



November 10, 2021

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Submitted via e-mail to [dbrazeal@taprootep.com](mailto:dbrazeal@taprootep.com)

**RE: Confirmation Soil Sampling Following Produce Water Release  
Spill/Release ID Point 480563 near Briggsdale, Colorado**

Dear Mr. Brazeal and Mr. Hunt,

Environmental Works, Inc. (EWI) is pleased to submit this letter report summarizing the additional investigation activities completed in conjunction with the initial release response on August 19, 2021, and follow-up confirmation sampling completed on September 24, 2021 at Taproot's Hale Release Spill/Release Point ID 480563 near Briggsdale, Colorado (the Site). The release occurred at a location just east of the previous Hale release that occurred on June 8, 2021. Initial results are recorded on Figure 1 and Table 1, and analytical data can be referenced in earlier reports.

The purpose of this report is to aid with the submission of the Final Form 19 Supplemental to the Colorado Oil and Gas Conservation Commission (COGCC) and to satisfy the requirements to achieve Site closure in accordance with COGCC Guidance Rule 913.

### Summary of Work Completed

During the initial release response, EWI collected excavation floor and sidewall samples in accordance with Rule 915. EWI re-mobilized to the Site on September 24, 2021 after discussions with the COGCC and surveying of the aerial extent. Additional shallow excavation samples were collected from the areas minimally impacted by the release. Surveying of Site features and sampling locations was completed by Avery Technical Resources. GPS coordinates, sample names, and sample depths are recorded in Appendix A in accordance with COGCC Guidance Rule 915. Sample locations, the produced water line, excavation extents, and select site features for reference are depicted on Figure 1 and Figure 2.

Based on evaluation of Site survey data, the following samples were recommended in accordance COGCC Guidance Table 915-1:

- Nine (9) sidewall samples (SW1 through SW9) for the primary excavation where the release occurred.



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- One (1) floor sample (FS1) for the primary excavation where the release occurred of less than 500 square feet (sq. ft.). The floor sample was collected from the bottom of the excavation (approximately 5' below ground surface [bgs]) from the area where the highest impacts to soil would be expected, in accordance with COGCC Guidance Rule 915.

Following COGCC Rule 915, a total of four (4) soil samples were collected from the area of shallow excavation over an area of approximately 4,000 sq. ft. Surface samples (SS1 through SS4) were collected from approximately 0.5 feet bgs with a hand auger. The background sample (BS1) from the initial Hale release (Spill/Release Point ID 480146) is used to compare background conditions with confirmation sample results.

Soil borings for sidewall samples were advanced with a hand auger while the excavations remained open following the initial release. Continuous soil screening for the presence of volatile organic compounds (VOCs) was also conducted on sidewall sample borings using a photoionization detector (PID) to aid in understanding Site conditions. No elevated PID readings were observed in any soil at the Site. Following sampling, soil borings were abandoned with clean soil cuttings and the hand auger was decontaminated between borings.

Samples were immediately placed on ice and shipped to a COGCC approved lab (Pace Analytical). All samples collected were analyzed for the full list of Table 915-1 analytes. Table 2 presents the full analytical results and compares them with the Residential Soil Screening Level Concentrations (RSSLs) and the Protection of Groundwater Soil Screening Level Concentrations listed in Table 915-1. According to COGCC Rule 915 RSSLs will be used unless otherwise required by the COGCC. Full Analytical Results are attached as Appendix B. Groundwater is located at an estimated 110 feet below ground surface based on topography and nearby well data. Well data backup is attached on the Final Form 19 Supplemental.

A photographic log is attached as Appendix C to aid with the determination that appropriate action was taken to remove impacted material with the goal of achieving Site closure.

## **Results and Conclusions**

Exceedances of the RSSLs were only observed for arsenic, pH, boron, and sodium absorption ration (SAR). pH was detected at a concentration slightly above the soil suitability for reclamation standard of 8.3 standard units (s.u.) in soil samples from SW3 (8.32 s.u.) and SW9 (8.70 s.u.).

The soil sample from SW4 (2.04 mg/l) slightly exceeded the suitability for reclamation standard for boron of 2 mg/l.

SAR exceeded the suitability for reclamation standard of 6 in SW2 (7.15), SW4 (10.5), and SW8 (9.8). Floor sample FS1 did not exceed the standard for SAR.

No soil samples exceeded the suitability for reclamation standard for conductivity of 4 mmhos/cm.

Arsenic was detected at concentrations above the RSSL in all soil samples that were analyzed, including the background sample, BS1 (2.04 milligrams per kilogram [mg/kg]). Concentrations of arsenic can vary significantly within a vertical section of soil due to natural variations within soil types. Although arsenic was higher in some sidewall and surface samples than the background, that could be a function of depth and/or soil type. Arsenic concentrations in floor samples FS1 was comparable to background concentrations observed in BS1. The concentrations observed at the Site are similar to elevated arsenic levels found in soils across the state and should not be a barrier to Site closure.

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No semi-volatile or volatile compounds were detected above RSSLs. Limited total petroleum hydrocarbon (TPH) compounds were detected above the laboratory reporting limit, but well below the Cleanup Standards.

Soil samples at the Site exhibited few exceedances of the RSSLs and Protection of Groundwater Screening Level Concentrations, and many of the exceedances were also observed in the background sample. Additionally, no detections of VOCs were present from PID screening of the soil at the time of sample collection. With the data collected from initial and confirmation soil sampling, EWI believes horizontal and vertical delineation has been adequately completed, and no additional Site investigation is needed. A final Form 19 Supplemental shall be submitted to the COGCC less than 90 days from the incident, and will state that an additional Form 27 will be required for the interim time until a Comprehensive Site Reclamation Plan can be completed with SWCA Consultants. If the closure request is approved by the COGCC, Taproot should restore site conditions to the Commission's 1000 series rules, as applicable.

We appreciate the opportunity to provide this letter report to Taproot Energy Partners. Please contact me at 507-475-2825 or [akubat@environmentalworks.com](mailto:akubat@environmentalworks.com) if you have questions or we can be of further service.

Sincerely,

Adam Kubat  
Project Geologist  
Environmental Works, Inc.

cc: Steve Brauner (Environmental Works, Inc.)  
Cameron Ezell (Environmental Works, Inc.)