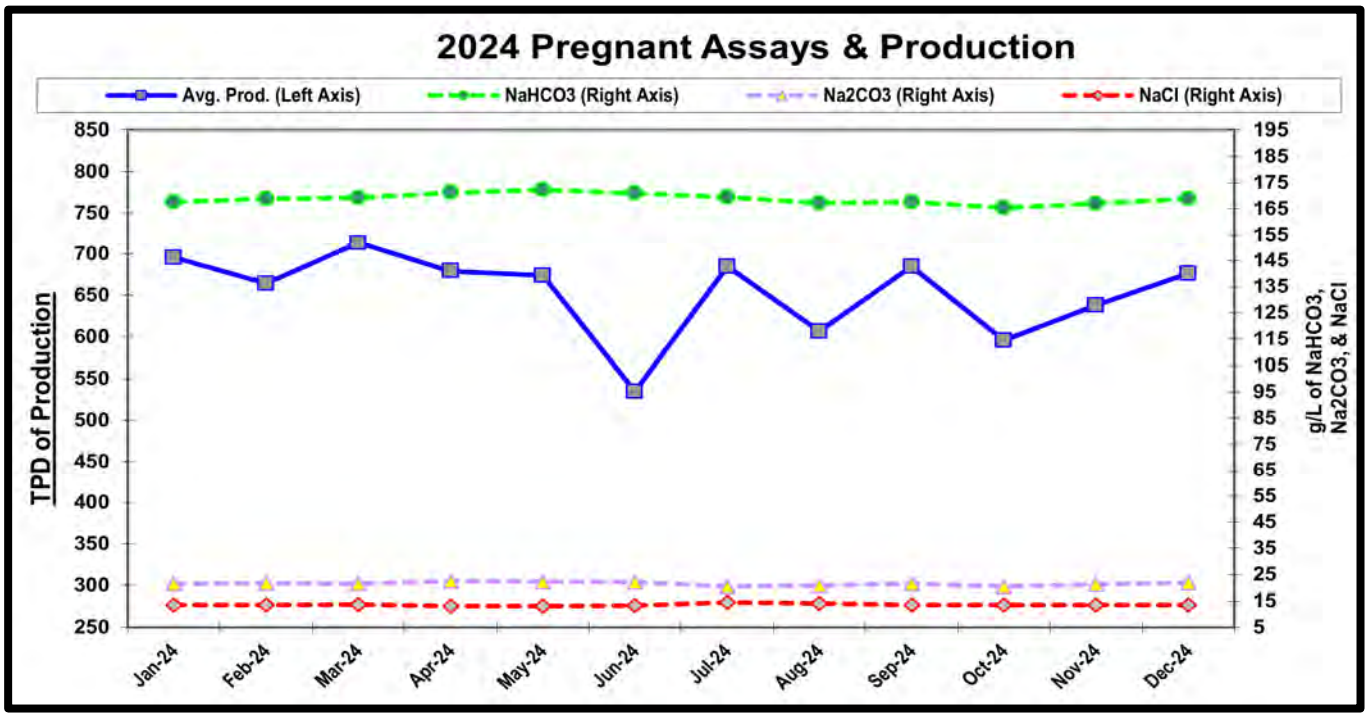

Figure 6: NS 2024 Pregnant Assays and Production (Confidential)

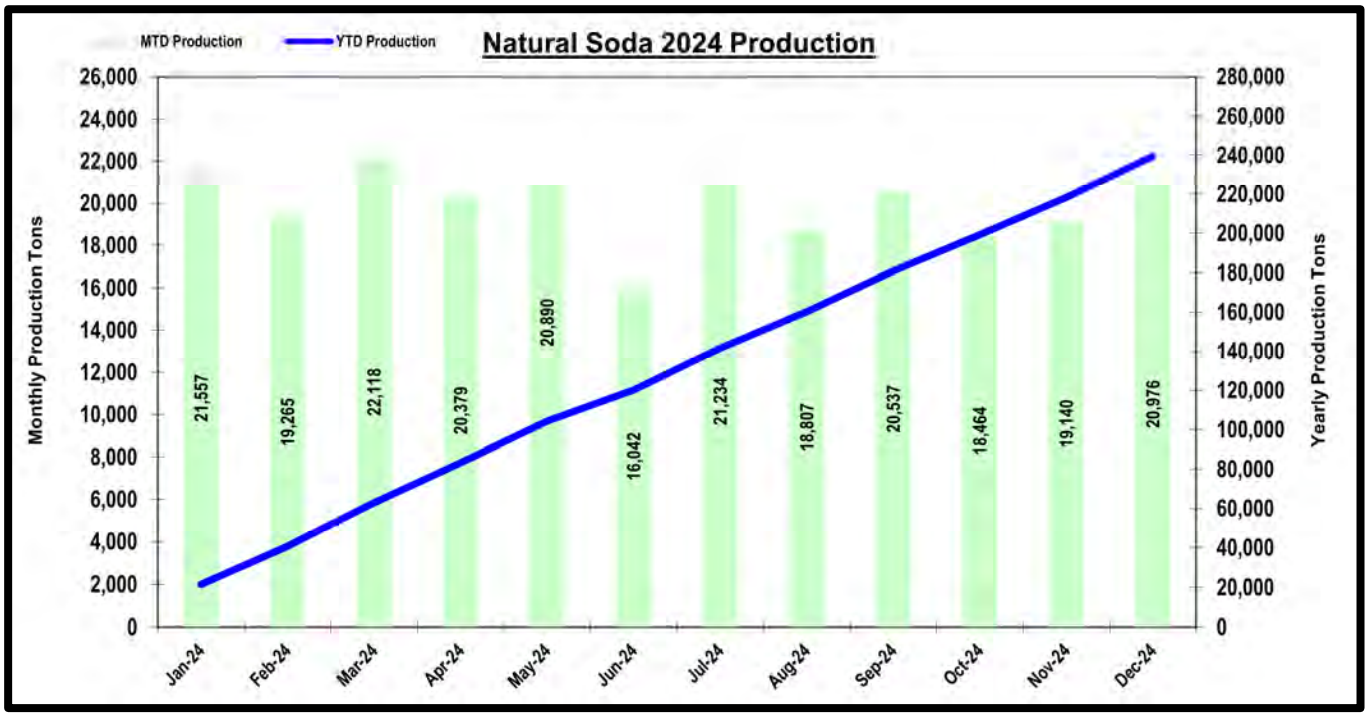

Figure 7: NS 2024 Production (Confidential)

4.4. Geotechnical Program (Geophysical Logging)

4.4.1. Subsurface Subsidence Geophysical Logging

NS conducted EPA mandated subsurface subsidence logging in the DS-3 SSMW well January 2024. The analysis indicated no subsurface subsidence to the depth of 1,836 feet. The DS-3 SSMW serves as the subsidence monitor well for the 12H and 13H mining intervals.

4.4.2. Surface Subsidence Monitoring

A surface subsidence monument (SSM) survey of SSMs above NS's area of operations will be conducted during the second quarter of 2025. One new SSM was installed on November 13, 2024, on the NS lease. The 18H SSM was installed above the 18H-IR-W wellbore to monitor the 18H mining interval. The initial monument elevation survey of the new 18H SSM will be conducted in second quarter of 2025, the installation information is shown in Table 5.

Table 5: 2024 18H Surface Subsidence Monument (SSM) Installation

Surface Subsidence Monument (SSM)	Initial Monument Elevation (ft. AMSL)	2024 Installed SSM (Date Installed)
18H SSM	TBD	Installed 11/13/2024
The 18H-SSM installation was completed on November 13, 2024 at 13:15. The 1-inch diameter auger TD was in clayey to silty sub-soils at a depth of 3.0 feet BGS. The augured hole was lined with ½-inch PVC tube to a depth of 3.0 feet BGL and had a stick-up of 0.1 feet AGL. A 4.0 foot length of ½-inch (#4) rebar was hammered to a total depth of 3.9 feet BGL, and had a stick-up of 0.1 feet AGL.		

4.5. Water Supply Well Pumpage

In 2024, approximately 86.12 million gallons of water were pumped from water supply wells WSW-2, WSW-3, and WSW-4 with an average pumpage of 163.3 gallons per minute (gpm). Included in the following Table 6 is a summary of water supply pumpage in 2024. The 2024 total pumpage increased by 3.53 million gallons from the 2023 pumpage total of 82.59 million gallons. The additional water pumped in 2024 can be attributed in part to supplying water for drilling operations on the three 18H mining interval production wells. The 2024 total pumpage from WSW-2 was 2.55 million gallons, WSW-3 was 41.36 million gallons, and the total pumpage from WSW-4 was 42.19 million gallons.

NS continued to release water from the WSW-3 and WSW-4 in 2024 to meet obligations for White River water rights call. The 2022 WY Augmentation Plan (88CW420) required NS to release 241,800 gallons (0.74-acre feet) of water per month during the months the water call was in place. For 2023 WY the amount of water required to be released was increased to 256,445 gallons (0.79-acre feet) of water per month. For the calendar year 2024 there was partial water augmentation for the month of January, the water call was lifted on January 9, 2024, at 8:00 AM. NS released 119,600 gallons of water in January 2024 for a total of 1,602,900 gallons since the water rights call began in December 2022.

Table 6: NS Water Supply Well Pumpage 2024

2024 Date	WSW-2 (#074491-F) (gal)	WSW-3 (#077834-F) (gal)	WSW-4 (#077833-F) (gal)	Total (gal)	Avg. (gpm)	Water Augmentation (gal)
Jan	3,300	3,438,700	3,464,900	**6,906,900**	154.7	**119,600**
Feb	13,400	2,881,000	3,257,200	**6,151,600**	147.3	**0**
Mar	13,300	3,217,200	3,667,100	**6,897,600**	154.5	**0**
Apr	28,300	3,513,700	3,698,600	**7,240,600**	167.6	**0**
May	335,100	3,292,400	3,379,700	**7,007,200**	157.0	**0**
Jun	131,600	3,327,300	3,443,300	**6,902,200**	159.8	**0**
Jul	5,300	3,650,000	3,650,600	**7,305,900**	163.7	**0**
Aug	2,000	3,690,600	3,685,800	**7,378,400**	165.3	**0**
Sep	2,200	3,434,500	3,331,900	**6,768,600**	156.7	**0**
Oct	951,900	4,220,900	4,025,900	**9,198,700**	206.1	**0**
Nov	6,500	3,605,032	3,489,774	**7,101,306**	164.4	**0**
Dec	1,064,200	3,096,368	3,102,026	**7,262,594**	162.7	**0**
Total:	**2,557,100**	**41,367,700**	**42,196,800**	**86,121,600**	163.3	**119,600**

5.0 Environmental Monitoring and Protection

5.1. Hydrology Monitoring

5.1.1. Introduction

NS's hydrology monitoring program concentrates on groundwater, as there are no perennial streams or springs located on the NS sodium leases. The USGS stream gauging station-monitoring program is conducted, with NS support, to provide regional surface stream flow data on Yellow Creek and Piceance Creek.

The hydrology-monitoring plan is designed to identify impacts of NS's solution mining operations on underground sources of drinking water, as designated by the US EPA.

Refer to Figure 3 and Figure 4 for the locations of existing monitor wells. Groundwater analytical results are presented in Appendix A.

5.1.1. Monitoring Wells

Per regulatory requirements, dedicated groundwater monitoring wells have been constructed to monitor four water-bearing intervals identified as the Perched, A-Groove, B-Groove, and the Dissolution Surface (DS) Aquifers. The DS Aquifer has been exempted as an underground source of drinking water in the NS lease and permit areas. The DS Aquifer monitored by NS contains total dissolved solids (TDS) values in excess of 10,000 parts per million (PPM). These four aquifers are monitored at several locations across the solution mining area: up and down-gradient, remote down-gradient, and near the southeast portion of Section 26. Baseline and current groundwater monitoring data have been obtained from 1991 through present. Refer to Figure 3 and Figure 4 or well locations.

The Perched Aquifer is characteristically lower in TDS, conductivity, fluoride, SAR (sodium absorption ratio) and moderate to higher in sulfate and pH. The A-Groove and B-Groove Aquifers are similar in water quality with moderate TDS, conductivity, SAR, but higher fluoride. However, the B-Groove Aquifer generally has slightly higher levels of TDS, conductivity, SAR, and fluoride. The DS Aquifer is characterized by very high TDS and conductivity (30,000 to >100,000 ppm), higher SAR, magnesium, potassium, moderate pH, and a generally higher fluoride and boron.

In 2024, the results of groundwater monitoring were analyzed for potential anomalies in order to prevent or mitigate potential negative impacts to the USDW's.

Appendix A contains detailed sampling results for groundwater monitoring wells.

5.1.2. Storage and Evaporation Ponds

The NS evaporation pond is used for wastewater storage and has a secondary liner constructed to collect and direct any condensation or leakage to tubes for removal. The evaporation pond is divided into two sections, the "Process Water Pond (3 acre)" which contains water that can be recycled and the "Wastewater Pond (7 acre)" in which the water cannot be reused. Pond pumpage information is reported to BLM. In May NS replaced the pond pump with a larger 150 gpm pump. The pond liner pump malfunctioned in October 2024 and was repaired at the end of the same month. No other changes occurred to the evaporation pond in 2024, maintenance and monitoring continued throughout the year.

5.1.3. Potentiometric Surface Maps (Confidential)

Using groundwater potentiometric elevations from NS groundwater monitoring wells and other NS wells, A-Groove and B-Groove Aquifer potentiometric surface maps have been plotted and have been included with this report in Appendix B (Confidential).

5.1.4. Stream Gauging Stations

NS contracts with the USGS to monitor surface waters for water quality and quantity. Monitoring was performed upstream and downstream relative to the NS mining operations and with respect to Yellow Creek and Piceance Creek at four existing stations with extensive historical data. Historical stream gauging data is reported in this document and discharge data is complete through the 2024 water year (WY) (October 2023 – September 2024).

The USGS surface water data are available to the public from the USGS web site at http://co.water.usgs.gov. Table 7 and Table 8 summarize key 2024 WY data for surface water near the NS site. Data reported in Table 7 and Table 8 is compiled from the USGS web site. The Specific Conductance and Temperature data included in the tables were generated by using USGS lab test results for each stream reported on the USGS web site during the 2024 WY.

The USGS notes in the 2023- and 2024-year end water reports that the 6200 (Piceance Creek below Ryan Gulch) station has diversions for irrigation upstream of the monitor station. The 6222 (Piceance Creek at White River) station has diversions for irrigation of approximately 5,500 acres upstream from the monitor station. The 6255 (Yellow Creek near White River) station has diversions to irrigate approximately 300 acres upstream from the monitor station. The 6242 (Corral Gulch near Rangely) stream which historically has been a low flow stream is not reported as having any diversions upstream from the monitoring station.

The 2024 WY discharge (cfs) data in this area indicated a decrease in average stream discharge for the 6242 Corral Gulch, 6255 Yellow Creek, 6200 and 6222 Piceance Creek stream stations compared to 2023 WY. 2023 WY was impacted by above average snowpack runoff in the relevant basins that contribute water to these streams. 2024 discharge was additionally below the average Period of Record (PR) historic levels and similar to the 2016 WY discharge. The 2024 WY discharge was generally higher than 2017 WY through 2022 WY (6 Years).

Table 7: Historical Comparison with 2024 Water Year Data

Station	Discharge P of R*	Discharge 2024 WY**	Average Total Discharge P of R	Total Discharge 2024	Specific conductance (µS/cm @ 25° C)				Temp (°c.)	
					P of R	2024 WY	P of R	2024 WY	P of R	2024 WY
	cfs	cfs	ac ft/yr	ac ft/yr	Max	Max	Min	Min	Max	Max
6200	24.70 (59 yrs)	14.20	17,861	10,280	2,800	1,940	600	1,480	26.3	18.2
6222	30.20 (58 yrs)	18.40	21,847	13,321	7,240	3,310	516	1,940	30.0	22.2
6242	1.47 (49 yrs)	0.67	1,061	484	1,760	1,390	312	1,230	24.0	17.0
6255	2.29 (46 yrs)	1.58	1,660	1,144	5,330	3,790	460	3,270	31.0	22.6
6200 Piceance Creek below Ryan Gulch					6242 Corral Gulch near Rangely					
6222 Piceance Creek at White River					6255 Yellow Creek near White River					
* P of R = Period of Record for collection of data.					**WY = Water Year (October-September).					
cfs = cubic feet per second, average annual flow.					N/D = No data available at time of publication					

Table 8: Yellow and Piceance Creek Discharge Data up to 2024 Water Year

Project Data Comparison														
Discharge for Water Years in cfs														
Station	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024
6200	36.2	17.5	11.3	10.7	15.9	17.0	11.7	7.5	9.6	10.9	5.9	7.1	30.3	14.2
6222	41.7	19.2	11.8	13.0	19.7	21.2	15.5	8.9	11.6	12.4	7.4	8.2	36.9	18.4
6242	1.1	0.3	0.2	0.5	0.5	1.9	0.6	0.1	1.0	0.4	0.2	0.8	2.6	0.7
6255	1.3	1.2	1.1	1.2	1.3	1.3	1.7	0.8	1.6	0.9	0.5	2.0	2.4	1.6
Maximum Specific Conductance (µS/cm @ 25° C)														
Station	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024
6200	1,460	1,610	1,930	2,040	1,770	1,840	2,120	1,700	1,740	1,590	2,100	1,760	1,840	1,940
6222	2,290	5,350	5,100	3,190	2,790	2,020	3,550	5,350	3,300	4,160	4,610	4,650	2,970	3,310
6242	1,280	1,480	1,430	1,400	1,330	1,170	1,280	1,490	1,480	1,260	1,440	1,470	1,460	1,390
6255	4,130	4,170	4,720	4,530	4,070	4,520	3,600	3,980	4,530	4,560	4,560	5,330	4,710	3,790
* P of R = Period of Record for collection of data.					**WY = Water Year (October-September).					cfs = cubic feet per second, average annual flow.				
6200 Piceance Creek below Ryan Gulch					6242 Corral Gulch near Rangely									
6222 Piceance Creek at White River					6255 Yellow Creek near White River									
N/D No data available at time of publication.														

NS data indicated a precipitation increase at the NS location in 2024 (10.60”) compared to 2023 (9.81”). The 2024 precipitation at NS was similar to 2022 (10.35”), 2021 (10.09”), and 2020 (9.79”) values, and approximately half that of 2019 (20.8”). A similar pattern of annual total precipitation (2019 WY through 2024 WY) can be observed throughout Piceance Creek Basin. Decreases and increases in precipitation and/or changes to irrigation diversions may be affecting stream flow discharge at some level. The 2024 WY decrease in discharge is likely attributable to the measured snowpack levels (Snow Water Equivalent (Inches)) found in the Yampa-White-Little Snake Basin and the Colorado Headwaters Basin to the East and Northeast of NS. The snowpack measurements for WY 2024 in these two basins decreased notably in comparison to the 2023 WY but was above the 2022 WY level. Figure 8 and Figure 9 (Pg. 28) show the difference between 2023 WY and 2024 WY with regards to snowpack levels in the two basins and the discharge rates in the four stream locations. The maximum snowpack for the basins were recorded in 1984, 1985, and 1986 WY’s, this also corresponds to the maximum stream discharge rates for all four stream locations. The minimum snowpack for the basins were recorded in 1977, 2002, and 2021 WY’s which corresponds to the minimum historic stream discharge rates.

The 2024 Specific Conductance data from USGS for the four stations were all within the maximum & minimum range values for the period of record, and all four stream stations were near the PR average value. The 6200 (Piceance Creek below Ryan Gulch) and 6222 (Piceance Creek at White River) both had increases in Max Specific Conductance in 2024 compared to 2023. The other two stream locations along Yellow Creek (6242 and 6255) had decreases in Max Specific Conductance from 2023 to 2024 WYs. The 2024 water temperature for all streams was below the associated Max PR temperature. Analysis of the USGS data shows no effect on stream water quality or quantity as a result of the NS mining operations.

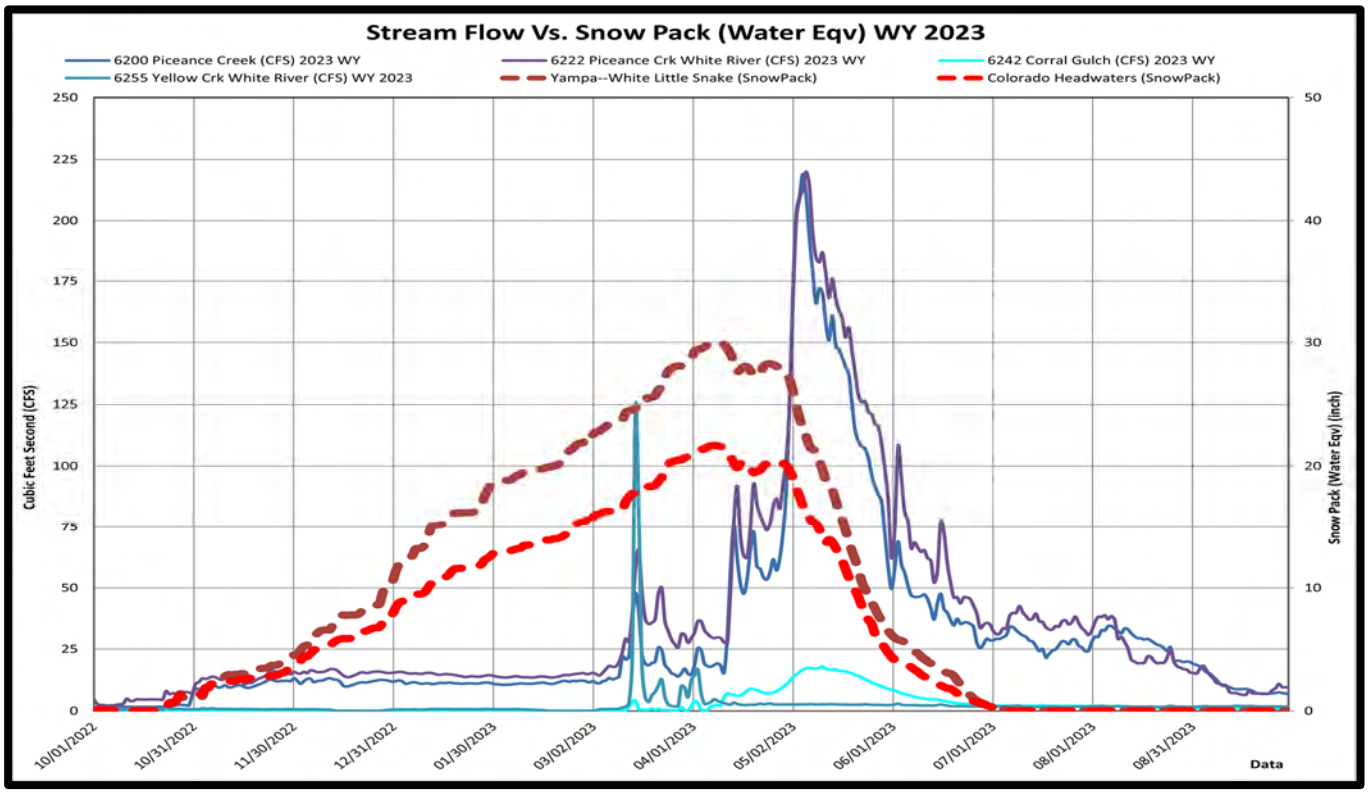

Figure 8: Water Year 2023 Stream Flow (cfs) Vs. Snowpack (Water Eqv (Inch))

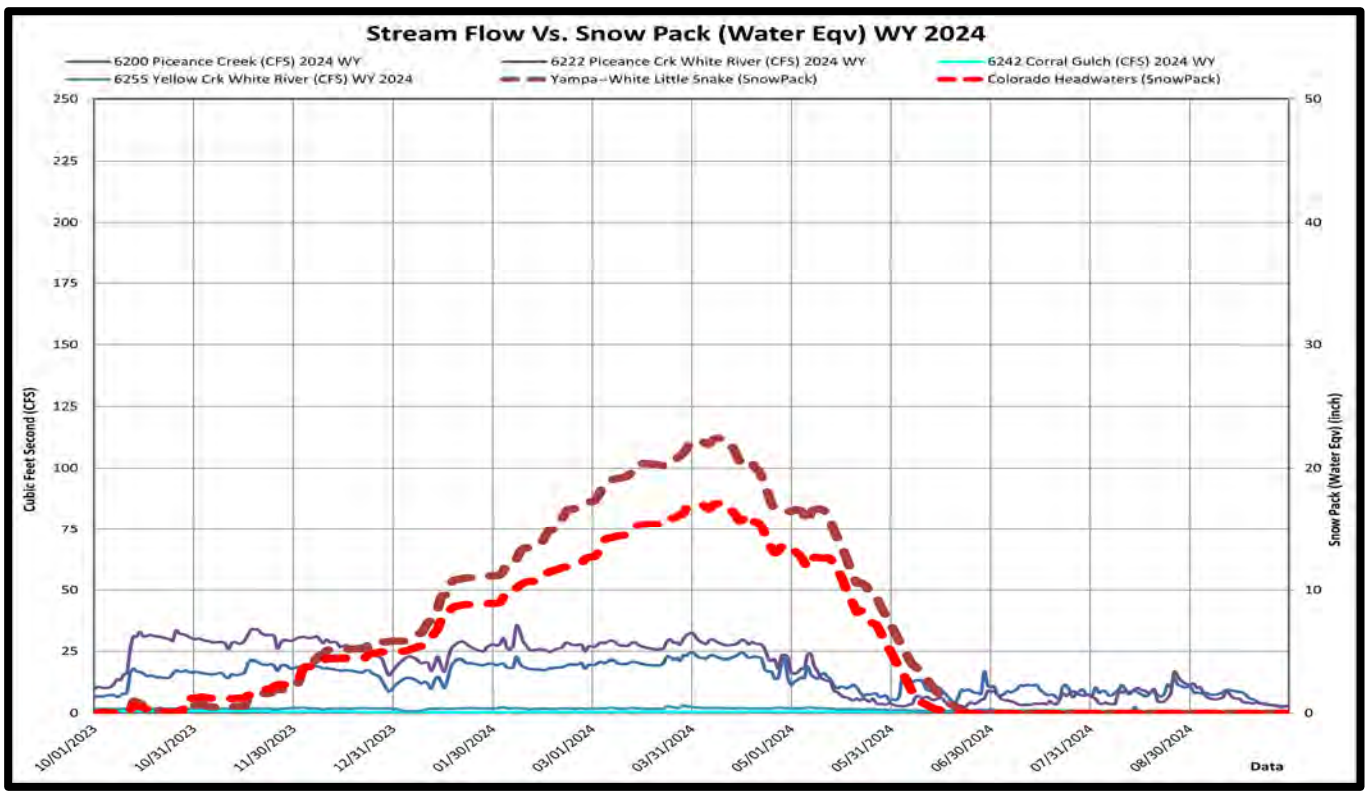

Figure 9: Water Year 2024 Stream Flow (cfs) Vs. Snowpack (Water Eqv (Inch))

5.2. Injection Well Mechanical Integrity (MIT)

5.2.1. MIT Introduction

The EPA Underground Injection Control (UIC) regulations require that an injection well maintain mechanical integrity throughout it's operational lifetime (40 CFR 144.28 (f)(2) and 40 CFR 144.51 (q)(1)). A well has mechanical integrity (40 CFR 146.8) if:

- There is no significant leak in the tubing, casing or packer; and
- There is no significant fluid movement into an underground source of drinking water (USDW) through vertical channels adjacent to the injection wellbore.

The mechanical integrity of an injection well must be maintained at all times. Mechanical integrity pressure tests are required initially upon construction and at least every five (5) years. If for any reason the tubing/packer is pulled, however, the injection well is required to pass another mechanical integrity test prior to recommencing injection regardless of when the last test was conducted. The Regional UIC program must be notified of the workover and the proposed date of the pressure test. The well's test cycle would then start from the date of the new test if the well passes the test and documentation is adequate. Tests may be required on a more frequent basis depending on the nature of the injectate and the construction of the well.

5.2.2. Mechanical Integrity, Part 1 Pressure Testing and Part 2 Temperature Logging

NS conducted routine, EPA mandated, MIT Part 1 pressure testing and/or Part 2 temperature logging in the following injection wells on the indicated dates. No anomalies were detected during any testing or logging. All required documentation was submitted to the EPA and cc'd to the BLM.

- 18H-1V MIT P1 (Initial) May 25, 2024
- 15H-IR-E MIT P1 (5 Year) October 15, 2024
- 15H-IR-E MIT P2 (5 Year) October 17, 2024
- 18H-IR-W MIT P1 (Initial) October 18, 2024

6.0 Land Disturbance and Reclamation

6.1. Summary of 2024 Disturbance

NS created no new disturbed acreage in 2024. In March of 2024, D&A and the DRMS coordinated to verify disturbed acreage at NS as part of the 1st Quarter inspection that was focused on NS permits. Following a complete review of the NS disturbed areas, D&A made the following changes in disturbed acreage reported in 2023 through use of mapping software and updated as-built location surveys. The 18H-1V Pad and 18H-IR-W pad disturbance was decreased by 40,943 sq/ft (0.94 acres), the length of Road B was assessed to be longer than previously represented and increased disturbance by 21,875 sq/ft (0.50 acres), 14H-1V pad disturbance was increased by 28,683 sq/ft (0.66 acres), and the DS-10 pad disturbance was increased by 16,873 sq/ft (0.389 acres).

Three locations that have been undergoing final reclamation were recognized as reclaimed by agencies in 2024; Pad G (1,050 sq/ft, 0.02 acres), WSW-3 Pipeline (21,521 sq/ft, 0.49 acres), and WSW-4 pipeline (53,675 sq/ft, 1.23 acres).

The total disturbed acreage reported in 2023 was 104.53 acres, and in 2024 the NS land disturbance decreased to 102.81 acres, a 1.72 acre decrease. The total affected acreage of NS operations increased in 2024 to 115.19 acres from 114.59 acres in 2023. The total affected acreage includes 12.38 acres that have been 'Recognized as Reclaimed by Agency'. Table 9 lists the disturbed acreage as of December 2024.

Table 9: Disturbed Acreage

Process Area:	**Acres:**
Plant Site Disturbed	26.84
Plant Site Undergoing Interim Reclamation	4.46
Plant Site Undergoing Final Reclamation	0.00
Plant Site Successfully Reclaimed	0.00
Well Field:	
Roads Disturbed	3.56
Well Pads Disturbed	30.61
Roads/Misc. Undergoing Interim Reclamation	1.26
Well Pads Undergoing Interim Reclamation	16.53
Road/Misc. Undergoing Final Reclamation	1.42
Well Pads Undergoing Final Reclamation	18.12
Total Disturbance:	**102.81**
Road/Misc. -- Recognized as Reclaimed by Agencies	2.77
Well Pads -- Recognized as Reclaimed by Agencies	9.61
Total Effected Acreage:	**115.19**

6.2. Regulatory Compliance

6.2.1. Regulatory Activity

In 2024, required reports were submitted in a timely manner. Required forms were submitted to the appropriate agencies regarding activities pertaining to the new 18H production wells drilled & associated 18H-IR-WA plugging and abandonment operation.

6.3. Reclamation Activity

6.3.1. Regrading & Scarification

Regrading and scarification operations that occurred in 2024 were completed by M Services LLC. The 14H-1V Pad, 15H-I(R) Pad, and roads northwest of the NS evaporation ponds to the WSW-3 Pad and to WSW-4 Pad were regraded and scarified in 2024. In May 2024 regrading and scarification operations were completed to reclaim all the Rock School Lease locations and access roads, wattles were placed around reclaimed areas for erosion control. Additionally during 2024, the blading and drum rolling maintenance of plant areas, roads and well field pads were completed for general maintenance.

6.3.2. Seeding & Weed Control

During 2024, seeding was conducted by M Services LLC on the BG-8, BG-9, BG-6, 14H-I&R, 14H-1V, 17H-E SSMW pads by hand broadcast in March and April. Additionally, hand seeding was conducted around the brine pipeline where dirt was added. Track walk and hand seeding was conducted on the Rock School Lease locations RS-96-20-1, MWB-2, MWB-1 pads and the access roads to these locations.

M Services LLC was contracted for weed management and sprayed active well pads, utility locations, pads undergoing reclamation including the 14H I&R pad. Other areas were spot sprayed, including various roadways, and around plant facilities in 2024.

Annual vegetation monitoring continued in 2024 for the areas of study that are currently in final reclamation status. The report, ***The 2024 Vegetation Monitoring Reclamation Status Report,*** prepared by Mr. Rusty Roberts, is presented in Appendix C.

6.3.3. Reclamation Fencing

The cuttings pits on the 15H-R, 15H-IR-E, 18H-1V and 18H-IR-W pads were fenced or repaired to restrict wildlife and human access in 2024. Fencing was repaired near the NS plant parking lot, and around waste ponds. Fence repair and additional maintenance activities were performed in 2024 as necessary, throughout the lease.

6.3.4. Precipitation

Perennial vegetation is an indicator of long-term precipitation, the "normal" precipitation for the NS site is 12-14 inches for the calendar year. The 33-year average at the NS site is 12.48 inches per year, and the 10-year average is 14.32 inches per year. The distribution of precipitation is important for proper reclamation. The 2024 precipitation measured at the NS plant was 10.60 inches. WY 2024 marks the fifth year in a row that precipitation at NS was below the 33-year average and ranged from a low of 9.79 inches in 2020 to a high of 10.60 inches in 2024. Table 10 provides a composite of precipitation data from the NS plant site for the last 10 years. The 10-year precipitation totals and 2024 monthly totals are shown combined in Figure 10.

Table 10: Annual Precipitation in inches (10 Year)

Month/Year	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	AVG
Jan	0.47	1.62	1.89	1.26	0.67	1.06	0.32	0.55	1.20	0.50	0.95
Feb	0.39	1.34	1.52	1.35	1.47	0.83	0.17	0.47	1.10	0.70	0.93
Mar	0.82	1.76	1.01	1.55	0.85	0.95	0.60	0.78	0.80	2.25	1.16
Apr	1.71	5.18	1.11	1.74	2.99	0.82	0.20	0.54	0.40	0.40	1.51
May	4.36	2.06	2.17	1.52	2.93	1.29	0.38	1.20	0.43	0.60	1.69
Jun	0.51	0.53	0.47	0.99	3.86	1.83	0.84	0.61	1.03	0.80	1.15
Jul	1.78	1.07	3.36	1.27	1.87	0.61	0.39	0.92	1.00	0.25	1.25
Aug	1.44	2.78	0.85	3.24	0.83	0.37	1.16	0.48	0.70	1.50	1.33
Sep	0.32	2.19	1.55	0.10	1.75	1.17	1.50	1.40	0.40	0.70	1.11
Oct	1.38	1.89	1.62	4.10	1.19	0.08	1.93	1.40	1.30	1.65	1.65
Nov	0.70	1.56	0.64	0.60	1.62	0.14	0.60	0.50	0.80	0.80	0.80
Dec	0.10	1.04	0.44	0.45	0.71	0.66	1.80	1.50	0.65	0.45	0.78
Annual Totals	13.97	23.02	16.63	18.17	20.75	9.79	10.09	10.35	9.81	10.60	14.32

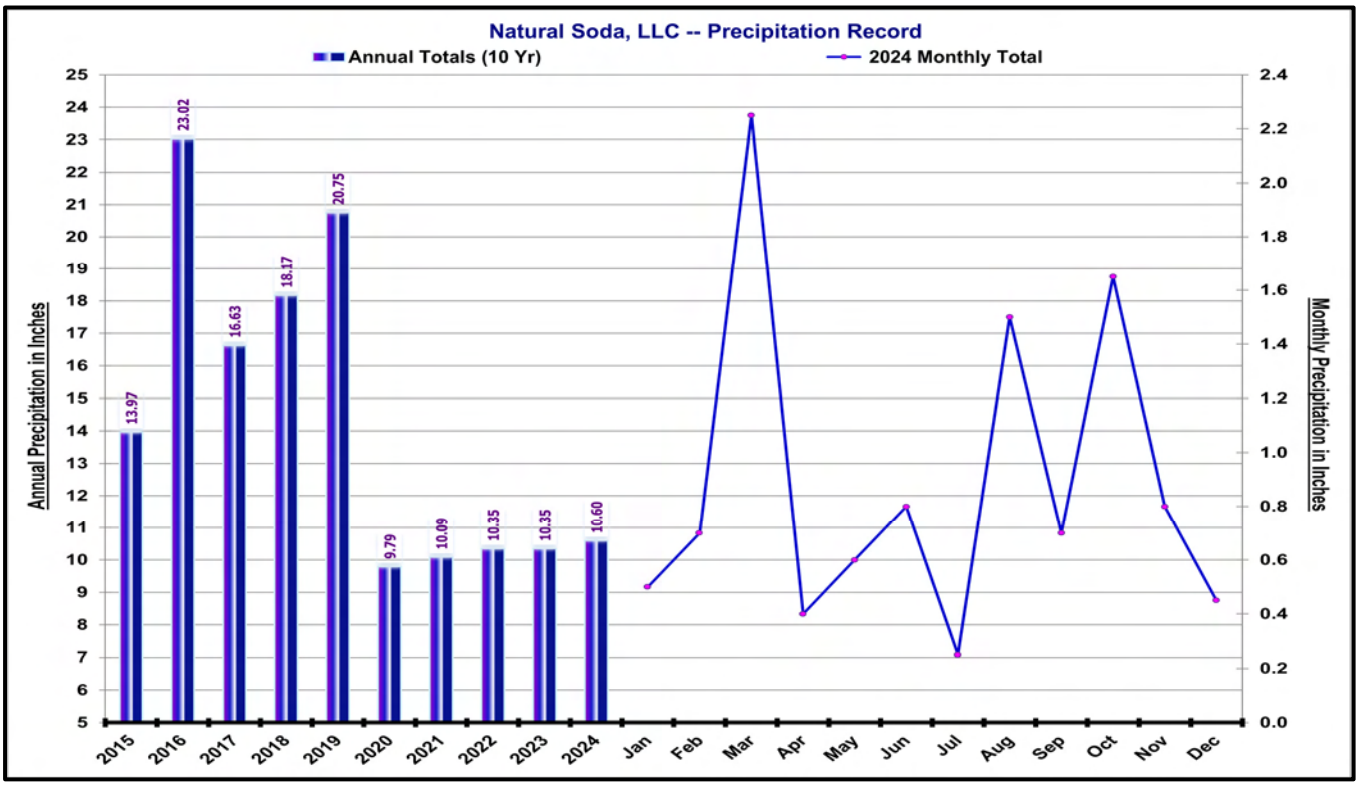

Figure 10: Ten Year Precipitation Record & 2024 Monthly Totals

6.3.5. Vegetation Monitoring Results

A vegetation survey is undertaken annually on the NS lease to collect data from reclaimed land to monitor and evaluate the success of revegetation efforts.

In 2024, the vegetation survey focused on eleven pads, three access routes that are reclaimed pad sites in final reclamation status, and six additional undisturbed areas for comparison purposes. The pads studied were the 4A-1V, 93-2M, 93-4H, BG-8, C, G, H, IRI-3, N, T and U. The access routes studied included the C, H, and N.

The continued dry conditions that occurred during the growing season in 2024 resulted in the following changes to the total vegetation cover and composition of desirable plant species compared to the values measured in 2023 for the control areas. Foliar cover for all plant groups declined, non-native grasses increased 14%, cover of non-native forb species declined over 80%, foliar cover of desirable species declined 8%, foliar cover of perennial grasses declined 4%, shrub cover declined 2%, cover of desirable forbs declined 78% but densities increased 6%, desirable forbs species increased from 13 to 20 (35%), 9% increases in bare ground measured, 9% decline in herbaceous litter, 8.5% decline in total foliar cover.

Access route C, and Pad G were the only areas that met full criteria for reclamation in 2024, having five desirable plant species exceeding 70%, bare ground area %, and had foliar/shrub/forb density exceeding 80%.

Summary of the areas studied not meeting full requirements in 2024:

- Pad 4A-1V – Site met requirements in 2018, but does not have desired foliar cover, densities of desirable shrubs or bare ground criteria in 2024. Pad does meet criteria for desirable forbs.
- Pad 93-2M – Site studied last in 2023. 2024 Plant community species diversity, desired foliar cover, and bare ground are required percentages. Densities of desirable forbs or shrubs do not meet criteria.
- Pad 93-4H -- Site met requirements in 2019, in 2024 does not meet criteria for species diversity and amount of bare ground. Additionally, the site does not have required densities of desirable forbs or shrubs.
- Pad BG-8 – Site studied last in 2023. 2024 the pad has appropriate species diversity, does not meet bare ground, desired foliar cover, shrub diversity and desirable forb density.
- Pad C – Site last studied in 2021. Species diversity and bare ground requirements were met in 2024. Desired foliar cover for shrub and forb densities were not met.
- Access Route Pad H – First time this site studied was 2024, plant community species diversity and bare ground were the only criteria met for reclamation goals.
- Pad H – Site met requirements in 2019. In 2024 the densities of desirable forbs or for shrubs did not meet requirements.
- Pads IRI-3, MW-1, PW-1, PW-2 – Site studied in 2023 and 2024. The site does not meet the desired foliar cover, for desirable forb/shrub density in 2024.
- Access Route Pad N – This is the first time study for the site and only the species diversity criteria was sufficient.
- Pad N – Site met requirement in 2019. In 2024 foliar cover and shrub density did not meet the requirements.
- Pad T – The site was studied in 2023, most criteria declined in 2024. Site only meets the species diversity and shrub densities requirements in 2024.
- Pad U – Only the species diversity requirement was met in 2024, most criteria declined compared to 2023.

For details of the 2024 vegetation monitoring results, refer to Appendix C for the full ***2024 Vegetation Monitoring Reclamation Status Report*** prepared for NS by Mr. Rusty Roberts.

6.4. Deer Roadkill Study

Per the monitoring requirement from the BLM, NS compiled deer roadkill data throughout 2024 for vehicles traveling to and from the mine site. Four deer of unknown sex were reported as struck by a vehicle, and one deer of unknown sex ran into a vehicle in 2024, all five deer ran from accidents with indeterminate injuries to the animals. Two deer of unknown sex were reported as struck and killed in 2024. One elk of unknown sex was reported as struck by a vehicle but departed with unknown injuries to the animal.

6.5. Raptor Survey

During May of 2023, D&A Inc. conducted the most recent raptor breeding activity survey and inventory on behalf of NS in the pinion juniper habitat that was proximal to the 2024 production wells drilled: 18H-1V, 18H-IR-WA and 18H-IR-W. No raptor survey was conducted in 2024. NS will coordinate with the BLM to conduct the required 2025 raptor survey for the possible 2025 and 2026 wellfield development that will encompass areas for the proposed production wells 19H-1V and 19H-IR-E wells, and associated pipeline.

6.6. Other Observations

Elk, deer, coyotes, rabbits, bobcat, badger and fox were noted in and around the well-field throughout the year.

6.7. Waste Disposal

Common domestic solid waste was collected in containers and periodically transported to the Rio Blanco County landfill. Sewage from the plant was directed to a septic system with a leach drain field.

There are two additional wastewater streams that originate from the NS plant and flow to the process and waste evaporation ponds. One wastewater stream includes plant wash down, laboratory drains, and precipitation runoff which is directed to the process pond (3 acre). A pump in the process pond allows NS to recycle the water to be reused in the mining process. The waste evaporation pond (7 acre) contains wastewater from both boiler streams (blow down and boiler ditch) and cooling tower water. The waste evaporation pond water cannot be repurposed.

Hazardous waste that is generated and collected at the NS facilities is contained safely, stored separately from day-to-day waste, and then disposed of properly by Clean Harbors, Inc., a certified hazardous waste handling/disposal company. NS disposed of hazardous waste February 28 and July 23, 2024. The inventory of the 2024 disposed hazardous waste is found in Table 11.

Table 11: 2024 Hazardous Waste Disposal Inventory

Date Shipped	# of Containers / Type	Total Quantity	Contents / Waste	Weight:	MGT Codes	EPA Waste Code
February 28, 2024	1 DF	400 P	NA3082, HAZARDOUS WASTE, LIQUID, N.O.S. (SILVER, CHROMIUM) , 9, PG III -- CHLORIDE TEST WASTE	400 LBS	H111 & H132	D007, D011
	1 DF	400 P	NA3082, HAZARDOUS WASTE, LIQUID, N.O.S. (SILVER, CHROMIUM) , 9, PG III -- CHLORIDE TEST WASTE	400 LBS	H111 & H132	D007, D011
	1 DF	400 P	NA3082, HAZARDOUS WASTE, LIQUID, N.O.S. (SILVER, CHROMIUM) , 9, PG III -- CHLORIDE TEST WASTE	400 LBS	H111 & H132	D007, D011
	1 DF	400 P	NA3082, HAZARDOUS WASTE, LIQUID, N.O.S. (SILVER, CHROMIUM) , 9, PG III -- CHLORIDE TEST WASTE	400 LBS	H111 & H132	D007, D011
	1 DF	400 P	NA3082, HAZARDOUS WASTE, LIQUID, N.O.S. (SILVER, CHROMIUM) , 9, PG III -- CHLORIDE TEST WASTE	400 LBS	H111 & H132	D007, D011
	1 DF	40 P	NONE, NON DOT REGULATED MATERIAL, N/A, NONE, (UNIVERSAL WASTE-LAMPS) -- STRAIGHT FLUORESCENT TUBES FOR RECLAIM	62 LBS	H010	NONE
	1 CW	1000 P	UN2794, BATTERIES, WET, FILLED WITH ACID, 8, NONE, (UNIVERSAL WASTE-BATTERIES) -- LEAD ACID BATTERIES (WET or GEL)	639 LBS	H010	NONE
	1 DF	5 P	NONE, NON DOT REGULATED MATERIAL, N/A, NONE, UNIVERSAL WASTE—LAMP -- BULBS - SHATTERSHIELD/HID/HIGH PRESSURE Na/METAL HALIDE/Hg V	55 LBS	H010	NONE
July 23, 2024	1 DM	100 P	N/A, NON DOT REGULATED MATERIAL, N/A, NONE -- LABPACK	8 LBS	H040	NONE
	1 DF	400 P	NA3082, HAZARDOUS WASTE, LIQUID, N.O.S. (SILVER, CHROMIUM) , 9, PG III -- CHLORIDE TEST WASTE	400 LBS	H111 & H132	D007, D011
	1 DF	400 P	NA3082, HAZARDOUS WASTE, LIQUID, N.O.S. (SILVER, CHROMIUM) , 9, PG III -- CHLORIDE TEST WASTE	400 LBS	H111 & H132	D007, D011
	1 DM	10 P	UN1561, WASTE ARSENIC TRIOXIDE, 6.1, PG II -- LAB PACKS FOR STABLIZATION	0 LBS	H111 & H141	D004, P012
	1 DF	10 P	UN1469, WASTE LEAD NITRATE, 5.1, (6.1), PG II - Labpack Oxidizers For Incineration	10 LBS	H040 & H141	D001, D008
	1 DM	10 P	UN3288, WASTE TOXIC SOLID, INORGANIC, N.O.S. (LEAD ACETATE) , 6.1, PG III -- Labpack Organics For Incineration	10 LBS	H040	D008
Reported from Natural Soda by Jamie Reck 01/13/2025						

Natural Soda LLC

Appendix A: 2024 Groundwater Analytical Results

Appx. Table A-1: 89-3 Annual Perched Aquifer

Parameters Wet Chemistry	No. of Samples	High	Date	Low	Date	Average	Units
Bicarbonate as CaCO3	183	404.00	08/28/2013	66.00	09/14/1992	201.27	mg/l
Carbonate as CaCO3	183	138.00	12/05/2012	3.00	06/26/1990	30.50	mg/l
Total Alkalinity as CaCO3	183	524.00	08/28/2013	66.00	09/14/1992	222.92	mg/l
Bromide	28	0.60	07/06/2000	0.05	10/22/1989	0.19	mg/l
Cation-Anion Balance	181	15.70	06/14/2017	-13.00	12/16/2015	0.05	%
Sum of Anions	160	12.60	08/28/2013	5.10	06/14/2017	7.52	meq/l
Sum of Cations	161	11.80	08/28/2013	5.78	09/14/1992	7.47	meq/l
Chemical Oxygen Demand	22	300.00	09/23/2010	10.00	10/22/1989	49.00	mg/l
Chloride	183	75.30	08/28/2013	4.00	09/27/1990	16.43	mg/l
Conductivity, Lab	179	1,210.00	08/28/2013	534.00	08/06/1992	724.09	µmhos
Fluoride	183	18.00	07/31/1991	0.02	04/19/2001	0.46	mg/l
Hardness as CaCO3	182	113.00	04/11/2006	27.00	03/30/1990	78.99	mg/l
Nitrate as N, dissolved	30	0.76	07/24/2002	0.02	12/05/2012	0.14	mg/l
Nitrate/Nitrite as N,	30	0.85	07/24/2002	0.03	07/18/1995	0.15	mg/l
Nitrite as N, dissolved	30	0.10	06/26/1991	0.01	06/25/2007	0.04	mg/l
Nitrogen, Ammonia	27	13.10	09/23/2010	0.11	07/12/1996	1.45	mg/l
Nitrogen, Organic	27	13.40	06/26/1991	0.10	07/18/1995	1.93	mg/l
Nitrogen, Total Kjeldahl	27	25.40	09/23/2010	0.20	07/21/1994	2.94	mg/l
pH, lab	182	11.50	12/19/1991	6.60	09/14/1992	8.60	units
Phosphate, total	25	155.00	06/25/2007	0.03	07/02/1998	9.28	mg/l
Phosphorus, total	27	2.33	09/23/2010	0.01	06/26/1991	0.20	mg/l
SAR in Water	172	15.92	03/30/1990	4.82	09/14/1992	6.83	none
Sulfate	183	296.00	03/30/1990	1.00	12/12/2008	126.17	mg/l
Sulfide	24	4.50	09/23/2010	0.03	07/02/1998	0.49	mg/l
Total Dissolved Solids	183	659.00	08/28/2013	329.00	06/14/2017	440.38	mg/l
Conductivity, Field	199	16,000.00	07/01/1990	500.00	02/24/1993	774.08	µmhos
pH, Field	200	10.23	07/19/2009	6.90	12/12/2018	8.69	units
Temperature (°C), Field	110	21.10	07/19/2009	6.40	12/01/1990	12.22	(°C)
Water Level, Field	105	341.00	09/01/2011	314.50	09/12/2024	322.12	Ft.
Parameters Metals	**No. of Samples**	**High**	**Date**	**Low**	**Date**	**Average**	**Units**
Aluminum, dissolved	29	2.12	07/27/2001	0.03	07/07/1999	0.40	mg/l
Arsenic, dissolved	28	0.04	10/22/1989	0.00	12/05/2012	0.01	mg/l
Barium, dissolved	28	0.69	03/30/1990	0.01	10/22/1989	0.06	mg/l
Beryllium, dissolved	28	0.01	06/26/1991	0.01	06/26/1991	0.01	mg/l
Boron, dissolved	183	0.43	08/28/2013	0.02	04/24/1991	0.06	mg/l
Cadmium, dissolved	28	0.00	09/13/1995	0.00	09/13/1995	0.00	mg/l
Calcium, dissolved	183	17.00	09/27/1990	4.50	06/25/2007	11.56	mg/l
Chromium, dissolved	29	0.01	06/26/1991	0.01	06/26/1991	0.01	mg/l
Copper, dissolved	29	0.20	12/05/2012	0.01	03/30/1990	0.06	mg/l
Iron, dissolved	28	4.17	09/27/1990	0.01	07/07/1999	0.40	mg/l
Lead, dissolved	28	0.06	08/19/2009	0.02	06/26/1991	0.04	mg/l
Lithium, dissolved	28	0.05	03/30/1990	0.02	04/29/2024	0.03	mg/l
Magnesium, dissolved	183	18.40	07/24/2002	3.00	03/30/1990	12.16	mg/l
Manganese, dissolved	28	0.14	09/27/1990	0.01	07/07/1999	0.03	mg/l
Mercury, dissolved	27	0.00	10/22/1989	0.00	06/26/1991	0.00	mg/l
Molybdenum, dissolved	28	0.15	06/26/1990	0.01	07/12/1996	0.07	mg/l
Nickel, dissolved	28	0.02	10/22/1989	0.02	10/22/1989	0.02	mg/l
Potassium, dissolved	183	10.00	01/31/1991	0.04	04/28/1995	1.17	mg/l
Selenium, dissolved	28	0.00	03/30/1990	0.00	09/27/1990	0.00	mg/l
Silica, dissolved	183	33.20	07/27/2001	4.80	01/21/1992	15.44	mg/l
Sodium, dissolved	183	236.00	08/28/2013	96.00	09/14/1992	133.25	mg/l
Strontium, dissolved	183	1.09	04/11/2006	0.17	03/30/1990	0.82	mg/l
Vanadium, dissolved	28	U	12/05/2012	U	12/12/2008	U	mg/l
Zinc, dissolved	28	0.35	03/30/1990	0.01	10/22/1989	0.05	mg/l

Appx. Table A-2: MMC-IRI-1 Annual Perched Aquifer

Parameters Wet Chemistry	No. of Samples	High	Date	Low	Date	Average	Units
Bicarbonate as CaCO3	126	548.00	01/08/2015	0.0000	08/01/1990	161.14	mg/l
Carbonate as CaCO3	126	300.00	10/25/1990	0.0000	08/30/2008	116.98	mg/l
Total Alkalinity as CaCO3	126	900.00	08/01/1990	96.40	08/10/2021	292.11	mg/l
Bromide	29	1.60	07/21/1993	0.06	06/16/2011	0.29	mg/l
Cation-Anion Balance	123	63.90	08/14/2017	-16.00	03/13/2003	0.65	%
Sum of Anions	116	24.97	08/13/1990	5.00	08/10/2021	8.81	meq/l
Sum of Cations	116	50.00	08/14/2017	5.70	06/14/2011	9.25	meq/l
Chemical Oxygen	22	300.00	09/21/2010	10.00	08/16/1994	44.18	mg/l
Chloride	126	400.00	04/24/1991	14.00	12/15/1992	53.34	mg/l
Conductivity, Lab	123	2,630.00	01/20/1992	347.00	08/10/2021	860.83	µmhos
Fluoride	126	24.00	09/02/1998	1.70	04/20/1992	6.39	mg/l
Hardness as CaCO3	126	553.00	08/01/1990	2.00	06/23/2010	35.89	mg/l
Nitrate as N, dissolved	29	2.77	06/26/2002	0.02	06/28/2006	0.35	mg/l
Nitrate/Nitrite as N,	29	2.79	06/26/2002	0.02	09/07/2022	0.32	mg/l
Nitrite as N, dissolved	29	0.13	08/16/1996	0.01	08/01/1990	0.05	mg/l
Nitrogen, Ammonia	28	2.57	07/31/1991	0.25	06/09/1999	0.71	mg/l
Nitrogen, Organic	28	3.90	07/21/1992	0.10	06/16/2011	1.00	mg/l
Nitrogen, Total Kjeldahl	28	5.90	07/31/1991	0.33	09/07/2022	1.68	mg/l
pH, lab	123	11.30	07/31/1991	6.60	08/30/2008	9.55	units
Phosphate, total	27	155.00	06/28/2006	0.03	09/07/2022	16.15	mg/l
Phosphorus, total	28	1.41	09/21/2010	0.01	09/07/2022	0.23	mg/l
SAR in Water	118	76.00	08/14/2017	5.76	08/01/1990	21.05	none
Sulfate	126	243.00	12/15/1992	39.20	08/07/2023	74.91	mg/l
Sulfide	27	4.00	06/13/2001	0.03	06/02/1998	1.08	mg/l
Total Dissolved Solids	124	1,644.00	08/01/1990	328.00	08/10/2021	577.23	mg/l
Conductivity, Field	184	3,500.00	08/01/1990	573.00	08/10/2021	1,137.72	µmhos
pH, Field	184	12.80	12/01/1990	6.04	08/30/2008	10.20	units
Temperature (°C), Field	124	20.90	08/07/2023	6.50	12/12/2008	12.38	(°C)
Water Level, Field	107	387.19	08/14/2017	308.80	06/20/2017	380.38	Ft.
Parameters Metals	**No. of Samples**	**High**	**Date**	**Low**	**Date**	**Average**	**Units**
Aluminum, dissolved	29	11.10	08/16/1996	0.06	07/29/2009	3.18	mg/l
Arsenic, dissolved	29	0.0060	07/31/1991	0.0005	11/27/2012	0.0024	mg/l
Barium, dissolved	29	0.29	08/14/1995	0.01	11/27/2012	0.07	mg/l
Beryllium, dissolved	29	0.012	08/07/2023	0.003	08/14/1995	0.008	mg/l
Boron, dissolved	126	0.39	01/08/2015	0.00	10/25/1990	0.16	mg/l
Cadmium, dissolved	29	0.03	07/21/1993	0.03	07/21/1993	0.03	mg/l
Calcium, dissolved	126	223.00	08/01/1990	0.90	06/23/2010	10.70	mg/l
Chromium, dissolved	29	0.02	08/01/1990	0.01	08/16/1996	0.01	mg/l
Copper, dissolved	29	0.20	06/14/2000	0.01	08/01/1990	0.04	mg/l
Iron, dissolved	29	14.10	07/21/1993	0.02	07/21/1992	3.00	mg/l
Lead, dissolved	29	0.10	07/21/1993	0.05	06/16/1997	0.07	mg/l
Lithium, dissolved	29	0.19	08/13/1990	0.00	08/30/2008	0.05	mg/l
Magnesium, dissolved	126	31.20	03/14/2000	0.30	09/26/2001	2.58	mg/l
Manganese, dissolved	29	0.37	08/14/1995	0.01	08/30/2008	0.08	mg/l
Mercury, dissolved	29	0.0002	08/14/1995	0.0002	08/14/1995	0.0002	mg/l
Molybdenum, dissolved	29	0.10	08/01/1990	0.01	06/16/1997	0.04	mg/l
Nickel, dissolved	29	0.02	10/25/1990	0.01	08/16/1996	0.01	mg/l
Potassium, dissolved	126	146.00	08/01/1990	1.00	04/24/1991	7.41	mg/l
Selenium, dissolved	29	0.0040	07/31/1991	0.0001	08/07/2023	0.0023	mg/l
Silica, dissolved	126	99.30	08/14/1995	5.60	08/27/2024	28.60	mg/l
Sodium, dissolved	126	1,110.00	08/14/2017	124.00	05/18/2021	194.94	mg/l
Strontium, dissolved	126	2.45	08/01/1990	0.02	05/24/1994	0.30	mg/l
Vanadium, dissolved	29	0.03	08/14/1995	0.01	06/16/1997	0.01	mg/l
Zinc, dissolved	29	0.30	08/07/2023	0.02	06/09/1999	0.08	mg/l

Appx. Table A-3: MMC-IRI-5 Annual Perched Aquifer

Parameters Wet Chemistry	No. of Samples	High	Date	Low	Date	Average	Units
Bicarbonate as CaCO3	64	327.00	06/30/2009	2.00	12/18/1991	184.10	mg/l
Carbonate as CaCO3	64	284.00	12/18/1991	0.00	06/14/2008	75.16	mg/l
Total Alkalinity as CaCO3	64	406.00	03/25/1992	181.00	05/29/2002	251.87	mg/l
Bromide	34	1.00	08/22/1991	0.00	08/12/1992	0.21	mg/l
Cation-Anion Balance	61	17.30	06/14/2008	-10.20	05/26/2004	0.69	%
Sum of Anions	56	15.77	06/16/1992	8.43	12/19/1995	9.90	meq/l
Sum of Cations	56	15.25	06/16/1992	7.90	05/26/2004	10.09	meq/l
Chemical Oxygen	31	181.00	11/02/2015	0.00	05/29/2002	51.31	mg/l
Chloride	64	420.00	06/16/1992	9.00	12/19/1995	20.44	mg/l
Conductivity, Lab	64	1,500.00	06/16/1992	795.00	08/12/1991	973.03	µmhos
Fluoride	64	0.90	09/16/1991	0.00	06/30/1995	0.29	mg/l
Hardness as CaCO3	64	182.00	06/14/2008	1.00	12/20/1993	34.72	mg/l
Nitrate as N, dissolved	35	12.50	05/29/2002	0.00	08/12/1992	0.97	mg/l
Nitrate/Nitrite as N,	35	12.50	05/29/2002	0.00	08/12/1992	0.82	mg/l
Nitrite as N, dissolved	35	0.08	02/26/2024	0.00	08/12/1992	0.03	mg/l
Nitrogen, Ammonia	35	0.87	06/23/1994	0.08	05/21/2007	0.27	mg/l
Nitrogen, Organic	35	80.00	05/15/1998	0.20	03/09/2020	5.10	mg/l
Nitrogen, Total Kjeldahl	35	80.00	05/15/1998	0.30	03/09/2020	4.60	mg/l
pH, lab	64	11.90	06/28/1993	2.40	06/16/1992	9.19	units
Phosphate, total	33	155.00	07/29/2009	0.06	05/29/2002	5.31	mg/l
Phosphorus, total	35	1.87	06/18/1996	0.02	05/29/2002	0.19	mg/l
SAR in Water	55	90.44	01/20/1994	7.50	06/30/2009	21.69	none
Sulfate	64	290.00	03/25/1992	148.00	03/22/1996	203.97	mg/l
Sulfide	34	6.60	03/09/2020	0.05	06/14/2008	0.57	mg/l
Total Dissolved Solids	63	1,090	06/16/1992	504	04/21/1994	628	mg/l
Conductivity, Field	77	9,880	05/21/2007	715	12/19/1995	1,163	µmhos
pH, Field	76	12.00	08/12/1992	6.33	06/14/2008	9.83	units
Temperature (°C), Field	37	17	06/14/2008	9.70	11/01/2002	12	(°C)
Water Level, Field	67	248.06	06/15/2010	237.80	11/09/2022	240.50	Ft.
Parameters Metals	**No. of Samples**	**High**	**Date**	**Low**	**Date**	**Average**	**Units**
Aluminum, dissolved	34	10.00	08/22/1992	0.04	05/29/2003	0.94	mg/l
Arsenic, dissolved	34	0.0060	06/18/1996	0.0003	05/26/2004	0.0015	mg/l
Barium, dissolved	34	0.270	05/21/2007	0.013	05/26/2004	0.040	mg/l
Beryllium, dissolved	34	0.005	08/22/1992	0.005	08/22/1992	0.005	mg/l
Boron, dissolved	64	0.11	11/21/2005	0.02	08/22/1997	0.07	mg/l
Cadmium, dissolved	34	0.0050	08/22/1992	0.0000	03/22/2016	0.0025	mg/l
Calcium, dissolved	64	63.60	06/14/2008	1.00	06/16/1992	7.23	mg/l
Chromium, dissolved	34	0.02	08/22/1992	0.01	06/23/1994	0.01	mg/l
Copper, dissolved	34	0.04	06/25/2019	0.01	06/23/1994	0.02	mg/l
Iron, dissolved	34	7.30	08/22/1992	0.01	05/26/2004	0.59	mg/l
Lead, dissolved	34	0.12	03/22/2016	0.02	08/12/1991	0.05	mg/l
Lithium, dissolved	34	0.06	10/03/2012	0.02	02/12/2023	0.03	mg/l
Magnesium, dissolved	64	9.10	06/30/2009	0.30	06/30/1995	4.68	mg/l
Manganese, dissolved	38	0.07	08/22/1992	0.01	08/22/1997	0.02	mg/l
Mercury, dissolved	34	0.0001	08/22/1992	0.0001	08/22/1992	0.0001	mg/l
Molybdenum, dissolved	34	0.03	06/14/2008	0.01	06/18/1996	0.02	mg/l
Nickel, dissolved	34	0.04	07/29/2009	0.02	08/22/1992	0.03	mg/l
Potassium, dissolved	63	22.00	12/18/1991	0.70	06/25/2019	7.04	mg/l
Selenium, dissolved	34	0.001	08/12/1991	0.001	08/12/1991	0.001	mg/l
Silica, dissolved	63	74.00	08/22/1992	10.90	03/21/2017	17.99	mg/l
Sodium, dissolved	63	336.00	06/16/1992	166.00	05/26/2004	207.62	mg/l
Strontium, dissolved	63	1.30	06/30/2009	0.06	06/16/1992	0.50	mg/l
Vanadium, dissolved	34	0.010	08/22/1992	0.010	08/22/1992	0.010	mg/l
Zinc, dissolved	34	0.58	03/15/2022	0.02	06/23/1994	0.07	mg/l

Appx. Table A-4: PA-1 Annual Perched Aquifer

Parameters Wet Chemistry	No. of Samples	High	Date	Low	Date	Average	Units
Bicarbonate as CaCO3	7	624	05/20/2024	395	09/03/2021	496	mg/l
Carbonate as CaCO3	7	124	09/10/2021	39	06/03/2022	72	mg/l
Total Alkalinity as CaCO3	7	624	05/20/2024	479	09/03/2021	547	mg/l
Bromide	6	U	08/21/2021	U	06/03/2022	U	mg/l
Cation-Anion Balance	7	5.00	05/20/2024	-2.60	11/12/2021	0.73	%
Sum of Anions	7	22.00	04/24/2023	19.00	09/03/2021	20.00	meq/l
Sum of Cations	7	21.00	08/21/2021	19.00	11/12/2021	20.29	meq/l
Chemical Oxygen Demand	6	48.00	08/21/2021	20.00	09/03/2021	34.00	mg/l
Chloride	7	17	05/20/2024	7	08/21/2021	13	mg/l
Conductivity, Lab	7	1,730	04/24/2023	1,290	05/20/2024	1,620	µmhos
Fluoride	7	0.65	06/03/2022	0.65	06/03/2022	0.65	mg/l
Hardness as CaCO3	7	647.00	05/20/2024	470.00	11/12/2021	565.43	mg/l
Nitrate as N, dissolved	6	U	08/21/2021	U	06/03/2022	U	mg/l
Nitrate/Nitrite as N,	6	U	08/21/2021	U	06/03/2022	U	mg/l
Nitrite as N, dissolved	6	U	08/21/2021	U	06/03/2022	U	mg/l
Nitrogen, Ammonia	6	0.43	09/10/2021	0.24	04/24/2023	0.34	mg/l
Nitrogen, Organic	6	0.55	09/10/2021	0.22	09/03/2021	0.38	mg/l
Nitrogen, Total Kjeldahl	6	0.98	09/10/2021	0.26	05/20/2024	0.50	mg/l
pH, lab	7	8.80	09/03/2021	7.70	05/20/2024	8.44	units
Phosphate, total	6	1.32	05/20/2024	0.45	08/21/2021	0.89	mg/l
Phosphorus, total	6	0.43	05/20/2024	0.15	08/21/2021	0.29	mg/l
SAR in Water	7	4	11/12/2021	3.10	05/20/2024	4	none
Sulfate	7	448	04/24/2023	290.00	05/20/2024	409	mg/l
Sulfide	6	0.18	05/20/2024	0.08	04/24/2023	0.13	mg/l
Total Dissolved Solids	7	1,250	04/24/2023	1,100	05/20/2024	1,154	mg/l
Conductivity, Field	6	1,720	04/24/2023	1,460	06/06/2022	1,624	µmhos
pH, Field	6	8.60	09/03/2021	7.24	05/20/2024	7.92	units
Temperature (°C), Field	6	16.30	09/10/2021	12.30	04/24/2023	14.42	(°C)
Water Level, Field	15	305.50	11/27/2023	304.90	11/08/2022	305.17	Ft.
Parameters Metals	**No. of Samples**	**High**	**Date**	**Low**	**Date**	**Average**	**Units**
Aluminum, dissolved	6	U	08/21/2021	U	06/03/2022	U	mg/l
Arsenic, dissolved	6	0.01	09/10/2021	0.0003	05/20/2024	0.004	mg/l
Barium, dissolved	6	0.04	06/03/2022	0.01	05/20/2024	0.02	mg/l
Beryllium, dissolved	6	U	08/21/2021	U	06/03/2022	U	mg/l
Boron, dissolved	7	0.12	06/03/2022	0.09	05/20/2024	0.10	mg/l
Cadmium, dissolved	6	U	08/21/2021	U	06/03/2022	U	mg/l
Calcium, dissolved	7	79.20	05/20/2024	43.80	11/12/2021	62.41	mg/l
Chromium, dissolved	6	U	08/21/2021	U	06/03/2022	U	mg/l
Copper, dissolved	6	U	08/21/2021	U	06/03/2022	U	mg/l
Iron, dissolved	6	0.30	09/10/2021	0.06	04/24/2023	0.20	mg/l
Lead, dissolved	6	U	08/21/2021	U	06/03/2022	U	mg/l
Lithium, dissolved	6	0.12	09/03/2021	0.07	05/20/2024	0.10	mg/l
Magnesium, dissolved	7	109.00	05/20/2024	87.60	11/12/2021	99.43	mg/l
Manganese, dissolved	6	0.21	08/21/2021	0.02	06/03/2022	0.07	mg/l
Mercury, dissolved	6	U	08/21/2021	U	06/03/2022	U	mg/l
Molybdenum, dissolved	6	0.03	09/03/2021	0.02	09/10/2021	0.02	mg/l
Nickel, dissolved	6	U	08/21/2021	U	06/03/2022	U	mg/l
Potassium, dissolved	7	15.10	09/10/2021	2.20	08/21/2021	7.65	mg/l
Selenium, dissolved	7	0.0002	01/00/1900	0.0001	08/21/2021	0.0001	mg/l
Silica, dissolved	7	34.00	04/24/2023	21.90	09/03/2021	28.59	mg/l
Sodium, dissolved	7	210	09/10/2021	178	05/20/2024	194	mg/l
Strontium, dissolved	7	3.07	06/03/2022	2.06	08/21/2021	2.63	mg/l
Vanadium, dissolved	6	U	08/21/2021	U	06/03/2022	U	mg/l
Zinc, dissolved	6	0.03	06/03/2022	0.03	06/03/2022	0.03	mg/l

Appx. Table A-5: 89-2 Quarterly A-Groove Aquifer

Parameters Wet Chemistry	No. of Samples	High	Date	Low	Date	Average	Units
Bicarbonate as CaCO3	198	903.00	12/12/2008	41.00	01/30/1997	515.01	mg/l
Carbonate as CaCO3	198	566.00	01/30/1997	8.00	11/28/1990	95.36	mg/l
Total Alkalinity as CaCO3	198	926.00	12/12/2008	160.00	10/25/1990	608.72	mg/l
Bromide	27	3.00	06/26/1990	0.05	07/01/1997	0.44	mg/l
Cation-Anion Balance	189	63.40	04/14/2005	-28.80	08/02/2006	0.33	%
Sum of Anions	172	20.10	12/12/2008	11.66	11/28/1990	14.17	meq/l
Sum of Cations	172	67.50	04/14/2005	7.80	08/02/2006	14.38	meq/l
Chemical Oxygen Demand	24	220.00	09/22/2010	10.00	08/02/2006	80.23	mg/l
Chloride	197	118.00	10/22/1989	2.00	04/24/1991	18.96	mg/l
Conductivity, Lab	195	1,760.00	12/12/2008	1,000.00	05/20/1993	1,257.17	µmhos
Fluoride	198	30.00	12/19/1991	1.90	06/26/1991	21.24	mg/l
Hardness as CaCO3	192	375.00	05/21/2018	0.40	10/25/1990	11.78	mg/l
Nitrate as N, dissolved	28	5.76	08/10/2008	0.02	07/18/1995	0.53	mg/l
Nitrate/Nitrite as N,	28	6.26	08/10/2008	0.02	07/18/1995	0.56	mg/l
Nitrite as N, dissolved	28	0.50	08/10/2008	0.01	03/30/1990	0.13	mg/l
Nitrogen, Ammonia	26	3.77	08/10/2008	0.54	06/15/1992	1.30	mg/l
Nitrogen, Organic	26	14.60	09/27/1990	0.10	06/15/1992	4.37	mg/l
Nitrogen, Total Kjeldahl	26	15.40	09/27/1990	0.60	06/15/1992	5.49	mg/l
pH, lab	194	9.70	12/20/1994	8.00	07/18/1995	8.92	units
Phosphate, total	22	155.00	06/25/2007	0.06	07/02/1998	10.79	mg/l
Phosphorus, total	27	0.46	06/26/1990	0.01	08/17/1993	0.08	mg/l
SAR in Water	155	345.00	04/14/2005	0.21	05/21/2018	55.62	none
Sulfate	198	445.00	06/26/1990	2.49	05/21/2018	40.76	mg/l
Sulfide	23	2.40	07/24/2002	0.02	07/15/2004	0.45	mg/l
Total Dissolved Solids	198	2,040.00	04/14/2005	494.00	10/25/1990	783.09	mg/l
Conductivity, Field	245	1,980.00	12/12/2008	620.00	03/16/1994	1,222.36	µmhos
pH, Field	245	10.00	08/22/1991	6.80	03/10/2015	9.08	units
Temperature (°C), Field	125	17.40	07/01/2002	8.10	02/08/2021	12.29	(°C)
Water Level, Field	111	545.20	06/25/2014	463.95	04/01/2003	498.18	Ft.

Parameters Metals	No. of Samples	High	Date	Low	Date	Average	Units
Aluminum, dissolved	26	0.70	10/22/1989	0.03	07/01/1997	0.12	mg/l
Arsenic, dissolved	26	0.04	06/26/1991	0.00	06/15/1992	0.01	mg/l
Barium, dissolved	26	0.23	07/15/2004	0.01	08/02/2006	0.04	mg/l
Beryllium, dissolved	26	0.01	06/26/1990	0.01	06/26/1990	0.01	mg/l
Boron, dissolved	191	1.48	04/14/2005	0.19	08/02/2006	0.37	mg/l
Cadmium, dissolved	26	0.01	06/26/1990	0.01	06/26/1990	0.01	mg/l
Calcium, dissolved	190	141.00	05/21/2018	0.30	04/27/2004	2.49	mg/l
Chromium, dissolved	26	0.07	07/30/2003	0.01	06/26/1990	0.04	mg/l
Copper, dissolved	26	0.01	06/26/1990	0.01	06/26/1990	0.01	mg/l
Iron, dissolved	26	0.80	10/22/1989	0.01	07/18/1995	0.13	mg/l
Lead, dissolved	26	0.05	10/22/1989	0.02	06/26/1990	0.03	mg/l
Lithium, dissolved	26	0.13	07/15/2004	0.02	06/26/1990	0.05	mg/l
Magnesium, dissolved	190	9.10	12/12/2008	0.20	04/27/2004	1.29	mg/l
Manganese, dissolved	25	0.14	07/30/2003	0.01	06/26/1990	0.06	mg/l
Mercury, dissolved	26	0.0006	06/15/1992	0.0001	06/26/1990	0.0004	mg/l
Molybdenum, dissolved	26	0.13	10/22/1989	0.01	07/12/1996	0.05	mg/l
Nickel, dissolved	26	0.52	07/30/2003	0.02	10/22/1989	0.19	mg/l
Potassium, dissolved	191	12.50	05/21/2018	0.50	06/10/2020	1.33	mg/l
Selenium, dissolved	26	0.009	09/27/1990	0.001	06/26/1990	0.004	mg/l
Silica, dissolved	191	27.70	01/09/2001	2.00	12/10/2019	12.45	mg/l
Sodium, dissolved	191	1,530.00	04/14/2005	9.20	05/21/2018	320.55	mg/l
Strontium, dissolved	191	1.34	12/12/2008	0.03	04/27/2004	0.20	mg/l
Vanadium, dissolved	26	0.01	06/26/1990	0.01	06/26/1990	0.01	mg/l
Zinc, dissolved	26	0.03	07/29/2009	0.01	06/26/1990	0.02	mg/l

Appx. Table A-6: 90-4 Quarterly A-Groove Aquifer

Parameters Wet Chemistry	No. of Samples	High	Date	Low	Date	Average	Units
Bicarbonate as CaCO3	139	3,960.00	11/25/2024	45.00	06/26/2002	973.52	mg/l
Carbonate as CaCO3	139	693.00	06/26/2002	10.00	12/16/2003	98.30	mg/l
Total Alkalinity as CaCO3	139	3,960.00	11/25/2024	142.00	09/28/2006	1,056.68	mg/l
Bromide	30	16.00	06/16/1997	0.29	08/01/1990	5.56	mg/l
Cation-Anion Balance	136	39.50	05/21/2024	-68.80	08/15/2017	-1.87	%
Sum of Anions	136	153.40	05/24/1994	34.16	08/01/1990	86.88	meq/l
Sum of Cations	136	143.00	02/27/1997	10.00	08/15/2017	84.52	meq/l
Chemical Oxygen Demand	22	840.00	08/16/1994	10.00	08/16/1996	192.50	mg/l
Chloride	139	4,690.00	05/24/1994	700.00	08/01/1990	2,368.15	mg/l
Conductivity, Lab	137	14,100.00	02/21/1994	309.00	05/27/2015	8,563.21	µmhos
Fluoride	139	23.70	08/01/1990	0.00	11/25/2024	12.20	mg/l
Hardness as CaCO3	139	204.00	02/21/1994	25.00	08/15/2017	89.59	mg/l
Nitrate as N, dissolved	29	0.08	06/26/2002	0.02	06/28/2006	0.05	mg/l
Nitrate/Nitrite as N,	29	0.09	06/16/2011	0.02	06/28/2006	0.06	mg/l
Nitrite as N, dissolved	29	0.04	06/16/2011	0.01	01/29/1991	0.02	mg/l
Nitrogen, Ammonia	28	3.30	08/10/2008	0.83	08/13/1990	1.88	mg/l
Nitrogen, Organic	28	10.10	03/14/2008	0.40	07/21/1993	3.39	mg/l
Nitrogen, Total Kjeldahl	28	12.10	03/14/2008	1.30	06/14/2000	5.03	mg/l
pH, lab	136	9.10	12/14/2021	7.70	09/14/2004	8.56	units
Phosphate, total	26	155.00	06/28/2006	0.06	08/14/1995	17.00	mg/l
Phosphorus, total	28	0.11	08/13/1990	0.02	07/31/1991	0.06	mg/l
SAR in Water	136	4,950.00	06/24/2003	19.00	08/15/2017	127.21	none
Sulfate	138	2,310.00	06/15/2014	4.00	12/16/2004	70.78	mg/l
Sulfide	23	5.80	06/26/2002	0.02	08/10/2008	1.18	mg/l
Total Dissolved Solids	139	8,270.00	02/27/1997	2,110.00	08/15/2017	5,040.41	mg/l
Conductivity, Field	197	13,600.00	11/17/1993	2,900.00	08/01/1990	8,638.05	µmhos
pH, Field	192	9.53	07/29/2009	7.30	10/09/2019	8.53	units
Temperature (°C), Field	140	22.10	07/10/2018	7.40	12/15/2005	12.37	(°C)
Water Level, Field	116	554.90	08/07/2023	516.40	10/01/1990	539.63	Ft.

Parameters Metals	No. of Samples	High	Date	Low	Date	Average	Units
Aluminum, dissolved	29	0.80	06/16/2005	0.03	09/21/2010	0.28	mg/l
Arsenic, dissolved	29	0.05	01/29/1991	0.00	06/28/2006	0.01	mg/l
Barium, dissolved	29	1.56	03/14/2008	0.09	08/01/1990	0.85	mg/l
Beryllium, dissolved	29	U	11/27/2012	U	08/10/2008	U	mg/l
Boron, dissolved	139	1.38	11/25/2024	0.10	11/20/1996	0.41	mg/l
Cadmium, dissolved	29	0.03	07/21/1993	0.03	07/21/1993	0.03	mg/l
Calcium, dissolved	139	45.00	12/16/2004	3.00	11/20/1996	11.04	mg/l
Chromium, dissolved	29	U	11/27/2012	U	08/10/2008	U	mg/l
Copper, dissolved	29	0.08	06/24/2004	0.08	06/24/2004	0.08	mg/l
Iron, dissolved	29	1.67	10/25/1990	0.07	09/21/2010	0.39	mg/l
Lead, dissolved	29	U	11/27/2012	U	08/10/2008	U	mg/l
Lithium, dissolved	28	0.10	06/16/1997	0.02	08/13/1990	0.04	mg/l
Magnesium, dissolved	139	37.00	02/21/1994	3.90	08/15/2017	15.03	mg/l
Manganese, dissolved	28	0.15	10/25/1990	0.01	09/21/2010	0.05	mg/l
Mercury, dissolved	29	0.00	09/15/2007	0.00	08/14/1995	0.00	mg/l
Molybdenum, dissolved	29	0.37	08/13/1990	0.13	10/25/1990	0.24	mg/l
Nickel, dissolved	29	U	11/27/2012	U	08/10/2008	U	mg/l
Potassium, dissolved	139	10.00	07/31/1991	1.37	12/14/2020	3.09	mg/l
Selenium, dissolved	29	0.00	01/29/1991	0.00	08/13/1990	0.00	mg/l
Silica, dissolved	139	63.00	12/16/2004	2.10	04/20/1992	12.22	mg/l
Sodium, dissolved	139	3,180.00	02/27/1997	220.00	08/15/2017	1,924.79	mg/l
Strontium, dissolved	139	8.17	02/21/1994	0.30	08/15/2017	3.24	mg/l
Vanadium, dissolved	29	U	11/27/2012	U	08/10/2008	U	mg/l
Zinc, dissolved	29	0.10	07/31/1991	0.01	10/25/1990	0.05	mg/l

Appx. Table A-7: AG-1 Quarterly A-Groove Aquifer

Parameters Wet Chemistry	No. of Samples	High	Date	Low	Date	Average	Units
Bicarbonate as CaCO3	23	1,410	06/03/2020	198	02/10/2015	809	mg/l
Carbonate as CaCO3	23	420	12/10/2024	53	11/04/2014	222	mg/l
Total Alkalinity as CaCO3	23	1,830	12/10/2024	377	02/10/2015	1,030	mg/l
Bromide	11	2.38	04/22/2019	0.17	01/29/2015	1.27	mg/l
Cation-Anion Balance	23	3.30	02/27/2024	-6.70	02/10/2015	-2.10	%
Sum of Anions	23	46.00	12/10/2024	15.00	12/15/2015	27.96	meq/l
Sum of Cations	23	45.00	12/10/2024	14.00	02/10/2015	26.83	meq/l
Chemical Oxygen Demand	11	37.00	12/15/2015	10.00	06/11/2019	19.11	mg/l
Chloride	23	435	06/11/2019	92	11/04/2014	198	mg/l
Conductivity, Lab	23	3,960	12/10/2024	1,430	11/04/2014	2,549	µmhos
Fluoride	23	17.50	06/03/2020	5.47	06/19/2018	11.54	mg/l
Hardness as CaCO3	23	84.00	12/10/2024	13.00	06/19/2018	43.62	mg/l
Nitrate as N, dissolved	11	0.02	01/29/2015	0.02	01/29/2015	0.02	mg/l
Nitrate/Nitrite as N,	11	0.03	01/29/2015	0.00	11/04/2014	0.02	mg/l
Nitrite as N, dissolved	11	0.01	01/29/2015	0.00	11/04/2014	0.01	mg/l
Nitrogen, Ammonia	11	1.51	09/28/2017	0.47	04/05/2016	0.84	mg/l
Nitrogen, Organic	11	0.50	01/29/2015	0.10	04/05/2016	0.28	mg/l
Nitrogen, Total Kjeldahl	11	1.90	09/28/2017	0.60	04/05/2016	1.05	mg/l
pH, lab	23	9.70	01/29/2015	8.50	12/10/2024	9.07	units
Phosphate, total	11	1.02	06/03/2020	0.06	06/19/2018	0.38	mg/l
Phosphorus, total	11	0.33	06/03/2020	0.02	06/19/2018	0.12	mg/l
SAR in Water	23	59	06/03/2020	20.00	11/04/2014	40	none
Sulfate	23	210	02/10/2015	10.50	08/14/2023	57	mg/l
Sulfide	11	6.20	06/03/2020	0.04	11/04/2014	2.22	mg/l
Total Dissolved Solids	23	2,480	12/10/2024	843	12/15/2015	1,506	mg/l
Conductivity, Field	21	4,062	04/22/2019	1,432	04/05/2016	2,605	µmhos
pH, Field	21	9.64	06/19/2018	8.44	04/22/2019	8.93	units
Temperature (°C), Field	21	22.22	06/19/2018	10.10	04/25/2023	16.92	(°C)
Water Level, Field	21	581.90	09/28/2017	561.80	04/25/2023	570.76	Ft.
Parameters Metals	No. of Samples	High	Date	Low	Date	Average	Units
Aluminum, dissolved	11	U	06/03/2020	U	11/04/2014	U	mg/l
Arsenic, dissolved	11	0.0038	11/04/2014	0.0004	02/10/2015	0.0011	mg/l
Barium, dissolved	11	0.41	04/22/2019	0.01	12/15/2015	0.12	mg/l
Beryllium, dissolved	11	U	06/03/2020	U	11/04/2014	U	mg/l
Boron, dissolved	23	1.07	06/03/2020	0.21	02/10/2015	0.60	mg/l
Cadmium, dissolved	11	U	06/03/2020	U	11/04/2014	U	mg/l
Calcium, dissolved	23	12.20	05/18/2021	1.30	04/05/2016	3.27	mg/l
Chromium, dissolved	11	U	06/03/2020	U	11/04/2014	U	mg/l
Copper, dissolved	11	U	06/03/2020	U	11/04/2014	U	mg/l
Iron, dissolved	11	0.86	09/28/2017	0.03	11/04/2014	0.25	mg/l
Lead, dissolved	11	U	06/03/2020	U	11/04/2014	U	mg/l
Lithium, dissolved	11	0.28	06/11/2019	0.12	11/04/2014	0.17	mg/l
Magnesium, dissolved	23	18.40	12/10/2024	2.40	06/19/2018	8.60	mg/l
Manganese, dissolved	11	0.08	11/04/2014	0.01	04/05/2016	0.03	mg/l
Mercury, dissolved	11	U	06/03/2020	U	11/04/2014	U	mg/l
Molybdenum, dissolved	11	0.19	06/19/2018	0.06	11/04/2014	0.13	mg/l
Nickel, dissolved	11	U	06/03/2020	U	11/04/2014	U	mg/l
Potassium, dissolved	23	11.30	06/19/2018	0.98	02/13/2023	3.68	mg/l
Selenium, dissolved	11	0.0134	05/18/2021	0.0002	09/28/2017	0.0037	mg/l
Silica, dissolved	23	13.90	11/04/2014	0.20	02/10/2015	9.83	mg/l
Sodium, dissolved	23	985	12/10/2024	303	02/10/2015	583	mg/l
Strontium, dissolved	23	2.11	12/10/2024	0.23	12/15/2015	1.00	mg/l
Vanadium, dissolved	11	U	06/03/2020	U	11/04/2014	U	mg/l
Zinc, dissolved	11	0.61	05/18/2021	0.01	11/04/2014	0.23	mg/l

Appx. Table A-8: AG-2 Annual A-Groove Aquifer

Parameters Wet Chemistry	No. of Samples	High	Date	Low	Date	Average	Units
Bicarbonate as CaCO3	7	467	02/19/2024	308	11/12/2021	391	mg/l
Carbonate as CaCO3	7	283	11/12/2021	80	08/17/2021	157	mg/l
Total Alkalinity as CaCO3	7	592	11/12/2021	513	09/03/2021	548	mg/l
Bromide	6	U	08/17/2021	U	09/10/2021	U	mg/l
Cation-Anion Balance	7	3.20	09/03/2021	-3.40	03/14/2022	-0.46	%
Sum of Anions	7	17.00	09/10/2021	13.00	08/17/2021	14.71	meq/l
Sum of Cations	7	17.00	09/10/2021	13.00	08/17/2021	14.57	meq/l
Chemical Oxygen Demand	6	35.00	09/03/2021	25.00	09/10/2021	29.33	mg/l
Chloride	7	32	09/10/2021	12	02/19/2024	21	mg/l
Conductivity, Lab	7	1,620	11/12/2021	1,200	02/13/2023	1,370	µmhos
Fluoride	7	10.90	02/13/2023	9.31	09/10/2021	9.96	mg/l
Hardness as CaCO3	7	60.00	08/17/2021	34.00	02/19/2024	47.57	mg/l
Nitrate as N, dissolved	6	U	08/17/2021	U	09/10/2021	U	mg/l
Nitrate/Nitrite as N,	6	U	08/17/2021	U	09/10/2021	U	mg/l
Nitrite as N, dissolved	6	U	08/17/2021	U	09/10/2021	U	mg/l
Nitrogen, Ammonia	6	0.91	09/03/2021	0.39	08/17/2021	0.64	mg/l
Nitrogen, Organic	6	0.59	09/10/2021	0.31	09/03/2021	0.46	mg/l
Nitrogen, Total Kjeldahl	6	1.36	09/10/2021	0.47	02/19/2024	0.89	mg/l
pH, lab	7	9.80	09/10/2021	8.70	02/13/2023	9.21	units
Phosphate, total	6	1.45	09/03/2021	0.16	02/19/2024	0.61	mg/l
Phosphorus, total	6	0.47	09/03/2021	0.05	02/19/2024	0.20	mg/l
SAR in Water	7	23	09/03/2021	15.00	08/17/2021	19	none
Sulfate	7	190	11/12/2021	58.30	02/19/2024	125	mg/l
Sulfide	6	2.73	09/10/2021	0.10	08/17/2021	0.86	mg/l
Total Dissolved Solids	7	971	09/10/2021	710	02/19/2024	828	mg/l
Conductivity, Field	10	1,561	09/10/2021	1,020	08/11/2021	1,237	µmhos
pH, Field	10	9.71	09/03/2021	7.44	08/11/2021	8.63	units
Temperature (°C),	10	28.10	08/11/2021	10.10	02/13/2023	17.36	(°C)
Water Level, Field	15	386.60	08/16/2024	368.70	09/03/2021	373.99	Ft.

Parameters Metals	No. of Samples	High	Date	Low	Date	Average	Units
Aluminum, dissolved	6	0.09	08/17/2021	0.09	08/17/2021	0.09	mg/l
Arsenic, dissolved	6	0.45	09/10/2021	0.05	02/19/2024	0.18	mg/l
Barium, dissolved	6	0.07	09/10/2021	0.02	08/17/2021	0.05	mg/l
Beryllium, dissolved	6	U	08/17/2021	U	09/10/2021	U	mg/l
Boron, dissolved	7	0.27	02/19/2024	0.24	02/13/2023	0.25	mg/l
Cadmium, dissolved	6	U	08/17/2021	U	09/10/2021	U	mg/l
Calcium, dissolved	7	11.30	08/17/2021	3.87	02/19/2024	6.76	mg/l
Chromium, dissolved	6	U	08/17/2021	U	09/10/2021	U	mg/l
Copper, dissolved	6	U	08/17/2021	U	09/10/2021	U	mg/l
Iron, dissolved	6	0.30	08/17/2021	0.17	09/03/2021	0.25	mg/l
Lead, dissolved	6	U	08/17/2021	U	09/10/2021	U	mg/l
Lithium, dissolved	6	0.11	09/03/2021	0.07	02/13/2023	0.09	mg/l
Magnesium, dissolved	7	8.79	11/12/2021	5.95	02/19/2024	7.43	mg/l
Manganese, dissolved	6	0.05	08/17/2021	0.05	08/17/2021	0.05	mg/l
Mercury, dissolved	6	U	08/17/2021	U	09/10/2021	U	mg/l
Molybdenum, dissolved	6	0.69	09/10/2021	0.04	02/19/2024	0.30	mg/l
Nickel, dissolved	6	U	08/17/2021	U	09/10/2021	U	mg/l
Potassium, dissolved	7	30.30	09/03/2021	1.21	02/13/2023	13.01	mg/l
Selenium, dissolved	6	0.0028	08/17/2021	0.0002	09/10/2021	0.0011	mg/l
Silica, dissolved	7	13.40	08/17/2021	6.40	09/03/2021	8.86	mg/l
Sodium, dissolved	7	342	09/10/2021	269	02/13/2023	298	mg/l
Strontium, dissolved	7	1.07	11/12/2021	0.77	08/17/2021	0.91	mg/l
Vanadium, dissolved	6	U	08/17/2021	U	09/10/2021	U	mg/l
Zinc, dissolved	6	0.62	09/10/2021	0.30	03/14/2022	0.46	mg/l

Appx. Table A-9: MMC-IRI-4 Annual A-Groove Aquifer

Parameters Wet Chemistry	No. of Samples	High	Date	Low	Date	Average	Units
Bicarbonate as CaCO3	64	1,250.00	03/22/1993	34.00	09/08/1993	302.78	mg/l
Carbonate as CaCO3	64	870.00	03/22/1993	24.00	06/30/2009	248.34	mg/l
Total Alkalinity as CaCO3	64	2,120.00	03/22/1993	176.00	06/14/2008	503.52	mg/l
Bromide	34	2.70	11/29/2011	0.07	05/26/2000	0.62	mg/l
Cation-Anion Balance	62	13.30	11/06/2014	-16.70	02/13/2024	1.17	%
Sum of Anions	62	21.00	02/13/2024	9.50	05/29/2003	13.47	meq/l
Sum of Cations	62	18.34	09/16/1991	9.50	05/26/2004	13.80	meq/l
Chemical Oxygen Demand	32	1,300.00	05/29/2002	12.00	03/15/2022	402.41	mg/l
Chloride	64	252.00	06/14/2008	21.00	12/20/1993	112.45	mg/l
Conductivity, Lab	63	3,320.00	09/15/1992	1,010.00	05/29/2003	1,530.32	µmhos
Fluoride	64	27.00	12/19/1995	2.20	09/15/1992	9.75	mg/l
Hardness as CaCO3	64	962.00	03/22/1993	0.00	01/19/1994	32.98	mg/l
Nitrate as N, dissolved	34	3.89	06/14/2008	0.02	09/15/1992	0.43	mg/l
rate/Nitrite as N, dissolved	34	3.90	06/14/2008	0.02	09/15/1992	0.33	mg/l
Nitrite as N, dissolved	34	0.05	11/06/2014	0.01	06/18/1996	0.02	mg/l
Nitrogen, Ammonia	34	21.30	09/08/1993	0.34	08/23/2017	3.35	mg/l
Nitrogen, Organic	34	104.00	05/29/2002	0.20	08/23/2017	16.68	mg/l
Nitrogen, Total Kjeldahl	34	106.00	05/29/2002	0.40	04/22/2019	17.63	mg/l
pH, lab	63	11.90	06/16/1992	8.50	02/12/2023	10.08	units
Phosphate, total	34	155.00	07/29/2009	0.03	05/26/1999	6.06	mg/l
Phosphorus, total	34	2.95	09/27/1990	0.01	05/26/1999	0.22	mg/l
SAR in Water	55	190.00	11/14/1997	3.83	03/25/1992	61.68	none
Sulfate	64	360.00	09/16/1991	0.80	02/26/1997	31.18	mg/l
Sulfide	34	29.00	03/22/2016	0.02	09/15/1992	4.16	mg/l
Total Dissolved Solids	63	2,752.00	03/22/1993	578.00	09/27/1990	847.29	mg/l
Conductivity, Field	81	3,910.00	07/29/2009	694.00	06/01/2005	1,583.05	µmhos
pH, Field	80	12.90	09/13/1995	7.78	09/16/2019	10.56	units
Temperature (°C), Field	41	22.50	06/01/2005	7.00	07/01/1991	12.31	(°C)
Water Level, Field	74	495.50	08/09/2024	409.63	11/01/1990	441.65	Ft.

Parameters Metals	No. of Samples	High	Date	Low	Date	Average	Units
Aluminum, dissolved	34	1.35	11/06/2014	0.03	08/23/2017	0.22	mg/l
Arsenic, dissolved	34	0.0095	08/23/2017	0.0004	03/15/2022	0.0029	mg/l
Barium, dissolved	34	0.20	07/29/2009	U	09/08/1993	0.05	mg/l
Beryllium, dissolved	34	U	03/15/2022	U	05/26/2004	U	mg/l
Boron, dissolved	64	0.47	12/20/1993	0.04	03/09/2020	0.22	mg/l
Cadmium, dissolved	34	U	03/15/2022	U	05/26/2004	U	mg/l
Calcium, dissolved	64	27.50	06/30/2009	0.20	11/14/1997	4.12	mg/l
Chromium, dissolved	34	0.02	11/06/2014	0.01	06/23/1994	0.01	mg/l
Copper, dissolved	34	0.04	07/29/2009	0.01	07/30/1991	0.03	mg/l
Iron, dissolved	34	65.10	11/06/2014	0.01	06/30/1995	2.94	mg/l
Lead, dissolved	34	0.63	09/15/2010	0.02	06/23/1994	0.14	mg/l
Lithium, dissolved	34	0.17	09/27/1990	0.02	02/13/2024	0.06	mg/l
Magnesium, dissolved	64	5.00	09/27/1990	0.00	05/24/2005	1.53	mg/l
Manganese, dissolved	34	0.59	11/06/2014	0.01	07/29/2009	0.06	mg/l
Mercury, dissolved	34	0.00	07/30/1991	0.00	09/27/1990	0.00	mg/l
Molybdenum, dissolved	34	0.13	05/24/2005	0.01	05/09/2001	0.05	mg/l
Nickel, dissolved	34	0.03	09/15/1992	0.01	03/22/2016	0.01	mg/l
Potassium, dissolved	64	39.00	03/22/1993	0.42	02/12/2023	5.56	mg/l
Selenium, dissolved	34	0.00	07/30/1991	0.00	02/12/2023	0.00	mg/l
Silica, dissolved	64	44.60	06/16/1992	1.30	03/09/2020	15.67	mg/l
Sodium, dissolved	64	567.00	03/22/1993	153.00	03/25/1992	304.11	mg/l
Strontium, dissolved	64	5.10	03/25/1992	0.01	04/21/1994	0.33	mg/l
Vanadium, dissolved	34	U	06/23/1994	U	05/26/2000	U	mg/l
Zinc, dissolved	34	0.61	11/06/2014	0.01	09/27/1990	0.09	mg/l

Appx. Table A-10: O-GMW-A Annual A-Groove Aquifer

Parameters Wet Chemistry	No. of Samples	High	Date	Low	Date	Average	Units
Bicarbonate as CaCO3	1	528.00	10/05/2014	528.00	10/05/2014	528.00	mg/l
Carbonate as CaCO3	1	51.40	10/05/2014	51.40	10/05/2014	51.40	mg/l
Total Alkalinity as CaCO3	1	579.00	10/05/2014	579.00	10/05/2014	579.00	mg/l
Bromide	1	U	10/05/2014	U	10/05/2014	U	mg/l
Cation-Anion Balance	1	-3.70	10/05/2014	-3.70	10/05/2014	-3.70	%
Sum of Anions	1	14.00	10/05/2014	14.00	10/05/2014	14.00	meq/l
Sum of Cations	1	13.00	10/05/2014	13.00	10/05/2014	13.00	meq/l
Chemical Oxygen Demand	1	U	10/05/2014	U	10/05/2014	U	mg/l
Chloride	1	18.60	10/05/2014	18.60	10/05/2014	18.60	mg/l
Conductivity, Lab	1	1,270.00	10/05/2014	1,270.00	10/05/2014	1,270.00	µmhos
Fluoride	1	16.40	10/05/2014	16.40	10/05/2014	16.40	mg/l
Hardness as CaCO3	1	46.00	10/05/2014	46.00	10/05/2014	46.00	mg/l
Nitrate as N, dissolved	1	U	10/05/2014	U	10/05/2014	U	mg/l
Nitrate/Nitrite as N,	1	U	10/05/2014	U	10/05/2014	U	mg/l
Nitrite as N, dissolved	1	U	10/05/2014	U	10/05/2014	U	mg/l
Nitrogen, Ammonia	1	0.40	10/05/2014	0.40	10/05/2014	0.40	mg/l
Nitrogen, Organic	1	0.30	10/05/2014	0.30	10/05/2014	0.30	mg/l
Nitrogen, Total Kjeldahl	1	0.70	10/05/2014	0.70	10/05/2014	0.70	mg/l
pH, lab	1	8.60	10/05/2014	8.60	10/05/2014	8.60	units
Phosphate, total	1	0.06	10/05/2014	0.06	10/05/2014	0.06	mg/l
Phosphorus, total	1	0.02	10/05/2014	0.02	10/05/2014	0.02	mg/l
SAR in Water	1	17.00	10/05/2014	17.00	10/05/2014	17.00	none
Sulfate	1	60.00	10/05/2014	60.00	10/05/2014	60.00	mg/l
Sulfide	1	0.03	10/05/2014	0.03	10/05/2014	0.03	mg/l
Total Dissolved Solids	1	746.00	10/05/2014	746.00	10/05/2014	746.00	mg/l
Conductivity, Field	0	N/A	N/A	N/A	N/A	N/A	µmhos
pH, Field	0	N/A	N/A	N/A	N/A	N/A	units
Temperature (°C), Field	0	N/A	N/A	N/A	N/A	N/A	(°C)
Water Level, Field	0	N/A	N/A	N/A	N/A	N/A	Ft.

Parameters Metals	No. of Samples	High	Date	Low	Date	Average	Units
Aluminum, dissolved	1	U	10/05/2014	U	10/05/2014	U	mg/l
Arsenic, dissolved	1	0.02	10/05/2014	0.02	10/05/2014	0.02	mg/l
Barium, dissolved	1	0.13	10/05/2014	U	10/05/2014	0.13	mg/l
Beryllium, dissolved	1	U	10/05/2014	U	10/05/2014	U	mg/l
Boron, dissolved	1	0.25	10/05/2014	0.25	10/05/2014	0.25	mg/l
Cadmium, dissolved	1	U	10/05/2014	U	10/05/2014	U	mg/l
Calcium, dissolved	1	6.00	10/05/2014	U	10/05/2014	6.00	mg/l
Chromium, dissolved	1	U	10/05/2014	U	10/05/2014	U	mg/l
Copper, dissolved	1	U	10/05/2014	U	10/05/2014	U	mg/l
Iron, dissolved	1	U	10/05/2014	U	10/05/2014	U	mg/l
Lead, dissolved	1	U	10/05/2014	U	10/05/2014	U	mg/l
Lithium, dissolved	1	0.12	10/05/2014	0.12	10/05/2014	0.12	mg/l
Magnesium, dissolved	1	7.40	10/05/2014	U	10/05/2014	7.40	mg/l
Manganese, dissolved	1	0.01	10/05/2014	U	10/05/2014	0.01	mg/l
Mercury, dissolved	1	U	10/05/2014	U	10/05/2014	U	mg/l
Molybdenum, dissolved	1	U	10/05/2014	U	10/05/2014	U	mg/l
Nickel, dissolved	1	U	10/05/2014	U	10/05/2014	U	mg/l
Potassium, dissolved	1	1.30	10/05/2014	1.30	10/05/2014	1.30	mg/l
Selenium, dissolved	1	U	10/05/2014	U	10/05/2014	U	mg/l
Silica, dissolved	1	11.80	10/05/2014	11.80	10/05/2014	11.80	mg/l
Sodium, dissolved	1	267.00	10/05/2014	267.00	10/05/2014	267.00	mg/l
Strontium, dissolved	1	1.16	10/05/2014	U	10/05/2014	1.16	mg/l
Vanadium, dissolved	1	U	10/05/2014	U	10/05/2014	U	mg/l
Zinc, dissolved	1	U	10/05/2014	U	10/05/2014	U	mg/l

Appx. Table A-11: WSW-2 Quarterly A-Groove Aquifer

Parameters Wet Chemistry	No. of Samples	High	Date	Low	Date	Average	Units
Bicarbonate as CaCO3	66	4,070.00	11/29/2022	483.00	06/16/2014	2,000.97	mg/l
Carbonate as CaCO3	66	636.00	03/03/2021	39.80	08/03/2024	161.19	mg/l
Total Alkalinity as CaCO3	66	4,410.00	11/29/2022	534.00	06/16/2014	2,158.50	mg/l
Bromide	5	0.46	07/11/2013	0.03	10/04/2011	0.18	mg/l
Cation-Anion Balance	65	38.70	05/09/2022	-13.40	06/14/2011	-2.00	%
Sum of Anions	66	137.00	11/29/2022	13.70	10/04/2011	63.50	meq/l
Sum of Cations	66	136.00	11/07/2023	12.60	06/14/2011	61.43	meq/l
Chemical Oxygen Demand	13	91.00	04/07/2021	10.00	01/20/2011	29.38	mg/l
Chloride	66	1,910.00	07/03/2019	11.00	06/14/2011	701.95	mg/l
Conductivity, Lab	67	11,600	11/29/2022	1,250	10/04/2011	5,567	µmhos
Fluoride	66	28.10	11/14/2018	13.80	09/17/2012	20.49	mg/l
Hardness as CaCO3	66	72.00	01/24/2018	14.00	11/30/2011	34.89	mg/l
Nitrate as N, dissolved	3	0.10	11/10/2014	0.02	04/07/2021	0.06	mg/l
Nitrate/Nitrite as N,	3	0.10	11/10/2014	0.02	04/07/2021	0.06	mg/l
Nitrite as N, dissolved	0	U	11/10/2014	U	04/07/2021	U	mg/l
Nitrogen, Ammonia	17	2.26	05/01/2023	0.39	10/04/2011	1.17	mg/l
Nitrogen, Organic	13	0.90	04/03/2019	0.10	03/23/2011	0.35	mg/l
Nitrogen, Total Kjeldahl	17	3.03	05/01/2023	0.60	03/30/2011	1.43	mg/l
pH, lab	67	8.90	03/16/2014	8.40	08/03/2024	8.67	units
Phosphate, total	17	3.08	05/06/2024	0.09	03/23/2011	1.07	mg/l
Phosphorus, total	17	1.00	05/06/2024	0.03	03/23/2011	0.35	mg/l
SAR in Water	66	200.00	11/06/2024	31.30	06/14/2011	94.60	none
Sulfate	51	156.00	09/11/2019	5.41	07/17/2018	35.04	mg/l
Sulfide	17	4.34	05/01/2023	1.41	01/24/2018	2.61	mg/l
Total Dissolved Solids	66	7,280.00	11/29/2022	740.00	11/30/2011	3,438.53	mg/l
Conductivity, Field	158	11,870	06/17/2024	719	03/23/2011	5,763	µmhos
pH, Field	130	9.10	06/15/2020	7.30	05/28/2015	8.29	units
Temperature (°C), Field	130	25.00	07/13/2016	16.35	05/17/2016	21.92	(°C)
Water Level, Field	N/A	N/A	N/A	N/A	N/A	N/A	Ft.

Parameters Metals	No. of Samples	High	Date	Low	Date	Average	Units
Aluminum, dissolved	17	0.05	03/23/2011	0.03	11/05/2015	0.04	mg/l
Arsenic, dissolved	17	0.0004	03/23/2017	0.0002	11/05/2015	0.0003	mg/l
Barium, dissolved	17	1.53	04/03/2019	0.03	01/24/2018	0.54	mg/l
Beryllium, dissolved	17	0.002	01/20/2011	U	01/20/2011	0.002	mg/l
Boron, dissolved	66	3.32	11/07/2023	0.36	10/04/2011	1.52	mg/l
Cadmium, dissolved	17	U	05/09/2022	U	10/04/2011	U	mg/l
Calcium, dissolved	66	14.10	01/24/2018	1.70	05/14/2019	3.21	mg/l
Chromium, dissolved	17	0.02	04/06/2016	0.02	04/06/2016	0.02	mg/l
Copper, dissolved	17	U	05/09/2022	U	10/04/2011	U	mg/l
Iron, dissolved	17	1.71	05/01/2023	0.05	03/23/2011	0.51	mg/l
Lead, dissolved	17	U	05/09/2022	U	10/04/2011	U	mg/l
Lithium, dissolved	17	0.27	05/09/2022	0.06	01/20/2011	0.14	mg/l
Magnesium, dissolved	66	13.00	04/10/2018	2.00	01/20/2011	6.53	mg/l
Manganese, dissolved	17	0.05	04/03/2019	0.01	03/23/2011	0.02	mg/l
Mercury, dissolved	17	U	05/09/2022	U	10/04/2011	U	mg/l
Molybdenum, dissolved	17	U	05/09/2022	U	10/04/2011	U	mg/l
Nickel, dissolved	17	0.02	07/11/2013	0.01	03/23/2011	0.02	mg/l
Potassium, dissolved	66	7.00	02/11/2020	0.40	11/01/2012	1.64	mg/l
Selenium, dissolved	17	U	05/09/2022	U	05/09/2022	U	mg/l
Silica, dissolved	66	12.80	11/05/2015	9.00	01/24/2018	11.42	mg/l
Sodium, dissolved	66	3,060.00	11/07/2023	279.00	06/14/2011	1,377.62	mg/l
Strontium, dissolved	66	2.67	01/24/2018	0.44	06/14/2011	1.39	mg/l
Vanadium, dissolved	17	U	05/09/2022	U	10/04/2011	U	mg/l
Zinc, dissolved	17	0.16	05/06/2024	0.01	11/05/2015	0.07	mg/l

Appx. Table A-12: WSW-3 Quarterly A-Groove Aquifer

Parameters Wet Chemistry	No. of Samples	High	Date	Low	Date	Average	Units
Bicarbonate as CaCO3	45	648.00	08/03/2024	459.00	07/17/2018	503.87	mg/l
Carbonate as CaCO3	45	220.00	11/05/2024	26.70	04/06/2016	61.57	mg/l
Total Alkalinity as CaCO3	45	825.00	11/05/2024	518.00	03/03/2021	565.49	mg/l
Bromide	6	1.54	03/23/2017	0.10	08/22/2014	0.94	mg/l
Cation-Anion Balance	45	13.30	01/24/2018	-7.70	07/08/2020	-1.16	%
Sum of Anions	45	22.00	11/05/2024	12.00	10/18/2016	13.87	meq/l
Sum of Cations	45	21.00	11/05/2024	12.00	08/22/2014	13.58	meq/l
Chemical Oxygen	3	196.00	04/06/2016	11.00	05/09/2022	76.33	mg/l
Chloride	45	144.00	11/05/2024	11.60	08/27/2015	29.61	mg/l
Conductivity, Lab	45	2,130	11/05/2024	1,100	08/16/2016	1,271	µmhos
Fluoride	45	19.80	08/22/2014	11.20	05/06/2024	17.36	mg/l
Hardness as CaCO3	45	238.00	01/24/2018	12.00	06/27/2017	19.88	mg/l
Nitrate as N, dissolved	1	0.09	08/22/2014	0.09	08/22/2014	0.09	mg/l
Nitrate/Nitrite as N,	1	0.25	08/22/2014	0.25	08/22/2014	0.25	mg/l
Nitrite as N, dissolved	1	0.16	08/22/2014	0.16	08/22/2014	0.16	mg/l
Nitrogen, Ammonia	11	0.65	05/06/2024	0.43	04/06/2016	0.49	mg/l
Nitrogen, Organic	3	0.40	08/22/2014	0.30	04/03/2019	0.37	mg/l
Nitrogen, Total Kjeldahl	10	0.80	08/22/2014	0.30	01/24/2018	0.59	mg/l
pH, lab	45	9.30	10/10/2019	8.20	08/03/2024	8.69	units
Phosphate, total	11	0.12	08/22/2014	0.05	05/09/2022	0.08	mg/l
Phosphorus, total	11	0.04	08/22/2014	0.02	05/09/2022	0.03	mg/l
SAR in Water	45	39.00	08/03/2024	7.60	01/24/2018	33.59	none
Sulfate	43	57.90	04/06/2016	11.60	01/27/2016	37.38	mg/l
Sulfide	11	6.93	05/09/2022	0.16	08/22/2014	2.59	mg/l
Total Dissolved Solids	45	1,180.00	11/05/2024	661.00	08/27/2015	747.40	mg/l
Conductivity, Field	112	2,152	12/02/2024	632	02/21/2019	1,301	µmhos
pH, Field	112	8.90	03/16/2016	7.60	04/06/2016	8.41	units
Temperature (°C), Field	112	23.40	07/17/2017	14.85	02/11/2020	21.48	(°C)
Water Level, Field	N/A	N/A	N/A	N/A	N/A	N/A	Ft.

Parameters Metals	No. of Samples	High	Date	Low	Date	Average	Units
Aluminum, dissolved	11	0.04	01/24/2018	0.00	08/22/2014	0.02	mg/l
Arsenic, dissolved	11	0.05	08/22/2014	0.00	03/23/2017	0.01	mg/l
Barium, dissolved	11	0.52	05/06/2024	0.03	01/24/2018	0.23	mg/l
Beryllium, dissolved	11	U	08/22/2014	U	08/22/2014	U	mg/l
Boron, dissolved	45	0.31	11/05/2024	0.21	04/06/2016	0.24	mg/l
Cadmium, dissolved	11	U	08/22/2014	U	08/22/2014	U	mg/l
Calcium, dissolved	44	4.03	11/05/2024	2.20	03/23/2017	2.64	mg/l
Chromium, dissolved	11	U	08/22/2014	U	08/22/2014	U	mg/l
Copper, dissolved	11	U	08/22/2014	U	08/22/2014	U	mg/l
Iron, dissolved	11	0.74	05/01/2023	0.05	03/23/2017	0.17	mg/l
Lead, dissolved	11	U	08/22/2014	U	08/22/2014	U	mg/l
Lithium, dissolved	11	0.13	04/06/2016	0.06	08/22/2014	0.08	mg/l
Magnesium, dissolved	44	4.55	11/05/2024	1.40	09/10/2019	1.98	mg/l
Manganese, dissolved	11	0.03	08/22/2014	0.01	04/06/2016	0.02	mg/l
Mercury, dissolved	11	U	08/22/2014	U	08/22/2014	U	mg/l
Molybdenum, dissolved	11	0.16	01/24/2018	0.07	08/22/2014	0.12	mg/l
Nickel, dissolved	11	0.01	04/06/2016	0.00	08/22/2014	0.01	mg/l
Potassium, dissolved	45	29.20	04/06/2016	0.20	10/18/2016	1.32	mg/l
Selenium, dissolved	11	U	08/22/2014	U	08/22/2014	U	mg/l
Silica, dissolved	45	13.50	07/08/2020	10.20	11/05/2024	12.44	mg/l
Sodium, dissolved	45	463.00	11/05/2024	258.00	05/14/2018	295.84	mg/l
Strontium, dissolved	45	1.17	11/05/2024	0.45	01/24/2018	0.61	mg/l
Vanadium, dissolved	11	U	08/22/2014	U	08/22/2014	U	mg/l
Zinc, dissolved	11	0.36	01/24/2018	0.02	08/22/2014	0.19	mg/l

Appx. Table A-13: WSW-4 Quarterly A-Groove Aquifer

Parameters Wet Chemistry	No. of Samples	High	Date	Low	Date	Average	Units
Bicarbonate as CaCO3	46	524.00	04/07/2021	385.00	11/05/2024	477.65	mg/l
Carbonate as CaCO3	47	537.00	09/25/2014	46.10	01/13/2020	79.89	mg/l
Total Alkalinity as	47	925.00	09/25/2014	511.00	06/09/2015	555.68	mg/l
Bromide	6	1.91	05/09/2022	0.09	08/25/2014	0.73	mg/l
Cation-Anion Balance	46	3.70	01/24/2018	-7.70	07/08/2020	-2.46	%
Sum of Anions	47	22.00	09/25/2014	13.00	06/09/2015	13.64	meq/l
Sum of Cations	47	19.00	09/25/2014	12.00	08/27/2015	12.98	meq/l
Chemical Oxygen	4	53.00	08/25/2014	13.00	04/06/2016	31.25	mg/l
Chloride	47	50.60	11/14/2018	7.87	10/05/2020	17.11	mg/l
Conductivity, Lab	47	2,810	09/25/2014	1,130	04/06/2016	1,249	µmhos
Fluoride	47	19.70	11/14/2018	5.11	09/25/2014	16.35	mg/l
Hardness as CaCO3	47	67.00	01/24/2018	11.00	03/05/2019	13.71	mg/l
Nitrate as N, dissolved	2	0.03	08/25/2014	0.00	09/25/2014	0.02	mg/l
Nitrate/Nitrite as N,	2	0.08	08/25/2014	0.00	09/25/2014	0.04	mg/l
Nitrite as N, dissolved	2	0.05	08/25/2014	0.01	09/25/2014	0.03	mg/l
Nitrogen, Ammonia	12	2.28	09/25/2014	0.35	05/01/2023	0.62	mg/l
Nitrogen, Organic	4	0.40	04/03/2019	0.00	09/25/2014	0.25	mg/l
Nitrogen, Total Kjeldahl	12	1.00	09/25/2014	0.30	03/23/2017	0.59	mg/l
pH, lab	47	11.70	09/25/2014	8.50	10/05/2020	8.81	units
Phosphate, total	12	0.28	09/25/2014	0.06	05/09/2022	0.10	mg/l
Phosphorus, total	12	0.09	09/25/2014	0.02	05/09/2022	0.03	mg/l
SAR in Water	47	44.00	09/25/2014	15.00	01/24/2018	35.17	none
Sulfate	47	130.00	09/25/2014	20.00	04/06/2016	51.50	mg/l
Sulfide	12	4.10	04/03/2019	0.10	09/25/2014	2.49	mg/l
Total Dissolved Solids	47	1,210.00	09/25/2014	687.00	08/15/2022	730.83	mg/l
Conductivity, Field	113	1,558	10/10/2019	1,073	04/06/2016	1,225	µmhos
pH, Field	113	9.40	01/13/2020	7.70	08/27/2015	8.54	units
Temperature (°C), Field	113	29.00	06/20/2016	13.80	04/19/2017	21.47	(°C)
Water Level, Field	N/A	N/A	N/A	N/A	N/A	N/A	Ft.
Parameters **Metals**	**No. of Samples**	**High**	**Date**	**Low**	**Date**	**Average**	**Units**
Aluminum, dissolved	12	0.42	09/25/2014	0.42	09/25/2014	0.42	mg/l
Arsenic, dissolved	12	0.01	09/25/2014	0.00	04/07/2021	0.00	mg/l
Barium, dissolved	12	0.23	04/06/2016	0.02	09/25/2014	0.09	mg/l
Beryllium, dissolved	12	U	09/25/2014	U	04/07/2021	U	mg/l
Boron, dissolved	47	0.44	09/25/2014	0.18	08/27/2015	0.21	mg/l
Cadmium, dissolved	12	U	09/25/2014	U	04/07/2021	U	mg/l
Calcium, dissolved	47	24.70	01/24/2018	1.89	11/07/2023	2.68	mg/l
Chromium, dissolved	12	U	09/25/2014	U	04/07/2021	U	mg/l
Copper, dissolved	12	U	09/25/2014	U	04/07/2021	U	mg/l
Iron, dissolved	12	1.63	04/03/2019	0.02	03/23/2017	0.33	mg/l
Lead, dissolved	12	U	09/25/2014	U	04/07/2021	U	mg/l
Lithium, dissolved	12	0.14	04/07/2021	0.07	04/06/2016	0.12	mg/l
Magnesium, dissolved	47	2.00	08/27/2015	0.30	09/25/2014	1.70	mg/l
Manganese, dissolved	12	0.01	01/24/2018	U	05/01/2023	0.01	mg/l
Mercury, dissolved	12	U	09/25/2014	U	04/07/2021	U	mg/l
Molybdenum, dissolved	12	0.04	01/24/2018	0.02	09/25/2014	0.03	mg/l
Nickel, dissolved	12	U	08/25/2014	U	09/25/2014	U	mg/l
Potassium, dissolved	47	18.30	09/25/2014	0.20	05/14/2018	0.96	mg/l
Selenium, dissolved	12	0.0042	04/07/2021	0.0003	04/03/2019	0.0012	mg/l
Silica, dissolved	47	172.00	09/25/2014	8.90	01/24/2018	15.22	mg/l
Sodium, dissolved	47	416.00	09/25/2014	262.00	07/08/2020	286.00	mg/l
Strontium, dissolved	47	7.97	01/24/2018	0.37	11/05/2024	0.58	mg/l
Vanadium, dissolved	12	U	09/25/2014	U	04/07/2021	U	mg/l
Zinc, dissolved	12	0.02	09/25/2014	0.02	09/25/2014	0.02	mg/l

Appx. Table A-14: 89-1 Quarterly B-Groove Aquifer

Parameters Wet Chemistry	No. of Samples	High	Date	Low	Date	Average	Units
Bicarbonate as CaCO3	199	762.00	03/25/1994	144.00	07/30/1990	609.31	mg/l
Carbonate as CaCO3	199	489.00	11/26/2024	25.00	07/01/1997	102.50	mg/l
Total Alkalinity as CaCO3	199	830.00	07/31/1991	200.00	07/30/1990	711.93	mg/l
Bromide	28	10.00	06/26/1991	0.06	07/01/1997	1.15	mg/l
Cation-Anion Balance	194	24.10	04/16/2002	-10.30	01/13/2021	-0.38	%
Sum of Anions	193	18.00	06/14/2017	4.29	07/30/1990	15.74	meq/l
Sum of Cations	193	18.20	04/11/2006	4.38	07/30/1990	15.43	meq/l
Chemical Oxygen	30	420.00	06/25/2007	30.00	03/30/1990	81.41	mg/l
Chloride	198	70.50	06/14/2017	6.00	09/27/1990	15.09	mg/l
Conductivity, Lab	191	1,850.00	04/24/1991	1,000.00	05/20/1993	1,391.66	µmhos
Fluoride	193	38.20	02/24/1992	0.20	09/29/1994	23.67	mg/l
Hardness as CaCO3	197	65.00	09/27/1990	0.00	07/30/1990	11.24	mg/l
Nitrate as N, dissolved	30	16.50	06/25/2007	0.02	06/26/1991	1.01	mg/l
Nitrate/Nitrite as N,	30	17.00	06/25/2007	0.02	06/26/1991	1.07	mg/l
Nitrite as N, dissolved	31	0.55	06/25/2007	0.01	03/30/1990	0.13	mg/l
Nitrogen, Ammonia	30	9.23	12/26/2018	0.06	07/30/1990	1.85	mg/l
Nitrogen, Organic	29	29.10	06/26/1991	0.10	06/15/1992	5.08	mg/l
Nitrogen, Total Kjeldahl	30	30.10	06/26/1991	0.80	06/15/1992	6.81	mg/l
pH, lab	194	9.80	12/20/1994	8.10	10/28/2002	8.87	units
Phosphate, total	26	155.00	06/25/2007	0.06	07/18/1995	13.46	mg/l
Phosphorus, total	31	2.90	09/27/1990	0.02	07/02/1998	0.17	mg/l
SAR in Water	169	158.62	06/26/1990	16.50	09/27/1990	48.02	none
Sulfate	197	140.00	10/25/1990	0.00	08/16/2017	20.10	mg/l
Sulfide	26	2.10	07/30/1990	0.02	07/27/2001	0.45	mg/l
Total Dissolved Solids	199	1,100.00	10/21/1989	446.00	07/30/1990	861.75	mg/l
Conductivity, Field	216	1,683.00	06/05/2012	925.00	08/02/2006	1,343.35	µmhos
pH, Field	216	10.12	07/29/2009	7.10	06/10/2020	9.00	units
Temperature (°C), Field	122	19.00	07/31/1991	7.50	11/26/2024	12.50	(°C)
Water Level, Field	106	500.70	06/25/2014	432.37	06/25/2014	473.02	Ft.

Parameters Metals	No. of Samples	High	Date	Low	Date	Average	Units
Aluminum, dissolved	30	1.54	03/30/1990	0.04	07/01/1997	0.24	mg/l
Arsenic, dissolved	30	0.30	10/21/1989	0.00	12/03/2012	0.02	mg/l
Barium, dissolved	30	0.43	08/02/2006	0.02	12/26/2018	0.18	mg/l
Beryllium, dissolved	29	0.01	06/26/1991	U	12/26/2018	0.01	mg/l
Boron, dissolved	194	3.30	03/25/1991	0.35	01/27/2004	0.68	mg/l
Cadmium, dissolved	29	0.013	10/21/1989	U	12/26/2018	0.01	mg/l
Calcium, dissolved	191	13.00	09/27/1990	0.50	03/16/2010	2.30	mg/l
Chromium, dissolved	29	0.01	06/26/1991	U	12/26/2018	0.01	mg/l
Copper, dissolved	30	0.02	06/25/2007	0.01	03/30/1990	0.01	mg/l
Iron, dissolved	30	0.93	03/30/1990	0.01	07/07/1999	0.17	mg/l
Lead, dissolved	29	0.10	10/21/1989	0.02	06/26/1991	0.06	mg/l
Lithium, dissolved	29	0.20	12/27/1990	0.06	03/30/1990	0.13	mg/l
Magnesium, dissolved	193	8.00	09/27/1990	0.30	03/16/2010	1.38	mg/l
Manganese, dissolved	29	0.07	06/25/2007	0.01	07/01/1997	0.03	mg/l
Mercury, dissolved	30	0.001	06/15/1992	0.0001	06/26/1991	0.0005	mg/l
Molybdenum, dissolved	29	0.60	10/21/1989	0.01	07/27/2001	0.14	mg/l
Nickel, dissolved	30	0.03	10/21/1989	0.01	12/03/2012	0.02	mg/l
Potassium, dissolved	193	13.00	03/25/1991	0.60	06/10/2020	1.26	mg/l
Selenium, dissolved	30	0.001	10/21/1989	U	12/03/2012	U	mg/l
Silica, dissolved	194	35.90	10/21/1989	1.80	06/11/2019	16.78	mg/l
Sodium, dissolved	194	408.00	04/11/2006	102.00	12/27/1990	347.97	mg/l
Strontium, dissolved	194	0.83	03/14/2012	0.06	10/21/1989	0.50	mg/l
Vanadium, dissolved	30	0.03	06/26/1991	0.01	10/21/1989	0.02	mg/l
Zinc, dissolved	30	0.07	07/29/2009	0.01	03/30/1990	0.02	mg/l

Appx. Table A-15: 90-3 Quarterly B-Groove Aquifer

Parameters Wet Chemistry	No. of Samples	High	Date	Low	Date	Average	Units
Bicarbonate as CaCO3	138	1,790.00	09/14/2004	419.00	03/23/2005	764.86	mg/l
Carbonate as CaCO3	138	451.00	11/25/2024	4.00	06/16/1997	93.81	mg/l
Total Alkalinity as CaCO3	138	1,790.00	09/14/2004	680.00	06/15/2014	854.62	mg/l
Bromide	14	1.50	07/21/1992	0.10	01/29/1991	0.44	mg/l
Cation-Anion Balance	137	36.90	08/10/2008	-33.50	09/14/2004	-1.68	%
Sum of Anions	128	37.50	09/14/2004	15.00	06/26/2002	18.96	meq/l
Sum of Cations	128	39.50	08/10/2008	11.10	11/23/2010	18.24	meq/l
Chemical Oxygen Demand	21	210.00	09/15/2007	10.00	08/14/1995	75.00	mg/l
Chloride	138	293.00	06/14/2008	9.75	01/16/2018	24.80	mg/l
Conductivity, Lab	135	2,200.00	05/16/2007	1,280.00	07/21/1992	1,603.88	µmhos
Fluoride	138	98.00	03/24/1999	9.00	12/11/2001	22.80	mg/l
Hardness as CaCO3	134	47.00	10/09/2019	1.00	10/25/1990	15.18	mg/l
Nitrate as N, dissolved	26	0.27	06/24/2004	0.04	01/29/1991	0.11	mg/l
Nitrate/Nitrite as N,	26	0.27	06/24/2004	0.05	01/29/1991	0.12	mg/l
Nitrite as N, dissolved	26	0.03	08/16/1994	0.01	01/29/1991	0.02	mg/l
Nitrogen, Ammonia	25	10.90	08/16/1996	0.83	06/28/2006	1.63	mg/l
Nitrogen, Organic	25	12.00	09/15/2007	0.20	01/29/1991	3.56	mg/l
Nitrogen, Total Kjeldahl	25	13.00	09/15/2007	0.50	08/14/1995	4.26	mg/l
pH, lab	135	9.00	04/24/1991	7.40	06/16/1997	8.69	units
Phosphate, total	21	155.00	06/28/2006	0.06	05/08/2020	8.29	mg/l
Phosphorus, total	24	3.63	08/01/1990	0.02	06/28/2006	0.27	mg/l
SAR in Water	129	198.04	10/25/1990	0.08	04/24/1991	47.98	none
Sulfate	94	333.00	01/20/1992	0.60	09/29/1997	49.26	mg/l
Sulfide	19	6.21	08/01/1990	0.03	06/28/2006	0.76	mg/l
Total Dissolved Solids	136	1,490.00	08/10/2008	813.00	11/23/2010	1,014.48	mg/l
Conductivity, Field	196	2,200.00	05/16/2007	1,135.00	06/16/1997	1,559.30	µmhos
pH, Field	196	10.60	12/16/2002	7.00	10/09/2019	8.66	units
Temperature (°C), Field	137	19.70	05/01/2002	7.90	02/09/2021	12.33	(°C)
Water Level, Field	116	547.50	08/07/2023	507.30	01/15/2016	531.29	Ft.

Parameters Metals	No. of Samples	High	Date	Low	Date	Average	Units
Aluminum, dissolved	26	9.47	06/16/1997	0.04	06/14/2000	1.73	mg/l
Arsenic, dissolved	26	0.0180	08/01/1990	0.0003	11/27/2012	0.0034	mg/l
Barium, dissolved	26	0.96	06/16/1997	0.03	08/08/1990	0.36	mg/l
Beryllium, dissolved	26	U	06/16/1997	U	08/08/1990	U	mg/l
Boron, dissolved	139	0.93	03/18/2004	0.31	02/21/1994	0.74	mg/l
Cadmium, dissolved	26	0.03	07/21/1993	U	08/08/1990	U	mg/l
Calcium, dissolved	139	15.00	10/09/2019	0.80	12/12/2008	2.55	mg/l
Chromium, dissolved	26	U	06/16/1997	U	08/08/1990	U	mg/l
Copper, dissolved	26	0.40	07/31/1991	0.01	06/24/2004	0.21	mg/l
Iron, dissolved	26	12.10	06/16/1997	0.01	06/16/2005	1.65	mg/l
Lead, dissolved	26	0.07	06/16/1997	0.04	07/21/1992	0.06	mg/l
Lithium, dissolved	25	0.15	06/09/1999	0.04	07/21/1993	0.13	mg/l
Magnesium, dissolved	139	8.00	10/30/1991	0.90	12/12/2008	2.20	mg/l
Manganese, dissolved	25	0.08	06/16/1997	0.01	06/28/2006	0.02	mg/l
Mercury, dissolved	26	0.017	07/31/1991	0.0002	08/14/1995	0.0060	mg/l
Molybdenum, dissolved	26	0.14	08/01/1990	0.02	08/16/1996	0.07	mg/l
Nickel, dissolved	26	0.02	01/29/1991	0.01	09/21/2010	0.02	mg/l
Potassium, dissolved	139	12.00	07/31/1991	1.00	05/23/1994	1.64	mg/l
Selenium, dissolved	26	0.001	08/08/1990	U	8/16/1996	0.001	mg/l
Silica, dissolved	139	122.00	10/30/1991	0.30	04/24/1991	19.27	mg/l
Sodium, dissolved	139	882.00	08/10/2008	247.00	11/23/2010	408.45	mg/l
Strontium, dissolved	139	1.30	04/20/1992	0.06	06/14/2000	0.70	mg/l
Vanadium, dissolved	26	U	06/16/1997	U	08/08/1990	U	mg/l
Zinc, dissolved	26	0.53	07/31/1991	0.01	08/01/1990	0.09	mg/l

Appx. Table A-16: BG-4 Monthly B-Groove Aquifer

Parameters Wet Chemistry	No. of Samples	High	Date	Low	Date	Average	Units
Bicarbonate as CaCO3	264	899.00	10/28/2002	416.00	12/02/2024	693.81	mg/l
Carbonate as CaCO3	264	485.00	12/02/2024	16.00	11/21/2008	100.55	mg/l
Total Alkalinity as CaCO3	264	984.00	05/07/2018	612.00	04/17/2002	790.56	mg/l
Bromide	33	0.10	08/12/2004	U	08/02/2006	0.10	mg/l
Cation-Anion Balance	263	13.40	08/02/2006	-12.80	05/07/2018	-2.31	%
Sum of Anions	263	22.00	05/07/2018	12.60	08/02/2006	17.92	meq/l
Sum of Cations	263	20.00	05/14/2020	13.60	04/29/2010	17.11	meq/l
Chemical Oxygen Demand	33	400.00	08/22/2002	10.00	08/02/2006	71.55	mg/l
Chloride	263	116.00	11/03/2020	2.00	08/02/2006	32.31	mg/l
Conductivity, Lab	263	1,960	01/12/2021	1,160	08/02/2006	1,583	µmhos
Fluoride	263	26.90	12/16/2003	2.09	06/06/2017	21.85	mg/l
Hardness as CaCO3	262	47.00	09/30/2008	5.00	11/27/2002	15.90	mg/l
Nitrate as N, dissolved	32	2.06	09/28/2006	0.03	11/06/2014	1.05	mg/l
Nitrate/Nitrite as N,	32	2.08	09/28/2006	0.02	05/18/2006	0.59	mg/l
Nitrite as N, dissolved	32	0.21	08/02/2006	0.01	05/18/2006	0.07	mg/l
Nitrogen, Ammonia	33	1.61	09/30/2008	0.43	05/14/2020	0.92	mg/l
Nitrogen, Organic	31	27.00	08/22/2002	0.50	08/02/2006	4.46	mg/l
Nitrogen, Total Kjeldahl	33	28.00	08/22/2002	1.00	04/13/2016	4.73	mg/l
pH, lab	264	9.20	05/21/2009	3.80	12/11/2024	8.74	units
Phosphate, total	29	155.00	05/18/2006	0.12	08/18/2010	36.21	mg/l
Phosphorus, total	33	0.32	05/14/2020	0.03	08/02/2006	0.08	mg/l
SAR in Water	262	73.30	12/16/2002	23.40	09/30/2008	42.79	none
Sulfate	261	126.00	09/13/2023	0.00	09/02/2015	18.02	mg/l
Sulfide	25	0.80	08/22/2002	0.03	09/28/2006	0.24	mg/l
Total Dissolved Solids	263	1,110	10/06/2020	789	08/02/2006	948	mg/l
Conductivity, Field	278	2,874	02/10/2016	1,101	10/05/2006	1,565	µmhos
pH, Field	277	10.01	07/29/2009	6.90	11/04/2019	8.55	units
Temperature (°C), Field	274	22.70	08/02/2016	5.80	01/26/2010	12.09	(°C)
Water Level, Field	270	547.26	11/10/2010	468.30	07/01/2002	506.49	Ft.
Parameters Metals	**No. of Samples**	**High**	**Date**	**Low**	**Date**	**Average**	**Units**
Aluminum, dissolved	35	1.26	05/14/2020	0.03	05/18/2006	0.20	mg/l
Arsenic, dissolved	35	0.0009	09/30/2008	0.003	05/04/2021	0.005	mg/l
Barium, dissolved	35	0.28	12/11/2024	0.00	07/06/2017	0.05	mg/l
Beryllium, dissolved	35	U	08/22/2002	U	05/04/2021	U	mg/l
Boron, dissolved	264	0.97	07/12/2007	0.34	08/21/2003	0.73	mg/l
Cadmium, dissolved	35	U	08/22/2002	U	05/04/2021	U	mg/l
Calcium, dissolved	265	14.30	11/05/2021	1.10	12/16/2002	3.04	mg/l
Chromium, dissolved	35	0.02	09/28/2006	U	05/04/2021	U	mg/l
Copper, dissolved	35	U	08/22/2002	U	05/04/2021	U	mg/l
Iron, dissolved	35	2.08	05/14/2020	0.01	08/12/2004	0.25	mg/l
Lead, dissolved	35	0.04	05/06/2019	U	05/04/2021	U	mg/l
Lithium, dissolved	35	0.17	07/03/2023	0.08	08/21/2003	0.14	mg/l
Magnesium, dissolved	264	4.40	09/30/2008	0.60	11/27/2002	2.01	mg/l
Manganese, dissolved	33	0.19	09/30/2008	0.01	03/14/2008	0.03	mg/l
Mercury, dissolved	35	0.0004	09/28/2006	U	05/04/2021	U	mg/l
Molybdenum, dissolved	35	0.12	08/22/2002	0.01	08/18/2010	0.04	mg/l
Nickel, dissolved	35	0.03	09/30/2008	0.01	12/03/2012	0.02	mg/l
Potassium, dissolved	265	6.20	07/24/2002	0.60	11/21/2008	1.53	mg/l
Selenium, dissolved	35	0.0001	05/06/2019	U	05/04/2021	U	mg/l
Silica, dissolved	264	29.30	04/17/2002	5.50	08/21/2003	14.67	mg/l
Sodium, dissolved	265	451.00	08/03/2021	302.00	09/11/2013	379.15	mg/l
Strontium, dissolved	264	0.93	11/03/2020	0.06	04/27/2004	0.55	mg/l
Vanadium, dissolved	35	U	08/22/2002	U	05/04/2021	U	mg/l
Zinc, dissolved	35	0.13	08/30/2008	0.01	08/22/2002	0.04	mg/l

Appx. Table A-17: BG-6 Monthly B-Groove Aquifer

Parameters Wet Chemistry	No. of Samples	High	Date	Low	Date	Average	Units
Bicarbonate as CaCO3	175	869.00	12/18/2013	420.00	12/03/2024	673.85	mg/l
Carbonate as CaCO3	175	391.00	12/03/2024	36.90	04/08/2024	91.36	mg/l
Total Alkalinity as CaCO3	175	1,040.00	12/18/2013	633.00	06/11/2014	763.15	mg/l
Bromide	17	1.50	07/21/1992	0.10	01/29/1991	0.44	mg/l
Cation-Anion Balance	174	5.90	04/09/2014	-9.70	01/12/2021	-2.54	%
Sum of Anions	174	23.00	12/18/2013	14.30	06/11/2014	16.93	meq/l
Sum of Cations	174	20.00	12/18/2013	13.10	04/11/2011	16.08	meq/l
Chemical Oxygen Demand	16	800.00	01/13/2011	10.00	07/07/2022	200.77	mg/l
Chloride	174	70.00	12/08/2010	10.00	01/20/2011	15.74	mg/l
Conductivity, Lab	175	8,820	06/03/2019	1,320	07/05/2017	1,545	µmhos
Fluoride	174	27.80	06/03/2019	14.60	09/17/2012	22.95	mg/l
Hardness as CaCO3	174	18.00	10/03/2023	10.00	09/11/2013	12.75	mg/l
Nitrate as N, dissolved	17	0.03	12/27/2012	UH	01/29/1991	UH	mg/l
Nitrate/Nitrite as N,	17	0.03	12/27/2012	UH	01/29/1991	UH	mg/l
Nitrite as N, dissolved	17	1.50	07/21/1992	0.10	01/29/1991	0.44	mg/l
Nitrogen, Ammonia	16	1.01	12/11/2024	0.71	01/20/2011	0.84	mg/l
Nitrogen, Organic	16	8.30	01/13/2011	0.25	07/07/2022	2.30	mg/l
Nitrogen, Total Kjeldahl	16	9.00	01/13/2011	0.81	07/03/2023	2.67	mg/l
pH, lab	175	9.40	12/08/2010	7.80	09/11/2024	8.75	units
Phosphate, total	16	77.50	08/11/2011	0.08	07/03/2023	4.96	mg/l
Phosphorus, total	16	0.09	07/10/2013	0.03	07/03/2023	0.04	mg/l
SAR in Water	174	56.60	12/18/2013	37.00	03/07/2022	44.22	none
Sulfate	174	20.00	01/13/2011	3.45	11/02/2016	12.06	mg/l
Sulfide	16	0.10	01/20/2011	0.03	07/10/2013	0.05	mg/l
Total Dissolved Solids	174	1,130	12/18/2013	799	05/14/2014	885	mg/l
Conductivity, Field	170	2,413	09/17/2012	1,232	06/05/2017	1,472	µmhos
pH, Field	168	9.58	03/05/2012	6.60	11/04/2019	8.37	units
Temperature (°C), Field	170	23.00	09/05/2017	4.62	11/22/2011	11.96	(°C)
Water Level, Field	169	517.10	08/07/2017	493.80	12/03/2024	506.39	Ft.

Parameters Metals	No. of Samples	High	Date	Low	Date	Average	Units
Aluminum, dissolved	17	0.04	01/13/2011	U	08/08/1990	U	mg/l
Arsenic, dissolved	17	0.0619	01/13/2011	0.0002	04/12/2016	0.0049	mg/l
Barium, dissolved	17	0.39	01/13/2011	0.31	07/05/2017	0.34	mg/l
Beryllium, dissolved	17	U	11/10/2014	U	08/08/1990	U	mg/l
Boron, dissolved	174	0.91	12/18/2013	0.62	12/08/2010	0.72	mg/l
Cadmium, dissolved	17	U	06/16/1997	U	08/08/1990	U	mg/l
Calcium, dissolved	174	4.10	03/07/2022	2.00	09/11/2013	2.45	mg/l
Chromium, dissolved	17	0.01	12/31/2018	U	08/08/1990	U	mg/l
Copper, dissolved	17	0.04	05/06/2019	U	08/08/1990	U	mg/l
Iron, dissolved	17	0.19	12/31/2018	0.02	12/04/2012	0.07	mg/l
Lead, dissolved	17	0.05	12/04/2012	U	08/08/1990	U	mg/l
Lithium, dissolved	17	0.13	01/13/2011	0.11	07/05/2017	0.12	mg/l
Magnesium, dissolved	174	2.45	10/03/2023	1.30	12/08/2010	1.60	mg/l
Manganese, dissolved	17	0.009	01/13/2011	U	08/08/1990	U	mg/l
Mercury, dissolved	18	U	06/16/1997	U	08/08/1990	U	mg/l
Molybdenum, dissolved	17	0.06	01/13/2011	U	08/08/1990	U	mg/l
Nickel, dissolved	17	U	06/16/1997	U	08/08/1990	U	mg/l
Potassium, dissolved	174	2.10	12/08/2010	0.60	11/02/2016	0.95	mg/l
Selenium, dissolved	17	U	06/16/1997	U	08/08/1990	U	mg/l
Silica, dissolved	174	17.80	08/03/2021	1.10	12/08/2010	15.56	mg/l
Sodium, dissolved	174	439.00	12/18/2013	292.00	04/11/2011	357.37	mg/l
Strontium, dissolved	174	0.83	09/07/2014	0.38	12/08/2010	0.70	mg/l
Vanadium, dissolved	17	U	06/16/1997	U	08/08/1990	U	mg/l
Zinc, dissolved	17	0.12	07/03/2023	0.01	12/04/2012	0.04	mg/l

Appx. Table A-18: BG-7 Annual B-Groove Aquifer

Parameters Wet Chemistry	No. of Samples	High	Date	Low	Date	Average	Units
Bicarbonate as CaCO3	11	912	06/02/2020	501	12/15/2015	722	mg/l
Carbonate as CaCO3	11	323	11/18/2024	24	06/12/2023	179	mg/l
Total Alkalinity as CaCO3	11	999	11/18/2024	808	12/15/2015	901	mg/l
Bromide	11	0.14	10/18/2014	0.13	09/28/2017	0.13	mg/l
Cation-Anion Balance	11	2.40	06/25/2019	-5.00	11/18/2024	-1.29	%
Sum of Anions	11	24.00	10/18/2014	20.00	06/25/2019	21.82	meq/l
Sum of Cations	11	24.00	10/18/2014	19.00	06/03/2022	21.27	meq/l
Chemical Oxygen Demand	11	30.00	06/25/2019	10.00	06/02/2020	20.60	mg/l
Chloride	11	201	12/15/2015	14	06/12/2023	92	mg/l
Conductivity, Lab	11	2,340	10/18/2014	761	06/12/2023	1,895	µmhos
Fluoride	11	23.70	06/09/2021	18.20	12/15/2015	20.38	mg/l
Hardness as CaCO3	11	13.00	10/18/2014	11.00	04/05/2016	12.17	mg/l
Nitrate as N, dissolved	11	0.02	10/18/2014	UH	04/05/2016	UH	mg/l
Nitrate/Nitrite as N,	11	0.02	10/18/2014	UH	04/05/2016	UH	mg/l
Nitrite as N, dissolved	11	0.01	12/15/2015	UH	04/05/2016	UH	mg/l
Nitrogen, Ammonia	11	1.22	10/18/2014	0.80	06/12/2023	0.99	mg/l
Nitrogen, Organic	11	6.00	11/18/2024	0.20	10/18/2014	1.26	mg/l
Nitrogen, Total Kjeldahl	11	6.90	11/18/2024	0.85	06/03/2022	1.93	mg/l
pH, lab	11	9.60	12/15/2015	8.20	06/12/2023	8.93	units
Phosphate, total	11	0.40	12/15/2015	0.06	06/09/2021	0.14	mg/l
Phosphorus, total	11	0.13	12/15/2015	0.02	06/09/2021	0.05	mg/l
SAR in Water	11	66	04/05/2016	51	11/18/2024	59	none
Sulfate	11	40	10/18/2014	5	06/20/2018	16	mg/l
Sulfide	11	0.15	06/25/2019	0.02	06/02/2020	0.08	mg/l
Total Dissolved Solids	11	1,350	10/18/2014	1,050	06/03/2022	1,161	mg/l
Conductivity, Field	12	2,575	12/15/2015	1,594	10/25/2018	1,950	µmhos
pH, Field	12	9.40	06/20/2018	8.00	06/02/2020	8.64	units
Temperature (°C), Field	12	22.50	10/18/2014	11.49	10/25/2018	14.56	(°C)
Water Level, Field	12	492.30	11/18/2024	468.00	06/12/2023	476.92	Ft.

Parameters Metals	No. of Samples	High	Date	Low	Date	Average	Units
Aluminum, dissolved	11	0.08	10/18/2014	0.04	04/05/2016	0.07	mg/l
Arsenic, dissolved	11	0.03	10/18/2014	0.00	09/28/2017	0.01	mg/l
Barium, dissolved	11	0.40	06/09/2021	0.02	12/15/2015	0.23	mg/l
Beryllium, dissolved	11	U	10/18/2014	U	06/12/2023	U	mg/l
Boron, dissolved	11	0.84	06/12/2023	0.56	12/15/2015	0.72	mg/l
Cadmium, dissolved	11	U	10/18/2014	U	06/12/2023	U	mg/l
Calcium, dissolved	11	3.60	10/18/2014	1.40	06/20/2018	2.31	mg/l
Chromium, dissolved	11	U	10/18/2014	U	06/12/2023	U	mg/l
Copper, dissolved	11	U	10/18/2014	U	06/12/2023	U	mg/l
Iron, dissolved	11	0.36	09/28/2017	0.06	12/15/2015	0.16	mg/l
Lead, dissolved	11	U	10/18/2014	U	06/12/2023	U	mg/l
Lithium, dissolved	11	0.17	04/05/2016	0.09	06/02/2020	0.12	mg/l
Magnesium, dissolved	11	1.90	09/28/2017	1.00	10/18/2014	1.61	mg/l
Manganese, dissolved	11	0.02	09/28/2017	0.01	10/18/2014	0.01	mg/l
Mercury, dissolved	11	U	10/18/2014	U	06/12/2023	U	mg/l
Molybdenum, dissolved	11	0.14	10/18/2014	0.05	06/20/2018	0.09	mg/l
Nickel, dissolved	11	U	10/18/2014	U	06/12/2023	U	mg/l
Potassium, dissolved	11	14.50	10/18/2014	0.90	06/25/2019	5.88	mg/l
Selenium, dissolved	11	U	10/18/2014	U	06/12/2023	U	mg/l
Silica, dissolved	11	18.90	10/18/2014	0.90	12/15/2015	9.52	mg/l
Sodium, dissolved	11	536	10/18/2014	425	11/18/2024	470	mg/l
Strontium, dissolved	11	0.66	06/25/2019	0.16	12/15/2015	0.45	mg/l
Vanadium, dissolved	11	0.01	10/18/2014	U	06/12/2023	U	mg/l
Zinc, dissolved	11	0.10	11/18/2024	0.04	12/15/2015	0.07	mg/l

Appx. Table A-19: BG-10 Quarterly B-Groove Aquifer

Parameters Wet Chemistry	No. of Samples	High	Date	Low	Date	Average	Units
Bicarbonate as CaCO3	17	599	08/04/2021	24	05/20/2024	441	mg/l
Carbonate as CaCO3	17	709	05/20/2024	192	09/10/2021	305	mg/l
Total Alkalinity as CaCO3	17	802	08/04/2021	702	01/29/2024	747	mg/l
Bromide	3	U	08/04/2021	U	09/10/2021	U	mg/l
Cation-Anion Balance	17	10.50	08/20/2024	-50.00	11/27/2023	-4.82	%
Sum of Anions	17	45.00	11/27/2023	16.00	06/03/2022	18.47	meq/l
Sum of Cations	17	21.00	08/20/2024	15.00	06/03/2022	16.12	meq/l
Chemical Oxygen Demand	3	247.00	08/04/2021	16.00	09/10/2021	98.67	mg/l
Chloride	17	1,070	11/27/2023	21	05/20/2024	89	mg/l
Conductivity, Lab	17	1,610	09/03/2021	1,300	05/20/2024	1,500	µmhos
Fluoride	17	23.80	08/20/2024	15.00	10/14/2024	19.88	mg/l
Hardness as CaCO3	17	88.00	08/04/2021	14.00	06/03/2022	23.24	mg/l
Nitrate as N, dissolved	3	UH	08/04/2021	UH	09/10/2021	UH	mg/l
Nitrate/Nitrite as N,	3	UH	08/04/2021	UH	09/10/2021	UH	mg/l
Nitrite as N, dissolved	3	UH	08/04/2021	UH	09/10/2021	UH	mg/l
Nitrogen, Ammonia	3	1.24	09/03/2021	0.82	08/04/2021	1.07	mg/l
Nitrogen, Organic	3	0.93	08/04/2021	0.20	09/10/2021	0.48	mg/l
Nitrogen, Total Kjeldahl	3	1.75	08/04/2021	1.38	09/10/2021	1.55	mg/l
pH, lab	17	9.70	09/03/2021	9.20	08/04/2021	9.38	units
Phosphate, total	3	6.30	08/04/2021	1.01	09/10/2021	3.34	mg/l
Phosphorus, total	3	2.02	08/04/2021	0.33	09/10/2021	1.08	mg/l
SAR in Water	17	41	03/14/2022	16.00	08/04/2021	36	none
Sulfate	17	18.30	08/20/2024	U	09/10/2021	U	mg/l
Sulfide	3	0.09	09/10/2021	0.07	09/03/2021	0.08	mg/l
Total Dissolved Solids	17	1,880	11/27/2023	810	10/14/2024	933	mg/l
Conductivity, Field	20	1,620	07/23/2021	1,383	08/15/2023	1,465	µmhos
pH, Field	20	9.53	11/27/2023	7.04	07/23/2021	8.98	units
Temperature (°C), Field	20	25.50	07/23/2021	10.50	11/19/2024	15.87	(°C)
Water Level, Field	15	541.50	11/27/2023	441.60	03/14/2022	456.29	Ft.

Parameters Metals	No. of Samples	High	Date	Low	Date	Average	Units
Aluminum, dissolved	3	U	08/04/2021	U	09/10/2021	U	mg/l
Arsenic, dissolved	3	0.01	08/04/2021	0.00	09/10/2021	0.00	mg/l
Barium, dissolved	3	0.40	09/10/2021	0.07	08/04/2021	0.24	mg/l
Beryllium, dissolved	3	U	08/04/2021	U	09/10/2021	U	mg/l
Boron, dissolved	17	0.82	08/04/2021	0.39	08/20/2024	0.72	mg/l
Cadmium, dissolved	3	U	08/04/2021	U	09/10/2021	U	mg/l
Calcium, dissolved	17	17.40	08/04/2021	2.41	05/20/2024	4.37	mg/l
Chromium, dissolved	3	U	08/04/2021	U	09/10/2021	U	mg/l
Copper, dissolved	3	U	08/04/2021	U	09/10/2021	U	mg/l
Iron, dissolved	3	1.06	09/03/2021	0.45	09/10/2021	0.66	mg/l
Lead, dissolved	3	U	08/04/2021	U	09/10/2021	U	mg/l
Lithium, dissolved	3	0.26	08/04/2021	0.23	09/10/2021	0.24	mg/l
Magnesium, dissolved	17	10.80	08/04/2021	1.81	09/08/2022	2.97	mg/l
Manganese, dissolved	3	0.03	08/04/2021	0.02	09/10/2021	0.02	mg/l
Mercury, dissolved	3	U	08/04/2021	U	09/10/2021	U	mg/l
Molybdenum, dissolved	3	0.02	08/04/2021	0.02	08/04/2021	0.02	mg/l
Nickel, dissolved	3	U	08/04/2021	U	09/10/2021	U	mg/l
Potassium, dissolved	17	8.03	09/03/2021	3.57	10/14/2024	4.94	mg/l
Selenium, dissolved	3	0.01	09/03/2021	0.00	08/04/2021	0.01	mg/l
Silica, dissolved	17	15.80	08/04/2021	3.30	03/14/2022	5.14	mg/l
Sodium, dissolved	17	439	08/20/2024	327	10/14/2024	351	mg/l
Strontium, dissolved	17	0.94	08/20/2024	0.54	08/04/2021	0.63	mg/l
Vanadium, dissolved	3	U	08/04/2021	U	09/10/2021	U	mg/l
Zinc, dissolved	3	U	08/04/2021	U	09/10/2021	U	mg/l

Appx. Table A-20: BG-11 Quarterly B-Groove Aquifer

Parameters Wet Chemistry	No. of Samples	High	Date	Low	Date	Average	Units
Bicarbonate as CaCO3	24	1,160	04/30/2024	683	03/05/2021	820	mg/l
Carbonate as CaCO3	24	606	12/02/2024	63	03/16/2021	170	mg/l
Total Alkalinity as CaCO3	24	1,560	12/02/2024	830	05/03/2021	989	mg/l
Bromide	4	U	03/05/2021	U	05/03/2021	U	mg/l
Cation-Anion Balance	24	6.20	08/20/2024	-7.70	07/12/2021	-1.53	%
Sum of Anions	24	46.00	12/02/2024	19.00	03/05/2021	25.33	meq/l
Sum of Cations	24	44.00	12/02/2024	17.00	03/05/2021	24.71	meq/l
Chemical Oxygen Demand	4	34.00	03/05/2021	10.00	03/09/2021	16.75	mg/l
Chloride	24	487	12/02/2024	43	03/16/2021	160	mg/l
Conductivity, Lab	24	4,040	12/02/2024	1,690	05/03/2021	2,287	µmhos
Fluoride	24	24.70	05/03/2021	15.30	08/15/2023	20.02	mg/l
Hardness as CaCO3	24	35.00	12/02/2024	14.00	03/16/2021	21.04	mg/l
Nitrate as N, dissolved	4	0.06	03/05/2021	UH	04/05/2021	UH	mg/l
Nitrate/Nitrite as N,	4	0.06	03/05/2021	UH	04/05/2021	UH	mg/l
Nitrite as N, dissolved	4	UH	03/05/2021	UH	05/03/2021	UH	mg/l
Nitrogen, Ammonia	4	0.99	03/16/2021	0.89	03/05/2021	0.95	mg/l
Nitrogen, Organic	4	0.28	03/05/2021	0.28	03/05/2021	0.28	mg/l
Nitrogen, Total Kjeldahl	4	1.17	03/05/2021	0.96	03/16/2021	1.06	mg/l
pH, lab	24	9.20	11/02/2021	8.30	04/30/2024	8.84	units
Phosphate, total	4	2.04	03/05/2021	0.15	03/16/2021	0.65	mg/l
Phosphorus, total	4	0.66	03/05/2021	0.05	03/16/2021	0.21	mg/l
SAR in Water	24	73	12/02/2024	39.00	03/05/2021	52	none
Sulfate	24	5.38	03/05/2021	U	09/07/2022	U	mg/l
Sulfide	4	0.02	05/03/2021	U	03/05/2021	U	mg/l
Total Dissolved Solids	24	2,470	12/02/2024	972	03/05/2021	1,359	mg/l
Conductivity, Field	23	4,020	12/02/2024	1,637	03/09/2021	2,234	µmhos
pH, Field	23	8.96	11/27/2023	8.15	07/12/2021	8.60	units
Temperature (°C), Field	23	17.40	07/12/2021	12.20	02/13/2023	14.51	(°C)
Water Level, Field	23	561.40	11/08/2022	527.30	12/02/2024	547.39	Ft.

Parameters Metals	No. of Samples	High	Date	Low	Date	Average	Units
Aluminum, dissolved	4	U	03/05/2021	U	05/03/2021	U	mg/l
Arsenic, dissolved	4	0.03	03/09/2021	0.00	05/03/2021	0.01	mg/l
Barium, dissolved	4	0.41	05/03/2021	0.19	03/05/2021	0.32	mg/l
Beryllium, dissolved	4	U	03/05/2021	U	05/03/2021	U	mg/l
Boron, dissolved	24	0.99	12/02/2024	0.74	03/05/2021	0.85	mg/l
Cadmium, dissolved	4	U	03/05/2021	U	05/03/2021	U	mg/l
Calcium, dissolved	24	6.49	04/30/2024	2.75	04/05/2021	3.96	mg/l
Chromium, dissolved	4	0.01	03/05/2021	U	03/16/2021	U	mg/l
Copper, dissolved	4	0.01	05/03/2021	U	03/16/2021	U	mg/l
Iron, dissolved	4	0.94	03/16/2021	0.40	05/03/2021	0.66	mg/l
Lead, dissolved	4	U	03/05/2021	U	05/03/2021	U	mg/l
Lithium, dissolved	4	0.16	03/16/2021	0.15	03/05/2021	0.16	mg/l
Magnesium, dissolved	24	4.92	12/02/2024	1.79	03/16/2021	2.70	mg/l
Manganese, dissolved	4	0.04	03/05/2021	0.02	03/16/2021	0.03	mg/l
Mercury, dissolved	4	U	03/05/2021	U	05/03/2021	U	mg/l
Molybdenum, dissolved	4	0.13	03/09/2021	0.06	03/05/2021	0.09	mg/l
Nickel, dissolved	4	U	03/05/2021	U	05/03/2021	U	mg/l
Potassium, dissolved	24	2.90	08/02/2021	0.90	04/05/2021	1.30	mg/l
Selenium, dissolved	4	0.0017	03/09/2021	0.0030	03/05/2021	0.0010	mg/l
Silica, dissolved	24	16.60	11/02/2021	4.00	08/20/2024	14.65	mg/l
Sodium, dissolved	24	985	12/02/2024	372	03/05/2021	550	mg/l
Strontium, dissolved	24	2.39	12/02/2024	0.39	08/20/2024	1.07	mg/l
Vanadium, dissolved	4	U	03/05/2021	U	05/03/2021	U	mg/l
Zinc, dissolved	4	U	03/05/2021	U	05/03/2021	U	mg/l

Appx. Table A-21: MMC-IRI-6 Annual B-Groove Aquifer

Parameters Wet Chemistry	No. of Samples	High	Date	Low	Date	Average	Units
Bicarbonate as CaCO3	68	806.00	12/16/1992	183.00	01/24/2023	627.00	mg/l
Carbonate as CaCO3	68	754.00	09/27/1990	10.00	06/16/1992	101.91	mg/l
Total Alkalinity as CaCO3	68	1,064.00	09/27/1990	250.00	01/24/2023	707.94	mg/l
Bromide	37	2.60	09/07/1990	0.06	05/26/2000	0.74	mg/l
Cation-Anion Balance	66	11.10	05/29/2002	-9.40	07/29/2009	0.19	%
Sum of Anions	60	24.21	09/27/1990	9.70	01/24/2023	16.30	meq/l
Sum of Cations	60	23.84	09/27/1990	9.50	01/24/2023	16.30	meq/l
Chemical Oxygen Demand	29	550.00	07/29/2009	11.00	08/24/2017	140.39	mg/l
Chloride	67	524.00	09/07/1990	11.00	06/30/1995	40.88	mg/l
Conductivity, Lab	66	1,660.00	09/08/1993	932.00	01/24/2023	1,427.08	µmhos
Fluoride	68	32.00	09/28/1994	2.80	05/28/1991	21.59	mg/l
Hardness as CaCO3	66	59.00	09/27/1990	3.00	06/30/2009	11.53	mg/l
Nitrate as N, dissolved	36	1.99	06/14/2008	0.02	06/30/1995	0.23	mg/l
Nitrate/Nitrite as N,	36	2.13	06/14/2008	0.02	09/28/1994	0.24	mg/l
Nitrite as N, dissolved	36	0.14	06/14/2008	0.01	10/03/2012	0.08	mg/l
Nitrogen, Ammonia	36	5.70	05/09/2001	0.58	05/21/2007	1.11	mg/l
Nitrogen, Organic	36	34.70	07/29/2009	0.33	02/12/2024	8.08	mg/l
Nitrogen, Total Kjeldahl	36	35.50	07/29/2009	1.13	03/08/2021	9.17	mg/l
pH, lab	66	11.60	12/20/1993	8.40	12/30/1996	8.86	units
Phosphate, total	36	0.90	09/07/1990	0.03	05/26/2000	0.14	mg/l
Phosphorus, total	36	0.30	09/07/1990	0.01	06/18/1996	0.05	mg/l
SAR in Water	56	92.00	11/27/2002	12.00	01/24/2023	51.45	none
Sulfate	68	210.00	01/24/2023	2.00	05/28/1991	25.91	mg/l
Sulfide	36	0.80	09/07/1990	0.01	05/26/2004	0.13	mg/l
Total Dissolved Solids	67	1,428.00	09/27/1990	600.00	01/24/2023	908.21	mg/l
Conductivity, Field	91	3,803.00	09/01/2009	982.00	11/21/2005	1,534.32	µmhos
pH, Field	90	12.00	09/27/1990	7.60	09/16/2019	9.26	units
Temperature (°C), Field	48	16.20	06/14/2008	7.70	02/12/2023	12.11	(°C)
Water Level, Field	65	435.60	08/24/2017	398.45	11/01/1990	413.16	Ft.
Parameters Metals	**No. of Samples**	**High**	**Date**	**Low**	**Date**	**Average**	**Units**
Aluminum, dissolved	35	3.79	09/27/1990	0.03	05/26/2004	0.65	mg/l
Arsenic, dissolved	35	0.03	09/27/1990	0.003	05/26/2004	0.006	mg/l
Barium, dissolved	35	0.44	03/08/2021	0.01	09/07/1990	0.25	mg/l
Beryllium, dissolved	35	U	03/08/2021	U	09/07/1990	U	mg/l
Boron, dissolved	68	0.72	01/31/1991	0.08	01/24/2023	0.56	mg/l
Cadmium, dissolved	35	U	03/08/2021	U	09/07/1990	U	mg/l
Calcium, dissolved	68	12.00	09/27/1990	0.00	02/26/1991	2.40	mg/l
Chromium, dissolved	35	0.01	03/08/2021	U	03/27/2018	U	mg/l
Copper, dissolved	35	0.07	10/22/2013	U	03/27/2018	U	mg/l
Iron, dissolved	35	0.24	11/06/2014	0.01	05/26/1999	0.05	mg/l
Lead, dissolved	35	0.32	03/22/2016	0.02	06/23/1994	0.15	mg/l
Lithium, dissolved	35	0.13	09/07/1990	0.06	09/15/1992	0.08	mg/l
Magnesium, dissolved	68	7.00	09/27/1990	0.00	02/26/1991	1.30	mg/l
Manganese, dissolved	35	0.02	03/27/2018	0.01	07/31/1991	0.01	mg/l
Mercury, dissolved	35	U	03/08/2021	U	09/07/1990	U	mg/l
Molybdenum, dissolved	35	0.02	03/22/2016	U	09/07/1990	U	mg/l
Nickel, dissolved	35	0.02	06/23/1994	U	09/07/1990	U	mg/l
Potassium, dissolved	68	13.00	09/07/1990	0.86	03/08/2021	1.79	mg/l
Selenium, dissolved	35	0.0020	09/27/1990	0.0010	07/31/1991	0.0015	mg/l
Silica, dissolved	68	63.00	09/27/1990	9.50	12/20/1993	17.23	mg/l
Sodium, dissolved	68	508.00	09/27/1990	191.00	01/24/2023	364.43	mg/l
Strontium, dissolved	68	0.78	03/08/2021	0.00	12/20/1993	0.48	mg/l
Vanadium, dissolved	35	0.01	09/07/1990	U	09/07/1990	U	mg/l
Zinc, dissolved	35	0.13	10/22/2013	0.01	05/09/2001	0.03	mg/l

Appx. Table A-22: DS-3 Annual Dissolution Surface Aquifer

Parameters Wet Chemistry	No. of Samples	High	Date	Low	Date	Average	Units
Bicarbonate as CaCO3	219	43,000	05/24/2005	17,400	11/27/2002	27,132	mg/l
Carbonate as CaCO3	219	23,900	05/03/2008	419	06/26/2002	3,946	mg/l
Total Alkalinity as CaCO3	219	60,100	03/14/2008	21,900	06/11/2014	30,905	mg/l
Bromide	34	5.00	05/03/2008	0.70	08/02/2006	2.18	mg/l
Cation-Anion Balance	219	13.50	10/28/2002	-93.80	04/10/2013	-4.66	%
Sum of Anions	219	1,440.00	04/07/2020	511.00	04/29/2003	781.68	meq/l
Sum of Cations	219	1,730.00	03/14/2008	20.70	04/10/2013	727.66	meq/l
Chemical Oxygen Demand	34	1,100.00	07/30/2009	140.00	08/21/2003	391.48	mg/l
Chloride	219	17,200.00	12/19/2018	39.00	05/24/2005	5,720.37	mg/l
Conductivity, Lab	219	81,800	02/13/2019	27,200	09/28/2006	47,385	µmhos
Fluoride	219	329.00	11/07/2018	2.80	05/24/2005	61.56	mg/l
Hardness as CaCO3	219	49.00	03/08/2011	1.00	01/28/2003	14.97	mg/l
Nitrate as N, dissolved	34	0.10	08/12/2004	0.02	09/28/2006	0.05	mg/l
Nitrate/Nitrite as N,	34	0.14	11/10/2014	0.02	09/28/2006	0.05	mg/l
Nitrite as N, dissolved	34	0.05	11/10/2014	0.01	07/11/2013	0.03	mg/l
Nitrogen, Ammonia	34	34.20	12/19/2018	4.84	03/14/2022	12.90	mg/l
Nitrogen, Organic	34	28.00	08/22/2002	0.80	09/30/2008	8.82	mg/l
Nitrogen, Total Kjeldahl	34	50.00	12/19/2018	3.50	09/23/2010	19.67	mg/l
pH, lab	219	9.20	04/10/2008	7.90	10/28/2002	8.62	units
Phosphate, total	34	155.00	07/30/2009	3.10	08/16/2011	33.90	mg/l
Phosphorus, total	34	183.00	09/30/2008	3.20	06/26/2007	14.26	mg/l
SAR in Water	153	8,450	05/18/2006	U	12/09/2014	2,472	none
Sulfate	219	1,860	09/23/2010	U	09/02/2015	206	mg/l
Sulfide	34	18.10	06/10/2020	0.04	08/25/2005	3.70	mg/l
Total Dissolved Solids	219	88,500	03/14/2008	18,500	05/29/2003	41,561	mg/l
Conductivity, Field	241	86,810	02/13/2019	30,600	04/29/2003	50,271	µmhos
pH, Field	240	9.91	06/30/2009	7.00	03/09/2016	8.44	units
Temperature (°C), Field	240	24.40	07/05/2016	5.30	02/09/2012	12.89	(°C)
Water Level, Field	250	547.30	08/02/2021	484.10	02/04/2016	521.75	Ft.
Parameters Metals	**No. of Samples**	**High**	**Date**	**Low**	**Date**	**Average**	**Units**
Aluminum, dissolved	35	79.90	08/12/2004	0.40	03/14/2008	17.00	mg/l
Arsenic, dissolved	35	0.02	06/10/2020	0.01	12/04/2012	0.02	mg/l
Barium, dissolved	35	3.32	08/25/2005	0.19	08/19/2007	1.79	mg/l
Beryllium, dissolved	35	U	06/10/2020	U	06/20/2023	U	mg/l
Boron, dissolved	220	74.70	02/13/2019	3.69	05/29/2003	19.35	mg/l
Cadmium, dissolved	35	U	06/10/2020	U	06/20/2023	U	mg/l
Calcium, dissolved	220	14.00	07/10/2017	0.30	05/29/2003	4.10	mg/l
Chromium, dissolved	35	0.01	05/18/2006	0.01	05/18/2006	0.01	mg/l
Copper, dissolved	35	1.20	08/16/2011	0.50	08/12/2004	0.85	mg/l
Iron, dissolved	35	3.70	09/15/2007	0.07	05/18/2006	1.49	mg/l
Lead, dissolved	35	1.40	08/22/2002	0.22	03/14/2008	0.81	mg/l
Lithium, dissolved	35	8.48	03/14/2008	2.70	12/19/2018	3.35	mg/l
Magnesium, dissolved	220	10.00	01/08/2008	0.00	09/02/2015	3.99	mg/l
Manganese, dissolved	35	U	06/10/2020	U	06/20/2023	U	mg/l
Mercury, dissolved	35	U	06/10/2020	U	06/20/2023	U	mg/l
Molybdenum, dissolved	35	0.70	08/19/2007	0.30	08/18/2010	0.45	mg/l
Nickel, dissolved	35	0.20	09/23/2010	0.02	05/18/2006	0.13	mg/l
Potassium, dissolved	220	274.00	06/25/2024	0.00	11/21/2008	37.69	mg/l
Selenium, dissolved	35	0.01	08/22/2002	0.00	07/12/2007	0.01	mg/l
Silica, dissolved	220	79.00	04/11/2006	8.90	05/29/2003	25.88	mg/l
Sodium, dissolved	220	39,200	03/14/2008	450	04/10/2013	16,620	mg/l
Strontium, dissolved	220	0.70	02/21/2005	0.04	05/29/2003	0.22	mg/l
Vanadium, dissolved	35	0.20	06/26/2007	0.01	05/18/2006	0.08	mg/l
Zinc, dissolved	35	1.80	07/10/2017	0.02	03/14/2008	0.68	mg/l

Appx. Table A-23: DS-6 Annual Dissolution Surface Aquifer

Parameters Wet Chemistry	No. of Samples	High	Date	Low	Date	Average	Units
Bicarbonate as CaCO3	80	9,560	07/06/2020	5,770	12/07/2017	7,162	mg/l
Carbonate as CaCO3	80	5,060	03/07/2018	2,110	07/06/2020	3,682	mg/l
Total Alkalinity as CaCO3	80	12,400	03/05/2020	9,650	08/09/2016	10,842	mg/l
Bromide	13	U	04/05/2016	U	05/07/2019	U	mg/l
Cation-Anion Balance	79	2.60	02/11/2020	-13.30	07/06/2020	-4.16	%
Sum of Anions	79	272.00	03/05/2020	219.00	11/03/2020	240.12	meq/l
Sum of Cations	79	255.00	02/11/2020	188.00	12/01/2020	221.01	meq/l
Chemical Oxygen Demand	13	167.00	12/09/2014	44.00	04/05/2016	80.50	mg/l
Chloride	79	1,330	12/09/2014	448	11/03/2020	700	mg/l
Conductivity, Lab	80	19,800	12/09/2014	14,900	12/01/2020	16,966	µmhos
Fluoride	79	51.00	04/07/2020	26.80	09/08/2015	37.36	mg/l
Hardness as CaCO3	79	30.00	09/22/2016	U	01/03/2017	6.58	mg/l
Nitrate as N, dissolved	13	UH	04/05/2016	UH	05/07/2019	UH	mg/l
Nitrate/Nitrite as N,	13	0.02	12/09/2014	UH	05/07/2019	UH	mg/l
Nitrite as N, dissolved	13	0.03	12/09/2014	UH	05/07/2019	UH	mg/l
Nitrogen, Ammonia	13	4.95	06/20/2023	0.58	03/14/2022	3.69	mg/l
Nitrogen, Organic	13	7.00	03/14/2022	0.80	07/11/2017	3.48	mg/l
Nitrogen, Total Kjeldahl	13	9.30	05/07/2019	4.70	07/11/2017	7.08	mg/l
pH, lab	80	9.50	03/01/2017	9.00	08/10/2020	9.25	units
Phosphate, total	13	7.00	09/27/2016	0.71	12/09/2014	4.92	mg/l
Phosphorus, total	13	2.20	09/27/2016	0.23	12/09/2014	1.58	mg/l
SAR in Water	56	1,600	02/11/2020	410.00	09/22/2016	1,041	none
Sulfate	79	370	12/09/2014	20.60	09/04/2020	86	mg/l
Sulfide	13	3.00	07/11/2017	0.30	04/05/2016	1.66	mg/l
Total Dissolved Solids	79	14,100	12/09/2014	11,200	12/01/2020	12,482	mg/l
Conductivity, Field	75	19,680	05/07/2019	13,820	05/01/2020	16,841	µmhos
pH, Field	75	9.70	08/09/2016	7.30	12/10/2018	8.98	units
Temperature (°C), Field	75	20.40	06/20/2023	8.00	01/14/2020	12.24	(°C)
Water Level, Field	84	560.00	08/28/2024	489.40	10/06/2020	525.07	Ft.

Parameters Metals	No. of Samples	High	Date	Low	Date	Average	Units
Aluminum, dissolved	13	U	04/05/2016	U	05/07/2019	U	mg/l
Arsenic, dissolved	13	0.01	12/09/2014	U	06/25/2024	0.01	mg/l
Barium, dissolved	13	0.46	10/04/2016	0.05	04/05/2016	0.26	mg/l
Beryllium, dissolved	13	U	04/05/2016	U	05/07/2019	U	mg/l
Boron, dissolved	78	8.66	06/20/2023	6.20	10/04/2017	7.60	mg/l
Cadmium, dissolved	13	U	04/05/2016	U	05/07/2019	U	mg/l
Calcium, dissolved	78	7.34	06/07/2021	U	03/25/2015	1.98	mg/l
Chromium, dissolved	13	U	04/05/2016	U	05/07/2019	U	mg/l
Copper, dissolved	13	U	04/05/2016	U	05/07/2019	U	mg/l
Iron, dissolved	13	0.65	06/25/2024	0.20	09/22/2016	0.43	mg/l
Lead, dissolved	13	U	04/05/2016	U	05/07/2019	U	mg/l
Lithium, dissolved	13	2.95	06/20/2023	1.94	09/27/2016	2.26	mg/l
Magnesium, dissolved	78	4.00	03/25/2015	U	09/08/2015	2.71	mg/l
Manganese, dissolved	13	U	04/05/2016	U	05/07/2019	U	mg/l
Mercury, dissolved	13	U	04/05/2016	U	05/07/2019	U	mg/l
Molybdenum, dissolved	13	U	04/05/2016	U	05/07/2019	U	mg/l
Nickel, dissolved	13	U	04/05/2016	U	05/07/2019	U	mg/l
Potassium, dissolved	78	113.00	12/09/2014	45.20	12/01/2020	71.96	mg/l
Selenium, dissolved	13	U	04/05/2016	U	05/07/2019	U	mg/l
Silica, dissolved	78	34.00	07/11/2017	7.00	01/27/2016	26.18	mg/l
Sodium, dissolved	78	5,750	02/11/2020	4,240	12/01/2020	4,977	mg/l
Strontium, dissolved	78	0.48	12/07/2021	U	12/29/2015	0.18	mg/l
Vanadium, dissolved	13	U	04/05/2016	U	05/07/2019	U	mg/l
Zinc, dissolved	13	0.40	09/22/2016	U	07/11/2017	0.28	mg/l

Appx. Table A-24: DS-7 Annual Dissolution Surface Aquifer

Parameters Wet Chemistry	No. of Samples	High	Date	Low	Date	Average	Units
Bicarbonate as CaCO3	86	33,500	04/08/2019	8,220	06/26/2024	23,818	mg/l
Carbonate as CaCO3	86	16,600	08/02/2016	63	12/07/2020	4,651	mg/l
Total Alkalinity as CaCO3	86	41,300	07/07/2016	9,060	12/07/2020	28,360	mg/l
Bromide	12	U	12/17/2014	U	05/04/2021	U	mg/l
Cation-Anion Balance	86	21.30	03/05/2020	-15.70	10/06/2020	-2.05	%
Sum of Anions	86	3,360.00	12/17/2014	302.00	12/07/2020	1,230.49	meq/l
Sum of Cations	86	3,230.00	12/17/2014	293.00	03/15/2022	1,169.73	meq/l
Chemical Oxygen Demand	12	3,630.00	11/05/2015	110.00	06/20/2023	1,495.25	mg/l
Chloride	86	96,000	12/30/2014	3,750	06/26/2024	23,548	mg/l
Conductivity, Lab	86	207,000	12/17/2014	24,000	11/02/2020	72,794	µmhos
Fluoride	86	106.00	12/10/2019	38.50	10/06/2020	63.74	mg/l
Hardness as CaCO3	86	82.40	12/16/2015	0.00	12/30/2014	27.64	mg/l
Nitrate as N, dissolved	12	0.03	05/07/2020	UH	05/04/2021	UH	mg/l
Nitrate/Nitrite as N,	12	0.03	05/07/2020	UH	05/04/2021	UH	mg/l
Nitrite as N, dissolved	12	UH	12/17/2014	UH	05/04/2021	UH	mg/l
Nitrogen, Ammonia	12	40.40	12/17/2014	3.33	05/04/2021	12.45	mg/l
Nitrogen, Organic	12	7.00	05/07/2019	3.00	05/04/2021	4.44	mg/l
Nitrogen, Total Kjeldahl	12	33.00	12/30/2014	1.10	11/05/2015	11.25	mg/l
pH, lab	86	9.10	05/06/2015	8.30	04/08/2020	8.61	units
Phosphate, total	12	71.00	11/05/2015	5.60	06/20/2023	29.58	mg/l
Phosphorus, total	12	23.00	11/05/2015	1.80	06/20/2023	9.57	mg/l
SAR in Water	32	7,600	06/08/2016	650	06/20/2023	2,355	none
Sulfate	86	480	12/30/2014	110	07/11/2017	350	mg/l
Sulfide	12	4.80	05/07/2019	0.21	06/26/2024	2.39	mg/l
Total Dissolved Solids	86	189,676	12/17/2014	16,600	11/05/2021	67,505	mg/l
Conductivity, Field	84	186,700	12/17/2014	22,900	06/26/2024	73,478	µmhos
pH, Field	84	9.20	03/10/2016	7.10	12/17/2014	8.30	units
Temperature (°C), Field	84	20.70	06/20/2023	7.20	02/09/2021	13.02	(°C)
Water Level, Field	93	643.10	12/12/2014	478.76	11/09/2016	505.27	Ft.
Parameters Metals	**No. of Samples**	**High**	**Date**	**Low**	**Date**	**Average**	**Units**
Aluminum, dissolved	12	U	12/17/2014	U	05/04/2021	U	mg/l
Arsenic, dissolved	12	U	12/17/2014	U	05/04/2021	U	mg/l
Barium, dissolved	12	1.90	07/11/2017	0.40	11/05/2015	0.98	mg/l
Beryllium, dissolved	12	U	12/17/2014	U	05/04/2021	U	mg/l
Boron, dissolved	86	66.00	09/09/2015	7.10	01/09/2018	23.35	mg/l
Cadmium, dissolved	12	U	12/17/2014	U	05/04/2021	U	mg/l
Calcium, dissolved	86	30.00	05/06/2015	0.00	12/30/2014	6.76	mg/l
Chromium, dissolved	12	U	12/17/2014	U	05/04/2021	U	mg/l
Copper, dissolved	12	U	12/17/2014	U	05/04/2021	U	mg/l
Iron, dissolved	12	5.00	12/30/2014	0.64	03/15/2022	2.88	mg/l
Lead, dissolved	12	U	12/17/2014	U	05/04/2021	U	mg/l
Lithium, dissolved	12	2.73	06/20/2023	1.00	12/30/2014	2.13	mg/l
Magnesium, dissolved	86	20.00	06/17/2015	2.16	10/12/2021	12.23	mg/l
Manganese, dissolved	12	U	12/17/2014	U	05/04/2021	U	mg/l
Mercury, dissolved	12	U	12/17/2014	U	05/04/2021	U	mg/l
Molybdenum, dissolved	12	2.00	04/05/2016	U	05/04/2021	U	mg/l
Nickel, dissolved	12	U	12/17/2014	U	05/04/2021	U	mg/l
Potassium, dissolved	86	140.00	09/09/2015	14.20	03/15/2022	45.42	mg/l
Selenium, dissolved	12	U	12/17/2014	U	05/04/2021	U	mg/l
Silica, dissolved	86	55.00	06/08/2021	16.00	09/11/2017	22.95	mg/l
Sodium, dissolved	86	73,200	12/17/2014	6,630	03/15/2022	26,549	mg/l
Strontium, dissolved	86	1.00	08/12/2015	0.10	06/08/2016	0.33	mg/l
Vanadium, dissolved	12	U	12/17/2014	U	05/04/2021	U	mg/l
Zinc, dissolved	12	0.50	07/11/2017	U	05/04/2021	U	mg/l

Appx. Table A-25: DS-8 Annual Dissolution Surface Aquifer

Parameters Wet Chemistry	No. of Samples	High	Date	Low	Date	Average	Units
Bicarbonate as CaCO3	33	41,100	07/08/2021	17,200	12/01/2020	23,509	mg/l
Carbonate as CaCO3	33	13,800	09/07/2021	566	09/03/2020	4,034	mg/l
Total Alkalinity as CaCO3	33	50,300	07/08/2021	19,400	11/02/2020	27,542	mg/l
Bromide	7	U	08/14/2019	U	05/03/2021	U	mg/l
Cation-Anion Balance	32	13.50	05/13/2020	-33.30	04/07/2020	-4.42	%
Sum of Anions	32	1,230.00	07/08/2021	447.00	11/02/2020	781.31	meq/l
Sum of Cations	32	1,280.00	09/07/2021	353.00	12/01/2020	722.41	meq/l
Chemical Oxygen Demand	7	400.00	08/14/2019	177.00	06/20/2023	325.67	mg/l
Chloride	32	19,800	09/10/2019	2,040	11/02/2020	7,948	mg/l
Conductivity, Lab	33	74,500	09/10/2019	25,000	12/01/2020	49,712	µmhos
Fluoride	32	109.00	09/07/2021	29.00	09/10/2019	64.94	mg/l
Hardness as CaCO3	32	18.00	10/07/2019	7.00	04/05/2021	11.00	mg/l
Nitrate as N, dissolved	7	UH	08/14/2019	UH	05/03/2021	UH	mg/l
Nitrate/Nitrite as N,	7	UH	08/14/2019	UH	05/03/2021	UH	mg/l
Nitrite as N, dissolved	7	UH	08/14/2019	UH	05/03/2021	UH	mg/l
Nitrogen, Ammonia	7	19.80	03/14/2022	8.55	05/03/2021	12.51	mg/l
Nitrogen, Organic	7	9.00	05/03/2021	5.00	08/14/2019	6.80	mg/l
Nitrogen, Total Kjeldahl	7	22.50	06/20/2023	2.10	05/13/2020	15.47	mg/l
pH, lab	33	9.00	06/20/2023	8.50	06/02/2020	8.70	units
Phosphate, total	7	69.00	06/20/2023	18.00	06/25/2024	30.29	mg/l
Phosphorus, total	7	22.40	06/20/2023	5.70	06/25/2024	9.74	mg/l
SAR in Water	10	4,200	08/02/2021	1,200.00	11/02/2020	2,422	none
Sulfate	32	U	08/14/2019	U	05/03/2021	U	mg/l
Sulfide	7	10.00	05/13/2020	0.29	06/20/2023	4.08	mg/l
Total Dissolved Solids	32	67,700	09/07/2021	22,700	12/01/2020	41,466	mg/l
Conductivity, Field	32	70,540	08/20/2019	28,730	12/01/2020	48,438	µmhos
pH, Field	31	9.21	06/25/2024	8.20	12/01/2020	8.57	units
Temperature (°C), Field	32	22.00	06/20/2023	9.32	02/10/2020	12.70	(°C)
Water Level, Field	42	627.80	04/07/2020	565.60	01/11/2021	592.45	Ft.
Parameters Metals	**No. of Samples**	**High**	**Date**	**Low**	**Date**	**Average**	**Units**
Aluminum, dissolved	7	U	08/14/2019	U	03/14/2022	U	mg/l
Arsenic, dissolved	7	0.011	08/14/2019	0.007	03/14/2022	0.009	mg/l
Barium, dissolved	7	1.90	08/20/2019	0.96	06/25/2024	1.50	mg/l
Beryllium, dissolved	7	U	08/14/2019	U	03/14/2022	U	mg/l
Boron, dissolved	32	61.00	09/07/2021	11.50	12/01/2020	22.86	mg/l
Cadmium, dissolved	7	U	08/14/2019	U	03/14/2022	U	mg/l
Calcium, dissolved	32	7.00	10/07/2019	2.63	08/02/2021	4.43	mg/l
Chromium, dissolved	7	U	08/14/2019	U	03/14/2022	U	mg/l
Copper, dissolved	7	U	08/14/2019	U	03/14/2022	U	mg/l
Iron, dissolved	7	U	08/14/2019	U	03/14/2022	U	mg/l
Lead, dissolved	7	U	08/14/2019	U	03/14/2022	U	mg/l
Lithium, dissolved	7	3.70	05/13/2020	3.01	06/25/2024	3.47	mg/l
Magnesium, dissolved	32	U	08/14/2019	U	03/14/2022	U	mg/l
Manganese, dissolved	7	U	08/14/2019	U	03/14/2022	U	mg/l
Mercury, dissolved	7	U	08/14/2019	U	03/14/2022	U	mg/l
Molybdenum, dissolved	7	U	08/14/2019	U	03/14/2022	U	mg/l
Nickel, dissolved	7	U	08/14/2019	U	03/14/2022	U	mg/l
Potassium, dissolved	32	800.00	08/20/2019	30.60	06/25/2024	240.42	mg/l
Selenium, dissolved	7	0.0021	05/03/2021	U	03/14/2022	U	mg/l
Silica, dissolved	32	31.00	12/09/2019	15.00	12/01/2020	22.81	mg/l
Sodium, dissolved	32	29,100	09/07/2021	7,990	12/01/2020	16,275	mg/l
Strontium, dissolved	32	0.42	12/06/2021	0.20	08/02/2021	0.26	mg/l
Vanadium, dissolved	7	U	08/14/2019	U	03/14/2022	U	mg/l
Zinc, dissolved	7	U	08/14/2019	U	03/14/2022	U	mg/l

Appx. Table A-26: DS-9 Annual Dissolution Surface Aquifer

Parameters Wet Chemistry	No. of Samples	High	Date	Low	Date	Average	Units
Bicarbonate as CaCO3	13	20,200	06/02/2020	11,900	06/20/2018	14,685	mg/l
Carbonate as CaCO3	13	5,990	11/18/2024	1,880	09/28/2017	2,958	mg/l
Total Alkalinity as CaCO3	13	22,200	06/02/2020	14,300	09/28/2017	17,638	mg/l
Bromide	13	U	11/04/2014	U	06/03/2022	U	mg/l
Cation-Anion Balance	13	-1.50	11/18/2024	-83.70	06/02/2020	-10.15	%
Sum of Anions	13	474.00	06/02/2020	341.00	06/20/2018	408.54	meq/l
Sum of Cations	13	429.00	06/03/2022	42.00	06/02/2020	346.54	meq/l
Chemical Oxygen Demand	13	132.00	09/28/2017	90.00	06/02/2020	112.00	mg/l
Chloride	13	2,470	02/04/2015	476	11/18/2024	1,627	mg/l
Conductivity, Lab	13	29,900	06/03/2022	24,300	12/15/2015	26,692	µmhos
Fluoride	13	62.50	04/22/2019	40.60	06/12/2023	47.89	mg/l
Hardness as CaCO3	13	36.00	01/28/2015	U	12/15/2015	19.00	mg/l
Nitrate as N, dissolved	13	0.03	01/28/2015	UH	02/04/2015	UH	mg/l
Nitrate/Nitrite as N,	13	0.04	01/28/2015	UH	02/04/2015	UH	mg/l
Nitrite as N, dissolved	13	0.01	01/28/2015	UH	02/04/2015	UH	mg/l
Nitrogen, Ammonia	13	8.55	06/12/2023	3.43	06/20/2018	5.49	mg/l
Nitrogen, Organic	13	30.00	11/18/2024	1.80	01/28/2015	6.59	mg/l
Nitrogen, Total Kjeldahl	13	36.20	11/18/2024	2.30	06/02/2020	10.14	mg/l
pH, lab	13	9.00	04/22/2019	6.70	06/12/2023	8.64	units
Phosphate, total	13	14.00	11/18/2024	3.70	02/04/2015	8.61	mg/l
Phosphorus, total	13	4.49	11/18/2024	1.20	02/04/2015	2.74	mg/l
SAR in Water	8	1,700	06/08/2021	83.00	06/02/2020	819	none
Sulfate	13	2,870	02/04/2015	10.80	04/22/2019	588	mg/l
Sulfide	13	0.47	06/03/2022	0.42	06/12/2023	0.44	mg/l
Total Dissolved Solids	13	24,100	06/03/2022	15,500	06/02/2020	20,669	mg/l
Conductivity, Field	12	29,450	04/22/2019	23,740	04/05/2016	26,955	µmhos
pH, Field	12	8.93	06/20/2018	7.20	01/29/2015	8.41	units
Temperature (°C), Field	12	14.35	06/20/2018	10.20	11/18/2024	12.93	(°C)
Water Level, Field	13	470.10	10/29/2014	444.80	11/18/2024	454.95	Ft.

Parameters Metals	No. of Samples	High	Date	Low	Date	Average	Units
Aluminum, dissolved	13	U	11/04/2014	U	06/08/2021	U	mg/l
Arsenic, dissolved	13	0.011	11/04/2014	0.003	02/04/2015	0.006	mg/l
Barium, dissolved	13	1.87	11/04/2014	0.12	02/04/2015	0.91	mg/l
Beryllium, dissolved	13	U	11/04/2014	U	06/08/2021	U	mg/l
Boron, dissolved	13	13.90	06/08/2021	1.20	06/02/2020	9.93	mg/l
Cadmium, dissolved	13	U	11/04/2014	U	06/08/2021	U	mg/l
Calcium, dissolved	13	6.00	11/04/2014	2.00	02/04/2015	3.52	mg/l
Chromium, dissolved	13	U	11/04/2014	U	06/08/2021	U	mg/l
Copper, dissolved	13	U	11/04/2014	U	06/08/2021	U	mg/l
Iron, dissolved	13	1.20	11/04/2014	0.20	12/15/2015	0.58	mg/l
Lead, dissolved	13	U	11/04/2014	U	06/08/2021	U	mg/l
Lithium, dissolved	13	4.11	06/12/2023	0.20	06/02/2020	3.09	mg/l
Magnesium, dissolved	13	7.00	01/28/2015	2.03	06/12/2023	4.81	mg/l
Manganese, dissolved	13	U	11/04/2014	U	06/08/2021	U	mg/l
Mercury, dissolved	13	U	11/04/2014	U	06/08/2021	U	mg/l
Molybdenum, dissolved	13	0.30	02/04/2015	0.20	12/15/2015	0.25	mg/l
Nickel, dissolved	13	U	11/04/2014	U	06/08/2021	U	mg/l
Potassium, dissolved	13	30.00	04/22/2019	18.10	06/12/2023	23.13	mg/l
Selenium, dissolved	13	U	11/04/2014	U	06/08/2021	U	mg/l
Silica, dissolved	13	29.00	04/22/2019	12.00	06/02/2020	21.31	mg/l
Sodium, dissolved	13	9,730	06/03/2022	940	06/02/2020	7,848	mg/l
Strontium, dissolved	13	1.10	06/02/2020	0.06	09/28/2017	0.29	mg/l
Vanadium, dissolved	13	U	11/04/2014	U	06/08/2021	U	mg/l
Zinc, dissolved	13	1.90	12/15/2015	0.20	09/28/2017	0.83	mg/l

Appx. Table A-27: DS-10 Annual Dissolution Surface Aquifer

Parameters Wet Chemistry	No. of Samples	High	Date	Low	Date	Average	Units
Bicarbonate as CaCO3	33	41,100	07/08/2021	17,200	12/01/2020	23,509	mg/l
Carbonate as CaCO3	33	13,800	09/07/2021	566	09/03/2020	4,034	mg/l
Total Alkalinity as CaCO3	33	50,300	07/08/2021	19,400	11/02/2020	27,542	mg/l
Bromide	7	U	08/14/2019	U	05/03/2021	U	mg/l
Cation-Anion Balance	32	13.50	05/13/2020	-33.30	04/07/2020	-4.42	%
Sum of Anions	32	1,230.00	07/08/2021	447.00	11/02/2020	781.31	meq/l
Sum of Cations	32	1,280.00	09/07/2021	353.00	12/01/2020	722.41	meq/l
Chemical Oxygen	7	400.00	08/14/2019	177.00	06/20/2023	325.67	mg/l
Chloride	32	19,800	09/10/2019	2,040	11/02/2020	7,948	mg/l
Conductivity, Lab	33	74,500	09/10/2019	25,000	12/01/2020	49,712	µmhos
Fluoride	32	109.00	09/07/2021	29.00	09/10/2019	64.94	mg/l
Hardness as CaCO3	32	18.00	10/07/2019	7.00	04/05/2021	11.00	mg/l
Nitrate as N, dissolved	7	UH	08/14/2019	UH	05/03/2021	UH	mg/l
Nitrate/Nitrite as N,	7	UH	08/14/2019	UH	05/03/2021	UH	mg/l
Nitrite as N, dissolved	7	UH	08/14/2019	UH	05/03/2021	UH	mg/l
Nitrogen, Ammonia	7	19.80	03/14/2022	8.55	05/03/2021	12.51	mg/l
Nitrogen, Organic	7	9.00	05/03/2021	5.00	08/14/2019	6.80	mg/l
Nitrogen, Total Kjeldahl	7	22.50	06/20/2023	2.10	05/13/2020	15.47	mg/l
pH, lab	33	9.00	06/20/2023	8.50	06/02/2020	8.70	units
Phosphate, total	7	69.00	06/20/2023	18.00	06/25/2024	30.29	mg/l
Phosphorus, total	7	22.40	06/20/2023	5.70	06/25/2024	9.74	mg/l
SAR in Water	10	4,200	08/02/2021	1,200.00	11/02/2020	2,422	none
Sulfate	32	U	08/14/2019	U	05/03/2021	U	mg/l
Sulfide	7	10.00	05/13/2020	0.29	06/20/2023	4.08	mg/l
Total Dissolved Solids	32	67,700	09/07/2021	22,700	12/01/2020	41,466	mg/l
Conductivity, Field	32	70,540	08/20/2019	28,730	12/01/2020	48,438	µmhos
pH, Field	31	9.21	06/25/2024	8.20	12/01/2020	8.57	units
Temperature (°C), Field	32	22.00	06/20/2023	9.32	02/10/2020	12.70	(°C)
Water Level, Field	42	627.80	04/07/2020	565.60	01/11/2021	592.45	Ft.
Parameters Metals	**No. of Samples**	**High**	**Date**	**Low**	**Date**	**Average**	**Units**
Aluminum, dissolved	7	U	08/14/2019	U	03/14/2022	U	mg/l
Arsenic, dissolved	7	0.011	08/14/2019	0.007	03/14/2022	.009	mg/l
Barium, dissolved	7	1.90	08/20/2019	0.96	06/25/2024	1.50	mg/l
Beryllium, dissolved	7	U	08/14/2019	U	03/14/2022	U	mg/l
Boron, dissolved	32	61.00	09/07/2021	11.50	12/01/2020	22.86	mg/l
Cadmium, dissolved	7	U	08/14/2019	U	03/14/2022	U	mg/l
Calcium, dissolved	32	7.00	10/07/2019	2.63	08/02/2021	4.43	mg/l
Chromium, dissolved	7	U	08/14/2019	U	03/14/2022	U	mg/l
Copper, dissolved	7	U	08/14/2019	U	03/14/2022	U	mg/l
Iron, dissolved	7	U	08/14/2019	U	03/14/2022	U	mg/l
Lead, dissolved	7	U	08/14/2019	U	03/14/2022	U	mg/l
Lithium, dissolved	7	3.70	05/13/2020	3.01	06/25/2024	3.47	mg/l
Magnesium, dissolved	32	U	08/14/2019	U	03/14/2022	U	mg/l
Manganese, dissolved	7	U	08/14/2019	U	03/14/2022	U	mg/l
Mercury, dissolved	7	U	08/14/2019	U	03/14/2022	U	mg/l
Molybdenum, dissolved	7	U	08/14/2019	U	03/14/2022	U	mg/l
Nickel, dissolved	7	U	08/14/2019	U	03/14/2022	U	mg/l
Potassium, dissolved	32	800.00	08/20/2019	30.60	06/25/2024	240.42	mg/l
Selenium, dissolved	7	0.0021	05/03/2021	U	03/14/2022	U	mg/l
Silica, dissolved	32	31.00	12/09/2019	15.00	12/01/2020	22.81	mg/l
Sodium, dissolved	32	29,100	09/07/2021	7,990	12/01/2020	16,275	mg/l
Strontium, dissolved	32	0.42	12/06/2021	0.20	08/02/2021	0.26	mg/l
Vanadium, dissolved	7	U	08/14/2019	U	03/14/2022	U	mg/l
Zinc, dissolved	7	U	08/14/2019	U	03/14/2022	U	mg/l

Appx. Table A-28: MMC-IRI-7 Annual Dissolution Surface Aquifer

Parameters Wet Chemistry	No. of Samples	High	Date	Low	Date	Average	Units
Bicarbonate as CaCO3	66	31,900	03/15/2022	294	09/16/1991	9,372	mg/l
Carbonate as CaCO3	66	4,730	11/02/2015	10.00	06/30/1995	1,099	mg/l
Total Alkalinity as CaCO3	66	33,900	03/15/2022	294	09/16/1991	10,371	mg/l
Bromide	35	33.00	08/30/1990	0.10	05/21/2007	7.54	mg/l
Cation-Anion Balance	66	6.10	03/28/2018	-27.90	03/15/2022	-2.94	%
Sum of Anions	63	700.00	03/15/2022	30.69	03/25/1992	244.07	meq/l
Sum of Cations	63	409.00	03/09/2020	31.56	05/28/1991	215.50	meq/l
Chemical Oxygen	32	960.00	06/14/2008	37.00	09/27/2017	150.32	mg/l
Chloride	65	774.00	02/12/2023	21.00	08/30/1990	367.22	mg/l
Conductivity, Lab	64	39,700	02/12/2024	2,500	06/16/1992	14,586	µmhos
Fluoride	66	48.30	03/09/2021	1.30	05/28/1991	28.02	mg/l
Hardness as CaCO3	66	135.00	06/14/2008	6.00	08/30/1990	25.27	mg/l
Nitrate as N, dissolved	35	3.22	10/22/2013	0.02	05/24/2005	0.51	mg/l
Nitrate/Nitrite as N,	35	4.14	10/22/2013	0.02	09/27/2017	0.61	mg/l
Nitrite as N, dissolved	35	0.92	10/22/2013	0.00	05/21/2007	0.15	mg/l
Nitrogen, Ammonia	35	10.20	02/12/2023	1.17	09/15/1992	4.26	mg/l
Nitrogen, Organic	35	46.00	06/14/2008	0.50	08/22/1990	7.31	mg/l
Nitrogen, Total Kjeldahl	35	51.00	06/14/2008	1.90	08/22/1990	10.98	mg/l
pH, lab	66	9.20	06/16/1992	8.30	06/30/1995	8.64	units
Phosphate, total	33	155.00	05/21/2007	0.17	09/15/1992	16.16	mg/l
Phosphorus, total	36	9.63	03/15/2022	0.05	09/15/1992	2.23	mg/l
SAR in Water	56	1,600.00	03/15/2022	88.89	03/25/1992	425.26	none
Sulfate	65	2,031.00	09/16/1991	2.50	06/18/1996	169.18	mg/l
Sulfide	35	3.31	08/30/1990	0.00	07/31/1991	0.57	mg/l
Total Dissolved Solids	65	30,400	03/15/2022	1,708	09/15/1992	11,512	mg/l
Conductivity, Field	83	36,320	03/09/2020	1,800	06/01/1991	13,885	µmhos
pH, Field	82	12.20	09/01/1990	7.86	11/07/2015	8.88	units
Temperature (°C), Field	47	19.40	08/01/1990	7.50	12/01/1990	12.29	(°C)
Water Level, Field	60	424.20	02/12/2023	405.03	04/01/2001	411.31	Ft.
Parameters **Metals**	**No. of Samples**	**High**	**Date**	**Low**	**Date**	**Average**	**Units**
Aluminum, dissolved	35	1.40	09/15/2010	0.05	06/23/1994	0.61	mg/l
Arsenic, dissolved	35	0.005	08/22/1990	0.001	09/15/1992	0.0027	mg/l
Barium, dissolved	35	6.65	09/15/2010	0.08	09/15/1992	4.20	mg/l
Beryllium, dissolved	35	U	08/22/1990	U	03/28/2018	U	mg/l
Boron, dissolved	66	8.91	03/15/2022	0.03	02/26/1991	3.42	mg/l
Cadmium, dissolved	35	U	08/22/1990	U	03/28/2018	U	mg/l
Calcium, dissolved	66	44.00	06/14/2008	1.00	05/28/1991	3.45	mg/l
Chromium, dissolved	35	0.20	11/02/2015	0.01	06/23/1994	0.11	mg/l
Copper, dissolved	35	0.31	03/09/2021	0.10	07/29/2009	0.20	mg/l
Iron, dissolved	35	1.82	07/31/1991	0.04	06/23/1994	0.30	mg/l
Lead, dissolved	35	0.04	07/31/1991	0.02	06/23/1994	0.03	mg/l
Lithium, dissolved	35	4.10	03/09/2020	0.32	09/15/1992	2.29	mg/l
Magnesium, dissolved	66	10.00	12/30/1996	1.00	06/16/1992	4.64	mg/l
Manganese, dissolved	35	0.07	05/26/1999	0.01	06/23/1994	0.04	mg/l
Mercury, dissolved	35	U	08/22/1990	U	03/28/2018	U	mg/l
Molybdenum, dissolved	35	0.10	06/23/1994	U	03/28/2018	U	mg/l
Nickel, dissolved	35	0.02	06/23/1994	U	03/28/2018	U	mg/l
Potassium, dissolved	66	26.00	06/30/2009	3.00	08/30/1990	9.70	mg/l
Selenium, dissolved	35	0.002	07/31/1991	0.001	08/30/1990	0.002	mg/l
Silica, dissolved	66	34.00	11/20/2001	1.50	02/26/1991	17.26	mg/l
Sodium, dissolved	66	9,280	03/09/2020	710	05/28/1991	4,430	mg/l
Strontium, dissolved	66	2.58	03/26/1997	0.18	06/16/1992	1.21	mg/l
Vanadium, dissolved	35	0.06	05/26/2004	0.05	11/02/2015	0.06	mg/l
Zinc, dissolved	35	0.30	03/09/2020	0.01	06/23/1994	0.10	mg/l

Appx. Table A-29: Summary of 2024 Annual Remote Water Levels

NS Remote Wells – Sampled for Water Level Only					
Well / Ground Level (ft)	Depth to Water Level ft.				
	2020	2021	2022	2023	2024
MMC-IRI-11 / 6613.6	468.30	468.80	469.00	468.80	466.50
TH75-6A / NA	298.56	298.65	299.06	299.06	299.06
TH75-6B / NA	295.93	295.94	296.67	246.67	294.86
TH75-11A / NA	413.03	411.27	404.35	NS	404.35
TH75-11B / NA	495.55	496.02	485.53	NS	485.53

NOTES:

Water levels are measured by USGS personnel and transmitted to NS via metal tag on the well head.

The TH75-11A and TH75-11B wells were not measured for water level due to extenuating circumstances in 2023.

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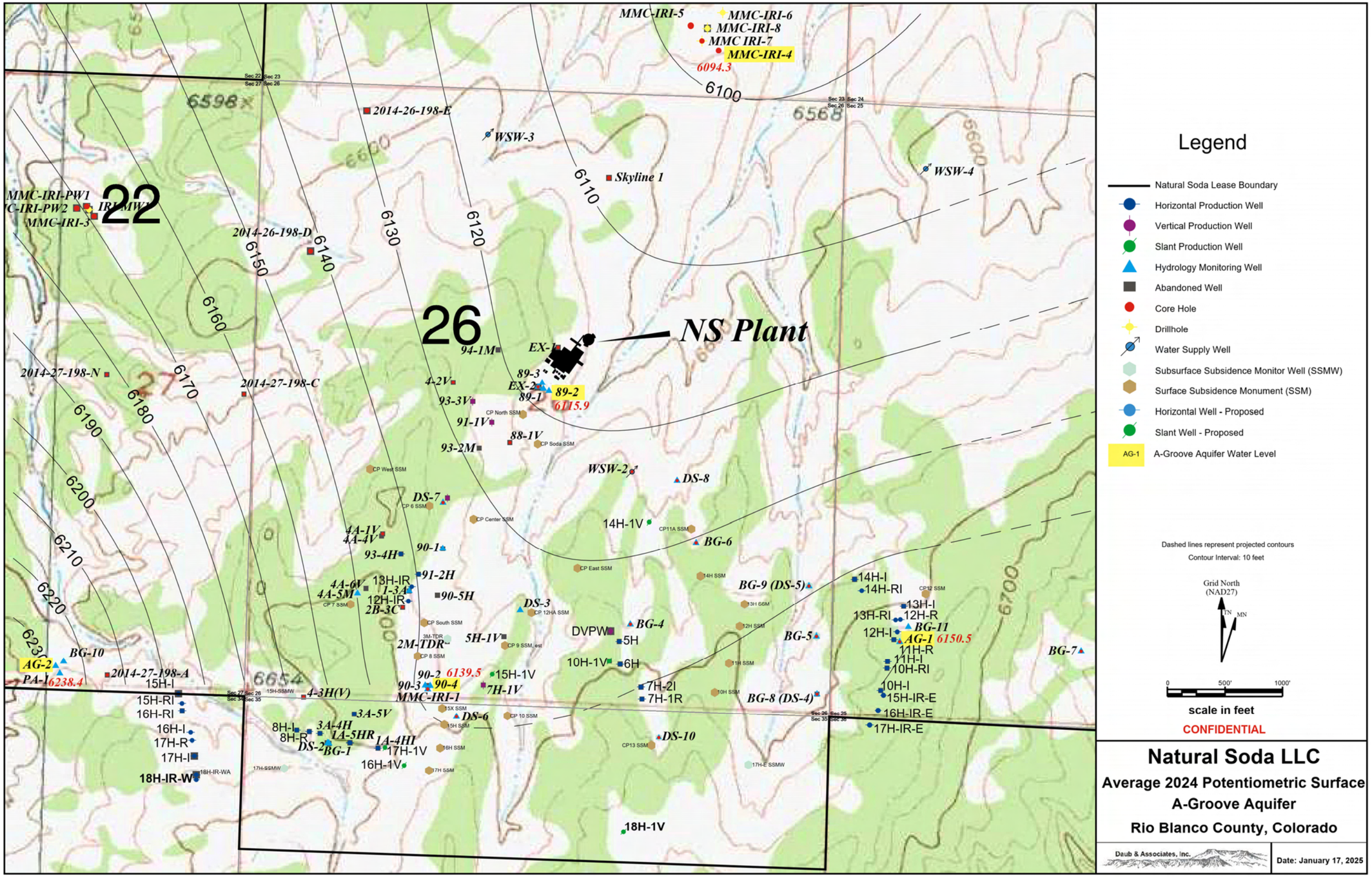
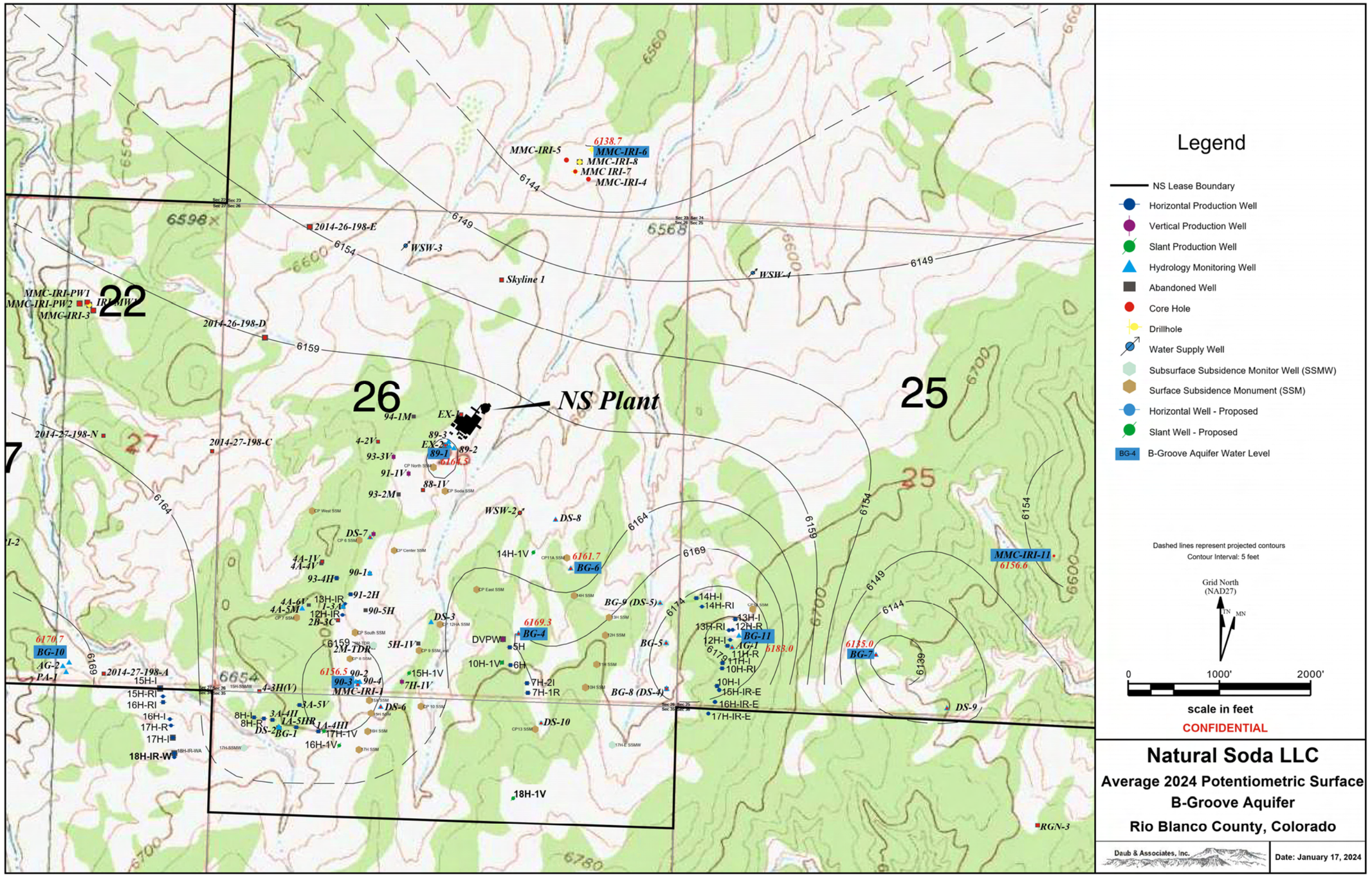
Appendix B: 2024 Potentiometric Surface Maps (Confidential)



Appx. Figure B-1: NS Average 2024 Potentiometric Surface A-Groove Aquifer (CONFIDENTIAL)



Appx. Figure B-2: NS Average 2024 Potentiometric Surface B-Groove Aquifer (CONFIDENTIAL)

Natural Soda LLC

Appendix C: 2024 Vegetation Monitoring & Reclamation Status Report

Prepared

By

Rusty Roberts

Reclamation Status Report
2024 Vegetation Monitoring Results for Reclaimed Sites

Evaluating Status of Current Plant Communities on Fourteen Reclaimed Sites in meeting Criteria for Successful Reclamation

Prepared for:
Natural Soda
Rifle, Colorado

Prepared by:
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December 2024

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Introduction

The Bureau of Land Management (BLM) and the State of Colorado require reclaimed lands to be revegetated in a manner that establishes a diverse, effective, and long-lasting vegetation cover that is equal or nearly so to the natural vegetation of the surrounding areas. Natural Soda's approved mine plan requires periodic monitoring to evaluate the success of revegetation efforts.

Vegetation cover, species composition, species density and ground cover data were collected from undisturbed reference area sites on Natural Soda's lease area near their current mining operations. The data collected from undisturbed areas is used as a baseline for evaluation of the vegetation cover, species composition, species density and ground cover data collected from reclaimed sites to determine if a site has met the criteria for successful reclamation.

Vegetative data was collected between August 20th through September 4, 2024, for 14 reclaimed sites in final reclamation status and for 6 undisturbed areas. The baseline data from undisturbed areas was collected from 6 native rangeland reference area sites on Natural Soda's lease area near the reclaimed sites being evaluated. Table 1 lists the 14 sites in final reclamation status for which data was collected in 2024.

Criteria for Successful Reclamation of Disturbed Areas

The approved criteria for successful reclamation must reflect a plant community of at least five desirable plant species where no one species may exceed 70 percent relative cover and desired foliar cover, bare ground, and shrub and/or forb density must have 80 percent similarity in relation to the identified desired plant community.

The desired plant community referenced in the criteria refers to an ecological site present at or near the area of disturbance. Two ecological sites occur on the parts of the lease area being actively mined, a pinyon and juniper woodland site and a rolling loam rangeland site. The vegetative values in the criteria are based on the capability of a site in an early seral plant community, which is basically an herbaceous species dominated site with varying amounts of shrub species. The rolling loam rangeland site reflects more of the capability of a site in an early seral plant community, thus, data collected from the six-rolling loam native rangeland reference areas were used to evaluate the success of the plant community on each reclaimed site in achieving the reclamation criteria.

Vegetation Sampling Methods Utilized to Measure Criteria for Successful Reclamation

Data was collected based upon recommendations in White River Field Office's Surface Reclamation Plan which require that vegetation cover, composition, and diversity data be gathered using quantitative methods to measure the Core Terrestrial Indicators and Methods in BLM Technical Note 440. BLM approved sampling methods are found in Monitoring Manual for Grassland, Shrubland, and Savanna Ecosystems, Volume I and II: Quick Start.

The core terrestrial indicators include:

(1) Bare Ground: The amount of bare ground is accepted as one of the most sensitive indicators of resource condition in rangelands. A large percentage of bare ground can be an indicator of high erosion potential, low forage production, poor wildlife habitat, and increased risk of invasion by nonnative plant species.

(2) Vegetation Composition: Vegetation composition data, including the cover of groups of species are indicators generated from the same data, and when used together, are sensitive to most changes and are useful when determining the status of key species in a plant community.

(3) Nonnative Invasive Plant Species: The presence and cover of nonnative species is acquired as a component of vegetation composition. Nonnative invasive species can have the ability to significantly alter sustainability and site resilience.

(4) Plant Species of Management Concern: The presence and cover of plant species of management concern is also acquired as a component of vegetation composition. Plant species of management concern can be sensitive to site disturbance, provide important ecosystem functions, or contribute to biological diversity.

Line-point intercept with plot-level species inventory was the vegetation monitoring technique used to measure the core indicators of bare ground, vegetation composition, non-native invasive plant species and plant species of management concern.

Line-point intercept is a rapid, accurate method for quantifying soil cover, including vegetation, litter, rocks and biological crusts. The theory behind this method is that if an infinite number of points are placed in a two-dimensional area, the cover of a plant species can be determined by counting the number of points that hit that species. These measurements are related to wind and water erosion, water infiltration, and the ability of the site to resist and recover from disturbance.

A plot-level plant species inventory provides a rapid estimate of species richness. A search area at each site was utilized to record all plant species occurring within the plot. A thorough search of the plot can detect less-frequently occurring species that may not have been recorded in line-point intercept cover measurements.

Shrub and forb densities, also a criterion for successful reclamation, are not measured by the sampling methods used for the other criteria. Forb and shrub density measurements were taken from one-meter square density quadrants along the same line-point intercept transect line used for the other sampling techniques.

Summary of Results for Reclaimed Sites in Achieving Reclamation Goals

Vegetation cover, plant species composition, ground cover and shrub and forb density data were collected from the 14 sites in final reclamation status and from 6 native rangeland reference area sites near the reclaimed sites being evaluated. Data was collected between August 20 through September 4, 2024. Table 1 lists the sites in final reclamation status for which data was collected in 2024. The location of sites from which vegetative data was collected are illustrated on the attached location maps.

Table 1 is a summary of the progress of each site monitored in achieving successful reclamation. The site-specific monitoring results for each site will be discussed in detail later.

Table 1 - Summary of Results for Reclaimed Sites in Achieving Successful Reclamation Criteria							
	Criteria for Successful Reclamation of Disturbed Areas						
	at least five desirable plant species where no one species may exceed 70 percent relative cover		desired foliar cover, bare ground, and shrub and/or forb density must have 80 percent similarity in relation to the values measured on nearby undisturbed native rangelands				
Site	the number of desired plant species present	the relative cover of the desired species with the greatest cover	% similarity of desired foliar cover	% similarity of bare ground	% similarity of shrub density	% similarity of forb density	Criteria Met
	2024 Data Collected for Sites in Final Reclamation Status						
Pad 4A-1V	20	10	73	76	23	83	No
Pad 93-2M	13	19.3	86	101	32	3	No
Pad 93-4H	19	8.0	73	113	26	59	No
Pad BG-8	15	9.3	68	79	38	3	No
Pad C access route	23	8.0	85	132	124	24	Yes
Pad C	26	8.0	76	126	44	68	No
Pad G	30	20.7	91	140	41	87	Yes
Pad H access route	19	7.0	73	121	24	63	No
Pad H	23	12.7	93	124	38	50	No
Pad IRI 3	18	13.3	77	84	26	7	No
Pad N access route	24	12.0	66	79	72	42	No
Pad N	23	12.0	73	113	44	127	No
Pad T	19	10.0	46	70	133	60	No
Pad U	13	10.0	46	68	59	26	No
	2024 Baseline Data Collected from Native Rangeland Reference Areas						
	33 species	19.0%	57.7%	25.3%	1.43%	3.88%	
Note: values in red are below the criteria required for successful reclamation							

Vegetation Sampling Methods and Procedures for Reclaimed Sites and Reference Areas

The line-point intercept with plot-level species inventory was the vegetation sampling protocol used on both the reclaimed sites and associated reference areas. The procedure involves random placement of a transect line (measuring tape) as the base for data collection. Values for foliar cover, basal cover, species composition and bare ground were measured at specific points along the line. Density quadrants were placed adjacent to the transect line at specific points.

A 25-meter tape was used as the baseline transect for collecting data from the 6 rolling loam reference areas and from the 14 reclaimed sites. One transect line was used to collect data from each of the 6 reference areas. Three transect lines were used to collect data from each of the 14 reclaimed sites.

The following techniques were used to collect the sample data:

- The beginning and ending points of each transect were recorded using a GPS receiver. Azimuths from the 0-meter to the 25-meter point were recorded.
- Photographs were taken at each transect that show vegetation features at the time of sampling.
- Point count data were collected at one half-meter intervals along a 25-meter tape using a thin, straight metal rod (pin flag) for a total of fifty samples taken along each transect.
    - The first plant species in the canopy hit by the drop of a pin flag at each sample point was recorded by species in the "Top Layer". The total of top layer hits was used to determine the total foliar cover for the study site and the total foliar cover for each species hit in the top layer.
    - Subsequent plant species encountered at each sample point and vegetative litter hits were recorded in the "Lower Canopy Layers". Vegetative litter was recorded as either unattached herbaceous or woody litter.
    - Species composition based upon total of all plant species encountered in the top layer and the lower layers at each sample point and recorded by species and summarized by plant group.
    - Soil surface hits were recorded as plant species basal intercepts, lichen crust, moss, embedded litter, duff, rock, or bare soil. Bare ground percent was determined by a bare soil hit with no canopy intercepts in the top and lower canopy layers.
- Forb and shrub density data were taken from one-meter square density quadrants alongside the same line-point intercept transect line used for the other sampling techniques. Quadrants were placed at every 5^{th} sample point along the transect tape for a total of 10 one-meter density quads for each transect. Only desirable forb and shrub densities are required in the criteria for successful reclamation. The total number of desirable forb and shrub species rooted in each quad were counted and recorded by species and summarized by plant group. Densities for grasses or trees were not collected.
- A plot-level plant species inventory was conducted within a search area at each site. The search area for reclaimed sites was within the original disturbance at the site. In addition to those plant species recorded during sampling, other species not encountered during sampling but were observed in the sample area were recorded for species richness.

Vegetation Sampling Results for Nearby Native Rangeland Reference Areas

Vegetation cover, species composition, species density and ground cover data were collected from 6 rolling loam rangeland sites from August 20 through September 4, 2024. Transects were established in the rolling loam sites which represent the site characteristics near the reclaimed sites being evaluated. The vegetative data collected from the 6 reference areas were used to

evaluate the success of the plant community on each reclaimed site in achieving the reclamation criteria.

Values for foliar cover, basal cover, species composition and bare ground were collected from six 25 meter transects for a total of 300 sample points. Values for forb and shrub densities were collected from 60 one-meter square quadrants. Table 2 summarizes the data collected in 2024 in comparison to the data that was collected in 2023.

Table 2- Rolling Loam Native Rangeland Reference Area
Vegetation Cover, Species Composition, Species Density & Ground Cover

	Line-Point Canopy Intercept Data [1]								Density Data [2]	
	Number of Species		% Foliar Cover		% Basal Cover		% Species Composition		Forb/Shrub Density (#/m^2)	
Plant Group	**2023**	**2024**	**2023**	**2024**	**2023**	**2024**	**2023**	**2024**	**2023**	**2024**
Perennial Grasses	7	7	42.0	40.34	8.0	6.0	60.38	63.13	n/a	n/a
Invasive Non-Native Grasses	1	1	4.0	4.67	0	0	6.29	7.83	n/a	n/a
Desirable Forbs	13	20	7.0	3.66	0	0	12.58	8.76	3.65	3.88
Invasive and Non-Native Forbs	2	1	1.5	0.33	0	0	1.89	0.46	n/a	n/a
Shrubs	6	6	14.0	13.67	0	0	18.87	19.82	1.70	1.43
Vegetation Totals	**29**	**35**	**68.5**	**62.67**	**8.0**	**6.0**	**100.0**	**100.0**	**5.35**	**5.32**

Line-Point Intercept Soil Surface Cover Data [3]

Percent Cover by Type	Bare Ground		Biotic Crust		Herbaceous Litter		Woody Litter		Duff		Rock	
	2023	**2024**	**2023**	**2024**	**2023**	**2024**	**2023**	**2024**	**2023**	**2024**	**2023**	**2024**
	23.0	**25.3**	**0.0**	**0.0**	**48.0**	**43.7**	**4.0**	**2.0**	**0.0**	**0.0**	**0.0**	**0.0**

[1] Sum of data from 6 randomly placed transects with 50 sample points collected from each transect. Foliar cover based upon 1st plant species encountered in the canopy at each sample point. Species composition based upon total of all plant species encountered at each sample point.
[2] Sum of density data collected from ten 1-meter square quadrants along each transect. Only desirable forb and shrub densities were recorded based upon reclamation criteria.
[3] Percentages are not cumulative with vegetation totals, rather a measure by layer of ground cover from the top layer thru the lower layers to the soil surface. Values for bare ground have no vegetative, litter or rock cover above the soil surface.

The data collected from the 6 reference areas showed a decline in foliar cover of all plant groups except for non-native grasses. The cover of non-native grasses increased 14 percent above that measured in 2023 but accounted for only 7 percent of the total foliar cover measured. The cover of non-native forb species declined over 80 percent from that recorded in 2023 and accounted for only 0.005 percent of the total cover measured in 2024.

The foliar cover of desirable species declined 8 percent of the values measured in 2023. Foliar cover of perennial grasses declined 4 percent and shrub cover declined 2 percent. The cover of desirable forbs declined 78 percent from values measured in 2023. Even though the desirable forbs showed a significant decline in foliar cover in 2024, their densities increased 6 percent. Likewise, there were 20 species of desirable forbs noted in the study areas in 2024 compared to only 13 in 2023, a 35 percent increase.

There was a 9 percent increase in the amount of bare ground measured in 2024 because of a 9 percent decline in amount of herbaceous litter and the 8.5 percent decline in total foliar cover.

The specific vegetation sampling data collected from the 6 rolling loam rangeland sites are presented in Appendix A. Data in the appendix include (1) vegetation cover, ground cover,

species composition, and forb and shrub densities; (2) the scientific and common names of each plant species encountered; (3) GPS coordinate data for the transect start and end points; and (4) photographs of each transect.

Monitoring Results and Evaluation of Criteria for Sites in Final Reclamation Status

Vegetation cover, species composition, species density and ground cover data were collected from the area of disturbance for 14 sites in final reclamation status. Vegetation sampling data collected for the 14 reclaimed sites are presented in Appendix B through Appendix O. Locations of each site are noted on the attached location maps.

- Appendix B – reclaimed pad 4A-IV.
- Appendix C – reclaimed pad 93-2M.
- Appendix D – reclaimed pad 93-4H.
- Appendix E – reclaimed pad BS-8.
- Appendix F – reclaimed access route to pad C.
- Appendix G – reclaimed pad C.
- Appendix H – reclaimed pad G.
- Appendix I – reclaimed access route to pad H.
- Appendix J – reclaimed pad H.
- Appendix K – combined reclaimed pads IRI-3, MW-1, PW-1, PW-2.
- Appendix L – reclaimed access route to pad N.
- Appendix M – reclaimed pad N.
- Appendix N – reclaimed pad T
- Appendix O – reclaimed pad U

Vegetation sampling data in the appendixes include (1) vegetation cover, ground cover, species composition, and forb and shrub densities; (2) the scientific and common names of each plant species encountered; (3) GPS coordinate data for the transect start and end points; and (4) photographs of each transect.

The following discussion for each site summarizes the vegetation data presented in the appendices, compares that data with that from a previous year's collection and evaluates the 2024 data to that collected from the reference areas in 2024. Also, an evaluation of achieving the criteria for successful reclamation of the disturbance is included for each site.

Reclaimed Pad 4A-1V

Data was collected for this site on August 22, 2024. Three 25 meter transects were placed in a spoke pattern on the pad with 50 sample points on each transect for cover data. Ten one-meter square density quadrants were placed along each transect. Data collected from this site includes vegetative foliar and basal cover, species composition, forb and shrub densities all summarized by plant group. In addition, ground cover data was collected for dead vegetative litter, bare ground, and surface rock.

The value for foliar cover, basal cover, species composition and bare ground were collected from three 25 meter transects for a total of 150 sample points. Values for forb and shrub densities were collected from 30 one-meter square quadrants.

The data collected in 2024 is summarized in Table 3 from the sampling data presented in Appendix Table B1. Each plant species encountered at this site is listed in Table B1. Table 3 summarizes the data collected in 2024 in comparison to most recent data that was collected in 2018.

Table 3 - Reclaimed Pad 4A-1V
Vegetation Cover, Species Composition, Species Density & Ground Cover

	Line-Point Canopy Intercept Data [1]								Density Data [2]	
	Number of Species		% Foliar Cover		% Basal Cover		% Species Composition		Forb/Shrub Density (#/m^2)	
Plant Group	**2018**	**2024**	**2018**	**2024**	**2018**	**2024**	**2018**	**2024**	**2018**	**2024**
Perennial Grasses	8	9	26.7	32.7	5.4	6.7	49.5	55.32	n/a	n/a
Invasive Non-Native Grasses	1	1	2.7	14.0	0.0	0.0	4.7	24.47	n/a	n/a
Perennial Forbs	8	8	14.7	8.0	3.3	0.7	31.8	14.89	10.36	3.20
Invasive and Non-Native Forbs	4	2	3.3	2.0	0.0	0.0	9.3	3.19	n/a	n/a
Shrubs	5	3	2.7	1.3	0.0	0.0	4.7	2.13	0.23	0.33
Vegetation Totals	**26**	**23**	**50.1**	**58.0**	**8.7**	**7.4**	**100.0**	**100.0**	**10.59**	**3.53**

Line-Point Intercept Soil Surface Cover Data [3]

Percent Cover by Type	Bare Ground		Biotic Crust		Herbaceous Litter		Woody Litter		Duff		Rock	
	2018	**2024**	**2018**	**2024**	**2018**	**2024**	**2018**	**2024**	**2018**	**2024**	**2018**	**2024**
	34.7	**33.3**	**0.0**	**0.0**	**31.3**	**28.0**	**4.7**	**3.3**	**0.0**	**0.0**	**0.0**	**0.0**

[1] Sum of data from 3 randomly placed 50 meter transects with 50 sample points collected from each transect. Foliar cover based upon 1st plant species encountered in the canopy at each sample point. Species composition based upon total of all plant species encountered at each sample point.
[2] Sum of density data collected from ten 1-meter square quadrants along each transect. Only forb and shrub densities were recorded based upon reclamation criteria.
[3] Percentages are not cumulative with vegetation totals, rather a measure by layer of ground cover from the top layer thru the lower layers to the soil surface. Values for bare ground have no vegetative, litter or rock cover above the soil surface.

The vegetative data collected for this site in 2018 resulted in the site meeting the criteria for successful reclamation. The site met the criteria for the species diversity, the cover of desirable species, the density of desirable forbs and the amount of bare ground.

The total foliar cover increased 14 percent above that measured in 2018. The foliar cover of desirable species declined 5 percent from 2018 values. The cover of desirable species measured in 2024 was below that required to meet the criteria. There was a 63 percent increase in cover of invasive and non-native species in 2024 from that measured in 2018. Nearly 28 percent of the total species composition measured on the site in 2024 was from invasive non-native species.

Twelve percent of the foliar cover measured in 2018 was from undesirable invasive and non-native species, in 2024 that value has increased to 16 percent mainly due to an 81 percent increase in cover of the invasive non-native cheatgrass (*Bromus tectorum*). The values for bare ground declined 4 percent and vegetative litter declined 11 percent in 2024.

The densities of desirable forbs in 2024 declined 69 percent from values measured in 2018. Shrub densities increased 30 percent above 2018 values.

Table 4 is a comparison of the data collected for reclaimed well pads 4A-1V with that from the rolling loam rangeland reference areas. Only the data required to access the success of achieving successful reclamation is used in Table 4.

Table 4 – Comparison of Reclamation Criteria Elements with Native Rangeland Reference Areas					
Site	**# desired plant species**	**% desired foliar cover**	**% bare ground**	**shrub density (#/m^2)**	**forb density (#/m^2)**
Reclaimed Pad 4A-1V	20 species	42.0	33.3	0.33	3.20
Reference Area [1]	33 species	57.7	25.3	1.43	3.88
[1] *The average of six native rangelands reference areas were used as the baseline for evaluating success of the reclamation criteria.*					

The foliar cover of desirable species was 73 percent of that on the reference areas. The cover of desirable forbs was 54 percent greater than that on the reference areas and shrubs were only 9 percent. The density of desirable forbs on the site was 83 percent and the density of shrubs was 23 percent of that on reference areas.

The amount of bare ground on this site was 24 percent greater than that measured on the reference areas. The amount of herbaceous litter on this site was 64 percent of that on the reference areas.

Evaluation of successful reclamation of the disturbance on reclaimed pad 4A-1V:

- There are 20 desirable plant species established on the site (9 perennial grasses, 8 desirable forbs, and 3 shrubs) meeting the required five plant species.
- Pubescent wheatgrass (*Thinopyrum intermedium*) was the desired species with the greatest relative cover at 10 percent meeting the requirement that no one species can exceed 70 percent relative cover.
- The foliar cover of desirable species on the site was 73 percent of that on the native rangeland reference areas not meeting the required of 80 percent similarity.
- The amount of unprotected bare ground on the site was 24 percent greater than on the native rangeland reference areas which equates to 76 percent similarity, not meeting the required 80 percent similarity.
- The density of forbs and shrubs on the site in comparison with the native rangeland reference areas was 83 percent and 23 percent, respectively. The criteria only require either forb density or shrub density meet the requirement of 80 percent similarity. The forb density has 83 percent similarity which meets these criteria.

The plant community does meet the criteria for species diversity but does not meet the criteria for desired foliar cover or for bare ground. The site does not meet the criteria for the densities of desirable shrubs but does meet the criteria for desirable forbs. This site does not meet all the criteria for successful reclamation of the disturbance at the site.

Reclaimed Pad 93-2M

Data was collected for this site on August 21, 2024. Three 25 meter transects were placed in a spoke pattern on the pad with 50 sample points on each transect for cover data. Ten one-meter square density quadrants were placed along each transect. Data collected from this site includes vegetative foliar and basal cover, species composition, forb and shrub densities all summarized by plant group. In addition, ground cover data was collected for dead vegetative litter, bare ground, and surface rock.

The value for foliar cover, basal cover, species composition and bare ground were collected from three 25 meter transects for a total of 150 sample points. Values for forb and shrub densities were collected from 30 one-meter square quadrants.

The data collected in 2024 is summarized in Table 5 from the sampling data presented in Appendix Table C1. Each plant species encountered at this site is listed in Table C1. Table 5 summarizes the data collected in 2024 in comparison to the data that was collected in 2023.

Table 5 - Reclaimed Pad 93-2M
Vegetation Cover, Species Composition, Species Density & Ground Cover

	Line-Point Canopy Intercept Data [1]								Density Data [2]	
	Number of Species		% Foliar Cover		% Basal Cover		% Species Composition		Forb/Shrub Density (#/m^2)	
Plant Group	**2023**	**2024**	**2023**	**2024**	**2023**	**2024**	**2023**	**2024**	**2023**	**2024**
Perennial Grasses	8	6	45.3	42.0	6.7	8.0	72.44	52.42	n/a	n/a
Invasive Non-Native Grasses	1	1	4.7	16.0	0.0	0.0	9.18	25.0	n/a	n/a
Desirable Forbs	3	3	2.7	0.7	0.0	0.0	4.08	1.62	0.50	0.13
Invasive and Non-Native Forbs	2	7	2.0	8.0	0.0	0.0	3.06	12.1	n/a	n/a
Shrubs	4	4	7.3	6.7	0.0	0.0	12.24	8.9	0.67	0.46
Vegetation Totals	**18**	**21**	**62.0**	**73.4**	**6.7**	**8.0**	**100.0**	**100.0**	**1.17**	**0.59**

Line-Point Intercept Soil Surface Cover Data [3]

Percent Cover by Type	Bare Ground		Biotic Crust		Herbaceous Litter		Woody Litter		Duff		Rock	
	2022	**2024**	**2023**	**2024**	**2023**	**2024**	**2023**	**2024**	**2023**	**2024**	**2023**	**2024**
	28.0	**25.0**	**0.0**	**0.0**	**56.3**	**66.7**	**1.3**	**2.0**	**0.0**	**0.0**	**0.0**	**0.0**

[1] Sum of data from 3 randomly placed transects with 50 sample points collected from each transect. Foliar cover based upon 1st plant species encountered in the canopy at each sample point. Species composition based upon total of all plant species encountered at each sample point.
[2] Sum of density data collected from ten 1-meter square quadrants along each transect. Only desirable forb and shrub densities were recorded based upon reclamation criteria.
[3] Percentages are not cumulative with vegetation totals, rather a measure by layer of ground cover from the top layer thru the lower layers to the soil surface. Values for bare ground have no vegetative, litter or rock cover above the soil surface.

The data collected from this site in 2024 showed an 11 percent decline in foliar cover for desirable species and a 72 percent increase for invasive and non-native species. Foliar cover of desirable species declined 11 percent from values measured in 2023. The foliar cover of perennial grasses declined 7 percent, the cover of desirable forbs declined 74 percent and shrub cover declined 8 percent from values measured in 2023.

The cover for non-native grasses increased 70 percent and non-native forb species increased 25 percent in 2024. In comparison with reference areas the cover of non-native grasses was 71 percent greater and non-native forb species cover was 95 percent greater.

In 2024, the densities of desirable forb species declined 74 percent, and the densities of shrubs declined 31 percent. There was an 11 percent decline in the amount of bare ground measured in 2024 and a 16 percent increase in amount of herbaceous litter.

Table 6 is a comparison of the data collected for reclaimed well pad 93-2M with that of the rolling loam rangeland reference areas. Only the data required to access the success of achieving successful reclamation is used in Table 6.

Table 6 – Comparison of Reclamation Criteria Elements with Native Rangeland Reference Areas					
Site	**# desired plant species**	**% desired foliar cover**	**% bare ground**	**shrub density (#/m^2)**	**forb density (#/m^2)**
Reclaimed Pad 93-2M	13 species	49.4	25.0	0.46	0.13
Reference Area [1]	33 species	57.7	25.3	1.43	3.88
[1] *The average of four native rangelands reference areas were used as the baseline for evaluating success of the reclamation criteria.*					

The foliar cover of desirable species was 93 percent of that on the reference areas. The cover of desirable forbs and shrubs were well below that on the reference areas, only 19 percent for forbs and 47 percent for shrubs. The density of desirable forbs on the site was 3 percent and the density of shrubs was 32 percent of that on reference areas.

The amount of bare ground on this site was 1 percent less than that measured on the reference areas. The amount of herbaceous litter on this site was 34 percent greater than that on the reference areas.

Evaluation of the reclamation efforts of the disturbance on Well Pad 93-2M:

- There are 13 desirable plant species established on the site (6 perennial grasses, 3 desirable forbs, and 4 shrubs) meeting the requirement of at least five plant species.
- Pubescent wheatgrass (*Thinopyrum intermedium*) was the desired species with the greatest relative cover at 19.3 percent meeting the requirement that no one species can exceed 70 percent relative cover.
- The foliar cover of desirable species on the site was 86 percent of that on the native rangeland reference area exceeding the requirement of 80 percent similarity.
- The amount of unprotected bare ground on the site was 1 percent less than that on the native rangeland reference area which equates to 101 percent similarity, exceeding the required 80 percent similarity.
- The density of desirable forbs and shrubs on the site in comparison with the native rangeland reference areas was 3 percent and 32 percent, respectively. Neither forb density nor shrub density have met the requirement of 80 percent similarity.

The plant community does meet the criteria for species diversity, desired foliar cover, and the amount of bare ground. The site does not meet the criteria for the densities of desirable forbs or shrubs. This site does not meet all the criteria for successful reclamation of the disturbance at the site.

Reclaimed Pad 93-4H

Data was collected for this site on August 21, 2024. Three 25 meter transects were placed in a spoke pattern on the pad with 50 sample points on each transect for cover data. Ten one-meter square density quadrants were placed along each transect. Data collected from this site includes vegetative foliar and basal cover, species composition, forb and shrub densities all summarized by plant group. In addition, ground cover data was collected for dead vegetative litter, bare ground, and surface rock. The value for foliar cover, basal cover, species composition and bare ground were collected from three 25 meter transects for a total of 150 sample points. Values for forb and shrub densities were collected from 30 one-meter square quadrants.

The data collected in 2024 is summarized in Table 7 from the sampling data presented in Appendix Table D1. Each plant species encountered at this site is listed in Table D1. Table 7 summarizes the data collected in 2024 in comparison to the data that was collected in 2019.

Table 7 - Reclaimed Pad 93-4H
Vegetation Cover, Species Composition, Species Density & Ground Cover

	Line-Point Canopy Intercept Data [1]								Density Data [2]	
	Number of Species		% Foliar Cover		% Basal Cover		% Species Composition		Forb/Shrub Density (#/m^2)	
Plant Group	**2019**	**2024**	**2019**	**2024**	**2019**	**2024**	**2019**	**2024**	**2019**	**2024**
Perennial Grasses	9	8	38.6	30.7	8.1	5.4	44.5	42.86	n/a	n/a
Invasive Non-Native Grasses	1	1	10.7	20.0	0.0	0.0	18.2	36.14	n/a	n/a
Desirable Forbs	7	8	18.8	6.7	2.0	0.0	27.1	8.40	5.93	1.59
Invasive and Non-Native Forbs	4	6	2.6	5.4	0.0	0.0	6.6	6.72	n/a	n/a
Shrubs	6	3	3.4	4.7	0.0	0.0	3.6	5.88	0.37	0.37
Vegetation Totals	**27**	**26**	**74.1**	**67.5**	**10.1**	**5.4**	**100.0**	**100.0**	**6.30**	**1.96**

Line-Point Intercept Soil Surface Cover Data [3]

Percent Cover by Type	Bare Ground		Biotic Crust		Herbaceous Litter		Woody Litter		Duff		Rock	
	2019	**2024**	**2019**	**2024**	**2019**	**2024**	**2019**	**2024**	**2019**	**2024**	**2019**	**2024**
	15.3	**22.0**	**0.0**	**0.0**	**47.3**	**53.3**	**7.3**	**3.3**	**0.0**	**0.0**	**1.3**	**0.0**

[1] Sum of data from 3 randomly placed 25 meter transects with 50 sample points collected from each transect. Foliar cover based upon 1st plant species encountered in the canopy at each sample point. Species composition based upon total of all plant species encountered at each sample point.
[2] Sum of density data collected from ten 1-meter square quadrants along each transect. Only desirable forb and shrub densities were recorded based upon reclamation criteria.
[3] Percentages are not cumulative with vegetation totals, rather a measure by layer of ground cover from the top layer thru the lower layers to the soil surface. Values for bare ground have no vegetative, litter or rock cover above the soil surface.

The vegetative data collected for this site in 2019 resulted in the site meeting the criteria for successful reclamation. The site met the criteria for the species diversity, the cover of desirable species, the density of desirable forbs and the amount of bare ground.

In 2024, the total foliar cover declined 9 percent from that measured in 2019. The foliar cover of desirable species declined 31 percent resulting in the site not meeting the criteria for 2024. There was a 48 percent increase in cover of invasive and non-native species in 2024 from that measured in 2019. Nearly 43 percent of the total species composition measured on the site in 2024 was from invasive non-native species.

The foliar cover from undesirable invasive and non-native species measured in 2019 was 13 percent, in 2024 that value has increased to 25 percent mainly due to a 20 percent increase in cover of the invasive non-native cheatgrass (*Bromus tectorum*). The values for bare ground increased 30 percent but vegetative litter increased 11 percent in 2024.

In 2019, the density of desirable forbs met the criteria for successful reclamation. The densities of desirable forbs in 2024 declined 27 percent resulting in no longer meeting the necessary criteria. Shrub densities were the same as measured in 2019.

Table 8 is a comparison of the data collected for reclaimed well pads 93-4H with that from the rolling loam rangeland reference area. Only the data required to access the success of achieving successful reclamation is used in Table 8.

Table 8 – Comparison of Reclamation Criteria Elements with Native Rangeland Reference Areas

Site	# desired plant species	% desired foliar cover	% bare ground	shrub density (#/m^2)	forb density (#/m^2)
Reclaimed Pad 93-4H	19 species	42.1	22.0	0.37	1.59
Reference Area [1]	33 species	57.7	25.3	1.43	3.88

[1] *The average of six native rangelands reference areas were used as the baseline for evaluating success of the reclamation criteria.*

The foliar cover of desirable species was 73 percent of that on the reference areas. The cover of desirable forbs was 45 percent greater than that on the reference areas and shrubs were only 34 percent. The density of desirable forbs on the site was 59 percent and the density of shrubs was 26 percent of that on reference areas.

The amount of bare ground on this site was 13 percent below that measured on the reference areas. The amount of herbaceous litter on this site was 18 percent greater than that on the reference areas.

Evaluation of successful reclamation of the disturbance on Well Pad site 93-4H

- There are 19 desirable plant species established on the site (10 perennial grasses, 8 desirable forbs, and 3 shrubs) meeting the requirement of at least five plant species.
- Pubescent wheatgrass (*Thinopyrum intermedium*) was the desired species with the greatest relative cover at 8.0 percent meeting the requirement that no one species can exceed 70 percent relative cover.
- The foliar cover of desirable species on the site was 73 percent of that on the native rangeland reference areas not meeting the requirement of 80 percent similarity.
- The amount of unprotected bare ground on the site was 13 percent less than on the native rangeland reference areas which equates to 113 percent similarity, meeting the required 80 percent similarity.
- The density of forbs and shrubs on the site in comparison with the native rangeland reference areas was 59 percent and 26 percent, respectively. The criteria only require either forb density or shrub density meet the requirement of 80 percent similarity. Neither forb density nor shrub density have met the requirement of 80 percent similarity.

The plant community does meet the criteria for species diversity and the amount of bare ground. The site does not meet the criteria for desired foliar cover nor the densities of desirable forbs or shrubs. This site does not meet all the criteria for successful reclamation of the disturbance at the site.

Reclaimed Pad BG-8

Data was collected for this site on August 21, 2024. Three 25 meter transects were placed in a spoke pattern on the pad with 50 sample points on each transect for cover data. Ten one-meter square density quadrants were placed along each transect. Data collected from this site includes vegetative foliar and basal cover, species composition, forb and shrub densities and ground cover all summarized by plant group. In addition, ground cover data was collected for dead vegetative litter, bare ground, and surface rock. The value for foliar cover, basal cover, species composition and bare ground were collected from three 25 meter transects for a total of 150 sample points. Values for forb and shrub densities were collected from 30 one-meter square quadrants.

The data collected in 2024 is summarized in Table 9 from the sampling data presented in Appendix Table E1. Each plant species encountered at this site is listed in Table E1. Table 9 summarizes the data collected in 2024 in comparison to the data that was collected in 2023.

Table 9 - Reclaimed Pad BS-8
Vegetation Cover, Species Composition, Species Density & Ground Cover

	Line-Point Canopy Intercept Data [1]								Density Data [2]	
	Number of Species		% Foliar Cover		% Basal Cover		% Species Composition		Forb/Shrub Density (#/m^2)	
Plant Group	**2023**	**2024**	**2023**	**2024**	**2023**	**2024**	**2023**	**2024**	**2023**	**2024**
Perennial Grasses	10	9	46.7	34.7	10.0	4.7	63.97	59.14	n/a	n/a
Invasive Non-Native Grasses	1	1	8.0	12.0	0.0	0.0	12.61	22.58	n/a	n/a
Desirable Forbs	6	2	0.7	0.7	0.0	0.0	1.80	1.08	0.10	0.10
Invasive and Non-Native Forbs	2	5	8.7	4.7	0.0	0.0	13.51	10.70	n/a	n/a
Shrubs	5	4	6.0	4.0	0.0	0.0	8.11	6.50	0.46	0.54
Vegetation Totals	**24**	**21**	**70.1**	**56.1**	**10.0**	**4.7**	**100.0**	**100.0**	**0.56**	**0.64**

Line-Point Intercept Soil Surface Cover Data [3]												
Percent Cover by Type	**Bare Ground**		**Biotic Crust**		**Herbaceous Litter**		**Woody Litter**		**Duff**		**Rock**	
	2023	**2024**	**2023**	**2024**	**2023**	**2024**	**2023**	**2024**	**2023**	**2024**	**2023**	**2024**
	18.0	**32.0**	**0.0**	**0.0**	**55.3**	**48.7**	**1.3**	**0.7**	**0.0**	**0.0**	**1.3**	**0.7**

[1] Sum of data from 3 randomly placed 25 meter transects with 50 sample points collected from each transect. Foliar cover based upon 1st plant species encountered in the canopy at each sample point. Species composition based upon total of all plant species encountered at each sample point.
[2] Sum of density data collected from ten 1-meter square quadrants along each transect. Only desirable forb and shrub densities were recorded based upon reclamation criteria.
[3] Percentages are not cumulative with vegetation totals, rather a measure by layer of ground cover from the top layer thru the lower layers to the soil surface. Values for bare ground have no vegetative, litter or rock cover above the soil surface.

The data collected from this site in 2024 showed a decline in foliar cover for desirable species. Foliar cover of desirable species declined 26 percent from the values measured in 2023. The foliar cover of perennial grasses declined 26 percent. Shrub cover declined 33 percent and desirable forb cover was unchanged from values measured in 2023.

The cover for non-native grasses increased 33 percent and cover of non-native forb species declined 33 percent of the values measured in 2023. In 2024, the cover of non-native grasses was 1.5 times greater than on the reference areas and non-native forb species cover was 13 times greater.

In 2024, the densities of desirable forb species were unchanged from values measured in 2023 and the densities of shrubs increased 15 percent. In comparison with reference areas, desirable forb species were only 3 percent of that on the reference areas and shrub densities were 38 percent of that on the reference areas.

There was a 44 percent increase in the amount of bare ground measured in 2024 because of a 12 percent increase in amount of herbaceous litter and the 20 percent decrease in total foliar cover. Table 10 is a comparison of the data collected for reclaimed Pad BG-8 with that of the rolling loam rangeland reference areas. Only the data required to access the success of achieving successful reclamation is used in Table 10.

Table 10 – Comparison of Reclamation Criteria Elements with Native Rangeland Reference Areas

Site	# desired plant species	% desired foliar cover	% bare ground	shrub density (#/m^2)	forb density (#/m^2)
Reclaimed Pad BS-8	15 species	39.4	32.0	0.54	0.10
Reference Area [1]	33 species	57.7	25.3	1.43	3.88

[1] *The average of six native rangelands reference areas were used as the baseline for evaluating success of the reclamation criteria.*

In comparison with values measured on the reference areas, the foliar cover of desirable species on the site was 32 percent less. The density of desirable forbs on the site was 3 percent and the density of shrubs was 38 percent of that on reference areas.

The amount of bare ground on this site was 21 percent greater than that measured on the reference areas. The amount of herbaceous litter on this site was 10 percent greater than that on the reference areas.

Evaluation of the reclamation efforts of the disturbance on Pad BG-8:

- There are 15 desirable plant species established on the site (9 perennial grasses, 2 desirable forbs, and 4 shrubs) meeting the requirement of at least five plant species.
- Slender wheatgrass (*Elymus trachycaulus*) was the desired species with the greatest relative cover at 9.3 percent meeting the requirement that no one species can exceed 70 percent relative cover.
- The foliar cover of desirable species on the site was 68 percent of that on the native rangeland reference areas not meeting the requirement of 80 percent similarity.
- The amount of unprotected bare ground on the site was 21 percent greater than that on the native rangeland reference areas which equates to 79 percent similarity, not meeting the required 80 percent similarity.

- The density of forbs and shrubs on the site in comparison with the native rangeland reference areas was 3 percent and 38 percent, respectively. Neither forb density nor shrub density have met the requirement of 80 percent similarity.

The plant community meets only the species diversity criteria. It does not meet the bare ground, desired foliar cover, shrub density and desirable forb density criteria necessary for successful reclamation of the disturbance at this site. This site does not meet all the criteria for successful reclamation of the disturbance at the site.

Reclaimed Access Route to Pad C

This is a 280 meter (920 feet) narrow linear reclaimed access route leading from corehole pad H to corehole pad C. Vegetation sampling data was collected on August 26 and 28, 2024. As this site was a linear disturbance, three 25 meter transects were randomly placed one near either end of the route and one near the mid-point of the route. The value for foliar cover, basal cover, species composition and bare ground were collected from three 25 meter transects for a total of 150 sample points. Values for forb and shrub densities were collected from 30 one-meter square quadrants.

The data collected in 2024 is summarized in Table 11 from the sampling data presented in Appendix Table F1. Each plant species encountered at this site is listed in Table F1. Data collected from this access route includes vegetative foliar and basal cover, species composition, forb and shrub densities and ground cover all summarized by plant group. In addition, ground cover data was collected for dead vegetative litter, bare ground, and surface rock.

Table 11 - Reclaimed Access Route to Pad C
Vegetation Cover, Species Composition, Species Density & Ground Cover

Plant Group	Line-Point Canopy Intercept Data [1]				Density Data [2]
	Number of Species	% Foliar Cover	% Basal Cover	% Species Composition	Desirable Forb/Shrub Density (#/m^2)
Perennial Grasses	8	32.7	4.0	43.44	n/a
Invasive Non-Native Grasses	1	18.0	0.0	34.43	n/a
Desirable Forbs	9	2.1	0.0	2.46	0.93
Invasive and Non-Native Forbs	2	0.7	0.0	1.63	n/a
Shrubs	6	14.0	1.3	18.04	1.87
Vegetation Totals	**26**	**67.5**	**5.3**	**100.0**	**2.80**

Line-Point Intercept Soil Surface Cover Data [3]

Percent Cover by Type	Bare Ground	Biotic Crust	Herbaceous Litter	Woody Litter	Duff	Rock
	17.3	**0.0**	**61.0**	**7.0**	**0.0**	**0.0**

[1] Sum of data from 3 randomly placed 25 meter transects with 50 sample points collected from each transect. Foliar cover based upon 1st plant species encountered in the canopy at each sample point. Species composition based upon total of all plant species encountered at each sample point.
[2] Sum of density data collected from ten 1-meter square quadrants along each transect. Only desirable forb and shrub densities were recorded based upon reclamation criteria.
[3] Percentages are not cumulative with vegetation totals, rather a measure by layer of ground cover from the top layer thru the lower layers to the soil surface. Values for bare ground have no vegetative, litter or rock cover above the soil surface.

The reclaimed access route has a good diversity of native and seeded plant species along the length of the route. Many of the desirable forbs and shrubs were not in the seed mix but established on the route from species adjacent to the route. The mix of desirable grasses, forbs and shrubs account for 64 percent of the species composition on the route. However, 36 percent of the composition came from invasive and non-native species, primarily cheatgrass (*Bromus tectorum*).

Table 12 is a comparison of the data collected for the reclaimed route with that of the rolling loam rangeland reference areas. Only the data required to access the success of achieving successful reclamation is used in Table 12.

Table 12 – Comparison of Reclamation Criteria Elements with Native Rangeland Reference Areas

Site	# desired plant species	% desired foliar cover	% bare ground	shrub density (#/m^2)	forb density (#/m^2)
Reclaimed Access Route to Pad C	23 species	48.8	17.3	1.87	0.93
Reference Area [1]	33 species	57.7	25.3	1.43	3.88

[1] *The average of six native rangelands reference areas were used as the baseline for evaluating success of the reclamation criteria.*

In comparison with values measured on the reference areas, the foliar cover of desirable species on the site was 15 percent less. The density of desirable forbs on the site was 24 percent of that on the reference areas. The density of shrubs was 24 percent greater than that on the reference areas.

The amount of bare ground on this site was 32 percent less than that measured on the reference areas. The amount of herbaceous litter on this site was 28 percent greater than that on the reference areas.

Evaluation of the reclamation efforts of the disturbance on the access route to Pad C:

- There are 23 desirable plant species established on the site (8 perennial grasses, 9 desirable forbs, and 6 shrubs) meeting the requirement of at least five plant species.
- There were two desired species with equal relative cover of 8.0 percent each, needle & thread needlegrass (*Hesperostipa comata*) and broom snakeweed (*Gutierrezia sarothrae*). Neither species exceeded the 70 percent relative cover requirement thus meeting the criteria.
- The foliar cover of desirable species on the site was 85 percent of that on the native rangeland reference areas meeting the requirement of 80 percent similarity.
- The amount of unprotected bare ground on the site was 32 percent less than that on the native rangeland reference areas which equates to 132 percent similarity, meeting the required 80 percent similarity.
- The density of forbs and shrubs on the site in comparison with the native rangeland reference areas was 24 percent and 124 percent, respectively. The criteria only require either forb density or shrub density meet the requirement of 80 percent similarity. Shrub density has met the requirement of 80 percent similarity.

The plant community meets the species diversity, the bare ground, the desired foliar cover, and the shrub density criteria necessary for successful reclamation of the disturbance at this site. This site does meet the criteria for successful reclamation of the disturbance at the site.

Reclaimed Pad C

Data was collected for this site on August 28, 2024. Three 25 meter transects were placed in a spoke pattern on the pad with 50 sample points on each transect for a total of 150 points for cover data. Ten one-meter square density quadrants were placed along each transect for a total of 30 quadrants. Data collected from this site includes vegetative foliar and basal cover, species composition, forb and shrub densities and ground cover all summarized by plant group. In addition, ground cover data was collected for dead vegetative litter, bare ground, and surface rock.1

The data collected in 2024 is summarized in Table 13 from the sampling data presented in Appendix Table G1. Each plant species encountered at this site is listed in Table G1. Table 13 summarizes the data collected in 2024 in comparison with the most recent data that was collected in 2021.

Table 13 - Reclaimed Pad C
Vegetation Cover, Species Composition, Species Density & Ground Cover

	Line-Point Canopy Intercept Data [1]								Density Data [2]	
	Number of Species		% Foliar Cover		% Basal Cover		% Species Composition		Forb/Shrub Density (#/m^2)	
Plant Group	**2021**	**2024**	**2021**	**2024**	**2021**	**2024**	**2021**	**2024**	**2021**	**2024**
Perennial Grasses	10	9	40.2	31.3	8.7	4.0	61.68	38.76	n/a	n/a
Invasive Non-Native Grasses	1	1	2.7	21.3	0.0	0.0	5.61	34.89	n/a	n/a
Perennial Forbs	12	11	4.0	4.0	0.0	0.0	6.54	5.40	3.33	1.70
Invasive and Non-Native Forbs	1	2	1.3	6.7	0.0	0.0	1.87	10.09	n/a	n/a
Shrubs	6	6	15.9	8.7	0.7	0.7	24.30	10.86	2.34	0.97
Vegetation Totals	**30**	**29**	**64.1**	**72.0**	**9.4**	**4.7**	**100.0**	**100.0**	**5.67**	**2.67**

Line-Point Intercept Soil Surface Cover Data [3]												
Percent Cover by Type	**Bare Ground**		**Biotic Crust**		**Herbaceous Litter**		**Woody Litter**		**Duff**		**Rock**	
	2021	**2024**	**2021**	**2024**	**2021**	**2024**	**2021**	**2024**	**2021**	**2024**	**2021**	**2024**
	18.7	**18.7**	**0.0**	**0.0**	**56.0**	**57.3**	**6.7**	**2.0**	**0.0**	**0.0**	**0.7**	**0.0**

[1] Sum of data from 3 randomly placed 50 meter transects with 50 sample points collected from each transect. Foliar cover based upon 1st plant species encountered in the canopy at each sample point. Species composition based upon total of all plant species encountered at each sample point.
[2] Sum of density data collected from ten 1-meter square quadrants along each transect. Only forb and shrub densities were recorded based upon reclamation criteria.
[3] Percentages are not cumulative with vegetation totals, rather a measure by layer of ground cover from the top layer thru the lower layers to the soil surface. Values for bare ground have no vegetative, litter or rock cover above the soil surface.

The vegetative data collected for this site in 2021 resulted in the site meeting the criteria for successful reclamation. The site met the criteria for the species diversity, the cover of desirable species, the density of shrubs and the amount of bare ground.

The total foliar cover increased 11 percent above that measured in 2021. The foliar cover of desirable species declined 27 percent resulting in the site not meeting the criteria for 2024. There was a 28 percent increase in cover of invasive and non-native species in 2024 from that measured in 2021.

Invasive non-native species accounted for 45 percent of the total species composition measured on the site in 2024.

The foliar cover from undesirable invasive and non-native species measured in 2021 was 4.7 percent, in 2024 that value has increased to 28 percent mainly due to a 21 percent increase in cover of the invasive non-native cheatgrass (*Bromus tectorum*). The values for bare ground in 2024 remained constant with those measured in 2021.

In 2021, the density of shrubs met the criteria for successful reclamation. Shrub densities declined 58 percent resulting in the site no longer meeting the necessary criteria. The densities of desirable forbs in 2024 declined 49 percent from values measured in 2021.

Table 14 is a comparison of the data collected for reclaimed Pad C with that of the rolling loam rangeland reference areas. Only the data required to access the success of achieving successful reclamation is used in Table 14.

Table 14 – Comparison of Reclamation Criteria Elements with Native Rangeland Reference Areas

Site	# desired plant species	% desired foliar cover	% bare ground	shrub density (#/m^2)	forb density (#/m^2)
Reclaimed Pad C	26 species	44.0	18.7	0.97	1.70
Reference Area [1]	33 species	57.7	25.3	1.43	3.88

[1] *The average of six native rangelands reference areas were used as the baseline for evaluating success of the reclamation criteria.*

In comparison with values measured on the reference areas, the foliar cover of desirable species on the site was 76 of that on the reference areas. The density of desirable forbs on the site was 44 percent of that on the reference areas. The density of shrubs was 68 percent of that in the reference areas.

The amount of bare ground on the reference areas was 26 percent greater than that measured on this site. The amount of herbaceous litter on this site was 24 percent greater than that on the reference areas.

Evaluation of the reclamation efforts of the disturbance on Corehole Pad C:

- There are 26 desirable plant species established on the site (9 perennial grasses, 11 desirable forbs, and 6 shrubs) meeting the requirement of at least five plant species.
- Western wheatgrass (*Pascopyrum smithii*) was the desired species with the greatest relative cover at 8.0 percent meeting the requirement that no one species can exceed 70 percent relative cover.
- The foliar cover of desirable species on the site was 76 percent of that on the native rangeland reference areas not meeting the requirement of 80 percent similarity.
- The amount of unprotected bare ground on the site was 26 percent less than that on the native rangeland reference areas which equates to 126 percent similarity, exceeding the required 80 percent similarity.
- The density of forbs and shrubs on the site in comparison with the native rangeland reference areas was 44 percent and 68 percent, respectively. The criteria only require

either forb density or shrub density meet the requirement of 80 percent similarity. Neither shrub nor forb densities have met the required criteria.

The plant community on this site meets criteria for species diversity and bare ground, but not for desired foliar cover or for shrub and forb densities. This site does not meet the criteria necessary for successful reclamation of the disturbance at this site.

Reclaimed Pad G

Vegetation sampling data was collected on August 20, 2024. Three 25 meter transects were randomly placed on the pad with 50 sample points on each transect. Ten one-meter square density quadrants were placed along each transect. The value for foliar cover, basal cover, species composition and bare ground were collected from three 25 meter transects for a total of 150 sample points. Values for forb and shrub densities were collected from 30 one-meter square quadrants. Data collected from this site includes vegetative foliar and basal cover, species composition, forb and shrub densities and ground cover all summarized by plant group. In addition, ground cover data was collected for dead vegetative litter, bare ground, and surface rock.

Table 15 summarizes the data collected in 2024 in comparison to the data that was collected in 2023. The 2024 data in Table 15 is summarized from data presented in Appendix Table H1. Each plant species encountered at this site is listed in Table H1.

Table 15 - Reclaimed Pad G
Vegetation Cover, Species Composition, Species Density & Ground Cover

	Line-Point Canopy Intercept Data [1]								Density Data [2]	
	Number of Species		% Foliar Cover		% Basal Cover		% Species Composition		Forb/Shrub Density (#/m²)	
Plant Group	**2023**	**2024**	**2023**	**2024**	**2023**	**2024**	**2023**	**2024**	**2023**	**2024**
Perennial Grasses	9	10	47.3	44.7	8.0	7.3	67.21	58.98	n/a	n/a
Invasive Non-Native Grasses	1	1	3.3	16.0	0.0	0.0	7.38	26.50	n/a	n/a
Desirable Forbs	15	14	6.0	3.4	0.7	0.0	10.66	5.98	3.50	3.36
Invasive and Non-Native Forbs	2	2	5.4	2.0	0.0	0.0	6.55	3.41	n/a	n/a
Shrubs	6	6	6.0	4.1	0.7	0.7	8.20	5.13	0.67	0.84
Vegetation Totals	**33**	**33**	**68.0**	**70.2**	**9.4**	**8.0**	**100.0**	**100.0**	**4.17**	**4.20**

Line-Point Intercept Soil Surface Cover Data [3]

Percent Cover by Type	Bare Ground		Biotic Crust		Herbaceous Litter		Woody Litter		Duff		Rock	
	2023	**2024**	**2023**	**2024**	**2023**	**2024**	**2023**	**2024**	**2023**	**2024**	**2023**	**2024**
	16.7	**15.3**	**0.0**	**0.0**	**58.7**	**64.7**	**4.7**	**2.7**	**0.0**	**0.0**	**0.0**	**0.0**

[1] Sum of data from 3 randomly placed transects with 50 sample points collected from each transect. Foliar cover based upon 1st plant species encountered in the canopy at each sample point. Species composition based upon total of all plant species encountered at each sample point.
[2] Sum of density data collected from ten 1-meter square quadrants along each transect. Only desirable forb and shrub densities were recorded based upon reclamation criteria.
[3] Percentages are not cumulative with vegetation totals, rather a measure by layer of ground cover from the top layer thru the lower layers to the soil surface. Values for bare ground have no vegetative, litter or rock cover above the soil surface.

The data collected from this site in 2024 showed a 12 percent decrease in foliar cover for desirable species compared to values measured in 2023. The foliar cover of perennial grasses declined by 6 percent in 2024. Both shrub cover and cover of desirable forbs showed declines in

2024. Shrub cover decreased 32 percent, and desirable forbs cover decreased 34 percent compared to the values measured in 2023.

There was a 46 percent decline in the amount of bare ground measured in 2024 because of a 9 percent increase in amount of herbaceous litter and a 3 percent increase in total foliar cover.

The foliar cover from undesirable invasive and non-native species measured in 2023 was 8.7 percent, in 2024 that value has increased to 18 percent mainly due to a 16 percent increase in cover of the invasive non-native cheatgrass (*Bromus tectorum*). In comparison with reference areas, the cover of non-native grass was 2.5 times greater and non-native forb species cover was 5 times greater than the values measured on the reference areas.

Table 16 is a comparison of the data collected for corehole pad G with that from the rolling loam rangeland reference areas. Only the data required to access the success of achieving successful reclamation is used in Table 16.

Table 16 – Comparison of Reclamation Criteria Elements with Native Rangeland Reference Areas

Site	# desired plant species	% desired foliar cover	% bare ground	shrub density (#/m^2)	forb density (#/m^2)
Reclaimed Pad G	30 species	52.2	15.3	0.84	3.36
Reference Area [1]	33 species	57.7	25.3	1.43	3.88

[1] *The average of six native rangelands reference areas were used as the baseline for evaluating success of the reclamation criteria.*

In comparison with values measured on the reference areas, the foliar cover of desirable species on the site was 91 percent of that on the reference areas. In 2024, the densities of desirable forb species declined 4 percent, and the densities of shrubs increased 20 percent of the values measured in 2023. In comparison with reference areas, desirable forb densities were 87 percent of that on the reference areas and shrub densities were 41 percent of that on the reference areas.

The amount of bare ground on this site was 40 percent below that measured on the reference areas. The amount of herbaceous litter on this site was 32 percent greater than that on the reference areas.

Evaluation of the reclamation efforts of the disturbance on Corehole Pad G:

- There are 30 desirable plant species established on the site (10 perennial grasses, 14 desirable forbs, and 6 shrubs) meeting the requirement of at least five plant species.
- Slender wheatgrass (*Elymus trachycaulus*) was the desired species with the greatest relative cover at 20.7 percent meeting the requirement that no one species can exceed 70 percent relative cover.
- The foliar cover of desirable species on the site was 91 percent of that on the native rangeland reference areas, meeting the required 80 percent similarity.
- The amount of unprotected bare ground on the site was 40 percent less than that on the native rangeland reference areas which equates to 140 percent similarity, exceeding the required 80 percent similarity.

- The density of desirable forbs and shrubs on the site in comparison with the native rangeland reference areas was 87 percent and 41 percent, respectively. The criteria only require either desirable forbs density or shrub density meet the requirement of 80 percent similarity. The desirable forbs density of 87 percent similarity has met the required criteria.

The plant community on this site does meet the criteria for species diversity, desired foliar cover, desirable forb density and bare ground. This site does meet all the criteria for successful reclamation of the disturbance at the site.

Reclaimed Access Route to Pad H

This is a 170 meter (558 feet) narrow linear reclaimed access route leading to corehole pad H. Vegetation sampling data was collected on August 26, 2024. As this site was a short linear disturbance, only two 25 meter transects were randomly placed one near either end of the route. The value for foliar cover, basal cover, species composition and bare ground were collected from two 25 meter transects for a total of 100 sample points. Values for forb and shrub densities were collected from 20 one-meter square quadrants.

The data collected in 2024 is summarized in Table 17 from the sampling data presented in Appendix Table I1. Each plant species encountered at this site is listed in Table I1. Data collected from this access route includes vegetative foliar and basal cover, species composition, forb and shrub densities and ground cover all summarized by plant group. In addition, ground cover data was collected for dead vegetative litter, bare ground, and surface rock.

Table 17 – Reclaimed Access Route to Pad H
Vegetation Cover, Species Composition, Species Density & Ground Cover

	Line-Point Canopy Intercept Data [1]				Density Data [2]
Plant Group	**Number of Species**	**% Foliar Cover**	**% Basal Cover**	**% Species Composition**	**Desirable Forb/Shrub Density (#/m²)**
Perennial Grasses	8	35.0	5.0	65.46	n/a
Invasive Non-Native Grasses	1	7.0	0.0	16.36	n/a
Desirable Forbs	8	4.0	1.0	10.91	2.45
Invasive and Non-Native Forbs	1	1.0	0.0	1.82	n/a
Shrubs	3	3.0	0.0	5.45	0.35
Vegetation Totals	**21**	**50.0**	**6.0**	**100.0**	**2.80**

Line-Point Intercept Soil Surface Cover Data [3]						
Percent Cover by Type	**Bare Ground**	**Biotic Crust**	**Herbaceous Litter**	**Woody Litter**	**Duff**	**Rock**
	20.0	**0.0**	**31.0**	**6.0**	**0.0**	**0.0**

[1] Sum of data from 2 randomly placed 25 meter transects with 50 sample points collected from each transect. Foliar cover based upon 1st plant species encountered in the canopy at each sample point. Species composition based upon total of all plant species encountered at each sample point.
[2] Sum of density data collected from ten 1-meter square quadrants along each transect. Only desirable forb and shrub densities were recorded based upon reclamation criteria.
[3] Percentages are not cumulative with vegetation totals, rather a measure by layer of ground cover from the top layer thru the lower layers to the soil surface. Values for bare ground have no vegetative, litter or rock cover above the soil surface.

The reclaimed access route has a good diversity of native and seeded plant species along the length of the route. The mix of desirable grasses, forbs and shrubs account for 82 percent of the species composition on the route. However, 18 percent of the composition came from invasive and non-native species, primarily cheatgrass (*Bromus tectorum*).

Table 18 is a comparison of the data collected for the reclaimed route with that of the rolling loam rangeland reference areas. Only the data required to access the success of achieving successful reclamation is used in Table 18.

Table 18 – Comparison of Reclamation Criteria Elements with Native Rangeland Reference Areas

Site	# desired plant species	% desired foliar cover	% bare ground	shrub density (#/m^2)	forb density (#/m^2)
Reclaimed Access Route to Pad H	19 species	42.0	20.0	0.35	2.45
Reference Area [1]	33 species	57.7	25.3	1.43	3.88

[1] *The average of six native rangelands reference areas were used as the baseline for evaluating success of the reclamation criteria.*

In comparison with values measured on the reference areas, the foliar cover of desirable species on the site was 27 percent less. The density of desirable forbs on the site was 63 percent of that on the reference areas. The density of shrubs was 24 percent of that on the reference areas.

The amount of bare ground on this site was 21 percent less than that measured on the reference areas. The amount of herbaceous litter on this site was 29 percent less than that on the reference areas.

Evaluation of the reclamation efforts of the disturbance on the access route to Pad H:

- There are 19 desirable plant species established on the site (8 perennial grasses, 8 desirable forbs, and 3 shrubs) meeting the requirement of at least five plant species.
- There were two desired species with equal relative cover of 7.0 percent each, Indian ricegrass (*Achnatherum hymenoides*) and basin wildrye (*Leymus cinereus*). Neither species exceeded the 70 percent relative cover requirement thus meeting the criteria.
- The foliar cover of desirable species on the site was 73 percent of that on the native rangeland reference areas not meeting the requirement of 80 percent similarity.
- The amount of unprotected bare ground on the site was 21 percent less than that on the native rangeland reference areas which equates to 121 percent similarity, meeting the required 80 percent similarity.
- The density of forbs and shrubs on the site in comparison with the native rangeland reference areas was 63 percent and 24 percent, respectively. The criteria only require either forb density or shrub density meet the requirement of 80 percent similarity. Neither shrub nor forb densities have met the required criteria.

The plant community meets the species diversity, the bare ground, the desired foliar cover, and the shrub density criteria necessary for successful reclamation of the disturbance at this site. This site does not meet the criteria for successful reclamation of the disturbance at the site.

Reclaimed Pad H

Vegetation sampling data was collected on August 26, 2024. Three 25 meter transects were randomly placed on the pad with 50 sample points on each transect. Ten one-meter square density quadrants were placed along each transect. The value for foliar cover, basal cover, species composition and bare ground were collected from three 25 meter transects for a total of 150 sample points. Values for forb and shrub densities were collected from 30 one-meter square quadrants. Data collected from this site includes vegetative foliar and basal cover, species composition, forb and shrub densities and ground cover all summarized by plant group. In addition, ground cover data was collected for dead vegetative litter, bare ground, and surface rock.

Table 19 summarizes the data collected in 2024 in comparison to the most recent data that was collected for this site in 2019. The 2024 data in Table 19 is summarized from data presented in Appendix Table J1. Each plant species encountered at this site is listed in Table J1.

Table 19 - Reclaimed Pad H
Vegetation Cover, Species Composition, Species Density & Ground Cover

	Line-Point Canopy Intercept Data [1]								Density Data [2]	
	Number of Species		% Foliar Cover		% Basal Cover		% Species Composition		Forb/Shrub Density (#/m^2)	
Plant Group	**2019**	**2024**	**2019**	**2024**	**2019**	**2024**	**2019**	**2024**	**2019**	**2024**
Perennial Grasses	8	9	35.0	49.3	5.0	8.0	44.5	79.00	n/a	n/a
Invasive Non-Native Grasses	1	1	7.0	5.3	0.0	0.0	18.2	9.00	n/a	n/a
Desirable Forbs	8	10	4.0	0.7	1.0	0.0	27.1	4.00	2.45	1.93
Invasive and Non-Native Forbs	1	1	1.0	0.7	0.0	0.0	6.6	3.00	n/a	n/a
Shrubs	3	4	3.0	3.4	0.0	0.0	3.6	5.00	0.35	0.55
Vegetation Totals	**21**	**25**	**50.0**	**59.4**	**6.0**	**8.0**	**100.0**	**100.0**	**2.80**	**2.48**

Line-Point Intercept Soil Surface Cover Data [3]

Percent Cover by Type	Bare Ground		Biotic Crust		Herbaceous Litter		Woody Litter		Duff		Rock	
	2019	**2024**	**2019**	**2024**	**2019**	**2024**	**2019**	**2024**	**2019**	**2024**	**2019**	**2024**
	20.0	**19.3**	**0.0**	**0.0**	**31.0**	**50.0**	**6.0**	**14.0**	**0.0**	**0.0**	**0.0**	**1.3**

[1] Sum of data from 3 randomly placed 25 meter transects with 50 sample points collected from each transect. Foliar cover based upon 1st plant species encountered in the canopy at each sample point. Species composition based upon total of all plant species encountered at each sample point.
[2] Sum of density data collected from ten 1-meter square quadrants along each transect. Only desirable forb and shrub densities were recorded based upon reclamation criteria.
[3] Percentages are not cumulative with vegetation totals, rather a measure by layer of ground cover from the top layer thru the lower layers to the soil surface. Values for bare ground have no vegetative, litter or rock cover above the soil surface.

The vegetative data collected for this site in 2019 resulted in the site meeting the criteria for successful reclamation. The site met the criteria for the species diversity, the cover of desirable species, the density of desirable forbs and the amount of bare ground.

The data collected from this site in 2024 showed a 21 percent increase in foliar cover for desirable species compared to values measured on this site in 2019. The foliar cover of perennial grasses increased 29 percent in 2024. Shrub cover increased 12 percent and desirable forbs cover decreased 32 percent compared to the values measured in 2019. There was a 4 percent decline in

the amount of bare ground measured in 2024 because of a 38 percent increase in amount of herbaceous litter.

The foliar cover from undesirable invasive and non-native species measured in 2019 was 8.0 percent, in 2024 that value has declined to just 6 percent mainly due to a 24 percent decline in the cover of the invasive non-native cheatgrass (*Bromus tectorum*). In comparison with reference areas, the cover of non-native grass was 32 percent less than the values measured on the reference areas.

The foliar cover of desirable species on the site was 93 percent of that measured on the reference areas. The cover of perennial grasses was 22 percent greater than measured on the reference areas. The cover of desirable forbs was only 19 percent and shrub cover were only 25 percent of the values measured on the reference areas. The species composition of desirable species was 96 percent of that measured on the reference areas.

In 2019, the density of desirable forbs met the criteria for successful reclamation. The densities of desirable forbs in 2024 declined 27 mostly due to an 81 percent decline in the density of alfalfa, which resulted in no longer meeting the necessary criteria. Shrub densities increased 36 percent from values measured in 2019.

Table 20 is a comparison of the data collected for corehole pad H with that from the rolling loam rangeland reference area. Only the data required to access the success of achieving successful reclamation is used in Table 20.

Table 20 – Comparison of Reclamation Criteria Elements with Native Rangeland Reference Areas

Site	# desired plant species	% desired foliar cover	% bare ground	shrub density (#/m^2)	forb density (#/m^2)
Reclaimed Pad H	23 species	53.4	19.3	0.55	1.93
Reference Area [1]	33 species	57.7	25.3	1.43	3.88

[1] *The average of six native rangelands reference areas were used as the baseline for evaluating success of the reclamation criteria.*

In comparison with values measured on the reference areas, the foliar cover of desirable species on the site was 93 percent of that on the reference areas. The density of desirable forbs on the site was 50 percent of that on the reference areas. The density of shrubs was 38 percent of that in the reference areas.

The amount of bare ground on this site was 24 percent less than that measured on the reference areas. The amount of herbaceous litter on this site was 13 percent greater than that on the reference areas.

Evaluation of successful reclamation of the disturbance on Exploration Corehole Pad H

- There are 23 desirable plant species established on the site (9 perennial grasses, 10 desirable forbs, and 4 shrubs) meeting the requirement of at least five plant species.
- Indian ricegrass (*Achnatherum hymenoides*) was the desired species with the greatest relative cover at 12.7 percent meeting the requirement that no one species can exceed 70 percent relative cover.

- The foliar cover of desirable species on the site was 93 percent of that on the native rangeland reference areas, meeting the requirement of 80 percent similarity.
- The amount of unprotected bare ground on the site was 24 percent less than on the native rangeland reference areas which equates to 124 percent similarity, meeting the required 80 percent similarity.
- The density of forbs and shrubs on the site in comparison with the native rangeland reference areas was 50 percent and 38 percent, respectively. The criteria only require either forb density or shrub density meet the requirement of 80 percent similarity. Neither shrub nor forb densities have met the required criteria.

The plant community does meet the criteria of species diversity, desired foliar cover, and bare ground but not the criteria for densities of desirable forbs or for shrubs for successful reclamation of the disturbance at the site.

Reclaimed Pads IRI-3, MW-1, PW-1, PW-2

This site includes corehole pads IRI-3, MW-1, PW-1, and PW-2. Vegetation sampling data was collected on August 20, 2024. Three 25 meter transects were randomly placed on the site with 50 sample points on each transect for cover data. Ten one-meter square density quadrants were placed along each transect. Data collected from this site includes vegetative foliar and basal cover, species composition, forb and shrub densities and ground cover all summarized by plant group. In addition, ground cover data was collected for dead vegetative litter, bare ground, and surface rock.

The 2024 data in Table 21 is summarized from data presented in Appendix Table K1. Each plant species encountered at this site is listed in Table K1. Table 21 summarizes the data collected in 2024 in comparison to the data that was collected in 2023.

Table 21 - Reclaimed Pads IRI-3, MW-1, PW-1, and PW-2
Vegetation Cover, Species Composition, Species Density & Ground Cover

	Line-Point Canopy Intercept Data [1]								Density Data [2]	
	Number of Species		% Foliar Cover		% Basal Cover		% Species Composition		Forb/Shrub Density (#/m^2)	
Plant Group	**2023**	**2024**	**2023**	**2024**	**2023**	**2024**	**2023**	**2024**	**2023**	**2024**
Perennial Grasses	7	7	50.0	40.0	10.0	6.0	89.65	64.65	n/a	n/a
Invasive Non-Native Grasses	1	1	2.0	7.3	0.0	0.0	3.45	16.16	n/a	n/a
Desirable Forbs	6	7	0.0	0.0	0.0	0.0	0.0	1.01	0.23	0.29
Invasive and Non-Native Forbs	1	1	0.7	4.0	0.0	0.0	1.15	9.09	n/a	n/a
Shrubs	4	4	3.3	4.7	0.0	0.0	5.75	9.09	0.64	0.37
Vegetation Totals	**19**	**20**	**56.0**	**56.0**	**10.0**	**6.0**	**100**	**100.0**	**1.90**	**0.66**

Line-Point Intercept Soil Surface Cover Data [3]

Percent Cover by Type	Bare Ground		Biotic Crust		Herbaceous Litter		Woody Litter		Duff		Rock	
	2023	**2024**	**2023**	**2024**	**2023**	**2024**	**2023**	**2024**	**2023**	**2024**	**2023**	**2024**
	24.0	**30.0**	**0.0**	**0.0**	**58.0**	**54.0**	**0.7**	**0.7**	**0.0**	**0.0**	**0.7**	**0.0**

[1] Sum of data from 3 randomly placed transects with 50 sample points collected from each transect. Foliar cover based upon 1st plant species encountered in the canopy at each sample point. Species composition based upon total of all plant species encountered at each sample point.
[2] Sum of density data collected from ten 1-meter square quadrants along each transect. Only desirable forb and shrub densities were recorded based upon reclamation criteria.

[3] Percentages are not cumulative with vegetation totals, rather a measure by layer of ground cover from the top layer thru the lower layers to the soil surface. Values for bare ground have no vegetative, litter or rock cover above the soil surface.

Total foliar cover on this site was the same in 2024 as that measured in 2023. The data collected from this site in 2024 showed foliar cover for desirable species was 83 percent of the values measured in 2023. The foliar cover of perennial grasses decreased 20 percent in 2024. The shrub cover increased 30 percent in 2024. As in 2023, no foliar cover of desirable forbs was recorded in the data collected in 2024. In 2024, the densities of desirable forb species increased 21 percent, and the densities of shrubs declined 42 percent of the values measured in 2023.

The foliar cover from undesirable invasive and non-native species measured in 2023 was 2.7 percent, in 2024 that value has increased to 11.3 percent mainly due to a 73 percent increase in the cover of the invasive non-native cheatgrass (*Bromus tectorum*). The foliar cover of non-native forb species increased 83 percent from the values measured in 2023. In comparison with reference areas, the cover of non-native grass in 2024 was 37 percent above the values measured on the reference areas.

There was a 20 percent increase in the amount of bare ground measured in 2024 and a 7 percent decline in the amount of herbaceous litter measured in 2024.

Table 22 is a comparison of the data collected for exploration corehole pad IRI-3, MW-1, PW-1 and PW-2 with that from the rolling loam rangeland reference area. Only the data required to access the success of achieving successful reclamation is used in Table 22.

Table 22 – Comparison of Reclamation Criteria Elements with Native Rangeland Reference Areas

Site	# desired plant species	% desired foliar cover	% bare ground	shrub density (#/m^2)	forb density (#/m^2)
Pads IRI-3, MW-1, PW-1 and PW-2	18 species	44.7	30.0	0.37	0.29
Reference Area [1]	33 species	57.7	25.3	1.43	3.88

[1] *The average of six native rangelands reference areas were used as the baseline for evaluating success of the reclamation criteria.*

In comparison with values measured on the reference areas, the foliar cover of desirable species on the site was 77 percent of that on the reference areas. The density of desirable forbs on the site was 7 percent of that on the reference areas. The density of shrubs was 26 percent of that in the reference areas.

The amount of bare ground on this site was 16 percent above that measured on the reference areas. The amount of herbaceous litter on this site was 19 percent greater than that on the reference areas.

Evaluation of the reclamation efforts of the disturbance on Corehole Pads IRI-3, MW-1, PW-1, and PW-2:

- There are 18 desirable plant species established on the site (7 perennial grasses, 7 desirable forbs, and 4 shrubs) meeting the requirement of at least five plant species.

- Russian wildrye (*Psathyrostachys juncea*) was the desired species with the greatest relative cover at 13.3 percent meeting the requirement that no one species can exceed 70 percent relative cover.
- The foliar cover of desirable species on the site was 77 percent of that on the native rangeland reference areas not meeting the 80 percent similarity criteria.
- The amount of unprotected bare ground on this site was 84 percent of that on the native rangeland reference meeting the required 80 percent similarity.
- The density of forbs and shrubs on the site in comparison with the native rangeland reference areas was 7 percent and 26 percent, respectively. Neither desirable forbs nor shrub densities have met the requirement of 80 percent similarity.

The plant community does meet the criteria of species diversity and bare ground but does not meet the criteria for desired foliar cover, for desirable forb density nor for shrub density. This site does not meet all the criteria for successful reclamation of the disturbance at the site.

Reclaimed Access Route to Pad N

This is a 318 meter (1043 feet) narrow linear reclaimed access route leading from corehole pad C to corehole pad N. Vegetation sampling data was collected on August 28 and 29, 2024. As this site was a linear disturbance, three 25 meter transects were randomly placed one near either end of the route and one near the mid-point of the route. The value for foliar cover, basal cover, species composition and bare ground were collected from three 25 meter transects for a total of 150 sample points. Values for forb and shrub densities were collected from 30 one-meter square quadrants.

Data collected from this access route includes vegetative foliar and basal cover, species composition, forb and shrub densities and ground cover all summarized by plant group. In addition, ground cover data was collected for dead vegetative litter, bare ground, and surface rock.

The 2024 data in Table 23 is summarized from data presented in Appendix Table L1. Each plant species encountered at this site is listed in Table L1. As shown in Table L1 there is a good representation of the seeded species established on the site.

Table 23 - Reclaimed Access Route to Pad N
Vegetation Cover, Species Composition, Species Density & Ground Cover

	Line-Point Canopy Intercept Data [1]				Density Data [2]
Plant Group	Number of Species	% Foliar Cover	% Basal Cover	% Species Composition	Desirable Forb/Shrub Density (#/m^2)
Perennial Grasses	7	26.7	2.7	50.59	n/a
Invasive Non-Native Grasses	1	10.0	0.0	23.53	n/a
Desirable Forbs	11	2.6	0.0	4.70	1.63
Invasive and Non-Native Forbs	2	3.4	0.0	5.89	n/a
Shrubs	6	8.6	0.7	15.29	1.03
Vegetation Totals	**27**	**51.3**	**3.4**	**100.0**	**2.66**
Line-Point Intercept Soil Surface Cover Data [3]					

Percent Cover by Type	Bare Ground	Biotic Crust	Herbaceous Litter	Woody Litter	Duff	Rock
	32.0	**0.0**	**32.7**	**5.3**	**0.0**	**8.0**

[1] Sum of data from 3 randomly placed 25 meter transects with 50 sample points collected from each transect. Foliar cover based upon 1st plant species encountered in the canopy at each sample point. Species composition based upon total of all plant species encountered at each sample point.
[2] Sum of density data collected from ten 1-meter square quadrants along each transect. Only desirable forb and shrub densities were recorded based upon reclamation criteria.
[3] Percentages are not cumulative with vegetation totals, rather a measure by layer of ground cover from the top layer thru the lower layers to the soil surface. Values for bare ground have no vegetative, litter or rock cover above the soil surface.

The reclaimed access route has a good diversity of native and seeded plant species along the length of the route. Many of the desirable forbs and shrubs were not in the seed mix but established on the route from species adjacent to the route. The mix of desirable grasses, forbs and shrubs account for 71 percent of the species composition on the route. However, 29 percent of the composition came from invasive and non-native species, primarily cheatgrass (*Bromus tectorum*). The composition of invasive and non-native species on this site was 77 percent above the values measured on the reference areas.

Table 24 is a comparison of the data collected for the reclaimed route with that of the rolling loam rangeland reference areas. Only the data required to access the success of achieving successful reclamation is used in Table 24.

Table 24 – Comparison of Reclamation Criteria Elements with Native Rangeland Reference Areas

Site	# desired plant species	% desired foliar cover	% bare ground	shrub density (#/m^2)	forb density (#/m^2)
Reclaimed Access Route to Pad N	24 species	37.9	32.0	1.03	1.63
Reference Area [1]	33 species	57.7	25.3	1.43	3.88

[1] *The average of six native rangelands reference areas were used as the baseline for evaluating success of the reclamation criteria.*

In comparison with values measured on the reference areas, the foliar cover of desirable species on the site was 34 percent less. The density of desirable forbs on the site was 42 percent of that on the reference areas. The density of shrubs was 72 percent of that on the reference areas.

The amount of bare ground on this site was 21 percent more than that measured on the reference areas. The amount of herbaceous litter on this site was 25 percent less than that on the reference areas.

Evaluation of the reclamation efforts of the disturbance on the access route to Pad N:

- There are 24 desirable plant species established on the site (7 perennial grasses, 11 desirable forbs, and 6 shrubs) meeting the requirement of at least five plant species.
- Indian ricegrass (*Achnatherum hymenoides*) was the desired species with the greatest relative cover at 12.0 percent meeting the requirement that no one species can exceed 70 percent relative cover.

- The foliar cover of desirable species on the site was 66 percent of that on the native rangeland reference areas not meeting the requirement of 80 percent similarity.
- The amount of unprotected bare ground on the site was 21 percent more than that on the native rangeland reference areas which equates to 79 percent similarity, not meeting the required 80 percent similarity.
- The density of forbs and shrubs on the site in comparison with the native rangeland reference areas was 42 percent and 72 percent, respectively. The criteria only require either forb density or shrub density meet the requirement of 80 percent similarity. Neither desirable forbs nor shrub densities have met the requirement of 80 percent similarity.

The plant community meets only the species diversity criteria. The criteria for desired foliar cover, for bare ground, for desirable forb density and for shrub density have not been met. This site does not meet the criteria for successful reclamation of the disturbance at the site.

Reclaimed Pad N

Vegetation sampling data was collected on August 28, 2024. Three 25 meter transects were randomly placed on the pad with 50 sample points on each transect. Ten one-meter square density quadrants were placed along each transect. The value for foliar cover, basal cover, species composition and bare ground were collected from three 25 meter transects for a total of 150 sample points. Values for forb and shrub densities were collected from 30 one-meter square quadrants.

Table 25 summarizes the data collected in 2024 in comparison to the most recent data that was collected for this site in 2019. The 2024 data in Table 25 is summarized from data presented in Appendix Table M1. Each plant species encountered at this site is listed in Table M1.

Table 25 - Reclaimed Pad N
Vegetation Cover, Species Composition, Species Density & Ground Cover

	Line-Point Canopy Intercept Data [1]								Density Data [2]	
	Number of Species		% Foliar Cover		% Basal Cover		% Species Composition		Forb/Shrub Density (#/m^2)	
Plant Group	**2019**	**2024**	**2019**	**2024**	**2019**	**2024**	**2019**	**2024**	**2019**	**2024**
Perennial Grasses	12	6	46.7	30.7	6.7	4.7	57.0	53.94	n/a	n/a
Invasive Non-Native Grasses	1	1	1.3	9.3	0.0	0.0	2.9	15.73	n/a	n/a
Desirable Forbs	7	13	15.3	6.7	2.7	0.0	29.9	20.23	11.93	5.30
Invasive and Non-Native Forbs	2	1	2.0	0.7	0.0	0.0	4.4	1.12	n/a	n/a
Shrubs	6	4	4.1	4.8	0.7	0.7	5.8	8.98	0.70	0.64
Vegetation Totals	**28**	**25**	**69.4**	**52.2**	**10.1**	**5.4**	**100.0**	**100.0**	**12.63**	**5.94**

Line-Point Intercept Soil Surface Cover Data [3]

Percent Cover by Type	Bare Ground		Biotic Crust		Herbaceous Litter		Woody Litter		Duff		Rock	
	2019	**2024**	**2019**	**2024**	**2019**	**2024**	**2019**	**2024**	**2019**	**2024**	**2019**	**2024**
	14.7	**22.0**	**0.0**	**0.0**	**42.7**	**43.3**	**15.3**	**10.0**	**0.0**	**0.0**	**7.3**	**5.3**

[1] Sum of data from 3 randomly placed 25 meter transects with 50 sample points collected from each transect. Foliar cover based upon 1st plant species encountered in the canopy at each sample point. Species composition based upon total of all plant species encountered at each sample point.
[2] Sum of density data collected from ten 1-meter square quadrants along each transect. Only desirable forb and shrub densities were recorded based upon reclamation criteria.

[3] Percentages are not cumulative with vegetation totals, rather a measure by layer of ground cover from the top layer thru the lower layers to the soil surface. Values for bare ground have no vegetative, litter or rock cover above the soil surface.

The vegetative data collected for this site in 2019 resulted in the site meeting the criteria for successful reclamation. The site met the criteria for the species diversity, the cover of desirable species, the density of desirable forbs and the amount of bare ground.

The data collected from this site in 2024 showed a 37 percent decline in foliar cover for desirable species resulting in the site not meeting the criteria for 2024. The foliar cover of perennial grasses declined 34 percent in 2024. Shrub cover increased 15 percent and desirable forbs cover decreased 56 percent compared to the values measured in 2019. There was a 33 percent increase in the amount of bare ground measured in 2024.

The foliar cover from undesirable invasive and non-native species measured in 2019 was 3.3 percent, in 2024 that value has increased to 71 percent mainly due to an 86 percent increase in the cover of the invasive non-native cheatgrass (*Bromus tectorum*). The invasive and non-native species accounted for 17 percent of the total plant species composition on the site in 2024. In comparison with 2024 data, the cover of non-native species was 50 percent higher than the values measured on the reference areas.

Table 24 is a comparison of the data collected for exploration corehole pad N with that from the rolling loam rangeland reference area. Only the data required to access the success of achieving successful reclamation is used in Table 24.

Table 26 – Comparison of Reclamation Criteria Elements with Native Rangeland Reference Areas

Site	# desired plant species	% desired foliar cover	% bare ground	shrub density (#/m^2)	forb density (#/m^2)
Reclaimed Pad N	23 species	42.2	22.0	0.64	5.30
Reference Area [1]	33 species	57.7	25.3	1.43	3.88

[1] *The average of six native rangelands reference areas were used as the baseline for evaluating success of the reclamation criteria.*

The foliar cover of desirable species on the site was 73 percent of that measured on the reference areas in 2024. The cover of perennial grasses was 24 percent less than measured on the reference areas. The cover of desirable forbs was 45 percent greater and shrub cover was only 35 percent of the values measured on the reference areas. The density of desirable forbs on the site was 27 percent greater than on the reference areas. The density of shrubs was 44 percent of that in the reference areas.

The amount of bare ground on this site was 13 percent less than that measured on the reference areas. The amount of herbaceous litter on this site was 99 percent of that on the reference areas.

Evaluation of successful reclamation of the disturbance on Exploration Corehole Pad N

- There are 23 desirable plant species established on the site (6 perennial grasses, 13 desirable forbs, and 4 shrubs) meeting the requirement of at least five plant species.
- Indian ricegrass (*Achnatherum hymenoides*) was the desired species with the greatest relative cover at 12.0 percent meeting the requirement that no one species can exceed 70 percent relative cover.

- The foliar cover of desirable species on the site was 73 percent of that on the native rangeland reference areas not meeting the requirement of 80 percent similarity.
- The amount of unprotected bare ground on the site was 13 percent less than on the native rangeland reference areas which equates to 113 percent similarity, meeting the required 80 percent similarity.
- The density of forbs on the site was 27 percent greater than that on native rangeland reference areas which equates to 127 percent similarity, meeting the requirement of 80 percent similarity. The shrub density was only 44 percent of that on native rangeland reference areas not meeting the required 80 percent. The criteria only require either forb density or shrub density meet the requirement of 80 percent similarity. The density of desirable forbs exceeds the required criteria.

The plant community does meet the criteria of species diversity, desirable forb density and bare ground but does not meet the desired foliar cover for successful reclamation of the disturbance at the site.

Reclaimed Pad T

Vegetation sampling data was collected on September 4, 2024. Three 25 meter transects were randomly placed on the pad with 50 sample points on each transect for cover data. Ten one-meter square density quadrants were placed along each transect. Data collected from this site includes vegetative foliar and basal cover, species composition, forb and shrub densities and ground cover all summarized by plant group. In addition, ground cover data was collected for dead vegetative litter, bare ground, and surface rock.

The value for foliar cover, basal cover, species composition and bare ground were collected from three 25 meter transects for a total of 150 sample points. Values for forb and shrub densities were collected from 30 one-meter square quadrants. The 2024 data in Table 27 is summarized from data presented in Appendix Table N1. Each plant species encountered at this site is listed in Table N1. Table 27 summarizes the data collected in 2024 in comparison to the data that was collected in 2023

The data collected from this site in 2024 showed a 15 percent decline in foliar cover for desirable species from values measured in 2023. The foliar cover of perennial grasses declined 32 percent and foliar cover of desirable forbs declined 45 percent from data collected in 2023. Shrub cover increased 14 percent in 2024.

There is poor distribution across the site of the perennial species used in the seed mix. Most of the perennial species on the site are a few native grasses and several native forbs and shrubs that have pioneered the site from adjacent stands. The invasive and non-native species on this site accounted for 44 percent of the total species composition.

Table 27 - Reclaimed Pad T Vegetation Cover, Species Composition, Species Density & Ground Cover										
	Line-Point Canopy Intercept Data [1]								Density Data [2]	
	Number of Species		% Foliar Cover		% Basal Cover		% Species Composition		Forb/Shrub Density (#/m^2)	
Plant Group	**2023**	**2024**	**2023**	**2024**	**2023**	**2024**	**2023**	**2024**	**2023**	**2024**
Perennial Grasses	9	7	12.8	8.7	2.0	0.7	21.84	21.42	n/a	n/a
Invasive Non-Native Grasses	1	1	20.0	14.0	0	0.0	33.64	29.75	n/a	n/a
Desirable Forbs	6	7	6.0	3.3	0.7	0.7	9.12	8.30	1.47	1.54
Invasive and Non-Native Forbs	3	2	9.4	8.0	0	0.0	18.18	14.28	n/a	n/a
Shrubs	5	5	12.7	14.7	0.7	0.0	17.22	26.25	1.33	2.14
Vegetation Totals	**24**	**22**	**60.9**	**48.7**	**3.4**	**1.4**	**100.0**	**100.0**	**2.81**	**3.68**

Line-Point Intercept Soil Surface Cover Data [3]												
Percent Cover by Type	**Bare Ground**		**Biotic Crust**		**Herbaceous Litter**		**Woody Litter**		**Duff**		**Rock**	
	2023	**2024**	**2023**	**2024**	**2023**	**2024**	**2023**	**2024**	**2023**	**2024**	**2023**	**2024**
	28.7	**36.0**	**0.0**	**0.0**	**45.3**	**41.3**	**4.7**	**2.7**	**0.0**	**0.0**	**0.0**	**0.7**

[1] Sum of data from 3 randomly placed transects with 50 sample points collected from each transect. Foliar cover based upon 1st plant species encountered in the canopy at each sample point. Species composition based upon total of all plant species encountered at each sample point.
[2] Sum of density data collected from ten 1-meter square quadrants along each transect. Only desirable forb and shrub densities were recorded based upon reclamation criteria.
[3] Percentages are not cumulative with vegetation totals, rather a measure by layer of ground cover from the top layer thru the lower layers to the soil surface. Values for bare ground have no vegetative, litter or rock cover above the soil surface.

The cover for non-native and invasive species showed a 25 percent decline in 2024. However, they still accounted for 41 percent of the total cover measured on this site versus the 48 percent measured in 2023. The cover of cheatgrass did decline 30 percent of its value measured in 2023. It accounted for 30 percent of the total foliar cover measured on this site. The cover of non-native forb species declined 72 percent in 2024 but still accounted for 15 percent of the cover measured on this site. In comparison with reference areas, the cover of non-native grasses was 3 times greater, and the cover of non-native forb species was 24 times greater than the values measured on the reference areas.

Table 28 is a comparison of the data collected for corehole pad T with that from the rolling loam rangeland reference areas. Only the data required to access the success of achieving successful reclamation is used in Table 28.

Table 28 – Comparison of Reclamation Criteria Elements with Native Rangeland Reference Areas					
Site	**# desired plant species**	**% desired foliar cover**	**% bare ground**	**shrub density (#/m^2)**	**forb density (#/m^2)**
Reclaimed Pad T	19 species	26.7	36.0	2.14	1.54
Reference Area [1]	33 species	57.7	25.3	1.43	3.88

[1] *The average of six native rangelands reference areas were used as the baseline for evaluating success of the reclamation criteria.*

In 2024, the densities of desirable forb species increased 5 percent, and the densities of shrubs increased 38 percent mainly due to the increase of yellow rabbitbrush that has pioneered the site. In comparison with reference areas, densities of desirable forb species were 60 percent of that on the reference areas and shrub densities were 133 percent of that on the reference areas.

There was a 20 percent increase in the amount of bare ground measured in 2024 and a 12 percent decline in the amount of herbaceous and woody litter. The amount of bare ground on this site

was 30 percent above that measured on the reference areas. The amount of herbaceous and woody litter on this site was 4 percent less than that on the reference areas.

In comparison with values measured in 2024, the foliar cover of desirable species on this site was 46 percent of that on the reference areas.

Evaluation of the reclamation efforts of the disturbance on Corehole Pad T:

- There are 19 desirable plant species observed on the site (7 perennial grasses, 7 desirable forbs, and 5 shrubs) meeting the requirement of at least five plant species.
- The yellow rabbitbrush (*Chrysothamnus viscidiflorus*) was the desired species with the greatest relative cover at 10.0 percent meeting the requirement that no one species can exceed 70 percent relative cover.
- The foliar cover of desirable species on the site was 46 percent of that on the native rangeland reference areas not meeting the requirement of 80 percent similarity.
- The amount of unprotected bare ground on the site was 30 greater than on the native rangeland reference areas which equates to 70 percent similarity, not meeting the required 80 percent similarity.
- The density of forbs and shrubs on the site in comparison with the native rangeland reference areas was 60 percent and 133 percent, respectively. The criteria only require either forb density or shrub density meet the requirement of 80 percent similarity. Shrub densities have met the requirement of 80 percent similarity.

The plant community only meets the criteria for species diversity and shrub densities. The criteria for the desired foliar cover, desirable forb density and bare ground have not been met. This site does not meet all the criteria for successful reclamation of the disturbance at the site.

Reclaimed Pad U

Vegetation sampling data was collected on September 4, 2024. Three 25 meter transects were randomly placed on the pad with 50 sample points on each transect for cover data. Ten one-meter square density quadrants were placed along each transect. Data collected from this site includes vegetative foliar and basal cover, species composition, forb and shrub densities and ground cover all summarized by plant group. In addition, ground cover data was collected for dead vegetative litter, bare ground, and surface rock.

The value for foliar cover, basal cover, species composition and bare ground were collected from three 25 meter transects for a total of 150 sample points. Values for forb and shrub densities were collected from 30 one-meter square quadrants. The 2024 data in Table 29 is summarized from data presented in Appendix Table O1. Each plant species encountered at this site is listed in Table O1. Table 29 summarizes the data collected in 2024 in comparison to the data that was collected in 2023.

Table 29 - Reclaimed Pad U
Vegetation Cover, Species Composition, Species Density & Ground Cover

	Line-Point Canopy Intercept Data [1]								Density Data [2]	
	Number of Species		% Foliar Cover		% Basal Cover		% Species Composition		Forb/Shrub Density (#/m^2)	
Plant Group	**2023**	**2024**	**2023**	**2024**	**2023**	**2024**	**2023**	**2024**	**2023**	**2024**
Perennial Grasses	5	4	15.4	14.7	2.7	2.7	26.00	27.27	n/a	n/a
Invasive Non-Native Grasses	1	1	22.0	16.0	0.0	0.0	34.00	31.81	n/a	n/a
Desirable Forbs	3	3	1.3	0.7	1.3	0.7	3.00	1.14	0.37	1.00
Invasive and Non-Native Forbs	3	1	6.0	10.7	0.0	0.0	14.00	19.32	n/a	n/a
Shrubs	6	6	14.7	11.3	0.7	0.7	23.00	20.46	0.88	0.84
Vegetation Totals	**18**	**15**	**59.4**	**53.4**	**4.7**	**4.1**	**100.0**	**100.0**	**1.25**	**1.84**

Line-Point Intercept Soil Surface Cover Data [3]

Percent Cover by Type	Bare Ground		Biotic Crust		Herbaceous Litter		Woody Litter		Duff		Rock	
	2023	**2024**	**2023**	**2024**	**2023**	**2024**	**2023**	**2024**	**2023**	**2024**	**2023**	**2024**
	26.7	**37.3**	**0.0**	**0.0**	**54.0**	**28.0**	**4.0**	**3.3**	**0.0**	**0.0**	**0.7**	**0.0**

[1] Sum of data from 3 randomly placed transects with 50 sample points collected from each transect. Foliar cover based upon 1st plant species encountered in the canopy at each sample point. Species composition based upon total of all plant species encountered at each sample point.
[2] Sum of density data collected from ten 1-meter square quadrants along each transect. Only desirable forb and shrub densities were recorded based upon reclamation criteria.
[3] Percentages are not cumulative with vegetation totals, rather a measure by layer of ground cover from the top layer thru the lower layers to the soil surface. Values for bare ground have no vegetative, litter or rock cover above the soil surface.

The data collected from this site in 2024 showed a 10 percent decline in total vegetative cover from values measured in 2023. The data showed a 15 percent decline in foliar cover for desirable species. The foliar cover of perennial grasses declined 5 percent, shrub cover declined 23 percent, and foliar cover of desirable forbs declined 46 percent from data collected in 2023. In comparison with values measured in 2024, the foliar cover of desirable species on this site was 46 percent of that on the reference areas.

The cover for non-native and invasive species also showed a 5 percent decline in 2024. However, they still accounted for 50 percent of the total cover and 51 percent of the total species composition measured on this site. The cover of cheatgrass declined 27 percent of its value measured in 2023 but accounted for 30 percent of the total foliar cover measured on this site. The cover of non-native forb species increased 44 percent in 2024 and still accounted for 20 percent of the cover measured on this site. In comparison with reference areas, the cover of non-native grasses was 2.5 times greater, and the cover of non-native forb species was 31 times greater than the values measured on the reference areas.

There is poor distribution across the site of the perennial species used in the seed mix. Most of the perennial species on the site are a few native grasses and several native shrubs that have pioneered the site from adjacent stands. The invasive and non-native species on this site accounted for 51 percent of the total species composition.

Table 30 is a comparison of the data collected for corehole pad U with that from the rolling loam rangeland reference area. Only the data required to access the success of achieving successful reclamation is used in Table 30.

Table 30 – Comparison of Reclamation Criteria Elements with Native Rangeland Reference Areas					
Site	**# desired plant species**	**% desired foliar cover**	**% bare ground**	**shrub density (#/m^2)**	**forb density (#/m^2)**
Reclaimed Pad U	13 species	26.7	37.3	0.84	1.00
Reference Area [1]	33 species	57.7	25.3	1.43	3.88
[1] *The average of six native rangelands reference areas were used as the baseline for evaluating success of the reclamation criteria.*					

In 2024, the densities of desirable forb species increased 63 percent, and the densities of shrubs declined 5 percent. In comparison with reference areas, desirable forb species were 26 percent of that on the reference areas and shrub densities were 59 percent of that on the reference areas.

There was a 20 percent increase in the amount of bare ground measured in 2024 and a 12 percent decline in the amount of herbaceous and woody litter. The amount of bare ground on this site was 32 percent above that measured on the reference areas. The amount of herbaceous and woody litter on this site was 28 percent less than that on the reference areas.

In comparison with values measured in 2024, the foliar cover of desirable species on this site was 46 percent of that on the reference areas.

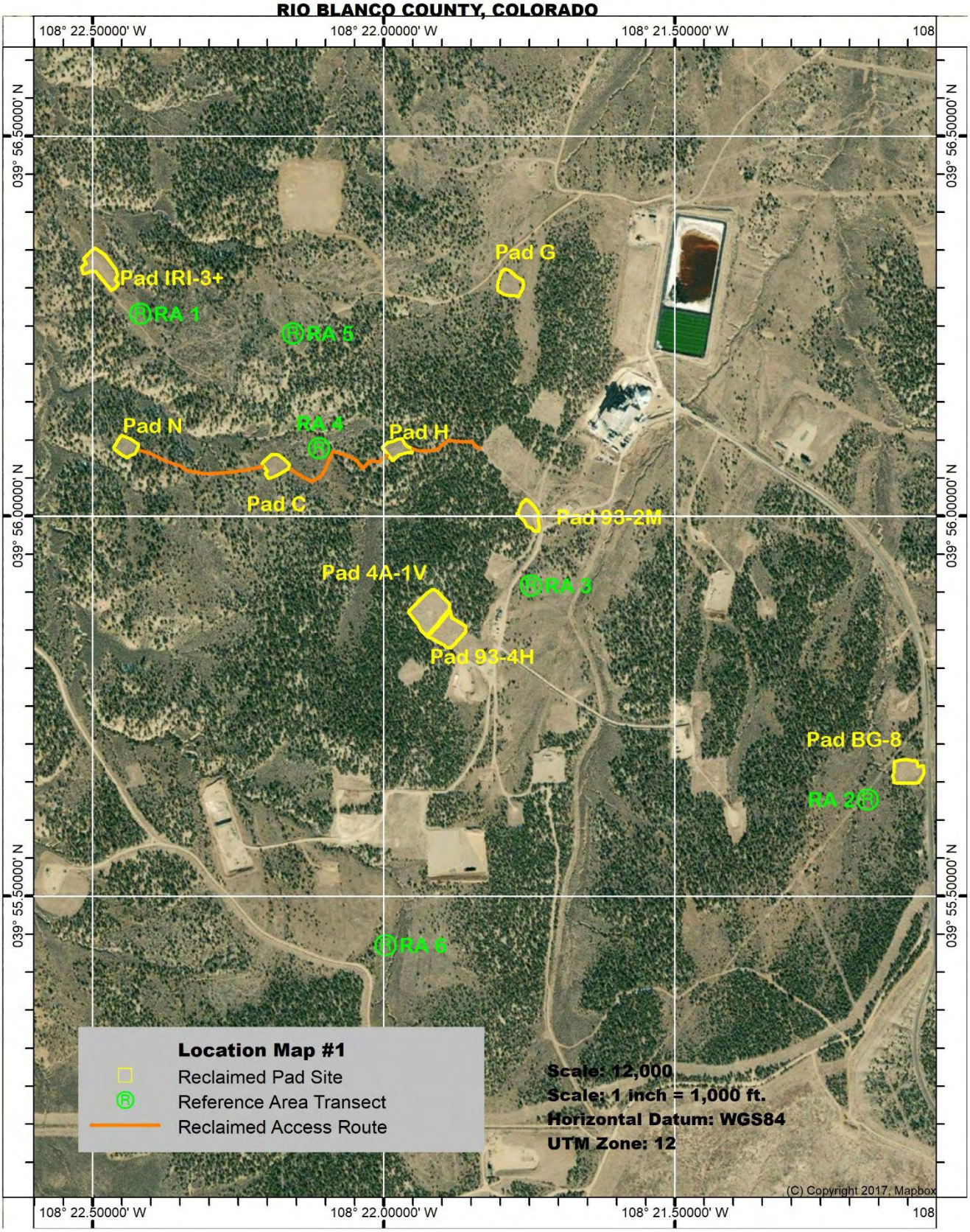
Evaluation of the reclamation efforts of the disturbance on Corehole Pad U:

- There are 13 desirable plant species established on the site (4 perennial grasses, 3 desirable forbs, and 6 shrubs) meeting the requirement of at least five plant species.
- The yellow rabbitbrush (*Chrysothamnus viscidiflorus*) was the desired species with the greatest relative cover at 10.0 percent meeting the requirement that no one species can exceed 70 percent relative cover.
- The foliar cover of desirable species on the site was 46 percent of that on the native rangeland reference areas not meeting the requirement of 80 percent similarity.
- The amount of unprotected bare ground on the site was 32 percent greater than on the native rangeland reference areas which equates to 68 percent similarity, not meeting the required 80 percent similarity.
- The density of forbs and shrubs on the site in comparison with the native rangeland reference areas was 26 percent and 59 percent, respectively. Neither desirable forbs nor shrub densities have met the requirement of 80 percent similarity.

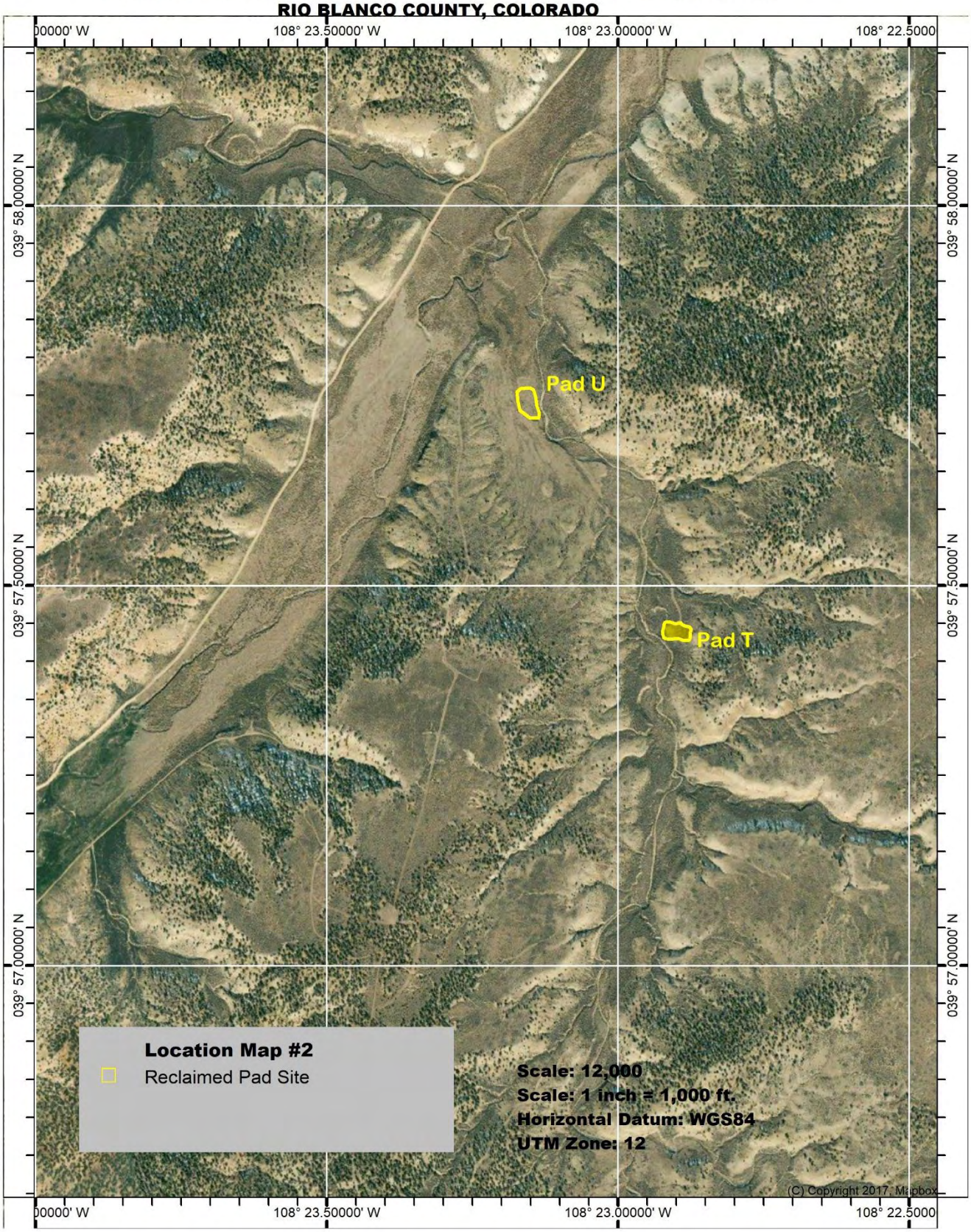
The plant community only meets the criteria for species diversity. The criteria for desired foliar cover, desirable forb density, shrub density and bare ground have not been met. This site does not meet all the criteria for successful reclamation of the disturbance at the site.

Location Maps

NATURAL SODA 2024 VEGETATION MONITORING OF RECLAIMED SITES
RIO BLANCO COUNTY, COLORADO



NATURAL SODA 2024 VEGETATION MONITORING OF RECLAIMED SITES
RIO BLANCO COUNTY, COLORADO



Appendix A – Vegetation Sampling Data Native Rangeland Reference Areas

Table A1 - Rolling Loam Native Rangeland Reference Areas

Vegetation Cover, Species Composition, Species Density & Ground Cover

Plant Species Observed within Study Area			Line-Point Canopy Intercept Data [1]			Density Data [2]
Species Symbol	**Scientific Name**	**Common Name**	**% Foliar Cover**	**% Basal Cover**	**Species Composition**	**Desirable Forb/Shrub Density (#/m²)**
ACHY	*Achnatherum hymenoides*	Indian ricegrass	1.67	0.00	2.77	
ELELE	*Elymus elymoides ssp. elymoides*	bottlebrush squirreltail	0.33	0.00	0.92	
HECO26	*Hesperostipa comata*	needle & thread needlegrass	19.00	4.00	28.11	
KOMA	*Koeleria macrantha*	prairie junegrass	7.67	0.67	11.52	
PASM	*Pascopyrum smithii*	western wheatgrass	9.00	0.33	13.36	
POSE	*Poa secunda*	Sandberg bluegrass	2.00	0.67	5.07	
PSSPI	*Pseudoroegneria spicata ssp. inermis*	beardless bluebunch wheatgrass	0.67	0.33	1.38	
		Perennial Grass Totals	**40.34**	**6.00**	**63.13**	
ANRO2	*Antennaria rosea*	rosey pussytoes	0.33	0.00	0.46	0.00
ASCH	*Astragalus chamaeleuce*	cicada milkvetch	0.00	0.00	0.00	0.03
ASSP6	*Astragalus spatulatus*	tufted milkvetch	0.00	0.00	0.00	0.02
ASCO12	*Astragalus convallarius*	lesser-rushy mlkvetch	0.00	0.00	0.46	0.13
CANU3	*Calochortus nuttallii*	sego lily	0.00	0.00	0.00	0.02
CRAC	*Crepis acuminata*	longleaf hawksbeard	0.00	0.00	0.00	0.02
CRFL6	*Cryptantha flavoculata*	roughseed cryptanth	0.00	0.00	0.46	0.07
EREA	*Erigeron eatonii*	Eaton's fleabane	0.00	0.00	0.00	0.12
HEBO	*Hedysarum boreale*	Utah sweetvetch	0.33	0.00	0.46	0.10
LEER	*Leucelene ericoides*	heath aster	0.00	0.00	0.00	0.07
MACA2	*Machaeranthera canescens*	hoary tansyaster	0.00	0.00	0.00	0.02
MAGR2	*Machaeranthera grindelioides*	rayless tansyaster	0.33	0.00	0.46	0.17
OPPO	*Opuntia polyacantha*	plains pricklypear cactus	0.00	0.00	0.46	0.03
PAMU11	*Pakera multilobata*	lobeleaf groundsel	0.00	0.00	0.00	0.07
PEFRF5	*Penstemon fremontii var. fremontii*	Fremont beardtongue	0.00	0.00	0.00	0.02
PHAC4	*Physaria acutifolia*	common twinpod	0.00	0.00	0.00	0.03
PHHO	*Phlox hoodii*	Hood's phlox	1.67	0.00	2.77	1.00
SPCO	*Sphaeralcea coccinea*	scarlet globemallow	1.00	0.00	3.23	1.90
TOIN	*Townsendia incana*	hoary Townsend daisy	0.00	0.00	0.00	0.03
TRGY	*Trifolium gymnocarpon*	hollyleaf clover	0.00	0.00	0.00	0.05
		Native and Desirable Forb Totals	**3.66**	**0.00**	**8.76**	**3.88**
ARTRW	*Artemisia tridentata var. wyomingensis*	Wyoming big sagebrush	11.67	0.00	17.05	1.00
CHDE2	*Chrysothamnus depressus*	longflower rabbitbrush	0.00	0.00	0.00	0.02
CHVI8	*Chrysothamnus viscidiflorus*	yellow rabbitbrush	0.33	0.00	0.46	0.05
GUSA2	*Gutierrezia sarothrae*	broom snakeweed	1.67	0.00	2.31	0.32
JUOS	*Juniperus osteosperma*	Utah juniper	0.00	0.00	0.00	0.03
KRLA2	*Krascheninnikovia lanata*	winterfat	0.00	0.00	0.00	0.02
		Shrub Totals	**13.67**	**0.00**	**19.82**	**1.43**
BRTE	*Bromus tectorum*	cheatgrass	4.67	0.00	7.83	
LEDE	*Lepidium densiflorum*	common pepperweed	0.33	0.00	0.46	
		Totals for Invasive and Non-Native Species	**5.00**	**0.00**	**8.29**	
		Vegetation Totals	**62.67**	**6.00**	**100.00**	**5.32**

[1] Sum of data from 4 randomly placed transects with 50 sample points collected from each transect. Foliar cover based upon 1st plant species encountered in the canopy at each sample point. Species composition based upon total of all plant species encountered at each sample point.

[2] Sum of density data collected from 10 one-square meter quadrants along each transect. Only desirable forb and shrub densities were recorded based upon reclamation criteria.

[3] Plant species not encountered in sampling data but were present within the study area.

Soil Surface Cover Type (%)[4]	
Bare Ground	**25.3**
Biotic Crust	**0.0**
Herbaceous Litter	**43.7**
Woody Litter	**2.0**

[4] Percentages are not cumulative with vegetation totals, rather a measure by layer of ground cover from the top layer thru the lower layers to the soil surface.	**Duff**	**0.0**
	Rock	**0.0**

Table A2 - Transect Coordinate Locations Native Rangeland Reference Areas (Datum: UTM Zone 12, WGS 84)						
Site	**Azimuth from starting point (true N)**	**Transect Starting Point**		**Transect Ending Point**		**Length**
		Northing (mN)	**Easting (mE)**	**Northing (mN)**	**Easting (mE)**	
Transect 1	007 º	4424143.757	724404.7118	4424165.769	724405.1754	25 meters
Transect 2	184 º	4423039.5	726217.498	4423016.417	726218.4396	25 meters
Transect 3	116 º	4423528.478	725369.6127	4423519.624	725397.0747	25 meters
Transect 4	357 º	4423825.791	724857.7245	4423848.644	724849.0103	25 meters
Transect 5	341 º	4424105.408	724784.9008	4424124.966	724769.9552	25 meters
Transect 6	029 º	4422620.201	725046.8429	4422644.88	725051.076	25 meters

Transect Photos -- Native Rangeland Reference Areas

Figure A1 - Rolling Loam Rangeland Reference Area Transect #1

Figure A2 - Rolling Loam Rangeland Reference Area Transect #2

Figure A3 - Rolling Loam Rangeland Reference Area Transect #3

Figure A4 - Rolling Loam Rangeland Reference Area Transect #4

Figure A5 - Rolling Loam Rangeland Reference Area Transect #5

Figure A6 - Rolling Loam Rangeland Reference Area Transect #6

Appendix B – Vegetation Sampling Data Reclaimed Pad 4A-1V

Table B1 - Vegetation Cover, Species Composition, Species Density & Ground Cover Reclaimed Pad 4A-1V						
Plant Species Observed within Study Area			**Line-Point Canopy Intercept Data [1]**			**Density Data [2]**
Species Symbol	**Scientific Name**	**Common Name**	**% Foliar Cover**	**% Basal Cover**	**Species Composition**	
ACHY	*Achnatherum hymenoides*	Indian ricegrass	1.3	0.7	2.13	
AGCR	*Agropyron cristatum*	crested wheatgrass	1.3	0.0	2.13	
ELTR7	*Elymus trachycaulus*	slender wheatgrass	9.3	2.0	15.96	
LECI4	*Leymus cinereus*	basin wildrye	1.3	0.7	2.13	
NAVI4	*Nassella viridula*	green needlegrass	0.7	0.7	1.06	
PASM	*Pascopyrum smithii*	western wheatgrass	0.7	0.0	1.06	
PSJU3	*Psathyrostachys juncea*	Russian wildrye	2.0	0.0	3.19	
PSSPI	*Pseudoroegneria spicata ssp. inermis*	beardless bluebunch wheatgrass	6.0	2.0	10.64	
THIN6	*Thinopyrum intermedium*	pubescent wheatgrass	10.0	0.7	17.02	**Forb/Shrub Density (#/m^2)**
		Perennial Grass Totals	**32.7**	**6.7**	**55.32**	
ASCH	*Astragalus chamaeleuce*	cicada milkvetch	0.0	0.0	0.00	0.03
CRFL6	*Cryptantha flavoculata*	roughseed cryptanth	0.0	0.0	0.00	0.03
GRSQ	*Grindelia squarrosa*	curlycup gumweed	2.7	0.0	4.26	0.33
LILE3	*Linum lewisii*	Lewis flax	0.0	0.0	0.00	0.03
MACA2	*Machaeranthera canescens*	hoary tansyaster	1.3	0.0	2.13	0.33
MESA	*Medicago sativa*	alfalfa	2.7	0.7	6.38	2.10
SPCO	*Sphaeralcea coccinea*	scarlet globemallow	0.7	0.0	1.06	0.23
SPPA2	*Sphaeralcea parvifolia*	small-leaf globemallow	0.7	0.0	1.06	0.10
		Native and Desirable Forb Totals	**8.0**	**0.7**	**14.89**	**3.20**
ATCA2	*Atriplex canescens*	four-wing saltbush	1.3	0.0	2.13	0.07
CHVI8	*Chrysothamnus viscidiflorus*	yellow rabbitbrush	0.0	0.0	0.00	0.23
GUSA2	*Gutierrezia sarothrae*	broom Snakeweed	0.0	0.0	0.00	0.03
		Shrub Totals	**1.3**	**0.0**	**2.13**	**0.33**
ALDE	*Alyssum desertorum*	desert madwort	1.3	0.0	2.13	
BRTE	*Bromus tectorum*	cheatgrass	14.0	0.0	24.47	
SATR12	*Salsola tragus*	Russian thistle	0.7	0.0	1.06	
		Totals for Invasive and Non-Native Species	**16.0**	**0.0**	**27.66**	
		Vegetation Totals	**58.0**	**7.3**	**100.0**	**3.53**

[1] Sum of data from 3 randomly placed 50 meter transects with 50 sample points collected from each transect. Foliar cover based upon 1st plant species encountered in the canopy at each sample point. Species composition based upon total of all plant species encountered at each sample point.
[2] Sum of density data collected from 10 one-square meter quadrants along each transect. Only forb and shrub densities were recorded based upon reclamation criteria.
[3] Plant species not encountered in sampling data but were present within the study area.
[4] Percentages are not cumulative with vegetation totals, rather a measure by layer of ground cover from the top layer thru the lower layers to the soil surface. Values for bare ground have no vegetative, litter or rock cover above the soil surface.

Percent Ground Cover by Cover Type [4]	
Bare Ground	**33.3**
Biotic Crust	**0.0**
Herbaceous Litter	**28.0**
Woody Litter	**3.3**
Duff	**0.0**
Rock	**0.0**

Table B2 - Transect Coordinate Locations Reclaimed Pad 4A-1V (Datum: UTM Zone 12, WGS 84)						
Site	**Azimuth from starting point (true N)**	**Transect Starting Point**		**Transect Ending Point**		**Length**
		Northing (mN)	**Easting (mE)**	**Northing (mN)**	**Easting (mE)**	
Transect 1	023 º	4423453.398	725141.2277	4423476.992	725142.5836	25 meters
Transect 2	264 º	4423443.053	725129.5582	4423441.085	725104.2977	25 meters
Transect 3	166 º	4423432.937	725136.871	4423410.283	725144.8107	25 meters

Transect Photos -- Reclaimed Pad 4A-1V

Figure B1 Transect 1 Reclaimed Pad 4A-1V

Figure B2 Transect 2 Reclaimed Pad 4A-1V

Figure B3 Transect 3 Reclaimed Pad 4A-1V

Appendix C – Vegetation Sampling Data Reclaimed Pad 93-2M

Table C1 - Vegetation Cover, Species Composition, Species Density & Ground Cover Reclaimed Pad 93-2M						
Plant Species Observed within Study Area			**Line-Point Canopy Intercept Data [1]**			**Density Data [2]**
Species Symbol	**Scientific Name**	**Common Name**	**% Foliar Cover**	**% Basal Cover**	**Species Composition**	
AGCR	*Agropyron cristatum*	crested wheatgrass	1.3	0.0	1.61	
ELTR7	*Elymus trachycaulus*	slender wheatgrass	0.7	0.0	1.61	
LECI4	*Leymus cinereus*	basin wildrye	2.7	0.0	3.23	
PASM	*Pascopyrum smithii*	western wheatgrass	0.7	0.0	0.81	
PSJU3	*Psathyrostachys juncea*	Russian wildrye	17.3	5.0	21.77	
THIN6	*Thinopyrum intermedium*	pubescent wheatgrass	19.3	3.0	23.39	**Forb/Shrub Density (#/m^2)**
		Perennial Grass Totals	**42.0**	**8.0**	**52.42**	
GRSQ	*Grindelia squarrosa*	curlycup gumweed	0.7	0.0	0.81	0.00
MACA2	*Machaeranthera canescens*	hoary tansyaster	0.0	0.0	0.00	0.03
MESA	*Medicago sativa*	alfalfa	0.0	0.0	0.81	0.10
		Native and Desirable Forb Totals	**0.7**	**0.0**	**1.62**	**0.13**
ARTRW	*Artemisia tridentata var. wyomingensis*	Wyoming big sagebrush	2.0	0.0	2.42	0.10
CHVI8	*Chrysothamnus viscidiflorus*	yellow rabbitbrush	4.0	0.0	5.65	0.13
GUSA2	*Gutierrezia sarothrae*	broom Snakeweed	0.0	0.0	0.00	0.23
KRLA2	*Krascheninnikovia lanata*	winterfat	0.7	0.0	0.81	0.00
		Shrub Totals	**6.7**	**0.0**	**8.90**	**0.46**
BAAM4	*Bassia americana*	kochia	2.0	0.0	4.84	
BRTE	*Bromus tectorum*	cheatgrass	16.0	0.0	25.00	
DESO2	*Descurainia sophia*	yellow mustard	1.3	0.0	1.61	
LEDE	*Lepidium densiflorum*	common pepperweed	2.7	0.0	3.23	
LEPE2	*Lepidium perfoliatum*	clasping pepperweed	0.7	0.0	0.81	
MEOF	*Melilotus officinalis*	yellow sweetclover	0.7	0.0	0.81	
SATR12	*Salsola tragus*	Russian thistle	0.7	0.0	0.81	
		Totals for Invasive and Non-Native Species	**24.0**	**0.00**	**37.10**	
		Vegetation Totals	**73.4**	**8.0**	**100.0**	**0.59**

[1] Sum of data from 3 randomly placed 25 meter transects with 50 sample points collected from each transect. Foliar cover based upon 1st plant species encountered in the canopy at each sample point. Species composition based upon total of all plant species encountered at each sample point.
[2] Sum of density data collected from 10 one-square meter quadrants along each transect. Only desirable forb and shrub densities were recorded based upon reclamation criteria.
[3] Plant species not encountered in sampling data but were present within the study area.
[4] Percentages are not cumulative with vegetation totals, rather a measure by layer of ground cover from the top layer thru the lower layers to the soil surface. Values for bare ground have no vegetative, litter or rock cover above the soil surface.

Percent Ground Cover by Cover Type [4]	
Bare Ground	**25.0**
Biotic Crust	**0.0**
Herbaceous Litter	**66.7**
Woody Litter	**2.0**
Duff	**0.0**
Rock	**0.0**

Table C2 - Transect Coordinate Locations Reclaimed Pad 93-2M (Datum: UTM Zone 12, WGS 84)						
	Azimuth from starting point (true N)	**Transect Starting Point**		**Transect Ending Point**		
Site		**Northing (mN)**	**Easting (mE)**	**Northing (mN)**	**Easting (mE)**	**Length**
Transect 1	183 º	4423683.743	725375.0292	4423661.842	725382.0918	25 meters
Transect 2	277 º	4423690.169	725378.175	4423686.399	725355.8767	25 meters
Transect 3	357 º	4423697.496	725381.7218	4423715.724	725366.8987	25 meters

Transect Photos – Reclaimed Pad 93-2M

Figure C1 Transect 1 Reclaimed Pad 93-2M

Figure C2 Transect 2 Reclaimed Pad 93-2M

Figure C3 Transect 3 Reclaimed Pad 93-2M

Appendix D – Vegetation Sampling Data Reclaimed Pad 93-4H

Table D1 - Vegetation Cover, Species Composition, Species Density & Ground Cover Reclaimed Pad 93-4H						
Plant Species Observed within Study Area			Line-Point Canopy Intercept Data [1]			Density Data [2]
Species Symbol	Scientific Name	Common Name	% Foliar Cover	% Basal Cover	Species Composition	
ACHY	*Achnatherum hymenoides*	Indian ricegrass	7.3	2.7	10.08	
AGCR	*Agropyron cristatum*	crested wheatgrass	0.7	0.0	0.84	
ELTR7	*Elymus trachycaulus*	slender wheatgrass	3.3	0.7	5.04	
LECI4	*Leymus cinereus*	basin wildrye	2.7	0.0	4.21	
PASM	*Pascopyrum smithii*	western wheatgrass	5.3	1.3	7.56	
PSJU3	*Psathyrostachys juncea*	Russian wildrye	1.3	0.0	1.68	
PSSPI	*Pseudoroegneria spicata ssp. inermis*	beardless bluebunch wheatgrass	2.1	0.0	2.53	**Desirable Forb/Shrub Density (#/m^2)**
THIN6	*Thinopyrum intermedium*	pubescent wheatgrass	8.0	0.7	10.92	
		Perennial Grass Totals	**30.7**	**5.4**	**42.86**	
ASCH	*Astragalus chamaeleuce*	cicada milkvetch	0.0	0.0	0.00	0.07
ERCO4	*Erigeron compositus*	cutleaf daisy	0.0	0.0	0.00	0.03
GRSQ	*Grindelia squarrosa*	curlycup gumweed	0.7	0.0	0.84	0.13
LILE3	*Linum lewisii*	Lewis flax	0.0	0.0	0.00	0.03
MACA2	*Machaeranthera canescens*	hoary tansyaster	1.3	0.0	1.68	0.23
MESA	*Medicago sativa*	alfalfa	0.7	2.0	0.84	0.73
SPCO	*Sphaeralcea coccinea*	scarlet globemallow	0.7	0.0	0.84	0.20
SPPA2	*Sphaeralcea parvifolia*	small-leaf globemallow	3.3	0.0	4.20	0.17
		Native and Desirable Forb Totals	**6.7**	**0.0**	**8.40**	**1.59**
ATCA2	*Atriplex canescens*	four-wing saltbush	0.0	0.0	0.00	0.03
CHVI8	*Chrysothamnus viscidiflorus*	yellow rabbitbrush	3.4	0.0	4.20	0.17
GUSA2	*Gutierrezia sarothrae*	broom Snakeweed	1.3	0.0	1.68	0.17
		Shrub Totals	**4.7**	**0.0**	**5.88**	**0.37**
ALDE	*Alyssum desertorum*	desert madwort	2.0	0.0	2.52	
BRTE	*Bromus tectorum*	cheatgrass	20.0	0.0	36.14	
DESO2	*Descurainia sophia*	yellow mustard	0.7	0.0	0.84	
LEDE	*Lepidium densiflorum*	common pepperweed	1.3	0.0	1.68	
MEOF	*Melilotus officinalis*	yellow sweetclover	0.7	0.0	0.84	
SATR12	*Salsola tragus*	Russian thistle	0.7	0.0	0.84	
		Totals for Invasive and Non-Native Species	**25.4**	**0.0**	**42.86**	
		Vegetation Totals	**67.5**	**5.4**	**100.0**	**1.96**

[1] Sum of data from 3 randomly placed 25 meter transects with 50 sample points collected from each transect. Foliar cover based upon 1st plant species encountered in the canopy at each sample point. Species composition based upon total of all plant species encountered at each sample point.
[2] Sum of density data collected from 10 one-square meter quadrants along each transect. Only desirable forb and shrub densities were recorded based upon reclamation criteria.
[3] Plant species not encountered in sampling data but were present within the study area.
[4] Percentages are not cumulative with vegetation totals, rather a measure by layer of ground cover from the top layer thru the lower layers to the soil surface. Values for bare ground have no vegetative, litter or rock cover above the soil surface.

Percent Ground Cover by Cover Type [4]	
Bare Ground	**22.0**
Biotic Crust	**0.0**
Herbaceous Litter	**53.3**
Woody Litter	**3.3**
Duff	**0.0**
Rock	**0.0**

Table D2 - Transect Coordinate Locations Reclaimed Pad 93-4H (Datum: UTM Zone 12, WGS 84)						
Site	Azimuth from starting point (true N)	Transect Starting Point		Transect Ending Point		Length
		Northing (mN)	Easting (mE)	Northing (mN)	Easting (mE)	
Transect 1	337 º	4423400.306	725186.9327	4423422.954	725182.5855	25 meters
Transect 2	082 º	4423400.942	725193.4147	4423411.523	725213.1176	25 meters
Transect 3	173 º	4423395.996	725183.9807	4423369.14	725188.7943	25 meters

Transect Photos -- Reclaimed Pad 93-4H

Figure D1 Transect 1 Reclaimed Pad 93-4H

Figure D2 Transect 2 Reclaimed Pad 93-4H

Figure D3 Transect 3 Reclaimed Pad 93-4H

Appendix E – Vegetation Sampling Data Reclaimed Pad BS-8

Table E1 - Vegetation Cover, Species Composition, Species Density & Ground Cover Reclaimed Pad BS-8						
Plant Species Observed within Study Area			**Line-Point Canopy Intercept Data [1]**			**Density Data [2]**
Species Symbol	**Scientific Name**	**Common Name**	**% Foliar Cover**	**% Basal Cover**	**Species Composition**	
ACHY	*Achnatherum hymenoides*	Indian ricegrass	1.3	0.7	2.15	
ELLAL	*Elymus lanceolatus*	thickspike wheatgrass	1.3	0.0	2.15	
ELTR7	*Elymus trachycaulus*	slender wheatgrass	9.3	0.0	15.05	
LECI4[3]	*Leymus cinereus*	basin wildrye	0.0	0.0	0.00	
PASM	*Pascopyrum smithii*	western wheatgrass	2.0	0.0	3.23	
PSJU3	*Psathyrostachys juncea*	Russian wildrye	5.3	2.0	9.68	
PSSPI	*Pseudoroegneria spicata ssp. inermis*	beardless bluebunch wheatgrass	6.7	1.3	11.83	
PSSPS	*Pseudoroegneria spicata ssp. spicata*	bearded bluebunch wheatgrass	0.7	0.0	1.08	
THIN6	*Thinopyrum intermedium*	intermedate wheatgrass	8.0	0.7	13.98	**Forb/Shrub Density (#/m^2)**
		Perennial Grass Totals	**34.7**	**4.7**	**59.14**	
MACA2	*Machaeranthera canescens*	hoary tansyaster	0.7	0.0	1.08	0.07
MESA	*Medicago sativa*	alfalfa	0.0	0.0	0.00	0.03
		Native and Desirable Forb Totals	**0.7**	**0.0**	**1.08**	**0.10**
ARTRW	*Artemisia tridentata var. wyomingensis*	Wyoming big sagebrush	1.3	0.0	2.15	0.07
CHVI8	*Chrysothamnus viscidiflorus*	yellow rabbitbrush	1.3	0.0	2.15	0.30
GUSA2	*Gutierrezia sarothrae*	broom Snakeweed	0.7	0.0	1.08	0.17
SAVE4	*Sarcobatus vermiculatus*	greasewood	0.7	0.0	1.08	0.00
		Shrub Totals	**4.0**	**0.0**	**6.5**	**0.54**
ALDE	*Alyssum desertorum*	desert madwort	0.7	0.0	1.08	
BRTE	*Bromus tectorum*	cheatgrass	12.0	0.0	22.58	
CEDI[3]	*Centaurea diffusa*	Diffuse knapweed	0.0	0.0	0.00	
DESO2	*Descurainia sophia*	yellow mustard	0.7	0.0	1.08	
LEDE	*Lepidium densiflorum*	common pepperweed	0.7	0.0	2.15	
SATR12	*Salsola tragus*	Russian thistle	2.7	0.0	6.45	
		Totals for Invasive and Non-Native Species	**16.7**	**0.0**	**33.34**	
		Vegetation Totals	**56.1**	**4.7**	**100.0**	**0.64**

[1] Sum of data from 3 randomly placed 25 meter transects with 50 sample points collected from each transect. Foliar cover based upon 1st plant species encountered in the canopy at each sample point. Species composition based upon total of all plant species encountered at each sample point.
[2] Sum of density data collected from 10 one-square meter quadrants along each transect. Only desirable forb and shrub densities were recorded based upon reclamation criteria.
[3] Plant species not encountered in sampling data but were present within the study area.
[4] Percentages are not cumulative with vegetation totals, rather a measure by layer of ground cover from the top layer thru the lower layers to the soil surface. Values for bare ground have no vegetative, litter or rock cover above the soil surface.

Percent Ground Cover by Cover Type [4]	
Bare Ground	**32.0**
Biotic Crust	**0.0**
Herbaceous Litter	**48.7**
Woody Litter	**0.7**
Duff	**0.0**
Rock	**0.7**

Table E2 - Transect Coordinate Locations Reclaimed Pad BS-8 (Datum: UTM Zone 12, WGS 84)						
	Azimuth from starting point (true N)	**Transect Starting Point**		**Transect Ending Point**		
Site		**Northing (mN)**	**Easting (mE)**	**Northing (mN)**	**Easting (mE)**	**Length**
Transect 1	082 º	4423093.518	726322.9926	4423106.389	726344.8511	25 meters
Transect 2	214 º	4423091.713	726314.5776	4423073.114	726301.8708	25 meters
Transect 3	282 º	4423102.199	726315.9771	4423103.181	726292.9374	25 meters

Transect Photos -- Reclaimed Pad BS-8

Figure E1 Transect 1 Reclaimed Pad BS-8

Figure E2 Transect 2 Reclaimed Pad BS-8

Figure E3 Transect 3 Reclaimed Pad BS-8

Appendix F – Vegetation Sampling Data Reclaimed Access Route to Pad C

Table F1 - Vegetation Cover, Species Composition, Species Density & Ground Cover Reclaimed Access Route to Pad C						
Plant Species Observed within Study Area			**Line-Point Canopy Intercept Data [1]**			**Density Data [2]**
Species Symbol	**Scientific Name**	**Common Name**	**% Foliar Cover**	**% Basal Cover**	**Species Composition**	
ACHY	*Achnatherum hymenoides*	Indian ricegrass	6.0	0.7	7.38	
ELTR7	*Elymus trachycaulus*	slender wheatgrass	2.7	0.7	4.10	
HECO26	*Hesperostipa comata*	needle & thread needlegrass	8.0	1.3	10.66	
LECI4	*Leymus cinereus*	basin wildrye	3.3	0.0	4.10	
NAVI4	*Nassella viridula*	green needlegrass	4.7	1.3	6.56	
PASM	*Pascopyrum smithii*	western wheatgrass	7.3	0.0	9.84	
PSJU3	*Psathyrostachys juncea*	Russian wildrye	0.0	0.0	0.00	
PSSPI	*Pseudoroegneria spicata ssp. inermis*	beardless bluebunch wheatgrass	0.7	0.0	0.82	**Desirable Forb/Shrub Density (#/m²)**
		Perennial Grass Totals	**32.7**	**4.0**	**43.44**	
ACLA	*Achillea lanulosa*	western yarrow	0.0	0.0	0.00	0.07
ASCI4	*Astragalus cicer*	cicer milkvetch	0.7	0.0	0.82	0.13
LILE3	*Linum lewisii*	Lewis flax	0.0	0.0	0.00	0.07
MACA2	*Machaeranthera canescens*	hoary tansyaster	0.7	0.0	0.82	0.07
MAGR2	*Machaeranthera*	rayless tansyaster	0.0	0.0	0.00	0.07
MESA	*Medicago sativa*	alfalfa	0.0	0.0	0.00	0.10
PAMU11	*Pakera multilobata*	lobeleaf groundsel	0.0	0.0	0.00	0.07
PHAC4	*Physaria acutifolia*	common twinpod	0.0	0.0	0.00	0.03
SPCO	*Sphaeralcea coccinea*	scarlet globemallow	0.7	0.0	0.82	0.33
		Desirable Forb Totals	**2.1**	**0.0**	**2.46**	**0.93**
ARTRW	*Artemisia tridentata var. wyomingensis*	Wyoming big sagebrush	0.0	0.0	0.00	0.13
ATCA2	*Atriplex canescens*	four-wing saltbush	2.7	0.0	3.28	0.47
CHVI8	*Chrysothamnus viscidiflorus*	yellow rabbitbrush	2.0	0.0	2.46	0.10
GUSA2	*Gutierrezia sarothrae*	broom Snakeweed	8.0	1.3	10.66	1.00
KRLA2	*Krascheninnikovia lanata*	winterfat	1.3	0.0	1.64	0.07
PUTR2	*Purshia tridentata*	antelope bittrebrush	0.0	0.0	0.00	0.10
		Shrub Totals	**14.0**	**1.3**	**18.04**	**1.87**
ALDE	*Alyssum desertorum*	desert madwort	0.7	0.0	0.82	
BRTE	*Bromus tectorum*	cheatgrass	18.0	0.0	34.43	
LEDE	*Lepidium densiflorum*	common pepperweed	0.0	0.0	0.82	
		Totals for Invasive and Non-Native Species	**18.7**	**0.0**	**36.1**	
		Vegetation Totals	**67.5**	**5.3**	**100.00**	**2.80**

[1] Sum of data from 3 randomly placed 25 meter transects with 50 sample points collected from each transect. Foliar cover based upon 1st plant species encountered in the canopy at each sample point. Species composition based upon total of all plant species encountered at each sample point.
[2] Sum of density data collected from 10 one-square meter quadrants along each transect. Only desirable forb and shrub densities were recorded based upon reclamation criteria.
[3] Percentages are not cumulative with vegetation totals, rather a measure by layer of ground cover from the top layer thru the lower layers to the soil surface. Values for bare ground have no vegetative, litter or rock cover above the soil surface.

Percent Ground Cover by Cover Type [3]	
Bare Ground	**17.3**
Biotic Crust	**0.0**
Herbaceous Litter	**61.0**
Woody Litter	**7.0**
Duff	**0.0**
Rock	**0.0**

Table F2 - Transect Coordinate Locations Reclaimed Access Route to Pad C (Datum: UTM Zone 12, WGS 84)						
	Azimuth from starting point (true N)	**Transect Starting Point**		**Transect Ending Point**		
Site		**Northing (mN)**	**Easting (mE)**	**Northing (mN)**	**Easting (mE)**	**Length**
Transect 1	302 º	4423803.87	724954.5088	4423814.815	724933.8292	25 meters
Transect 2	030 º	4423788.579	724869.3428	4423808.061	724878.1764	25 meters
Transect 3	312 º	4423776.622	724806.7441	4423793.312	724788.7178	25 meters

Transect Photos -- Reclaimed Access Route to Pad C

Figure F1 Transect 1 Reclaimed Access Route to Pad C

Figure F2 Transect 2 Reclaimed Access Route to Pad C

Figure F3 Transect 3 Reclaimed Access Route to Pad C

Appendix G – Vegetation Sampling Data Reclaimed Pad C

Table G1 - Vegetation Cover, Species Composition, Species Density & Ground Cover Reclaimed Pad C						
Plant Species Observed within Study Area			**Line-Point Canopy Intercept Data [1]**			**Density Data [2]**
Species Symbol	**Scientific Name**	**Common Name**	**% Foliar Cover**	**% Basal Cover**	**Species Composition**	
ACHY	*Achnatherum hymenoides*	Indian ricegrass	7.3	2.0	9.30	
ELLAL	*Elymus lanceolatus*	thickspike wheatgrass	3.3	0.0	3.88	
ELTR7	*Elymus trachycaulus*	slender wheatgrass	2.0	0.7	2.33	
HECO26	*Hesperostipa comata*	needle & thread needlegrass	1.3	0.0	1.55	
LECI4	*Leymus cinereus*	basin wildrye	5.3	0.7	6.20	
NAVI4	*Nassella viridula*	green needlegrass	0.7	0.0	0.78	
PASM	*Pascopyrum smithii*	western wheatgrass	8.0	0.0	10.08	
PSJU3	*Psathyrostachys juncea*	Russian wildrye	2.7	0.7	3.10	
THIN6	*Thinopyrum intermedium*	intermedate wheatgrass	0.7	0.0	1.55	**Desirable Forb/Shrub Density (#/m^2)**
		Perennial Grass Totals	**31.3**	**4.0**	**38.76**	
ASCI4	*Astragalus cicer*	cicer milkvetch	0.0	0.0	0.00	0.03
ASCO	*Astragalus convallarius*	lesser-rushy mlkvetch	1.3	0.0	1.55	0.03
CRAC	*Crepis acuminata*	longleaf hawksbeard	0.0	0.0	0.00	0.13
CRFL6	*Cryptantha flavoculata*	roughseed cryptanth	0.0	0.0	0.00	0.03
DEPI2	*Descurainia pinnata*	western tansymustard	0.7	0.0	0.78	0.03
HEBO	*Hedysarum boreale*	Utah sweetvetch	0.0	0.0	0.00	0.07
LEER	*Leucelene ericoides*	heath aster	0.0	0.0	0.00	0.03
MACA2	*Machaeranthera canescens*	hoary tansyaster	0.7	0.0	1.55	0.70
MAGR2	*Machaeranthera*	rayless tansyaster	0.0	0.0	0.00	0.07
MESA	*Medicago sativa*	alfalfa	0.0	0.0	0.00	0.07
SPCO	*Sphaeralcea coccinea*	scarlet globemallow	1.3	0.0	1.55	0.50
		Desirable Forb Totals	**4.0**	**0.0**	**5.40**	**1.70**
ARTRW	*Artemisia tridentata var. wyomingensis*	Wyoming big sagebrush	0.0	0.0	0.00	0.03
ATCA2	*Atriplex canescens*	four-wing saltbush	3.3	0.0	3.88	0.27
CHVI8	*Chrysothamnus viscidiflorus*	yellow rabbitbrush	0.7	0.0	0.78	0.13
GUSA2	*Gutierrezia sarothrae*	broom Snakeweed	4.7	0.7	6.20	0.43
KRLA2	*Krascheninnikovia lanata*	winterfat	0.0	0.0	0.00	0.03
PUTR2	*Purshia tridentata*	antelope bittrebrush	0.0	0.0	0.00	0.07
		Shrub Totals	**8.7**	**0.7**	**10.86**	**0.97**
ALDE	*Alyssum desertorum*	desert madwort	2.0	0.0	3.90	
BRTE	*Bromus tectorum*	cheatgrass	21.3	0.0	34.90	
LEDE	*Lepidium densiflorum*	common pepperweed	4.7	0.0	6.20	
		Totals for Invasive and Non-Native Species	**28.0**	**0.0**	**45.0**	
		Vegetation Totals	**72.0**	**4.7**	**100.00**	**2.7**

[1] Sum of data from 3 randomly placed 25 meter transects with 50 sample points collected from each transect. Foliar cover based upon 1st plant species encountered in the canopy at each sample point. Species composition based upon total of all plant species encountered at each sample point.

[2] Sum of density data collected from 10 one-square meter quadrants along each transect. Only desirable forb and shrub densities were recorded based upon reclamation criteria.

[3] Percentages are not cumulative with vegetation totals, rather a measure by layer of ground cover from the top layer thru the lower layers to the soil surface. Values for bare ground have no vegetative, litter or rock cover above the soil surface.

Percent Ground Cover by Cover Type [3]	
Bare Ground	**18.7**
Biotic Crust	**0.0**
Herbaceous Litter	**57.3**
Woody Litter	**2.0**
Duff	**0.0**
Rock	**0.0**

Table G2 - Transect Coordinate Locations Reclaimed Pad C (Datum: UTM Zone 12, WGS 84)						
	Azimuth from starting point (true N)	Transect Starting Point		Transect Ending Point		
Site		Northing (mN)	Easting (mE)	Northing (mN)	Easting (mE)	Length
Transect 1	061 º	4423790.778	724747.994	4423802.612	724768.7713	25 meters
Transect 2	341 º	4423794.062	724746.3575	4423816.229	724736.9797	25 meters
Transect 3	191 º	4423788.52	724746.7776	4423766.106	724740.2539	25 meters

Transect Photos -- Reclaimed Pad C

Figure G1 Transect 1 Reclaimed Pad C

Figure G2 Transect 2 Reclaimed Pad C

Figure G3 Transect 3 Reclaimed Pad C

Appendix H – Vegetation Sampling Data Reclaimed Pad G

Table H1 - Vegetation Cover, Species Composition, Species Density & Ground Cover Reclaimed Pad G						
Plant Species Observed within Study Area			**Line-Point Canopy Intercept Data [1]**			**Density Data [2]**
Species Symbol	**Scientific Name**	**Common Name**	**% Foliar Cover**	**% Basal Cover**	**Species Composition**	
ACHY	*Achnatherum hymenoides*	Indian ricegrass	4.0	1.3	5.13	
ELLAL	*Elymus lanceolatus*	thickspike wheatgrass	4.0	0.0	5.13	
ELTR7	*Elymus trachycaulus*	slender wheatgrass	20.7	3.3	28.22	
HECO26	*Hesperostipa comata*	needle & thread needlegrass	6.0	2.0	7.69	
NAVI4	*Nassella viridula*	green needlegrass	1.3	0.7	1.71	
PASM	*Pascopyrum smithii*	western wheatgrass	6.0	0.0	7.69	
POSE	*Poa secunda*	Sandberg bluegrass	0.7	0.0	0.85	
KOMA	*Koeleria macrantha*	prairie junegrass	0.7	0.0	0.85	
PSJU3	*Psathyrostachys juncea*	Russian wildrye	0.7	0.0	0.85	
PSSPI	*Pseudoroegneria spicata ssp. inermis*	beardless bluebunch wheatgrass	0.7	0.0	0.85	**Desirable Forb/Shrub Density (#/m^2)**
		Perennial Grass Totals	**44.7**	**7.3**	**58.98**	
ANRO2	*Antennaria rosea*	rosey pussytoes	0.0	0.0	0.00	0.07
ASCO12	*Astragalus convallarius*	lesser-rushy mlkvetch	1.3	0.0	1.71	0.20
CRAC	*Crepis acuminata*	longleaf hawksbeard	0.0	0.0	0.00	0.03
CRFL6	*Cryptantha flavoculata*	roughseed cryptanth	0.0	0.0	0.00	0.03
EREA	*Erigeron eatonii*	Eaton fleabane	0.0	0.0	0.00	0.13
HEBO	*Hedysarum boreale*	Utah sweetvetch	0.7	0.0	1.71	0.07
LEER	*Leucelene ericoides*	heath aster	0.0	0.0	0.00	0.13
LILE3	*Linum lewisii*	Lewis's flax	0.0	0.0	0.00	0.20
MACA2	*Machaeranthera canescens*	hoary tansyaster	0.0	0.0	0.00	0.17
MAGR2	*Machaeranthera*	rayless tansyaster	0.7	0.0	0.85	0.30
MESA	*Medicago sativa*	alfalfa	0.0	0.0	0.00	0.17
PEST2	*Penstemon strictus*	Rocky Mountain penstemon	0.0	0.0	0.00	0.03
PHHO	*Phlox hoodii*	Hood's phlox	0.0	0.0	0.00	0.23
SPCO	*Sphaeralcea coccinea*	scarlet globemallow	0.7	0.0	1.71	1.60
		Native and Desirable Forb Totals	**3.4**	**0.0**	**5.98**	**3.36**
ARTRW	*Artemisia tridentata var. wyomingensis*	Wyoming big sagebrush	0.7	0.0	0.85	0.07
ATCA2	*Atriplex canescens*	four-wing saltbush	0.7	0.0	0.85	0.17
CHVI8	*Chrysothamnus viscidiflorus*	yellow rabbitbrush	0.0	0.0	0.00	0.17
GUSA2	*Gutierrezia sarothrae*	broom Snakeweed	2.7	0.7	3.43	0.40
KRLA2	*Krascheninnikovia lanata*	winterfat	0.0	0.0	0.00	0.00
PUTR2	*Purshia tridentata*	antelope bittrebrush	0.0	0.0	0.00	0.03
		Shrub Totals	**4.1**	**0.7**	**5.13**	**0.84**
ALDE	*Alyssum desertorum*	desert madwort	1.3	0.0	2.56	
BRTE	*Bromus tectorum*	cheatgrass	16.0	0.0	26.50	
SATR12	*Salsola tragus*	Russian thistle	0.7	0.0	0.85	
		Totals for Invasive and Non-Native Species	**18.0**	**0.0**	**29.91**	
		Vegetation Totals	**70.2**	**8.0**	**100.0**	**4.20**

[1] Sum of data from 3 randomly placed 25 meter transects with 50 sample points collected from each transect. Foliar cover based upon 1st plant species encountered in the canopy at each sample point. Species composition based upon total of all plant species encountered at each sample point.

[2] Sum of density data collected from 10 one-square meter quadrants along each transect. Only desirable forb and shrub densities were recorded based upon reclamation criteria.

[3] Percentages are not cumulative with vegetation totals, rather a measure by layer of ground cover from the top layer thru the lower layers to the soil surface. Values for bare ground have no vegetative, litter or rock cover above the soil surface.

Percent Ground Cover by Cover Type [3]	
Bare Ground	**15.3**
Biotic Crust	**0.0**
Herbaceous Litter	**64.7**
Woody Litter	**2.7**
Duff	**0.0**
Rock	**0.0**

Table H2 - Transect Coordinate Locations Reclaimed Pad G (Datum: UTM Zone 12, WGS 84)						
	Azimuth from starting point (true N)	Transect Starting Point		Transect Ending Point		
Site		Northing (mN)	Easting (mE)	Northing (mN)	Easting (mE)	Length
Transect 1	231 º	4424258.988	725293.8729	4424241.728	725277.5344	25 meters
Transect 2	126 º	4424253.885	725297.8725	4424242.817	725321.8908	25 meters
Transect 3	009 º	4424261.388	4424283.671	725301.9524	724265.7037	25 meters

Transect Photos -- Reclaimed Pad G

Figure H1 Transect 1 Reclaimed Pad G

Figure H2 Transect 2 Reclaimed Pad G

Figure H3 Transect 3 Reclaimed Pad G

Appendix I – Vegetation Sampling Data Reclaimed Access Route to Pad H

Table I1 - Vegetation Cover, Species Composition, Species Density & Ground Cover Reclaimed Access Route to Pad H						
Plant Species Observed within Study Area			**Line-Point Canopy Intercept Data [1]**			**Density Data [2]**
Species Symbol	**Scientific Name**	**Common Name**	**% Foliar Cover**	**% Basal Cover**	**Species Composition**	
ACHY	*Achnatherum hymenoides*	Indian ricegrass	7.0	1.0	12.73	
ELLAL	*Elymus lanceolatus*	thickspike wheatgrass	1.0	0.0	1.82	
ELTR7	*Elymus trachycaulus*	slender wheatgrass	6.0	1.0	12.73	
LECI4	*Leymus cinereus*	basin wildrye	7.0	3.0	12.73	
NAVI4	*Nassella viridula*	green needlegrass	5.0	0.0	9.09	
PASM	*Pascopyrum smithii*	western wheatgrass	3.0	0.0	5.45	
PSJU3	*Psathyrostachys juncea*	Russian wildrye	1.0	0.0	1.82	
PSSPI	*Pseudoroegneria spicata ssp. inermis*	beardless bluebunch wheatgrass	5.0	0.0	9.09	**Desirable Forb/Shrub Density (#/m^2)**
		Perennial Grass Totals	**35.0**	**5.0**	**65.45**	
ACLA	*Achillea lanulosa*	western yarrow	0.0	0.0	0.00	0.05
ARFE3	*Arenaria fendleri*	Fendler sandwort	0.0	0.0	0.00	0.05
CRFL6	*Cryptantha flavoculata*	roughseed cryptanth	0.0	0.0	0.00	0.05
EREA	*Erigeron eatonii*	Eaton fleabane	0.0	0.0	0.00	0.05
MACA2	*Machaeranthera canescens*	hoary tansyaster	0.0	0.0	0.00	0.10
MAGR2	*Machaeranthera*	rayless tansyaster	0.0	0.0	0.00	0.15
MESA	*Medicago sativa*	alfalfa	4.0	1.0	10.91	1.90
PEPA8	*Penstemon palmeri*	Palmer's penstemon	0.0	0.0	0.00	0.10
		Native and Desirable Forb Totals	**4.0**	**1.0**	**10.91**	**2.45**
ATCA2	*Atriplex canescens*	four-wing saltbush	3.0	0.0	5.45	0.25
CHVI8	*Chrysothamnus viscidiflorus*	yellow rabbitbrush	0.0	0.0	0.00	0.05
GUSA2	*Gutierrezia sarothrae*	broom snakeweed	0.0	0.0	0.00	0.05
		Shrub Totals	**3.0**	**0.0**	**5.45**	**0.35**
BRTE	*Bromus tectorum*	cheatgrass	7.0	0.0	16.36	
LEDE	*Lepidium densiflorum*	common pepperweed	1.0	0.0	1.82	
		Totals for Invasive and Non-Native Species	**8.0**	**0.0**	**18.2**	
		Vegetation Totals	**50.0**	**6.0**	**100.0**	**2.80**

[1] Sum of data from 3 randomly placed 25 meter transects with 50 sample points collected from each transect. Foliar cover based upon 1st plant species encountered in the canopy at each sample point. Species composition based upon total of all plant species encountered at each sample point.
[2] Sum of density data collected from 10 one-square meter quadrants along each transect. Only desirable forb and shrub densities were recorded based upon reclamation criteria.
[3] Plant species not encountered in sampling data but were present within the study area.
[4] Percentages are not cumulative with vegetation totals, rather a measure by layer of ground cover from the top layer thru the lower layers to the soil surface. Values for bare ground have no vegetative, litter or rock cover above the soil surface.

Percent Ground Cover by Cover Type [4]	
Bare Ground	**20.0**
Biotic Crust	**0.0**
Herbaceous Litter	**31.0**
Woody Litter	**6.0**
Duff	**0.0**
Rock	**0.0**

Table I2 - Transect Coordinate Locations Reclaimed Access Route to Pad H (Datum: UTM Zone 12, WGS 84)						
Site	**Azimuth from starting point (true N)**	**Transect Starting Point**		**Transect Ending Point**		**Length**
		Northing (mN)	**Easting (mE)**	**Northing (mN)**	**Easting (mE)**	
Reclaimed Well Pad 5H-1V						
Transect 1	278 º	4423863.093	725195.4127	4423867.468	725168.122	25 meters
Transect 2	268 º	4423838.501	725122.6677	4423838.241	725098.8121	25 meters

Transect Photos -- Reclaimed Access Route to Pad H

Figure I1 Transect 1 Reclaimed Access Route to Pad H

Figure I2 Transect 2 Reclaimed Access Route to Pad H

Appendix J – Vegetation Sampling Data Reclaimed Pad H

Table J1 - Vegetation Cover, Species Composition, Species Density & Ground Cover Reclaimed Pad H						
Plant Species Observed within Study Area			**Line-Point Canopy Intercept Data [1]**			**Density Data [2]**
Species Symbol	**Scientific Name**	**Common Name**	**% Foliar Cover**	**% Basal Cover**	**Species Composition**	
ACHY	*Achnatherum hymenoides*	Indian ricegrass	12.7	2.7	21.00	
ELLAL	*Elymus lanceolatus*	thickspike wheatgrass	0.7	0.7	1.00	
ELTR7	*Elymus trachycaulus*	slender wheatgrass	6.0	0.0	12.00	
LECI4	*Leymus cinereus*	basin wildrye	12.0	0.7	18.00	
NAVI4	*Nassella viridula*	green needlegrass	8.0	1.3	12.00	
PASM	*Pascopyrum smithii*	western wheatgrass	1.3	0.0	2.00	
PSJU3	*Psathyrostachys juncea*	Russian wildrye	1.3	1.3	2.00	
PSSPI	*Pseudoroegneria spicata ssp. inermis*	beardless bluebunch wheatgrass	6.7	1.3	10.00	**Desirable Forb/Shrub Density (#/m^2)**
THIN6	*Thinopyrum intermedium*	intermedate wheatgrass	0.7	0.0	1.00	
		Perennial Grass Totals	**49.3**	**8.0**	**79.0**	
ACLA	*Achillea lanulosa*	western yarrow	0.0	0.0	0.00	0.07
ANRO2	*Antennaria rosea*	rosey pussytoes	0.0	0.0	0.00	0.03
ASCH	*Astragalus chamaeleuce*	cicada milkvetch	0.0	0.0	0.00	0.03
ASCI4	*Astragalus cicer*	cicer milkvetch	0.0	0.0	0.00	0.30
CRFL6	*Cryptantha flavoculata*	roughseed cryptanth	0.0	0.0	0.00	0.10
LEER	*Leucelene ericoides*	heath aster	0.0	0.0	0.00	0.03
MACA2	*Machaeranthera canescens*	hoary tansyaster	0.0	0.0	0.00	0.23
MAGR2	*Machaeranthera*	rayless tansyaster	0.0	0.0	1.00	0.30
MESA	*Medicago sativa*	alfalfa	0.7	0.0	3.00	0.60
PEPA8	*Penstemon palmeri*	Palmer's penstemon	0.0	0.0	0.00	0.23
		Native and Desirable Forb Totals	**0.7**	**0.0**	**4.00**	**1.93**
ATCA2	*Atriplex canescens*	four-wing saltbush	2.7	0.0	4.00	0.33
CHVI8	*Chrysothamnus viscidiflorus*	yellow rabbitbrush	0.0	0.0	0.00	0.00
KRLA2	*Krascheninnikovia lanata*	winterfat	0.0	0.0	0.00	0.12
PUTR2	*Purshia tridentata*	antelope bittrebrush	0.7	0.0	1.00	0.10
		Shrub Totals	**3.4**	**0.0**	**5.00**	**0.55**
ALDE	*Alyssum desertorum*	desert madwort	0.7	0.0	3.00	
BRTE	*Bromus tectorum*	cheatgrass	5.3	0.0	9.00	
		Totals for Invasive and Non-Native Species	**6.0**	**0.0**	**12.0**	
		Vegetation Totals	**59.4**	**8.0**	**100.0**	**2.49**

[1] Sum of data from 3 randomly placed 25 meter transects with 50 sample points collected from each transect. Foliar cover based upon 1st plant species encountered in the canopy at each sample point. Species composition based upon total of all plant species encountered at each sample point.
[2] Sum of density data collected from 10 one-square meter quadrants along each transect. Only desirable forb and shrub densities were recorded based upon reclamation criteria.
[3] Plant species not encountered in sampling data but were present within the study area.
[4] Percentages are not cumulative with vegetation totals, rather a measure by layer of ground cover from the top layer thru the lower layers to the soil surface. Values for bare ground have no vegetative, litter or rock cover above the soil surface.

Percent Ground Cover by Cover Type [4]	
Bare Ground	**19.3**
Biotic Crust	**0.0**
Herbaceous Litter	**50.0**
Woody Litter	**14.0**
Duff	**0.0**
Rock	**1.3**

Table J2 - Transect Coordinate Locations Reclaimed Pad H (Datum: UTM Zone 12, WGS 84)						
	Azimuth from starting point (true N)	**Transect Starting Point**		**Transect Ending Point**		
Site		**Northing (mN)**	**Easting (mE)**	**Northing (mN)**	**Easting (mE)**	**Length**
Reclaimed Well Pad 5H-1V						
Transect 1	081 º	4423834.266	725054.5387	4423844.141	725076.6563	25 meters
Transect 2	352 º	4423836.244	725046.2692	4423861.774	725045.4299	25 meters
Transect 3	257 º	4423839.338	725045.6647	4423832.629	725021.6574	25 meters

Transect Photos -- Reclaimed Pad H

Figure J1 Transect 1 Reclaimed Pad H

Figure J2 Transect 2 Reclaimed Pad H

Figure J3 Transect 3 Reclaimed Pad H

Appendix K – Vegetation Sampling Data Reclaimed Pad IRI-3, MW-1, PW-1, and PW-2

Table K1 - Vegetation Cover, Species Composition, Species Density & Ground Cover
Reclaimed Pads IRI-3, MW-1, PW-1, and PW-2

Plant Species Observed within Study Area			Line-Point Canopy Intercept Data [1]			Density Data [2]
Species Symbol	**Scientific Name**	**Common Name**	**% Foliar Cover**	**% Basal Cover**	**Species Composition**	
ACHY	*Achnatherum hymenoides*	Indian ricegrass	2.7	0.0	4.04	
AGCR	*Agropyron cristatum*	crested wheatgrass	9.3	1.3	14.14	
ELTR7	*Elymus trachycaulus*	slender wheatgrass	2.0	0.0	4.04	
LECI4[3]	*Leymus cinereus*	basin wildrye	0.0	0.0	0.00	
PASM	*Pascopyrum smithii*	western wheatgrass	7.3	0.0	13.13	
PSJU3	*Psathyrostachys juncea*	Russian wildrye	13.3	3.3	20.20	**Desirable Forb/Shrub Density (#/m^2)**
THIN6	*Thinopyrum intermedium*	pubescent wheatgrass	5.3	1.3	9.09	
		Perennial Grass Totals	**40.0**	**6.0**	**64.64**	
EREA	*Erigeron eatonii*	Eaton's fleabane	0.0	0.0	0.00	0.03
HEBO[3]	*Hedysarum boreale*	Utah sweetvetch	0.0	0.0	0.00	0.00
LILE3	*Linum lewisii*	Lewis's flax	0.0	0.0	1.01	0.00
MACA2[3]	*Machaeranthera canescens*	hoary tansyaster	0.0	0.0	0.00	0.00
MAGR2	*Machaeranthera*	rayless tansyaster	0.0	0.0	0.00	0.03
MESA	*Medicago sativa*	alfalfa	0.0	0.0	0.00	0.23
PHHO[3]	*Phlox hoodii*	Hood's phlox	0.0	0.0	0.00	0.00
		Native and Desirable Forb Totals	**0.0**	**0.0**	**1.01**	**0.29**
ARTRW	*Artemisia tridentata var. wyomingensis*	Wyoming big sagebrush	0.0	0.0	2.02	0.13
ATCA2	*Atriplex canescens*	four-wing saltbush	4.0	0.0	6.06	0.17
CHVI8[3]	*Chrysothamnus viscidiflorus*	yellow rabbitbrush	0.0	0.0	0.00	0.00
GUSA2	*Gutierrezia sarothrae*	broom Snakeweed	0.7	0.0	1.01	0.07
		Shrub Totals	**4.7**	**0.0**	**9.09**	**0.37**
ALDE	*Alyssum desertorum*	desert madwort	4.0	0.0	9.09	
BRTE	*Bromus tectorum*	cheatgrass	7.3	0.0	16.16	
		Totals for Invasive and Non-Native Species	**11.3**	**0.0**	**25.25**	
		Vegetation Totals	**56.0**	**6.0**	**100.0**	**0.66**

[1] Sum of data from 3 randomly placed 25 meter transects with 50 sample points collected from each transect. Foliar cover based upon 1st plant species encountered in the canopy at each sample point. Species composition based upon total of all plant species encountered at each sample point.
[2] Sum of density data collected from 10 one-square meter quadrants along each transect. Only desirable forb and shrub densities were recorded based upon reclamation criteria.
[3] Plant species not encountered in sampling data but were present within the study area.
[4] Percentages are not cumulative with vegetation totals, rather a measure by layer of ground cover from the top layer thru the lower layers to the soil surface. Values for bare ground have no vegetative, litter or rock cover above the soil surface.

Percent Ground Cover by Cover Type [4]	
Bare Ground	**30.0**
Biotic Crust	**0.0**
Herbaceous Litter	**54.0**
Woody Litter	**0.7**
Duff	**0.0**
Rock	**0.0**

Table K2 - Transect Coordinate Locations
Reclaimed Pads IRI-3, MW-1, PW-1 and PW-2 (Datum: UTM Zone 12, WGS 84)

Site	Azimuth from starting point (true N)	Transect Starting Point		Transect Ending Point		Length
		Northing (mN)	Easting (mE)	Northing (mN)	Easting (mE)	
Transect 1	105 º	4424246.605	724309.144	4424237.114	724330.2062	25 meters
Transect 2	359 º	4424258.829	724297.9223	4424283.113	724296.2668	25 meters
Transect 3	273 º	4424257.667	724292.3974	4424257.412	724268.6287	25 meters

Transect Photos -- Reclaimed Pads IRI-3, MW-1, PW-1, and PW-2

Figure K1 Transect 1 Reclaimed Pads IRI-3, MW-1, PW-1, and PW-2

Figure K2 Transect 2 Reclaimed Pads IRI-3, MW-1, PW-1, and PW-2

Figure K3 Transect 3 Reclaimed Pads IRI-3, MW-1, PW-1, and PW-2

Appendix L – Vegetation Sampling Data Reclaimed Access Route to Pad N

Table L1 - Vegetation Cover, Species Composition, Species Density & Ground Cover
Reclaimed Access Route to Pad N

Plant Species Observed within Study Area			Line-Point Canopy Intercept Data [1]			Density Data [2]
Species Symbol	**Scientific Name**	**Common Name**	**% Foliar Cover**	**% Basal Cover**	**Species Composition**	
ACHY	*Achnatherum hymenoides*	Indian ricegrass	12.0	2.0	23.53	
ELTR7	*Elymus trachycaulus*	slender wheatgrass	5.3	0.0	10.59	
LECI4	*Leymus cinereus*	basin wildrye	0.7	0.0	1.18	
NAVI4	*Nassella viridula*	green needlegrass	3.3	0.0	5.88	
PASM	*Pascopyrum smithii*	western wheatgrass	3.3	0.0	5.88	
POSE	*Poa secunda*	Sandberg bluegrass	0.7	0.0	1.18	
PSSPI	*Pseudoroegneria spicata ssp. inermis*	beardless bluebunch wheatgrass	1.3	0.7	2.35	**Desirable Forb/Shrub Density (#/m²)**
		Perennial Grass Totals	**26.7**	**2.7**	**50.59**	
ACLA	*Achillea lanulosa*	western yarrow	0.0	0.0	0.00	0.03
ASCH	*Astragalus chamaeleuce*	cicada milkvetch	0.0	0.0	0.00	0.07
ASCI4	*Astragalus cicer*	cicer milkvetch	0.0	0.0	0.00	0.03
CRFL6	*Cryptantha flavoculata*	roughseed cryptanth	0.0	0.0	0.00	0.03
EUFE	*Euphorbia fendleri*	Fendler spurge	1.3	0.0	2.35	0.00
MACA2	*Machaeranthera canescens*	hoary tansyaster	0.0	0.0	0.00	0.23
MAGR2	*Machaeranthera*	rayless tansyaster	1.3	0.0	2.35	0.13
MESA	*Medicago sativa*	alfalfa	0.0	0.0	0.00	0.80
PEPA8	*Penstemon palmeri*	Palmer's beardtongue	0.0	0.0	0.00	0.07
PHAC4	*Physaria acutifolia*	common twinpod	0.0	0.0	0.00	0.03
SPCO	*Sphaeralcea coccinea*	scarlet globemallow	0.0	0.0	0.00	0.20
		Desirable Forb Totals	**2.6**	**0.0**	**4.70**	**1.63**
ARTRW	*Artemisia tridentata var. wyomingensis*	Wyoming big sagebrush	1.3	0.0	2.35	0.10
ATCA2	*Atriplex canescens*	four-wing saltbush	4.0	0.7	7.06	0.27
CHVI8	*Chrysothamnus viscidiflorus*	yellow rabbitbrush	1.3	0.0	2.35	0.10
GUSA2	*Gutierrezia sarothrae*	broom Snakeweed	1.3	0.0	2.35	0.47
KRLA2	*Krascheninnikovia lanata*	winterfat	0.7	0.0	1.18	0.00
PUTR2	*Purshia tridentata*	antelope bittrebrush	0.0	0.0	0.00	0.10
		Shrub Totals	**8.6**	**0.7**	**15.29**	**1.03**
ALDE	*Alyssum desertorum*	desert madwort	2.7	0.0	4.71	
BRTE	*Bromus tectorum*	cheatgrass	10.0	0.0	23.53	
LEDE	*Lepidium densiflorum*	common pepperweed	0.7	0.0	1.18	
		Totals for Invasive and Non-Native Species	**13.4**	**0.0**	**29.40**	
		Vegetation Totals	**51.3**	**3.4**	**100.00**	**2.66**

[1] Sum of data from 3 randomly placed 25 meter transects with 50 sample points collected from each transect. Foliar cover based upon 1st plant species encountered in the canopy at each sample point. Species composition based upon total of all plant species encountered at each sample point.
[2] Sum of density data collected from 10 one-square meter quadrants along each transect. Only desirable forb and shrub densities were recorded based upon reclamation criteria.
[3] Percentages are not cumulative with vegetation totals, rather a measure by layer of ground cover from the top layer thru the lower layers to the soil surface. Values for bare ground have no vegetative, litter or rock cover above the soil surface.

Percent Ground Cover by Cover Type [3]	
Bare Ground	**32.0**
Biotic Crust	**0.0**
Herbaceous Litter	**32.7**
Woody Litter	**5.3**
Duff	**0.0**
Rock	**8.0**

Table L2 - Transect Coordinate Locations
Reclaimed Access Route to Pad N (Datum: UTM Zone 12, WGS 84)

Site	Azimuth from starting point (true N)	Transect Starting Point		Transect Ending Point		Length
		Northing (mN)	Easting (mE)	Northing (mN)	Easting (mE)	
Transect 1	262 º	4423786.054	724704.5977	4423787.679	724680.6009	25 meters
Transect 2	294 º	4423766.819	724545.8192	4423779.743	724524.3976	25 meters
Transect 3	300 º	4423798.394	724471.0754	4423810.912	724447.1857	25 meters

Transect Photos -- Reclaimed Access Route to Pad N

Figure L1 Transect 1 Reclaimed Access Route to Pad N

Figure L2 Transect 2 Reclaimed Access Route to Pad N

Figure L3 Transect 3 Reclaimed Access Route to Pad N

Appendix M – Vegetation Sampling Data Reclaimed Pad N

Table M1 - Vegetation Cover, Species Composition, Species Density & Ground Cover
Reclaimed Pad N

Plant Species Observed within Study Area			Line-Point Canopy Intercept Data [1]			Density Data [2]
Species Symbol	**Scientific Name**	**Common Name**	**% Foliar Cover**	**% Basal Cover**	**Species Composition**	
ACHY	*Achnatherum hymenoides*	Indian ricegrass	12.0	1.3	20.22	
ELTR7	*Elymus trachycaulus*	slender wheatgrass	10.0	1.3	16.85	
LECI4	*Leymus cinereus*	basin wildrye	1.3	0.0	3.37	
NAVI4	*Nassella viridula*	green needlegrass	2.7	1.3	5.63	
PSSPI	*Pseudoroegneria spicata ssp. inermis*	beardless bluebunch wheatgrass	2.7	0.7	4.49	
PSSPS	*Pseudoroegneria spicata ssp. Spicata*	bearded bluebunch wheatgrass	2.0	0.0	3.37	**Desirable Forb/Shrub Density (#/m²)**
		Perennial Grass Totals	**30.7**	**4.7**	**53.94**	
ACLA	*Achillea lanulosa*	western yarrow	0.0	0.0	0.00	0.13
ASCH	*Astragalus chamaeleuce*	cicada milkvetch	0.0	0.0	0.00	0.03
ASCI4	*Astragalus cicer*	cicer milkvetch	0.0	0.0	0.00	0.07
CRFL6	*Cryptantha flavoculata*	roughseed cryptanth	0.0	0.0	0.00	0.03
EREA	*Erigeron eatonii*	Eaton fleabane	0.0	0.0	0.00	0.03
LILE3	*Linum lewisii*	Lewis flax	0.7	0.0	1.12	0.03
LIPU	*Linanthus pungens*	pricky phlox	0.0	0.0	0.00	0.03
MACA2	*Machaeranthera canescens*	hoary tansyaster	0.0	0.0	0.00	0.07
MAGR2	*Machaeranthera*	rayless tansyaster	0.0	0.0	0.00	0.07
MESA	*Medicago sativa*	alfalfa	6.0	0.0	17.99	4.57
PAMU11	*Pakera multilobata*	lobeleaf groundsel	0.0	0.0	0.00	0.03
PEPA8	*Penstemon palmeri*	Palmer's penstemon	0.0	0.0	0.00	0.07
SPCO	*Sphaeralcea coccinea*	scarlet globemallow	0.0	0.0	1.12	0.13
		Desirable Forb Totals	**6.7**	**0.0**	**20.23**	**5.30**
ARTRW	*Artemisia tridentata var. wyomingensis*	Wyoming big sagebrush	0.0	0.0	0.0	0.10
ATCA2	*Atriplex canescens*	four-wing saltbush	2.7	0.0	3.6	0.37
CHVI8	*Chrysothamnus viscidiflorus*	yellow rabbitbrush	0.7	0.0	1.5	0.10
KRLA2	*Krascheninnikovia lanata*	winterfat	0.0	0.0	0.0	0.10
		Shrub Totals	**4.8**	**0.7**	**8.98**	**0.64**
BRTE	*Bromus tectorum*	Cheatgrass	9.3	0.0	15.73	
SATR12	*Salsola tragus*	Russian thistle	0.7	0.0	1.12	
		Totals for Invasive and Non-Native Species	**10.0**	**0.0**	**16.85**	
		Vegetation Totals	**52.2**	**5.4**	**100.0**	**5.94**

[1] Sum of data from 3 randomly placed 25 meter transects with 50 sample points collected from each transect. Foliar cover based upon 1st plant species encountered in the canopy at each sample point. Species composition based upon total of all plant species encountered at each sample point.
[2] Sum of density data collected from 10 one-square meter quadrants along each transect. Only desirable forb and shrub densities were recorded based upon reclamation criteria.
[3] Plant species not encountered in sampling data but were present within the study area.
[4] Percentages are not cumulative with vegetation totals, rather a measure by layer of ground cover from the top layer thru the lower layers to the soil surface. Values for bare ground have no vegetative, litter or rock cover above the soil surface.

Percent Ground Cover by Cover Type [4]

Bare Ground	**22.0**
Biotic Crust	**0.0**
Herbaceous Litter	**43.3**
Woody Litter	**10.0**
Duff	**0.0**
Rock	**5.3**

Table M2 - Transect Coordinate Locations
Reclaimed Pad N (Datum: UTM Zone 12, WGS 84)

Site	Azimuth from starting point (true N)	Transect Starting Point		Transect Ending Point		Length
		Northing (mN)	Easting (mE)	Northing (mN)	Easting (mE)	
Transect 1	165 º	4423824.452	724390.08	4423800.281	724395.5814	25 meters
Transect 2	274 º	4423826.609	724387.8782	4423828.475	724364.4734	25 meters
Transect 3	321 º	4423830.503	724399.3957	4423847.348	724379.0567	25 meters

Transect Photos -- Reclaimed Pad N

Figure M1 Transect 1 Reclaimed Pad N

Figure M2 Transect 2 Reclaimed Pad N

Figure M3 Transect 3 Reclaimed Pad N

Appendix N – Vegetation Sampling Data Reclaimed Pad T

Table N1 - Vegetation Cover, Species Composition, Species Density & Ground Cover Reclaimed Pad T

Plant Species Observed within Study Area			Line-Point Canopy Intercept Data [1]			Density Data [2]
Species Symbol	**Scientific Name**	**Common Name**	**% Foliar Cover**	**% Basal Cover**	**Species Composition**	
ACHY	*Achnatherum hymenoides*	Indian ricegrass	3.3	0.7	8.35	
ELLAL	*Elymus lanceolatus ssp lanceolatus*	thickspike wheatgrass	0.7	0.0	2.37	
ELTR7	*Elymus trachycaulus*	slender wheatgrass	2.7	0.0	5.95	
HECO26	*Hesperostipa comata*	needle & thread needlegrass	1.3	0.0	2.37	
LECI4	*Leymus cinereus*	basin wildrye	0.7	0.0	1.19	
PASM	*Pascopyrum smithii*	western wheatgrass	0.0	0.0	1.19	
PSSPI[3]	*Pseudoroegneria spicata ssp. inermis*	beardless bluebunch wheatgrass	0.0	0.0	0.00	**Desirable Forb/Shrub Density (#/m²)**
		Perennial Grass Totals	**8.7**	**0.7**	**21.42**	
ARFR4	*Artemisia frigida*	fringed sage	1.3	0.7	2.35	0.40
ASCO	*Astragalus convallarius*	lesser-rushy mlkvetch	0.0	0.0	0.00	0.03
CHAL	*Chenopodium album*	lambsquarter	0.0	0.0	0.00	0.10
MACA2	*Machaeranthera canescens*	hoary tansyaster	0.7	0.0	1.19	0.27
MESA	*Medicago sativa*	alfalfa	1.3	0.0	4.76	1.07
PHLO2	*Phlox longifolia*	longleaf phlox	0.0	0.0	0.00	0.07
SPCO	*Sphaeralcea coccinea*	scarlet globemallow	0.0	0.0	0.00	0.20
		Native and Desirable Forb Totals	**3.3**	**0.7**	**8.30**	**2.14**
ARTRW	*Artemisia tridentata var. wyomingensis*	Wyoming big sagebrush	3.3	0.0	6.0	0.90
ATCA2	*Atriplex canescens*	four-wing saltbush	0.7	0.0	1.19	0.07
CHVI8	*Chrysothamnus viscidiflorus*	yellow rabbitbrush	10.0	0.0	17.86	0.47
GUSA2	*Gutierrezia sarothrae*	broom Snakeweed	0.0	0.0	0.0	0.07
KRLA2	*Krascheninnikovia lanata*	winterfat	0.7	0.0	1.2	0.03
		Shrub Totals	**14.7**	**0.0**	**26.25**	**1.54**
ALDE	*Alyssum desertorum*	desert madwort	2.7	0.0	4.76	
BRTE	*Bromus tectorum*	Cheatgrass	14.0	0.0	17.85	
SATR12	*Salsola tragus*	Russian thistle	5.3	0.0	9.52	
		Totals for Invasive and Non-Native Species	**22.0**	**0.0**	**44.03**	
		Vegetation Totals	**48.7**	**1.3**	**100.0**	**3.68**

[1] Sum of data from 3 randomly placed 25 meter transects with 50 sample points collected from each transect. Foliar cover based upon 1st plant species encountered in the canopy at each sample point. Species composition based upon total of all plant species encountered at each sample point.
[2] Sum of density data collected from 10 one-square meter quadrants along each transect. Only desirable forb and shrub densities were recorded based upon reclamation criteria.
[3] Plant species not encountered in sampling data but were present within the study area.
[4] Percentages are not cumulative with vegetation totals, rather a measure by layer of ground cover from the top layer thru the lower layers to the soil surface. Values for bare ground have no vegetative, litter or rock cover above the soil surface.

Percent Ground Cover by Cover Type [4]	
Bare Ground	**36.0**
Biotic Crust	**0.0**
Herbaceous Litter	**41.3**
Woody Litter	**2.7**
Duff	**0.0**
Rock	**0.7**

Table N2 - Transect Coordinate Locations Reclaimed Pad T (Datum: UTM Zone 12, WGS 84)

Site	Azimuth from starting point (true N)	Transect Starting Point		Transect Ending Point		Length
		Northing (mN)	Easting (mE)	Northing (mN)	Easting (mE)	
Transect 1	126 º	4426317.869	723660.2483	4426304.878	723683.2024	25 meters
Transect 2	161 º	4426318.823	723658.6812	4426296.151	723666.0163	25 meters
Transect 3	220 º	4426322.333	723657.1246	4426299.584	723642.9153	25 meters

Transect Photos -- Reclaimed Pad T

Figure N1 Transect 1 Reclaimed Pad T

Figure N2 Transect 2 Reclaimed Pad T

Figure N3 Transect 3 Reclaimed Pad T

Appendix O – Vegetation Sampling Data Reclaimed Pad U

Table O1 - Vegetation Cover, Species Composition, Species Density & Ground Cover
Reclaimed Pad U

Plant Species Observed within Study Area			Line-Point Canopy Intercept Data [1]			Density Data [2]
Species Symbol	**Scientific Name**	**Common Name**	**% Foliar Cover**	**% Basal Cover**	**Species Composition**	
ACHY	*Achnatherum hymenoides*	Indian ricegrass	2.0	0.7	5.68	
ELTR7	*Elymus trachycaulus*	slender wheatgrass	8.0	2.0	13.64	
LECI4[3]	*Leymus cinereus*	basin wildrye	0.0	0.0	0.00	
PASM	*Pascopyrum smithii*	western wheatgrass	4.7	0.0	7.95	**Desirable Forb/Shrub Density (#/m^2)**
		Perennial Grass Totals	**14.7**	**2.7**	**27.27**	
CHAL	*Chenopodium album*	lambsquarter	0.0	0.0	0.00	0.07
MESA	*Medicago sativa*	alfalfa	0.7	0.7	1.14	0.73
SPCO	*Sphaeralcea coccinea*	scarlet globemallow	0.0	0.0	0.00	0.20
		Native and Desirable Forb Totals	**0.7**	**0.7**	**1.14**	**1.00**
ARTRT	*Artemisia tridentata var. tridentata*	basin big sagebrush	0.7	0.0	1.14	0.07
ATCA2[3]	*Atriplex canescens*	four-wing saltbush	0.0	0.0	0.0	0.0
CHVI8	*Chrysothamnus viscidiflorus*	yellow rabbitbrush	10.0	0.7	18.18	0.53
GUSA2	*Gutierrezia sarothrae*	broom Snakeweed	0.7	0.0	1.14	0.17
PUTR2	*Purshia tridentata*	antelope bittrebrush	0.0	0.0	0.00	0.07
SAVE4[3]	*Sarcobatus vermiculatus*	greasewood	0.0	0.0	0.00	0.00
		Shrub Totals	**11.3**	**0.7**	**20.46**	**0.84**
BRTE	*Bromus tectorum*	cheatgrass	16.0	0.0	31.82	
SATR12	*Salsola tragus*	Russian thistle	10.7	0.0	19.32	
		Totals for Invasive and Non-Native Species	**26.7**	**0.0**	**51.10**	
		Vegetation Totals	**53.4**	**4.0**	**100.0**	**1.84**

[1] Sum of data from 3 randomly placed 25 meter transects with 50 sample points collected from each transect. Foliar cover based upon 1st plant species encountered in the canopy at each sample point. Species composition based upon total of all plant species encountered at each sample point.
[2] Sum of density data collected from 10 one-square meter quadrants along each transect. Only desirable forb and shrub densities were recorded based upon reclamation criteria.
[3] Percentages are not cumulative with vegetation totals, rather a measure by layer of ground cover from the top layer thru the lower layers to the soil surface. Values for bare ground have no vegetative, litter or rock cover above the soil surface.

Percent Ground Cover by Cover Type [3]	
Bare Ground	**37.3**
Biotic Crust	**0.0**
Herbaceous Litter	**28.0**
Woody Litter	**3.3**
Duff	**0.0**
Rock	**0.0**

Table O2 - Transect Coordinate Locations
Reclaimed Pad U (Datum: UTM Zone 12, WGS 84)

Site	Azimuth from starting point (true N)	Transect Starting Point		Transect Ending Point		Length
		Northing (mN)	Easting (mE)	Northing (mN)	Easting (mE)	
Transect 1	144 º	4426843.439	723275.4688	4426822.62	723289.1602	25 meters
Transect 2	004 º	4426845.601	723277.2008	4426870.571	723276.2121	25 meters
Transect 3	328 º	4426847.756	723274.9147	4426866.631	723259.314	25 meters

Transect Photos -- Reclaimed Pad U

Figure O1 Transect 1 Reclaimed Pad U

Figure O2 Transect 2 Reclaimed Pad U

Figure O3 Transect 3 Reclaimed Pad U