AECOM Environment

Prepared for:
Platte River Power Authority
Colorado

Prepared by:
AECOM
Fort Collins, CO
60784724
May 28, 2026

Coal Combustion Residual (CCR) Alternative Source Demonstration (ASD) Assessment Monitoring, Selenium

Rawhide Energy Station, Platte River Power Authority

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List of Acronyms

AECOM	AECOM Technical Services, Inc.
amsl	above mean sea level
ASD	Alternative Source Demonstration
BAT	Bottom Ash Transfer
bgs	below ground surface
BSGW	Basic Standards for Ground Water
CCR	coal combustion residuals
CDPHE	Colorado Department of Health and Environment
CFR	Code of Federal Regulations
EROP	Engineering Report and Operational Plan
ft/ft	feet per foot
GWPS	groundwater protection standard
μg/L	micrograms per liter
Platte River	Platte River Power Authority
POC	point of compliance
PRS	Phosphate Reduction System
SSI	statistically significant increase
SSL	statistically significant level
Station	Rawhide Energy Station
TDS	total dissolved solids
USEPA	United States Environmental Protection Agency
USGS	United States Geological Survey

Alternative Source Demonstration Certification

Certification Statement 40 Code of Federal Regulations (CFR) § 257.95(g)(3) – Alternative Source Demonstration Report for the existing Coal Combustion Residuals (CCR) Rawhide Energy Station, Platte River Power Authority

I, Patrick Clem, being a Registered Professional Engineer in good standing in the State of Colorado, do hereby certify, to the best of my knowledge, information, and belief, and in accordance with good engineering practice, that the factual or evidentiary basis of the interpretations and conclusions presented in this Alternative Source Demonstration Report are true and accurate, as required by 40 CFR § 257.95(g)(3).

Certification Statement: 6 Code of Colorado Regulations 1007-2 Part 1, Appendix B, Solid Waste Facility – Investigation. Reviewed and Sealed by a Colorado Professional Engineer or Reviewed by a Professional Geologist, as appropriate.

I, Rachel Bosch, being a Professional Geologist in AECOM's Cincinnati, Ohio, office, having earned a doctoral degree in geology, having sufficient training and experience in groundwater hydrogeology and related fields, and being registered as a Certified Professional Geologist (AIPG, #12337), a Registered Professional Geologist in Kentucky (#289554), and a Licensed Professional Geologist in Tennessee (#6516), meet the requirements of 6 Code of Colorado Regulations 1007-2 Part1 for a "qualified ground water scientist". As required by 6 Code of Colorado Regulations 1007-2 Part 1, I hereby certify to the best of my knowledge, information, and belief, and in accordance with good scientific practice, that the factual or evidentiary basis of the interpretations and conclusions presented in this Alternative Source Demonstration Report are true and accurate.

1.0 Introduction

At the request of Platte River Power Authority (Platte River) AECOM Technical Services, Inc. (AECOM) has prepared this Alternative Source Determination (ASD) for the detection of statistically significant concentrations of selenium in groundwater sampled from downgradient monitoring wells at the Rawhide Energy Station (Station) Coal Combustion Residuals (CCR) Landfill (Ash Monofill). The statistically significant level (SSL) was reported for groundwater sample results from assessment monitoring in the 2025 Annual Groundwater Monitoring and Corrective Action Report for the Ash Monofill (AECOM 2026a) and the 2025 Colorado Department of Public Health and Environment (CDPHE) Annual Groundwater Monitoring Report (AECOM 2026b).

This ASD was prepared in accordance with 40 Code of Federal Regulations (CFR) 257.95(g)(3)(ii) of the United States Environmental Protection Agency (USEPA) CCR Rule (40 CFR Part 257 Subpart D) to evaluate whether the detection of selenium (an Appendix IV constituent) at concentrations that represent SSLs above groundwater protection standards (GWPS) are the result of an alternative source. This ASD also meets the requirements of an investigation under Appendix B of the CDPHE Regulations Pertaining to Solid Waste Sites and Facilities, 6 Code of Colorado Regulations 1007-2, Part 1 (Solid Waste Regulations). This demonstration documents that site-specific geologic, topographic, and geochemical conditions result in natural mobilization of selenium from the Pierre Shale bedrock and associated alluvial sediments into groundwater, resulting in elevated concentrations that are unrelated to the presence of the Ash Monofill.

1.1 Facility Background

The Station occupies approximately 4,560 acres north of Wellington in Larimer County, Colorado. In addition to the plant buildings, the major feature of the facility is an approximately 500-acre dry-land constructed reservoir of reclaimed wastewater from the City of Fort Collins, also known as Hamilton Reservoir. The reservoir contains approximately 15,000 acre-feet of water that is also used for cooling processes at the Station. The power block area of the Station contains boiler and turbine buildings, air quality control equipment, and administrative offices. A rail spur along the northern edge of the site connects the Station with the mainline of the BNSF Railway Company and is used to deliver coal and construction materials for plant operations. Six generating units are located at the Station. Units A, B, C, D, and F are fueled by natural gas, and Unit 1 is fueled by coal mined from the Powder River Basin in Wyoming.

The Ash Monofill is located northwest of the main plant and north of Hamilton Reservoir. CCR solid waste from Unit 1 operations is disposed of in the Ash Monofill, which comprises two cells, Cell 1 and Cell 2, as shown on **Figure 1**. Cell 1 was operated from approximately 1980 to 2007 and is no longer in use. It is capped with native cover soils and has been vegetated but has not undergone final closure. Cell 2 is active, lies to the west of Cell 1, and is progressively expanding northwards as additional ash material is placed within the cell. In 2023, lined Cell 2B was completed; it includes a leachate collection system and was designed to divert stormwater and melt water run-on. CCR waste generated following completion of the liner has been placed in the lined portion of the cell. The footprint of the lined Cell 2B is presented in **Figure 1**.

1.2 Monitoring Program

Groundwater at the Ash Monofill is monitored by a system of groundwater wells, including hydraulically upgradient (background) and downgradient locations. Specifics related to the wells in the monitoring system are identified in **Table 1**, and the relative locations of the wells are shown in **Figure 1**. Because of their relevance to this ASD, **Figure 1** also illustrates the location of wells used for monitoring of the adjacent Phosphate Reduction System (PRS) Ponds and nearby Bottom Ash Transfer (BAT) Impoundments CCR units on site.

At the start of the 2025 reporting period, Platte River was operating the Ash Monofill under the assessment monitoring program outlined in 40 CFR 257.95. The assessment monitoring program for the Ash Monofill was initiated on April 30, 2018, after an ASD for Appendix III indicator parameters was unable to identify alternative sources for the statistically significant increases (SSIs) of Appendix III parameters downgradient of the Ash Monofill (AECOM 2018). In the 2025 reporting period, monitoring data reported the detections of the following Appendix III parameters in downgradient monitoring wells at concentrations that represent verified SSIs over background:

- Boron in monitoring wells ASH-02, ASH-03, ASH-05, ASH-07, and ASH-08
- Calcium in monitoring wells ASH-03, ASH-04, ASH-05, ASH-07, and ASH-08
- Chloride in monitoring wells ASH-03, ASH-04, ASH-05, ASH-07, and ASH-08
- Sulfate in monitoring wells ASH-04 and ASH-07
- Total dissolved solids (TDS) in monitoring wells ASH-03, ASH-04, ASH-05, ASH-07, and ASH-08

Per CCR rule requirements, GWPS values were established for each Appendix IV constituent, and the data were tested for whether the downgradient concentrations represented SSLs above their respective GWPSs. As of 2025, downgradient wells with an Appendix IV constituent reported above its GWPS at SSLs are as follows:

- Selenium in monitoring wells ASH-03, ASH-04, and ASH-07.

AECOM also performed groundwater sampling and analysis for 2025 assessment monitoring at the Ash Monofill monitoring wells for CDPHE under 6 Code of Colorado Regulations 1007-2, Part 1, Section 3 (Solid Waste Landfills). Nine wells were sampled as part of the Ash Monofill network in April/May, and 11 wells were sampled in September/October 2025. These monitoring wells included background monitoring wells (ASH-01 and ASH-06) and downgradient wells (ASH-02, ASH-03, ASH-04, ASH-05, ASH-07, ASH-08, ASH-09, ASH-10, and ASH-11). New wells ASH-10 and ASH-11 were supplementally sampled in July and August 2025 to establish baseline data for the assessment of SSIs. Wells ASH-07, ASH-10, and ASH-11 are designated as point of compliance (POC) wells per state regulations due to being located approximately 150 meters downgradient of the Ash Monofill cell boundaries. The detected SSIs for CDPHE Appendix 1A total constituents, Appendix 1B constituents, and other constituents are summarized below:

- Chloride in monitoring wells ASH-03, ASH-04, ASH-05, ASH-07, ASH-08, ASH-09, and ASH-10
- Sulfate in monitoring wells ASH-02, ASH-03, ASH-04, ASH-05, ASH-07, ASH-08, ASH-09, and ASH-10
- Nickel in monitoring wells ASH-03, ASH-05, ASH-07, ASH-08, ASH-09, ASH-10
- Selenium in monitoring wells ASH-03, ASH-04, ASH-07, and ASH-09
- Aluminum in monitoring wells ASH-03, ASH-09, ASH-10, ASH-11
- Boron in monitoring wells ASH-02, ASH-03, ASH-04, ASH-05, ASH-07, ASH-08, ASH-09, ASH-10, ASH-11

Per CDPHE rule requirements, Basic Standards for Groundwater (BSGW) values were established for each constituent, and the data were tested for whether the downgradient concentrations represented SSLs above their respective BSGWs. As of 2025, downgradient wells with a CDPHE Appendix 1A total constituents, Appendix 1B constituents, and other constituents reported above BSGWs at an SSL are as follows:

- Selenium in monitoring wells ASH-03, ASH-04, ASH-07, and ASH-09

1.3 Nature and Extent of Selenium Impacts

Selenium has been observed at elevated concentrations at multiple locations at the Station that are not associated with the Ash Monofill. These locations include monitoring wells BAT-10, MW-5, PRS-02, and PRS-03. BAT-10, PRS-02 and PRS-03 are located upgradient/cross gradient of site CCR or CDPHE solid waste units (i.e. Ash Monofill, PRS Ponds, or former BAT Impoundments). MW-5 is located on the southeast side of Hamilton Reservoir and is outside the influence of the CCR units or CDPHE solid waste units as outlined in Section 2.1 below. Dissolved selenium concentrations illustrated on **Figure 2** were collected in September/October 2025 as part of the CDPHE monitoring program efforts. Concentrations in these wells ranged from 107 micrograms per liter (µg/L) in MW-5 to 224 µg/L in BAT-10. PRS-02 and PRS-03 had concentrations of 212 and 150 µg/L, respectively.

The dissolved selenium concentration in downgradient Ash Monofill wells ASH-03, ASH-04, ASH-07, and ASH-09 ranged from 43.4 µg/L in ASH-04 to 102 µg/L in ASH-09. Total and dissolved selenium concentrations from the September/October 2025 CDPHE monitoring program are summarized in the 2025 CDPHE Annual Groundwater Monitoring Report, Platte River Power Authority, Rawhide Energy Station (AECOM 2026b). The selenium concentrations in monitoring wells ASH-03, ASH-04, and ASH-07 with SSL exceedances of the GWPS for the CCR Federal program are in alignment with the CDPHE monitoring program concentrations and can be found in the 2025 Annual Groundwater Monitoring and Corrective Action Report for the Ash Monofill (AECOM 2026a).

2.0 Alternative Source Demonstration Under the CCR Rule

Part 257.95(g)(3) of the Federal CCR Rule and Appendix B Section B5 of 6 Code of Colorado Regulations § 1007-2, Part 1 of the CDPHE solid waste regulations allow the Owner or Operator, following an SSL determination, to demonstrate that:

- A source other than the CCR unit caused the SSL or;
- The apparent SSL resulted from errors in sampling, analysis, statistical evaluation, or natural variation in groundwater quality.

Accordingly, the potential for alternative sources of this sort to have affected the groundwater monitoring results at the CCR Landfill monitoring well network was evaluated.

The hypothesis for this ASD is that the SSL for selenium in both the Federal and State monitoring well networks as outlined in Section 1.2 above, resulted from a source other than the CCR unit; specifically, naturally occurring selenium within the alluvial sediments and underlying Pierre Shale (bedrock) was released and mobilized into groundwater in response to oxidizing conditions in the groundwater originating upgradient of the CCR Landfill.

Four lines of evidence are used for this ASD, as presented in the following subsections:

1. Groundwater hydrogeology and flow direction
2. Temporal behavior of selenium concentrations
3. Groundwater chemical signatures
4. Pierre Shale geochemistry and natural selenium mobilization

2.1 Hydrogeology

The hydrogeology of the site is discussed in the Engineering Report and Operational Plan (EROP) for the Solid Waste Disposal Facility (Platte River, 1980), and in the final report of Investigation of the Groundwater Monitoring Program for the Bottom Ash Disposal Site conducted by Lidstone and Anderson, Inc. (1989). According to the 1980 EROP, hydrogeology of the site was originally investigated by drilling and installing 23 piezometers in conjunction with the original geotechnical investigation prior to construction of the facility. Data from the piezometers indicated that a groundwater table exists within the weathered and fractured Pierre Shale bedrock beneath the site, and in alluvial deposits along Coal Creek. The report indicated that the depth to groundwater varied across the site from 11 to 67 feet below ground surface, with groundwater generally flowing to the south-southeast. The shallow water table, as explained in the 1980 EROP, was reported to be directly recharged by infiltration from precipitation and surface runoff. Following construction and operation of the Station, Lidstone and Anderson, Inc. (1989) concluded that sufficient groundwater data were collected to determine that a mound had formed in the shallow, weathered and fractured Pierre Shale in the vicinity of Hamilton Reservoir. Available groundwater flow data shows the Ash Monofill and PRS Ponds are located hydraulically upgradient of Hamilton Reservoir.

2.1.1 Ash Monofill Hydrogeology

The Ash Monofill is constructed within a narrow south-sloping valley with bedrock highs along both sides. Groundwater in the vicinity of the Ash Monofill is generally confined to the limits of the topographic valley occupied by the Monofill. The uppermost water-bearing stratum at the Ash Monofill was identified as the weathered and fractured Pierre Shale during groundwater monitoring well installation. Groundwater at the Ash Monofill is unconfined, and in 2025 was present at depths from approximately 23 to 37 feet below ground surface (bgs) in piezometers PZ-3 through PZ-5, located upgradient of the footprint of lined Cell 2B. The depth to water in monitoring wells ASH-01, upgradient of the monofill, and in ASH-04, located downgradient of the Ash Monofill, are approximately 13 feet bgs. Groundwater flow is generally from northwest to southeast, from the Ash Monofill towards Hamilton Reservoir. The depth to groundwater measurements (**Table 2**) were used with the top of casing elevations to calculate the groundwater elevations (**Table 3**) and prepare potentiometric surface maps for the Station. The September/October 2025 potentiometric surface elevation map is presented on **Figure 3**. This map was used to determine that groundwater in the uppermost aquifer beneath the Ash Monofill was flowing at an average hydraulic gradient of 0.0149 feet per foot (ft/ft) between monitoring wells ASH-01 and ASH-02 in 2025. This is similar to the hydraulic gradient of 0.0145 ft/ft between ASH-01 and ASH-02 calculated in 2024 and is consistent with the average gradients previously reported in past annual reports. Year to year, the ASH wells tend to fluctuate 1 to 2 feet in elevation, with the lowest groundwater elevations generally observed in the fall and the highest groundwater elevations observed in the spring. The addition of the lined Cell 2B in the Ash Monofill in 2023 changed the surface water interaction with groundwater within the footprint of the unit. Surface water is controlled on the footprint of Cell 2B by the liner system inhibiting infiltration directly upgradient of the former active face of the unlined portion of Cell 2. Because of this control, groundwater elevations have decreased in the downgradient Ash Monofill network wells post liner construction, as shown on hydrographs presented on **Figure 4**.

2.1.2 Localized Groundwater Flow Direction

Monitoring wells ASH-10 and ASH-11 were newly installed in 2025 to help determine whether groundwater was flowing southwestward around Hamilton Reservoir towards monitoring well MW-05. Fluid levels within ASH-10 and ASH-11 measured in 2025 show groundwater flow to the southeast from ASH-10 and east-southeast from ASH-11 towards ASH-08 and ASH-09. Groundwater follows the top of bedrock towards the center of Hamilton Reservoir, and does not flow around the southwestern side of the reservoir. The top of weathered bedrock elevation contours are presented on **Figure 5** and the top of competent bedrock elevation contours are presented on **Figure 6.** Both contour maps show the area where MW-5 is located to be on a local bedrock high. The competent bedrock elevation near ASH-11 is approximately 5,655 feet above mean sea level (amsl), whereas the competent bedrock elevation near MW-5 is approximately 5,665 feet amsl, indicating groundwater is unlikely to flow from ASH-11 to MW-5. Cross Section A-A’, with location shown on **Figure 7** and depicted as **Figure 8**, illustrates the geologic and groundwater conditions upgradient of Cell 1 of the Monofill and between Cell 1 and Hamilton Reservoir. Based on this information, the groundwater conditions present in MW-05 are shown to represent background conditions and to be not influenced by the Ash Monofill or other CCR or solid waste units at the Station.

Groundwater flow in the vicinity of the Ash Monofill and PRS Ponds is shown on **Figure 3**. As mentioned in Section 2.1.1 above, the groundwater generally flows from northwest to southeast in this area, but localized flow direction between monitoring wells varies. The groundwater flow direction near monitoring wells ASH-03 and ASH-07 flows from north/northeast to south from the direction of monitoring wells PRS-02 and PRS-03.

2.2 Temporal Behavior of Selenium Concentrations

Time-series selenium concentration data were evaluated for all monitoring wells at the Station to assess whether observed concentrations or trends are indicative of CCR unit releases or are consistent with background and non-operational influences. Particular attention was given to wells with current or historical selenium concentrations greater than the site-specific BSGW and the GWPS (both equal to 50 µg/L).

The four monitoring wells with the highest concentrations of selenium at the Station are background wells. Review of time-series plots indicates that no consistent increasing or decreasing trends are temporally correlated with site operational milestones, including changes in pond usage or landfill construction activities.

2.2.1 Background Well Trends

The highest selenium concentrations and most persistent exceedances of the BSGW/GWPS occur in wells designated as background wells. Summary observations for these wells, discussed in order from highest current concentration to lowest, are provided below.

- **PRS-02** (background, upgradient of PRS ponds, cross-gradient to Ash Monofill):
Selenium concentrations have exceeded the BSGW/GWPS since the inception of monitoring at this well (July 10, 2019). Concentrations have averaged 252 µg/L with a sharp peak to 553 µg/L on October 16, 2023, followed by a marked decline. No obvious connection to site operational milestones is apparent.
- **BAT-10** (background, upgradient of BAT impoundments, possibly downgradient of PRS Ponds):
Selenium concentrations have consistently exceeded the BSGW/GWPS and show a gradual long-term increase with fluctuations on the order of 50 to100 µg/L. No clear connection to operational milestones is evident.
- **PRS-03** (background, upgradient of PRS ponds, cross-gradient to Ash Monofill):
Selenium concentrations have exceeded the BSGW/GWPS since inception of monitoring (July 10, 2019) and have generally increased since then, with no apparent connection to operational changes.
- **MW-5** (background, no hydraulic relationship to Station units):
Except for one sampling event (October 7, 2019), concentrations have exceeded the BSGW/GWPS since inception of monitoring, fluctuating between 40.7 and 182 µg/L, with no overall increasing or decreasing trend. Concentrations appear to be unrelated to operational activities.

The consistently elevated concentrations and lack of operational correlation in these background wells indicate that these high selenium concentrations are not associated with releases from CCR units but are associated with background conditions. Time-series concentration charts depicting these trends are included as **Figure 9**.

2.2.2 Downgradient Ash Monofill Well Trends

Downgradient wells exhibit a range of selenium concentration behaviors, with no consistent pattern suggestive of CCR releases.

- **ASH-09** (downgradient of Ash Monofill, on shore of Hamilton Reservoir):
The first sample collected on October 10, 2023 yielded the highest observed concentration (149 µg/L), with concentrations decreasing thereafter. This pattern is often indicative of ambient low-permeability groundwater conditions that are flushed by subsequent recharge in response to sampling events.
- **ASH-03** (downgradient of Ash Monofill; between Ash Monofill and PRS ponds):
Selenium concentrations have exceeded the BSGW/GWPS since inception of monitoring. They showed minor fluctuations during 2019 – 2020, possibly reflecting higher analytical resolution, but have otherwise been stable over time.
- **ASH-07** (downgradient of Ash Monofill and PRS Ponds):
Except for one sampling event (October 7, 2019), concentrations have exceeded the BSGW/GWPS since inception of monitoring. A peak concentration of 230 µg/L occurred on July 16, 2020, followed by a general decreasing trend, with no clear connection to operational milestones.
- **ASH-04** (downgradient at Ash Monofill limit of waste):
Selenium concentrations exceeded the BSGW/GWPS from 2019 through May 2025, with a peak concentration of 147 µg/L on October 20, 2022, followed by decreasing concentrations after completion of lined Cell 2B.
- **ASH-05** (downgradient at Ash Monofill limit of waste):
Selenium concentrations exceeded the BSGW/GWPS beginning in 2019 and exhibited a gradual decreasing trend, with concentrations falling below the BSGW/GWPS beginning in April 2021, with no clear connection to operational milestones.

2.2.3 PRS Pond Area Wells

Two wells located immediately downgradient of the PRS ponds, PRS-06 and PRS-07, exhibit divergent responses that are inconsistent with an operational release signal. A third PRS Pond well, PRS-01, has had historical exceedances of the BSGW/GWPS for selenium with no apparent response connection to operational changes.

- **PRS-06** (downgradient of PRS ponds at limit of waste):
Selenium concentrations were consistently greater than the BSGW/GWPS from January 2021 through

May 2024. Following decreased PRS pond usage, one non-detect result was observed, followed by concentrations slightly above the BSGW/GWPS.

- **PRS-07** (immediately downgradient of PRS-06):
  Selenium concentrations were below the BSGW/GWPS at the first sampling event (May 1, 2024) and have increased since. If operational changes were controlling selenium concentrations, a similar response would be expected in PRS-06, whereas the opposing trends suggest the observed changes are unrelated to PRS pond operations.
- **PRS-01** (between Ash Monofill and PRS Ponds, cross-gradient to Ash Monofill and PRS Ponds):
  This well recorded the highest selenium concentration at the site in October 2019 (158 µg/L), followed by a steady decline to below the BSGW/GWPS by October 2021. Concentrations continued to decrease until October 2023, followed by a measurement of 142 µg/L in May 2024, and subsequent decline, returning to below the BSGW/GWPS. While the elevated measurement in 2024 could be associated with operational changes two observations suggest otherwise:
  - The elevated measurement observed in PRS-02 during the prior event suggests that both are likely due to a broader system response rather than an operational response, and
  - The October 2019 value followed by a steady decline suggests a pattern similar to that observed in ASH-09, indicative of ambient low-permeability groundwater conditions that were flushed by subsequent recharge in response to sampling events.

Collectively, the temporal behavior of selenium across background and downgradient wells is inconsistent with CCR unit releases and instead reflects broader hydrogeologic and geochemical controls.

2.2.4 Indicator Parameter Evaluation

Appendix III indicator parameters expected to correlate with selenium under CCR-related release scenarios include boron and sulfate. Review of time-series concentration plots for analytes across the PRS and ASH monitoring networks, as well as MW-5 and BAT-10, indicates that boron and sulfate trends do not mirror selenium trends. In contrast, similar temporal patterns are observed between selenium and nitrate. Nitrate is not an indicator of potential CCR impact. Time-series concentration plots are included as **Figure 9**

Further evaluation was conducted by plotting selenium concentrations against nitrate, boron, and sulfate to look for indications of correlation. Selenium exhibits a strong positive correlation with nitrate, whereas no comparable relationship is observed with boron or sulfate (**Figure 10**). This contrast indicates that selenium mobility at the Station is likely linked to nitrate-related geochemical or hydrologic conditions rather than CCR indicator parameters.

2.3 Geochemical Evaluation

Geochemical signatures of groundwater at monitoring wells with BSGW/GWPS selenium exceedances (ASH-03, ASH-07, ASH-09, BAT-10, BAT-15, MW-5, PRS-02, PRS-03, PRS-06, and PRS-07) were compared to geochemical signatures of other water sources at the site (Hamilton Reservoir, PRS Ponds, and Ash Monofill leachate). To evaluate whether these waters could be hydraulically connected to groundwater and potentially serve as sources for selenium exceedances identified in the monitoring wells, geochemical relationships were evaluated using Piper diagram analysis and comparisons of historic selenium concentrations.

The Piper diagram, which displays anion and cation chemistry to facilitate qualitative comparison of water samples, was developed using samples collected between August and October 2025 (**Figure 11**). Most groundwater samples plot closely together on this diagram, indicating a consistent major-ion geochemical signature in groundwater conditions across the site. However, groundwater samples from BAT-15, MW-5 and PRS-03 plot slightly offset from the primary groundwater cluster, suggesting localized geochemical variability. In contrast, the geochemical compositions of Ash Monofill leachate, PRS Ponds surface water, and Hamilton Reservoir surface water plot distinctly away from the groundwater samples, indicating that these waters have different geochemical signatures than the primary groundwater cluster and the BAT-15, MW-5, and PRS-3 wells. Considered collectively, the Piper diagram patterns suggest that surface water and leachate at the site are geochemically dissimilar from groundwater and are therefore unlikely to represent contributors to the observed groundwater.

Historic selenium concentrations in groundwater at these select monitoring wells were also compared to selenium concentrations in the Ash Monofill leachate, PRS Ponds surface water, and Hamilton Reservoir surface water. Surface water samples from Hamilton Reservoir and the PRS Ponds have been analyzed for selenium annually from 2018 through 2025, and selenium has not been detected at concentrations above the reporting limit during this period. Ash Monofill leachate was sampled in September 2023 and September 2025, with a maximum concentration of dissolved selenium of 36.8 µg/L in September 2023. Selenium concentrations in the Ash Monofill leachate, PRS Ponds surface water, and Hamilton Reservoir surface water are all below the BSGW/GWPS, and therefore also lower than those measured in the monitoring wells that exhibited selenium exceedances between August and October 2025. Therefore, the Ash Monofill leachate, PRS Ponds surface water, and Hamilton Reservoir surface water cannot represent the sole or primary source of selenium in the affected groundwater, indicating that an alternative source or mobilization mechanism is present at the site.

For reference, historic selenium concentrations for Ash Monofill leachate, PRS Ponds surface water, and Hamilton Reservoir surface water are presented in **Table 4**. Selenium concentrations for the monitoring wells discussed above are presented in Tables 6 and 7 of the 2025 CDPHE Annual Monitoring Report (AECOM, 2026b), and not reproduced herein.

2.4 Pierre Shale Geochemistry and Natural Selenium Mobilization

The Station is located in an area underlain by Cretaceous-aged Pierre Shale, with shallow Quaternary alluvial and colluvial deposits occupying broad, gently sloping buried valleys in the bedrock surface (paleovalleys). The Quaternary surficial deposits consist predominantly of clay and silty clay, with limited sandy and gravelly zones re-deposited from weathering (fluvial or mass wasting) of the underlying Pierre Shale (**Figure 12**).

In the available scientific literature, Cretaceous marine shales like the Pierre have been identified as a dominant natural source of selenium to groundwater and surface water systems in Colorado. In western Colorado, the Mancos Shale is documented as the dominant geologic source of selenium; the Pierre Shale east of the Continental Divide is stratigraphically, mineralogically, and geochemically equivalent, having been deposited within the same Western Interior Seaway. In central and eastern Colorado, the Pierre Shale is identified as the primary geologic source of selenium, with selenium occurrence attributed to original depositional inputs and long-term geochemical evolution of the shale (Gates et al., 2009; Gidley et al., 2025).

Selenium in unweathered shale is primarily associated with organic matter and pyrite, whereas weathered shale and shale-derived materials contain secondary iron oxides and highly soluble selenium-bearing salts formed through long-term natural weathering (Gidley et al., 2025). Laboratory and field studies demonstrate that soluble selenium-bearing salts that have accumulated in the weathered zone over thousands of years represent the most mobile and readily dissolved selenium source in shale-derived soils and weathered shale (Mast et al., 2014).

Regional soil geochemical data provide additional context for background selenium conditions. United States Geological Survey (USGS) geochemical maps of soils of the conterminous United States show that the Station is located within an area characterized by elevated selenium concentrations in the soil C-horizon, corresponding to approximately the 80^{th} – 90^{th} percentile on a regional basis (Smith et al., 2017). The C-horizon selenium contours shown on the USGS map are generated from measured soil sample data, including multiple sampling locations in the vicinity of the Station, and therefore reflect native soil conditions rather than facility-related influences. The spatial distribution of soil sampling points and resulting contours indicate that elevated selenium is a regional background characteristic of soils in the vicinity, consistent with naturally occurring conditions.

Selenium mobility in shale-underlain groundwater systems is primarily controlled by nitrate naturally derived from organic matter and weathering processes. Elevated nitrate concentrations inhibit the reduction of oxidized selenium species, maintaining selenium in highly soluble forms (Mast et al., 2014; Mills et al., 2016). Field and laboratory investigations demonstrate that nitrate oxidizes the reduced selenium present in shale through autotrophic denitrification, releasing selenium from bedrock to groundwater and preventing re-immobilization even under low dissolved oxygen conditions (Bailey et al., 2012). This process provides an explanation for naturally elevated selenium concentrations in shale-dominated hydrogeologic settings:

- Weathered shale releases selenium and nitrate;
- Soluble salts form along flow paths;
- Dissolution of soluble salts releases selenium;
- Nitrate inhibits selenium reduction;
- Selenium persists in oxidized, mobile forms (Gidley et al., 2025).

The peer-reviewed literature establishes that selenium is an inherent constituent of Pierre Shale bedrock, that long-term weathering produces soluble selenium-bearing salts, and that naturally occurring nitrate sustains oxidizing conditions and selenium mobility. As a result, elevated selenium concentrations in groundwater are a predictable background condition in Cretaceous marine shale-underlain hydrogeologic systems.

Accordingly, selenium exceedances observed in groundwater at sites underlain by Pierre Shale are consistent with naturally occurring background conditions and are not indicative of releases from CCR units, supporting the use of site-specific background concentrations using monitoring wells PRS-02 and PRS-03 at Station under 40 CFR 257.93(d) and 257.95(h)(3).

3.0 Conclusions

The hydrogeologic framework, temporal behavior of selenium concentrations, groundwater geochemical signatures, and well-established Pierre Shale geochemistry demonstrate that the selenium SSLs reported for the Ash Monofill monitoring wells are attributable to naturally occurring background conditions rather than releases from CCR or other solid waste units at the Station. Elevated selenium concentrations occur most persistently and at the highest levels in hydraulically upgradient and background monitoring wells, are temporally uncorrelated with CCR operational activities, and are associated with nitrate-driven oxidizing conditions that promote selenium mobilization from weathered Pierre Shale and shale-derived sediments. The data further indicate that Ash Monofill leachate and water from nearby surface water features do not have sufficient selenium concentrations to create the observed groundwater values. Accordingly, this Alternative Source Demonstration satisfies the requirements of 40 CFR 257.95(g)(3)(ii) and Appendix B of 6 CCR 1007-2 by demonstrating that selenium exceedances reflect natural background variability and geochemical processes inherent to the site setting.

4.0 Limitations

The signature of Consultant's authorized representative on this document represents that, to the best of Consultant's knowledge, information, and belief in the exercise of its professional judgment, it is Consultant's professional opinion that the aforementioned information is accurate as of the date of such signature. Any opinion or decisions by Consultant are made on the basis of Consultant's experience, qualifications, and professional judgment and are not to be construed as warranties or guaranties. In addition, opinions relating to environmental, geologic, and geotechnical conditions or other estimates are based on available data, and actual conditions may vary from those encountered at the times and locations where data are obtained, despite the use of due care.

5.0 References

AECOM Technical Services, Inc. (AECOM) 2018. Ash Monofill Appendix III Constituents Alternate Source Demonstration. Prepared for Platte River Power Authority. April 30.

AECOM Technical Services, Inc. (AECOM) 2026a. ASH Monofill Annual Groundwater Monitoring and Corrective Action Report For 2025. Prepared for Platte River Power Authority. January 31.

AECOM Technical Services Inc. (AECOM) 2026b. 2025 CDPHE Annual Groundwater Monitoring Report, Platte River Power Authority, Rawhide Energy Station. March.

Bailey, R.T., Hunter, W.J., Gates, T.K. 2012. The Influence of Nitrate on Selenium in Irrigated Agricultural Groundwater Systems. Journal of Environmental Quality. Vol. 41, No. 3. https://doi.org/10.2134/jeq2011.0311.

Gates, T.K., Cody, B.M., Donnelly, J.P., Herting, A.W., Bailey, R.T., Mueller Price, J. 2009. Assessing Selenium Contamination in the Irrigated Stream–Aquifer System of the Arkansas River, Colorado. Journal of Environmental Quality, 38(6), 2344-2356. https://doi.org/10.2134/jeq2008.0499.

Gidley, R.G., Leib, K.J., and Williams, C.A. 2025. Summary of selenium in the lower Gunnison River Basin, Colorado—Information and data gaps: U.S. Geological Survey Circular 1559. https://doi.org/10.3133/cir1559.

Lidstone and Anderson, Inc. 1989. Investigation of the Ground-Water Monitoring Program for the Bottom Ash Disposal Site. March.

Mast, M.A., Mills, T.J., Paschke, S.S., Keith, G., Linard, J.I. 2014. Mobilization of selenium from the Mancos Shale and associated soils in the lower Uncompahgre River Basin, Colorado. Applied Geochemistry. Vol. 48. https://doi.org/10.1016/j.apgeochem.2014.06.024

Mills, T.J., Mast, M.A., Thomas, J., Keith, G. 2016. Controls on selenium distribution and mobilization in an irrigated shallow groundwater system underlain by Mancos Shale, Uncompahgre River Basin, Colorado, USA. Science of The Total Environment. Vol. 566–567. https://doi.org/10.1016/j.scitotenv.2016.06.063.

Platte River Power Authority (Platte River). 1980. Engineering Report and Operational Plan for the Solid Waste Disposal Facility, Rawhide Energy Project. December.

Smith, D.B., Solano, F., Woodruff, L.G., Cannon, W.F., Ellefsen, K.J. 2019. Geochemical and mineralogical maps, with interpretation, for soils of the conterminous United States: U.S. Geological Survey Scientific Investigations Report 2017-5118. https://doi.org/10.3133/sir20175118.

TABLES

Table 1
Ash Monofill Monitoring Well and Piezometer Construction Details
CCR ASD Assessment Monitoring, Selenium
PRPA Rawhide Facility, Colorado

Well Name	Well Classification	Location Relative to Waste Unit	Easting (ft)	Northing (ft)	Ground Surface Elevation (ft amsl)	Top of Casing Elevation (ft amsl)	Total Depth (ft bgs)	Well Screen Interval (ft bgs)	Well Screen Lithology
ASH-01	Network Well	Upgradient Well	3124781.307	1562659.296	5759.29	5760.15	31	26-29	Shale
ASH-02	Network Well	Downgradient Well	3127250.213	1558450.627	5679.25	5679.87	55	51-54	Shale
ASH-03	Network Well	Downgradient Well	3126904.393	1558820.854	5714.21	5717.18	49	39-49	Shale
ASH-04	Network Well	Downgradient Well	3126544.377	1558803.996	5689.58	5692.57	29	19-29	Shale
ASH-05	Network Well	Downgradient Well	3126255.648	1558603.939	5696.68	5698.71	29	19-29	Shale
ASH-06	Network Well	Upgradient Well	3126039.957	1562657.603	5783.23	5786.41	65	50-65	Shale
ASH-07	Network Well	Downgradient Well	3127068.621	1558643.688	5687.58	5690.56	25	15-25	Shale
ASH-08	Network Well	Downgradient Well	3126672.477	1558046.977	5681.22	5684.41	29	19-29	Shale
ASH-09	Characterization Well	Downgradient Well	3127135.72	1558074.37	5674.98	5677.57	24	9-24	Shale
ASH-10	Characterization Well	Downgradient Well	3126583.98	1558395.52	5685.47	5688.21	29	17-27	Shale
ASH-11	Characterization Well	Downgradient Well	3126275.63	1558210.17	5700.27	5703.39	49	39-49	Shale
ASH-12	Characterization Boring	Crossgradient/ Downgradient Soil Boring	3127320.50	1560677.36	5748.30	NA	69	NA	Shale
PZ-3	Characterization Well	Piezometer Within Monofill Footprint	3125767.342	1561418.307	5733.89	5736.97	40	30-40	Shale
PZ-4	Characterization Well	Piezometer Within Monofill Footprint	3124972.680	1561715.131	5740.87	5744.09	40	30-40	Shale
PZ-5	Characterization Well	Piezometer Within Monofill Footprint	3125210.921	1560836.957	5742.25	5745.26	39	29-39	Shale

Notes:
ft amsl = feet above mean sea level; ft bgs = feet below ground surface
NA = not applicable
ASH-01 was installed in December 1980 as MW-1 by Black & Veatch.
ASH-02 was installed in December 1980 as MW-2 by Black & Veatch.
Wells and soil boring surveyed in North American Datum 1983 (NAD83)

Table 2
Water Level Depth Measurements 2025
CCR ASD Assessment Monitoring, Selenium
PRPA Rawhide Facility, Colorado

Well ID	TOC Elevation (ft amsl)	Depth to Water (ft btoc)					Ground Surface Elevation (ft amsl)	Depth to Water (ft bgs)				
		January (1/22/2025)	April/May (4/28/2025-5/12/2025)	July (7/9/2025)	August (8/20/2025-8/21/2025)	Sept./ Oct. (9/29/2025-10/2/2025)		January (1/22/2025)	April/May (4/28/2025-5/12/2025)	July (7/9/2025)	August (8/20/2025-8/21/2025)	Sept./ Oct. (9/29/2025-10/2/2025)
PZ-3	5736.97	32.90	32.82	33.02	--	33.15	5733.89	29.82	29.74	29.94	--	30.07
PZ-4	5744.09	23.14	23.36	22.80	--	23.75	5740.87	19.92	20.14	19.58	--	20.53
PZ-5	5745.26	36.34	36.19	36.82	--	37.22	5742.25	33.33	33.18	33.81	--	34.21
ASH-01	5760.15	14.08	14.29	14.25	--	14.08	5759.29	13.22	13.43	13.39	--	13.22
ASH-02	5679.87	4.98	4.71	5.70	--	7.21	5679.25	4.36	4.09	5.08	--	6.59
ASH-03	5717.18	40.44	40.48	40.73	--	41.10	5714.21	37.47	37.51	37.76	--	38.13
ASH-04	5692.57	15.86	15.96	16.37	--	17.02	5689.58	12.87	12.97	13.38	--	14.03
ASH-05	5698.71	22.75	22.87	23.14	--	23.66	5696.68	20.72	20.84	21.11	--	21.63
ASH-06	5786.41	62.67	62.69	62.84	--	62.77	5783.23	59.49	59.51	59.66	--	59.59
ASH-07	5690.56	16.20	15.85	16.84	--	18.29	5687.58	13.22	12.87	13.86	--	15.31
ASH-08	5684.41	10.86	10.49	10.97	--	12.46	5681.22	7.67	7.30	7.78	--	9.27
ASH-09	5677.57	4.30	4.19	5.24	--	6.63	5674.98	1.71	1.60	2.65	--	4.04
ASH-10	5688.21	--[1]	--[1]	13.75	14.32	14.79	5685.47	--[1]	--[1]	11.01	11.58	12.05
ASH-11	5703.39	--[1]	--[1]	27.61	27.98	28.18	5700.27	--[1]	--[1]	24.49	24.86	25.06
BAT-01	5682.48	13.28	14.00	13.23	--	11.96	5683.12	13.92	14.64	13.87	--	12.60
BAT-02	5682.41	19.86	18.56	18.84	--	16.66	5682.95	20.40	19.10	19.38	--	17.20
BAT-03	5682.40	14.85	12.78	13.39	--	13.13	5682.96	15.41	13.34	13.95	--	13.69
BAT-04R	5686.98	17.10	16.03	15.81	--	16.39	5684.62	14.74	13.67	13.45	--	14.03
BAT-05	5682.13	20.90	20.94	21.29	--	21.16	5682.63	21.40	21.44	21.79	--	21.66
BAT-06	5685.46	14.82	14.76	16.05	--	16.76	5682.84	12.20	12.14	13.43	--	14.14
BAT-09	5693.03	20.72	20.70	18.64	--	19.79	5690.86	18.55	18.53	16.47	--	17.62
BAT-10	5690.59	12.91	12.38	12.53	--	12.39	5687.73	10.05	9.52	9.67	--	9.53
BAT-11	5704.87	28.12	28.35	28.84	--	28.36	5702.01	25.26	25.49	25.98	--	25.50
BAT-12	5701.60	31.75	31.75	32.92	--	32.25	5698.62	28.77	28.77	29.94	--	29.27
BAT-13	5682.00	36.24	35.73	34.43	--	33.73	5682.41	36.65	36.14	34.84	--	34.14
BAT-14	5704.72	--[1]	--[1]	34.39	34.73	34.68	5701.68	--[1]	--[1]	31.35	31.69	31.64
BAT-15	5681.44	--[1]	--[1]	7.04	9.61	10.42	5678.12	--[1]	--[1]	3.72	6.29	7.10
PRS-01	5718.17	29.84	30.94	31.17	--	32.55	5715.50	27.17	28.27	28.50	--	29.88
PRS-02	5718.61	27.29	28.33	28.96	--	29.73	5715.60	24.28	25.32	25.95	--	26.72
PRS-03	5748.29	48.90	48.92	49.27	--	49.50	5745.72	46.33	46.35	46.70	--	46.93
PRS-04	5712.40	29.52	29.91	30.21	--	30.26	5709.55	26.67	27.06	27.36	--	27.41
PRS-05	5703.40	29.69	29.93	30.09	--	31.82	5700.54	26.83	27.07	27.23	--	28.96
PRS-06	5698.53	22.27	22.64	22.99	--	23.91	5695.90	19.64	20.01	20.36	--	21.28
PRS-07	5700.85	25.60	25.81	26.54	--	27.34	5698.07	22.82	23.03	23.76	--	24.56
MW-3	5683.58	25.28	25.33	24.93	--	24.78	5681.08	22.78	22.83	22.43	--	22.28
MW-4	5649.06	19.98	20.07	20.03	--	20.18	5648.26	19.18	19.27	19.23	--	19.38
MW-5	5687.86	21.98	21.69	22.12	--	22.75	5686.82	20.94	20.65	21.08	--	21.71
MW-6	5589.87	--[2]	1.75	2.96	--	2.74	5588.48	--[2]	0.36	1.57	--	1.35
MW-7	5575.06	4.10	2.31	4.17	--	5.64	5574.26	3.30	1.51	3.37	--	4.84
MW-8	5684.76	12.08	10.71	10.64	--	10.81	5681.92	9.24	7.87	7.80	--	7.97
FTP-01	5685.82	30.37	30.33	29.31	--	29.18	5683.00	27.55	27.51	26.49	--	26.36
FTP-02	5686.34	9.92	8.66	8.44	--	8.68	5683.51	7.09	5.83	5.61	--	5.85
FTP-03	5676.98	27.04	27.16	27.18	--	27.26	5674.19	24.25	24.37	24.39	--	24.47
FTP-04	5655.61	18.40	18.50	18.59	--	18.88	5652.78	15.57	15.67	15.76	--	16.05
FTP-05	5637.62	11.68	11.71	12.52	--	12.47	5634.87	8.93	8.96	9.77	--	9.72

Notes:
amsl = above mean sea level
bgs = below ground surface
btoc = below top of casing
CDPHE = Colorado Department of Public Health and Environment
ft = feet
ID = identification
TOC = top of casing
-- = not measured
[1] = well not installed until June 2025
[2] = well could not be opened due to stuck lid

Table 3
Water Level Elevations 2025
CCR ASD Assessment Monitoring, Selenium
PRPA Rawhide Facility, Colorado

Well ID	TOC Elevation (ft amsl)	Groundwater Elevation (ft amsl)				
		January (1/22/2025)	April/May (4/28/2025-5/12/2025)	July (7/9/2025)	August (8/20/2025-8/21/2025)	Sept./ Oct. (9/29/2025-10/2/2025)
PZ-3	5736.97	5704.07	5704.15	5703.95	--	5703.82
PZ-4	5744.09	5720.95	5720.73	5721.29	--	5720.34
PZ-5	5745.26	5708.92	5709.07	5708.44	--	5708.04
ASH-01	5760.15	5746.07	5745.86	5745.90	--	5746.07
ASH-02	5679.87	5674.89	5675.16	5674.17	--	5672.66
ASH-03	5717.18	5676.74	5676.70	5676.45	--	5676.08
ASH-04	5692.57	5676.71	5676.61	5676.20	--	5675.55
ASH-05	5698.71	5675.96	5675.84	5675.57	--	5675.05
ASH-06	5786.41	5723.74	5723.72	5723.57	--	5723.64
ASH-07	5690.56	5674.36	5674.71	5673.72	--	5672.27
ASH-08	5684.41	5673.55	5673.92	5673.44	--	5671.95
ASH-09	5677.57	5673.27	5673.38	5672.33	--	5670.94
ASH-10	5688.21	--[1]	--[1]	5674.46	5673.89	5673.42
ASH-11	5703.39	--[1]	--[1]	5675.78	5675.41	5675.21
BAT-01	5682.48	5669.20	5668.48	5669.25	--	5670.52
BAT-02	5682.41	5662.55	5663.85	5663.57	--	5665.75
BAT-03	5682.40	5667.55	5669.62	5669.01	--	5669.27
BAT-04R	5686.98	5669.88	5670.95	5671.17	--	5670.59
BAT-05	5682.13	5661.23	5661.19	5660.84	--	5660.97
BAT-06	5685.46	5670.64	5670.70	5669.41	--	5668.70
BAT-09	5693.03	5672.31	5672.33	5674.39	--	5673.24
BAT-10	5690.59	5677.68	5678.21	5678.06	--	5678.20
BAT-11	5704.87	5676.75	5676.52	5676.03	--	5676.51
BAT-12	5701.60	5669.85	5669.85	5668.68	--	5669.35
BAT-13	5682.00	5645.76	5646.27	5647.57	--	5648.27
BAT-14	5704.72	--[1]	--[1]	5670.33	5669.99	5670.04
BAT-15	5681.44	--[1]	--[1]	5674.40	5671.83	5671.02
PRS-01	5718.17	5688.33	5687.23	5687.00	--	5685.62
PRS-02	5718.61	5691.32	5690.28	5689.65	--	5688.88
PRS-03	5748.29	5699.39	5699.37	5699.02	--	5698.79
PRS-04	5712.40	5682.88	5682.49	5682.19	--	5682.14
PRS-05	5703.40	5673.71	5673.47	5673.31	--	5671.58
PRS-06	5698.53	5676.26	5675.89	5675.54	--	5674.62
PRS-07	5700.85	5675.25	5675.04	5674.31	--	5673.51
MW-3	5683.58	5658.30	5658.25	5658.65	--	5658.80
MW-4	5649.06	5629.08	5628.99	5629.03	--	5628.88
MW-5	5687.86	5665.88	5666.17	5665.74	--	5665.11
MW-6	5589.87	--[2]	5588.12	5586.91	--	5587.13
MW-7	5575.06	5570.96	5572.75	5570.89	--	5569.42
MW-8	5684.76	5672.68	5674.05	5674.12	--	5673.95
FTP-01	5685.82	5655.45	5655.49	5656.51	--	5656.64
FTP-02	5686.34	5676.42	5677.68	5677.90	--	5677.66
FTP-03	5676.98	5649.94	5649.82	5649.80	--	5649.72
FTP-04	5655.61	5637.21	5637.11	5637.02	--	5636.73
FTP-05	5637.62	5625.94	5625.91	5625.10	--	5625.15

Notes:
amsl = above mean sea level
CDPHE = Colorado Department of Public Health and Environment
ft = feet
ID = identification
TOC = top of casing
-- = not measured
[1] = well not installed until June 2025
[2] = well could not be opened due to stuck lid

Table 4
Historic Selenium Concentrations of Surface Water and Ash Monofill Leachate
CCR ASD Assessment Monitoring, Selenium
PRPA Rawhide Facility, Colorado

		Fraction	Dissolved	Total
		Unit	µg/L	µg/L
		BSGW	50	NA
		MCL	NA	50
Location	**Sample ID**	**Date**		
Hamilton Reservoir Surface Water	SW-01	10/10/2018	--	0.64
	SW-01	7/9/2019	< 1.0	< 1.0
	SW-01	10/7/2019	< 2.0	< 2.0
	SW-01	7/23/2020	< 5.0	< 5.0
	SW-01	10/18/2021	< 1.0	< 1.0
	SW-01	10/25/2022	< 3.0	< 3.0
	SW-01	10/11/2023	< 3.0	< 3.0
	SW-01	10/9/2024	< 15.0	< 15.0
	SW-01	10/7/2025	< 0.50	< 0.50
PRS Ponds Surface Water	SW-04	10/10/2018	--	1.3
	SW-04	7/9/2019	< 1.0	< 1.0
	SW-04	10/7/2019	< 5.0	< 5.0
	SW-04	7/23/2020	< 5.0	< 5.0
	SW-04	10/15/2021	< 1.0	< 1.0
	SW-04	10/25/2022	< 3.0	< 3.0
	SW-04	10/11/2023	< 3.0	< 3.0
	SW-04	10/9/2024	< 15.0	< 15.0
	SW-04	10/7/2025	< 0.50	< 0.50
Ash Monofill Leachate	LT-01-23	9/11/2023	36.8	37.1
	Leachate	9/25/2025	17.9	19.1

Notes:

-- = not analyzed

< = less than (laboratory reporting limit)

BSGW = Basic Standards for Groundwater

ID = identification

MCL = Maximum Contaminant Level

µg/L = micrograms per liter

NA = not available

Regulation 41 BSGW Table 1 Domestic Water Supply - Human Health Standards

40 Code of Federal Regulations 257.95 (h) MCL

FIGURES

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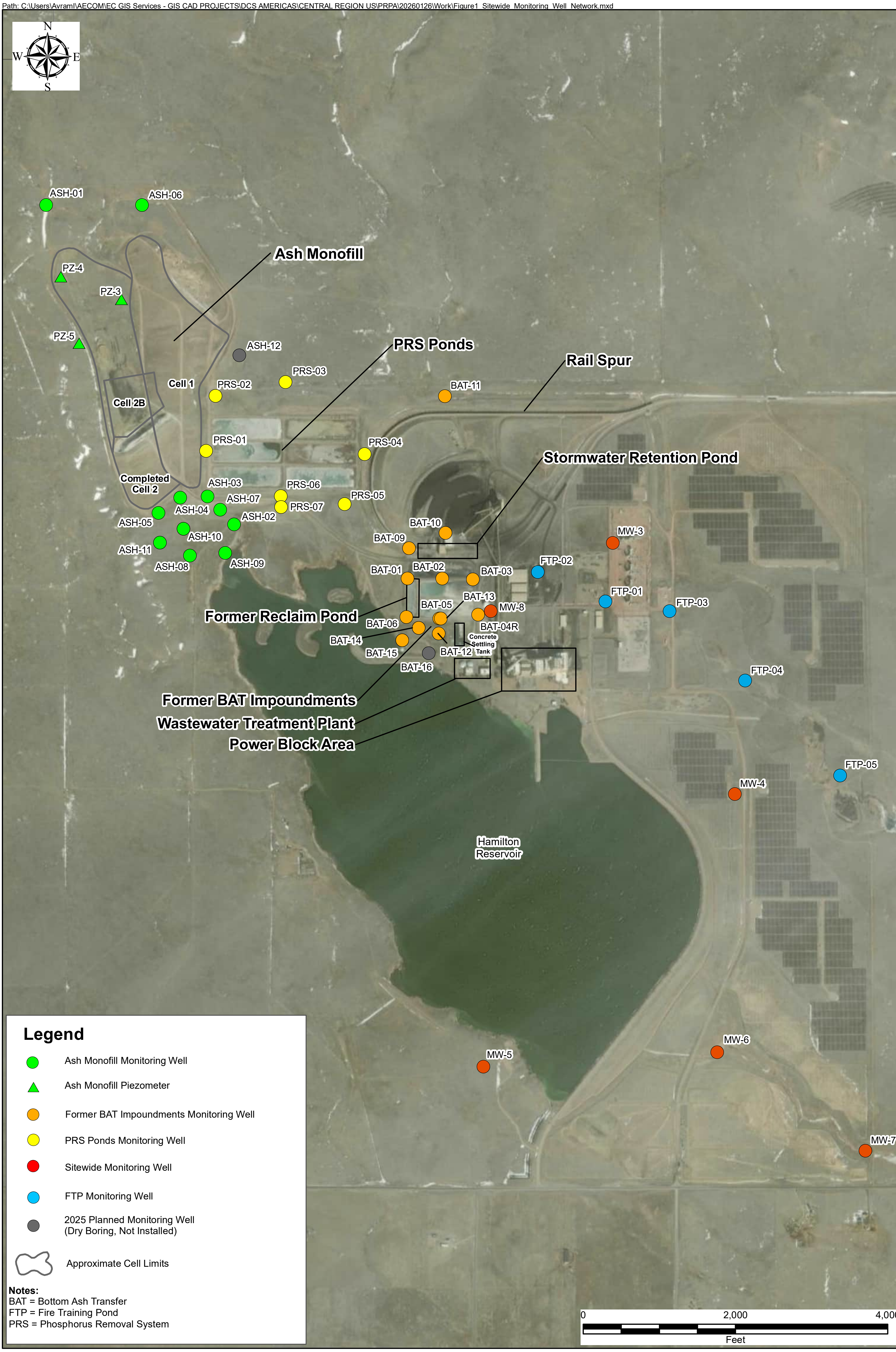

Alternative Source Demonstration
Platte River Power Authority Wellington, CO
Project No.: 60784724 Date: 2026-01-27

Rawhide Energy Station
Site Monitoring Well Network

AECOM

Figure 1

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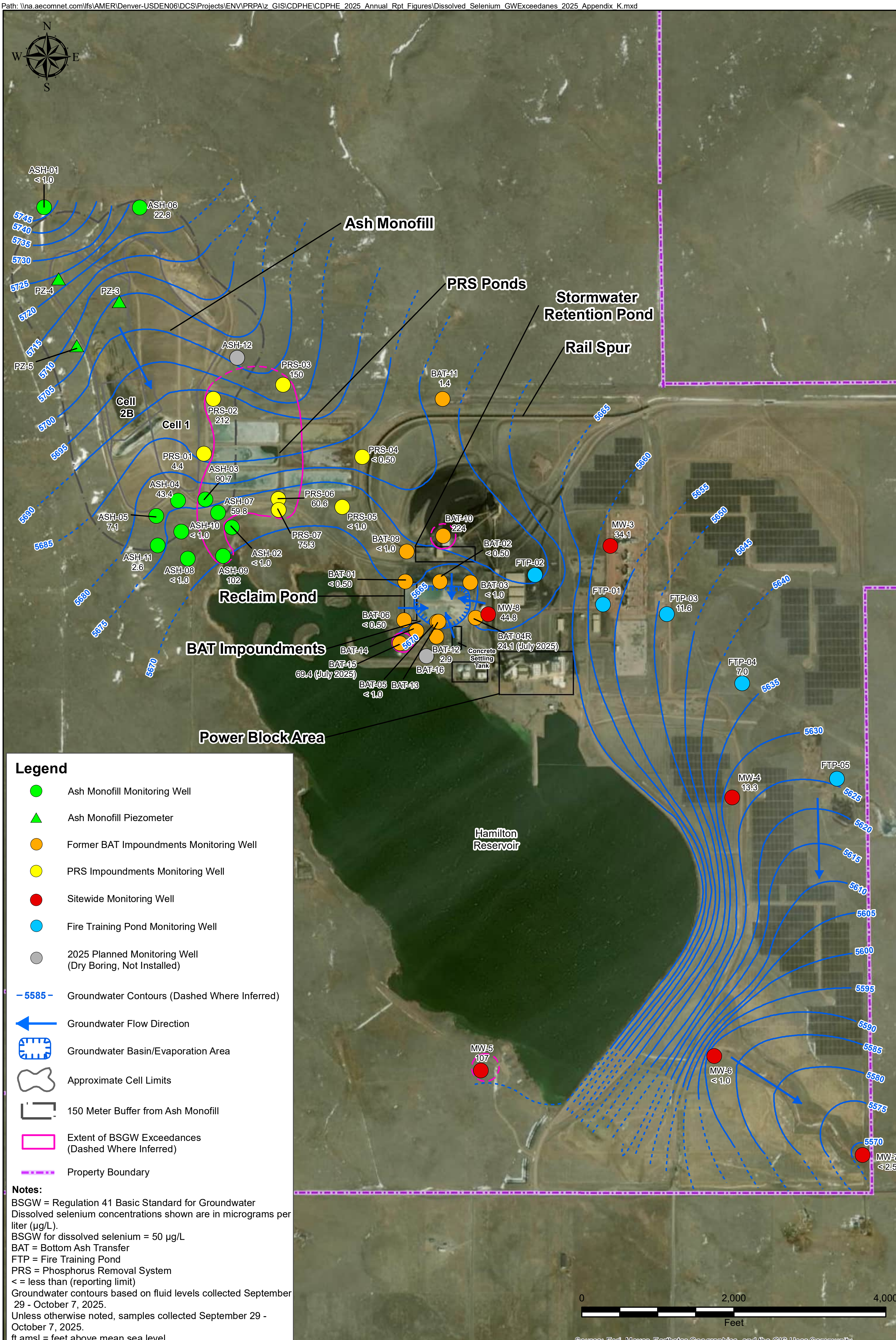

Alternative Source Demonstration
Platte River Power Authority Wellington, CO
Project No: 60784724 Date: 2026-05-22

Rawhide Energy Station
Dissolved Selenium Basic Standard for Groundwater Exceedances September/October 2025 - CDPHE

AECOM

Figure 2

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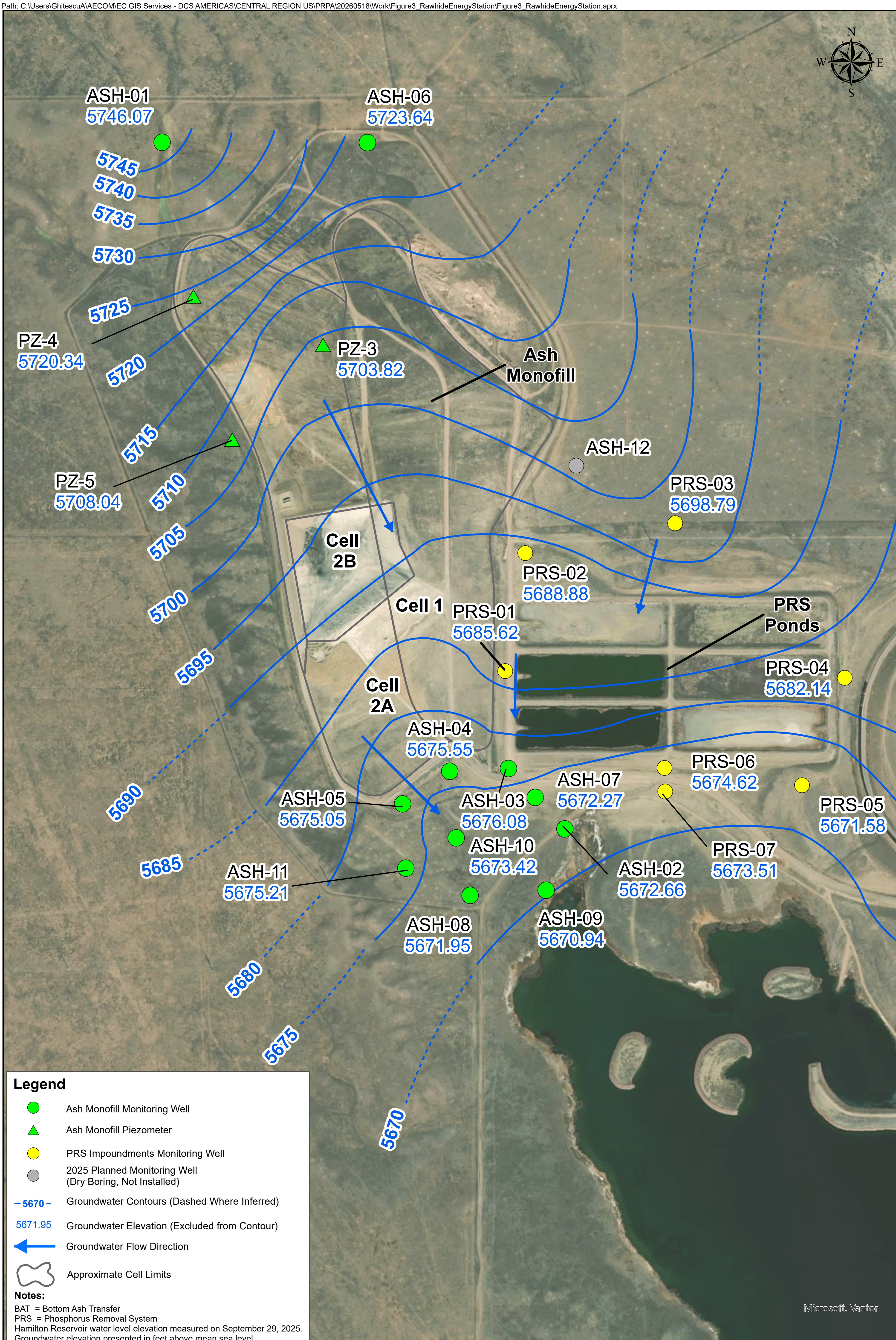


Legend

- Ash Monofill Monitoring Well
- Ash Monofill Piezometer
- PRS Impoundments Monitoring Well
- 2025 Planned Monitoring Well (Dry Boring, Not Installed)
- – 5670 – Groundwater Contours (Dashed Where Inferred)
- 5671.95 Groundwater Elevation (Excluded from Contour)
- Groundwater Flow Direction
- Approximate Cell Limits

Notes:
BAT = Bottom Ash Transfer
PRS = Phosphorus Removal System
Hamilton Reservoir water level elevation measured on September 29, 2025.
Groundwater elevation presented in feet above mean sea level.

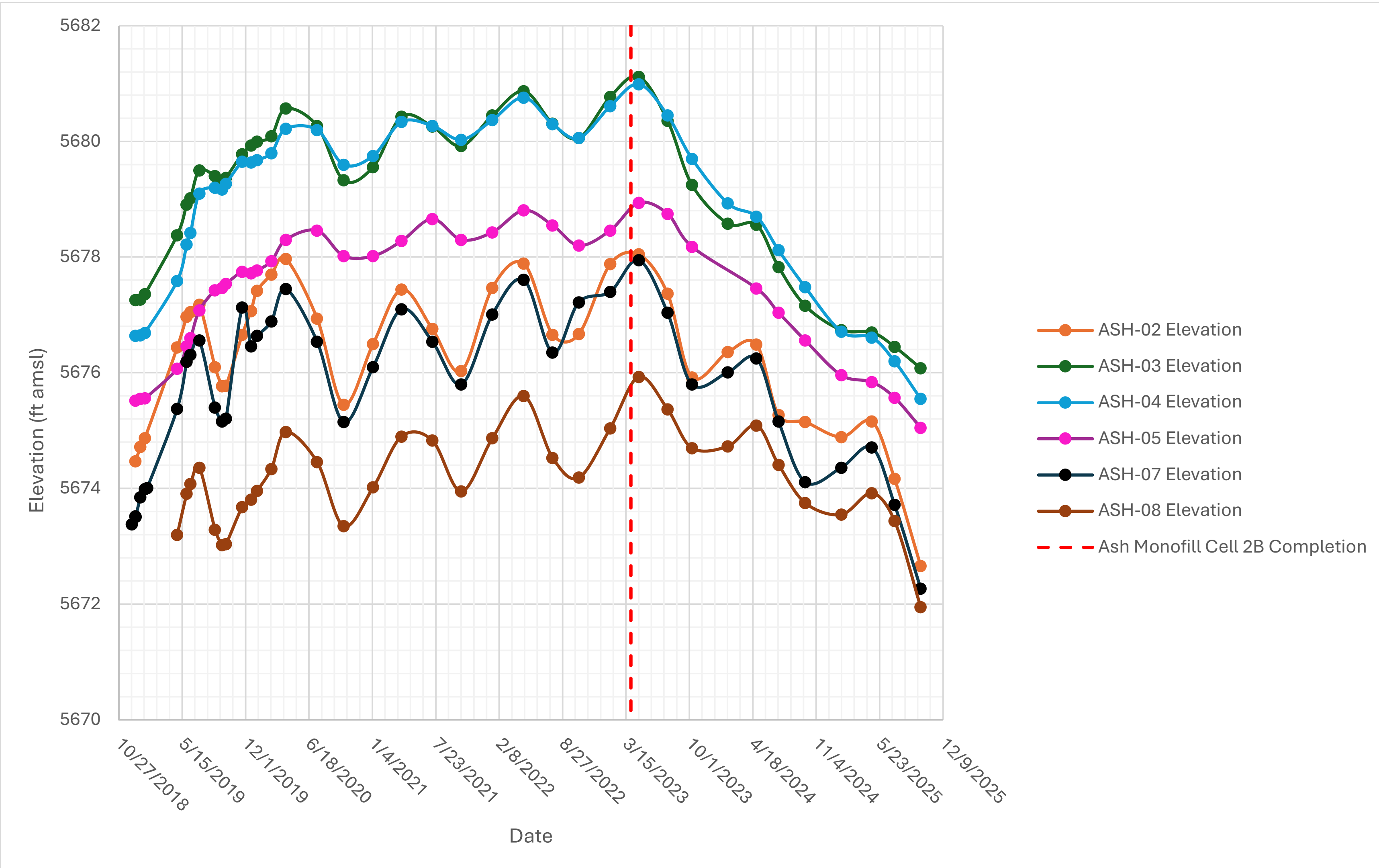
Alternative Source Demonstration
Platte River Power Authority Wellington, CO
Project No.: 60784724 Date: 2026-05-18

Rawhide Energy Station
September / October 2025
Potentiometric Surface Map

AECOM

Figure 3

Figure 4: Ash Monofill Downgradient Groundwater Elevations Following Cell 2B Completion



Notes:

ft amsl = feet above mean sea level

Alternative Source Demonstration
Platte River Power Authority Wellington, CO
Project No.: 60784724 Date: 2025-11-12

Rawhide Energy Station
Top of Weathered Bedrock Elevation Map

AECOM

Figure 5

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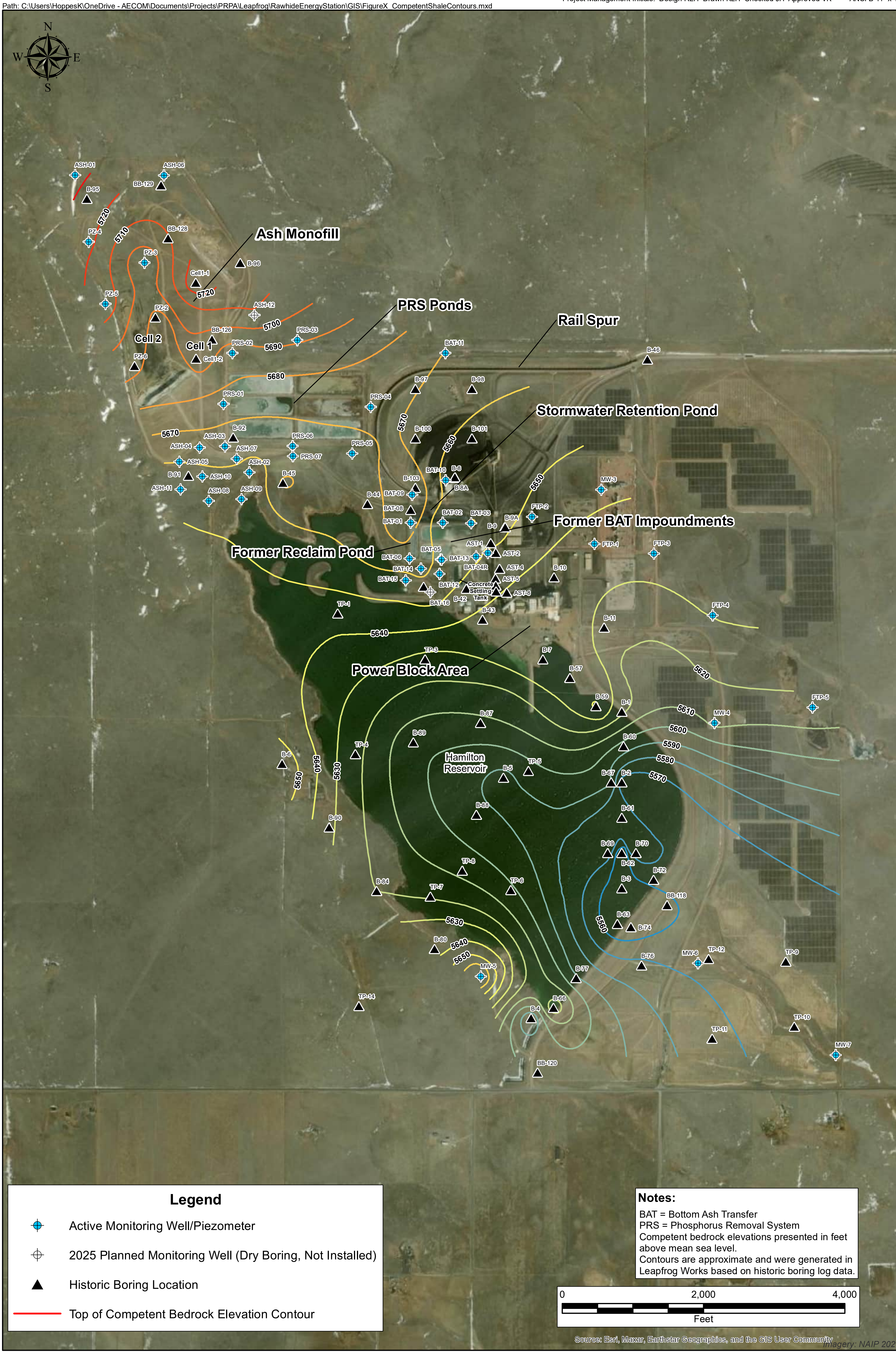
Project Management Initials: Design RLH Drawn KLH Checked JH Approved VK ANSI B 11" x 17"



Alternative Source Demonstration
Platte River Power Authority Wellington, CO
Project No.: 60784724 Date: 2025-11-12

Rawhide Energy Station
Top of Competent Bedrock Elevation Map

AECOM

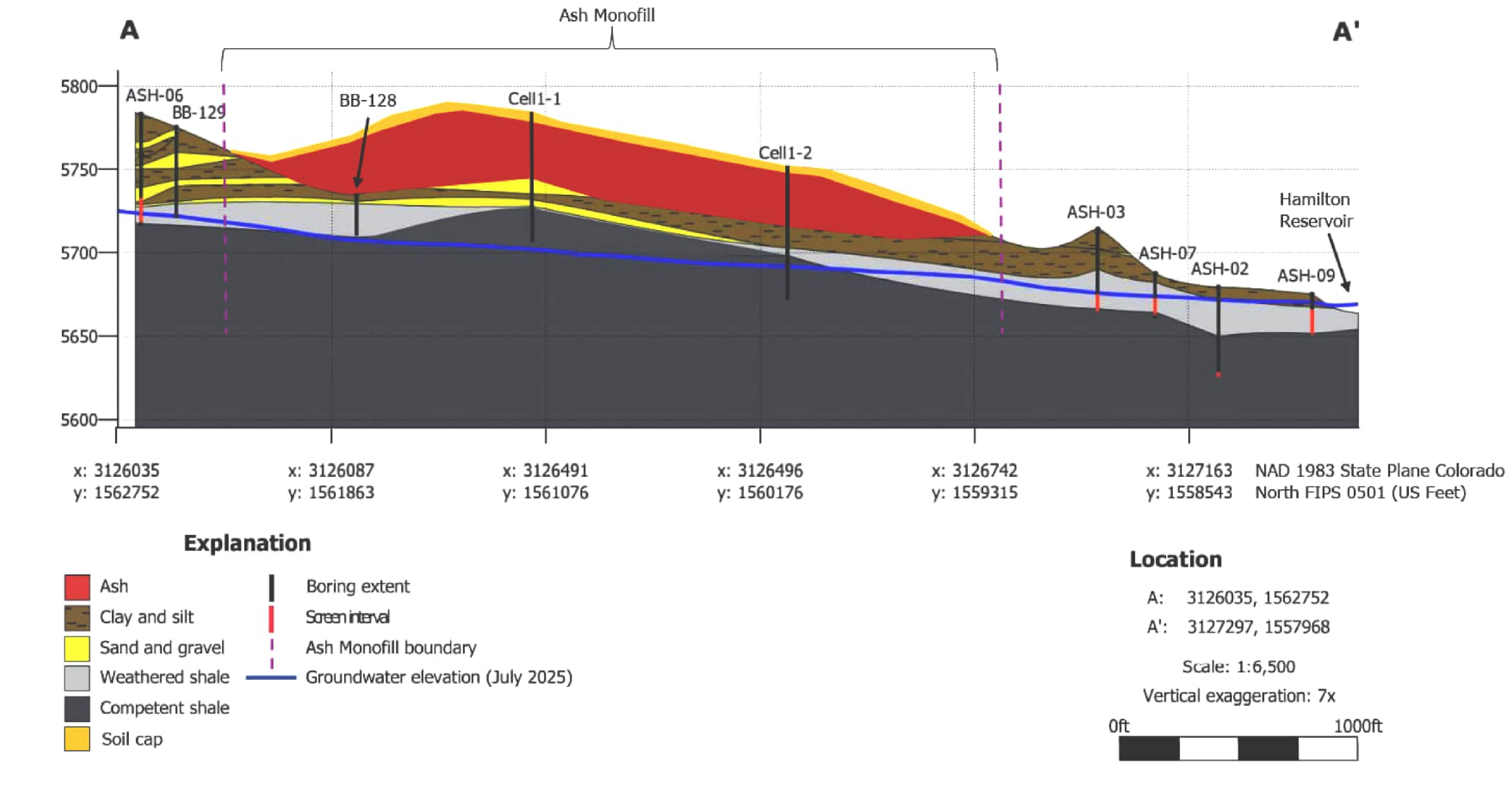
Figure 6

Alternative Source Demonstration
Platte River Power Authority Wellington, CO
Project No.: 60784724 Date: 2026-05-22

Rawhide Energy Station
Cross Section Location

AECOM

Figure 7



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Platte River Power Authority
Rawhide Energy Station
Wellington, Colorado
Project No.: 60784724 Date: 12/8/2025

RAWHIDE ENERGY STATION
CROSS SECTION A-A'

AECOM
Figure 8

Figure 9.
Rawhide Energy Station
Alternative Source Demonstration
Time-Series Concentration Charts

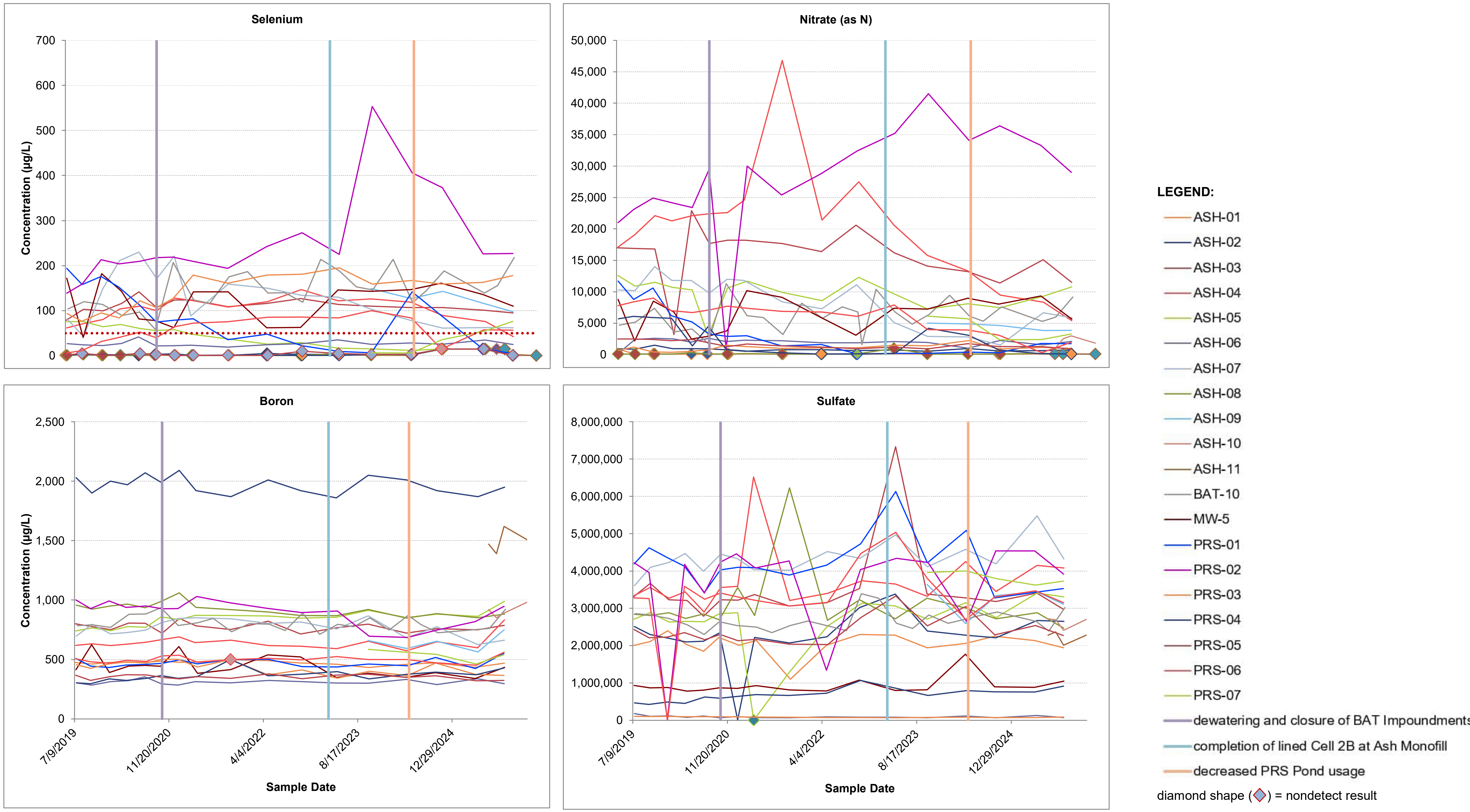


Figure 10.
Rawhide Energy Station
Alternative Source Demonstration
Constituent Scatter Plots

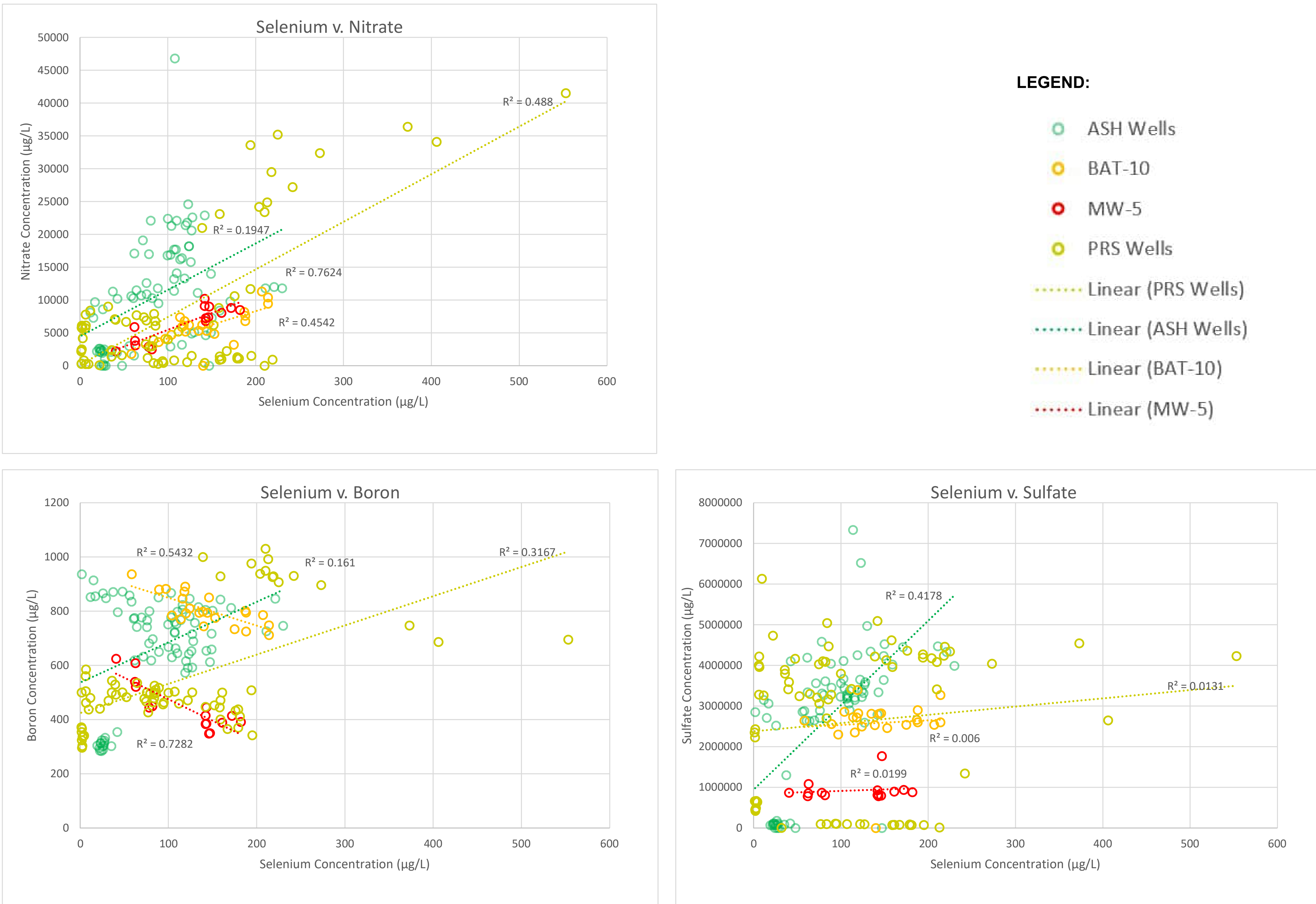
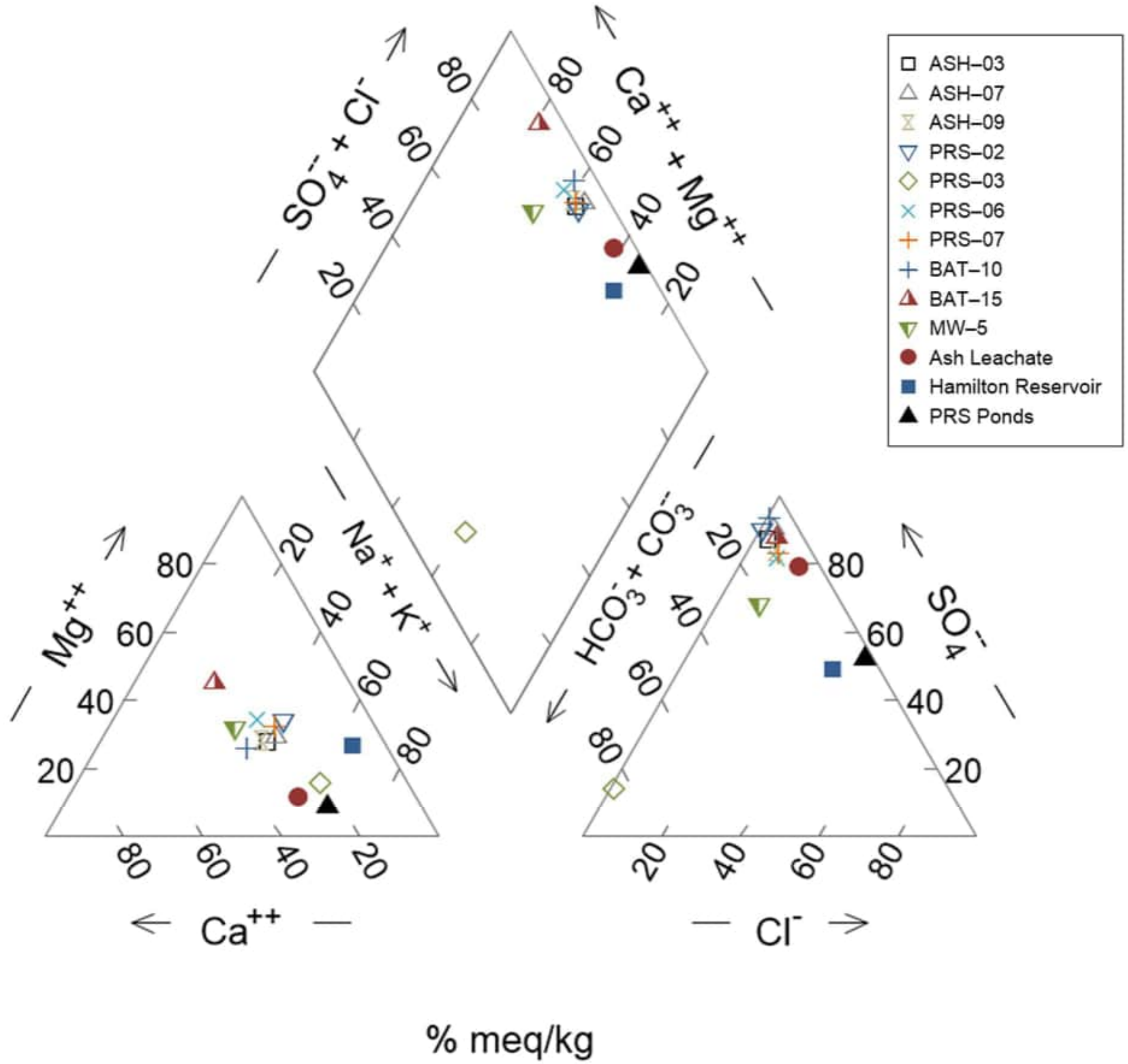
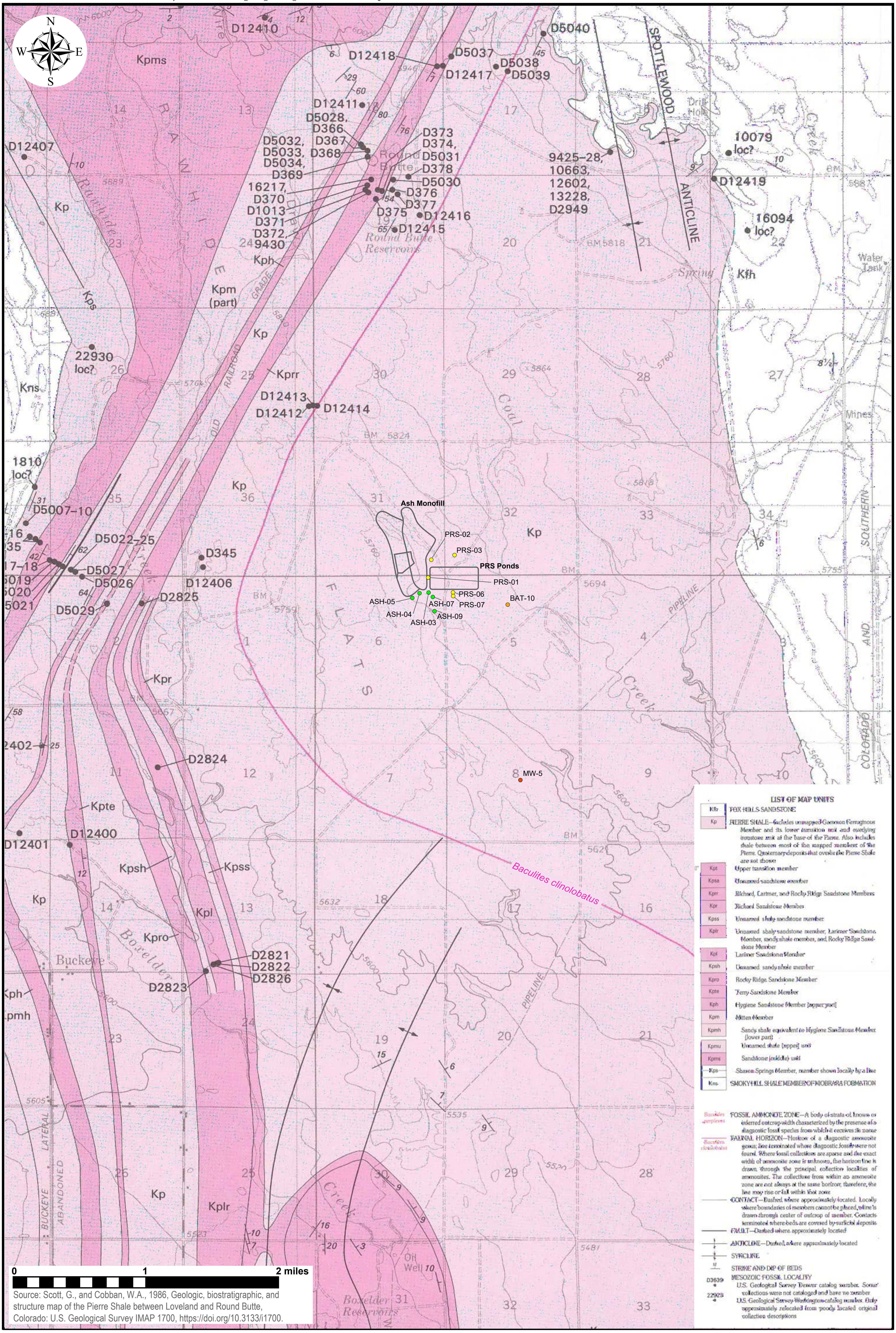


Figure 11.
Rawhide Energy Station
Alternative Source Demonstration
Piper Diagram of Groundwater Monitoring Wells with Selenium Exceedances Compared to Other Site Waters



Notes:
Colorado Department of Public Health and Environment (CDPHE) data only shown.
Data shown collected between August-October 2025.



Alternative Source Demonstration
Platte River Power Authority Wellington, CO
Project No.: 60784724 Date: 2026-05-01

Rawhide Energy Station
Pierre Shale Geologic Map

AECOM

Figure 12