



April 8, 2024

Dave Brazeal  
Dale Hunt  
Director of Operations  
Taproot Energy Partners  
518 17<sup>th</sup> Street, Suite 1800  
Denver, Colorado 80202

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

**RE: Confirmation Soil Sampling Following Produce Water Release  
Spill/Release ID Point 483128, Remediation Project Number 28892**

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 October 17, 2022, and follow-up confirmation sampling and excavation activities completed on October 18<sup>th</sup> through 20<sup>th</sup>, and December 20<sup>th</sup> through the 21<sup>st</sup>, 2022 at the Pintail Latera Spill/Release Point ID 483128, remediation project number 28892 (the Site). An additional round of confirmation sampling was completed with a direct-push (DPT) drill rig on February 9, 2023 for the purpose of vertical and spatial delineation of limited reclamation parameter exceedances surrounding the release. The purpose of this report is to aid with the submission of the Form 27 supplemental to the Colorado Energy and Carbon Management Commission (ECMC) and to satisfy the requirements to achieve Site closure in accordance with ECMC Guidance Rule 913.

### Summary of Work Completed

Immediately following the discovery of the release of produced water, EWI began directing excavation and hydroexcavation activities. An emergency response report was developed by EWI following the release and was attached to the supplemental 10-day Form 19. With samples collected and submitted on 10/20/22, the Site was secured awaiting further direction from the initial analytical results. EWI re-mobilized to the Site on December 20<sup>th</sup> 2022 to direct the excavation of soils within the secondary excavation where produced water appears to have flowed and infiltrated soils to a depth of at least 3.5' based on initial analytical results. Surveying of maximum impacted aerial extent was completed hours after the release by Avery Technical Resources. GPS coordinates, sample names, and sample depths are recorded in Appendix A in accordance with ECMC 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 initial samples were recommended in accordance ECMC Guidance Table 915-1:

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**Pintail Latera Produced Water Release**  
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- 5 sidewall samples (SW1 through SW5) for the primary excavation where the release occurred. Five initial sidewall samples have been collected, and additional are planned as part of a drilling investigation.
- Two floor samples were collected at two separate depths (FS1 and FS2) for the primary excavation where the release occurred of less than 500 square feet (sq. ft.). The floor samples were collected from the bottom of the excavation (from 8-8.5 feet below ground surface [bgs]) from the area directly under the failed pipe where the highest impacts to soil would be expected, in accordance with ECMC Guidance Rule 915.
- Five surface samples (SS1 through SS5) were collected from areas within the footprint of shallow impacted soil. Samples were collected from areas where approximately 0.5-1' of soil were initially removed. Additionally, samples SS1, SS2, and SS3 had an additional sample collected from 3' to 3.5' bgs to assist with vertical delineation and Site understanding. Approximately 13,500 sq ft. of impacted soil was initially observed. Confirmed by the onsite geologist, field observations, and a handheld soil conductivity meter.
- One background sample (BS1) was collected from soil outside the impacted area at depths of 0-0.5' and 3-3.5' to represent analyte concentrations of native soils. An additional background sample (SB4) was collected during the subsequent investigation.
- Soil borings SB1 through SB10 were collected during an additional investigation completed on February 9, 2023. Borings were advanced with DPT drill rig, and samples were collected from various depths based on field soil conductivity readings. Soil borings were advanced to refusal, which terminated the borings in a dry, dense claystone.

Soil borings for sidewall, floor, and surface 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. Following sampling, soil borings were abandoned with clean soil cuttings and the hand auger was decontaminated between borings. Soil boring logs from the additional investigation completed on February 9, 2023 are included as Appendix D.

Samples were immediately placed on ice and delivered to Origins laboratory for analysis. All samples collected initially were analyzed for the full list of Table 915-1 analytes. Subsequent samples were collected for select analytes identified by the initial results. Table 1 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. Full Analytical Results are attached as Appendix B. Depth to groundwater is estimated at 70' bgs at the Site, and boring logs indicate dry, dense claystone at 9-13', acting as a natural aquitard and preventing vertical migration of produced water immediately following the release. Estimates for groundwater depth at the Site are provided in Appendix E, and is based on local topography and nearby well data. With the depth to water estimates and Site lithology, EWI believes RSSLs are appropriate to use for remediation standards.

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.

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## Results

Exceedances of the RSSLs or reclamation parameters were only observed for arsenic, boron, pH, sodium absorption ration (SAR), and conductivity.

Boron was detected above the soil suitability for reclamation standard of 2 mg/kg in all but BS1, SS1-3, SS2-3, SS3-3, and SW2 in samples collected immediately following the release. Exceedances ranged from slightly over the standard in FS1 (2.49 mg/kg) to 11.4 mg/kg in SW4. Additional excavation surrounding the primary release location was completed the week of 10/24 as the Thermoflex pipe was removed and replaced along the entire segment of produced water line. In soil samples collected following excavation and removal activities, only SB2-8, background sample SB4-8, and SB5-7 slightly exceeded the reclamation standards at concentrations of 2.03 mg/l, 2.03 mg/l, and 2.44 mg/l, respectively. The limited exceedances of boron have been either removed, are close to background concentrations, or are vertically and spatially delineated.

SAR exceeded the RSSL in FS2, SS1-0.5, SS2-0.5, SS3-0.5, SS4, SS5, SW4, and SW5 for samples collected immediately following the release. Additional excavation was completed to address these exceedances, and delineation borings (SB1 through SB10) were collected in the first quarter of 2023 as part of a supplemental Site investigation. No samples collected during the supplemental investigation collected following excavation exceeded SAR standards. All SAR impacted soil has been either removed via excavation or has been vertically and spatially delineated.

Conductivity exceeded the RSSL of 4 mmhos/cm in several initial samples surrounding the primary excavation at a maximum concentration of 12.6 mmhos/cm. Deeper samples collected from 3-3.5' in SS1, SS2, and SS3 exhibited lower, but still elevated concentrations in several locations. Based on initial results, at least 3.5' of soil was removed over the entire impacted area during several dig and haul events. Soil samples collected during the 2023 supplemental investigation (SB1-SB10) exhibited limited exceedances of specific conductance. Only SB1-8 (1.34 mmhos/cm), SB5-7 (9.37 mmhos/cm), and SB5-11 (5.62 mmhos/cm) exceeded conductivity standards. Soil borings were advanced to refusal in a dry, dense clay to claystone. The limited exceedances in soil conductivity have been either removed, are below the root zone, and/or have been vertically and spatially delineated.

Arsenic was detected at concentrations above the RSSL in all soil samples that were analyzed, including the background samples, (3.59 milligrams per kilogram [mg/kg] in BS1-0.5, 3.49 mg/kg in BS1-3). Concentrations of arsenic can vary significantly within shallow soils due to natural variations within soil types. Although arsenic was elevated in many samples, concentrations were comparable to the background samples. 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.

No TPH, semi-volatile or volatile organic compounds (VOCs) were detected in any soil samples above RSSLs. TPH was not detected above laboratory reporting limits in any soil samples collected immediately following the release from the areas of highest observed impact, and additional sampling for TPH was not deemed necessary for subsequent investigations.

Soil samples at the Site following the initial excavation exhibited several exceedances of the RSSLs and Protection of Groundwater Screening Level Concentrations, primarily for reclamation parameters. A secondary excavation was completed around the release location to address the initial exceedances. A supplemental investigation was completed on February 9, 2023 to address the remaining exceedances and data gaps. Exceedances for Boron, pH, and Specific Conductance still remain at depths between 4

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feet to 8 feet, but vertical delineation was achieved with deeper samples collected from all borings immediately above the depth refusal was reached.

A reclamation may be developed if deemed necessary by ECMC to address limited exceedances remaining within the primary root zone for native plant species.

EWI believes the Site has met ECMC standards to reach Site closure. A final Form 27 will be submitted requesting Site Closure in the second quarter of 2024.

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.

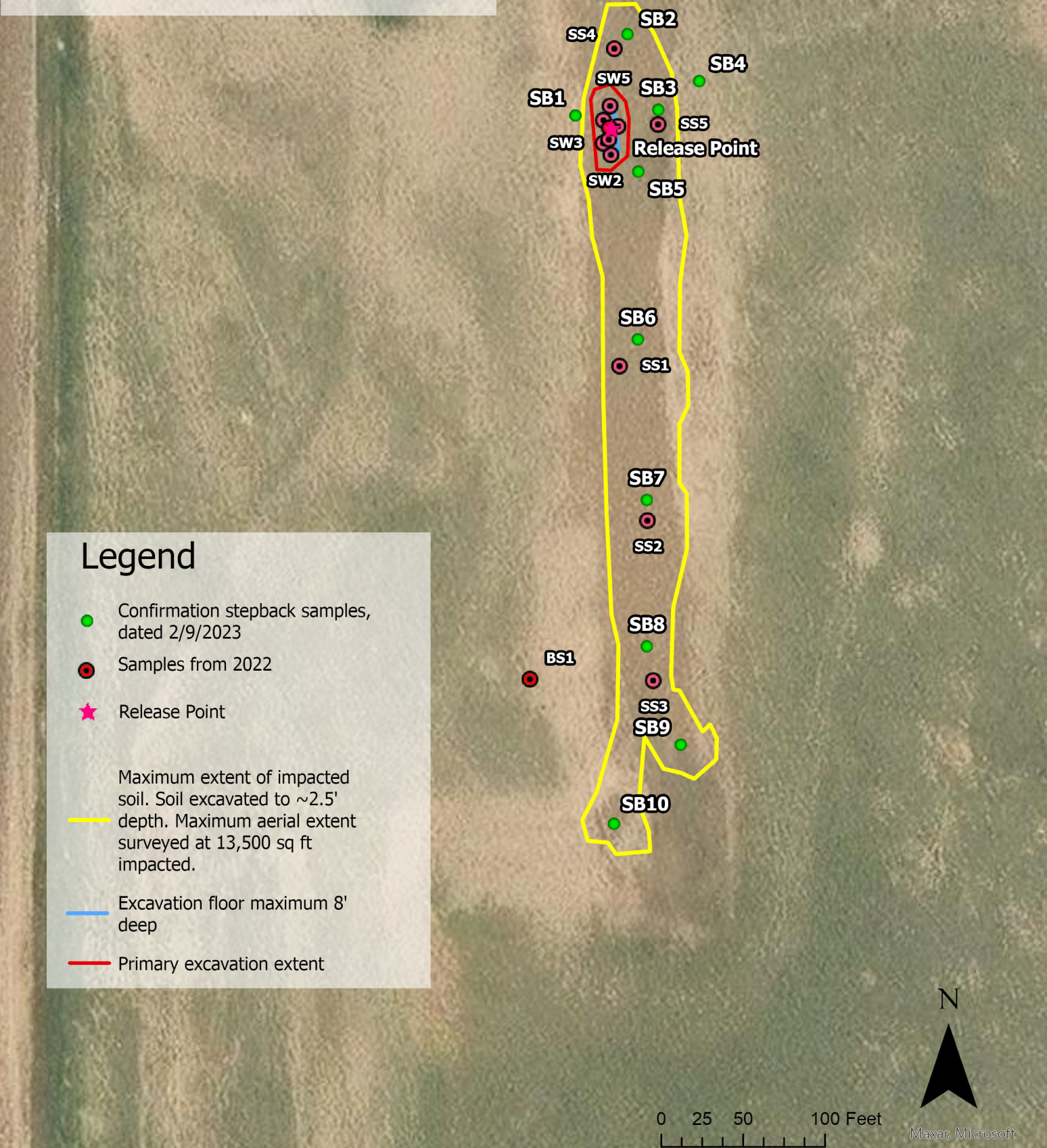
Sincerely,

Adam Kubat, P.G.  
Professional Geologist  
Environmental Works, Inc.



Figure 1 - Site Layout

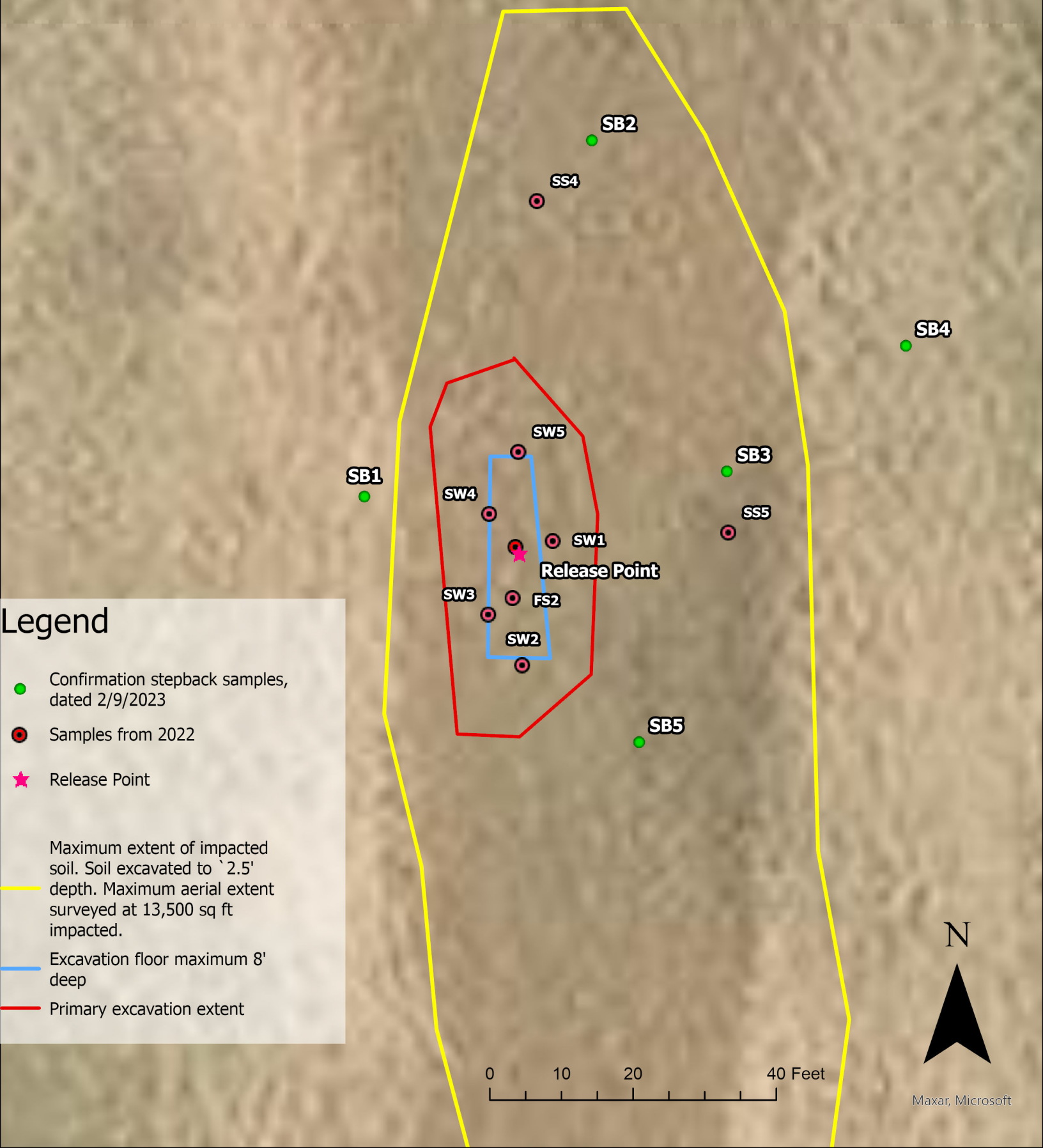
Maximum aerial impacts





# Figure 2 - Primary Excavation

Primary Excavation Location  
soil sampling points



## Legend

- Confirmation stepback samples, dated 2/9/2023
- Samples from 2022
- Release Point

Maximum extent of impacted soil. Soil excavated to `2.5' depth. Maximum aerial extent surveyed at 13,500 sq ft impacted.

Excavation floor maximum 8' deep

Primary excavation extent

0 10 20 40 Feet



Table 1. Summary of Analytical Results

Station Name	CAS Number	Units	Protection of Groundwater Soil Screening Level	Residential Soil Screening Level Concentrations	BS1	BS1	SS1	SS1	SS2	SS2	SS3	SS3	SS4	SS5	FS1	FS2	SW1
Sample Date					10/18/22	10/18/22	10/18/22	10/18/22	10/18/22	10/18/22	10/18/22	10/18/22	10/18/22	10/18/22	10/20/22	10/20/22	10/20/22
Sample Depth					0 - 0.5 ft	3 - 3.5 ft	0 - 0.5 ft	3 - 3.5 ft	0 - 0.5 ft	3 - 3.5 ft	0- 0.5 ft	3 - 3.5 ft	0.5 ft	0.5 ft	8 ft	8 ft	7 ft
Metals																	
ARSENIC	7440-38-2	mg/kg	0.29	0.68	3.59	3.49	3.43	3.75	3.61	3.80	3.53	4.78	3.36	3.07	3.64	4.08	4.24
BARIUM	7440-39-3	mg/kg	82	15,000	186	215	191	200	145	400	141	211	202	157	400	175	136
CADMIUM	7440-43-9	mg/kg	0.38	71	0.157	0.134	0.173	0.127	0.147	0.127	0.139	0.116	0.112	0.155	<0.0959	<0.0963	<0.0994
CALCIUM	7440-70-2	mg/l			2.62	1.79	14.8	58.5	25.6	35.4	35	60.8	32.6	17	84.3	62.3	9.28
CHROMIUM	7440-47-3	mg/kg	0.00067	0.3	<1.22	<0.244	<1.22	<0.488	<0.488	<0.251	<1.26	<0.244	<0.488	<2.47	<0.248	<0.245	<0.246
COPPER	7440-50-8	mg/kg	46	3,100	13.1	11.1	10.7	10.3	10.6	10.6	11.6	10.0	10.5	12.2	10.2	10.1	12.7
LEAD	7439-92-1	mg/kg	14	400	14.2	15.9	14.3	20.5	11.6	11.4	12.0	16.7	12.9	12.8	15.4	15.1	<9.94
MAGNESIUM	7439-95-4	mg/l			1.02	<0.823	5.08	21.3	9.34	13.2	13.0	25.9	10.2	5.08	20.8	15.6	2.97
NICKEL	7440-02-0	mg/kg	26	1,500	<9.53	<9.13	<9.95	<8.79	<9.15	<9.70	<9.79	<9.72	<9.76	<9.58	<9.59	<9.63	<9.94
SELENIUM	7782-49-2	mg/kg	0.26	390	0.158	<0.0913	0.115	0.112	0.137	<0.0970	0.128	<0.0972	<0.0976	0.187	<0.0959	<0.0963	<0.0994
SILVER	7440-22-4	mg/kg	0.8	390	<0.0953	<0.0913	<0.0995	<0.0879	<0.0915	<0.0970	<0.0979	<0.0972	<0.0976	<0.0958	<0.0959	<0.0963	<0.0994
SODIUM	7440-23-5	mg/l			0.812	2.76	91.8	10.7	85.9	22.1	66.4	29.0	71	86.5	25.1	40.5	82.5
ZINC	7440-66-6	mg/kg	370	23,000	<95.3	<91.3	<99.5	<87.9	<91.5	<97.0	<97.9	<97.2	<97.6	<95.8	<95.9	<96.3	<99.4
VOCs																	
BENZENE	71-43-2	mg/kg	0.0026	1.2	<0.00200	<0.00200	<0.00200	<0.00200	0.00374	<0.00200	<0.00200	0.00522	0.0498	0.108	0.172	0.134	<0.00200
ETHYLBENZENE	100-41-4	mg/kg	0.78	5.8	<0.00200	<0.00200	<0.00200	<0.00200	<0.00200	<0.00200	<0.00200	<0.00200	<0.00200	<0.00200	0.00256	0.00276	<0.00200
TOLUENE	108-88-3	mg/kg	0.69	490	<0.00200	<0.00200	<0.00200	<0.00200	0.00536	<0.00200	<0.00200	0.00282	0.0159	<0.00200	0.0886	0.0390	<0.00200
XYLENES, TOTAL	1330-20-7	mg/kg	9.9	58	<0.00200	<0.00200	0.00218	<0.00200	0.00316	<0.00200	<0.00200	<0.00200	<0.00200	<0.00200	<0.00200	<0.00200	<0.00200
1,2,4-TRIMETHYLBENZENE	95-63-6	mg/kg	0.0081	30	<0.00200	<0.00200	<0.00200	<0.00200	<0.00200	<0.00200	<0.00200	<0.00200	<0.00200	<0.00200	<0.00200	<0.00200	<0.00200
1,3,5-TRIMETHYLBENZENE	108-67-8	mg/kg	0.0087	27	<0.00200	<0.00200	<0.00200	<0.00200	<0.00200	<0.00200	<0.00200	<0.00200	<0.00200	<0.00200	<0.00200	<0.00200	<0.00200
Semi-VOCs																	
1-METHYLNAPHTHALENE	90-12-0	mg/kg	0.006	18	<0.000364	<0.000364	0.00586	<0.000364	<0.00182	<0.000364	<0.000364	<0.00182	<0.00182	0.000465	0.00108	<0.00182	<0.000364
2-METHYLNAPHTHALENE	91-57-6	mg/kg	0.019	24	<0.000645	<0.000645	<0.00323	<0.000645	<0.00323	<0.000645	<0.000645	<0.00323	<0.00323	<0.000645	0.000726	<0.00323	<0.000645
ACENAPHTHENE	83-32-9	mg/kg	0.55	360	<0.000304	<0.000304	<0.00152	<0.000304	<0.00152	<0.000304	<0.000304	<0.00152	<0.00152	<0.000304	<0.000304	<0.00152	<0.000304
ANTHRACENE	120-12-7	mg/kg	5.8	1,800	<0.000334	<0.000334	< 0.00167	<0.000334	< 0.00167	<0.000334	<0.000334	< 0.00167	<0.00167	<0.000334	<0.000334	<0.00167	<0.000334
BENZO(A)ANTHRACENE	56-55-3	mg/kg	0.011	1.1	<0.000493	<0.000493	< 0.00247	<0.000493	< 0.00247	<0.000493	<0.000493	< 0.00247	<0.00247	<0.000493	<0.000493	<0.00247	<0.000493
BENZO(A)PYRENE	50-32-8	mg/kg	0.24	0.11	<0.000468	<0.000468	0.00278	<0.000468	0.00332	<0.000468	<0.000468	<0.00234	<0.00234	<0.000468	<0.000468	<0.00234	<0.000468
BENZO(B)FLUORANTHENE	205-99-2	mg/kg	0.3	1.1	<0.000585	<0.000585	< 0.00293	<0.000585	< 0.00293	<0.000585	<0.000585	< 0.00293	<0.00293	<0.000585	<0.000585	<0.00293	<0.000585
BENZO(K)FLUORANTHENE	207-08-9	mg/kg	2.9	11	<0.000437	<0.000437	< 0.00219	<0.000437	< 0.00219	<0.000437	<0.000437	< 0.00219	<0.00219	<0.000437	<0.000437	<0.00219	<0.000437
CHRYSENE	218-01-9	mg/kg	9	110	<0.000624	<0.000624	< 0.00312	<0.000624	< 0.00312	<0.000624	<0.000624	< 0.00312	<0.00312	<0.000624	<0.000624	<0.00312	<0.000624
DIBENZ(A,H)ANTHRACENE	53-70-3	mg/kg	0.096	0.11	<0.000614	<0.000614	<0.00307	<0.000614	<0.00307	<0.000614	<0.000614	<0.00307	<0.00307	<0.000614	<0.000614	<0.00307	<0.000614
FLUORANTHENE	206-44-0	mg/kg	8.9	240	<0.000394	<0.000394	<0.00197	<0.000394	<0.00197	<0.000394	<0.000394	<0.00197	<0.00197	<0.000394	<0.000394	<0.00197	<0.000394
FLUORENE	86-73-7	mg/kg	0.54	240	<0.000286	<0.000286	<0.00143	<0.000286	<0.00143	<0.000286	<0.000286	<0.00143	<0.00143	<0.000286	<0.000286	<0.00143	0.000367
INDENO(1,2,3-CD)PYRENE	193-39-5	mg/kg	0.98	1.1	<0.000627	<0.000627	<0.00314	<0.000627	<0.00314	<0.000627	<0.000627	<0.00314	<0.00314	<0.000627	<0.000627	<0.00314	<0.000627
NAPHTHALENE	91-20-3	mg/kg	0.0038	2	<0.000484	<0.000484	<0.00242	<0.000484	<0.00242	<0.000484	<0.000484	<0.00242	<0.00242	0.00108	<0.000484	<0.00242	<0.000484
PYRENE	129-00-0	mg/kg	1.3	180	<0.000643	<0.000643	<0.00322	<0.000643	<0.00322	<0.000643	<0.000643	<0.00322	<0.00322	<0.000643	<0.000643	<0.00322	<0.000643
TPH**																	
Gasoline Range Hydrocarbons	NA	mg/kg	--	500	<0.200	<0.200	<0.200	<0.200	<0.200	<0.200	<0.200	<0.200	<0.200	<0.200	<0.200	<0.200	<0.200
C10-C28 DIESEL RANGE	NA	mg/kg	--	500	<25	<25	< 25	< 25	< 25	<25	<25	<25	<25	<25	<25	<25	<25
C28-C40 RESIDUAL RANGE ORGANICS	NA	mg/kg	--	500	<100	<100	< 100	< 100	< 100	<100	<100	<100	<100	<100	<100	<100	<100
Soil Suitability for Reclamation**																	
BORON	7440-42-8	mg/l	--	2	0.889	0.915	6.93	0.685	4.33	1.49	3.27	0.669	3.23	9.04	2.49	5.58	8.47
PH	NA	s.u.	--	6 - 8.3	8.03	8.32	7.65	7.53	7.70	7.80	7.83	7.76	7.85	7.91	7.77	7.74	8.05
SODIUM ADSORPTION RATIO	NA	NA	--	6	0.602	2.59	29.1	1.70	20.6	4.48	13.5	4.41	15.3	26	3.47	6.49	33.3
SPECIFIC CONDUCTANCE	NA	mmhos/cm	--	4	0.536	0.458	11.8	9.29	12.6	7.46	12.1	11.8	11.7	11.9	11.0	11.8	9.43

NOTES:

Boldface type indicates the analyte was detected above the reporting limit.

Highlighted text indicates an exceedance of either the protection of groundwater soil screening level or residential soil screening level.

\*\* Where RSSL or protection of groundwater screening level is not present, Table 915-1 Cleanup Concentrations are used.

-- No standard established.

NA Not applicable.

NS Not sampled.

BS indicates a background sample collected from unaffected soil nearby.

FS indicates a sample collected from the floor of an excavation.

SS indicates a surface sample collected from the area of shallow excavation with limited impact from produced water.

SW indicates a sample collected from the sidewall of an excavation.

SB indicates a soil boring completed by Geoprobe investigation

Station Name	Protection of Groundwater Soil Screening Level	Residential Soil Screening Level Concentrations	SW2	SW3	SW4	SW5	SB1-5	SB1-8	SB1-13	SB2-4	SB2-8	SB3-5	SB3-9	SB4-8	SB5-7	SB5-11	SB6-6	SB6-10	SB7-5	SB7-9	SB8-5	SB8-8	SB9-5	SB9-11	SB10-4
Sample Date			10/20/22	10/20/22	10/20/22	10/20/22	2/9/23	2/9/23	2/9/23	2/9/23	2/9/23	2/9/23	2/9/23	2/9/23	2/9/23	2/9/23	2/9/23	2/9/23	2/9/23	2/9/23	2/9/23	2/9/23	2/9/23	2/9/23	2/9/23
Sample Depth			7 ft	7 ft	7 ft	7 ft	5'	8'	13'	4'	8'	5'	9'	8'	7'	11'	6'	10'	5'	9'	5'	8'	5'	11'	4'
Metals																									
ARSENIC	0.29	0.68	3.67	3.57	4.16	4.09	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
BARIUM	82	15,000	173	123	257	180	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
CADMIUM	0.38	71	0.122	<0.0987	<0.0974	0.126	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
CALCIUM			5.43	43.8	10.4	21.9	2.77	54.5	5.14	6.39	28.3	2.32	3.17	8.43	57.1	37.7	11.1	2.07	4.12	6.21	18.4	7.12	3.87	2.67	2.07
CHROMIUM	0.00067	0.3	<0.248	<0.244	<0.244	<0.25	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
COPPER	46	3,100	10.7	10.7	11.2	11.4	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
LEAD	14	400	11.4	<9.87	14.8	13.4	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
MAGNESIUM			1.91	10.9	<8.23	<8.23	0.886	12.6	1.41	2.12	7.06	ND	ND	2.29	16.4	9.94	3.5	ND	1.2	1.74	5.24	2.03	1.34	ND	ND
NICKEL	26	1,500	<9.48	<9.87	<9.74	<9.78	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
SELENIUM	0.26	390	0.107	<0.0987	<0.0974	<0.0978	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
SILVER	0.8	390	<0.0948	<0.0987	<0.0974	<0.0978	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
SODIUM			6.10	19.2	107	97.9	4.47	16.4	5.52	6.11	10.8	2.91	3.98	7.13	19.3	13.5	9	4.37	6.43	7.64	12	7.51	5.41	4.22	2.43
ZINC	370	23,000	<94.8	<98.7	<97.4	<97.8	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
VOCs																									
BENZENE	0.0026	1.2	<0.00200	<0.00200	0.00842	0.0742	<0.00200	<0.00200	<0.00200	<0.00200	<0.00200	<0.00200	<0.00200	<0.00200	<0.00200	<0.00200	NS	NS	NS	NS	NS	NS	NS	NS	NS
ETHYLBENZENE	0.78	5.8	<0.00200	<0.00200	<0.00200	0.00444	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
TOLUENE	0.69	490	<0.00200	<0.00200	0.00200	<0.00200	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
XYLENES, TOTAL	9.9	58	<0.00200	<0.00200	<0.00200	<0.00200	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
1,2,4-TRIMETHYLBENZENE	0.0081	30	<0.00200	<0.00200	<0.00200	0.00478	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
1,3,5-TRIMETHYLBENZENE	0.0087	27	<0.00200	<0.00200	<0.00200	<0.00200	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Semi-VOCs																									
1-METHYLNAPHTHALENE	0.006	18	<0.000364	<0.000364	<0.00182	0.00348	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
2-METHYLNAPHTHALENE	0.019	24	<0.000645	<0.000645	<0.00323	<0.00323	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
ACENAPHTHENE	0.55	360	<0.000304	<0.000304	<0.00152	<0.00152	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
ANTHRACENE	5.8	1,800	<0.000334	<0.000334	<0.00167	<0.00167	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
BENZO(A)ANTHRACENE	0.011	1.1	<0.000493	<0.000493	<0.00247	<0.00247	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
BENZO(A)PYRENE	0.24	0.11	<0.000468	<0.000468	<0.00234	<0.00234	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
BENZO(B)FLUORANTHENE	0.3	1.1	<0.000585	<0.000585	<0.00293	<0.00293	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
BENZO(K)FLUORANTHENE	2.9	11	<0.000437	<0.000437	<0.00219	<0.00219	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
CHRYSENE	9	110	<0.000624	<0.000624	<0.00312	<0.00312	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
DIBENZ(A,H)ANTHRACENE	0.096	0.11	<0.000614	<0.000614	<0.00307	<0.00307	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
FLUORANTHENE	8.9	240	<0.000394	<0.000394	<0.00197	<0.00197	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
FLUORENE	0.54	240	<0.000286	<0.000286	<0.00143	<0.00143	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
INDENO(1,2,3-CD)PYRENE	0.98	1.1	<0.000627	<0.000627	<0.00314	<0.00314	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
NAPHTHALENE	0.0038	2	<0.000484	<0.000484	<0.00242	<0.00242	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
PYRENE	1.3	180	<0.000643	<0.000643	<0.00322	<0.00322	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
TPH**																									
GASOLINE RANGE HYDROCARBONS	NA	500	<0.200	<0.200	<0.200	<0.200	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
C10-C28 DIESEL RANGE	--	500	<25	<25	<25	<25	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
C28-C40 RESIDUAL RANGE ORGANICS	--	500	<100	<100	<100	<100	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Soil Suitability for Reclamation**																									
BORON	--	2	1.92	2.10	11.4	9.35	0.709	0.848	<0.0992	0.864	2.03	1.76	0.548	2.03	2.44	0.762	1.64	1.58	0.315	0.926	1.51	0.332	1.73	0.133	1.53
PH	--	6 - 8.3	8.12	7.74	7.97	8.02	8.30	7.71	8.05	7.74	7.88	8.25	7.96	8.07	7.67	7.67	7.94	8.17	7.73	8.04	7.97	7.75	8.16	7.95	8.38
SODIUM ADSORPTION RATIO	--	6	3.18	3.67	41.7	25.9	3.31	2.83	3.05	2.96	2.57	2.38	2.82	3.08	3.18	2.77	3.33	3.79	3.94	3.83	3.49	3.51	3.35	3.22	2.03
SPECIFIC CONDUCTANCE	--	4	1.51	7.63	11.4	11.9	0.507	4.34	0.834	0.958	2.11	0.628	0.847	1.04	9.37	5.62	2.66	0.780	1.32	1.63	2.95	1.69	1.11	0.876	0.573

NOTES:

- Boldface type indicates the analyte was detected above the reporting limit.
- Highlighted text indicates an exceedance of either the protection of groundwater soil screening level or residential soil screening level.
- \*\* Where RSSL or protection of groundwater screening level is not present, Table 915-1 Cleanup Concentrations are used.
- No standard established.
- NA Not applicable.
- NS Not sampled.
- BS indicates a background sample collected from unaffected soil nearby.
- FS indicates a sample collected from the floor of an excavation.
- SS indicates a surface sample collected from the area of shallow excavation with limited impact from produced water.
- SW indicates a sample collected from the sidewall of an excavation.
- SB indicates a soil boring completed by Geoprobe investigation

**Appendix A - Pintail Lateral Soil Sampling Locations**  
**Taproot Energy Partners**  
**Facility ID 467382**  
**Spill/Release ID 483128**  
**Remediation Project Number 28892**  
**Briggsdale, Colorado**

Point	Date Collected	Sample Depth (ft)	PID (ppm)	Elevation (a)	Latitude, Longitude (b)
BS1	10/18/2022	0.0-0.5, 3-3.5	0.0	4942.51	40.71102,-104.06786
**SB4	2/9/2023	7.5-8'	0.0	4936	40.71178,-104.06759
FS1	10/18/2022	8.0-8.5	19.0	4935.23	40.71172,-104.06773
FS2	10/18/2022	8.0-8.5	41.0	4935.17	40.71171,-104.06773
SS1	10/18/2022	0.0-0.5	1.0	4943.90	40.71142,-104.06772
SS2	10/18/2022	0.0-0.5	2.2	4942.95	40.71123,-104.06767
SS3	10/18/2022	0.0-0.5	0.0	4942.22	40.71102,-104.06766
SS4	10/18/2022	0.0-0.5	10.0	4943.11	40.71182,-104.06773
SS5	10/18/2022	0.0-0.5	6.0	4943.81	40.71173,-104.06766
SW1	10/18/2022	7.0-7.5	24.0	4937.25	40.71173,-104.06772
SW2	10/18/2022	7.0-7.5	7.0	4937.72	40.71169,-104.06773
SW3	10/18/2022	7.0-7.5	11.0	4936.88	40.71170,-104.06775
SW4	10/18/2022	7.0-7.5	35.0	4936.57	40.71173,-104.06777
SW5	10/18/2022	7.0-7.5	71.0	4936.50	40.71175,-104.06773
SB1	2/9/2023	4.5-5', 8-9', 12.5-13'	0.0	4938	40.71174,-104.06780
SB2	2/9/2023	3.5-4', 7.5-8'	0.0	4939	40.71184,-104.06771
SB3	2/9/2023	4.5-5', 8.5-9'	0.0	4939	40.71174,-104.06766
SB5	2/9/2023	6.5-7', 10.5-11'	0.0	4937	40.71167,-104.06769
SB6	2/9/2023	5.5-6', 9.5-10'	0.0	4938	40.71145,-104.06770
SB7	2/9/2023	4.5-5', 8.5-9'	0.0	4938	40.71125,-104.06768
SB8	2/9/2023	5-6', 8-9'	0.0	4936	40.71106,-104.06768
SB9	2/9/2023	4-6', 8-10'	0.0	4937	40.71094,-104.06762
SB10	2/9/2023	3.5-5	0.0	4938	40.71084,-104.06773

(a) Ground surface elevation, feet above mean sea level.

(b) All coordinates converted to NAD83 coordinate system.

BS background sample

FS primary excavation floor sample

SS surface sample

SW primary excavation sidewall sample

SB Soil borings completed with geoprobe drill rig

\*SB elevation not surveyed due to use of drill rig. Elevation is estimated.

\*\*SB4 was collected from outside the impacted area and is used as a background sample

Highlighted cells indicate soil was removed for disposal

November 01, 2022

**Environmental Works**

**Adam Kubat**

**AP@environmentalworks.com**

**Briggsdale CO 80204**

**Project Name - Taproot - Pintail Release**

**Project Number - 223274**

Attached are your analytical results for Taproot - Pintail Release received by Origins Laboratory, Inc. October 19, 2022. This project is associated with Origins project number Y210424-01.

The analytical results in the following report were analyzed under the guidelines of EPA Methods. These methods are identified as follows; "SW" are defined in SW-846, "EPA" are defined in 40CFR part 136 and "SM" are defined in the most current revision of Standard Methods For the Examination of Water and Wastewater.

The analytical results apply specifically to the samples and analyses specified per the attached Chain of Custody. As such, this report shall not be reproduced except in full, without the written approval of Origin's laboratory.

Unless otherwise noted, the analytical results for all soil samples are reported on a wet weight basis. All analytical analyses were performed under NELAP guidelines unless noted by a data qualifier.

Any holding time exceedances, deviations from the method specifications or deviations from Origins Laboratory's Standard Operating Procedures are outlined in the case narrative.

Thank you for selecting Origins for your analytical needs. Please contact us with any questions concerning this report, or if we can help with anything at all.

Origins Laboratory, Inc.  
303.433.1322  
o-squad@oelabinc.com





Environmental Works

AP@environmentalworks.com

Briggsdale CO 80204

Adam Kubat

Project Number: 223274

Project: Taproot - Pintail Release

## CROSS REFERENCE REPORT

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
SS1-0.5	Y210424-01	Soil	October 18, 2022 16:45	10/19/2022 09:20
SS1-3	Y210424-02	Soil	October 18, 2022 16:50	10/19/2022 09:20
SS2-0.5	Y210424-03	Soil	October 18, 2022 17:00	10/19/2022 09:20
SS2-3	Y210424-04	Soil	October 18, 2022 17:05	10/19/2022 09:20
SS3-0.5	Y210424-05	Soil	October 18, 2022 17:10	10/19/2022 09:20
SS3-3	Y210424-06	Soil	October 18, 2022 17:20	10/19/2022 09:20
BS1-0.5	Y210424-07	Soil	October 18, 2022 17:25	10/19/2022 09:20
BS1-3	Y210424-08	Soil	October 18, 2022 17:30	10/19/2022 09:20

Origins Laboratory, Inc.



*The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.*



Environmental Works

AP@environmentalworks.com

Briggsdale CO 80204

Adam Kubat

Project Number: 223274

Project: Taproot - Pintail Release

# ORIGINS

LABORATORY, INC

www.originslaboratory.com

4210424

page of

Client: Environmental Works, Inc

Address: 301 Century Rd.

Telephone Number: 507-475-2825

Email Address: AKubat@environmentalworks.com

Project Manager: Adam Kubat

Project Name: Taproot - Pintail Release

Project Number: 223274

Samples Collected By: Adam Kubat

Sample ID Description	Date Sampled	Time Sampled	# of Containers	Preservative			Matrix			Analysis			Sample Instructions
				Unpreserved	HCl	HNO <sub>3</sub>	Other	Groundwater	Soil	Air Summa Canister #	Other	Table 915	
SS1-0.5	10/18	1645	2	X				X					1
SS1-3	10/18	1650	2	X				X					2
SS2-0.5	10/18	1700	2	X				X					3
SS2-3	10/18	1705	2	X				X					4
SS3-0.5	10/18	1710	2	X				X					5
SS3-3	10/18	1720	2	X				X					6
BS1-0.5	10/18	1725	2	X				X					7
BS1-3	10/18	1730	2	X				X					8
													9
													10

Relinquished By:	Date:	Time:	Received By:	Date:	Time:	Turnaround Time:
Adam Kubat	10/19/22	0920	VP	10/19/22	0920	Standard <input checked="" type="checkbox"/>

Temp Received- 2.9 Date Results Needed

Origins Laboratory, Inc.

*J. Bynon*

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Environmental Works

AP@environmentalworks.com

Briggsdale CO 80204

Adam Kubat

Project Number: 223274

Project: Taproot - Pintail Release

Origins Laboratory F-012207-01-R1  
Effective Date: 01/09/12

**Sample Receipt Checklist**

Origins Work Order: 4210424 Client: Environmental Works  
Client Project ID: Taproot - Pintail release

Checklist Completed by: EHIS/DE Shipped Via: HD  
Date/time completed: 10/19/22 (UPS, FedEx, Hand Delivered, Pick-up, etc.)  
Airbill #: NA

Matrix(s) Received: (Check all that apply): ☒ Soil/Solid ☐ Water ☐ Other: \_\_\_\_\_  
Cooler Number/Temperature: 1 12.9 °C / \_\_\_\_\_ °C / \_\_\_\_\_ °C (Describe) \_\_\_\_\_ °C  
Thermometer ID: T004

Requirement Description	Yes	No	N/A	Comments (if any)
If samples require cooling, was the temperature between 0°C to ≤ 6°C <sup>(1)</sup> ?	<input checked="" type="checkbox"/>			
Is there ice present (document if blue ice is used)	<input checked="" type="checkbox"/>			
Are custody seals present on cooler? (if so, document in comments if they are signed and dated, broken or intact)		<input checked="" type="checkbox"/>		
Are custody seals present on each sample container? (if so, document in comments if they are signed and dated, broken or intact)		<input checked="" type="checkbox"/>		
Were all samples received intact <sup>(1)</sup> ?	<input checked="" type="checkbox"/>			
Was adequate sample volume provided <sup>(1)</sup> ?	<input checked="" type="checkbox"/>			
Are short holding time analytes or samples with HTs due within 48 hours present <sup>(1)</sup> ?		<input checked="" type="checkbox"/>		
Is a chain-of-custody (COC) present and filled out completely <sup>(1)</sup> ?	<input checked="" type="checkbox"/>			
Does the COC agree with the number and type of sample bottles received <sup>(1)</sup> ?	<input checked="" type="checkbox"/>			
Do the sample IDs on the bottle labels match the COC <sup>(1)</sup> ?	<input checked="" type="checkbox"/>			
Is the COC properly relinquished by the client with date and time recorded <sup>(1)</sup> ?	<input checked="" type="checkbox"/>			
For volatiles in water – is there headspace (> ¼ inch bubble) present? If yes, contact client and note in narrative.			<input checked="" type="checkbox"/>	
Are samples preserved that require preservation and was it checked <sup>(1)</sup> ? (note ID of confirmation instrument used in comments) / (preservation is not confirmed for sub-contracted analyses in order to insure sample integrity)/(pH < 2 for samples preserved with HNO <sub>3</sub> , HCL, H <sub>2</sub> SO <sub>4</sub> ) / (pH > 10 for samples preserved with NaAsO <sub>2</sub> +NaOH, ZnAc+NaOH)		<input checked="" type="checkbox"/>		
Additional Comments (if any):				

<sup>(1)</sup> If NO, then contact the client before proceeding with analysis and note date/time and person contacted as well as the corrective action to in the additional comments (above) and the case narrative.

Reviewed by: JB (Project Manager)

Date/Time Reviewed: 10-20-22

Origins Laboratory, Inc.

*J. Bynon*

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Environmental Works

AP@environmentalworks.com

Briggsdale CO 80204

Adam Kubat

Project Number: 223274

Project: Taproot - Pintail Release

## SS1-0.5

10/18/2022 4:45:00PM

Analyte	Result	Min Detection Limit	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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## Origins Laboratory, Inc.

Y210424-01 (Soil)

### Boron (DTPA Sorbitol)

Boron	6.93	0.100	mg/L	1	B2J2009	10/20/2022	10/24/2022	
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### DRO/ORO by EPA 8015D

Diesel (C10-C28)	ND	25.0	mg/kg	1	B2J2529	10/25/2022	10/26/2022	U
Residual Range Organics (C28-C40)	ND	100	"	"	"	"	"	U

Surrogate: o-Terphenyl	78.8 %	50-150	"	"	"
------------------------	--------	--------	---	---	---

### GBTEX+TMBs by 8260D

1,2,4-Trimethylbenzene	ND	0.00200	mg/kg	1	B2J2033	10/20/2022	10/25/2022	U
1,3,5-Trimethylbenzene	ND	0.00200	"	"	"	"	"	U
Benzene	ND	0.00200	"	"	"	"	"	U
Ethylbenzene	ND	0.00200	"	"	"	"	"	U
Toluene	ND	0.00200	"	"	"	"	"	U
Xylenes, total	0.00218	0.00200	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	0.200	"	"	"	"	"	U

Surrogate: 1,2-Dichloroethane-d4	113 %	70-130	"	"	"
Surrogate: Toluene-d8	100 %	70-130	"	"	"

Origins Laboratory, Inc.



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Environmental Works

AP@environmentalworks.com

Briggsdale CO 80204

Adam Kubat

Project Number: 223274

Project: Taproot - Pintail Release

## SS1-0.5

10/18/2022 4:45:00PM

Analyte	Result	Min Detection Limit	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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Origins Laboratory, Inc.

Y210424-01 (Soil)

## GBTEX+TMBs by 8260D

Surrogate: 4-Bromofluorobenzene	95.6 %	70-130	B2J20 33	10/20/2022	10/25/2022
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## Metals by Saturated Paste by EPA 6010

Calcium	14.8	0.499	meq/L	10	[CALC]	10/21/2022	10/25/2022
Magnesium	5.08	0.823	"	"	"	"	"
Sodium	91.8	0.435	"	"	"	"	"

## PAH by 8270D SIM

1-Methylnaphthalene	0.00586	0.00182	0.00335	mg/Kg	5	L644816	10/24/2022	10/24/2022
2-Methylnaphthalene	ND	0.00323	0.00335	"	"	"	"	"
Acenaphthene	ND	0.00152	0.00335	"	"	"	"	"
Anthracene	ND	0.00167	0.00335	"	"	"	"	"
Benzo(a)anthracene	ND	0.00247	0.00335	"	"	"	"	"
Benzo(a)pyrene	0.00278	0.00234	0.00335	"	"	"	"	" J
Benzo(b)fluoranthene	ND	0.00293	0.00335	"	"	"	"	"
Benzo(k)fluoranthene	ND	0.00219	0.00335	"	"	"	"	"
Chrysene	ND	0.00312	0.00335	"	"	"	"	"
Dibenz(a,h)anthracene	ND	0.00307	0.00335	"	"	"	"	"
Fluoranthene	ND	0.00197	0.00335	"	"	"	"	"
Fluorene	ND	0.00143	0.00335	"	"	"	"	"

Origins Laboratory, Inc.



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Environmental Works

AP@environmentalworks.com

Briggsdale CO 80204

Adam Kubat

Project Number: 223274

Project: Taproot - Pintail Release

## SS1-0.5

10/18/2022 4:45:00PM

Analyte	Result	Min Detection Limit	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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## Waypoint Analytical, LLC.

Y210424-01 (Soil)

### PAH by 8270D SIM

Indeno(1,2,3-cd)pyrene	ND	0.00314	0.00335	mg/Kg	5	L644816	10/24/2022	10/24/2022
Naphthalene	ND	0.00242	0.00335	"	"	"	"	"
Pyrene	ND	0.00322	0.00335	"	"	"	"	"

Surrogate: 2-Fluorobiphenyl	64.4 %	33-115	"	"	"
Surrogate: 4-Terphenyl-d14	75.2 %	33-122	"	"	"
Surrogate: Nitrobenzene-d5	68.1 %	29-110	"	"	"

### pH in Soil by 9045D

pH	7.65	pH Units	1	B2J2121	10/21/2022	10/25/2022
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### SAR by 20B Saturated Paste

SAR	29.1	SAR	1	B2J2113	10/21/2022	10/25/2022
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### Specific Conductance Mod. 9050A

Specific Conductance (EC)	11.8	0.00500	mmhos/cm	1	B2J2121	10/21/2022	10/25/2022
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### Table 915 metals by EPA 6020B

Arsenic	3.43	0.0995	mg/kg	10	B2J2402	10/24/2022	10/27/2022
Barium	191	9.95	"	"	"	"	"

Origins Laboratory, Inc.



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Environmental Works

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Briggsdale CO 80204

Adam Kubat

Project Number: 223274

Project: Taproot - Pintail Release

## SS1-0.5

10/18/2022 4:45:00PM

Analyte	Result	Min Detection Limit	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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## Origins Laboratory, Inc.

Y210424-01 (Soil)

### Table 915 metals by EPA 6020B

Cadmium	0.173	0.0995	mg/kg	10	B2J2402	10/24/2022	10/27/2022
Copper	10.7	9.95	"	"	"	"	"
Lead	14.3	9.95	"	"	"	"	"
Nickel	ND	9.95	"	"	"	"	"
Selenium	0.115	0.0995	"	"	"	"	"
Silver	ND	0.0995	"	"	"	"	"
Zinc	ND	99.5	"	"	"	"	"

### Total Metals by 7196A

Chromium, Hexavalent	ND	1.22	2.5	mg/Kg	5	L645065	10/18/2022	10/25/2022
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Adam Kubat

Project Number: 223274

Project: Taproot - Pintail Release

## SS1-3

10/18/2022 4:50:00PM

Analyte	Result	Min Detection Limit	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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## Origins Laboratory, Inc.

Y210424-02 (Soil)

### Boron (DTPA Sorbitol)

Boron	0.685	0.0992	mg/L	1	B2J2009	10/20/2022	10/24/2022	
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### DRO/ORO by EPA 8015D

Diesel (C10-C28)	ND	25.0	mg/kg	1	B2J2529	10/25/2022	10/26/2022	U
Residual Range Organics (C28-C40)	ND	100	"	"	"	"	"	U

Surrogate: o-Terphenyl	86.7 %	50-150	"	"	"	"	"
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### GBTEX+TMBs by 8260D

1,2,4-Trimethylbenzene	ND	0.00200	mg/kg	1	B2J2033	10/20/2022	10/25/2022	U
1,3,5-Trimethylbenzene	ND	0.00200	"	"	"	"	"	U
Benzene	ND	0.00200	"	"	"	"	"	U
Ethylbenzene	ND	0.00200	"	"	"	"	"	U
Toluene	ND	0.00200	"	"	"	"	"	U
Xylenes, total	ND	0.00200	"	"	"	"	"	U
Gasoline Range Hydrocarbons	ND	0.200	"	"	"	"	"	U

Surrogate: 1,2-Dichloroethane-d4	106 %	70-130	"	"	"	"	"
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Adam Kubat

Project Number: 223274

Project: Taproot - Pintail Release

## SS1-3

10/18/2022 4:50:00PM

Analyte	Result	Min Detection Limit	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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## Origins Laboratory, Inc.

Y210424-02 (Soil)

### GBTEX+TMBs by 8260D

Surrogate: Toluene-d8	93.8 %	70-130	B2J20 33	10/20/2022	10/25/2022
Surrogate: 4-Bromofluorobenzene	96.4 %	70-130	"	"	"

### Metals by Saturated Paste by EPA 6010

Calcium	58.8	0.499	meq/L	10	[CALC]	10/21/2022	10/25/2022
Magnesium	21.3	0.823	"	"	"	"	"
Sodium	10.7	0.435	"	"	"	"	"

### PAH by 8270D SIM

1-Methylnaphthalene	ND	0.000364	0.00067	mg/Kg	1	L644816	10/24/2022	10/24/2022
2-Methylnaphthalene	ND	0.000645	0.00067	"	"	"	"	"
Acenaphthene	ND	0.000304	0.00067	"	"	"	"	"
Anthracene	ND	0.000334	0.00067	"	"	"	"	"
Benzo(a)anthracene	ND	0.000493	0.00067	"	"	"	"	"
Benzo(a)pyrene	ND	0.000468	0.00067	"	"	"	"	"
Benzo(b)fluoranthene	ND	0.000585	0.00067	"	"	"	"	"
Benzo(k)fluoranthene	ND	0.000437	0.00067	"	"	"	"	"
Chrysene	ND	0.000624	0.00067	"	"	"	"	"
Dibenz(a,h)anthracene	ND	0.000614	0.00067	"	"	"	"	"
Fluoranthene	ND	0.000394	0.00067	"	"	"	"	"

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Project Number: 223274

Project: Taproot - Pintail Release

## SS1-3

10/18/2022 4:50:00PM

Analyte	Result	Min Detection Limit	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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## Waypoint Analytical, LLC.

Y210424-02 (Soil)

### PAH by 8270D SIM

Fluorene	ND	0.000286	0.00067	mg/Kg	1	L644816	10/24/2022	10/24/2022
Indeno(1,2,3-cd)pyrene	ND	0.000627	0.00067	"	"	"	"	"
Naphthalene	ND	0.000484	0.00067	"	"	"	"	"
Pyrene	ND	0.000643	0.00067	"	"	"	"	"

Surrogate: 2-Fluorobiphenyl	65 %	33-115	"	"	"
Surrogate: 4-Terphenyl-d14	75.5 %	33-122	"	"	"
Surrogate: Nitrobenzene-d5	60.1 %	29-110	"	"	"

### pH in Soil by 9045D

pH	7.53	pH Units	1	B2J2121	10/21/2022	10/25/2022
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### SAR by 20B Saturated Paste

SAR	1.70	SAR	1	B2J2113	10/21/2022	10/25/2022
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### Specific Conductance Mod. 9050A

Specific Conductance (EC)	9.29	0.00500	mmhos/cm	1	B2J2121	10/21/2022	10/25/2022
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### Table 915 metals by EPA 6020B

Arsenic	3.75	0.0879	mg/kg	10	B2J2402	10/24/2022	10/27/2022
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Adam Kubat

Project Number: 223274

Project: Taproot - Pintail Release

SS1-3

10/18/2022 4:50:00PM

Analyte	Result	Min Detection Limit	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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Origins Laboratory, Inc.

Y210424-02 (Soil)

## Table 915 metals by EPA 6020B

Barium	200	8.79	mg/kg	10	B2J2402	10/24/2022	10/27/2022
Cadmium	0.127	0.0879	"	"	"	"	"
Copper	10.3	8.79	"	"	"	"	"
Lead	20.5	8.79	"	"	"	"	"
Nickel	ND	8.79	"	"	"	"	"
Selenium	0.112	0.0879	"	"	"	"	"
Silver	ND	0.0879	"	"	"	"	"
Zinc	ND	87.9	"	"	"	"	"

## Total Metals by 7196A

Chromium, Hexavalent	ND	0.488	1	mg/Kg	2	L645065	10/18/2022	10/25/2022
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Project Number: 223274

Project: Taproot - Pintail Release

## SS2-0.5

10/18/2022 5:00:00PM

Analyte	Result	Min Detection Limit	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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## Origins Laboratory, Inc.

Y210424-03 (Soil)

### Boron (DTPA Sorbitol)

Boron	4.33	0.0999	mg/L	1	B2J2009	10/20/2022	10/24/2022	
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### DRO/ORO by EPA 8015D

Diesel (C10-C28)	ND	25.0	mg/kg	1	B2J2529	10/25/2022	10/26/2022	U
Residual Range Organics (C28-C40)	ND	100	"	"	"	"	"	U

Surrogate: o-Terphenyl	84.6 %	50-150	"	"	"	"	"
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### GBTEX+TMBs by 8260D

1,2,4-Trimethylbenzene	ND	0.00200	mg/kg	1	B2J2033	10/20/2022	10/25/2022	U
1,3,5-Trimethylbenzene	ND	0.00200	"	"	"	"	"	U
Benzene	0.00374	0.00200	"	"	"	"	"	
Ethylbenzene	ND	0.00200	"	"	"	"	"	U
Toluene	0.00536	0.00200	"	"	"	"	"	
Xylenes, total	0.00316	0.00200	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	0.200	"	"	"	"	"	U

Surrogate: 1,2-Dichloroethane-d4	110 %	70-130	"	"	"	"	"
Surrogate: Toluene-d8	88.0 %	70-130	"	"	"	"	"

Origins Laboratory, Inc.



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Briggsdale CO 80204

Adam Kubat

Project Number: 223274

Project: Taproot - Pintail Release

## SS2-0.5

10/18/2022 5:00:00PM

Analyte	Result	Min Detection Limit	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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Origins Laboratory, Inc.

Y210424-03 (Soil)

## GBTEX+TMBs by 8260D

Surrogate: 4-Bromofluorobenzene	109 %	70-130	B2J20 33	10/20/2022	10/25/2022
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## Metals by Saturated Paste by EPA 6010

Calcium	25.6	0.499	meq/L	10	[CALC]	10/21/2022	10/25/2022
Magnesium	9.34	0.823	"	"	"	"	"
Sodium	85.9	0.435	"	"	"	"	"

## PAH by 8270D SIM

1-Methylnaphthalene	ND	0.00182	0.00335	mg/Kg	5	L644816	10/24/2022	10/24/2022
2-Methylnaphthalene	ND	0.00323	0.00335	"	"	"	"	"
Acenaphthene	ND	0.00152	0.00335	"	"	"	"	"
Anthracene	ND	0.00167	0.00335	"	"	"	"	"
Benzo(a)anthracene	ND	0.00247	0.00335	"	"	"	"	"
Benzo(a)pyrene	0.00332	0.00234	0.00335	"	"	"	"	" J
Benzo(b)fluoranthene	ND	0.00293	0.00335	"	"	"	"	"
Benzo(k)fluoranthene	ND	0.00219	0.00335	"	"	"	"	"
Chrysene	ND	0.00312	0.00335	"	"	"	"	"
Dibenz(a,h)anthracene	ND	0.00307	0.00335	"	"	"	"	"
Fluoranthene	ND	0.00197	0.00335	"	"	"	"	"
Fluorene	ND	0.00143	0.00335	"	"	"	"	"

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Briggsdale CO 80204

Adam Kubat

Project Number: 223274

Project: Taproot - Pintail Release

## SS2-0.5

10/18/2022 5:00:00PM

Analyte	Result	Min Detection Limit	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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## Waypoint Analytical, LLC.

Y210424-03 (Soil)

### PAH by 8270D SIM

Indeno(1,2,3-cd)pyrene	ND	0.00314	0.00335	mg/Kg	5	L644816	10/24/2022	10/24/2022
Naphthalene	ND	0.00242	0.00335	"	"	"	"	"
Pyrene	ND	0.00322	0.00335	"	"	"	"	"

Surrogate: 2-Fluorobiphenyl	69.9 %	33-115	"	"	"
Surrogate: 4-Terphenyl-d14	64.8 %	33-122	"	"	"
Surrogate: Nitrobenzene-d5	71.7 %	29-110	"	"	"

### pH in Soil by 9045D

pH	7.70	pH Units	1	B2J2121	10/21/2022	10/25/2022
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### SAR by 20B Saturated Paste

SAR	20.6	SAR	1	B2J2113	10/21/2022	10/25/2022
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### Specific Conductance Mod. 9050A

Specific Conductance (EC)	12.6	0.00500	mmhos/cm	1	B2J2121	10/21/2022	10/25/2022
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### Table 915 metals by EPA 6020B

Arsenic	3.61	0.0915	mg/kg	10	B2J2402	10/24/2022	10/27/2022
Barium	145	9.15	"	"	"	"	"

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Project Number: 223274

Project: Taproot - Pintail Release

## SS2-0.5

10/18/2022 5:00:00PM

Analyte	Result	Min Detection Limit	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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## Origins Laboratory, Inc.

Y210424-03 (Soil)

### Table 915 metals by EPA 6020B

Cadmium	0.147	0.0915	mg/kg	10	B2J2402	10/24/2022	10/27/2022
Copper	10.6	9.15	"	"	"	"	"
Lead	11.6	9.15	"	"	"	"	"
Nickel	ND	9.15	"	"	"	"	"
Selenium	0.137	0.0915	"	"	"	"	"
Silver	ND	0.0915	"	"	"	"	"
Zinc	ND	91.5	"	"	"	"	"

### Total Metals by 7196A

Chromium, Hexavalent	ND	0.488	1	mg/Kg	2	L645065	10/18/2022	10/25/2022
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Project Number: 223274

Project: Taproot - Pintail Release

## SS2-3

10/18/2022 5:05:00PM

Analyte	Result	Min Detection Limit	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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## Origins Laboratory, Inc.

Y210424-04 (Soil)

### Boron (DTPA Sorbitol)

Boron	1.49	0.100	mg/L	1	B2J2009	10/20/2022	10/24/2022	
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### DRO/ORO by EPA 8015D

Diesel (C10-C28)	ND	25.0	mg/kg	1	B2J2529	10/25/2022	10/26/2022	U
Residual Range Organics (C28-C40)	ND	100	"	"	"	"	"	U

Surrogate: o-Terphenyl	81.1 %	50-150			"	"	"	
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### GBTEX+TMBs by 8260D

1,2,4-Trimethylbenzene	ND	0.00200	mg/kg	1	B2J2033	10/20/2022	10/25/2022	U
1,3,5-Trimethylbenzene	ND	0.00200	"	"	"	"	"	U
Benzene	ND	0.00200	"	"	"	"	"	U
Ethylbenzene	ND	0.00200	"	"	"	"	"	U
Toluene	ND	0.00200	"	"	"	"	"	U
Xylenes, total	ND	0.00200	"	"	"	"	"	U
Gasoline Range Hydrocarbons	ND	0.200	"	"	"	"	"	U

Surrogate: 1,2-Dichloroethane-d4	96.4 %	70-130			"	"	"	
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Briggsdale CO 80204

Adam Kubat

Project Number: 223274

Project: Taproot - Pintail Release

## SS2-3

10/18/2022 5:05:00PM

Analyte	Result	Min Detection Limit	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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## Origins Laboratory, Inc.

Y210424-04 (Soil)

### GBTEX+TMBs by 8260D

Surrogate: Toluene-d8	103 %		70-130			B2J20 33	10/20/2022	10/25/2022	
Surrogate: 4-Bromofluorobenzene	101 %		70-130			"	"	"	

### Metals by Saturated Paste by EPA 6010

Calcium	35.4		0.499	meq/L	10	[CALC]	10/21/2022	10/25/2022	
Magnesium	13.2		0.823	"	"	"	"	"	
Sodium	22.1		0.435	"	"	"	"	"	

### PAH by 8270D SIM

1-Methylnaphthalene	ND	0.000364	0.00067	mg/Kg	1	L644816	10/24/2022	10/24/2022	
2-Methylnaphthalene	ND	0.000645	0.00067	"	"	"	"	"	
Acenaphthene	ND	0.000304	0.00067	"	"	"	"	"	
Anthracene	ND	0.000334	0.00067	"	"	"	"	"	
Benzo(a)anthracene	ND	0.000493	0.00067	"	"	"	"	"	
Benzo(a)pyrene	ND	0.000468	0.00067	"	"	"	"	"	
Benzo(b)fluoranthene	ND	0.000585	0.00067	"	"	"	"	"	
Benzo(k)fluoranthene	ND	0.000437	0.00067	"	"	"	"	"	
Chrysene	ND	0.000624	0.00067	"	"	"	"	"	
Dibenz(a,h)anthracene	ND	0.000614	0.00067	"	"	"	"	"	
Fluoranthene	ND	0.000394	0.00067	"	"	"	"	"	

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Project Number: 223274

Project: Taproot - Pintail Release

## SS2-3

10/18/2022 5:05:00PM

Analyte	Result	Min Detection Limit	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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## Waypoint Analytical, LLC.

Y210424-04 (Soil)

### PAH by 8270D SIM

Fluorene	ND	0.000286	0.00067	mg/Kg	1	L644816	10/24/2022	10/24/2022
Indeno(1,2,3-cd)pyrene	ND	0.000627	0.00067	"	"	"	"	"
Naphthalene	ND	0.000484	0.00067	"	"	"	"	"
Pyrene	ND	0.000643	0.00067	"	"	"	"	"

Surrogate: 2-Fluorobiphenyl	61.3 %	33-115	"	"	"
Surrogate: 4-Terphenyl-d14	76.1 %	33-122	"	"	"
Surrogate: Nitrobenzene-d5	63.8 %	29-110	"	"	"

### pH in Soil by 9045D

pH	7.80	pH Units	1	B2J2121	10/21/2022	10/25/2022
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### SAR by 20B Saturated Paste

SAR	4.48	SAR	1	B2J2113	10/21/2022	10/25/2022
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### Specific Conductance Mod. 9050A

Specific Conductance (EC)	7.46	0.00500	mmhos/cm	1	B2J2121	10/21/2022	10/25/2022
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### Table 915 metals by EPA 6020B

Arsenic	3.80	0.0970	mg/kg	10	B2J2402	10/24/2022	10/27/2022
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Project Number: 223274

Project: Taproot - Pintail Release

## SS2-3

10/18/2022 5:05:00PM

Analyte	Result	Min Detection Limit	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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## Origins Laboratory, Inc.

Y210424-04 (Soil)

### Table 915 metals by EPA 6020B

Barium	400	9.70	mg/kg	10	B2J2402	10/24/2022	10/27/2022
Cadmium	0.127	0.0970	"	"	"	"	"
Copper	10.6	9.70	"	"	"	"	"
Lead	11.4	9.70	"	"	"	"	"
Nickel	ND	9.70	"	"	"	"	"
Selenium	ND	0.0970	"	"	"	"	"
Silver	ND	0.0970	"	"	"	"	"
Zinc	ND	97.0	"	"	"	"	"

### Total Metals by 7196A

Chromium, Hexavalent	ND	0.251	0.516	mg/Kg	1	L645065	10/18/2022	10/25/2022
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Origins Laboratory, Inc.



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Project Number: 223274

Project: Taproot - Pintail Release

## SS3-0.5

10/18/2022 5:10:00PM

Analyte	Result	Min Detection Limit	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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## Origins Laboratory, Inc.

Y210424-05 (Soil)

### Boron (DTPA Sorbitol)

Boron	3.27	0.101	mg/L	1	B2J2009	10/20/2022	10/24/2022	
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### DRO/ORO by EPA 8015D

Diesel (C10-C28)	ND	25.0	mg/kg	1	B2J2529	10/25/2022	10/26/2022	U
Residual Range Organics (C28-C40)	ND	100	"	"	"	"	"	U

Surrogate: o-Terphenyl	83.6 %	50-150	"	"	"	"	"	
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### GBTEX+TMBs by 8260D

1,2,4-Trimethylbenzene	ND	0.00200	mg/kg	1	B2J2033	10/20/2022	10/25/2022	U
1,3,5-Trimethylbenzene	ND	0.00200	"	"	"	"	"	U
Benzene	ND	0.00200	"	"	"	"	"	U
Ethylbenzene	ND	0.00200	"	"	"	"	"	U
Toluene	ND	0.00200	"	"	"	"	"	U
Xylenes, total	ND	0.00200	"	"	"	"	"	U
Gasoline Range Hydrocarbons	ND	0.200	"	"	"	"	"	U

Surrogate: 1,2-Dichloroethane-d4	112 %	70-130	"	"	"	"	"	
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Origins Laboratory, Inc.



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Environmental Works

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Briggsdale CO 80204

Adam Kubat

Project Number: 223274

Project: Taproot - Pintail Release

## SS3-0.5

10/18/2022 5:10:00PM

Analyte	Result	Min Detection Limit	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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## Origins Laboratory, Inc.

Y210424-05 (Soil)

### GBTEX+TMBs by 8260D

Surrogate: Toluene-d8	100 %	70-130	B2J20 33	10/20/2022	10/25/2022
Surrogate: 4-Bromofluorobenzene	97.2 %	70-130	"	"	"

### Metals by Saturated Paste by EPA 6010

Calcium	35.0	0.499	meq/L	10	[CALC]	10/21/2022	10/25/2022
Magnesium	13.0	0.823	"	"	"	"	"
Sodium	66.4	0.435	"	"	"	"	"

### PAH by 8270D SIM

1-Methylnaphthalene	ND	0.000364	0.00067	mg/Kg	1	L644816	10/24/2022	10/24/2022
2-Methylnaphthalene	ND	0.000645	0.00067	"	"	"	"	"
Acenaphthene	ND	0.000304	0.00067	"	"	"	"	"
Anthracene	ND	0.000334	0.00067	"	"	"	"	"
Benzo(a)anthracene	ND	0.000493	0.00067	"	"	"	"	"
Benzo(a)pyrene	ND	0.000468	0.00067	"	"	"	"	"
Benzo(b)fluoranthene	ND	0.000585	0.00067	"	"	"	"	"
Benzo(k)fluoranthene	ND	0.000437	0.00067	"	"	"	"	"
Chrysene	ND	0.000624	0.00067	"	"	"	"	"
Dibenz(a,h)anthracene	ND	0.000614	0.00067	"	"	"	"	"
Fluoranthene	ND	0.000394	0.00067	"	"	"	"	"

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Project Number: 223274

Project: Taproot - Pintail Release

## SS3-0.5

10/18/2022 5:10:00PM

Analyte	Result	Min Detection Limit	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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## Waypoint Analytical, LLC.

Y210424-05 (Soil)

### PAH by 8270D SIM

Fluorene	ND	0.000286	0.00067	mg/Kg	1	L644816	10/24/2022	10/24/2022
Indeno(1,2,3-cd)pyrene	ND	0.000627	0.00067	"	"	"	"	"
Naphthalene	ND	0.000484	0.00067	"	"	"	"	"
Pyrene	ND	0.000643	0.00067	"	"	"	"	"

Surrogate: 2-Fluorobiphenyl	58 %	33-115	"	"	"
Surrogate: 4-Terphenyl-d14	62.8 %	33-122	"	"	"
Surrogate: Nitrobenzene-d5	56.8 %	29-110	"	"	"

### pH in Soil by 9045D

pH	7.83	pH Units	1	B2J2121	10/21/2022	10/25/2022
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### SAR by 20B Saturated Paste

SAR	13.5	SAR	1	B2J2113	10/21/2022	10/25/2022
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### Specific Conductance Mod. 9050A

Specific Conductance (EC)	12.1	0.00500	mmhos/cm	1	B2J2121	10/21/2022	10/25/2022
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### Table 915 metals by EPA 6020B

Arsenic	3.53	0.0979	mg/kg	10	B2J2402	10/24/2022	10/27/2022
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Project Number: 223274

Project: Taproot - Pintail Release

## SS3-0.5

10/18/2022 5:10:00PM

Analyte	Result	Min Detection Limit	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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## Origins Laboratory, Inc.

Y210424-05 (Soil)

### Table 915 metals by EPA 6020B

Barium	141	9.79	mg/kg	10	B2J2402	10/24/2022	10/27/2022
Cadmium	0.139	0.0979	"	"	"	"	"
Copper	11.6	9.79	"	"	"	"	"
Lead	12.0	9.79	"	"	"	"	"
Nickel	ND	9.79	"	"	"	"	"
Selenium	0.128	0.0979	"	"	"	"	"
Silver	ND	0.0979	"	"	"	"	"
Zinc	ND	97.9	"	"	"	"	"

### Total Metals by 7196A

Chromium, Hexavalent	ND	1.26	2.59	mg/Kg	5	L645066	10/18/2022	10/25/2022
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Project Number: 223274

Project: Taproot - Pintail Release

SS3-3

10/18/2022 5:20:00PM

Analyte	Result	Min Detection Limit	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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Origins Laboratory, Inc.

Y210424-06 (Soil)

## Boron (DTPA Sorbitol)

Boron	0.669	0.0992	mg/L	1	B2J2009	10/20/2022	10/24/2022	
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## DRO/ORO by EPA 8015D

Diesel (C10-C28)	ND	25.0	mg/kg	1	B2J2529	10/25/2022	10/26/2022	U
Residual Range Organics (C28-C40)	ND	100	"	"	"	"	"	U

Surrogate: o-Terphenyl	85.0 %	50-150			"	"	"	
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## GBTEX+TMBs by 8260D

1,2,4-Trimethylbenzene	ND	0.00200	mg/kg	1	B2J2033	10/20/2022	10/25/2022	U
1,3,5-Trimethylbenzene	ND	0.00200	"	"	"	"	"	U
Benzene	0.00522	0.00200	"	"	"	"	"	
Ethylbenzene	ND	0.00200	"	"	"	"	"	U
Toluene	0.00282	0.00200	"	"	"	"	"	
Xylenes, total	ND	0.00200	"	"	"	"	"	U
Gasoline Range Hydrocarbons	ND	0.200	"	"	"	"	"	U

Surrogate: 1,2-Dichloroethane-d4	99.3 %	70-130			"	"	"	
Surrogate: Toluene-d8	117 %	70-130			"	"	"	

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Project Number: 223274

Project: Taproot - Pintail Release

## SS3-3

10/18/2022 5:20:00PM

Analyte	Result	Min Detection Limit	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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Origins Laboratory, Inc.

Y210424-06 (Soil)

## GBTEX+TMBs by 8260D

Surrogate: 4-Bromofluorobenzene 94.6 % 70-130 B2J20 33 10/20/2022 10/25/2022

## Metals by Saturated Paste by EPA 6010

Calcium	60.8	0.499	meq/L	10	[CALC]	10/21/2022	10/25/2022
Magnesium	25.9	0.823	"	"	"	"	"
Sodium	29.0	0.435	"	"	"	"	"

## PAH by 8270D SIM

1-Methylnaphthalene	ND	0.00182	0.00335	mg/Kg	5	L644816	10/24/2022	10/24/2022
2-Methylnaphthalene	ND	0.00323	0.00335	"	"	"	"	"
Acenaphthene	ND	0.00152	0.00335	"	"	"	"	"
Anthracene	ND	0.00167	0.00335	"	"	"	"	"
Benzo(a)anthracene	ND	0.00247	0.00335	"	"	"	"	"
Benzo(a)pyrene	ND	0.00234	0.00335	"	"	"	"	"
Benzo(b)fluoranthene	ND	0.00293	0.00335	"	"	"	"	"
Benzo(k)fluoranthene	ND	0.00219	0.00335	"	"	"	"	"
Chrysene	ND	0.00312	0.00335	"	"	"	"	"
Dibenz(a,h)anthracene	ND	0.00307	0.00335	"	"	"	"	"
Fluoranthene	ND	0.00197	0.00335	"	"	"	"	"
Fluorene	ND	0.00143	0.00335	"	"	"	"	"

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Project Number: 223274

Project: Taproot - Pintail Release

## SS3-3

10/18/2022 5:20:00PM

Analyte	Result	Min Detection Limit	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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## Waypoint Analytical, LLC.

Y210424-06 (Soil)

### PAH by 8270D SIM

Indeno(1,2,3-cd)pyrene	ND	0.00314	0.00335	mg/Kg	5	L644816	10/24/2022	10/24/2022
Naphthalene	ND	0.00242	0.00335	"	"	"	"	"
Pyrene	ND	0.00322	0.00335	"	"	"	"	"

Surrogate: 2-Fluorobiphenyl	52.7 %		33-115			"	"	"
Surrogate: 4-Terphenyl-d14	69.1 %		33-122			"	"	"
Surrogate: Nitrobenzene-d5	62.4 %		29-110			"	"	"

### pH in Soil by 9045D

pH	7.76			pH Units	1	B2J2121	10/21/2022	10/25/2022
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### SAR by 20B Saturated Paste

SAR	4.41			SAR	1	B2J2113	10/21/2022	10/25/2022
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### Specific Conductance Mod. 9050A

Specific Conductance (EC)	11.8		0.00500	mmhos/cm	1	B2J2121	10/21/2022	10/25/2022
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### Table 915 metals by EPA 6020B

Arsenic	4.78		0.0972	mg/kg	10	B2J2402	10/24/2022	10/27/2022
Barium	211		9.72	"	"	"	"	"

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Adam Kubat

Project Number: 223274

Project: Taproot - Pintail Release

SS3-3

10/18/2022 5:20:00PM

Analyte	Result	Min Detection Limit	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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Origins Laboratory, Inc.

Y210424-06 (Soil)

### Table 915 metals by EPA 6020B

Cadmium	0.116	0.0972	mg/kg	10	B2J2402	10/24/2022	10/27/2022
Copper	10.0	9.72	"	"	"	"	"
Lead	16.7	9.72	"	"	"	"	"
Nickel	ND	9.72	"	"	"	"	"
Selenium	ND	0.0972	"	"	"	"	"
Silver	ND	0.0972	"	"	"	"	"
Zinc	ND	97.2	"	"	"	"	"

### Total Metals by 7196A

Chromium, Hexavalent	ND	0.244	0.5	mg/Kg	1	L645066	10/18/2022	10/25/2022
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Project Number: 223274

Project: Taproot - Pintail Release

## BS1-0.5

10/18/2022 5:25:00PM

Analyte	Result	Min Detection Limit	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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## Origins Laboratory, Inc.

Y210424-07 (Soil)

### Boron (DTPA Sorbitol)

Boron	0.889	0.100	mg/L	1	B2J2009	10/20/2022	10/24/2022	
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### DRO/ORO by EPA 8015D

Diesel (C10-C28)	ND	25.0	mg/kg	1	B2J2529	10/25/2022	10/26/2022	U
Residual Range Organics (C28-C40)	ND	100	"	"	"	"	"	U

Surrogate: o-Terphenyl	107 %	50-150	"	"	"	"	"
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### GBTEX+TMBs by 8260D

1,2,4-Trimethylbenzene	ND	0.00200	mg/kg	1	B2J2033	10/20/2022	10/25/2022	U
1,3,5-Trimethylbenzene	ND	0.00200	"	"	"	"	"	U
Benzene	ND	0.00200	"	"	"	"	"	U
Ethylbenzene	ND	0.00200	"	"	"	"	"	U
Toluene	ND	0.00200	"	"	"	"	"	U
Xylenes, total	ND	0.00200	"	"	"	"	"	U
Gasoline Range Hydrocarbons	ND	0.200	"	"	"	"	"	U

Surrogate: 1,2-Dichloroethane-d4	106 %	70-130	"	"	"	"	"
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Briggsdale CO 80204

Adam Kubat

Project Number: 223274

Project: Taproot - Pintail Release

## BS1-0.5

10/18/2022 5:25:00PM

Analyte	Result	Min Detection Limit	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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## Origins Laboratory, Inc.

Y210424-07 (Soil)

### GBTEX+TMBs by 8260D

Surrogate: Toluene-d8	109 %		70-130			B2J20 33	10/20/2022	10/25/2022	
Surrogate: 4-Bromofluorobenzene	92.0 %		70-130			"	"	"	

### Metals by Saturated Paste by EPA 6010

Calcium	2.62		0.499	meq/L	10	[CALC]	10/21/2022	10/25/2022	
Magnesium	1.02		0.823	"	"	"	"	"	
Sodium	0.812		0.435	"	"	"	"	"	

### PAH by 8270D SIM

1-Methylnaphthalene	ND	0.000364	0.00067	mg/Kg	1	L644816	10/24/2022	10/24/2022	
2-Methylnaphthalene	ND	0.000645	0.00067	"	"	"	"	"	
Acenaphthene	ND	0.000304	0.00067	"	"	"	"	"	
Anthracene	ND	0.000334	0.00067	"	"	"	"	"	
Benzo(a)anthracene	ND	0.000493	0.00067	"	"	"	"	"	
Benzo(a)pyrene	ND	0.000468	0.00067	"	"	"	"	"	
Benzo(b)fluoranthene	ND	0.000585	0.00067	"	"	"	"	"	
Benzo(k)fluoranthene	ND	0.000437	0.00067	"	"	"	"	"	
Chrysene	ND	0.000624	0.00067	"	"	"	"	"	
Dibenz(a,h)anthracene	ND	0.000614	0.00067	"	"	"	"	"	
Fluoranthene	ND	0.000394	0.00067	"	"	"	"	"	

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Project Number: 223274

Project: Taproot - Pintail Release

## BS1-0.5

10/18/2022 5:25:00PM

Analyte	Result	Min Detection Limit	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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## Waypoint Analytical, LLC.

Y210424-07 (Soil)

### PAH by 8270D SIM

Fluorene	ND	0.000286	0.00067	mg/Kg	1	L644816	10/24/2022	10/24/2022
Indeno(1,2,3-cd)pyrene	ND	0.000627	0.00067	"	"	"	"	"
Naphthalene	ND	0.000484	0.00067	"	"	"	"	"
Pyrene	ND	0.000643	0.00067	"	"	"	"	"

Surrogate: 2-Fluorobiphenyl	60.4 %	33-115	"	"	"
Surrogate: 4-Terphenyl-d14	69.4 %	33-122	"	"	"
Surrogate: Nitrobenzene-d5	60.1 %	29-110	"	"	"

### pH in Soil by 9045D

pH	8.03	pH Units	1	B2J2121	10/21/2022	10/25/2022
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### SAR by 20B Saturated Paste

SAR	0.602	SAR	1	B2J2113	10/21/2022	10/25/2022
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### Specific Conductance Mod. 9050A

Specific Conductance (EC)	0.536	0.00500	mmhos/cm	1	B2J2121	10/21/2022	10/25/2022
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### Table 915 metals by EPA 6020B

Arsenic	3.59	0.0953	mg/kg	10	B2J2402	10/24/2022	10/27/2022
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Project Number: 223274

Project: Taproot - Pintail Release

BS1-0.5

10/18/2022 5:25:00PM

Analyte	Result	Min Detection Limit	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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Origins Laboratory, Inc.

Y210424-07 (Soil)

## Table 915 metals by EPA 6020B

Barium	186	9.53	mg/kg	10	B2J2402	10/24/2022	10/27/2022
Cadmium	0.157	0.0953	"	"	"	"	"
Copper	13.1	9.53	"	"	"	"	"
Lead	14.2	9.53	"	"	"	"	"
Nickel	ND	9.53	"	"	"	"	"
Selenium	0.158	0.0953	"	"	"	"	"
Silver	ND	0.0953	"	"	"	"	"
Zinc	ND	95.3	"	"	"	"	"

## Total Metals by 7196A

Chromium, Hexavalent	ND	1.22	2.5	mg/Kg	5	L645066	10/18/2022	10/25/2022
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Origins Laboratory, Inc.



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Project Number: 223274

Project: Taproot - Pintail Release

## BS1-3

10/18/2022 5:30:00PM

Analyte	Result	Min Detection Limit	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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## Origins Laboratory, Inc.

Y210424-08 (Soil)

### Boron (DTPA Sorbitol)

Boron	0.915	0.0999	mg/L	1	B2J2009	10/20/2022	10/24/2022	
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### DRO/ORO by EPA 8015D

Diesel (C10-C28)	ND	25.0	mg/kg	1	B2J2529	10/25/2022	10/26/2022	U
Residual Range Organics (C28-C40)	ND	100	"	"	"	"	"	U

Surrogate: o-Terphenyl	82.2 %	50-150			"	"	"	
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### GBTEX+TMBs by 8260D

1,2,4-Trimethylbenzene	ND	0.00200	mg/kg	1	B2J2033	10/20/2022	10/25/2022	U
1,3,5-Trimethylbenzene	ND	0.00200	"	"	"	"	"	U
Benzene	ND	0.00200	"	"	"	"	"	U
Ethylbenzene	ND	0.00200	"	"	"	"	"	U
Toluene	ND	0.00200	"	"	"	"	"	U
Xylenes, total	ND	0.00200	"	"	"	"	"	U
Gasoline Range Hydrocarbons	ND	0.200	"	"	"	"	"	U

Surrogate: 1,2-Dichloroethane-d4	111 %	70-130			"	"	"	
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Project Number: 223274

Project: Taproot - Pintail Release

## BS1-3

10/18/2022 5:30:00PM

Analyte	Result	Min Detection Limit	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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## Origins Laboratory, Inc.

Y210424-08 (Soil)

### GBTEX+TMBs by 8260D

Surrogate: Toluene-d8	96.5 %	70-130	B2J20 33	10/20/2022	10/25/2022
Surrogate: 4-Bromofluorobenzene	95.8 %	70-130	"	"	"

### Metals by Saturated Paste by EPA 6010

Calcium	1.79	0.499	meq/L	10	[CALC]	10/21/2022	10/25/2022
Magnesium	ND	0.823	"	"	"	"	"
Sodium	2.76	0.435	"	"	"	"	"

### PAH by 8270D SIM

1-Methylnaphthalene	ND	0.000364	0.00067	mg/Kg	1	L644816	10/24/2022	10/24/2022
2-Methylnaphthalene	ND	0.000645	0.00067	"	"	"	"	"
Acenaphthene	ND	0.000304	0.00067	"	"	"	"	"
Anthracene	ND	0.000334	0.00067	"	"	"	"	"
Benzo(a)anthracene	ND	0.000493	0.00067	"	"	"	"	"
Benzo(a)pyrene	ND	0.000468	0.00067	"	"	"	"	"
Benzo(b)fluoranthene	ND	0.000585	0.00067	"	"	"	"	"
Benzo(k)fluoranthene	ND	0.000437	0.00067	"	"	"	"	"
Chrysene	ND	0.000624	0.00067	"	"	"	"	"
Dibenz(a,h)anthracene	ND	0.000614	0.00067	"	"	"	"	"
Fluoranthene	ND	0.000394	0.00067	"	"	"	"	"

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Briggsdale CO 80204

Adam Kubat

Project Number: 223274

Project: Taproot - Pintail Release

## BS1-3

10/18/2022 5:30:00PM

Analyte	Result	Min Detection Limit	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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## Waypoint Analytical, LLC.

Y210424-08 (Soil)

### PAH by 8270D SIM

Fluorene	ND	0.000286	0.00067	mg/Kg	1	L644816	10/24/2022	10/24/2022
Indeno(1,2,3-cd)pyrene	ND	0.000627	0.00067	"	"	"	"	"
Naphthalene	ND	0.000484	0.00067	"	"	"	"	"
Pyrene	ND	0.000643	0.00067	"	"	"	"	"

Surrogate: 2-Fluorobiphenyl	63.3 %	33-115	"	"	"
Surrogate: 4-Terphenyl-d14	50.6 %	33-122	"	"	"
Surrogate: Nitrobenzene-d5	58.2 %	29-110	"	"	"

### pH in Soil by 9045D

pH	8.32	pH Units	1	B2J2121	10/21/2022	10/25/2022
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### SAR by 20B Saturated Paste

SAR	2.59	SAR	1	B2J2113	10/21/2022	10/25/2022
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### Specific Conductance Mod. 9050A

Specific Conductance (EC)	0.458	0.00500	mmhos/cm	1	B2J2121	10/21/2022	10/25/2022
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### Table 915 metals by EPA 6020B

Arsenic	3.49	0.0913	mg/kg	10	B2J2402	10/24/2022	10/27/2022
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Project Number: 223274

Project: Taproot - Pintail Release

## BS1-3

10/18/2022 5:30:00PM

Analyte	Result	Min Detection Limit	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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## Origins Laboratory, Inc.

Y210424-08 (Soil)

### Table 915 metals by EPA 6020B

Barium	215	9.13	mg/kg	10	B2J2402	10/24/2022	10/27/2022
Cadmium	0.134	0.0913	"	"	"	"	"
Copper	11.1	9.13	"	"	"	"	"
Lead	15.9	9.13	"	"	"	"	"
Nickel	ND	9.13	"	"	"	"	"
Selenium	ND	0.0913	"	"	"	"	"
Silver	ND	0.0913	"	"	"	"	"
Zinc	ND	91.3	"	"	"	"	"

### Total Metals by 7196A

Chromium, Hexavalent	ND	0.244	0.5	mg/Kg	1	L645066	10/18/2022	10/25/2022
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Project Number: 223274

Project: Taproot - Pintail Release

## Volatile Organic Compounds by GC/MS SW846 8260D - Quality Control

### Origins Laboratory, Inc.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B2J2033 - EPA 5030 (soil)										
Blank (B2J2033-BLK1)					Prepared: 10/20/2022 Analyzed: 10/21/2022					
1,2,4-Trimethylbenzene	ND	0.00200	mg/kg							U
1,3,5-Trimethylbenzene	ND	0.00200	"							U
Benzene	ND	0.00200	"							U
Ethylbenzene	ND	0.00200	"							U
Naphthalene	ND	0.00380	"							U
Toluene	ND	0.00200	"							U
Xylenes, total	ND	0.00200	"							U
Gasoline Range Hydrocarbons	ND	0.200	"							U
Surrogate: 1,2-Dichloroethane-d4	0.12		"	0.125		98.0	70-130			
Surrogate: Toluene-d8	0.13		"	0.125		101	70-130			
Surrogate: 4-Bromofluorobenzene	0.13		"	0.125		105	70-130			

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Project Number: 223274

Project: Taproot - Pintail Release

## Volatile Organic Compounds by GC/MS SW846 8260D - Quality Control

### Origins Laboratory, Inc.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch B2J2033 - EPA 5030 (soil)

#### LCS (B2J2033-BS1)

Prepared: 10/20/2022 Analyzed: 10/21/2022

1,2,4-Trimethylbenzene	0.117	0.00200	mg/kg	0.100		117	70-130			
1,3,5-Trimethylbenzene	0.117	0.00200	"	0.100		117	70-130			
Benzene	0.105	0.00200	"	0.100		105	70-130			
Ethylbenzene	0.109	0.00200	"	0.100		109	70-130			
Naphthalene	0.104	0.00380	"	0.100		104	70-130			
Toluene	0.108	0.00200	"	0.100		108	70-130			
o-Xylene	0.110	0.00200	"	0.100		110	70-130			
m,p-Xylene	0.224	0.00400	"	0.200		112	70-130			
Surrogate: 1,2-Dichloroethane-d4	0.13		"	0.125		101	70-130			
Surrogate: Toluene-d8	0.13		"	0.125		102	70-130			
Surrogate: 4-Bromofluorobenzene	0.13		"	0.125		101	70-130			

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Project Number: 223274

Project: Taproot - Pintail Release

## Volatile Organic Compounds by GC/MS SW846 8260D - Quality Control

### Origins Laboratory, Inc.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch B2J2033 - EPA 5030 (soil)

Matrix Spike (B2J2033-MS1)		Source: Y210372-01			Prepared: 10/20/2022 Analyzed: 10/21/2022					
1,2,4-Trimethylbenzene	0.0976	0.00200	mg/kg	0.100	ND	97.6	70-130			
1,3,5-Trimethylbenzene	0.0970	0.00200	"	0.100	ND	97.0	70-130			
Benzene	0.0971	0.00200	"	0.100	ND	97.1	70-130			
Ethylbenzene	0.0945	0.00200	"	0.100	ND	94.5	70-130			
Naphthalene	0.0896	0.00380	"	0.100	ND	89.6	70-130			
Toluene	0.0958	0.00200	"	0.100	ND	95.8	70-130			
o-Xylene	0.0970	0.00200	"	0.100	ND	97.0	70-130			
m,p-Xylene	0.195	0.00400	"	0.200	ND	97.6	70-130			
Surrogate: 1,2-Dichloroethane-d4	0.14		"	0.125		109	70-130			
Surrogate: Toluene-d8	0.12		"	0.125		99.6	70-130			
Surrogate: 4-Bromofluorobenzene	0.13		"	0.125		103	70-130			

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Project Number: 223274

Project: Taproot - Pintail Release

## Volatile Organic Compounds by GC/MS SW846 8260D - Quality Control

### Origins Laboratory, Inc.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B2J2033 - EPA 5030 (soil)										
Matrix Spike Dup (B2J2033-MSD1)		Source: Y210372-01			Prepared: 10/20/2022 Analyzed: 10/21/2022					
1,2,4-Trimethylbenzene	0.0921	0.00200	mg/kg	0.100	ND	92.1	70-130	5.80	20	
1,3,5-Trimethylbenzene	0.0919	0.00200	"	0.100	ND	91.9	70-130	5.44	20	
Benzene	0.0953	0.00200	"	0.100	ND	95.3	70-130	1.89	20	
Ethylbenzene	0.0921	0.00200	"	0.100	ND	92.1	70-130	2.61	20	
Naphthalene	0.0876	0.00380	"	0.100	ND	87.6	70-130	2.24	20	
Toluene	0.0933	0.00200	"	0.100	ND	93.3	70-130	2.64	20	
o-Xylene	0.0954	0.00200	"	0.100	ND	95.4	70-130	1.62	20	
m,p-Xylene	0.188	0.00400	"	0.200	ND	94.2	70-130	3.59	20	
Surrogate: 1,2-Dichloroethane-d4	0.13		"	0.125		106	70-130			
Surrogate: Toluene-d8	0.12		"	0.125		98.3	70-130			
Surrogate: 4-Bromofluorobenzene	0.13		"	0.125		101	70-130			

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Project Number: 223274

Project: Taproot - Pintail Release

**Volatile Organic Compounds by GC/MS SW846 8260D - Quality Control**  
**Origins Laboratory, Inc.**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>Batch B2J2529 - EPA 3550B</b>										
<b>Blank (B2J2529-BLK1)</b>					Prepared: 10/25/2022 Analyzed: 10/25/2022					
Diesel (C10-C28)	ND	25.0	mg/kg							U
Residual Range Organics (C28-C40)	ND	100	"							U
Surrogate: o-Terphenyl	27		"	24.9		109	50-150			

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Project Number: 223274

Project: Taproot - Pintail Release

## Extractable Petroleum Hydrocarbons by 8015D - Quality Control

### Origins Laboratory, Inc.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch B2J2529 - EPA 3550B

#### LCS (B2J2529-BS1)

Prepared: 10/25/2022 Analyzed: 10/25/2022

Diesel (C10-C28)	1000	50.0	mg/kg	1000		100	70-130			
Residual Range Organics (C28-C40)	940	200	"	1000		94.0	70-130			
Surrogate: o-Terphenyl	46		"	49.8		93.4	50-150			

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Project Number: 223274

Project: Taproot - Pintail Release

## Extractable Petroleum Hydrocarbons by 8015D - Quality Control

Origins Laboratory, Inc.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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### Batch B2J2529 - EPA 3550B

Matrix Spike (B2J2529-MS1)		Source: Y210424-01			Prepared: 10/25/2022 Analyzed: 10/25/2022					
Diesel (C10-C28)	1080	50.0	mg/kg	1000	ND	108	70-130			
Residual Range Organics (C28-C40)	1010	200	"	1000	ND	101	70-130			
Surrogate: o-Terphenyl	46		"	49.8		92.6	50-150			

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Project: Taproot - Pintail Release

## Extractable Petroleum Hydrocarbons by 8015D - Quality Control

Origins Laboratory, Inc.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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### Batch B2J2529 - EPA 3550B

Matrix Spike Dup (B2J2529-MSD1)		Source: Y210424-01			Prepared: 10/25/2022 Analyzed: 10/25/2022					
Diesel (C10-C28)	947	50.0	mg/kg	1000	ND	94.7	70-130	13.0	35	
Residual Range Organics (C28-C40)	857	200	"	1000	ND	85.7	70-130	16.4	35	
Surrogate: o-Terphenyl	41		"	49.8		82.0	50-150			

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Project: Taproot - Pintail Release

## Extractable Petroleum Hydrocarbons by 8015D - Quality Control

### Origins Laboratory, Inc.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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### \*\*\* DEFAULT GENERAL METHOD \*\*\* - Quality Control

#### Origins Laboratory, Inc.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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#### Batch B2J2402 - Default Prep Metals

##### Blank (B2J2402-BLK1)

Prepared: 10/24/2022 Analyzed: 10/27/2022

Arsenic	ND	0.000100	mg/kg
Barium	ND	0.0100	"
Cadmium	ND	0.000100	"
Copper	ND	0.0100	"
Lead	ND	0.0100	"
Nickel	ND	0.0100	"
Selenium	ND	0.000100	"
Silver	ND	0.000100	"
Zinc	ND	0.100	"

##### LCS (B2J2402-BS1)

Prepared: 10/24/2022 Analyzed: 10/27/2022

Arsenic	0.0511	0.000100	mg/kg	0.0500	102	80-120
Barium	4.84	0.0100	"	5.00	96.7	80-120
Cadmium	0.0535	0.000100	"	0.0500	107	80-120
Copper	0.558	0.0100	"	0.500	112	80-120
Lead	0.0525	0.0100	"	0.0500	105	80-120
Nickel	0.0531	0.0100	"	0.0500	106	80-120
Selenium	0.0495	0.000100	"	0.0500	98.9	80-120
Silver	0.0524	0.000100	"	0.0500	105	80-120
Zinc	0.543	0.100	"	0.500	109	80-120

##### Matrix Spike (B2J2402-MS1)

Source: Y210424-01

Prepared: 10/24/2022 Analyzed: 10/27/2022

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Project Number: 223274

Project: Taproot - Pintail Release

\*\*\* DEFAULT GENERAL METHOD \*\*\* - Quality Control  
Origins Laboratory, Inc.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch B2J2402 - Default Prep Metals

Matrix Spike (B2J2402-MS1)		Source: Y210424-01			Prepared: 10/24/2022 Analyzed: 10/27/2022					
Arsenic	7.48	0.0995	mg/kg	4.98	3.43	81.5	75-125			
Barium	629	9.95	"	498	191	88.2	75-125			
Cadmium	5.28	0.0995	"	4.98	0.173	103	75-125			
Copper	55.6	9.95	"	49.8	10.7	90.3	75-125			
Lead	18.5	9.95	"	4.98	14.3	83.1	75-125			
Nickel	11.9	9.95	"	4.98	7.86	82.2	75-125			
Selenium	4.73	0.0995	"	4.98	0.115	92.7	75-125			
Silver	4.72	0.0995	"	4.98	0.0279	94.4	75-125			
Zinc	90.1	99.5	"	49.8	49.6	81.5	75-125			
Matrix Spike Dup (B2J2402-MSD1)		Source: Y210424-01			Prepared: 10/24/2022 Analyzed: 10/27/2022					
Arsenic	7.53	0.0893	mg/kg	4.47	3.43	92.0	75-125	0.710	20	
Barium	670	8.93	"	447	191	107	75-125	6.30	20	
Cadmium	5.26	0.0893	"	4.47	0.173	114	75-125	0.428	20	
Copper	58.4	8.93	"	44.7	10.7	107	75-125	4.96	20	
Lead	19.4	8.93	"	4.47	14.3	113	75-125	4.90	20	
Nickel	12.8	8.93	"	4.47	7.86	111	75-125	6.98	20	
Selenium	4.61	0.0893	"	4.47	0.115	101	75-125	2.45	20	
Silver	4.75	0.0893	"	4.47	0.0279	106	75-125	0.520	20	
Zinc	95.8	89.3	"	44.7	49.6	104	75-125	6.14	20	

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Project Number: 223274

Project: Taproot - Pintail Release

## Classical Chemistry Parameters - Quality Control

### Origins Laboratory, Inc.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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#### Batch B2J2009 - Default Prep Metals

##### Blank (B2J2009-BLK1)

Prepared: 10/20/2022 Analyzed: 10/24/2022

Boron ND 0.100 mg/L

##### Duplicate (B2J2009-DUP1)

Source: Y210423-03

Prepared: 10/20/2022 Analyzed: 10/24/2022

Boron 3.78 0.0991 mg/L 3.83 1.36 50

#### Batch B2J2113 - Default Prep Metals

##### Blank (B2J2113-BLK1)

Prepared: 10/21/2022 Analyzed: 10/25/2022

Calcium PPM ND 10.0 mg/L

SAR 0.00 SAR

Magnesium PPM ND 10.0 mg/L

Sodium PPM ND 10.0 "

##### Duplicate (B2J2113-DUP1)

Source: Y210439-02

Prepared: 10/21/2022 Analyzed: 10/25/2022

SAR 0.00 SAR 1.98 200 200

Calcium PPM 65.4 10.0 mg/L 65.1 0.478 50

Magnesium PPM 20.9 10.0 " 20.9 0.0907 50

Sodium PPM 73.2 10.0 " 71.8 1.86 50

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Project Number: 223274

Project: Taproot - Pintail Release

## Saturated Paste - Quality Control

### Origins Laboratory, Inc.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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#### Batch B2J2121 - NO PREP

#### Blank (B2J2121-BLK1)

Prepared: 10/21/2022 Analyzed: 10/25/2022

pH	0.00		pH Units
Specific Conductance (EC)	ND	0.00500	mmhos/cm

#### Duplicate (B2J2121-DUP1)

Source: Y210439-02

Prepared: 10/21/2022 Analyzed: 10/25/2022

pH	7.89		pH Units	8.05		2.01	25
Specific Conductance (EC)	0.902	0.00500	mmhos/cm	0.863		4.45	25

Origins Laboratory, Inc.



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Project Number: 223274

Project: Taproot - Pintail Release

**PAH by 8270D SIM - Quality Control**  
**Waypoint Analytical, LLC.**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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**Batch L644816 - 3550B**

MSD (L 81850-MSD-L644816)		Source: Y210424-08			Prepared: 10/24/2022 Analyzed: 10/24/2022					
Naphthalene	0.102	0.00067	mg/Kg	0.167	<0.000484	61	30-130	4	30	
Benzo(b)fluoranthene	0.101	0.00067	"	0.167	<0.000585	60.4	30-130	1.7	30	
1-Methylnaphthalene	0.0708	0.00067	"	0.167	<0.000364	42.3	30-130	33.5	30	*
2-Methylnaphthalene	0.071	0.00067	"	0.167	<0.000645	42.5	30-130	28.5	30	
Acenaphthene	0.112	0.00067	"	0.167	<0.000304	67	30-130	6.4	30	
Anthracene	0.121	0.00067	"	0.167	<0.000334	72.4	30-130	5.9	30	
Pyrene	0.131	0.00067	"	0.167	<0.000643	78.4	30-130	3.1	30	
Benzo(a)pyrene	0.135	0.00067	"	0.167	<0.000468	80.8	30-130	4.5	30	
Benzo(k)fluoranthene	0.101	0.00067	"	0.167	<0.000437	60.4	30-130	3.1	30	
Chrysene	0.106	0.00067	"	0.167	<0.000624	63.4	30-130	3.7	30	
Dibenz(a,h)anthracene	0.163	0.00067	"	0.167	<0.000614	97.6	30-130	18	30	
Fluoranthene	0.131	0.00067	"	0.167	<0.000394	78.4	30-130	2.3	30	
Fluorene	0.155	0.00067	"	0.167	<0.000286	92.8	30-130	39.3	30	*
Indeno(1,2,3-cd)pyrene	0.135	0.00067	"	0.167	<0.000627	80.8	30-130	12.5	30	
Benzo(a)anthracene	0.121	0.00067	"	0.167	<0.000493	72.4	30-130	4.2	30	
Surrogate: Nitrobenzene-d5	68.4		"	0.333	192	68.4	29-110			
Surrogate: 2-Fluorobiphenyl	45.6		"	0.333	209	45.6	33-115			
Surrogate: 4-Terphenyl-d14	83.7		"	0.333	167	83.7	33-122			

MS (L 81850-MS-L644816)		Source: Y210424-08			Prepared: 10/24/2022 Analyzed: 10/24/2022					
Naphthalene	0.098	0.00067	mg/Kg	0.164	<0.000484	59.7	30-130			
Indeno(1,2,3-cd)pyrene	0.119	0.00067	"	0.164	<0.000627	72.5	30-130			
Pyrene	0.127	0.00067	"	0.164	<0.000643	77.4	30-130			
1-Methylnaphthalene	0.0993	0.00067	"	0.164	<0.000364	60.5	30-130			
2-Methylnaphthalene	0.0946	0.00067	"	0.164	<0.000645	57.6	30-130			
Acenaphthene	0.105	0.00067	"	0.164	<0.000304	64	30-130			
Anthracene	0.114	0.00067	"	0.164	<0.000334	69.5	30-130			

Origins Laboratory, Inc.



The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.



Environmental Works

AP@environmentalworks.com

Briggsdale CO 80204

Adam Kubat

Project Number: 223274

Project: Taproot - Pintail Release

**PAH by 8270D SIM - Quality Control**  
**Waypoint Analytical, LLC.**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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**Batch L644816 - 3550B**

MS (L 81850-MS-L644816)		Source: Y210424-08			Prepared: 10/24/2022 Analyzed: 10/24/2022					
Benzo(a)anthracene	0.116	0.00067	mg/Kg	0.164	<0.000493	70.7	30-130			
Fluoranthene	0.128	0.00067	"	0.164	<0.000394	78	30-130			
Benzo(b)fluoranthene	0.0992	0.00067	"	0.164	<0.000585	60.4	30-130			
Benzo(k)fluoranthene	0.0979	0.00067	"	0.164	<0.000437	59.6	30-130			
Chrysene	0.11	0.00067	"	0.164	<0.000624	67	30-130			
Dibenz(a,h)anthracene	0.136	0.00067	"	0.164	<0.000614	82.9	30-130			
Benzo(a)pyrene	0.129	0.00067	"	0.164	<0.000468	78.6	30-130			
Fluorene	0.104	0.00067	"	0.164	<0.000286	63.4	30-130			
Surrogate: Nitrobenzene-d5	68.9		"	0.329	192	68.9	29-110			
Surrogate: 4-Terphenyl-d14	77.5		"	0.329	167	77.5	33-122			
Surrogate: 2-Fluorobiphenyl	65		"	0.329	209	65	33-115			

**LCS (LCS-L644816)**

Prepared: 10/24/2022 Analyzed: 10/24/2022

Chrysene	0.117	0.00067	mg/Kg	0.167		70	30-130
Dibenz(a,h)anthracene	0.177	0.00067	"	0.167		106	30-130
Fluoranthene	0.128	0.00067	"	0.167		76.6	30-130
Fluorene	0.116	0.00067	"	0.167		69.4	30-130
Pyrene	0.127	0.00067	"	0.167		76	30-130
Benzo(k)fluoranthene	0.0721	0.00067	"	0.167		43.1	30-130
Indeno(1,2,3-cd)pyrene	0.143	0.00067	"	0.167		85.6	30-130
Naphthalene	0.105	0.00067	"	0.167		62.8	30-130
1-Methylnaphthalene	0.114	0.00067	"	0.167		68.2	30-130
Benzo(a)pyrene	0.139	0.00067	"	0.167		83.2	30-130
Benzo(a)anthracene	0.123	0.00067	"	0.167		73.6	30-130
Anthracene	0.123	0.00067	"	0.167		73.6	30-130
Acenaphthene	0.113	0.00067	"	0.167		67.6	30-130
2-Methylnaphthalene	0.123	0.00067	"	0.167		73.6	30-130

Origins Laboratory, Inc.



The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Environmental Works

AP@environmentalworks.com

Briggsdale CO 80204

Adam Kubat

Project Number: 223274

Project: Taproot - Pintail Release

**PAH by 8270D SIM - Quality Control**  
**Waypoint Analytical, LLC.**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>Batch L644816 - 3550B</b>										
<b>LCS (LCS-L644816)</b>					Prepared: 10/24/2022 Analyzed: 10/24/2022					
Benzo(b)fluoranthene	0.0807	0.00067	mg/Kg	0.167		48.3	30-130			
Surrogate: 4-Terphenyl-d14	90		"	0.333		90	33-122			
Surrogate: 2-Fluorobiphenyl	84.9		"	0.333		84.9	33-115			
Surrogate: Nitrobenzene-d5	82.2		"	0.333		82.2	29-110			
<b>LRB (LRB-L644816)</b>					Prepared: 10/24/2022 Analyzed: 10/24/2022					
Chrysene	ND	0.00067	mg/Kg				-			
Dibenz(a,h)anthracene	ND	0.00067	"				-			
Fluoranthene	ND	0.00067	"				-			
Fluorene	ND	0.00067	"				-			
Indeno(1,2,3-cd)pyrene	ND	0.00067	"				-			
Naphthalene	ND	0.00067	"				-			
Pyrene	ND	0.00067	"				-			
Benzo(a)pyrene	ND	0.00067	"				-			
1-Methylnaphthalene	ND	0.00067	"				-			
Benzo(a)anthracene	ND	0.00067	"				-			
Anthracene	ND	0.00067	"				-			
Acenaphthene	ND	0.00067	"				-			
2-Methylnaphthalene	ND	0.00067	"				-			
Benzo(b)fluoranthene	ND	0.00067	"				-			
Benzo(k)fluoranthene	ND	0.00067	"				-			
Surrogate: Nitrobenzene-d5	80.4		"	0.333		80.4	29-110			
Surrogate: 4-Terphenyl-d14	102		"	0.333		102	33-122			
Surrogate: 2-Fluorobiphenyl	73.8		"	0.333		73.8	33-115			

Origins Laboratory, Inc.



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Environmental Works

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Briggsdale CO 80204

Adam Kubat

Project Number: 223274

Project: Taproot - Pintail Release

## Total Metals by 7196A - Quality Control Waypoint Analytical, LLC.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>Batch L645066 -</b>										
<b>DUP (L 81850-DUP)</b>		<b>Source: Y210424-08</b>			Prepared: Analyzed: 10/25/2022					
Chromium, Hexavalent	ND	0.5	mg/Kg		<0.500	-		0	20	
<b>MS (L 81850-MS)</b>		<b>Source: Y210424-08</b>			Prepared: Analyzed: 10/25/2022					
Chromium, Hexavalent	38.2	2.57	mg/Kg	41.2	< 0.244	93	75-125			
<b>MSD (L 81850-MSD)</b>		<b>Source: Y210424-08</b>			Prepared: Analyzed: 10/25/2022					
Chromium, Hexavalent	362	50	mg/Kg	712	<24.4	51	75-125			*
<b>LCS (LCS)</b>					Prepared: Analyzed: 10/25/2022					
Chromium, Hexavalent	6.8	0.5	mg/Kg	8		85	75-125			
<b>LRB (LRB)</b>					Prepared: Analyzed: 10/25/2022					
Chromium, Hexavalent	ND	0.5	mg/Kg							

Origins Laboratory, Inc.



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Environmental Works

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Briggsdale CO 80204

Adam Kubat

Project Number: 223274

Project: Taproot - Pintail Release

## Total Metals by 7196A - Quality Control Waypoint Analytical, LLC.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>Batch L645065 -</b>										
<b>DUP (L 81795-DUP)</b>		<b>Source: 81795</b>			Prepared: Analyzed: 10/25/2022					
Chromium, Hexavalent	ND	0.501	mg/Kg		<0.501		-	0	20	
<b>MS (L 81795-MS)</b>		<b>Source: 81795</b>			Prepared: Analyzed: 10/25/2022					
Chromium, Hexavalent	38	2.53	mg/Kg	40.5	< 0.244	94	75-125			
<b>MSD (L 81795-MSD)</b>		<b>Source: 81795</b>			Prepared: Analyzed: 10/25/2022					
Chromium, Hexavalent	637	51.5	mg/Kg	703	<25.1	91	75-125			

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Environmental Works

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Briggsdale CO 80204

Adam Kubat

Project Number: 223274

Project: Taproot - Pintail Release

### Notes and Definitions

U Sample is Non-Detect.

J Estimated Value. Analyte below reported quantitation limit.

\* QC Failure

ND Analyte NOT DETECTED at or above the reporting limit

RPD Relative Percent Difference

All soil results are reported on a wet weight basis.

Origins Laboratory, Inc.



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February 17, 2023

**Environmental Works****Adam Kubat****AP@environmentalworks.com****Briggsdale CO 80204****Project Name - Taproot - Pintail****Project Number - 223274-C1**

Attached are your analytical results for Taproot - Pintail received by Origins Laboratory, Inc. February 10, 2023. This project is associated with Origins project number Y302217-01.

The analytical results in the following report were analyzed under the guidelines of EPA Methods. These methods are identified as follows; "SW" are defined in SW-846, "EPA" are defined in 40CFR part 136 and "SM" are defined in the most current revision of Standard Methods For the Examination of Water and Wastewater.

The analytical results apply specifically to the samples and analyses specified per the attached Chain of Custody. As such, this report shall not be reproduced except in full, without the written approval of Origin's laboratory.

Unless otherwise noted, the analytical results for all soil samples are reported on a wet weight basis. All analytical analyses were performed under NELAP guidelines unless noted by a data qualifier.

Any holding time exceedances, deviations from the method specifications or deviations from Origins Laboratory's Standard Operating Procedures are outlined in the case narrative.

Thank you for selecting Origins for your analytical needs. Please contact us with any questions concerning this report, or if we can help with anything at all.

Origins Laboratory, Inc.  
303.433.1322  
o-squad@oelabinc.com



Environmental Works

AP@environmentalworks.com

Briggsdale CO 80204

Adam Kubat

Project Number: 223274-C1

Project: Taproot - Pintail

## CROSS REFERENCE REPORT

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
SB1-5	Y302217-01	Soil	February 9, 2023 9:35	02/10/2023 15:07
SB1-8	Y302217-02	Soil	February 9, 2023 10:00	02/10/2023 15:07
SB1-13	Y302217-03	Soil	February 9, 2023 10:10	02/10/2023 15:07
SB2-4	Y302217-04	Soil	February 9, 2023 10:30	02/10/2023 15:07
SB2-8	Y302217-05	Soil	February 9, 2023 10:40	02/10/2023 15:07
SB4-8	Y302217-06	Soil	February 9, 2023 11:10	02/10/2023 15:07
SB5-7	Y302217-07	Soil	February 9, 2023 11:40	02/10/2023 15:07
SB5-11	Y302217-08	Soil	February 9, 2023 11:50	02/10/2023 15:07
SB6-6	Y302217-09	Soil	February 9, 2023 12:00	02/10/2023 15:07
SB6-10	Y302217-10	Soil	February 9, 2023 12:10	02/10/2023 15:07
SB7-5	Y302217-11	Soil	February 9, 2023 12:40	02/10/2023 15:07
SB7-9	Y302217-12	Soil	February 9, 2023 12:50	02/10/2023 15:07
SB8-5	Y302217-13	Soil	February 9, 2023 13:00	02/10/2023 15:07
SB8-8	Y302217-14	Soil	February 9, 2023 13:05	02/10/2023 15:07

Origins Laboratory, Inc.



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Environmental Works

AP@environmentalworks.com

Briggsdale CO 80204

Adam Kubat

Project Number: 223274-C1

Project: Taproot - Pintail

## CROSS REFERENCE REPORT

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
SB9-5	Y302217-15	Soil	February 9, 2023 13:10	02/10/2023 15:07
SB9-11	Y302217-16	Soil	February 9, 2023 13:15	02/10/2023 15:07
SB10-4	Y302217-17	Soil	February 9, 2023 13:30	02/10/2023 15:07
SB3-5	Y302217-18	Soil	February 9, 2023 10:45	02/10/2023 15:07
SB3-9	Y302217-19	Soil	February 9, 2023 10:55	02/10/2023 15:07

Origins Laboratory, Inc.



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Environmental Works

AP@environmentalworks.com

Briggsdale CO 80204

Adam Kubat

Project Number: 223274-C1

Project: Taproot - Pintail

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page 1 of 2

4302217

Client: Environmental Works

Address: 2770 Industrial Ln

Telephone Number: 507-475-2825

Email Address: AKubat@environmentalworks.com

Project Manager: Adam Kubat

Project Name: Taproot - Pintail

Project Number: 223274-C1

Samples Collected By: A. Kubat

Sample ID Description	Date Sampled	Time Sampled	# of Containers	Preservative				Matrix			Analysis		Sample Instructions
				Unpreserved	HCl	HNO <sub>3</sub>	Other	Groundwater	Soil	Air Summa Canister #	Other	TABLE 915	
SB1-5	2/9	9:35	2	X				X				X	Table 915 Gen 2000
SB1-8		10:00	2					X				X	PH, HR, and Cond. 2
SB1-13		10:10	2					X				X	for all samples
SB2-4		10:30	2					X				X	not full-list
SB2-8		10:40	2					X				X	table 915
SB4-8		11:10	2					X				X	
SB5-7		11:40	2					X				X	
SB5-11		11:50	2					X				X	
SB6-6		12:00	2					X				X	
SB6-10		12:10	2					X				X	

Relinquished By:	Date:	Time:	Received By:	Date:	Time:	Turnaround Time:
AKubat	2/10/23	15:07	EHS	2/10/23	15:07	Same Day <input type="checkbox"/> 24 Hr <input type="checkbox"/> 48 Hr <input type="checkbox"/> 72 Hr <input checked="" type="checkbox"/> Standard

Temp Received- 12.1 Date Results Needed

Origins Laboratory, Inc.

*J. Bynon*

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Environmental Works

AP@environmentalworks.com

Briggsdale CO 80204

Adam Kubat

Project Number: 223274-C1

Project: Taproot - Pintail

www.originslaboratory.com

430 2217 page 2 of 2

ORIGINS LABORATORY, INC

Client: Environmental Works Inc. Project Manager: Adam Kubat

Address: 2770 Industrial Ln. Project Name: Taproot - Pintail

Telephone Number: 507-475-2825 Project Number: 223274-C1

Email Address: AKubat@environmentalworks.com Samples Collected By: A. Kubat

Sample ID Description	Date Sampled	Time Sampled	# of Containers	Preservative			Matrix			Analysis			Turnaround Time
				Unpreserved	HCl	HNO <sub>3</sub>	Other	Groundwater	Soil	Air Summa Canister #	Other	Table 915	
SB 7-5	2/9	12:40	2	X				X					24 Hr
SB 7-9	2/9	12:50	2	X				X					24 Hr
SB 8-5	2/9	13:00	2	X				X					24 Hr
SB 8-8	2/9	13:05	2	X				X					24 Hr
SB 9-5	2/9	13:10	2	X				X					24 Hr
SB 9-11	2/9	13:15	2	X				X					24 Hr
SB 10-4	2/9	13:30	2	X				X					24 Hr
SB 13-5	2/9	10:45	2	X				X					24 Hr
SB 13-9	2/9	10:55	2	X				X					24 Hr
Relinquished By:	Date:	Time:		Received By:	Date:	Time:		Received By:	Date:	Time:		Standard	
Relinquished By:	Date:	Time:		Received By:	Date:	Time:		Received By:	Date:	Time:		Standard	

Table 915 Relinquished Parameters: pH, SRP, Boron, and Conductivity

Sample Instructions: Not full 175F 915

Date Results Needed

Temp Received - 2.1

Origins Laboratory, Inc.

J. Bynon

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Environmental Works

AP@environmentalworks.com

Briggsdale CO 80204

Adam Kubat

Project Number: 223274-C1

Project: Taproot - Pintail

Origins Laboratory

F-012207-01-R1  
Effective Date: 01/09/12

### Sample Receipt Checklist

Origins Work Order: 4302217

Client: Environmental Works

Client Project ID: Taproot-Pintail

Checklist Completed by: EHS/DE

Shipped Via: HD  
(UPS, FedEx, Hand Delivered, Pick-up, etc.)

Date/time completed: 2/10/23

Airbill #: NA

Matrix(s) Received: (Check all that apply): ☒ Soil/Solid ☐ Water ☐ Other: \_\_\_\_\_

Cooler Number/Temperature: 1 12.1 °C 1 °C 1 °C (Describe) °C

Thermometer ID: 7004

Requirement Description	Yes	No	N/A	Comments (if any)
If samples require cooling, was the temperature between 0°C to ≤ 6°C <sup>(1)</sup> ?		<input checked="" type="checkbox"/>		
Is there ice present (document if blue ice is used)		<input checked="" type="checkbox"/>		
Are custody seals present on cooler? (if so, document in comments if they are signed and dated, broken or intact)		<input checked="" type="checkbox"/>		
Are custody seals present on each sample container? (if so, document in comments if they are signed and dated, broken or intact)		<input checked="" type="checkbox"/>		
Were all samples received intact <sup>(1)</sup> ?	<input checked="" type="checkbox"/>			
Was adequate sample volume provided <sup>(1)</sup> ?	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		sample #6 <sup>B</sup> no volume in can
Are short holding time analytes or samples with HTs due within 48 hours present <sup>(1)</sup> ?		<input checked="" type="checkbox"/>		
Is a chain-of-custody (COC) present and filled out completely <sup>(1)</sup> ?	<input checked="" type="checkbox"/>			
Does the COC agree with the number and type of sample bottles received <sup>(1)</sup> ?	<input checked="" type="checkbox"/>			
Do the sample IDs on the bottle labels match the COC <sup>(1)</sup> ?	<input checked="" type="checkbox"/>			
Is the COC properly relinquished by the client with date and time recorded <sup>(1)</sup> ?	<input checked="" type="checkbox"/>			
For volatiles in water – is there headspace (> ¼ inch bubble) present? If yes, contact client and note in narrative.			<input checked="" type="checkbox"/>	
Are samples preserved that require preservation and was it checked <sup>(1)</sup> ? (note ID of confirmation instrument used in comments) / (preservation is not confirmed for subcontracted analyses in order to insure sample integrity)/(pH <2 for samples preserved with HNO <sub>3</sub> , HCL, H <sub>2</sub> SO <sub>4</sub> ) / (pH >10 for samples preserved with NaAsO <sub>2</sub> +NaOH, ZnAc+NaOH)			<input checked="" type="checkbox"/>	
Additional Comments (if any):	Sample #6B no volume provided			

<sup>(1)</sup> If NO, then contact the client before proceeding with analysis and note date/time and person contacted as well as the corrective action to in the additional comments (above) and the case narrative.

Reviewed by (Project Manager) [Signature]

2/13/23  
Date/Time Reviewed

Origins Laboratory, Inc.

[Signature]

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Environmental Works

AP@environmentalworks.com

Briggsdale CO 80204

Adam Kubat

Project Number: 223274-C1

Project: Taproot - Pintail

## SB1-5

2/9/2023 9:35:00AM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Analyst	Prepared	Analyzed	Notes
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## Origins Laboratory, Inc. Y302217-01 (Soil)

### Boron (DTPA Sorbitol)

Boron	0.709	0.0998	mg/L	1	B3B1308	KAP	02/13/2023	02/14/2023	
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### GBTEX+TMBs by 8260D

Benzene	ND	0.00200	mg/kg	1	B3B1417	ZZZ	02/14/2023	02/15/2023	U
---------	----	---------	-------	---	---------	-----	------------	------------	---

Surrogate: 1,2-Dichloroethane-d4	98.4 %	70-130			"	"	"
Surrogate: Toluene-d8	96.5 %	70-130			"	"	"
Surrogate: 4-Bromofluorobenzene	92.2 %	70-130			"	"	"

### Metals by Saturated Paste by EPA 6010

Calcium	2.77	0.499	meq/L	10	[CALC]	KAP	02/14/2023	02/15/2023
Magnesium	0.886	0.823	"	"	"	KAP	"	"
Sodium	4.47	0.435	"	"	"	KAP	"	"

### pH in Soil by 9045D

pH	8.30		pH Units	1	B3B1414	HJD	02/14/2023	02/15/2023
----	------	--	----------	---	---------	-----	------------	------------

### SAR by 20B Saturated Paste

SAR	3.31		SAR	1	B3B1411	KAP	02/14/2023	02/15/2023
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### Specific Conductance Mod. 9050A

Specific Conductance (EC)	0.507	0.00500	mmhos/cm	1	B3B1414	HJD	02/14/2023	02/15/2023
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Origins Laboratory, Inc.



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Environmental Works

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Briggsdale CO 80204

Adam Kubat

Project Number: 223274-C1

Project: Taproot - Pintail

## SB1-8

2/9/2023 10:00:00AM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Analyst	Prepared	Analyzed	Notes
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## Origins Laboratory, Inc. Y302217-02 (Soil)

### Boron (DTPA Sorbitol)

Boron	0.848	0.0993	mg/L	1	B3B1308	KAP	02/13/2023	02/14/2023	
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### GBTEX+TMBs by 8260D

Benzene	ND	0.00200	mg/kg	1	B3B1417	ZZZ	02/14/2023	02/15/2023	U
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Surrogate: 1,2-Dichloroethane-d4	96.6 %	70-130			"	"	"
Surrogate: Toluene-d8	97.7 %	70-130			"	"	"
Surrogate: 4-Bromofluorobenzene	91.6 %	70-130			"	"	"

### Metals by Saturated Paste by EPA 6010

Calcium	54.5	0.499	meq/L	10	[CALC]	KAP	02/14/2023	02/15/2023
Magnesium	12.6	0.823	"	"	"	KAP	"	"
Sodium	16.4	0.435	"	"	"	KAP	"	"

### pH in Soil by 9045D

pH	7.71		pH Units	1	B3B1414	HJD	02/14/2023	02/15/2023
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### SAR by 20B Saturated Paste

SAR	2.83		SAR	1	B3B1411	KAP	02/14/2023	02/15/2023
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### Specific Conductance Mod. 9050A

Specific Conductance (EC)	4.34	0.00500	mmhos/cm	1	B3B1414	HJD	02/14/2023	02/15/2023
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Environmental Works

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Briggsdale CO 80204

Adam Kubat

Project Number: 223274-C1

Project: Taproot - Pintail

## SB1-13

2/9/2023 10:10:00AM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Analyst	Prepared	Analyzed	Notes
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## Origins Laboratory, Inc. Y302217-03 (Soil)

### Boron (DTPA Sorbitol)

Boron	ND	0.0992	mg/L	1	B3B1308	KAP	02/13/2023	02/14/2023
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### GBTEX+TMBs by 8260D

Benzene	ND	0.00200	mg/kg	1	B3B1417	ZZZ	02/14/2023	02/15/2023	U
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Surrogate: 1,2-Dichloroethane-d4	102 %	70-130			"	"	"
Surrogate: Toluene-d8	96.9 %	70-130			"	"	"
Surrogate: 4-Bromofluorobenzene	90.6 %	70-130			"	"	"

### Metals by Saturated Paste by EPA 6010

Calcium	5.14	0.499	meq/L	10	[CALC]	KAP	02/14/2023	02/15/2023
Magnesium	1.41	0.823	"	"	"	KAP	"	"
Sodium	5.52	0.435	"	"	"	KAP	"	"

### pH in Soil by 9045D

pH	8.05		pH Units	1	B3B1414	HJD	02/14/2023	02/15/2023
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### SAR by 20B Saturated Paste

SAR	3.05		SAR	1	B3B1411	KAP	02/14/2023	02/15/2023
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### Specific Conductance Mod. 9050A

Specific Conductance (EC)	0.834	0.00500	mmhos/cm	1	B3B1414	HJD	02/14/2023	02/15/2023
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Project Number: 223274-C1

Project: Taproot - Pintail

## SB2-4

2/9/2023 10:30:00AM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Analyst	Prepared	Analyzed	Notes
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## Origins Laboratory, Inc. Y302217-04 (Soil)

### Boron (DTPA Sorbitol)

Boron	0.864	0.101	mg/L	1	B3B1308	KAP	02/13/2023	02/14/2023	
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### GBTEX+TMBs by 8260D

Benzene	ND	0.00200	mg/kg	1	B3B1417	ZZZ	02/14/2023	02/15/2023	U
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Surrogate: 1,2-Dichloroethane-d4	99.5 %	70-130			"	"	"
Surrogate: Toluene-d8	95.7 %	70-130			"	"	"
Surrogate: 4-Bromofluorobenzene	90.3 %	70-130			"	"	"

### Metals by Saturated Paste by EPA 6010

Calcium	6.39	0.499	meq/L	10	[CALC]	KAP	02/14/2023	02/15/2023
Magnesium	2.12	0.823	"	"	"	KAP	"	"
Sodium	6.11	0.435	"	"	"	KAP	"	"

### pH in Soil by 9045D

pH	7.74		pH Units	1	B3B1414	HJD	02/14/2023	02/15/2023
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### SAR by 20B Saturated Paste

SAR	2.96		SAR	1	B3B1411	KAP	02/14/2023	02/15/2023
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### Specific Conductance Mod. 9050A

Specific Conductance (EC)	0.958	0.00500	mmhos/cm	1	B3B1414	HJD	02/14/2023	02/15/2023
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Project Number: 223274-C1

Project: Taproot - Pintail

## SB2-8

2/9/2023 10:40:00AM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Analyst	Prepared	Analyzed	Notes
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## Origins Laboratory, Inc. Y302217-05 (Soil)

### Boron (DTPA Sorbitol)

Boron	2.03	0.101	mg/L	1	B3B1308	KAP	02/13/2023	02/14/2023	
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### GBTEX+TMBs by 8260D

Benzene	ND	0.00200	mg/kg	1	B3B1417	ZZZ	02/14/2023	02/15/2023	U
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Surrogate: 1,2-Dichloroethane-d4

100 %

70-130

"

"

"

Surrogate: Toluene-d8

96.0 %

70-130

"

"

"

Surrogate: 4-Bromofluorobenzene

90.4 %

70-130

"

"

"

### Metals by Saturated Paste by EPA 6010

Calcium	28.3	0.499	meq/L	10	[CALC]	KAP	02/14/2023	02/15/2023	
Magnesium	7.06	0.823	"	"	"	KAP	"	"	
Sodium	10.8	0.435	"	"	"	KAP	"	"	

### pH in Soil by 9045D

pH	7.88		pH Units	1	B3B1414	HJD	02/14/2023	02/15/2023	
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### SAR by 20B Saturated Paste

SAR	2.57		SAR	1	B3B1411	KAP	02/14/2023	02/15/2023	
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### Specific Conductance Mod. 9050A

Specific Conductance (EC)	2.11	0.00500	mmhos/cm	1	B3B1414	HJD	02/14/2023	02/15/2023	
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Project Number: 223274-C1

Project: Taproot - Pintail

## SB4-8

2/9/2023 11:10:00AM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Analyst	Prepared	Analyzed	Notes
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## Origins Laboratory, Inc. Y302217-06 (Soil)

### Boron (DTPA Sorbitol)

Boron	2.03	0.101	mg/L	1	B3B1407	KAP	02/14/2023	02/15/2023
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### Metals by Saturated Paste by EPA 6010

Calcium	8.43	0.499	meq/L	10	[CALC]	KAP	02/14/2023	02/15/2023
Magnesium	2.29	0.823	"	"	"	KAP	"	"
Sodium	7.13	0.435	"	"	"	KAP	"	"

### pH in Soil by 9045D

pH	8.07		pH Units	1	B3B1414	HJD	02/14/2023	02/15/2023
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### SAR by 20B Saturated Paste

SAR	3.08		SAR	1	B3B1411	KAP	02/14/2023	02/15/2023
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### Specific Conductance Mod. 9050A

Specific Conductance (EC)	1.04	0.00500	mmhos/cm	1	B3B1414	HJD	02/14/2023	02/15/2023
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Adam Kubat

Project Number: 223274-C1

Project: Taproot - Pintail

## SB5-7

2/9/2023 11:40:00AM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Analyst	Prepared	Analyzed	Notes
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## Origins Laboratory, Inc. Y302217-07 (Soil)

### Boron (DTPA Sorbitol)

Boron	2.44	0.0991	mg/L	1	B3B1407	KAP	02/14/2023	02/15/2023	
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### GBTEX+TMBs by 8260D

Benzene	ND	0.00200	mg/kg	1	B3B1417	ZZZ	02/14/2023	02/15/2023	U
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Surrogate: 1,2-Dichloroethane-d4	95.7 %	70-130			"	"	"
Surrogate: Toluene-d8	96.0 %	70-130			"	"	"
Surrogate: 4-Bromofluorobenzene	90.1 %	70-130			"	"	"

### Metals by Saturated Paste by EPA 6010

Calcium	57.1	0.499	meq/L	10	[CALC]	KAP	02/15/2023	02/16/2023
Magnesium	16.4	0.823	"	"	"	KAP	"	"
Sodium	19.3	0.435	"	"	"	KAP	"	"

### pH in Soil by 9045D

pH	7.67		pH Units	1	B3B1508	HJD	02/15/2023	02/16/2023
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### SAR by 20B Saturated Paste

SAR	3.18		SAR	1	B3B1504	KAP	02/15/2023	02/16/2023
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### Specific Conductance Mod. 9050A

Specific Conductance (EC)	9.37	0.00500	mmhos/cm	1	B3B1508	HJD	02/15/2023	02/16/2023
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Project Number: 223274-C1

Project: Taproot - Pintail

## SB5-11

2/9/2023 11:50:00AM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Analyst	Prepared	Analyzed	Notes
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## Origins Laboratory, Inc. Y302217-08 (Soil)

### Boron (DTPA Sorbitol)

Boron	0.762	0.101	mg/L	1	B3B1407	KAP	02/14/2023	02/15/2023	
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### GBTEX+TMBs by 8260D

Benzene	ND	0.00200	mg/kg	1	B3B1417	ZZZ	02/14/2023	02/15/2023	U
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Surrogate: 1,2-Dichloroethane-d4	96.7 %	70-130			"	"	"
Surrogate: Toluene-d8	95.6 %	70-130			"	"	"
Surrogate: 4-Bromofluorobenzene	90.3 %	70-130			"	"	"

### Metals by Saturated Paste by EPA 6010

Calcium	37.7	0.499	meq/L	10	[CALC]	KAP	02/15/2023	02/16/2023
Magnesium	9.94	0.823	"	"	"	KAP	"	"
Sodium	13.5	0.435	"	"	"	KAP	"	"

### pH in Soil by 9045D

pH	7.67		pH Units	1	B3B1508	HJD	02/15/2023	02/16/2023
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### SAR by 20B Saturated Paste

SAR	2.77		SAR	1	B3B1504	KAP	02/15/2023	02/16/2023
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### Specific Conductance Mod. 9050A

Specific Conductance (EC)	5.62	0.00500	mmhos/cm	1	B3B1508	HJD	02/15/2023	02/16/2023
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Adam Kubat

Project Number: 223274-C1

Project: Taproot - Pintail

## SB6-6

2/9/2023 12:00:00PM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Analyst	Prepared	Analyzed	Notes
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## Origins Laboratory, Inc. Y302217-09 (Soil)

### Boron (DTPA Sorbitol)

Boron	1.64	0.0997	mg/L	1	B3B1407	KAP	02/14/2023	02/15/2023
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### Metals by Saturated Paste by EPA 6010

Calcium	11.1	0.499	meq/L	10	[CALC]	KAP	02/15/2023	02/16/2023
Magnesium	3.50	0.823	"	"	"	KAP	"	"
Sodium	9.00	0.435	"	"	"	KAP	"	"

### pH in Soil by 9045D

pH	7.94		pH Units	1	B3B1508	HJD	02/15/2023	02/16/2023
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### SAR by 20B Saturated Paste

SAR	3.33		SAR	1	B3B1504	KAP	02/15/2023	02/16/2023
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### Specific Conductance Mod. 9050A

Specific Conductance (EC)	2.66	0.00500	mmhos/cm	1	B3B1508	HJD	02/15/2023	02/16/2023
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Project Number: 223274-C1

Project: Taproot - Pintail

## SB6-10

2/9/2023 12:10:00PM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Analyst	Prepared	Analyzed	Notes
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## Origins Laboratory, Inc. Y302217-10 (Soil)

### Boron (DTPA Sorbitol)

Boron	1.58	0.101	mg/L	1	B3B1407	KAP	02/14/2023	02/15/2023
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### Metals by Saturated Paste by EPA 6010

Calcium	2.07	0.499	meq/L	10	[CALC]	KAP	02/15/2023	02/16/2023
Magnesium	ND	0.823	"	"	"	KAP	"	"
Sodium	4.37	0.435	"	"	"	KAP	"	"

### pH in Soil by 9045D

pH	8.17		pH Units	1	B3B1508	HJD	02/15/2023	02/16/2023
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### SAR by 20B Saturated Paste

SAR	3.79		SAR	1	B3B1504	KAP	02/15/2023	02/16/2023
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### Specific Conductance Mod. 9050A

Specific Conductance (EC)	0.780	0.00500	mmhos/cm	1	B3B1508	HJD	02/15/2023	02/16/2023
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Adam Kubat

Project Number: 223274-C1

Project: Taproot - Pintail

## SB7-5

2/9/2023 12:40:00PM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Analyst	Prepared	Analyzed	Notes
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## Origins Laboratory, Inc. Y302217-11 (Soil)

### Boron (DTPA Sorbitol)

Boron	0.315	0.101	mg/L	1	B3B1407	KAP	02/14/2023	02/15/2023
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### Metals by Saturated Paste by EPA 6010

Calcium	4.12	0.499	meq/L	10	[CALC]	KAP	02/15/2023	02/16/2023
Magnesium	1.20	0.823	"	"	"	KAP	"	"
Sodium	6.43	0.435	"	"	"	KAP	"	"

### pH in Soil by 9045D

pH	7.73		pH Units	1	B3B1508	HJD	02/15/2023	02/16/2023
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### SAR by 20B Saturated Paste

SAR	3.94		SAR	1	B3B1504	KAP	02/15/2023	02/16/2023
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### Specific Conductance Mod. 9050A

Specific Conductance (EC)	1.32	0.00500	mmhos/cm	1	B3B1508	HJD	02/15/2023	02/16/2023
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Briggsdale CO 80204

Adam Kubat

Project Number: 223274-C1

Project: Taproot - Pintail

## SB7-9

2/9/2023 12:50:00PM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Analyst	Prepared	Analyzed	Notes
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## Origins Laboratory, Inc. Y302217-12 (Soil)

### Boron (DTPA Sorbitol)

Boron	0.926	0.101	mg/L	1	B3B1407	KAP	02/14/2023	02/15/2023
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### Metals by Saturated Paste by EPA 6010

Calcium	6.21	0.499	meq/L	10	[CALC]	KAP	02/15/2023	02/16/2023
Magnesium	1.74	0.823	"	"	"	KAP	"	"
Sodium	7.64	0.435	"	"	"	KAP	"	"

### pH in Soil by 9045D

pH	8.04		pH Units	1	B3B1508	HJD	02/15/2023	02/16/2023
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### SAR by 20B Saturated Paste

SAR	3.83		SAR	1	B3B1504	KAP	02/15/2023	02/16/2023
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### Specific Conductance Mod. 9050A

Specific Conductance (EC)	1.63	0.00500	mmhos/cm	1	B3B1508	HJD	02/15/2023	02/16/2023
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Adam Kubat

Project Number: 223274-C1

Project: Taproot - Pintail

## SB8-5

2/9/2023 1:00:00PM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Analyst	Prepared	Analyzed	Notes
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## Origins Laboratory, Inc. Y302217-13 (Soil)

### Boron (DTPA Sorbitol)

Boron	1.51	0.100	mg/L	1	B3B1407	KAP	02/14/2023	02/15/2023
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### Metals by Saturated Paste by EPA 6010

Calcium	18.4	0.499	meq/L	10	[CALC]	KAP	02/15/2023	02/16/2023
Magnesium	5.24	0.823	"	"	"	KAP	"	"
Sodium	12.0	0.435	"	"	"	KAP	"	"

### pH in Soil by 9045D

pH	7.97		pH Units	1	B3B1508	HJD	02/15/2023	02/16/2023
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### SAR by 20B Saturated Paste

SAR	3.49		SAR	1	B3B1504	KAP	02/15/2023	02/16/2023
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### Specific Conductance Mod. 9050A

Specific Conductance (EC)	2.95	0.00500	mmhos/cm	1	B3B1508	HJD	02/15/2023	02/16/2023
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Briggsdale CO 80204

Adam Kubat

Project Number: 223274-C1

Project: Taproot - Pintail

## SB8-8

2/9/2023 1:05:00PM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Analyst	Prepared	Analyzed	Notes
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## Origins Laboratory, Inc. Y302217-14 (Soil)

### Boron (DTPA Sorbitol)

Boron	0.332	0.0999	mg/L	1	B3B1506	KAP	02/15/2023	02/16/2023
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### Metals by Saturated Paste by EPA 6010

Calcium	7.12	0.499	meq/L	10	[CALC]	KAP	02/15/2023	02/16/2023
Magnesium	2.03	0.823	"	"	"	KAP	"	"
Sodium	7.51	0.435	"	"	"	KAP	"	"

### pH in Soil by 9045D

pH	7.75		pH Units	1	B3B1508	HJD	02/15/2023	02/16/2023
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### SAR by 20B Saturated Paste

SAR	3.51		SAR	1	B3B1504	KAP	02/15/2023	02/16/2023
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### Specific Conductance Mod. 9050A

Specific Conductance (EC)	1.69	0.00500	mmhos/cm	1	B3B1508	HJD	02/15/2023	02/16/2023
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Origins Laboratory, Inc.



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Environmental Works

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Briggsdale CO 80204

Adam Kubat

Project Number: 223274-C1

Project: Taproot - Pintail

## SB9-5

2/9/2023 1:10:00PM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Analyst	Prepared	Analyzed	Notes
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## Origins Laboratory, Inc. Y302217-15 (Soil)

### Boron (DTPA Sorbitol)

Boron	1.73	0.0999	mg/L	1	B3B1506	KAP	02/15/2023	02/16/2023
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### Metals by Saturated Paste by EPA 6010

Calcium	3.87	0.499	meq/L	10	[CALC]	KAP	02/15/2023	02/16/2023
Magnesium	1.34	0.823	"	"	"	KAP	"	"
Sodium	5.41	0.435	"	"	"	KAP	"	"

### pH in Soil by 9045D

pH	8.16		pH Units	1	B3B1508	HJD	02/15/2023	02/16/2023
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### SAR by 20B Saturated Paste

SAR	3.35		SAR	1	B3B1504	KAP	02/15/2023	02/16/2023
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### Specific Conductance Mod. 9050A

Specific Conductance (EC)	1.11	0.00500	mmhos/cm	1	B3B1508	HJD	02/15/2023	02/16/2023
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Briggsdale CO 80204

Adam Kubat

Project Number: 223274-C1

Project: Taproot - Pintail

## SB9-11

2/9/2023 1:15:00PM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Analyst	Prepared	Analyzed	Notes
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## Origins Laboratory, Inc. Y302217-16 (Soil)

### Boron (DTPA Sorbitol)

Boron	0.133	0.0996	mg/L	1	B3B1506	KAP	02/15/2023	02/16/2023
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### Metals by Saturated Paste by EPA 6010

Calcium	2.67	0.499	meq/L	10	[CALC]	KAP	02/15/2023	02/16/2023
Magnesium	ND	0.823	"	"	"	KAP	"	"
Sodium	4.22	0.435	"	"	"	KAP	"	"

### pH in Soil by 9045D

pH	7.95		pH Units	1	B3B1508	HJD	02/15/2023	02/16/2023
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### SAR by 20B Saturated Paste

SAR	3.22		SAR	1	B3B1504	KAP	02/15/2023	02/16/2023
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### Specific Conductance Mod. 9050A

Specific Conductance (EC)	0.876	0.00500	mmhos/cm	1	B3B1508	HJD	02/15/2023	02/16/2023
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Project Number: 223274-C1

Project: Taproot - Pintail

## SB10-4

2/9/2023 1:30:00PM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Analyst	Prepared	Analyzed	Notes
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## Origins Laboratory, Inc. Y302217-17 (Soil)

### Boron (DTPA Sorbitol)

Boron	1.53	0.100	mg/L	1	B3B1506	KAP	02/15/2023	02/16/2023
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### Metals by Saturated Paste by EPA 6010

Calcium	2.07	0.499	meq/L	10	[CALC]	KAP	02/15/2023	02/16/2023
Magnesium	ND	0.823	"	"	"	KAP	"	"
Sodium	2.43	0.435	"	"	"	KAP	"	"

### pH in Soil by 9045D

pH	8.38		pH Units	1	B3B1508	HJD	02/15/2023	02/16/2023
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### SAR by 20B Saturated Paste

SAR	2.03		SAR	1	B3B1504	KAP	02/15/2023	02/16/2023
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### Specific Conductance Mod. 9050A

Specific Conductance (EC)	0.573	0.00500	mmhos/cm	1	B3B1508	HJD	02/15/2023	02/16/2023
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Adam Kubat

Project Number: 223274-C1

Project: Taproot - Pintail

## SB3-5

2/9/2023 10:45:00AM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Analyst	Prepared	Analyzed	Notes
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## Origins Laboratory, Inc. Y302217-18 (Soil)

### Boron (DTPA Sorbitol)

Boron	1.76	0.0983	mg/L	1	B3B1506	KAP	02/15/2023	02/16/2023	
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### GBTEX+TMBs by 8260D

Benzene	ND	0.00200	mg/kg	1	B3B1417	ZZZ	02/14/2023	02/15/2023	U
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Surrogate: 1,2-Dichloroethane-d4	99.1 %	70-130			"	"	"
Surrogate: Toluene-d8	96.0 %	70-130			"	"	"
Surrogate: 4-Bromofluorobenzene	89.7 %	70-130			"	"	"

### Metals by Saturated Paste by EPA 6010

Calcium	2.32	0.499	meq/L	10	[CALC]	KAP	02/15/2023	02/16/2023
Magnesium	ND	0.823	"	"	"	KAP	"	"
Sodium	2.91	0.435	"	"	"	KAP	"	"

### pH in Soil by 9045D

pH	8.25		pH Units	1	B3B1508	HJD	02/15/2023	02/16/2023
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### SAR by 20B Saturated Paste

SAR	2.38		SAR	1	B3B1504	KAP	02/15/2023	02/16/2023
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### Specific Conductance Mod. 9050A

Specific Conductance (EC)	0.628	0.00500	mmhos/cm	1	B3B1508	HJD	02/15/2023	02/16/2023
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Adam Kubat

Project Number: 223274-C1

Project: Taproot - Pintail

## SB3-9

2/9/2023 10:55:00AM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Analyst	Prepared	Analyzed	Notes
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## Origins Laboratory, Inc. Y302217-19 (Soil)

### Boron (DTPA Sorbitol)

Boron	0.548	0.0986	mg/L	1	B3B1506	KAP	02/15/2023	02/16/2023	
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### GBTEX+TMBs by 8260D

Benzene	ND	0.00200	mg/kg	1	B3B1417	ZZZ	02/14/2023	02/15/2023	U
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Surrogate: 1,2-Dichloroethane-d4	96.3 %	70-130			"	"	"
Surrogate: Toluene-d8	96.5 %	70-130			"	"	"
Surrogate: 4-Bromofluorobenzene	91.0 %	70-130			"	"	"

### Metals by Saturated Paste by EPA 6010

Calcium	3.17	0.499	meq/L	10	[CALC]	KAP	02/15/2023	02/16/2023
Magnesium	ND	0.823	"	"	"	KAP	"	"
Sodium	3.98	0.435	"	"	"	KAP	"	"

### pH in Soil by 9045D

pH	7.96		pH Units	1	B3B1508	HJD	02/15/2023	02/16/2023
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### SAR by 20B Saturated Paste

SAR	2.82		SAR	1	B3B1504	KAP	02/15/2023	02/16/2023
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### Specific Conductance Mod. 9050A

Specific Conductance (EC)	0.847	0.00500	mmhos/cm	1	B3B1508	HJD	02/15/2023	02/16/2023
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Briggsdale CO 80204

Adam Kubat

Project Number: 223274-C1

Project: Taproot - Pintail

## Volatile Organic Compounds by GC/MS SW846 8260D - Quality Control

### Origins Laboratory, Inc.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B3B1417 - EPA 5030 (soil)										
Blank (B3B1417-BLK1)					Prepared: 02/14/2023 Analyzed: 02/15/2023					
1,2,4-Trimethylbenzene	ND	0.00200	mg/kg							U
1,3,5-Trimethylbenzene	ND	0.00200	"							U
Benzene	ND	0.00200	"							U
Ethylbenzene	ND	0.00200	"							U
Naphthalene	ND	0.00380	"							U
Toluene	ND	0.00200	"							U
Xylenes, total	ND	0.00200	"							U
Gasoline Range Hydrocarbons	ND	0.200	"							U
Surrogate: 1,2-Dichloroethane-d4	0.11		"	0.125		90.8	70-130			
Surrogate: Toluene-d8	0.12		"	0.125		97.4	70-130			
Surrogate: 4-Bromofluorobenzene	0.11		"	0.125		89.2	70-130			

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Adam Kubat

Project Number: 223274-C1

Project: Taproot - Pintail

**Volatile Organic Compounds by GC/MS SW846 8260D - Quality Control**  
**Origins Laboratory, Inc.**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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**Batch B3B1417 - EPA 5030 (soil)**

**LCS (B3B1417-BS1)**

Prepared: 02/14/2023 Analyzed: 02/15/2023

1,2,4-Trimethylbenzene	0.0947	0.00200	mg/kg	0.100		94.7	70-130			
1,3,5-Trimethylbenzene	0.0999	0.00200	"	0.100		99.9	70-130			
Benzene	0.0950	0.00200	"	0.100		95.0	70-130			
Ethylbenzene	0.0941	0.00200	"	0.100		94.1	70-130			
Naphthalene	0.0803	0.00380	"	0.100		80.3	70-130			
Toluene	0.0917	0.00200	"	0.100		91.7	70-130			
o-Xylene	0.0911	0.00200	"	0.100		91.1	70-130			
m,p-Xylene	0.194	0.00400	"	0.200		97.1	70-130			
Surrogate: 1,2-Dichloroethane-d4	0.11		"	0.125		86.2	70-130			
Surrogate: Toluene-d8	0.12		"	0.125		96.4	70-130			
Surrogate: 4-Bromofluorobenzene	0.11		"	0.125		85.5	70-130			

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Project Number: 223274-C1

Project: Taproot - Pintail

## Volatile Organic Compounds by GC/MS SW846 8260D - Quality Control

### Origins Laboratory, Inc.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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#### Batch B3B1417 - EPA 5030 (soil)

Matrix Spike (B3B1417-MS1)		Source: Y302217-01			Prepared: 02/14/2023 Analyzed: 02/15/2023					
1,2,4-Trimethylbenzene	0.0935	0.00200	mg/kg	0.100	ND	93.5	70-130			
1,3,5-Trimethylbenzene	0.0962	0.00200	"	0.100	ND	96.2	70-130			
Benzene	0.0944	0.00200	"	0.100	ND	94.4	70-130			
Ethylbenzene	0.0894	0.00200	"	0.100	ND	89.4	70-130			
Naphthalene	0.0958	0.00380	"	0.100	ND	95.8	70-130			
Toluene	0.0888	0.00200	"	0.100	ND	88.8	70-130			
o-Xylene	0.0901	0.00200	"	0.100	ND	90.1	70-130			
m,p-Xylene	0.185	0.00400	"	0.200	ND	92.3	70-130			
Surrogate: 1,2-Dichloroethane-d4	0.11		"	0.125		90.6	70-130			
Surrogate: Toluene-d8	0.12		"	0.125		94.4	70-130			
Surrogate: 4-Bromofluorobenzene	0.11		"	0.125		88.7	70-130			

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Project Number: 223274-C1

Project: Taproot - Pintail

## Volatile Organic Compounds by GC/MS SW846 8260D - Quality Control

### Origins Laboratory, Inc.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B3B1417 - EPA 5030 (soil)										
Matrix Spike Dup (B3B1417-MSD1)			Source: Y302217-01		Prepared: 02/14/2023 Analyzed: 02/15/2023					
1,2,4-Trimethylbenzene	0.0920	0.00200	mg/kg	0.100	ND	92.0	70-130	1.64	20	
1,3,5-Trimethylbenzene	0.0953	0.00200	"	0.100	ND	95.3	70-130	0.940	20	
Benzene	0.0931	0.00200	"	0.100	ND	93.1	70-130	1.37	20	
Ethylbenzene	0.0897	0.00200	"	0.100	ND	89.7	70-130	0.335	20	
Naphthalene	0.0916	0.00380	"	0.100	ND	91.6	70-130	4.46	20	
Toluene	0.0868	0.00200	"	0.100	ND	86.8	70-130	2.23	20	
o-Xylene	0.0898	0.00200	"	0.100	ND	89.8	70-130	0.333	20	
m,p-Xylene	0.185	0.00400	"	0.200	ND	92.3	70-130	0.0867	20	
Surrogate: 1,2-Dichloroethane-d4	0.11		"	0.125		91.7	70-130			
Surrogate: Toluene-d8	0.12		"	0.125		93.1	70-130			
Surrogate: 4-Bromofluorobenzene	0.11		"	0.125		89.2	70-130			

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Project Number: 223274-C1

Project: Taproot - Pintail

## Volatile Organic Compounds by GC/MS SW846 8260D - Quality Control

### Origins Laboratory, Inc.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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## Classical Chemistry Parameters - Quality Control

### Origins Laboratory, Inc.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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#### Batch B3B1308 - DTPA Sorbitol Preparation

##### Blank (B3B1308-BLK1)

Prepared: 02/13/2023 Analyzed: 02/14/2023

Boron ND 0.100 mg/L

##### Duplicate (B3B1308-DUP1)

Source: Y302177-01

Prepared: 02/13/2023 Analyzed: 02/14/2023

Boron 0.105 0.0996 mg/L 0.118 12.0 50

#### Batch B3B1407 - DTPA Sorbitol Preparation

##### Blank (B3B1407-BLK1)

Prepared: 02/14/2023 Analyzed: 02/15/2023

Boron ND 0.100 mg/L

##### Duplicate (B3B1407-DUP1)

Source: Y302217-06

Prepared: 02/14/2023 Analyzed: 02/15/2023

Boron 2.14 0.101 mg/L 2.03 5.33 50

#### Batch B3B1411 - Saturated Paste Metals

##### Blank (B3B1411-BLK1)

Prepared: 02/14/2023 Analyzed: 02/15/2023

Calcium PPM ND 10.0 mg/L

SAR 0.00 SAR

Magnesium PPM ND 10.0 mg/L

Sodium PPM ND 10.0 "

##### Duplicate (B3B1411-DUP1)

Source: Y302216-01

Prepared: 02/14/2023 Analyzed: 02/15/2023

Calcium PPM 43.6 10.0 mg/L 50.7 15.1 50

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Project Number: 223274-C1

Project: Taproot - Pintail

## Classical Chemistry Parameters - Quality Control

### Origins Laboratory, Inc.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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#### Batch B3B1411 - Saturated Paste Metals

Duplicate (B3B1411-DUP1)		Source: Y302216-01			Prepared: 02/14/2023 Analyzed: 02/15/2023					
SAR	0.00		SAR		0.268			200	200	
Magnesium PPM	8.67	10.0	mg/L		9.91			13.4	50	
Sodium PPM	7.29	10.0	"		7.96			8.80	50	

#### Batch B3B1504 - Saturated Paste Metals

Blank (B3B1504-BLK1)		Prepared: 02/15/2023 Analyzed: 02/16/2023								
Calcium PPM	ND	10.0	mg/L							
SAR	0.00		SAR							
Magnesium PPM	ND	10.0	mg/L							
Sodium PPM	ND	10.0	"							
Duplicate (B3B1504-DUP1)		Source: Y302217-07			Prepared: 02/15/2023 Analyzed: 02/16/2023					
SAR	0.00		SAR		3.18			200	200	
Calcium PPM	1190	10.0	mg/L		1140			3.62	50	
Magnesium PPM	210	10.0	"		199			5.08	50	
Sodium PPM	442	10.0	"		444			0.475	50	

#### Batch B3B1506 - DTPA Sorbitol Preparation

Blank (B3B1506-BLK1)		Prepared: 02/15/2023 Analyzed: 02/16/2023								
Boron	ND	0.100	mg/L							
Duplicate (B3B1506-DUP1)		Source: Y302217-14			Prepared: 02/15/2023 Analyzed: 02/16/2023					
Boron	0.237	0.0995	mg/L		0.332			33.5	50	

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Project Number: 223274-C1

Project: Taproot - Pintail

## Saturated Paste - Quality Control

### Origins Laboratory, Inc.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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#### Batch B3B1414 - Saturated Paste pH/EC

##### Blank (B3B1414-BLK1)

Prepared: 02/14/2023 Analyzed: 02/15/2023

Specific Conductance (EC) ND 0.00500 mmhos/cm

##### Duplicate (B3B1414-DUP1)

Source: Y302216-01

Prepared: 02/14/2023 Analyzed: 02/15/2023

pH	8.23		pH Units	8.13			1.22	25
Specific Conductance (EC)	0.221	0.00500	mmhos/cm	0.251			12.7	25

#### Batch B3B1508 - Saturated Paste pH/EC

##### Blank (B3B1508-BLK1)

Prepared: 02/15/2023 Analyzed: 02/16/2023

Specific Conductance (EC) ND 0.00500 mmhos/cm

##### Duplicate (B3B1508-DUP1)

Source: Y302217-07

Prepared: 02/15/2023 Analyzed: 02/16/2023

pH	7.68		pH Units	7.67			0.130	25
Specific Conductance (EC)	9.61	0.00500	mmhos/cm	9.37			2.45	25

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Adam Kubat

Project Number: 223274-C1

Project: Taproot - Pintail

### Notes and Definitions

U Sample is Non-Detect.

ND Analyte NOT DETECTED at or above the reporting limit

RPD Relative Percent Difference

All soil results are reported at a wet weight basis.

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## Taproot – Pintail Lateral – Produced Water Release

**Photo: 1**

**Description:**

Release location looking east. Photo taken at 8:00 AM 11/18.



**Photo: 2**

**Description:**

Release location looking southwest.





## Taproot – Pintail Lateral – Produced Water Release

### **Photo: 3**

#### **Description:**

South end of the impacted area looking north towards the release location. Maximum extents were determined by wet soil and surveyed by a professional surveyor.



### **Photo: 4**

#### **Description:**

Impacted area looking south from the release location.





## Taproot – Pintail Lateral – Produced Water Release

### **Photo: 5**

#### **Description:**

Hydro excavator working in the primary excavation area to locate the pipeline failure.



### **Photo: 6**

#### **Description:**

The failure in the pipeline. Deformed Thermoflex 6" pipe.





## Taproot – Pintail Lateral – Produced Water Release

**Photo: 7**

**Description:**

Surface scraping of impacted area to remove visible wet soil.



**Photo: 8**

**Description:**

Surface scraping of impacted area.





## Taproot – Pintail Lateral – Produced Water Release

### **Photo: 9**

#### **Description:**

Looking south at the primary and secondary excavation areas on 11/18



### **Photo: 10**

#### **Description:**

Primary excavation area after exposing failed pipeline. Day 2 of hydroexcavation 10/19/22.





## Taproot – Pintail Lateral – Produced Water Release

**Photo: 11**

**Description:**

Secondary excavation area after surface scrape looking south.



**Photo: 12**

**Description:**

Secondary excavation area after surface scrape looking southeast.



**Photo: 13**

**Description:**

Secondary excavation looking South. Following impacts with visual observations of impacts, as well as with a soil conductivity meter. Impacted soil was observed  $>4.0$  mmhos/cm on the darker soil on the right, and  $<0.5$  mmhos/cm in the lighter soil on the left.

12/20/22





Taproot – Pintail Lateral – Produced Water Release

**Photo: 14**

**Description:**

Excavation and disposal of impacted soil on 12/20/22.



## Taproot – Pintail Lateral – Produced Water Release

**Photo: 15****Description:**

Final Site Conditions following excavation of 1,150 tons of soil on 12/20 and 12/21.

**Photo: 16****Description:**

Drilling investigation completed 2/9/2023



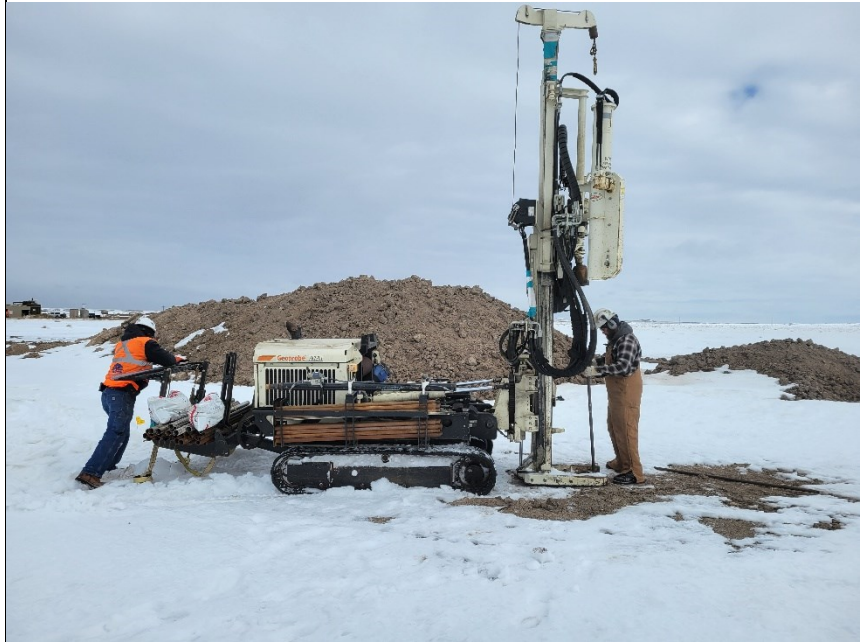


## Taproot – Pintail Lateral – Produced Water Release

**Photo: 17**

**Description:**

Drilling investigation  
completed 2/9/2023



**Photo: 18**

**Description:**

Drilling investigation  
completed 2/9/2023.  
Borings advanced to refusal  
in dense, dry claystone.



## Taproot – Pintail Lateral – Produced Water Release

**Photo: 19****Description:**

Drilling investigation  
completed 2/9/2023.  
Borings advanced to refusal  
in dense, dry claystone.

**Photo: 20****Description:**



Project #: P12121

Logged By: ARK

### Soil Description



Project #:

Logged By: ARK

[illegible]

Project Name: Taproot Pintail Boring No. SB3 Sheet 1 of 1

Location:

Boring No. SB3 Sheet 1 of

Sheet 1 of

Date(s) Drilled 2/9/23

$$\overline{2} \overline{19} \overline{23}$$

Project #:

Logged By: ARK

Sample Id/ Time	Sampler Type	PID/FID (ppm)	Recovery (ft/ft)	Sample Interval	Depth (ft)	USCS Symbol	Graphic Log	Soil Description
	Cond.				1			Excavated from D-2.5'
					2			
			2.5/5		3			Same as SB2, dry
	0.84	0.0			4			
					5			
	1.09	0.0			6			
					7			
					8			
					9			
					10			collect SB3-5 @ 10.45
					11			collect SB3-9 @
					12			refusal @ 11.5'
								9-11.5 dense, moist to dry clay & claystone



Project #:

Logged By: ARK

Sample Id/ Time	Sampler <small>Cone Type</small>	PID/FID <small>(ppm)</small>	Recovery <small>(ft/ft)</small>	Sample Interval	Depth (ft)	USCS Symbol	Graphic Log	Soil Description
		0.0	2/5					black mud Sample
	0.85				1			dry ML
					2			
	0.65	0.0			3			
					4			
					5			dry, hard, silty clay, brown sand
			3/5		6			fine silt, light brown
	1.1				7			
					8			
					9			
					10			mud to dry CH
	1.2		5/8					
								G
					15			
								Collect sample from SBH-8 @ 11:10

Project #:

Logged By: ARK

Collect SRS-11 @ 1150



Project Name: Tafreeh - Pintail  
Location:

Boring No. SB6 Sheet 1 of

Date(s) Drilled 2/9/23

Project #:

Logged By: ARK

[illegible]

Project #:

Boring No. 567 Sheet 1 of  
Date(s) Drilled 2/9/23  
Logged By: ARK

[illegible]



Boring No. SB8 Sheet 1 of  
Date(s) Drilled 2/9/23  
Logged By: ARK

[illegible]



Project Name: Taproot-PinTail  
Location:

Location:

Project #:

Boring No. SB9 Sheet 1 of 1  
Date(s) Drilled 2/9/23  
Logged By: ARK

Boring No. 769

Sheet 1 of

Date(s) Drilled

2/9/23

**Logged By:**

ARK

[illegible]

Project Name: Tafreeh - Pintail  
Location:

Boring No. SB10 Sheet 1 of

Date(s) Drilled 2/9/23

Logged By: ARK

Project #:

Sample Id/ Time	Sampler Type	PID/FID (ppm)	Recovery (ft/ft)	Sample Interval	Depth (ft)	USCS Symbol	Graphic Log	Soil Description
	Cond.							
			2.5/5		1			6" ex. <del>0.5-1.5'</del> brownish black soil 0.5-2' dry, sand + silt
	0.72	0.0			2			dry, light brown silt w/ sand, loose
					3			2-8.5
					4			
					5			
					6			5.5-10.5 7.5 silt stone, silt dry dense, hard drilling
					7			
					8			7.5-10.5 claystone, dry, hard
					9			
					10			
					11			refusal @ 10.5
								collect SB10-4 @ 1330 from 3-5



Taproot Energy Partners  
Pintail Latera - Water Level Backup  
Spill/Release ID 483128

Permit	Distance From Site (Ft)	Latitude	Longitude	Use1	Aquifer1	Permit Issued	Well Constructed	WellDepth	Top PerfCasing	Bottom PerfCasing	Static WL
292560	2900	40.7082	-104.0581	Domestic	Unnamed	9/19/2013	10/29/2013	152	98	152	50
118621	2640	40.7061	-104.0741	Domestic	Unnamed	NA	3/20/1919	NA	NA	NA	NA
223685	3220	40.706	-104.0769	Domestic	Unnamed	4/30/2001	4/25/2003	250	180	200	163

