II. APPENDIX D - DESCRIPTION OF THE LAND

G. Appendix D-7 - Soil Assessment (see Guideline No. 1).

The attached soil assessment report was completed by Grouse Mountain Environmental Consulting in 2023/2024.

Appendix D7- Soils

Mullinax Inc.

Permit to Mine TFN 7 2/199

Sheridan Wyoming

Table of Contents

Addenda

D7 -1. Introduction

D7-1.1 Objectives

The objective of this soil inventory is to provide essential soil data for mine and reclamation planning within the affected area in the permit boundary (Mine Area). Specific tasks for the soil resource inventory were to:

1. Develop Natural Resource Conservation Service (NRCS) soil map units with Forbes Pit soil sampling locations and delineate boundaries on appropriate ArcPro map.
2. Define soil physical and chemical characteristics through NRCS units and labs.
3. Determine suitability and recommend soil salvage depths for each affected soil map unit.

D7-1.2 Study Area

The Mine area permit acres are1,765.56 with affected acres of 1,186.31 in Sheridan Wyoming. Exact location of land can be found in Appendix C.

D7-2. Methods

D7 -2.1 Compilation of Available Information

Soil series descriptions for soils in the area were obtained from the NRCS to assist with soil identification, mapping, and interpretation of the 9 affected soil map units (2022). Soil series and families were verified through field observation and laboratory results. ArcGIS and GPS were used to identify project boundaries and assist with soil mapping and sampling.

D7-2.2 Field Methods

Fieldwork was conducted by Grouse Mountain Environmental Consultants in July of 2024. Soil map units were delineated on ArcPro with overlaying sample locations within the permit area. 84 soil samples from 19 pits were taken from backhoe excavated pits located with GPS. Each excavation was at least 60 Inches in depth. Lab results and analytics were provided by Energy Laboratories in Helena, MT.

Sample locations were preselected and located with a GPS to ensure the NRCS soil profiles were sampled and confirmed. Each Sample was photographed and described following the NRCS Field Book for Describing and Sampling Soil (Schoeneberger, 2012). Soil depth, horizon, structure, grade, frags, and notes were recorded for each site. A photo log is included in D7.C and field survey points are shown in D7.E.

D7-3. Soil Classification and Description

D7-3.1 Soil Classification

Based on the NRCS data, NRCS (2022), the Mine Area overlaps NRCS Soil Series 120,169, 198, 209, 213, 216, 220, 221, 244, 258, 269, 274, 303, 305, and 306. Unites 209 and 305 are in the perimeter boundary of the mine, but not in the affected areas. These Soil Series Descriptions can be seen in Addendum D7.B in full. Soil series with field sample number is provided in the table below, Table D7.1 (Soil Science, 2024).

Table D7.1: Map Unit, Soil Series, Sample Number, and Classification of Forbes Pit

Map Unit	Soil Series	Sample Number	Classification
120	Cedak-Recluse loams	19	FINE-LOAMY, MIXED, SUPERACTIVE, MESIC ARIDIC ARGIUSTOLLS
169	Jonpol-Platmak complex	13, 18	FINE, SMECTITIC, MESIC ARIDIC PALEUSTOLLS
198	Nuncho-Emigrant association	4, 5, 6	FINE, SMECTITIC, MESIC ARIDIC ARGIUSTOLLS
209	Parmleed-Worfka association	No Sample	FINE, SMECTITIC, MESIC USTIC PALEARGIDS, CLAYEY, SHALLOW USTIC HARPLARGIDS
213	Platmak loam	No Sample	FINE, SMECTITIC, MESIC ARIDIC PALEUSTOLLS
216	Platsher loam	17, 16	FINE, SMECTITIC, MESIC ARIDIC PALEUSTOLLS
220	Platsher- Wolfvar loams	1, 2, 3	FINE, SMECTITIC, MESIC ARIDIC PALEUSTOLLS, FINE-LOAMY OVER SANDY OR SANDY-SKELETAL, MIXED, SUPERACTIVE, MESIC CALCIDIC ARGIUSTOLLS
221	Platsher- Wolfvar loams	7, 8, 9	FINE, SMECTITIC, MESIC ARIDIC PALEUSTOLLS, FINE-LOAMY OVER SANDY OR SANDY-SKELETAL, MIXED, SUPERACTIVE, MESIC CALCIDIC ARGIUSTOLLS
244	Samday-Gayhart-Hilight clay loams	12	CLAYEY, SMECTITIC, CALCAREOUS, MESIC, SHALLOW USTIC TORRIORTHENTS, FINE,
258	Shingle- Nihill complex	10, 11	LOAMY, LOAMY-SKELETAL, MIXED, SUPERACTIVE, CALCAREOUS, MESIC, SHALLOW USTIC TORRIORTHENTS
269	Shingle-Theedle -Kishona Complex	No Sample	LOAMY, LOAMY-SKELETAL, MIXED, SUPERACTIVE, CALCAREOUS, MESIC, SHALLOW USTIC TORRIORTHENTS
274	Shingle -Worf complex	No Sample	LOAMY, MIXED, SUPERACTIVE, CALCAREOUS, MESIC, SHALLOW USTIC TORRIORTHENTS, HAPLARGIDS
303	Wolf loam	15, 14	FINE-LOAMY, MIXED, SUPERACTIVE, MESIC ARIDIC ARGIUSTOLLS
305	Worfka- Samday Shingle complex	No Sample	CLAYEY, SMECTITIC, MESIC, SHALLOW USTIC HAPLARGIDS, CALCAREOUS, TORRIORTHENTS
306	Worthenton clay loam	No Sample	FINE, SMECTITIC, MESIC TYPIC ARGIAQUOLLS

D7-3.2 Soil Map Units & Soil Series Descriptions with Recommended Salvage Depths

Soil map units are designated on Map No. D.7.E-1 with the mine plan map, D.7.E-2, overlayed in Addendum D.7.E. Table D7.2, below, details the map units, soil descriptions, sample numbers, acres for each soil series within the permit boundary and the amount of those acres affected. Salvage depths of topsoil and subsoil is also provided based on field studies and lab results (Addendum D7.A). Recommended topsoil/overburden salvage depths range from 10.8 to 60 inches based on WDEQ/LQD Guideline #1 suitability ratings (WDEQ, 19914). Anything below topsoil salvage depth and down to the mineral being mined is considered overburden. A map demonstrating salvage depths per unit is in Addendum D.7.E, Map No. D.7.E-3

Table D7.2 Soil Mapping Unit, Acreage, Topsoil Salvage, and Overburden Salvage.

Map Unit	Soil Series Description	Sample Number	Area (Acres)	Affected Area (Acres)	Topsoil Salvage Depths (Inches)	Overburden Salvage Depths (Inches)	Total Volume of Topsoil and Subsoil Salvage (yd3)
120	Cedak-Recluse loams 6 to 9 percent slopes	19	7.60	5.78	10.80	0.00	8,392.56
169	Jonpol-Platmak complex 0 to 9 percent slopes	13, 18	43.67	41.57	16.80	43.20	335,331.33
198	Nuncho-Emigrant association 9 to 15 percent slopes	4, 5, 6	307.48	186.78	31.20	18	1,235,487.44
209	Parmleed-Worfka association moist 9 to 25 percent slopes	No Sample	29.48	0.00	0.00	0.00	0.00
213	Platmak loam 3 to 6 percent slopes	No Sample	.46	0.00	0.00	0.00	0.00
216	Platsher loam 3 to 6 percent slopes	17, 16	72.95	66.42	16.80	14.40	278,609.76
220	Platsher- Wolfvar loams 3 to 6 percent slopes	1, 2, 3	605.84	469.81	14.40	0.00	909,552.16
221	Platsher- Wolfvar loams 6 to 9 percent slopes	7, 8, 9	249.70	206.04	26.40	18.00	1,229,921.44
244	Samday-Gayhart-Hilight clay loams moist 2 to 60 percent slopes	12	137.24	19.07	7.20	52.8	153,831.33
258	Shingle Nihill complex moist 3 to 80 percent slopes	10, 11	165.74	102.12	7.20	25.2	444,834.72
269	Shingle-Theedle-Kishona complex moist 3 to 80 percent slopes.	No Sample	19.10	0.00	0.00	0.00	0.00
274	Shingle Worf complex moist 9 to 15 percent slopes	No Sample	3.86	0.00	0.00	0.00	0.00

303	Wolf loam 3 to 6 percent slopes	15, 14	90.14	88.72	27.60	18.00	543,912.75
305	Worfka- Samday Shingle complex moist 6 to 30 percent slopes	No Sample	14.54	0.00	0.00	0.00	0.00
306	Worthenton clay loam 0 to 3 percent slopes	No Sample	17.76	0.00	0.00	0.00	0.00
Totals			1,765.56	1,186.31	158.40	189.60	5,139,873.49

D7-3.3 Map Unit Soil Descriptions

Soil profile descriptions are provided for soils comprising each soil map unit from the NRCS and field observations (Addenda D7.B and D7.D) (Soil Science, 2024). Soil labs were tested using:

Parameter	Reporting Limit	Units	Method
Metals, CACL2 Extractable			
Boron	0.1	mg/kg	E6010.20
Selenium	0.1	mg/kg	E6010.20
Metals, Saturated Paste			
Calcium	0.11	meq/L	E6010.20
Magnesium	0.2	meq/L	E6010.20
Sodium	1	meq/L	E6010.20
Coarse Fragments			
Coarse Fragments	2	%	ASA 15-3
Conductivity, Saturated Paste Extract			
Electrical Conductivity	0.1	mmhos/cm	ASA10-3
Organic Carbon/Matter Walkley- Black			
Organic Matter	0.1	%	ASA9 29-3
Saturation Percentage			
Saturation Percent	0.1	%	USDA 27a
pH, Saturated Paste			
pH	0.1	s.u.	ASA 10-3
Sodium Absorption Ratio			
Sodium Absorption Ratio	0.05	-	USDA 20b
Particle Size Analysis / Texture			
Clay	0.1	%	ASA 15-5
Sand	0.1	%	ASA 15-5
Silt	0.1	%	ASA 15-5
Texture	1	-	ASA 15-5
Very Fine Sand	1	Wt%	ASA 15-5

Figure 1 – Soil lab tests conducted and the analysis method used.

Samples are described as pit #-Sample#-Horizon Name.

Soil Map Unit 120: Cedak-Recluse loams 6 to 9 percent slopes.

- **Soil Description:**

The Cedak-Recluse loam is 45 percent Cedak and 40 percent Recluse with 15 percent minor components.

Cedak is typically composed of hills with shoulder, back slope and side slope. The slope is linear and the parent material is alluvium derived from sandstone and shale. A typical profile reaches restrictive features at 20-40 inches with a typical profile of: A:0-4 inches loam, Bt: 4-24 inches clay loam, Bk: 24-30 inches loam, Cr: 30-79 inches bedrock. The profile is well drained with high runoff, a low to moderately high Ksat, has a water table with a depth of more than 80 inches, calcium carbonate max of 10%, is non-saline to very slightly saline, has a Sodium Adsorption Max Ratio (SAR) of 8.0, and is a group C hydrologic soil.

Recluse is typically composed of hills and fan remnants with foot slope and side slope. The slope is linear and the parent material is alluvium derived from sandstone and shale. A typical profile reaches restrictive features at more than 80 inches with a typical profile of: A: 0-14 inches loam, Bt: 14-30 inches clay loam, Bk: 30-79 inches loam. The profile is well drained with medium runoff, a moderately high to high Ksat, has a water table with a depth of more than 80 inches, calcium carbonate max of 14%, is non-saline to very slightly saline, has a SAR of 3.0, and is a group B hydrologic soil.

- **Field Verification: Sample 19**

Soils observed at SS- 19 showed a profile of: A: 0-3.6 inches sbk structure with grade 2 identified as wet clay, Bt: 3.6-10.8 inches pr structure with grade 2, Cr: 10.8-27.6 inches sbk structure with a grade 2 including weathered shale and yellow precipitate, C1: 27.6-44.4 inches sbk with grade 1 showing many prominent Fe concentrations, C2: 44.4-60 inches contained prominent Fe concentrations.

Lab results identified the soils at 19-001-A as 78 wt% very fine sand and composed overall of 12% sand, 30% silt, and 58% clay with soil texture C. The pH was 7.5, conductivity .6 mmhos/cm, saturation 76.7%, and SAR .7 with 41wt%-dry course fragments. The organic matter was 3.7%. Chemical properties were: Calcium 3.94 meq/L, Magnesium 2.53 meq/L, Sodium 1.15 meq/L, boron .7 mg/kg, and no Selenium.

Lab results identified the soils at 19-002-Bt as 88 wt% very fine sand and composed overall of 12% sand, 28% silt, and 60% clay with soil texture C. The pH was 8.0, conductivity .7 mmhos/cm, saturation 87.5%, and SAR 3.0 with 45wt%-dry course fragments. The organic matter was 1.1%. Chemical properties were: Calcium 1.82 meq/L, Magnesium 2.25 meq/L, Sodium 4.21 meq/L, boron .7 mg/kg, and no Selenium.

Lab results identified the soils at 19-003-C1 as 59 wt% very fine sand and composed overall of 4% sand, 24% silt, and 72% clay with soil texture C. The pH was 8.3, conductivity 5.1 mmhos/cm, saturation 106%, and SAR 8.2 with 44wt%-dry course

fragments. The organic matter was .4%. Chemical properties were: Calcium 6.48 meq/L, Magnesium 29.9 meq/L, Sodium 33.9 meq/L, boron 1.6 mg/kg, and no Selenium.

- **Analysis**

Lab and field results indicated horizons differ from the NRCS data for unit 120. Specifically, the Cr layer is only 10.8 inches below the surface instead of 30 inches below the surface. Lab data and descriptions are included in D7.A and photographs are included in D7.C

Soil Map Unit 169: Jonpol-Platmak complex 0 to 9 percent slopes.

- **Soil Description**

The Jonpol-Platmak complex is 41 percent Jonpol and 39 percent Platmak with 20 percent minor components.

Jonpol is typically composed of hillslopes, mesas, ridges, and hills. The slope is linear and convex with parent material that is alluvium/colluvium/residuum derived/weathered from sandstone and shale. A typical profile reaches restrictive features at 20-40 inches with a typical profile of: A: 0-3 inches loam, BT: 3-19 inches clay loam, Btk: 19-32 inches loam, Cr: 32-79 inches bedrock. The profile is well drained with high runoff, a very low to moderately high Ksat, has a water table with a depth of more than 80 inches, calcium carbonate max of 14%, is non-saline to very slightly saline, has a SAR of 3.0, and is a group D hydrologic soil.

Platmak is typically composed of hillslopes, mesas, terraces, ridges, hills, footslope, toeslope, base slope, and side slope. The slope is linear and the parent material is alluvium derived from calcareous shale. A typical profile reaches restrictive features at more than 80 inches with a typical profile of: A: 0-4 inches loam, Bt: 4-27 inches clay loam, Bk: 27-79 inches loam. The profile is well drained with high runoff, a moderately low to moderately high Ksat, has a water table with a depth of 0-60 inches, calcium carbonate max of 14%, gypsum max of 1%, is non-saline to very slightly saline, has a SAR of 3.0, and is a group C hydrologic soil.

- **Field Verification: Sample 13 &18**
- **Soil Sample Site 13:**

Soils observed at SS-13 showed a profile of: A: 0-4.8 inches sbk structure with a grade 2, Bt: 4.8-17.4 inches pr structure with a grade 3, Btk1: 17.4-24.6 inches abk structure with a grade 2, Bkh+k2: 24.6-40.8 inchs sbk structure with a grade 2, Bck: 40.8-61.2 inches sbk structure with a grade 1, Ck: 61.2-84+ inches sl structure with grade ma. Profiles A through Bck contained 1% gr frags.

Lab results identified the soils at 13-001-A as 44 wt% very fine sand and composed overall of 44% sand, 28% silt, and 28% clay with soil texture cl. The pH was 6.4, conductivity .5 mmhos/cm, saturation 40.8%, and SAR .1 with 15 wt%-dry course fragments. The organic matter was 2.1%. Chemical properties were: Calcium 2.12 meq/L, Magnesium 3.15 meq/L, Sodium .21 meq/L, boron .4 mg/kg, and no Selenium.

Lab results identified the soils at 13-002-Bt as 35 wt% very fine sand and composed overall of 28% sand, 26% silt, and 46% clay with soil texture C. The pH was 6.7, conductivity .2 mmhos/cm, saturation 57.8%, and SAR .2 with 29 wt%-dry course fragments. The organic matter was 1.2%. Chemical properties were: Calcium .82 meq/L, Magnesium 1.2 meq/L, Sodium .24 meq/L, boron .8 mg/kg, and no Selenium.

Lab results identified the soils at 13-003-Btk1 as 41 wt% very fine sand and composed overall of 38% sand, 26% silt, and 36% clay with soil texture CL. The pH was 8.1, conductivity .3 mmhos/cm, saturation 51.1%, and SAR .3 with 27 wt%-dry course fragments. The organic matter was .8%. Chemical properties were: Calcium 1.4 meq/L, Magnesium 2.1 meq/L, Sodium .33 meq/L, boron .6 mg/kg, and no Selenium.

Lab results identified the soils at 13-004-Btk2 as 38 wt% very fine sand and composed overall of 38% sand, 28% silt, and 34% clay with soil texture CL. The pH was 8.0, conductivity 1.3 mmhos/cm, saturation 50.7%, and SAR .2 with 12 wt%-dry course fragments. The organic matter was .5%. Chemical properties were: Calcium 6.92 meq/L, Magnesium 8.57 meq/L, Sodium .61 meq/L, boron .6 mg/kg, and no Selenium.

Lab results identified the soils at 13-005-Bck as 42 wt% very fine sand and composed overall of 40% sand, 26% silt, and 34% clay with soil texture CL. The pH was 8.0, conductivity 3.6 mmhos/cm, saturation 47.6%, and SAR .6 with undetected wt%-dry course fragments. The organic matter was .5%. Chemical properties were: Calcium 20.3 meq/L, Magnesium 31.1 meq/L, Sodium 3.28 meq/L, boron 1.5 mg/kg, and no Selenium.

Lab results identified the soils at 13-006-Ck as 52 wt% very fine sand and composed overall of 30% sand, 34% silt, and 36% clay with soil texture CL. The pH was 8.1, conductivity 6.8 mmhos/cm, saturation 56%, and SAR 3.1 with 14 wt%-dry course fragments. The organic matter was .2%. Chemical properties were: Calcium 20.7 meq/L, Magnesium 73.4 meq/L, Sodium 20.6 meq/L, boron 1.6 mg/kg, and Selenium.1 mg/kg.

- **Soil Sample Site 18**

Soils observed at SS-18 showed a profile of: A: 0-6 inches sbk structure with a grade 2, Bt: 6-16.8 inches pr structure with a grade 3, Btk1: 16.8-28.8 inches sbk structure with a grade 2, BTk2: 28.8-39.6 inches sbk structure with a grade 2, BTk3: 39.6-52.2 inches sbk structure with a grade 2, Bctk: 52.2-84+ inches sbk structure with grade 2. All profiles contained 1% gr frags.

Lab results identified the soils at 18-001-A as 65 wt% very fine sand and composed overall of 36% sand, 40% silt, and 24% clay with soil texture L. The pH was 6.5, conductivity .3 mmhos/cm, saturation 38.1%, and SAR .6 with 13 wt%-dry course fragments. The organic matter was 1.6%. Chemical properties were: Calcium .91 meq/L, Magnesium 1.39 meq/L, Sodium .59 meq/L, boron .3 mg/kg, and no Selenium.

Lab results identified the soils at 18-002-Bt as 77 wt% very fine sand and composed overall of 20% sand, 32% silt, and 48% clay with soil texture C. The pH was 6.5, conductivity .2 mmhos/cm, saturation 70.2%, and SAR 1.4 with 47 wt%-dry course fragments. The organic matter was 1.5%. Chemical properties were: Calcium .54 meq/L, Magnesium .86 meq/L, Sodium 1.14 meq/L, boron .6 mg/kg, and no Selenium.

Lab results identified the soils at 18-003-Btk1 as 78 wt% very fine sand and composed overall of 20% sand, 40% silt, and 40% clay with soil texture C. The pH was 8.4, conductivity 1.1 mmhos/cm, saturation 58.7%, and SAR 3.9 with 34 wt%-dry course fragments. The organic matter was .7%. Chemical properties were: Calcium 1.34 meq/L, Magnesium 4.97 meq/L, Sodium 6.91 meq/L, boron 1.1 mg/kg, and no Selenium.

Lab results identified the soils at 18-004-Btk2 as 68 wt% very fine sand and composed overall of 28% sand, 34% silt, and 38% clay with soil texture C. The pH was 8.1, conductivity 6.5 mmhos/cm, saturation 53.2%, and SAR 3.4 with 19 wt%-dry course fragments. The organic matter was .5%. Chemical properties were: Calcium 21.8 meq/L, Magnesium 65.4 meq/L, Sodium 22.2 meq/L, boron 1.6 mg/kg, and Selenium .4 mg/kg.

Lab results identified the soils at 18-005-Btk3 as 70 wt% very fine sand and composed overall of 32% sand, 32% silt, and 36% clay with soil texture CL. The pH was 8.2, conductivity 4.7 mmhos/cm, saturation 49.3%, and SAR 3.9 with 5 wt%-dry course fragments. The organic matter was .4%. Chemical properties were: Calcium 12.8 meq/L, Magnesium 38.8 meq/L, Sodium 19.9 meq/L, boron 1.4 mg/kg, and Selenium .3 mg/kg.

Lab results identified the soils at 18-006-BCtK as 70 wt% very fine sand and composed overall of 32% sand, 32% silt, and 36% clay with soil texture CL. The pH was 8.2, conductivity 3.5 mmhos/cm, saturation 53.4%, and SAR 3.8 with 5 wt%-dry course fragments. The organic matter was .5%. Chemical properties were: Calcium 9.44 meq/L, Magnesium 24.9 meq/L, Sodium 15.9 meq/L, boron 1.4 mg/kg, and Selenium .1 mg/kg.

- **Analysis**

Lab and field results indicated consistency with the NRCS data for unit 169. Some chemical properties were elevated compared to other soil units. Lab data and descriptions are included in D7.A and photographs are included in D7.C

Soil Map Unit 198: Nuncho-Emigrant association 9 to 15 percent slopes.

- **Soil Description**

The Nuncho-Emigrant association is 40 percent Nuncho and 35 percent Emigrant with 25 percent minor components.

Nuncho is typically composed of hills and side slopes. The slope is linear and convex with no parent material listed. A typical profile reaches restrictive features at more than 80 inches with a typical profile of: A:0-2 inches loam, B: 2-35 inches clay loam, B: 35-60 clay loam. The profile is well drained with no runoff listed, a moderately high Ksat, has a water table with a depth of more than 80 inches, calcium carbonate max of 15%, is non-saline to very slightly saline, has a sodium adsorption rate no listed, and is a group C hydrologic soil.

Emigrant is typically composed of ridges, hills, and side slopes. The slope is linear and convex with no parent material listed. A typical profile reaches restrictive features at 20-40 inches with a typical profile of: A :0-5 inches loam, B: 5-12 inches clay loam, B:12-38 inches clay loam, and Cr: 38-60 inches bedrock. The profile is well drained with a very low to moderately high Ksat, has a water table with a depth of 0-60 inches, is non-saline to very slightly saline, no SAR listed, and is a group C hydrologic soil.

- **Field Verification: Sample 4,5, 6**
- **Soil Sample Site 4**

Soils observed at SS-4 showed a profile of: A: 0-3.6 inches sbk structure with a grade 2 and 5% gr frags, Bt1: 3.6-15.6 inches pr structure with a grade 3 and 4% gr and 8% cb

frags, Bt2: 15.6-27 inches pr structure with a grade 2 and 4% gr and 8% cb frags, Bktk1: 27-43.2 inches sbk structure with a grade 2 and 1% gr frags, Bctk: 43.2-55.2 inches sbk structure with a grade 1 and 1% gr frags, Ck: 55.2-68.4+ inches gd structure with grade ma and 1% very dense gravel.

Lab results identified the soils at 04-001-A as 56 wt% very fine sand and composed overall of 36% sand, 34% silt, and 30% clay with soil texture cl. The pH was 7.1, conductivity .6 mmhos/cm, saturation 55.2%, and no SAR with 16 wt%-dry course fragments. The organic matter was 3.7%. Chemical properties were: Calcium 6.51 meq/L, Magnesium 1.48 meq/L, Sodium .06 meq/L, boron .7 mg/kg, and no Selenium.

Lab results identified the soils at 04-002-Bt1 as 54 wt% very fine sand and composed overall of 32% sand, 34% silt, and 34% clay with soil texture CL. The pH was 7.2, conductivity .5 mmhos/cm, saturation 52.9%, and no SAR with 17 wt%-dry course fragments. The organic matter was 2.3%. Chemical properties were: Calcium 5.21 meq/L, Magnesium 1.09 meq/L, Sodium .11 meq/L, boron .6 mg/kg, and no Selenium.

Lab results identified the soils at 04-003-Bt2 as 65 wt% very fine sand and composed overall of 24% sand, 36% silt, and 40% clay with soil texture C. The pH was 7.9, conductivity of .2mmhos/cm, saturation 52.3%, and no SAR with 30 wt%-dry course fragments. Organic matter was 1.5%, Chemical properties were: Calcium 2.37 meq/L, Magnesium .66 meq/L, Sodium .11 meq/L, boron .4 mg/kg, and no Selenium.

Lab results identified the soils at 04-004-Btk1 as 70 wt% very fine sand and composed overall of 32% sand, 40% silt, and 38% clay with soil texture cl. The pH was 8.1, conductivity of .2mmhos/cm saturation 48% and SAR of .1 with 18 wt%-dry course fragments. The organic matter was .8%. Chemical properties were: Calcium 1.48 meq/L, Magnesium .79 meq/L, Sodium .13 meq/L, boron .4 mg/kg, and no Selenium.

Lab results identified the soils at 04-005-Bctk as 68 wt% very fine sand and composed overall of 24% sand, 38% silt, and 38% clay with soil texture CL. The pH was 8.2, conductivity .2 mmhos/cm, saturation 47.4%, and SAR of .2 with 18 wt%-dry course fragments. The organic matter was .5%. Chemical properties were: Calcium 1.05 meq/L, Magnesium 1.23 meq/L, Sodium .19 meq/L, boron .4 mg/kg, and no Selenium.

Lab results identified the soils at 04-006-Ck as 72 wt% very fine sand and composed overall of 28% sand, 38% silt, and 34% clay with soil texture CL. The pH was 8.4, conductivity of .2mmhos/cm, saturation 52.5%, and SAR .4 with 9 wt%-dry course fragments. Organic matter was .4%. Chemical properties were: Calcium .82 meq/L, Magnesium 1.6 meq/L, Sodium .42 meq/L, boron .4 mg/kg, and no Selenium.

- **Soil Sample Site 5**

Soils observed at SS-5 showed a profile of: A: 0-5.4 inches sbk structure with a grade 1 and 1% gr frags, Bt: 5.4-19.2 inches sbk structure with a grade 2 and 1% gr frags, Btk1: 19.2-31.2 inches sbk structure with a grade 2 and 5% gr frags, Btk2: 31.2-49.2 inches sbk structure with a grade with 5% gr and 5% cb frags, C:49.2-66+ inches sg structure with and 33% gr and 40% cb frags.

Lab results identified the soils at 05-001-A as 52 wt% very fine sand and composed overall of 42% sand, 38% silt, and 20% clay with soil texture L. The pH was 6.3, conductivity of .3 mmhos/cm, saturation 48.2%, and no SAR with 5 wt%-dry course fragments. Organic matter was 4.0%. Chemical properties were: Calcium 2.79 meq/L, Magnesium .95 meq/L, Sodium .09 meq/L, boron .4 mg/kg, and no Selenium.

Lab results identified the soils at 05-002-Bt as 49 wt% very fine sand and composed overall of 40% sand, 32% silt, and 28% clay with soil texture CL. The pH was 6.4, conductivity of .3 mmhos/cm, saturation 43.4%, and SAR .1 with 9 wt%-dry course fragments. Organic matter was 1.9%. Chemical properties were: Calcium 2.56 meq/L, Magnesium .77 meq/L, Sodium .14 meq/L, boron .3 mg/kg, and no Selenium.

Lab results identified the soils at 05-003-Btk1 as 47 wt% very fine sand and composed overall of 40% sand, 32% silt, and 28% clay with soil texture CL. The pH was 7.3, conductivity was.3 mmhos/com, saturation 47.9% and SAR .1 with 22 wt%-dry course fragments. Organic matter was 1.0%. Chemical properties were: Calcium 3.12 meq/L, Magnesium .79 meq/L, Sodium .2 meq/L, boron .3 mg/kg, and no Selenium.

Lab results identified the soils at 05-004-Btk2 as 57 wt% very fine sand and composed overall of 26% sand, 36% silt, and 38% clay with soil texture CL. The pH was 7.9, conductivity of .2 mmhos/cm, saturation 54.7% and SAR .3 with 21 wt%-dry course fragments. Organic matter was .6% Chemical properties were: Calcium 1.54 meq/L, Magnesium .43 meq/L, Sodium .29 meq/L, boron .3 mg/kg, and no Selenium.

- **Soil Sample Site 6**

Soils observed at SS-6 showed a profile of: A: 0-4.8 inches sbk structure with a grade 2 and 2% gr frags, Bt1: 4.8-13.8 inches pr structure with a grade 2 and 2% gr and 5% cb frags, Btk1: 13.8-30 inches sbk structure with a grade 2 and 3% gr and 15% cb frags, Bktk2: 30-48 inches sbk structure with a grade 2 and 1% gr frags including common large iron concentrations, Bctk: 48-71.4 inches s bk structure with a grade 1 and 1% gr frags including many large iron concentrations.

Lab results identified the soils at 06-001-A as 57 wt% very fine sand and composed overall of 28% sand, 38% silt, and 34% clay with soil texture CL. The pH was 6.7, conductivity of .8mmhos/cm, saturation 58.5%, and no SAR with 15 wt%-dry course fragments. Organic matter was 4%. Chemical properties were: Calcium 5.26 meq/L, Magnesium 3.83 meq/L, Sodium .19 meq/L, boron .6 mg/kg, and no Selenium.

Lab results identified the soils at 06-002-Bt as 70 wt% very fine sand and composed overall of 14% sand, 32% silt, and 54% clay with soil texture C. The pH was 7.5 , conductivity .4 mmhos/cm, saturation 61.3%, and SAR .2 with 30 wt%-dry course fragments. Organic matter was 1.5%. Chemical properties were: Calcium 2.71 meq/L, Magnesium 2.02 meq/L, Sodium .25 meq/L, boron .7 mg/kg, and no Selenium.

Lab results identified the soils at 06-003-Btk1 as 64 wt% very fine sand and composed overall of 14% sand, 36% silt, and 50% clay with soil texture C. The pH was 8.3, conductivity .2 mmhos/cm, saturation 64.6%, and SAR 1.2 with 26 wt%-dry course fragments. Organic matter was .9%. Chemical properties were: Calcium .97 meq/L, Magnesium 1.51 meq/L, Sodium 1.35 meq/L, boron .7 mg/kg, and no Selenium.

Lab results identified the soils at 06-004-Btk2 as 87 wt% very fine sand and composed overall of 16% sand, 40% silt, and 44% clay with soil texture C. The pH was 8.8 , conductivity .9 mmhos/cm, saturation 95.6%, and SAR 5.6 with 21 wt%-dry course fragments. Organic matter was .4%. Chemical properties were: Calcium .63 meq/L, Magnesium 2.11 meq/L, Sodium 6.53 meq/L, boron 1.9 mg/kg, and no Selenium.

Lab results identified the soils at 06-005-Bctk as 95 wt% very fine sand and composed overall of 6% sand, 38% silt, and 56% clay with soil texture C. The pH was 8.4, , conductivity 3.2 mmhos/cm, saturation 101%, and SAR 5.0 with 30 wt%-dry course fragments. Organic matter was not detected. Chemical properties were: Calcium 5.24 meq/L, Magnesium 18.6 meq/L, Sodium 17.2 meq/L, boron 2.3 mg/kg, and no Selenium.

- **Analysis**

Lab and field results indicated horizons differ slightly from the NRCS data for unit 198. Specifically, the CR layer begins in two of three samples at 55.2 inches depth instead of a further depth. This more representative of the Emigrant formation. Lab data and descriptions are included in D7.A and photographs are included in D7.C

Soil Map Unit 209: Parmleed-Worfka association moist 9 to 25 percent slopes.

- **Soil Description**

The Parmleed-Worfka association is 45 percent Parmleed and 40 percent Worfka with 15 percent minor components.

Parmleed is typically composed of ridges, hills, and side slopes. The slope is linear and convex with parent material that residuum weathered from shale or alluvium derived from shale. A typical profile reaches restrictive features at 20-40 inches with a typical profile of: A:0-8 inches loam, Bt: 8-29 inches clay, Bk: 29-32 inches clay loam, Cr: 32-60 inches bedrock. The profile is well drained with runoff unlisted, a very low to moderately high Ksat, has a water table with a depth of more than 80 inches, calcium carbonate max of 14%, is non-saline to very slightly saline, has a SAR of 5.0, and is a group D hydrologic soil.

Worfka is typically composed of hills and side slope. The slope is linear and convex with parent material that is residuum weathered from shale and/or colluvium derived from shale. A typical profile reaches restrictive features at more than 80 inches with a typical profile of: A: 0-1 inches loam, Bt: 1-8 inches clay, Bk: 8-11 inches clay loam, and Cr: 11-60 inches bedrock. The profile is well drained with no runoff listed, a very low to moderately high Ksat, has a water table with a depth of more than 80 inches, calcium carbonate max of 15%, is non-saline to very slightly saline, has a SAR not listed, and is a group D hydrologic soil.

- Field Verification: No Sample

Soil Map Unit 213: Platmak loam 3 to 6 percent slopes.

- **Soil Description**

Platmak unit is 80 percent Platmak and 20 percent minor components. It is typically composed of fan remnants and alluvial fans. The slope is linear and the parent material is alluvium derived from sandstone and shale. A typical profile reaches restrictive features at more than 80 inches with a typical profile of: A:0-2 inches loam, Bt: 2-13 inches clay loam, Bk: 13-60 inches loam. The profile is well drained with no runoff listed, a moderately high Ksat, has a water table with a depth more than 80 inches, calcium carbonate max of 15%, is non-saline to very slightly saline, has a sodium adsorption max unlisted, and is a group C hydrologic soil.

- Field Verification: No Sample

Soil Map Unit 216: Platsher loam 3 to 6 percent slopes.

- **Soil Description**

Plasther is 85 percent Platsher and 15 percent minor components. It is typically composed of fan remnants and alluvial fans. The slope is linear and the parent material is alluvium derived from sedimentary rock. A typical profile reaches restrictive features at more than 80 inches with a typical profile of: A:0-2 inches loam, Bt: 2-15 inches clay, Bk: 15-36 inches clay loam, and 2Bk: 36-60 inches gravelly loam. The profile is well drained with no runoff listed, a moderately low to moderately high Ksat, has a water table with a depth more than 80 inches, calcium carbonate max of 35%, gypsum max of 2%, is very slightly saline to slightly saline, has a SAR of 5.0, and is a group C hydrologic soil.

- **Field Verification: Sample 16 &17**
- **Soil Sample Site 16**

Soils observed at SS-16 showed a profile of: A: 0-7.2 inches sbk structure with a grade 2 and 1% gr frags, BT: 7.2-16.8 inches pr structure with a grade 2 and 2% gr frags, Bck1: 16.8-30 inches sbk structure with a grade 2 and 2% gr frags, C1: 30-43.2 inches sl structure with a grade ma and 2% gr frags, C2:43.2-69.6 inches sg structure with 42% gr and 30% cb frags including gravel layer with sand in between.

Lab results identified the soils at 16-001-A as 56 wt% very fine sand and composed overall of 28% sand, 30% silt, and 42% clay with soil texture C. The pH was 7.5, conductivity 1.4 mmhos/cm, saturation 73.6%, and SAR 5.4 with 40 wt%-dry course fragments. The organic matter was 2.6%. Chemical properties were: Calcium 2.21 meq/L, Magnesium 5.22 meq/L, Sodium 10.4 meq/L, boron 1.5 mg/kg, and no Selenium.

Lab results identified the soils at 16-002-Bt as 56 wt% very fine sand and composed overall of 20% sand, 46% silt, and 34% clay with soil texture SiCL. The pH was 8.0, conductivity 5.8 mmhos/cm, saturation 67.8%, and SAR 5.5 with 26 wt%-dry course fragments. The organic matter was 1%. Chemical properties were: Calcium 22.3 meq/L, Magnesium 40.1 meq/L, Sodium 30.7 meq/L, boron 4.9 mg/kg, and no Selenium.

Lab results identified the soils at 16-003-Bck as 71 wt% very fine sand and composed overall of 20% sand, 54% silt, and 26% clay with soil texture SiL. The pH was 8.1, conductivity 10.4 mmhos/cm, saturation 52.8%, and SAR 13.0 with 10 wt%-dry course fragments. The organic matter was .3%. Chemical properties were: Calcium 17.9 meq/L, Magnesium 65.1 meq/L, Sodium 83.8 meq/L, boron 4.5mg/kg, and no Selenium.

Lab results identified the soils at 16-004-C1 as 55 wt% very fine sand and composed overall of 28% sand, 58% silt, and 14% clay with soil texture SiL. The pH was 8.2, conductivity 5.3 mmhos/cm, saturation 45.0%, and SAR 15.5 with 7 wt%-dry course fragments. The organic matter was not detected. Chemical properties were: Calcium 2.84 meq/L, Magnesium 17.7 meq/L, Sodium 49.7 meq/L, boron 1.3 mg/kg, and no Selenium.

- **Soil Sample Site 17**

Soils observed at SS-17 showed a profile of: A: 0-4.8 inches sbk structure with a grade 1 and 2% gr frags, Btk1: 4.8-16.8 inches pr structure with a grade 2 and 5% gr and 3% cb frags, BTk2: 16.8-31.2 inches sbk structure with a grade 2 and 7% gr and 5% cb frags, C1: 31.2-51 inches sl structure with a grade ma and 15% gr frags and 22% cb frags including

loamy soft pockets and sandy pockets, C2:51-72+ inches sl structure with a grade ma and 3% gr frags.

Lab results identified the soils at 17-001-A as 70 wt% very fine sand and composed overall of 38% sand, 36% silt, and 26% clay with soil texture L. The pH was 7.0, conductivity .6 mmhos/cm, saturation 53.7%, and no SAR with 12 wt%-dry course fragments. The organic matter was 2.7%. Chemical properties were: Calcium 4.43 meq/L, Magnesium 2.15 meq/L, Sodium .16 meq/L, boron .2 mg/kg, and no Selenium.

Lab results identified the soils at 17-002-Btk1 as 78 wt% very fine sand and composed overall of 22% sand, 34% silt, and 44% clay with soil texture C. The pH was 7.3, conductivity .4 mmhos/cm, saturation 67.7%, and SAR .1 with 33 wt%-dry course fragments. The organic matter was 1.4%. Chemical properties were: Calcium 3.52 meq/L, Magnesium 1.73 meq/L, Sodium .16 meq/L, boron .4 mg/kg, and no Selenium.

Lab results identified the soils at 17-003-Btk2 as 64 wt% very fine sand and composed overall of 24% sand, 32% silt, and 44% clay with soil texture C. The pH was 8.0, conductivity .3 mmhos/cm, saturation 54.2%, and SAR .1 with 32 wt%-dry course fragments. The organic matter was .8%. Chemical properties were: Calcium 1.86 meq/L, Magnesium 1.19 meq/L, Sodium .15 meq/L, boron .4 mg/kg, and no Selenium.

Lab results identified the soils at 17-005-C2 as 63 wt% very fine sand and composed overall of 48% sand, 46% silt, and 6% clay with soil texture SL. The pH was 8.2, conductivity 1.3 mmhos/cm, saturation 45.9%, and SAR .3 with 5 wt%-dry course fragments. The organic matter was not present. Chemical properties were: Calcium 1.92 meq/L, Magnesium 10.7 meq/L, Sodium .79 meq/L, boron .4 mg/kg, and no Selenium.

- **Analysis**

Lab and field results indicated horizons differ from the NRCS data for unit 216. Specifically, the C layer is found at approximately 30 inches depth. Higher chemical properties were found in some sites compared to others. However, the ratios appear to be similar. Lab data and descriptions are included in D7.A and photographs are included in D7.C

Soil Map Unit 220: Platsher-Wolfvar loams 3 to 6 percent slopes.

- **Soil Description**

The Platsher-Wolfvar loam is 50 percent Platsher and 35 percent Wolfvar with 15 percent minor components.

Plasther is typically composed of fan remnants and alluvial fans. The slope is linear and the parent material is alluvium derived from sedimentary rock. A typical profile reaches restrictive features at more than 80 inches with a typical profile of: A: 0-9 inches loam, Bt: 9-20 inches clay loam, Bk: 20-37 inches clay loam, and 2Bk 37-60 inches gravelly loam. The profile is well drained with no runoff listed, a moderately high Ksat, has a water table with a depth more than 80 inches, calcium carbonate max of 35%, gypsum max of 2%, is very slightly saline to slightly saline, has a SAR of 5.0, and is a group C hydrologic soil.

Wolfvar is typically composed of alluvial fans, and fan remnants. The slope is linear and the parent material is alluvium derived from sedimentary rock. A typical profile reaches restrictive features at more than 20-40 inches with a typical profile of: A: 0-2 inches loam, Bt: 2-16 inches clay loam, 2C1:16-23 inches gravelly loam, and 2C2: 23-60 inches extremely gravelly loamy sand. The profile is well drained with no runoff listed, a moderately high Ksat, has a water table with a depth of more than 80 inches, is non-saline to very slightly saline, has a SAR of 5.0, and is a group C hydrologic soil.

- **Field Verification: Sample 1,2, 3**
- **Soil Sample Site 1**

Soils observed at SS-1 showed a profile of: A: 0-6 inches sbk structure with a grade 1 and 1% gr frags, Bt: 6-18 inches pr structure with a grade 2 and 3% gr frags, C1: 18-27.6 inches sg structure with 20% gr and 25% cb with a sandy gravelly mix, C2: 27.6-39.6 inches sg structure with 25% gr and 15% cb frags with a sandy gravelly mix, C3: 39.6-63.6+inches sg structure with 40% gr frags and 35% cb frags with a sandy gravelly mix.

Lab results identified the soils at 01-001-A as 43 wt% very fine sand and composed overall of 38 % sand, 42% silt, and 20% clay with soil texture L. The pH was 6.6, conductivity .4 mmhos/cm, saturation 38.3% and no SAR with 4 wt%-dry course fragments. Organic matter was 2.8%. Chemical properties were: Calcium 3.09 meq/L, Magnesium 1.1meq/L, Sodium .1 meq/L, boron .3 mg/kg, and no Selenium.

Lab results identified the soils at 01-002-Bt as 59 wt% very fine sand and composed overall of 24 % sand, 30% silt, and 46% clay with soil texture C. The pH was 6.6 , conductivity .3 mmhos/cm, saturation 54.8% and no SAR with 21 wt%-dry course fragments. Organic matter was 1.3%. Chemical properties were: Calcium 2.25 meq/L, Magnesium .7 meq/L, Sodium .1 meq/L, boron .3 mg/kg, and no Selenium.

- **Soil Sample Site 2**

Soils observed at SS-2 showed a profile of: A: 0-8.4 inches sbk structure with a grade 2 and 1% gr frags, Btk: 8.4-24 inches Sbk structure with a grade 2 and 6% gr frags, Ck1: 24-37.2 inches sbk structure with 10% gr and 40% cb frags, Ck2: 37.2-51.6 inches sbk structure with 12% gr frags, Ck3: 51.6-72+inches sg structure with 1% gr frags.

Lab results identified the soils at 02-001-A as 44 wt% very fine sand and composed overall of 34 % sand, 30% silt, and 36% clay with soil texture CL. The pH was 7.1, conductivity .4 mmhos/cm, saturation 56.1% and no SAR with 8 wt%-dry course fragments. Organic matter was 3.3%. Chemical properties were: Calcium 4.31 meq/L, Magnesium .95 meq/L, Sodium .06 meq/L, boron .6 mg/kg, and no Selenium.

Lab results identified the soils at 02-002-Btk as 53 wt% very fine sand and composed overall of 30 % sand, 52% silt, and 18% clay with soil texture SiL. The pH was 8.0, conductivity .2 mmhos/cm, saturation 50.2% and no SAR with 10 wt%-dry course fragments. Organic matter was 1.7%. Chemical properties were: Calcium 2.26 meq/L, Magnesium .66 meq/L, Sodium .09 meq/L, boron .6 mg/kg, and no Selenium.

Lab results identified the soils at 02-004-CK2 as 51 wt% very fine sand and composed overall of 36 % sand, 28% silt, and 36% clay with soil texture CL. The pH was 8.4, conductivity .2 mmhos/cm, saturation 48.0% and SAR of .3 with 2 wt%-dry course fragments. Organic matter is .3%. Chemical properties were: Calcium .83 meq/L, Magnesium 1.77 meq/L, Sodium .31 meq/L, boron .3 mg/kg, and no Selenium.

Lab results identified the soils at 02-005-Ck3 as 54 wt% very fine sand and composed overall of 38 % sand, 28% silt, and 34% clay with soil texture CL. The pH was 8.6, conductivity .3 mmhos/cm, saturation 53.8% and SAR of .8 with 8 wt%-dry course fragments. Organic matter was not detected. Chemical properties were: Calcium .6 meq/L, Magnesium 1.95 meq/L, Sodium .91 meq/L, boron .4 mg/kg, and no Selenium.

- **Soil Sample Site 3**

Soils observed at SS-3 showed profile variations as it is a gravel parking lot. Profile A: 0-4.8 inches with human induced epipedon as this is overburden from excavation showing 30% gr and 8% cb frags, Btb: 4.8-14.4 inches sbk structure with a grade 2 and 10% gr and 8% cb frags with a buried b horizon, Ck1: 14.4-32.4 inches sg structure with 25% gr and 12% cb frags, Ck2: 32.4-69.6 inches sg structure with 33% gr, 25% ob, and 8% st frags appearing as a depositional event.

Lab results identified the soils at 03-001-Btb as 51 wt% very fine sand and composed overall of 28 % sand, 28% silt, and 44% clay with soil texture C. The pH was 7.5, conductivity .4 mmhos/cm, saturation 60.1% and no SAR with 16 wt%-dry course fragments. Organic matter was 1.7%. Chemical properties were: Calcium 3.04 meq/L, Magnesium .83 meq/L, Sodium .11 meq/L, boron .5 mg/kg, and no Selenium.

- **Analysis**

Lab and field results indicated horizons differ from the NRCS data for unit 220. Specifically, the C layer depth exhibited more characteristics of Wolfvar than Platsher at 14-24 inches depth. Additionally, the SAR was significantly less if detected at all. Lab data and descriptions are included in D7.A and photographs are included in D7.C

Soil Map Unit 221: Platsher-Wolfvar complex 6 to 9 percent slopes.

- **Soil Description**

The Platsher-Wolfvar loam is 40 percent Platsher and 30 percent Wolfvar with 30 percent minor components.

Plasther is typically composed hills and side slope. The slope is linear and convex with parent material is alluvium derived from sedimentary rock. A typical profile reaches restrictive features at more than 80 inches with a typical profile of: A: 0-2 inches clay loam, Bt: 2-18 inches clay, Bk: 18-39 inches silt clay loam, and 2Bk 39-60 inches cobbly clay loam. The profile is well drained with no runoff listed, a moderately low to moderately high Ksat, has a water table with a depth more than 80 inches, calcium carbonate max of 35%, gypsum max of 2%, is very slightly saline to slightly saline, has a SAR of 5.0, and is a group C hydrologic soil.

Wolfvar is typically composed of hills and side slopes. The slope is linear and convex with a parent material of alluvium derived from sedimentary rock. A typical profile reaches restrictive features at 20-40 inches with a typical profile of: A:0-1 inches loam, Bt: 1-16 inches clay, 2C1: 16-24 inches gravelly clay loam, and 2C2: 24-60 inches extremely gravelly loamy sand. The profile is well drained with no runoff listed, a moderately low to moderately high Ksat, has a water table with a depth of more than 80

inches, is non-saline to very slightly saline, has a SAR of 5.0, and is a group C hydrologic soil.

- **Field Verification: Sample 7,8,9**
- **Soil Sample Site 7**

Soils observed at SS-7 showed a profile of: A: 0-4.8 inches sbk structure with a grade 2 and 2% gr frags, Bt: 4.8-13.2 inches pr structure with a grade 2 and 2% gr frags, Btk: 13.2-27.6 inches sbk structure with a grade 2 and 4% gr frags, Btk2: 27.6-38.4 inches sbk structure with 20% gr and 17% cb frags, C: 52.8-69.6 inches sg structure appearing sandy with 15% gr frags and 25% cb frags.

Lab results identified the soils at 07-001-A as 66 wt% very fine sand and composed overall of 34% sand, 44% silt, and 22% clay with soil texture L. The pH was 6.8, conductivity .9 mmhos/cm, saturation 55.4%, and no SAR with 10 wt%-dry course fragments. The organic matter was 3.8%. Chemical properties were: Calcium 7.99 meq/L, Magnesium 2.19 meq/L, Sodium .01 meq/L, boron .5 mg/kg, and no Selenium.

Lab results identified the soils at 07-002-Bt as 66 wt% very fine sand and composed overall of 32% sand, 40% silt, and 28% clay with soil texture CL. The pH was 7.0, conductivity .6 mmhos/cm, saturation 54.9%, and no SAR with 22 wt%-dry course fragments. The organic matter was 2.7%. Chemical properties were: Calcium 5.33 meq/L, Magnesium 1.41 meq/L, Sodium .09 meq/L, boron .4 mg/kg, and no Selenium.

Lab results identified the soils at 07-003-Btk as 66 wt% very fine sand and composed overall of 26% sand, 36% silt, and 38% clay with soil texture CL. The pH was 7.9, conductivity .3 mmhos/cm, saturation 57.2%, and no SAR with 12 wt%-dry course fragments. The organic matter was 1.7%. Chemical properties were: Calcium 2.54 meq/L, Magnesium .64 meq/L, Sodium .09 meq/L, boron .4 mg/kg, and no Selenium.

- **Soil Sample Site 8**

Soils observed at SS-8 showed a profile of: A: 0-6 inches sbk structure with a grade 2 and 1% gr frags, Bt1: 6-15.6 inches pr structure with a grade 2 and 1% gr frags, Bt2: 15.6-26.4 inches pr structure with a grade 2 and 1% gr frags, Bck: 26.4-44.4 inches sbk structure with grade 1 and 3% gr frags, C: 44.4-70.8+ inches sl structure appearing clayey.

Lab results identified the soils at 08-001-A as 74 wt% very fine sand and composed overall of 32% sand, 54% silt, and 14% clay with soil texture SiL. The pH was 6.6, conductivity .4 mmhos/cm, saturation 51.4%, and .2 SAR with 6 wt%-dry course fragments. The organic matter was 3.8%. Chemical properties were: Calcium 1.99 meq/L, Magnesium 1.64 meq/L, Sodium .34 meq/L, boron .4 mg/kg, and no Selenium.

Lab results identified the soils at 08-002-Bt1 as 77 wt% very fine sand and composed overall of 34% sand, 50% silt, and 16% clay with soil texture SiL. The pH was 6.3, conductivity .2 mmhos/cm, saturation 37.5%, and 1.8 SAR with 14 wt%-dry course fragments. The organic matter was 1.0%. Chemical properties were: Calcium .34 meq/L, Magnesium .34 meq/L, Sodium 1.03 meq/L, boron .2 mg/kg, and no Selenium.

Lab results identified the soils at 08-003-Bt2 as 84 wt% very fine sand and composed overall of 20% sand, 36% silt, and 44% clay with soil texture C. The pH was 7.2, conductivity .7 mmhos/cm, saturation 80.02%, and 5.2 SAR with 30 wt%-dry course fragments. The organic matter was 1.1%. Chemical properties were: Calcium .64 meq/L, Magnesium 1.53 meq/L, Sodium 5.36 meq/L, boron .8 mg/kg, and no Selenium.

Lab results identified the soils at 08-004-Bck as 74 wt% very fine sand and composed overall of 24% sand, 38% silt, and 38% clay with soil texture CL. The pH was 8.3, conductivity .9 mmhos/cm, saturation 60.1%, and 2.5 SAR with 17 wt%-dry course fragments. The organic matter was .6%. Chemical properties were: Calcium 2.09 meq/L, Magnesium 3.99 meq/L, Sodium 4.35 meq/L, boron 1.5 mg/kg, and no Selenium.

Lab results identified the soils at 08-005-C as 64 wt% very fine sand and composed overall of 20% sand, 36% silt, and 44% clay with soil texture C. The pH was 8.4, conductivity 4.1 mmhos/cm, saturation 84.4%, and 7.2 SAR with 13 wt%-dry course fragments. The organic matter was .3%. Chemical properties were: Calcium 3.39 meq/L, Magnesium 23.5 meq/L, Sodium 26.3 meq/L, boron 2.8 mg/kg, and no Selenium.

- **Soil Sample Site 9**

Soils observed at SS-9 showed a profile of: A: 0-4.2 inches sbk structure with a grade 2 and 1% gr frags, Bt: 4.2-14.4 inches pr structure with a grade 3 and 1% gr and 5% cb frags, Btk: 14.4-33.6 inches sbk structure with a grade 2 and 2% gr and 8% cb frags, Bck: 33.6-57.6 inches sbk structure with grade 1 and 5% gr frags, C: 57.6-72+ inches sl structure with a 1% gr frag.

Lab results identified the soils at 09-001-A as 52 wt% very fine sand and composed overall of 44% sand, 32% silt, and 24% clay with soil texture L. The pH was 6.7, conductivity .5 mmhos/cm, saturation 45.1%, and .1 SAR with 12 wt%-dry course fragments. The organic matter was 2.9%. Chemical properties were: Calcium 3.57 meq/L, Magnesium 1.73 meq/L, Sodium .17 meq/L, boron .4 mg/kg, and no Selenium.

Lab results identified the soils at 09-002-Bt as 57 wt% very fine sand and composed overall of 28% sand, 30% silt, and 42% clay with soil texture C. The pH was 7.2, conductivity .5 mmhos/cm, saturation 68.2%, and .1 SAR with 28 wt%-dry course fragments. The organic matter was 1.8%. Chemical properties were: Calcium 3.84 meq/L, Magnesium 1.73 meq/L, Sodium .17 meq/L, boron .4 mg/kg, and no Selenium.

Lab results identified the soils at 09-003-Btk as 70 wt% very fine sand and composed overall of 26% sand, 34% silt, and 40% clay with soil texture C. The pH was 8.2, conductivity .3 mmhos/cm, saturation 57.6%, and .7 SAR with 17 wt%-dry course fragments. The organic matter was .8%. Chemical properties were: Calcium 1.25 meq/L, Magnesium 1.93 meq/L, Sodium .88 meq/L, boron .5 mg/kg, and no Selenium.

Lab results identified the soils at 09-004-BCK as 54 wt% very fine sand and composed overall of 34% sand, 32% silt, and 34% clay with soil texture CL. The pH was 8.6, conductivity 1.0 mmhos/cm, saturation 54.6%, and 4.6 SAR with 10 wt%-dry course fragments. The organic matter was .2%. Chemical properties were: Calcium .74 meq/L, Magnesium 2.75 meq/L, Sodium 6.11 meq/L, boron .8 mg/kg, and no Selenium.

Lab results identified the soils at 09-005-C as 63 wt% very fine sand and composed overall of 40% sand, 32% silt, and 28% clay with soil texture CL. The pH was 8.6, conductivity 2.0 mmhos/cm, saturation 51.9%, and 6.3 SAR with no wt%-dry course fragments. The organic matter was .2%. Chemical properties were: Calcium .91 meq/L, Magnesium 7.21 meq/L, Sodium 12.7 meq/L, boron 1.8 mg/kg, and no Selenium.

- **Analysis**

Lab and field results indicated horizons differ from the NRCS data for unit 221. Specifically, the C layer depth exhibited more characteristics of Wolfvar than Platsher at 14.4”-38.4” depth. Additionally, the SAR had a variable range but averaged around the

NRCS value. Some chemical properties varied along with ratios, but not in salvage soils. Lab data and descriptions are included in D7.A and photographs are included in D7.C

Soil Map Unit 244: Samday-Gayhart-Hilight clay loams moist 2 to 60 percent slope.

- **Soil Description**

The Samday-Gayhart-Hilight clay loams are 35 percent Samday, 25 percent Gayhart, 20 percent Hilight, and 20 percent minor components.

Samday is typically composed of ridges, hills, and side slopes. The slope is linear and convex with parent material that is residuum weathered from shale and/or colluvium derived from shale. A typical profile reaches restrictive features at 10-20 inches with a typical profile of: A: 0-2 inches clay loam, C: 2-14 inches clay, Cr: 14-60 inches bedrock. The profile is well drained with no runoff listed, a very low to moderately high Ksat, has a water table with a depth of more than 80 inches, calcium carbonate max of 14%, is non-saline to very slightly saline, has a SAR of 3.0, and is a group D hydrologic soil.

Gayhart is typically composed of hills and side slopes. The slope is linear and convex with parent material that is Residuum weathered from shale and/or alluvium derived from shale. A typical profile reaches restrictive features at 20-40 inches with a typical profile of: A: 0-2 inches clay loam, C: 2-32 inches clay, Cr: 32-60 inches bedrock. The profile is well drained with no runoff listed, a very low to moderately high Ksat, has a water table with a depth of 0-60 inches, calcium carbonate max of 15%, gypsum max of 3%, is non-saline to moderately saline, has a SAR of 5.0, and is a group D hydrologic soil.

Hilight is typically composed of ridges, hills, and side slopes.. The slope is linear and convex with parent material that is residuum weathered from shale. A typical profile reaches restrictive features at 10-20 inches with a typical profile of: A:0-1 inches clay loam, C: 1-12 inches clay, Cr: 12-60 inches bedrock. The profile is well drained with no runoff listed, a very low to moderately high Ksat, has a water table with a depth more than 80 inches, is non-saline to very slightly saline, has a SAR listed, and is a group D hydrologic soil.

- **Field Verification: Sample 12**
- **Soil Sample Site 12**

Soils observed at SS-12 showed a profile of: A: 0-7.2 inches sbk structure showing high clay throughout with a grade 1 and 1% gr frags, Btg: 7.2-21.6 inches pr structure with a grade 3 and 1% gr frags, Bg1: 21.6-37.2 inches pl structure with a grade 3 and 1% gr frags, Bg2: 37.2-46.2 inches pl structure showing a coal seam with grade 3 and 1% gr frags, Bg3: 46.2-61.2 inches abk structure with a grade 3 and 1% gr frags, Cr: 61.2-72 inches is soft weathered shale.

Lab results identified the soils at 12-001-A as 93 wt% very fine sand and composed overall of 18% sand, 30% silt, and 52% clay with soil texture C. The pH was 7.8, conductivity .3 mmhos/cm, saturation 87%, and SAR .2 with 11 wt%-dry course

fragments. The organic matter was 1.2%. Chemical properties were: Calcium 1.39 meq/L, Magnesium 1.66 meq/L, Sodium .31 meq/L, boron .6 mg/kg, and no Selenium.

Lab results identified the soils at 12-002-Btg as 97 wt% very fine sand and composed overall of 38% sand, 16% silt, and 46% clay with soil texture C. The pH was 8.4, conductivity .2 mmhos/cm, saturation 101%, and SAR 1.1 with 27 wt%-dry course fragments. The organic matter was .6%. Chemical properties were: Calcium .56 meq/L, Magnesium .84 meq/L, Sodium .95 meq/L, boron 1 mg/kg, and no Selenium.

Lab results identified the soils at 12-003-Bg1 as 99 wt% very fine sand and composed overall of 18% sand, 24% silt, and 58% clay with soil texture C. The pH was 8.2, conductivity 4.7 mmhos/cm, saturation 109%, and SAR 2.9 with 30 wt%-dry course fragments. The organic matter was .6%. Chemical properties were: Calcium 18.2 meq/L, Magnesium 33.4 meq/L, Sodium 14.9 meq/L, boron 4.8 mg/kg, and no Selenium.

Lab results identified the soils at 12-004-Bg2 as 84 wt% very fine sand and composed overall of 10% sand, 22% silt, and 68% clay with soil texture C. The pH was 7.7, conductivity 5.7 mmhos/cm, saturation 118%, and SAR 4.6 with 56 wt%-dry course fragments. The organic matter was 4.3%. Chemical properties were: Calcium 13 meq/L, Magnesium 47.7 meq/L, Sodium 25.4 meq/L, boron .7 mg/kg, and Selenium .3 mg/kg.

Lab results identified the soils at 12-005-Bg3 as 99 wt% very fine sand and composed overall of 4% sand, 34% silt, and 62% clay with soil texture C. The pH was 7.6, conductivity 5.5 mmhos/cm, saturation 96.7%, and SAR 3.6 with 72 wt%-dry course fragments. The organic matter was .7%. Chemical properties were: Calcium 19.7 meq/L, Magnesium 42.8 meq/L, Sodium 20.1 meq/L, boron .4 mg/kg, and Selenium .3 mg/kg.

- **Analysis**

Lab and field results indicated horizons differ from the NRCS data for unit 244. Specifically, the C layer depth was deeper at 12” depth instead of 2” depth. Some chemical properties were higher than surrounding areas but exhibited more similar ratios. Lab data and descriptions are included in D7.A and photographs are included in D7.C

Soil Map Unit 258: Shingle-Nihill complex moist 3 to 80 percent slopes.

- **Soil Description**

The Shingle-Nihill complex are 35 percent Shingle, 35 percent Nihill, and 25 percent minor components.

Shingle is typically composed of ridges, hills, and side slopes. The slope is linear and convex with parent material that is residuum weathered from shale. A typical profile reaches restrictive features at 10-20 inches with a typical profile of: A: 0-4 inches loam, C: 4-17 inches loam, Cr: 17-60 inches bedrock. The profile is well drained with no runoff listed, a very low to moderately high Ksat, has a water table with a depth of more than 80 inches, calcium carbonate max of 15%, is non-saline to very slightly saline, has a SAR of 5.0, and is a group D hydrologic soil.

Nihill is typically composed of hills and side slopes. The slope is linear and convex with parent material that is gravelly alluvium derived from igneous, metamorphic, and

sedimentary rock. A typical profile reaches restrictive features at more than 80 inches with a typical profile of: A: 0-5 inches gravelly loam, Bk1: 5-29 inches very gravelly clay loam, Bk2: 29-60 very gravelly sandy clay loam. The profile is well drained with no runoff listed, a moderately high to high Ksat, has a water table with a depth of more than 80 inches, calcium carbonate max of 15%, is non-saline to very slightly saline, has a SAR unlisted, and is a group B hydrologic soil.

- **Field Verification: Sample 10 &11**
- **Soil Sample Site 10**

Soils observed at SS-10 showed a profile of: A: 0-3.6 inches gr structure with a grade 2 and 2% gr frags, Bt1: 3.6-7.2 inches pr structure with a grade 2 and 12% gr frags, Bt2: 7.2-21.6 inches sbk structure with a grade 2 and 30% gr and 8 % cb frags, Bct: 21.6-32.4 inches sbk structure with grade 1 and 25% gr and 15% cb frags, C1: 32.4-44.4 inches sbk structure with 2% gr frags, C2: 44.4-69.9+ inches sl with grade ma.

Lab results identified the soils at 10-001-A as 32 wt% very fine sand and composed overall of 50% sand, 12% silt, and 38% clay with soil texture SC. The pH was 7.4, conductivity .6 mmhos/cm, saturation 58.3%, and no SAR with 17 wt%-dry course fragments. The organic matter was 5%. Chemical properties were: Calcium 5.09 meq/L, Magnesium 1.13 meq/L, Sodium .14 meq/L, boron .6 mg/kg, and no Selenium.

Lab results identified the soils at 10-002-Bt1 as 31 wt% very fine sand and composed overall of 44% sand, 22% silt, and 34% clay with soil texture CL. The pH was 7.4, conductivity .5 mmhos/cm, saturation 55.4%, and no SAR with 10 wt%-dry course fragments. The organic matter was 3%. Chemical properties were: Calcium 4.62 meq/L, Magnesium .89 meq/L, Sodium .12 meq/L, boron .6 mg/kg, and no Selenium.

Lab results identified the soils at 10-005-C1 as 76 wt% very fine sand and composed overall of 10% sand, 24% silt, and 66% clay with soil texture C. The pH was 8.3, conductivity 1.7 mmhos/cm, saturation 85.6%, and SAR 2.8 with 37 wt%-dry course fragments. The organic matter was .7%. Chemical properties were: Calcium 2.42 meq/L, Magnesium 10.4 meq/L, Sodium 7.17 meq/L, boron 2.9 mg/kg, and Selenium .2 mg/kg.

Lab results identified the soils at 10-006-C2 as 96 wt% very fine sand and composed overall of 6% sand, 28% silt, and 66% clay with soil texture C. The pH was 7.9, conductivity 4.9 mmhos/cm, saturation 92.0%, and SAR 2.0 with 25wt%-dry course fragments. The organic matter was .3%. Chemical properties were: Calcium 19 meq/L, Magnesium 43.7 meq/L, Sodium 10.9 meq/L, boron 3.5 mg/kg, and Selenium .2 mg/kg

- **Soil Sample Site 11**

Soils observed at SS-11 showed a profile of: A: 0-9 inches sbk structure with a grade 2 and 3% gr and 8% cb frags, Btk1:19-21.6 inches pr structure with a grade 3 and 8% gr and 25% cb frags, Btk2: 21.6-37.2 inches pr structure with a grade 2 and 15% gr and 30% cb frags an additional gravel pocked was noted to the right but not in the profile, Bck: 37.2-60 inches sbk structure with grade 1 and 1% gr frags, Ck: 60-75+ inches sl with a large carbon patch.

Lab results identified the soils at 11-001-A as 52 wt% very fine sand and composed overall of 34% sand, 26% silt, and 40% clay with soil texture C. The pH was 7.0, conductivity .7 mmhos/cm, saturation 68.2%, and no SAR with 15 wt%-dry course fragments. The organic matter was 4%. Chemical properties were: Calcium 6.04 meq/L, Magnesium 1.79 meq/L, Sodium .11 meq/L, boron .5 mg/kg, and no Selenium.

Lab results identified the soils at 11-002-Btk1 as 54 wt% very fine sand and composed overall of 28% sand, 26% silt, and 46% clay with soil texture C. The pH was 7.8, conductivity .4 mmhos/cm, saturation 58.6%, and SAR .1 with 28 wt%-dry course fragments. The organic matter was 1.6%. Chemical properties were: Calcium 3.08 meq/L, Magnesium 1.61 meq/L, Sodium .22 meq/L, boron .4 mg/kg, and no Selenium.

Lab results identified the soils at 11-003-Btk2 as 55 wt% very fine sand and composed overall of 34% sand, 20% silt, and 46% clay with soil texture C. The pH was 8.4, conductivity .2 mmhos/cm, saturation 60.9%, and SAR 1.6 with 23 wt%-dry course fragments. The organic matter was .3%. Chemical properties were: Calcium .52 meq/L, Magnesium .87 meq/L, Sodium 1.31 meq/L, boron .5 mg/kg, and no Selenium.

Lab results identified the soils at 11-004-Bck as 60 wt% very fine sand and composed overall of 36% sand, 24% silt, and 40% clay with soil texture C. The pH was 8.8, conductivity .4 mmhos/cm, saturation 73%, and SAR 3.5 with 13 wt%-dry course fragments. The organic matter was not present. Chemical properties were: Calcium .4 meq/L, Magnesium 1.06 meq/L, Sodium 2.98 meq/L, boron 2.0 mg/kg, and no Selenium.

Lab results identified the soils at 11-005-CK as 71 wt% very fine sand and composed overall of 38% sand, 24% silt, and 38% clay with soil texture CL. The pH was 8.7, conductivity 1.2 mmhos/cm, saturation 64.1%, and SAR 5.0 with 10 wt%-dry course fragments. The organic matter was not present. Chemical properties were: Calcium .6 meq/L, Magnesium 3.78 meq/L, Sodium 7.39 meq/L, boron 3.2 mg/kg, and no Selenium.

- **Analysis**

Lab and field results indicated horizons Similar to NRCS data for unit 258. A few chemical properties were elevated but not in salvage soils. Lab data and descriptions are included in D7.A and photographs are included in D7.C

Soil Map Unit 269: Shingle-Theedle-Kishona complex moist 3 to 80 percent slopes.

- **Soil Description**

The Shingle-Theedle-Kishona complex are 31 percent Shingle, 29 percent Theedle, 20 percent Kishona, and 20 percent minor components.

Shingle is typically composed of hills, summits, shoulders, side slopes, and crests. The slope is linear and convex with parent material that is residuum weathered from sandstone and shale. A typical profile reaches restrictive features at 5-20 inches with a typical profile of: A:0-2 inches clay loam, AC: 2-16 inches clay loam, Cr: 16-79 bedrock. The profile is well drained with very high runoff, a very low to moderately high Ksat, has a water table with a depth of more than 80 inches, calcium carbonate max of 14%, is non-saline to very slightly saline, has a SAR of 8.0, and is a group D hydrologic soil.

Kishona is typically composed of hills, backslope, footslope, and side slope. The slope is linear with parent material that is slope alluvium derived from sandstone and shale. A typical profile reaches restrictive features at more than 80 inches with a typical profile of: A: 0-2 inches loam, Bk: 2-79 inches clay loam. The profile is well drained with medium runoff, a moderately high to high Ksat, has a water table with a depth of more than 80

inches, calcium carbonate max of 14%, is non-saline to slightly saline, has a SAR of 8.0, and is a group B hydrologic soil.

Theedle is typically composed of hills, backslope, and side slopes. The slope is linear and convex with parent material that is slope alluvium over residuum weathered from sandstone and shale. A typical profile reaches restrictive features at more than 80 inches with a typical profile of: A: 0-2 inches loam, AC: 2-22 inches loam, Cr: 22-79 inches bedrock. The profile is well drained with high runoff, a very low to moderately high Ksat, has a water table with a depth of more than 80 inches, calcium carbonate max of 10%, is non-saline to very slightly saline, has a SAR of 8.0, and is a group C hydrologic soil.

- Field Verification: No Sample

Soil Map Unit 274: Shingle-Worf complex moist 9 to 15 percent slopes.

- **Soil Description**

The Shingle-Worf complex are 50 percent Shingle, 25 percent Worf, and 25 percent minor components.

Shingle is typically composed of ridges, hills, and side slope. The slope is linear and convex with parent material that is residuum weathered from shale. A typical profile reaches restrictive features at 10-20 inches with a typical profile of: A: 0-3 inches clay loam, AC: 3-17 inches clay loam, Cr: 17-60 bedrock. The profile is well drained with no runoff listed, a very low to moderately high Ksat, has a water table with a depth of more than 80 inches, calcium carbonate max of 15%, is non-saline to very slightly saline, has a SAR of 8.0, and is a group D hydrologic soil.

Worf is typically composed of ridges, hills, and side slopes. The slope is linear and convex with parent material unlisted. A typical profile reaches restrictive features at more than 80 inches with a typical profile of: A: 0-2 inches loam, B: 2-11 inches clay loam, B: 11-14 inches loam, and Cr: 14-60 inches bedrock. The profile is well drained with no runoff listed, a very low to moderately high Ksat, has a water table with a depth of more than 80 inches, calcium carbonate max of 12%, is non-saline to very slightly saline, has a SAR unlisted, and is a group D hydrologic soil.

- Field Verification: No Sample

Soil Map Unit 303: Wolf loam 3 to 6 percent slopes.

- **Soil Description**

The Wolf loam is 80 percent Shingle, 20 percent minor components.

Wolf is typically composed of fan remnants, alluvial fans, footslope, and toeslope. The slope is linear with parent material that is alluvium derived from igneous, metamorphic,

and sedimentary rock. A typical profile reaches restrictive features at 8-16 inches with a typical profile of: A: 0-2 inches loam, Btk: 2-12 inches clay loam, 2Bk1: 12-36 inches gravelly sandy loam, 2Bk2: 36-60 inches cobbly sandy loam. The profile is well drained with low runoff, a moderately high to high Ksat, has a water table with a depth of more than 80 inches, calcium carbonate max of 30%, is very slightly saline to slightly saline, has a SAR of 5.0, and is a group B hydrologic soil.

- **Field Verification: Sample 14 & 15**
- **Soil Sample Site 14**

Soils observed at SS-14 showed a profile of: Ap: 0-7.2 inches sbk structure with a grade 1 and 2% gr frags, Bt:7.2-14.4 inches pr structure with a grade 2 and 2% frags, Bt: 14.4-27.6 inches pr structure with a grade 2 and 3% gr frags, C1: 27.6-45.6 inches sbk structure with grade 1 and 2% gr frags, C2: 45.6-68.4+ inches sl structure and 2% gr frags.

Lab results identified the soils at 14-001-Ap as 51 wt% very fine sand and composed overall of 42% sand, 40% silt, and 18% clay with soil texture L. The pH was 7.0, conductivity .5 mmhos/cm, saturation 33.7%, and SAR 1.8 with 14 wt%-dry course fragments. The organic matter was 1.5%. Chemical properties were: Calcium 1.58 meq/L, Magnesium 1.94 meq/L, Sodium 2.38 meq/L, boron .3 mg/kg, and no Selenium.

Lab results identified the soils at 14-002-Bt as 56 wt% very fine sand and composed overall of 26% sand, 28% silt, and 46% clay with soil texture C. The pH was 7.8, conductivity 1.2 mmhos/cm, saturation 67.8%, and SAR 5.1 with 54 wt%-dry course fragments. The organic matter was 1.5%. Chemical properties were: Calcium 1.34 meq/L, Magnesium 4.12 meq/L, Sodium 8.4 meq/L, boron 1.2 mg/kg, and no Selenium.

Lab results identified the soils at 14-003-Btk as 49 wt% very fine sand and composed overall of 24% sand, 24% silt, and 52% clay with soil texture C. The pH was 8.2, conductivity 8.8 mmhos/cm, saturation 64.3%, and SAR 6.2 with 25 wt%-dry course fragments. The organic matter was 1%. Chemical properties were: Calcium 22.5 meq/L, Magnesium 77.2 meq/L, Sodium 44 meq/L, boron 2.7 mg/kg, and no Selenium.

Lab results identified the soils at 14-004-C1 as 73 wt% very fine sand and composed overall of 22% sand, 36% silt, and 42% clay with soil texture C. The pH was 8.5, conductivity 4.7 mmhos/cm, saturation 68.9%, and SAR 8.6 with 5 wt%-dry course fragments. The organic matter was .4%. Chemical properties were: Calcium 4.26 meq/L, Magnesium 22.8 meq/L, Sodium 31.5 meq/L, boron 3.9 mg/kg, and no Selenium.

Lab results identified the soils at 14-005-C2 as 73 wt% very fine sand and composed overall of 20% sand, 38% silt, and 42% clay with soil texture C. The pH was 8.7, conductivity 1.9 mmhos/cm, saturation 82.3%, and SAR 8.6 with 10 wt%-dry course fragments. The organic matter was .4%. Chemical properties were: Calcium 1.06 meq/L, Magnesium 5.09 meq/L, Sodium 15 meq/L, boron 2.7 mg/kg, and no Selenium.

- **Soil Sample Site 15**

Soils observed at SS-15 showed a profile of: A: 0-3.6 inches sbk structure with a grade 2 and 1% frags, Bt: 3.6-13.2 inches pr structure with a grade 3 and 5% frags, Btk1: 13.2-25.2 inches pr structure with a grade 2 and 18% gr frags, Btk2: 25.2-39.6 inches sbk structure with grade 2 and 5% gr frags, Bck: 39.6-54 inches sbk with grade 1 and 3% gr frags with carbon area noted, Ok: 54-68.4+ sbk structure with a grade 1 and 5% ob.

Lab results identified the soils at 15-001-A as 31 wt% very fine sand and composed overall of 20% sand, 46% silt, and 34% clay with soil texture SiCL. The pH was 7.1,

conductivity .7 mmhos/cm, saturation 53.3%, and SAR .1 with 12 wt%-dry course fragments. The organic matter was 3.1%. Chemical properties were: Calcium 4.92 meq/L, Magnesium 2.79 meq/L, Sodium .27 meq/L, boron .3 mg/kg, and no Selenium.

Lab results identified the soils at 15-002-Bt as 62 wt% very fine sand and composed overall of 24% sand, 30% silt, and 46% clay with soil texture C. The pH was 6.9, conductivity .6 mmhos/cm, saturation 64.1%, and no SAR with 27 wt%-dry course fragments. The organic matter was 1.7%. Chemical properties were: Calcium 3.95 meq/L, Magnesium 2.33 meq/L, Sodium .12 meq/L, boron .4 mg/kg, and no Selenium.

Lab results identified the soils at 15-003-Btk1 as 52 wt% very fine sand and composed overall of 24% sand, 32% silt, and 44% clay with soil texture C. The pH was 8.1, conductivity .3 mmhos/cm, saturation 57.4%, and SAR .3 with 28 wt%-dry course fragments. The organic matter was 1.5%. Chemical properties were: Calcium 1.71 meq/L, Magnesium 1.75 meq/L, Sodium .39 meq/L, boron .5 mg/kg, and no Selenium.

Lab results identified the soils at 15-004-Btk2 as 45 wt% very fine sand and composed overall of 22% sand, 34% silt, and 44% clay with soil texture C. The pH was 8.4, conductivity .4 mmhos/cm, saturation 63.3%, and SAR 1.7 with 19 wt%-dry course fragments. The organic matter was 1.1%. Chemical properties were: Calcium .82 meq/L, Magnesium 2.11 meq/L, Sodium 2.05 meq/L, boron .7 mg/kg, and no Selenium.

Lab results identified the soils at 15-005-Bck as 49 wt% very fine sand and composed overall of 24% sand, 30% silt, and 46% clay with soil texture C. The pH was 8.6, conductivity 1.6 mmhos/cm, saturation 64.6%, and SAR 3.2 with 11 wt%-dry course fragments. The organic matter was 1.2%. Chemical properties were: Calcium 1.64 meq/L, Magnesium 9.82 meq/L, Sodium 7.77 meq/L, boron 1.9 mg/kg, and no Selenium.

Lab results identified the soils at 15-006-Ck as 63 wt% very fine sand and composed overall of 22% sand, 40% silt, and 38% clay with soil texture cl. The pH was 8.4, conductivity 4.0 mmhos/cm, saturation 57.9%, and SAR 3.0 with 5 wt%-dry course fragments. The organic matter was .3%. Chemical properties were: Calcium 6.84 meq/L, Magnesium 38.8 meq/L, Sodium 14.2 meq/L, boron 4.1 mg/kg, and no Selenium.

- **Analysis**

Lab and field results indicated horizons similar to the NRCS data for unit 221. The SAR did have a variable range but averaged significantly lower than the NRCS value. Some chemical properties varied along with ratios. Lab data and descriptions are included in D7.A and photographs are included in D7.C

Soil Map Unit 305: Worfka-Samday-Shingle complex moist 6 to 30 percent slopes.

- **Soil Description**

The Worfka-Samday-Shingle complex are 35 percent Worfka, 25 percent Samday, 25 percent Shingle, and 20 percent minor components.

Worfka is typically composed of hills, summits, shoulders, side slopes, and crests. The slope is linear and convex with parent material that is residuum weathered from shale and/or colluvium derived from shale. A typical profile reaches restrictive features at 10-20 inches with a typical profile of: A: 0-1 inches loam, Bt: 1-9 inches clay, Bk: 9-19 clay, Cr: 19-79 inches bedrock. The profile is well drained with very high runoff, a very low to

moderately high Ksat, has a water table with a depth of more than 80 inches, calcium carbonate max of 14%, is non-saline to very slightly saline, has a SAR of 3.0, and is a group D hydrologic soil.

Samday is typically composed of hills, summit, shoulder, side slope, and crest. The slope is linear and convex with parent material that is residuum weathered from shale. A typical profile reaches restrictive features at more than 80 inches with a typical profile of: A: 0-2 inches clay loam, C: 2-17 inches clay, and Cr: 17-79 inches bedrock. The profile is well drained with very high runoff, a very low to moderately high Ksat, has a water table with a depth of more than 80 inches, calcium carbonate max of 14%, gypsum max of 2%, is non-saline to very slightly saline, has a SAR of 8.0, and is a group D hydrologic soil.

Shingle is typically composed of hills, summit, shoulder, side slope, and crest. The slope is linear and convex with parent material that is residuum weathered from shale. A typical profile reaches restrictive features at more than 80 inches with a typical profile of: A: 0-2 inches clay loam, C: 2-19 inches clay loam, and Cr: 19-79 inches bedrock. The profile is well drained with very high runoff, a very low to moderately high Ksat, has a water table with a depth of more than 80 inches, calcium carbonate max of 14%, is non-saline to very slightly saline, has a SAR of 8.0, and is a group D hydrologic soil

- Field Verification: No Sample

Soil Map Unit 306: Worthenton clay loam 0 to 3 percent slopes

- **Soil Description**

The Worthenton clay loam is 90 percent Worthenton and 10 percent minor components.

Worthenton is typically composed of oxbows, flood plains, and drainageways. The slope is linear and convex with parent material unlisted. A typical profile reaches restrictive features at more than 80 inches with a typical profile of: Oi: 0-2 inches slightly decomposed plant material, H1: 2-10 inches clay loam, and H2: 10-21 inches silt clay loam, H3: 21-62 inches clay loam. The profile is poorly drained with no runoff listed, a very low to moderately high Ksat, has a water table with a depth of more than 80 inches, calcium carbonate max of 15%, gypsum max of 2%, very slightly saline to moderately saline, has a SAR of 5.0, and is a group C/D hydrologic soil

- Field Verification: No Sample

D7-4. References

Schoeneberger, P.J., D.A. Wysocki, E.C. Benham, and Soil Survey Staff. 2012. Field book for describing and sampling soils, Version 3.0. Natural Resources Conservation Service, National Soil Survey Center, Lincoln, NE.

Soil Science. *Natural Resources Conservation Service*, www.nrcs.usda.gov/conservation-basics/natural-resource-concerns/soil/soil-science. Accessed 14 Aug. 2024.

Wyoming Department of Environmental Quality, Land Quality Division November,1994. Guideline No. 1, Topsoil and Overburden.

Wyoming Department of Environmental Quality, Land Quality Division November,1994. Guideline No. 1A, Topsoil and Subsoil.

Land Quality - Wyoming Department of Environmental Quality, deq.wyoming.gov/land-quality/. Accessed 15 Aug. 2024.

Addendum D7.A

Laboratory Results

ANALYTICAL SUMMARY REPORT

August 16, 2024

Mullinax Inc.
PO Box 2044
Sheridan, WY 82801-2044

Work Order: G24070190 Quote ID: G17459

Project Name: Mullinax

Energy Laboratories Inc. Gillette WY received the following 83 samples for Mullinax Inc. on 7/11/2024 for analysis.

Lab ID	Client Sample ID	Collect Date	Receive Date	Matrix	Test
G24070190-001	01-001-A	07/11/24 0:00	07/11/24	Soil	Metals, CACL2 Extractable Metals, Saturated Paste Coarse Fragments Conductivity, Saturated Paste Extract Organic Carbon/Matter Walkley-Black pH, Saturated Paste CaCl2 Hot Water Soil Extraction ASA25-9 Total Organic Matter Prep ASA29-3 Particle Size Analysis / Texture Prep ASA15-5 Saturated Paste Extraction Particle Size Analysis / Texture Sodium Adsorption Ratio Saturation Percentage Very Fine Sand
G24070190-002	01-002-B+	07/11/24 0:00	07/11/24	Soil	Same As Above
G24070190-003	02-001-A	07/11/24 0:00	07/11/24	Soil	Same As Above
G24070190-004	02-002-B+K	07/10/24 0:00	07/11/24	Soil	Same As Above
G24070190-005	02-004-CK2	07/10/24 0:00	07/11/24	Soil	Same As Above
G24070190-006	02-005-CK3	07/10/24 0:00	07/11/24	Soil	Same As Above
G24070190-007	03-001-B+b	07/11/24 0:00	07/11/24	Soil	Same As Above
G24070190-008	04-001-A	07/10/24 0:00	07/11/24	Soil	Same As Above
G24070190-009	04-002-B+1	07/10/24 0:00	07/11/24	Soil	Same As Above
G24070190-010	04-003-B+2	07/10/24 0:00	07/11/24	Soil	Same As Above
G24070190-011	04-004-B+K1	07/10/24 0:00	07/11/24	Soil	Same As Above
G24070190-012	04-005-BC+K	07/10/24 0:00	07/11/24	Soil	Same As Above
G24070190-013	04-006-CK	07/10/24 0:00	07/11/24	Soil	Same As Above
G24070190-014	05-001-A	07/11/24 0:00	07/11/24	Soil	Same As Above
G24070190-015	05-002-B+	07/11/24 0:00	07/11/24	Soil	Same As Above
G24070190-016	05-003-B+K1	07/11/24 0:00	07/11/24	Soil	Same As Above
G24070190-017	05-004-B+K2	07/11/24 0:00	07/11/24	Soil	Same As Above
G24070190-018	06-001-A	07/10/24 0:00	07/11/24	Soil	Same As Above

ANALYTICAL SUMMARY REPORT

G24070190-019	06-002-B+	07/10/24 0:00	07/11/24	Soil	Same As Above
G24070190-020	06-003-B+K1	07/10/24 0:00	07/11/24	Soil	Same As Above
G24070190-021	06-004-B+K2	07/10/24 0:00	07/11/24	Soil	Same As Above
G24070190-022	06-005-BC+K	07/10/24 0:00	07/11/24	Soil	Same As Above
G24070190-023	07-001-A	07/10/24 0:00	07/11/24	Soil	Same As Above
G24070190-024	07-002-B+	07/10/24 0:00	07/11/24	Soil	Same As Above
G24070190-025	07-003-B+K	07/10/24 0:00	07/11/24	Soil	Same As Above
G24070190-026	08-001-A	07/10/24 0:00	07/11/24	Soil	Same As Above
G24070190-027	08-002-B+1	07/10/24 0:00	07/11/24	Soil	Same As Above
G24070190-028	08-003-B+2	07/10/24 0:00	07/11/24	Soil	Same As Above
G24070190-029	08-004-BCK	07/10/24 0:00	07/11/24	Soil	Same As Above
G24070190-030	08-005-C	07/10/24 0:00	07/11/24	Soil	Same As Above
G24070190-031	09-001-A	07/10/24 0:00	07/11/24	Soil	Same As Above
G24070190-032	09-002-B+	07/10/24 0:00	07/11/24	Soil	Same As Above
G24070190-033	09-003-B+K	07/10/24 0:00	07/11/24	Soil	Same As Above
G24070190-034	09-004-BCK	07/10/24 0:00	07/11/24	Soil	Same As Above
G24070190-035	09-005-C	07/10/24 0:00	07/11/24	Soil	Same As Above
G24070190-036	10-001-A	07/10/24 0:00	07/11/24	Soil	Same As Above
G24070190-037	10-002-B+1	07/10/24 0:00	07/11/24	Soil	Same As Above
G24070190-038	10-005-C1	07/10/24 0:00	07/11/24	Soil	Same As Above
G24070190-039	10-006-C2	07/10/24 0:00	07/11/24	Soil	Same As Above
G24070190-040	11-001-A	07/10/24 0:00	07/11/24	Soil	Same As Above
G24070190-041	11-002-B+K1	07/10/24 0:00	07/11/24	Soil	Same As Above
G24070190-042	11-003-B+K2	07/10/24 0:00	07/11/24	Soil	Same As Above
G24070190-043	11-004-BCK	07/10/24 0:00	07/11/24	Soil	Same As Above
G24070190-044	11-005-CK	07/10/24 0:00	07/11/24	Soil	Same As Above
G24070190-045	12-001-A	07/11/24 0:00	07/11/24	Soil	Same As Above
G24070190-046	12-002-B+g	07/11/24 0:00	07/11/24	Soil	Same As Above
G24070190-047	12-003-Bg1	07/11/24 0:00	07/11/24	Soil	Same As Above
G24070190-048	12-004-Bg2	07/11/24 0:00	07/11/24	Soil	Same As Above
G24070190-049	12-005-Bg3	07/11/24 0:00	07/11/24	Soil	Same As Above
G24070190-050	13-001-A	07/10/24 0:00	07/11/24	Soil	Same As Above
G24070190-051	13-002-B+	07/10/24 0:00	07/11/24	Soil	Same As Above
G24070190-052	13-003-B+K1	07/10/24 0:00	07/11/24	Soil	Same As Above
G24070190-053	13-004-B+K2	07/10/24 0:00	07/11/24	Soil	Same As Above
G24070190-054	13-005-BCK	07/10/24 0:00	07/11/24	Soil	Same As Above

ANALYTICAL SUMMARY REPORT

G24070190-055	13-006-CK	07/10/24 0:00	07/11/24	Soil	Same As Above
G24070190-056	14-001-Ap	07/10/24 0:00	07/11/24	Soil	Same As Above
G24070190-057	14-002-B+	07/10/24 0:00	07/11/24	Soil	Same As Above
G24070190-058	14-003-B+K	07/10/24 0:00	07/11/24	Soil	Same As Above
G24070190-059	14-004-C1	07/10/24 0:00	07/11/24	Soil	Same As Above
G24070190-060	14-005-C2	07/10/24 0:00	07/11/24	Soil	Same As Above
G24070190-061	15-001-A	07/10/24 0:00	07/11/24	Soil	Same As Above
G24070190-062	15-002-B+	07/10/24 0:00	07/11/24	Soil	Same As Above
G24070190-063	15-003-B+K1	07/10/24 0:00	07/11/24	Soil	Same As Above
G24070190-064	15-004-B+K2	07/10/24 0:00	07/11/24	Soil	Same As Above
G24070190-065	15-005-BCK	07/10/24 0:00	07/11/24	Soil	Same As Above
G24070190-066	15-006-CK	07/10/24 0:00	07/11/24	Soil	Same As Above
G24070190-067	16-001-A	07/10/24 0:00	07/11/24	Soil	Same As Above
G24070190-068	16-002-B+	07/10/24 0:00	07/11/24	Soil	Same As Above
G24070190-069	16-003-BCK	07/10/24 0:00	07/11/24	Soil	Same As Above
G24070190-070	16-004-C1	07/10/24 0:00	07/11/24	Soil	Same As Above
G24070190-071	17-001-A	07/10/24 0:00	07/11/24	Soil	Same As Above
G24070190-072	17-002-B+K1	07/10/24 0:00	07/11/24	Soil	Same As Above
G24070190-073	17-003-B+K2	07/10/24 0:00	07/11/24	Soil	Same As Above
G24070190-074	17-005-C2	07/10/24 0:00	07/11/24	Soil	Same As Above
G24070190-075	18-001-A	07/10/24 0:00	07/11/24	Soil	Same As Above
G24070190-076	18-002-B+	07/10/24 0:00	07/11/24	Soil	Same As Above
G24070190-077	18-003-B+K1	07/10/24 0:00	07/11/24	Soil	Same As Above
G24070190-078	18-004-B+K2	07/10/24 0:00	07/11/24	Soil	Same As Above
G24070190-079	18-005-B+K3	07/10/24 0:00	07/11/24	Soil	Same As Above
G24070190-080	18-006-BC+K	07/10/24 0:00	07/11/24	Soil	Same As Above
G24070190-081	19-001-A	07/10/24 0:00	07/11/24	Soil	Same As Above
G24070190-082	19-002-B+	07/10/24 0:00	07/11/24	Soil	Same As Above
G24070190-083	19-003-C1	07/10/24 0:00	07/11/24	Soil	Same As Above

The analyses presented in this report were performed by Energy Laboratories, Inc., 400 W Boxelder Rd, Gillette, WY 82718, unless otherwise noted. Any exceptions or problems with the analyses are noted in the report package. Any issues encountered during sample receipt are documented in the Work Order Receipt Checklist.

The results as reported relate only to the item(s) submitted for testing. This report shall be used or copied only in its entirety. Energy Laboratories, Inc. is not responsible for the consequences arising from the use of a partial report.

Energy Laboratories, Inc. verifies the reported results for the analysis has been technically reviewed and approved for release.

If you have any questions regarding these test results, please contact your Project Manager.

CLIENT: Mullinax Inc.
Project: Mullinax
Work Order: G24070190

Report Date: 08/16/24

CASE NARRATIVE

Tests associated with analyst identified as ELI-H were subcontracted to Energy Laboratories, 3161 E. Lyndale Ave., Helena, MT, EPA Number MT00945.

LABORATORY ANALYTICAL REPORT

Prepared by Gillette, WY Branch

Client: Mullinax Inc.
Project: Mullinax
Lab ID: G24070190-001
Client Sample ID: 01-001-A

Report Date: 08/16/24
Collection Date: 07/11/24
Date Received: 07/11/24
Matrix: Soil

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
PHYSICAL CHARACTERISTICS							
Very Fine Sand	43	wt%		1		ASA15-5	07/26/24 16:05 / eli-h
PHYSICAL CHARACTERISTICS							
Sand	38	%		1		ASA15-5	07/24/24 16:04 / eli-h
Silt	42	%		1		ASA15-5	07/24/24 16:04 / eli-h
Clay	20	%		1		ASA15-5	07/24/24 16:04 / eli-h
Texture	L			1		ASA15-5	07/24/24 16:04 / eli-h
SATURATED PASTE EXTRACT							
pH, sat. paste	6.6	s.u.		0.1		ASA10-3	07/24/24 09:13 / eli-h
Conductivity, sat. paste	0.4	mmhos/cm		0.1		ASA10-3	07/24/24 11:46 / eli-h
Saturation	38.3	%		0.1		USDA27a	07/24/24 08:17 / eli-h
Sodium Adsorption Ratio (SAR)	ND	unitless		0.1		USDA20b	07/29/24 17:37 / eli-h
CHEMICAL CHARACTERISTICS							
Organic Matter	2.8	%		0.2		ASA29-3	07/31/24 15:10 / eli-h
PHYSICAL CHARACTERISTICS							
Coarse Fragments	4	wt%-dry		2		ASA15-3	07/25/24 09:18 / eli-h
SATURATED PASTE EXTRACT							
Calcium, sat. paste	3.09	meq/L		0.05		SW6010B	07/26/24 21:54 / eli-h
Magnesium, sat. paste	1.1	meq/L		0.08		SW6010B	07/26/24 21:54 / eli-h
Sodium, sat. paste	0.1	meq/L		0.04		SW6010B	07/26/24 21:54 / eli-h
METALS, CACL2 EXTRACTABLE							
Boron	0.3	mg/kg		0.1		SW6010B	07/25/24 17:40 / eli-h
Selenium	ND	mg/kg		0.1		SW6020	07/29/24 15:26 / eli-h

Report Definitions:
RL - Analyte Reporting Limit
QCL - Quality Control Limit
MCL - Maximum Contaminant Level
ND - Not detected at the Reporting Limit (RL)

LABORATORY ANALYTICAL REPORT

Prepared by Gillette, WY Branch

Client: Mullinax Inc.
Project: Mullinax
Lab ID: G24070190-002
Client Sample ID: 01-002-B+

Report Date: 08/16/24
Collection Date: 07/11/24
Date Received: 07/11/24
Matrix: Soil

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
PHYSICAL CHARACTERISTICS							
Very Fine Sand	59	wt%		1		ASA15-5	07/26/24 16:05 / eli-h
PHYSICAL CHARACTERISTICS							
Sand	24	%		1		ASA15-5	07/24/24 16:04 / eli-h
Silt	30	%		1		ASA15-5	07/24/24 16:04 / eli-h
Clay	46	%		1		ASA15-5	07/24/24 16:04 / eli-h
Texture	C			1		ASA15-5	07/24/24 16:04 / eli-h
SATURATED PASTE EXTRACT							
pH, sat. paste	6.6	s.u.		0.1		ASA10-3	07/24/24 09:14 / eli-h
Conductivity, sat. paste	0.3	mmhos/cm		0.1		ASA10-3	07/24/24 11:47 / eli-h
Saturation	54.8	%		0.1		USDA27a	07/24/24 08:17 / eli-h
Sodium Adsorption Ratio (SAR)	ND	unitless		0.1		USDA20b	07/29/24 17:37 / eli-h
CHEMICAL CHARACTERISTICS							
Organic Matter	1.3	%		0.2		ASA29-3	07/31/24 15:10 / eli-h
PHYSICAL CHARACTERISTICS							
Coarse Fragments	21	wt%-dry		2		ASA15-3	07/25/24 09:18 / eli-h
SATURATED PASTE EXTRACT							
Calcium, sat. paste	2.25	meq/L		0.05		SW6010B	07/26/24 22:09 / eli-h
Magnesium, sat. paste	0.7	meq/L		0.08		SW6010B	07/26/24 22:09 / eli-h
Sodium, sat. paste	0.1	meq/L		0.04		SW6010B	07/26/24 22:09 / eli-h
METALS, CACL2 EXTRACTABLE							
Boron	0.3	mg/kg		0.1		SW6010B	07/25/24 17:44 / eli-h
Selenium	ND	mg/kg		0.1		SW6020	07/29/24 15:34 / eli-h

Report Definitions:
RL - Analyte Reporting Limit
QCL - Quality Control Limit
MCL - Maximum Contaminant Level
ND - Not detected at the Reporting Limit (RL)

LABORATORY ANALYTICAL REPORT

Prepared by Gillette, WY Branch

Client: Mullinax Inc.
Project: Mullinax
Lab ID: G24070190-003
Client Sample ID: 02-001-A

Report Date: 08/16/24
Collection Date: 07/11/24
Date Received: 07/11/24
Matrix: Soil

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
PHYSICAL CHARACTERISTICS							
Very Fine Sand	44	wt%		1		ASA15-5	07/26/24 16:05 / eli-h
PHYSICAL CHARACTERISTICS							
Sand	34	%		1		ASA15-5	07/24/24 16:04 / eli-h
Silt	30	%		1		ASA15-5	07/24/24 16:04 / eli-h
Clay	36	%		1		ASA15-5	07/24/24 16:04 / eli-h
Texture	CL			1		ASA15-5	07/24/24 16:04 / eli-h
SATURATED PASTE EXTRACT							
pH, sat. paste	7.1	s.u.		0.1		ASA10-3	07/24/24 09:14 / eli-h
Conductivity, sat. paste	0.4	mmhos/cm		0.1		ASA10-3	07/24/24 11:48 / eli-h
Saturation	56.1	%		0.1		USDA27a	07/24/24 08:17 / eli-h
Sodium Adsorption Ratio (SAR)	ND	unitless		0.1		USDA20b	07/29/24 17:37 / eli-h
CHEMICAL CHARACTERISTICS							
Organic Matter	3.3	%		0.2		ASA29-3	07/31/24 15:10 / eli-h
PHYSICAL CHARACTERISTICS							
Coarse Fragments	8	wt%-dry		2		ASA15-3	07/25/24 09:18 / eli-h
SATURATED PASTE EXTRACT							
Calcium, sat. paste	4.31	meq/L		0.05		SW6010B	07/26/24 22:13 / eli-h
Magnesium, sat. paste	0.95	meq/L		0.08		SW6010B	07/26/24 22:13 / eli-h
Sodium, sat. paste	0.06	meq/L		0.04		SW6010B	07/26/24 22:13 / eli-h
METALS, CACL2 EXTRACTABLE							
Boron	0.6	mg/kg		0.1		SW6010B	07/25/24 17:48 / eli-h
Selenium	ND	mg/kg		0.1		SW6020	07/29/24 15:37 / eli-h

Report Definitions:
RL - Analyte Reporting Limit
QCL - Quality Control Limit
MCL - Maximum Contaminant Level
ND - Not detected at the Reporting Limit (RL)

LABORATORY ANALYTICAL REPORT

Prepared by Gillette, WY Branch

Client: Mullinax Inc.
Project: Mullinax
Lab ID: G24070190-004
Client Sample ID: 02-002-B+K

Report Date: 08/16/24
Collection Date: 07/10/24
Date Received: 07/11/24
Matrix: Soil

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
PHYSICAL CHARACTERISTICS							
Very Fine Sand	53	wt%		1		ASA15-5	07/26/24 16:05 / eli-h
PHYSICAL CHARACTERISTICS							
Sand	30	%		1		ASA15-5	07/24/24 16:04 / eli-h
Silt	52	%		1		ASA15-5	07/24/24 16:04 / eli-h
Clay	18	%		1		ASA15-5	07/24/24 16:04 / eli-h
Texture	SiL			1		ASA15-5	07/24/24 16:04 / eli-h
SATURATED PASTE EXTRACT							
pH, sat. paste	8.0	s.u.		0.1		ASA10-3	07/24/24 09:15 / eli-h
Conductivity, sat. paste	0.2	mmhos/cm		0.1		ASA10-3	07/24/24 11:49 / eli-h
Saturation	50.2	%		0.1		USDA27a	07/24/24 08:17 / eli-h
Sodium Adsorption Ratio (SAR)	ND	unitless		0.1		USDA20b	07/29/24 17:37 / eli-h
CHEMICAL CHARACTERISTICS							
Organic Matter	1.7	%		0.2		ASA29-3	07/31/24 15:10 / eli-h
PHYSICAL CHARACTERISTICS							
Coarse Fragments	10	wt%-dry		2		ASA15-3	07/25/24 09:18 / eli-h
SATURATED PASTE EXTRACT							
Calcium, sat. paste	2.26	meq/L		0.05		SW6010B	07/26/24 22:17 / eli-h
Magnesium, sat. paste	0.66	meq/L		0.08		SW6010B	07/26/24 22:17 / eli-h
Sodium, sat. paste	0.09	meq/L		0.04		SW6010B	07/26/24 22:17 / eli-h
METALS, CACL2 EXTRACTABLE							
Boron	0.6	mg/kg		0.1		SW6010B	07/25/24 17:52 / eli-h
Selenium	ND	mg/kg		0.1		SW6020	07/29/24 15:39 / eli-h

Report Definitions:
RL - Analyte Reporting Limit
QCL - Quality Control Limit
MCL - Maximum Contaminant Level
ND - Not detected at the Reporting Limit (RL)

LABORATORY ANALYTICAL REPORT

Prepared by Gillette, WY Branch

Client: Mullinax Inc.
Project: Mullinax
Lab ID: G24070190-005
Client Sample ID: 02-004-CK2

Report Date: 08/16/24
Collection Date: 07/10/24
Date Received: 07/11/24
Matrix: Soil

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
PHYSICAL CHARACTERISTICS							
Very Fine Sand	51	wt%		1		ASA15-5	07/26/24 16:05 / eli-h
PHYSICAL CHARACTERISTICS							
Sand	36	%		1		ASA15-5	07/24/24 16:04 / eli-h
Silt	28	%		1		ASA15-5	07/24/24 16:04 / eli-h
Clay	36	%		1		ASA15-5	07/24/24 16:04 / eli-h
Texture	CL			1		ASA15-5	07/24/24 16:04 / eli-h
SATURATED PASTE EXTRACT							
pH, sat. paste	8.4	s.u.		0.1		ASA10-3	07/24/24 09:16 / eli-h
Conductivity, sat. paste	0.2	mmhos/cm		0.1		ASA10-3	07/24/24 11:50 / eli-h
Saturation	48.0	%		0.1		USDA27a	07/24/24 08:17 / eli-h
Sodium Adsorption Ratio (SAR)	0.3	unitless		0.1		USDA20b	07/29/24 17:37 / eli-h
CHEMICAL CHARACTERISTICS							
Organic Matter	0.3	%		0.2		ASA29-3	07/31/24 15:10 / eli-h
PHYSICAL CHARACTERISTICS							
Coarse Fragments	2	wt%-dry		2		ASA15-3	07/25/24 09:18 / eli-h
SATURATED PASTE EXTRACT							
Calcium, sat. paste	0.83	meq/L		0.05		SW6010B	07/26/24 22:21 / eli-h
Magnesium, sat. paste	1.77	meq/L		0.08		SW6010B	07/26/24 22:21 / eli-h
Sodium, sat. paste	0.31	meq/L		0.04		SW6010B	07/26/24 22:21 / eli-h
METALS, CACL2 EXTRACTABLE							
Boron	0.3	mg/kg		0.1		SW6010B	07/25/24 17:56 / eli-h
Selenium	ND	mg/kg		0.1		SW6020	07/29/24 15:41 / eli-h

Report Definitions:
RL - Analyte Reporting Limit
QCL - Quality Control Limit
MCL - Maximum Contaminant Level
ND - Not detected at the Reporting Limit (RL)

LABORATORY ANALYTICAL REPORT

Prepared by Gillette, WY Branch

Client: Mullinax Inc.
Project: Mullinax
Lab ID: G24070190-006
Client Sample ID: 02-005-CK3

Report Date: 08/16/24
Collection Date: 07/10/24
Date Received: 07/11/24
Matrix: Soil

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
PHYSICAL CHARACTERISTICS							
Very Fine Sand	54	wt%		1		ASA15-5	07/26/24 16:05 / eli-h
PHYSICAL CHARACTERISTICS							
Sand	38	%		1		ASA15-5	07/24/24 16:04 / eli-h
Silt	28	%		1		ASA15-5	07/24/24 16:04 / eli-h
Clay	34	%		1		ASA15-5	07/24/24 16:04 / eli-h
Texture	CL			1		ASA15-5	07/24/24 16:04 / eli-h
SATURATED PASTE EXTRACT							
pH, sat. paste	8.6	s.u.		0.1		ASA10-3	07/24/24 09:16 / eli-h
Conductivity, sat. paste	0.3	mmhos/cm		0.1		ASA10-3	07/24/24 11:51 / eli-h
Saturation	53.8	%		0.1		USDA27a	07/24/24 08:17 / eli-h
Sodium Adsorption Ratio (SAR)	0.8	unitless		0.1		USDA20b	07/29/24 17:37 / eli-h
CHEMICAL CHARACTERISTICS							
Organic Matter	ND	%		0.2		ASA29-3	07/31/24 15:10 / eli-h
PHYSICAL CHARACTERISTICS							
Coarse Fragments	8	wt%-dry		2		ASA15-3	07/25/24 09:18 / eli-h
SATURATED PASTE EXTRACT							
Calcium, sat. paste	0.6	meq/L		0.05		SW6010B	07/26/24 22:32 / eli-h
Magnesium, sat. paste	1.95	meq/L		0.08		SW6010B	07/26/24 22:32 / eli-h
Sodium, sat. paste	0.91	meq/L		0.04		SW6010B	07/26/24 22:32 / eli-h
METALS, CACL2 EXTRACTABLE							
Boron	0.4	mg/kg		0.1		SW6010B	07/25/24 18:11 / eli-h
Selenium	ND	mg/kg		0.1		SW6020	07/29/24 15:43 / eli-h

Report Definitions:
RL - Analyte Reporting Limit
QCL - Quality Control Limit
MCL - Maximum Contaminant Level
ND - Not detected at the Reporting Limit (RL)

LABORATORY ANALYTICAL REPORT

Prepared by Gillette, WY Branch

Client: Mullinax Inc.
Project: Mullinax
Lab ID: G24070190-007
Client Sample ID: 03-001-B+b

Report Date: 08/16/24
Collection Date: 07/11/24
Date Received: 07/11/24
Matrix: Soil

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
PHYSICAL CHARACTERISTICS							
Very Fine Sand	51	wt%		1		ASA15-5	07/26/24 16:05 / eli-h
PHYSICAL CHARACTERISTICS							
Sand	28	%		1		ASA15-5	07/24/24 16:04 / eli-h
Silt	28	%		1		ASA15-5	07/24/24 16:04 / eli-h
Clay	44	%		1		ASA15-5	07/24/24 16:04 / eli-h
Texture	C			1		ASA15-5	07/24/24 16:04 / eli-h
SATURATED PASTE EXTRACT							
pH, sat. paste	7.5	s.u.		0.1		ASA10-3	07/24/24 09:17 / eli-h
Conductivity, sat. paste	0.4	mmhos/cm		0.1		ASA10-3	07/24/24 11:52 / eli-h
Saturation	60.1	%		0.1		USDA27a	07/24/24 08:18 / eli-h
Sodium Adsorption Ratio (SAR)	ND	unitless		0.1		USDA20b	07/29/24 17:37 / eli-h
CHEMICAL CHARACTERISTICS							
Organic Matter	1.7	%		0.2		ASA29-3	07/31/24 15:10 / eli-h
PHYSICAL CHARACTERISTICS							
Coarse Fragments	16	wt%-dry		2		ASA15-3	07/25/24 09:18 / eli-h
SATURATED PASTE EXTRACT							
Calcium, sat. paste	3.04	meq/L		0.05		SW6010B	07/26/24 22:36 / eli-h
Magnesium, sat. paste	0.83	meq/L		0.08		SW6010B	07/26/24 22:36 / eli-h
Sodium, sat. paste	0.11	meq/L		0.04		SW6010B	07/26/24 22:36 / eli-h
METALS, CACL2 EXTRACTABLE							
Boron	0.5	mg/kg		0.1		SW6010B	07/25/24 18:26 / eli-h
Selenium	ND	mg/kg		0.1		SW6020	07/29/24 15:48 / eli-h

Report Definitions:
RL - Analyte Reporting Limit
QCL - Quality Control Limit
MCL - Maximum Contaminant Level
ND - Not detected at the Reporting Limit (RL)

LABORATORY ANALYTICAL REPORT

Prepared by Gillette, WY Branch

Client: Mullinax Inc.
Project: Mullinax
Lab ID: G24070190-008
Client Sample ID: 04-001-A

Report Date: 08/16/24
Collection Date: 07/10/24
Date Received: 07/11/24
Matrix: Soil

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
PHYSICAL CHARACTERISTICS							
Very Fine Sand	56	wt%		1		ASA15-5	07/26/24 16:05 / eli-h
PHYSICAL CHARACTERISTICS							
Sand	36	%		1		ASA15-5	07/24/24 16:04 / eli-h
Silt	34	%		1		ASA15-5	07/24/24 16:04 / eli-h
Clay	30	%		1		ASA15-5	07/24/24 16:04 / eli-h
Texture	CL			1		ASA15-5	07/24/24 16:04 / eli-h
SATURATED PASTE EXTRACT							
pH, sat. paste	7.1	s.u.		0.1		ASA10-3	07/24/24 09:18 / eli-h
Conductivity, sat. paste	0.6	mmhos/cm		0.1		ASA10-3	07/24/24 11:53 / eli-h
Saturation	55.2	%		0.1		USDA27a	07/24/24 08:18 / eli-h
Sodium Adsorption Ratio (SAR)	ND	unitless		0.1		USDA20b	07/29/24 17:37 / eli-h
CHEMICAL CHARACTERISTICS							
Organic Matter	3.7	%		0.2		ASA29-3	07/31/24 15:10 / eli-h
PHYSICAL CHARACTERISTICS							
Coarse Fragments	16	wt%-dry		2		ASA15-3	07/25/24 09:18 / eli-h
SATURATED PASTE EXTRACT							
Calcium, sat. paste	6.51	meq/L		0.05		SW6010B	07/26/24 22:40 / eli-h
Magnesium, sat. paste	1.48	meq/L		0.08		SW6010B	07/26/24 22:40 / eli-h
Sodium, sat. paste	0.06	meq/L		0.04		SW6010B	07/26/24 22:40 / eli-h
METALS, CACL2 EXTRACTABLE							
Boron	0.7	mg/kg		0.1		SW6010B	07/25/24 18:30 / eli-h
Selenium	ND	mg/kg		0.1		SW6020	07/29/24 15:50 / eli-h

Report Definitions:
RL - Analyte Reporting Limit
QCL - Quality Control Limit
MCL - Maximum Contaminant Level
ND - Not detected at the Reporting Limit (RL)

LABORATORY ANALYTICAL REPORT

Prepared by Gillette, WY Branch

Client: Mullinax Inc.
Project: Mullinax
Lab ID: G24070190-009
Client Sample ID: 04-002-B+1

Report Date: 08/16/24
Collection Date: 07/10/24
Date Received: 07/11/24
Matrix: Soil

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
PHYSICAL CHARACTERISTICS							
Very Fine Sand	54	wt%		1		ASA15-5	07/26/24 16:05 / eli-h
PHYSICAL CHARACTERISTICS							
Sand	32	%		1		ASA15-5	07/24/24 16:04 / eli-h
Silt	34	%		1		ASA15-5	07/24/24 16:04 / eli-h
Clay	34	%		1		ASA15-5	07/24/24 16:04 / eli-h
Texture	CL			1		ASA15-5	07/24/24 16:04 / eli-h
SATURATED PASTE EXTRACT							
pH, sat. paste	7.2	s.u.		0.1		ASA10-3	07/24/24 09:20 / eli-h
Conductivity, sat. paste	0.5	mmhos/cm		0.1		ASA10-3	07/24/24 11:55 / eli-h
Saturation	52.9	%		0.1		USDA27a	07/24/24 08:18 / eli-h
Sodium Adsorption Ratio (SAR)	ND	unitless		0.1		USDA20b	07/29/24 17:37 / eli-h
CHEMICAL CHARACTERISTICS							
Organic Matter	2.3	%		0.2		ASA29-3	07/31/24 15:10 / eli-h
PHYSICAL CHARACTERISTICS							
Coarse Fragments	17	wt%-dry		2		ASA15-3	07/25/24 09:18 / eli-h
SATURATED PASTE EXTRACT							
Calcium, sat. paste	5.21	meq/L		0.05		SW6010B	07/26/24 22:47 / eli-h
Magnesium, sat. paste	1.09	meq/L		0.08		SW6010B	07/26/24 22:47 / eli-h
Sodium, sat. paste	0.11	meq/L		0.04		SW6010B	07/26/24 22:47 / eli-h
METALS, CACL2 EXTRACTABLE							
Boron	0.6	mg/kg		0.1		SW6010B	07/25/24 18:34 / eli-h
Selenium	ND	mg/kg		0.1		SW6020	07/29/24 15:52 / eli-h

Report Definitions:
RL - Analyte Reporting Limit
QCL - Quality Control Limit
MCL - Maximum Contaminant Level
ND - Not detected at the Reporting Limit (RL)

LABORATORY ANALYTICAL REPORT

Prepared by Gillette, WY Branch

Client: Mullinax Inc.
Project: Mullinax
Lab ID: G24070190-010
Client Sample ID: 04-003-B+2

Report Date: 08/16/24
Collection Date: 07/10/24
Date Received: 07/11/24
Matrix: Soil

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
PHYSICAL CHARACTERISTICS							
Very Fine Sand	65	wt%		1		ASA15-5	07/26/24 16:05 / eli-h
PHYSICAL CHARACTERISTICS							
Sand	24	%		1		ASA15-5	07/24/24 16:04 / eli-h
Silt	36	%		1		ASA15-5	07/24/24 16:04 / eli-h
Clay	40	%		1		ASA15-5	07/24/24 16:04 / eli-h
Texture	C			1		ASA15-5	07/24/24 16:04 / eli-h
SATURATED PASTE EXTRACT							
pH, sat. paste	7.9	s.u.		0.1		ASA10-3	07/24/24 09:21 / eli-h
Conductivity, sat. paste	0.2	mmhos/cm		0.1		ASA10-3	07/24/24 11:56 / eli-h
Saturation	52.3	%		0.1		USDA27a	07/24/24 08:18 / eli-h
Sodium Adsorption Ratio (SAR)	ND	unitless		0.1		USDA20b	07/29/24 17:37 / eli-h
CHEMICAL CHARACTERISTICS							
Organic Matter	1.5	%		0.2		ASA29-3	07/31/24 15:10 / eli-h
PHYSICAL CHARACTERISTICS							
Coarse Fragments	30	wt%-dry		2		ASA15-3	07/25/24 09:18 / eli-h
SATURATED PASTE EXTRACT							
Calcium, sat. paste	2.37	meq/L		0.05		SW6010B	07/26/24 22:51 / eli-h
Magnesium, sat. paste	0.66	meq/L		0.08		SW6010B	07/26/24 22:51 / eli-h
Sodium, sat. paste	0.11	meq/L		0.04		SW6010B	07/26/24 22:51 / eli-h
METALS, CACL2 EXTRACTABLE							
Boron	0.4	mg/kg		0.1		SW6010B	07/25/24 18:37 / eli-h
Selenium	ND	mg/kg		0.1		SW6020	07/29/24 15:54 / eli-h

Report Definitions:
RL - Analyte Reporting Limit
QCL - Quality Control Limit
MCL - Maximum Contaminant Level
ND - Not detected at the Reporting Limit (RL)

LABORATORY ANALYTICAL REPORT

Prepared by Gillette, WY Branch

Client: Mullinax Inc.
Project: Mullinax
Lab ID: G24070190-011
Client Sample ID: 04-004-B+K1

Report Date: 08/16/24
Collection Date: 07/10/24
Date Received: 07/11/24
Matrix: Soil

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
PHYSICAL CHARACTERISTICS							
Very Fine Sand	70	wt%		1		ASA15-5	07/26/24 16:05 / eli-h
PHYSICAL CHARACTERISTICS							
Sand	22	%		1		ASA15-5	07/24/24 16:04 / eli-h
Silt	40	%		1		ASA15-5	07/24/24 16:04 / eli-h
Clay	38	%		1		ASA15-5	07/24/24 16:04 / eli-h
Texture	CL			1		ASA15-5	07/24/24 16:04 / eli-h
SATURATED PASTE EXTRACT							
pH, sat. paste	8.1	s.u.		0.1		ASA10-3	07/24/24 09:22 / eli-h
Conductivity, sat. paste	0.2	mmhos/cm		0.1		ASA10-3	07/24/24 11:57 / eli-h
Saturation	48.0	%		0.1		USDA27a	07/24/24 08:18 / eli-h
Sodium Adsorption Ratio (SAR)	0.1	unitless		0.1		USDA20b	07/29/24 17:37 / eli-h
CHEMICAL CHARACTERISTICS							
Organic Matter	0.8	%		0.2		ASA29-3	07/31/24 15:10 / eli-h
PHYSICAL CHARACTERISTICS							
Coarse Fragments	18	wt%-dry		2		ASA15-3	07/25/24 09:18 / eli-h
SATURATED PASTE EXTRACT							
Calcium, sat. paste	1.48	meq/L		0.05		SW6010B	07/26/24 22:55 / eli-h
Magnesium, sat. paste	0.79	meq/L		0.08		SW6010B	07/26/24 22:55 / eli-h
Sodium, sat. paste	0.13	meq/L		0.04		SW6010B	07/26/24 22:55 / eli-h
METALS, CACL2 EXTRACTABLE							
Boron	0.4	mg/kg		0.1		SW6010B	07/25/24 18:41 / eli-h
Selenium	ND	mg/kg		0.1		SW6020	07/29/24 16:02 / eli-h

Report Definitions:
RL - Analyte Reporting Limit
QCL - Quality Control Limit
MCL - Maximum Contaminant Level
ND - Not detected at the Reporting Limit (RL)

LABORATORY ANALYTICAL REPORT

Prepared by Gillette, WY Branch

Client: Mullinax Inc.
Project: Mullinax
Lab ID: G24070190-012
Client Sample ID: 04-005-BC+K

Report Date: 08/16/24
Collection Date: 07/10/24
Date Received: 07/11/24
Matrix: Soil

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
PHYSICAL CHARACTERISTICS							
Very Fine Sand	68	wt%		1		ASA15-5	07/26/24 16:05 / eli-h
PHYSICAL CHARACTERISTICS							
Sand	24	%		1		ASA15-5	07/24/24 16:04 / eli-h
Silt	38	%		1		ASA15-5	07/24/24 16:04 / eli-h
Clay	38	%		1		ASA15-5	07/24/24 16:04 / eli-h
Texture	CL			1		ASA15-5	07/24/24 16:04 / eli-h
SATURATED PASTE EXTRACT							
pH, sat. paste	8.2	s.u.		0.1		ASA10-3	07/24/24 09:23 / eli-h
Conductivity, sat. paste	0.2	mmhos/cm		0.1		ASA10-3	07/24/24 11:58 / eli-h
Saturation	47.4	%		0.1		USDA27a	07/24/24 08:18 / eli-h
Sodium Adsorption Ratio (SAR)	0.2	unitless		0.1		USDA20b	07/29/24 17:37 / eli-h
CHEMICAL CHARACTERISTICS							
Organic Matter	0.5	%		0.2		ASA29-3	07/31/24 15:10 / eli-h
PHYSICAL CHARACTERISTICS							
Coarse Fragments	18	wt%-dry		2		ASA15-3	07/25/24 09:18 / eli-h
SATURATED PASTE EXTRACT							
Calcium, sat. paste	1.05	meq/L		0.05		SW6010B	07/26/24 22:59 / eli-h
Magnesium, sat. paste	1.23	meq/L		0.08		SW6010B	07/26/24 22:59 / eli-h
Sodium, sat. paste	0.19	meq/L		0.04		SW6010B	07/26/24 22:59 / eli-h
METALS, CACL2 EXTRACTABLE							
Boron	0.4	mg/kg		0.1		SW6010B	07/25/24 18:45 / eli-h
Selenium	ND	mg/kg		0.1		SW6020	07/29/24 16:05 / eli-h

Report Definitions:
RL - Analyte Reporting Limit
QCL - Quality Control Limit
MCL - Maximum Contaminant Level
ND - Not detected at the Reporting Limit (RL)

LABORATORY ANALYTICAL REPORT

Prepared by Gillette, WY Branch

Client: Mullinax Inc.
Project: Mullinax
Lab ID: G24070190-013
Client Sample ID: 04-006-CK

Report Date: 08/16/24
Collection Date: 07/10/24
Date Received: 07/11/24
Matrix: Soil

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
PHYSICAL CHARACTERISTICS							
Very Fine Sand	72	wt%		1		ASA15-5	07/26/24 16:05 / eli-h
PHYSICAL CHARACTERISTICS							
Sand	28	%		1		ASA15-5	07/24/24 16:04 / eli-h
Silt	38	%		1		ASA15-5	07/24/24 16:04 / eli-h
Clay	34	%		1		ASA15-5	07/24/24 16:04 / eli-h
Texture	CL			1		ASA15-5	07/24/24 16:04 / eli-h
SATURATED PASTE EXTRACT							
pH, sat. paste	8.4	s.u.		0.1		ASA10-3	07/24/24 09:24 / eli-h
Conductivity, sat. paste	0.2	mmhos/cm		0.1		ASA10-3	07/24/24 11:59 / eli-h
Saturation	52.5	%		0.1		USDA27a	07/24/24 08:18 / eli-h
Sodium Adsorption Ratio (SAR)	0.4	unitless		0.1		USDA20b	07/29/24 17:37 / eli-h
CHEMICAL CHARACTERISTICS							
Organic Matter	0.4	%		0.2		ASA29-3	07/31/24 15:10 / eli-h
PHYSICAL CHARACTERISTICS							
Coarse Fragments	9	wt%-dry		2		ASA15-3	07/25/24 09:18 / eli-h
SATURATED PASTE EXTRACT							
Calcium, sat. paste	0.82	meq/L		0.05		SW6010B	07/26/24 23:03 / eli-h
Magnesium, sat. paste	1.6	meq/L		0.08		SW6010B	07/26/24 23:03 / eli-h
Sodium, sat. paste	0.42	meq/L		0.04		SW6010B	07/26/24 23:03 / eli-h
METALS, CACL2 EXTRACTABLE							
Boron	0.4	mg/kg		0.1		SW6010B	07/25/24 18:49 / eli-h
Selenium	ND	mg/kg		0.1		SW6020	07/29/24 16:07 / eli-h

Report Definitions:
RL - Analyte Reporting Limit
QCL - Quality Control Limit
MCL - Maximum Contaminant Level
ND - Not detected at the Reporting Limit (RL)

LABORATORY ANALYTICAL REPORT

Prepared by Gillette, WY Branch

Client: Mullinax Inc.
Project: Mullinax
Lab ID: G24070190-014
Client Sample ID: 05-001-A

Report Date: 08/16/24
Collection Date: 07/11/24
Date Received: 07/11/24
Matrix: Soil

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
PHYSICAL CHARACTERISTICS							
Very Fine Sand	52	wt%		1		ASA15-5	07/26/24 16:05 / eli-h
PHYSICAL CHARACTERISTICS							
Sand	42	%		1		ASA15-5	07/24/24 16:04 / eli-h
Silt	38	%		1		ASA15-5	07/24/24 16:04 / eli-h
Clay	20	%		1		ASA15-5	07/24/24 16:04 / eli-h
Texture	L			1		ASA15-5	07/24/24 16:04 / eli-h
SATURATED PASTE EXTRACT							
pH, sat. paste	6.3	s.u.		0.1		ASA10-3	07/24/24 09:25 / eli-h
Conductivity, sat. paste	0.3	mmhos/cm		0.1		ASA10-3	07/24/24 12:00 / eli-h
Saturation	48.2	%		0.1		USDA27a	07/24/24 08:18 / eli-h
Sodium Adsorption Ratio (SAR)	ND	unitless		0.1		USDA20b	07/29/24 17:37 / eli-h
CHEMICAL CHARACTERISTICS							
Organic Matter	4.0	%		0.2		ASA29-3	07/31/24 15:10 / eli-h
PHYSICAL CHARACTERISTICS							
Coarse Fragments	5	wt%-dry		2		ASA15-3	07/25/24 09:18 / eli-h
SATURATED PASTE EXTRACT							
Calcium, sat. paste	2.79	meq/L		0.05		SW6010B	07/26/24 23:07 / eli-h
Magnesium, sat. paste	0.95	meq/L		0.08		SW6010B	07/26/24 23:07 / eli-h
Sodium, sat. paste	0.09	meq/L		0.04		SW6010B	07/26/24 23:07 / eli-h
METALS, CACL2 EXTRACTABLE							
Boron	0.4	mg/kg		0.1		SW6010B	07/25/24 18:53 / eli-h
Selenium	ND	mg/kg		0.1		SW6020	07/29/24 16:09 / eli-h

Report Definitions:
RL - Analyte Reporting Limit
QCL - Quality Control Limit
MCL - Maximum Contaminant Level
ND - Not detected at the Reporting Limit (RL)

LABORATORY ANALYTICAL REPORT

Prepared by Gillette, WY Branch

Client: Mullinax Inc.
Project: Mullinax
Lab ID: G24070190-015
Client Sample ID: 05-002-B+

Report Date: 08/16/24
Collection Date: 07/11/24
Date Received: 07/11/24
Matrix: Soil

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
PHYSICAL CHARACTERISTICS							
Very Fine Sand	49	wt%		1		ASA15-5	07/26/24 16:05 / eli-h
PHYSICAL CHARACTERISTICS							
Sand	40	%		1		ASA15-5	07/24/24 16:04 / eli-h
Silt	32	%		1		ASA15-5	07/24/24 16:04 / eli-h
Clay	28	%		1		ASA15-5	07/24/24 16:04 / eli-h
Texture	CL			1		ASA15-5	07/24/24 16:04 / eli-h
SATURATED PASTE EXTRACT							
pH, sat. paste	6.4	s.u.		0.1		ASA10-3	07/24/24 09:26 / eli-h
Conductivity, sat. paste	0.3	mmhos/cm		0.1		ASA10-3	07/24/24 12:01 / eli-h
Saturation	43.4	%		0.1		USDA27a	07/24/24 08:18 / eli-h
Sodium Adsorption Ratio (SAR)	0.1	unitless		0.1		USDA20b	07/29/24 17:37 / eli-h
CHEMICAL CHARACTERISTICS							
Organic Matter	1.9	%		0.2		ASA29-3	07/31/24 15:10 / eli-h
PHYSICAL CHARACTERISTICS							
Coarse Fragments	9	wt%-dry		2		ASA15-3	07/25/24 09:18 / eli-h
SATURATED PASTE EXTRACT							
Calcium, sat. paste	2.56	meq/L		0.05		SW6010B	07/26/24 23:21 / eli-h
Magnesium, sat. paste	0.77	meq/L		0.08		SW6010B	07/26/24 23:21 / eli-h
Sodium, sat. paste	0.14	meq/L		0.04		SW6010B	07/26/24 23:21 / eli-h
METALS, CACL2 EXTRACTABLE							
Boron	0.3	mg/kg		0.1		SW6010B	07/25/24 18:57 / eli-h
Selenium	ND	mg/kg		0.1		SW6020	07/29/24 16:11 / eli-h

Report Definitions:
RL - Analyte Reporting Limit
QCL - Quality Control Limit
MCL - Maximum Contaminant Level
ND - Not detected at the Reporting Limit (RL)

LABORATORY ANALYTICAL REPORT

Prepared by Gillette, WY Branch

Client: Mullinax Inc.
Project: Mullinax
Lab ID: G24070190-016
Client Sample ID: 05-003-B+K1

Report Date: 08/16/24
Collection Date: 07/11/24
Date Received: 07/11/24
Matrix: Soil

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
PHYSICAL CHARACTERISTICS							
Very Fine Sand	47	wt%		1		ASA15-5	07/26/24 16:05 / eli-h
PHYSICAL CHARACTERISTICS							
Sand	40	%		1		ASA15-5	07/24/24 16:04 / eli-h
Silt	32	%		1		ASA15-5	07/24/24 16:04 / eli-h
Clay	28	%		1		ASA15-5	07/24/24 16:04 / eli-h
Texture	CL			1		ASA15-5	07/24/24 16:04 / eli-h
SATURATED PASTE EXTRACT							
pH, sat. paste	7.3	s.u.		0.1		ASA10-3	07/24/24 09:27 / eli-h
Conductivity, sat. paste	0.3	mmhos/cm		0.1		ASA10-3	07/24/24 12:02 / eli-h
Saturation	47.9	%		0.1		USDA27a	07/24/24 08:19 / eli-h
Sodium Adsorption Ratio (SAR)	0.1	unitless		0.1		USDA20b	07/29/24 17:37 / eli-h
CHEMICAL CHARACTERISTICS							
Organic Matter	1.0	%		0.2		ASA29-3	07/31/24 15:10 / eli-h
PHYSICAL CHARACTERISTICS							
Coarse Fragments	22	wt%-dry		2		ASA15-3	07/25/24 09:18 / eli-h
SATURATED PASTE EXTRACT							
Calcium, sat. paste	3.12	meq/L		0.05		SW6010B	07/26/24 23:25 / eli-h
Magnesium, sat. paste	0.79	meq/L		0.08		SW6010B	07/26/24 23:25 / eli-h
Sodium, sat. paste	0.2	meq/L		0.04		SW6010B	07/26/24 23:25 / eli-h
METALS, CACL2 EXTRACTABLE							
Boron	0.3	mg/kg		0.1		SW6010B	07/25/24 19:00 / eli-h
Selenium	ND	mg/kg		0.1		SW6020	07/29/24 16:13 / eli-h

Report Definitions:
RL - Analyte Reporting Limit
QCL - Quality Control Limit
MCL - Maximum Contaminant Level
ND - Not detected at the Reporting Limit (RL)

LABORATORY ANALYTICAL REPORT

Prepared by Gillette, WY Branch

Client: Mullinax Inc.
Project: Mullinax
Lab ID: G24070190-017
Client Sample ID: 05-004-B+K2

Report Date: 08/16/24
Collection Date: 07/11/24
Date Received: 07/11/24
Matrix: Soil

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
PHYSICAL CHARACTERISTICS							
Very Fine Sand	57	wt%		1		ASA15-5	07/26/24 16:05 / eli-h
PHYSICAL CHARACTERISTICS							
Sand	26	%		1		ASA15-5	07/24/24 16:04 / eli-h
Silt	36	%		1		ASA15-5	07/24/24 16:04 / eli-h
Clay	38	%		1		ASA15-5	07/24/24 16:04 / eli-h
Texture	CL			1		ASA15-5	07/24/24 16:04 / eli-h
SATURATED PASTE EXTRACT							
pH, sat. paste	7.9	s.u.		0.1		ASA10-3	07/24/24 09:27 / eli-h
Conductivity, sat. paste	0.2	mmhos/cm		0.1		ASA10-3	07/24/24 12:03 / eli-h
Saturation	54.7	%		0.1		USDA27a	07/24/24 08:19 / eli-h
Sodium Adsorption Ratio (SAR)	0.3	unitless		0.1		USDA20b	07/29/24 17:37 / eli-h
CHEMICAL CHARACTERISTICS							
Organic Matter	0.6	%		0.2		ASA29-3	07/31/24 15:10 / eli-h
PHYSICAL CHARACTERISTICS							
Coarse Fragments	21	wt%-dry		2		ASA15-3	07/25/24 09:18 / eli-h
SATURATED PASTE EXTRACT							
Calcium, sat. paste	1.54	meq/L		0.05		SW6010B	07/26/24 23:29 / eli-h
Magnesium, sat. paste	0.43	meq/L		0.08		SW6010B	07/26/24 23:29 / eli-h
Sodium, sat. paste	0.29	meq/L		0.04		SW6010B	07/26/24 23:29 / eli-h
METALS, CACL2 EXTRACTABLE							
Boron	0.3	mg/kg		0.1		SW6010B	07/25/24 19:16 / eli-h
Selenium	ND	mg/kg		0.1		SW6020	07/29/24 16:18 / eli-h

Report Definitions:
RL - Analyte Reporting Limit
QCL - Quality Control Limit
MCL - Maximum Contaminant Level
ND - Not detected at the Reporting Limit (RL)

LABORATORY ANALYTICAL REPORT

Prepared by Gillette, WY Branch

Client: Mullinax Inc.
Project: Mullinax
Lab ID: G24070190-018
Client Sample ID: 06-001-A

Report Date: 08/16/24
Collection Date: 07/10/24
Date Received: 07/11/24
Matrix: Soil

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
PHYSICAL CHARACTERISTICS							
Very Fine Sand	57	wt%		1		ASA15-5	07/26/24 16:05 / eli-h
PHYSICAL CHARACTERISTICS							
Sand	28	%		1		ASA15-5	07/24/24 16:04 / eli-h
Silt	38	%		1		ASA15-5	07/24/24 16:04 / eli-h
Clay	34	%		1		ASA15-5	07/24/24 16:04 / eli-h
Texture	CL			1		ASA15-5	07/24/24 16:04 / eli-h
SATURATED PASTE EXTRACT							
pH, sat. paste	6.7	s.u.		0.1		ASA10-3	07/24/24 09:28 / eli-h
Conductivity, sat. paste	0.8	mmhos/cm		0.1		ASA10-3	07/24/24 12:04 / eli-h
Saturation	58.5	%		0.1		USDA27a	07/24/24 08:19 / eli-h
Sodium Adsorption Ratio (SAR)	ND	unitless		0.1		USDA20b	07/29/24 17:37 / eli-h
CHEMICAL CHARACTERISTICS							
Organic Matter	4.0	%		0.2		ASA29-3	07/31/24 15:10 / eli-h
PHYSICAL CHARACTERISTICS							
Coarse Fragments	15	wt%-dry		2		ASA15-3	07/25/24 09:18 / eli-h
SATURATED PASTE EXTRACT							
Calcium, sat. paste	5.26	meq/L		0.05		SW6010B	07/26/24 23:33 / eli-h
Magnesium, sat. paste	3.83	meq/L		0.08		SW6010B	07/26/24 23:33 / eli-h
Sodium, sat. paste	0.19	meq/L		0.04		SW6010B	07/26/24 23:33 / eli-h
METALS, CACL2 EXTRACTABLE							
Boron	0.6	mg/kg		0.1		SW6010B	07/25/24 19:20 / eli-h
Selenium	ND	mg/kg		0.1		SW6020	07/29/24 16:20 / eli-h

Report Definitions:
RL - Analyte Reporting Limit
QCL - Quality Control Limit
MCL - Maximum Contaminant Level
ND - Not detected at the Reporting Limit (RL)

LABORATORY ANALYTICAL REPORT

Prepared by Gillette, WY Branch

Client: Mullinax Inc.
Project: Mullinax
Lab ID: G24070190-019
Client Sample ID: 06-002-B+

Report Date: 08/16/24
Collection Date: 07/10/24
Date Received: 07/11/24
Matrix: Soil

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
PHYSICAL CHARACTERISTICS							
Very Fine Sand	70	wt%		1		ASA15-5	07/26/24 16:05 / eli-h
PHYSICAL CHARACTERISTICS							
Sand	14	%		1		ASA15-5	07/24/24 16:04 / eli-h
Silt	32	%		1		ASA15-5	07/24/24 16:04 / eli-h
Clay	54	%		1		ASA15-5	07/24/24 16:04 / eli-h
Texture	C			1		ASA15-5	07/24/24 16:04 / eli-h
SATURATED PASTE EXTRACT							
pH, sat. paste	7.5	s.u.		0.1		ASA10-3	07/24/24 09:32 / eli-h
Conductivity, sat. paste	0.4	mmhos/cm		0.1		ASA10-3	07/24/24 12:06 / eli-h
Saturation	61.3	%		0.1		USDA27a	07/24/24 08:19 / eli-h
Sodium Adsorption Ratio (SAR)	0.2	unitless		0.1		USDA20b	07/29/24 17:37 / eli-h
CHEMICAL CHARACTERISTICS							
Organic Matter	1.5	%		0.2		ASA29-3	07/31/24 15:10 / eli-h
PHYSICAL CHARACTERISTICS							
Coarse Fragments	30	wt%-dry		2		ASA15-3	07/25/24 09:18 / eli-h
SATURATED PASTE EXTRACT							
Calcium, sat. paste	2.71	meq/L		0.05		SW6010B	07/26/24 23:40 / eli-h
Magnesium, sat. paste	2.02	meq/L		0.08		SW6010B	07/26/24 23:40 / eli-h
Sodium, sat. paste	0.25	meq/L		0.04		SW6010B	07/26/24 23:40 / eli-h
METALS, CACL2 EXTRACTABLE							
Boron	0.7	mg/kg		0.1		SW6010B	07/25/24 19:23 / eli-h
Selenium	ND	mg/kg		0.1		SW6020	07/29/24 16:22 / eli-h

Report Definitions:
RL - Analyte Reporting Limit
QCL - Quality Control Limit
MCL - Maximum Contaminant Level
ND - Not detected at the Reporting Limit (RL)

LABORATORY ANALYTICAL REPORT

Prepared by Gillette, WY Branch

Client: Mullinax Inc.
Project: Mullinax
Lab ID: G24070190-020
Client Sample ID: 06-003-B+K1

Report Date: 08/16/24
Collection Date: 07/10/24
Date Received: 07/11/24
Matrix: Soil

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
PHYSICAL CHARACTERISTICS							
Very Fine Sand	64	wt%		1		ASA15-5	07/26/24 16:05 / eli-h
PHYSICAL CHARACTERISTICS							
Sand	14	%		1		ASA15-5	07/24/24 16:04 / eli-h
Silt	36	%		1		ASA15-5	07/24/24 16:04 / eli-h
Clay	50	%		1		ASA15-5	07/24/24 16:04 / eli-h
Texture	C			1		ASA15-5	07/24/24 16:04 / eli-h
SATURATED PASTE EXTRACT							
pH, sat. paste	8.3	s.u.		0.1		ASA10-3	07/24/24 09:33 / eli-h
Conductivity, sat. paste	0.2	mmhos/cm		0.1		ASA10-3	07/24/24 12:07 / eli-h
Saturation	64.6	%		0.1		USDA27a	07/24/24 08:19 / eli-h
Sodium Adsorption Ratio (SAR)	1.2	unitless		0.1		USDA20b	07/29/24 17:37 / eli-h
CHEMICAL CHARACTERISTICS							
Organic Matter	0.9	%		0.2		ASA29-3	07/31/24 15:10 / eli-h
PHYSICAL CHARACTERISTICS							
Coarse Fragments	26	wt%-dry		2		ASA15-3	07/25/24 09:18 / eli-h
SATURATED PASTE EXTRACT							
Calcium, sat. paste	0.97	meq/L		0.05		SW6010B	07/26/24 23:44 / eli-h
Magnesium, sat. paste	1.51	meq/L		0.08		SW6010B	07/26/24 23:44 / eli-h
Sodium, sat. paste	1.35	meq/L		0.04		SW6010B	07/26/24 23:44 / eli-h
METALS, CACL2 EXTRACTABLE							
Boron	0.7	mg/kg		0.1		SW6010B	07/25/24 19:27 / eli-h
Selenium	ND	mg/kg		0.1		SW6020	07/29/24 16:24 / eli-h

Report Definitions:
RL - Analyte Reporting Limit
QCL - Quality Control Limit
MCL - Maximum Contaminant Level
ND - Not detected at the Reporting Limit (RL)

LABORATORY ANALYTICAL REPORT

Prepared by Gillette, WY Branch

Client: Mullinax Inc.
Project: Mullinax
Lab ID: G24070190-021
Client Sample ID: 06-004-B+K2

Report Date: 08/16/24
Collection Date: 07/10/24
Date Received: 07/11/24
Matrix: Soil

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
PHYSICAL CHARACTERISTICS							
Very Fine Sand	87	wt%		1		ASA15-5	07/26/24 16:05 / eli-h
PHYSICAL CHARACTERISTICS							
Sand	16	%		1		ASA15-5	07/24/24 16:04 / eli-h
Silt	40	%		1		ASA15-5	07/24/24 16:04 / eli-h
Clay	44	%		1		ASA15-5	07/24/24 16:04 / eli-h
Texture	C			1		ASA15-5	07/24/24 16:04 / eli-h
SATURATED PASTE EXTRACT							
pH, sat. paste	8.8	s.u.		0.1		ASA10-3	07/25/24 09:54 / eli-h
Conductivity, sat. paste	0.9	mmhos/cm		0.1		ASA10-3	07/26/24 08:06 / eli-h
Saturation	95.6	%		0.1		USDA27a	07/25/24 08:46 / eli-h
Sodium Adsorption Ratio (SAR)	5.6	unitless		0.1		USDA20b	07/29/24 17:37 / eli-h
CHEMICAL CHARACTERISTICS							
Organic Matter	0.4	%		0.2		ASA29-3	07/31/24 15:10 / eli-h
PHYSICAL CHARACTERISTICS							
Coarse Fragments	21	wt%-dry		2		ASA15-3	07/25/24 09:18 / eli-h
SATURATED PASTE EXTRACT							
Calcium, sat. paste	0.63	meq/L		0.05		SW6010B	07/27/24 00:11 / eli-h
Magnesium, sat. paste	2.11	meq/L		0.08		SW6010B	07/27/24 00:11 / eli-h
Sodium, sat. paste	6.53	meq/L		0.04		SW6010B	07/27/24 00:11 / eli-h
METALS, CACL2 EXTRACTABLE							
Boron	1.9	mg/kg		0.1		SW6010B	07/25/24 19:42 / eli-h
Selenium	ND	mg/kg		0.1		SW6020	07/29/24 16:41 / eli-h

Report Definitions:
RL - Analyte Reporting Limit
QCL - Quality Control Limit
MCL - Maximum Contaminant Level
ND - Not detected at the Reporting Limit (RL)

LABORATORY ANALYTICAL REPORT

Prepared by Gillette, WY Branch

Client: Mullinax Inc.
Project: Mullinax
Lab ID: G24070190-022
Client Sample ID: 06-005-BC+K

Report Date: 08/16/24
Collection Date: 07/10/24
Date Received: 07/11/24
Matrix: Soil

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
PHYSICAL CHARACTERISTICS							
Very Fine Sand	95	wt%		1		ASA15-5	07/26/24 16:05 / eli-h
PHYSICAL CHARACTERISTICS							
Sand	6	%		1		ASA15-5	07/24/24 16:04 / eli-h
Silt	38	%		1		ASA15-5	07/24/24 16:04 / eli-h
Clay	56	%		1		ASA15-5	07/24/24 16:04 / eli-h
Texture	C			1		ASA15-5	07/24/24 16:04 / eli-h
SATURATED PASTE EXTRACT							
pH, sat. paste	8.4	s.u.		0.1		ASA10-3	07/25/24 09:55 / eli-h
Conductivity, sat. paste	3.2	mmhos/cm		0.1		ASA10-3	07/26/24 08:07 / eli-h
Saturation	101	%		0.1		USDA27a	07/30/24 08:28 / eli-h
Sodium Adsorption Ratio (SAR)	5.0	unitless		0.1		USDA20b	07/29/24 17:37 / eli-h
CHEMICAL CHARACTERISTICS							
Organic Matter	ND	%		0.2		ASA29-3	07/31/24 15:10 / eli-h
PHYSICAL CHARACTERISTICS							
Coarse Fragments	30	wt%-dry		2		ASA15-3	07/25/24 09:18 / eli-h
SATURATED PASTE EXTRACT							
Calcium, sat. paste	5.24	meq/L		0.05		SW6010B	07/27/24 00:26 / eli-h
Magnesium, sat. paste	18.6	meq/L		0.08		SW6010B	07/27/24 00:26 / eli-h
Sodium, sat. paste	17.2	meq/L		0.04		SW6010B	07/27/24 00:26 / eli-h
METALS, CACL2 EXTRACTABLE							
Boron	2.3	mg/kg		0.1		SW6010B	07/25/24 19:46 / eli-h
Selenium	ND	mg/kg		0.1		SW6020	07/29/24 16:50 / eli-h

Report Definitions:
RL - Analyte Reporting Limit
QCL - Quality Control Limit
MCL - Maximum Contaminant Level
ND - Not detected at the Reporting Limit (RL)

LABORATORY ANALYTICAL REPORT

Prepared by Gillette, WY Branch

Client: Mullinax Inc.
Project: Mullinax
Lab ID: G24070190-023
Client Sample ID: 07-001-A

Report Date: 08/16/24
Collection Date: 07/10/24
Date Received: 07/11/24
Matrix: Soil

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
PHYSICAL CHARACTERISTICS							
Very Fine Sand	66	wt%		1		ASA15-5	07/26/24 16:05 / eli-h
PHYSICAL CHARACTERISTICS							
Sand	34	%		1		ASA15-5	07/24/24 16:04 / eli-h
Silt	44	%		1		ASA15-5	07/24/24 16:04 / eli-h
Clay	22	%		1		ASA15-5	07/24/24 16:04 / eli-h
Texture	L			1		ASA15-5	07/24/24 16:04 / eli-h
SATURATED PASTE EXTRACT							
pH, sat. paste	6.8	s.u.		0.1		ASA10-3	07/25/24 09:56 / eli-h
Conductivity, sat. paste	0.9	mmhos/cm		0.1		ASA10-3	07/26/24 08:08 / eli-h
Saturation	55.4	%		0.1		USDA27a	07/25/24 08:47 / eli-h
Sodium Adsorption Ratio (SAR)	ND	unitless		0.1		USDA20b	07/29/24 17:37 / eli-h
CHEMICAL CHARACTERISTICS							
Organic Matter	3.8	%		0.2		ASA29-3	07/31/24 15:10 / eli-h
PHYSICAL CHARACTERISTICS							
Coarse Fragments	10	wt%-dry		2		ASA15-3	07/25/24 09:18 / eli-h
SATURATED PASTE EXTRACT							
Calcium, sat. paste	7.99	meq/L		0.05		SW6010B	07/27/24 00:30 / eli-h
Magnesium, sat. paste	2.19	meq/L		0.08		SW6010B	07/27/24 00:30 / eli-h
Sodium, sat. paste	0.1	meq/L		0.04		SW6010B	07/27/24 00:30 / eli-h
METALS, CACL2 EXTRACTABLE							
Boron	0.5	mg/kg		0.1		SW6010B	07/25/24 19:58 / eli-h
Selenium	ND	mg/kg		0.1		SW6020	07/29/24 16:52 / eli-h

Report Definitions:
RL - Analyte Reporting Limit
QCL - Quality Control Limit
MCL - Maximum Contaminant Level
ND - Not detected at the Reporting Limit (RL)

LABORATORY ANALYTICAL REPORT

Prepared by Gillette, WY Branch

Client: Mullinax Inc.
Project: Mullinax
Lab ID: G24070190-024
Client Sample ID: 07-002-B+

Report Date: 08/16/24
Collection Date: 07/10/24
Date Received: 07/11/24
Matrix: Soil

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
PHYSICAL CHARACTERISTICS							
Very Fine Sand	66	wt%		1		ASA15-5	07/26/24 16:05 / eli-h
PHYSICAL CHARACTERISTICS							
Sand	32	%		1		ASA15-5	07/24/24 16:04 / eli-h
Silt	40	%		1		ASA15-5	07/24/24 16:04 / eli-h
Clay	28	%		1		ASA15-5	07/24/24 16:04 / eli-h
Texture	CL			1		ASA15-5	07/24/24 16:04 / eli-h
SATURATED PASTE EXTRACT							
pH, sat. paste	7.0	s.u.		0.1		ASA10-3	07/25/24 09:57 / eli-h
Conductivity, sat. paste	0.6	mmhos/cm		0.1		ASA10-3	07/26/24 08:09 / eli-h
Saturation	54.9	%		0.1		USDA27a	07/25/24 08:47 / eli-h
Sodium Adsorption Ratio (SAR)	ND	unitless		0.1		USDA20b	07/29/24 17:37 / eli-h
CHEMICAL CHARACTERISTICS							
Organic Matter	2.7	%		0.2		ASA29-3	07/31/24 15:10 / eli-h
PHYSICAL CHARACTERISTICS							
Coarse Fragments	22	wt%-dry		2		ASA15-3	07/25/24 09:18 / eli-h
SATURATED PASTE EXTRACT							
Calcium, sat. paste	5.33	meq/L		0.05		SW6010B	07/27/24 00:34 / eli-h
Magnesium, sat. paste	1.41	meq/L		0.08		SW6010B	07/27/24 00:34 / eli-h
Sodium, sat. paste	0.09	meq/L		0.04		SW6010B	07/27/24 00:34 / eli-h
METALS, CACL2 EXTRACTABLE							
Boron	0.4	mg/kg		0.1		SW6010B	07/25/24 20:02 / eli-h
Selenium	ND	mg/kg		0.1		SW6020	07/29/24 16:55 / eli-h

Report Definitions:
RL - Analyte Reporting Limit
QCL - Quality Control Limit
MCL - Maximum Contaminant Level
ND - Not detected at the Reporting Limit (RL)

LABORATORY ANALYTICAL REPORT

Prepared by Gillette, WY Branch

Client: Mullinax Inc.
Project: Mullinax
Lab ID: G24070190-025
Client Sample ID: 07-003-B+K

Report Date: 08/16/24
Collection Date: 07/10/24
Date Received: 07/11/24
Matrix: Soil

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
PHYSICAL CHARACTERISTICS							
Very Fine Sand	66	wt%		1		ASA15-5	07/26/24 16:05 / eli-h
PHYSICAL CHARACTERISTICS							
Sand	26	%		1		ASA15-5	07/24/24 16:04 / eli-h
Silt	36	%		1		ASA15-5	07/24/24 16:04 / eli-h
Clay	38	%		1		ASA15-5	07/24/24 16:04 / eli-h
Texture	CL			1		ASA15-5	07/24/24 16:04 / eli-h
SATURATED PASTE EXTRACT							
pH, sat. paste	7.9	s.u.		0.1		ASA10-3	07/25/24 09:58 / eli-h
Conductivity, sat. paste	0.3	mmhos/cm		0.1		ASA10-3	07/26/24 08:10 / eli-h
Saturation	57.2	%		0.1		USDA27a	07/25/24 08:47 / eli-h
Sodium Adsorption Ratio (SAR)	ND	unitless		0.1		USDA20b	07/29/24 17:37 / eli-h
CHEMICAL CHARACTERISTICS							
Organic Matter	1.7	%		0.2		ASA29-3	07/31/24 15:10 / eli-h
PHYSICAL CHARACTERISTICS							
Coarse Fragments	12	wt%-dry		2		ASA15-3	07/25/24 09:18 / eli-h
SATURATED PASTE EXTRACT							
Calcium, sat. paste	2.54	meq/L		0.05		SW6010B	07/27/24 00:38 / eli-h
Magnesium, sat. paste	0.64	meq/L		0.08		SW6010B	07/27/24 00:38 / eli-h
Sodium, sat. paste	0.09	meq/L		0.04		SW6010B	07/27/24 00:38 / eli-h
METALS, CACL2 EXTRACTABLE							
Boron	0.4	mg/kg		0.1		SW6010B	07/25/24 20:05 / eli-h
Selenium	ND	mg/kg		0.1		SW6020	07/29/24 16:57 / eli-h

Report Definitions:
RL - Analyte Reporting Limit
QCL - Quality Control Limit
MCL - Maximum Contaminant Level
ND - Not detected at the Reporting Limit (RL)

LABORATORY ANALYTICAL REPORT

Prepared by Gillette, WY Branch

Client: Mullinax Inc.
Project: Mullinax
Lab ID: G24070190-026
Client Sample ID: 08-001-A

Report Date: 08/16/24
Collection Date: 07/10/24
Date Received: 07/11/24
Matrix: Soil

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
PHYSICAL CHARACTERISTICS							
Very Fine Sand	74	wt%		1		ASA15-5	07/26/24 16:05 / eli-h
PHYSICAL CHARACTERISTICS							
Sand	32	%		1		ASA15-5	07/24/24 16:04 / eli-h
Silt	54	%		1		ASA15-5	07/24/24 16:04 / eli-h
Clay	14	%		1		ASA15-5	07/24/24 16:04 / eli-h
Texture	SiL			1		ASA15-5	07/24/24 16:04 / eli-h
SATURATED PASTE EXTRACT							
pH, sat. paste	6.6	s.u.		0.1		ASA10-3	07/25/24 09:59 / eli-h
Conductivity, sat. paste	0.4	mmhos/cm		0.1		ASA10-3	07/26/24 08:11 / eli-h
Saturation	51.4	%		0.1		USDA27a	07/25/24 08:47 / eli-h
Sodium Adsorption Ratio (SAR)	0.2	unitless		0.1		USDA20b	07/29/24 17:37 / eli-h
CHEMICAL CHARACTERISTICS							
Organic Matter	3.8	%		0.2		ASA29-3	07/31/24 15:10 / eli-h
PHYSICAL CHARACTERISTICS							
Coarse Fragments	6	wt%-dry		2		ASA15-3	07/25/24 09:18 / eli-h
SATURATED PASTE EXTRACT							
Calcium, sat. paste	1.99	meq/L		0.05		SW6010B	07/27/24 00:42 / eli-h
Magnesium, sat. paste	1.64	meq/L		0.08		SW6010B	07/27/24 00:42 / eli-h
Sodium, sat. paste	0.34	meq/L		0.04		SW6010B	07/27/24 00:42 / eli-h
METALS, CACL2 EXTRACTABLE							
Boron	0.4	mg/kg		0.1		SW6010B	07/25/24 20:20 / eli-h
Selenium	ND	mg/kg		0.1		SW6020	07/29/24 16:59 / eli-h

Report Definitions:
RL - Analyte Reporting Limit
QCL - Quality Control Limit
MCL - Maximum Contaminant Level
ND - Not detected at the Reporting Limit (RL)

LABORATORY ANALYTICAL REPORT

Prepared by Gillette, WY Branch

Client: Mullinax Inc.
Project: Mullinax
Lab ID: G24070190-027
Client Sample ID: 08-002-B+1

Report Date: 08/16/24
Collection Date: 07/10/24
Date Received: 07/11/24
Matrix: Soil

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
PHYSICAL CHARACTERISTICS							
Very Fine Sand	77	wt%		1		ASA15-5	07/26/24 16:05 / eli-h
PHYSICAL CHARACTERISTICS							
Sand	34	%		1		ASA15-5	07/24/24 16:04 / eli-h
Silt	50	%		1		ASA15-5	07/24/24 16:04 / eli-h
Clay	16	%		1		ASA15-5	07/24/24 16:04 / eli-h
Texture	SiL			1		ASA15-5	07/24/24 16:04 / eli-h
SATURATED PASTE EXTRACT							
pH, sat. paste	6.3	s.u.		0.1		ASA10-3	07/25/24 10:00 / eli-h
Conductivity, sat. paste	0.2	mmhos/cm		0.1		ASA10-3	07/26/24 08:12 / eli-h
Saturation	37.5	%		0.1		USDA27a	07/25/24 08:47 / eli-h
Sodium Adsorption Ratio (SAR)	1.8	unitless		0.1		USDA20b	07/29/24 17:37 / eli-h
CHEMICAL CHARACTERISTICS							
Organic Matter	1.0	%		0.2		ASA29-3	07/31/24 15:10 / eli-h
PHYSICAL CHARACTERISTICS							
Coarse Fragments	14	wt%-dry		2		ASA15-3	07/25/24 09:18 / eli-h
SATURATED PASTE EXTRACT							
Calcium, sat. paste	0.34	meq/L		0.05		SW6010B	07/27/24 00:53 / eli-h
Magnesium, sat. paste	0.34	meq/L		0.08		SW6010B	07/27/24 00:53 / eli-h
Sodium, sat. paste	1.03	meq/L		0.04		SW6010B	07/27/24 00:53 / eli-h
METALS, CACL2 EXTRACTABLE							
Boron	0.2	mg/kg		0.1		SW6010B	07/25/24 20:28 / eli-h
Selenium	ND	mg/kg		0.1		SW6020	07/29/24 17:03 / eli-h

Report Definitions:
RL - Analyte Reporting Limit
QCL - Quality Control Limit
MCL - Maximum Contaminant Level
ND - Not detected at the Reporting Limit (RL)

LABORATORY ANALYTICAL REPORT

Prepared by Gillette, WY Branch

Client: Mullinax Inc.
Project: Mullinax
Lab ID: G24070190-028
Client Sample ID: 08-003-B+2

Report Date: 08/16/24
Collection Date: 07/10/24
Date Received: 07/11/24
Matrix: Soil

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
PHYSICAL CHARACTERISTICS							
Very Fine Sand	84	wt%		1		ASA15-5	07/26/24 16:05 / eli-h
PHYSICAL CHARACTERISTICS							
Sand	20	%		1		ASA15-5	07/24/24 16:04 / eli-h
Silt	36	%		1		ASA15-5	07/24/24 16:04 / eli-h
Clay	44	%		1		ASA15-5	07/24/24 16:04 / eli-h
Texture	C			1		ASA15-5	07/24/24 16:04 / eli-h
SATURATED PASTE EXTRACT							
pH, sat. paste	7.2	s.u.		0.1		ASA10-3	07/25/24 10:01 / eli-h
Conductivity, sat. paste	0.7	mmhos/cm		0.1		ASA10-3	07/26/24 08:13 / eli-h
Saturation	80.2	%		0.1		USDA27a	07/25/24 08:48 / eli-h
Sodium Adsorption Ratio (SAR)	5.2	unitless		0.1		USDA20b	07/29/24 17:37 / eli-h
CHEMICAL CHARACTERISTICS							
Organic Matter	1.1	%		0.2		ASA29-3	07/31/24 15:10 / eli-h
PHYSICAL CHARACTERISTICS							
Coarse Fragments	30	wt%-dry		2		ASA15-3	07/25/24 09:18 / eli-h
SATURATED PASTE EXTRACT							
Calcium, sat. paste	0.64	meq/L		0.05		SW6010B	07/27/24 00:57 / eli-h
Magnesium, sat. paste	1.53	meq/L		0.08		SW6010B	07/27/24 00:57 / eli-h
Sodium, sat. paste	5.36	meq/L		0.04		SW6010B	07/27/24 00:57 / eli-h
METALS, CACL2 EXTRACTABLE							
Boron	0.8	mg/kg		0.1		SW6010B	07/25/24 20:32 / eli-h
Selenium	ND	mg/kg		0.1		SW6020	07/29/24 17:05 / eli-h

Report Definitions:
RL - Analyte Reporting Limit
QCL - Quality Control Limit
MCL - Maximum Contaminant Level
ND - Not detected at the Reporting Limit (RL)

LABORATORY ANALYTICAL REPORT

Prepared by Gillette, WY Branch

Client: Mullinax Inc.
Project: Mullinax
Lab ID: G24070190-029
Client Sample ID: 08-004-BCK

Report Date: 08/16/24
Collection Date: 07/10/24
Date Received: 07/11/24
Matrix: Soil

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
PHYSICAL CHARACTERISTICS							
Very Fine Sand	74	wt%		1		ASA15-5	07/26/24 16:05 / eli-h
PHYSICAL CHARACTERISTICS							
Sand	24	%		1		ASA15-5	07/24/24 16:04 / eli-h
Silt	38	%		1		ASA15-5	07/24/24 16:04 / eli-h
Clay	38	%		1		ASA15-5	07/24/24 16:04 / eli-h
Texture	CL			1		ASA15-5	07/24/24 16:04 / eli-h
SATURATED PASTE EXTRACT							
pH, sat. paste	8.3	s.u.		0.1		ASA10-3	07/25/24 10:03 / eli-h
Conductivity, sat. paste	0.9	mmhos/cm		0.1		ASA10-3	07/26/24 08:15 / eli-h
Saturation	60.1	%		0.1		USDA27a	07/25/24 08:48 / eli-h
Sodium Adsorption Ratio (SAR)	2.5	unitless		0.1		USDA20b	07/29/24 17:37 / eli-h
CHEMICAL CHARACTERISTICS							
Organic Matter	0.6	%		0.2		ASA29-3	07/31/24 15:10 / eli-h
PHYSICAL CHARACTERISTICS							
Coarse Fragments	17	wt%-dry		2		ASA15-3	07/25/24 09:18 / eli-h
SATURATED PASTE EXTRACT							
Calcium, sat. paste	2.09	meq/L		0.05		SW6010B	07/27/24 01:05 / eli-h
Magnesium, sat. paste	3.99	meq/L		0.08		SW6010B	07/27/24 01:05 / eli-h
Sodium, sat. paste	4.35	meq/L		0.04		SW6010B	07/27/24 01:05 / eli-h
METALS, CACL2 EXTRACTABLE							
Boron	1.5	mg/kg		0.1		SW6010B	07/25/24 21:14 / eli-h
Selenium	ND	mg/kg		0.1		SW6020	07/29/24 17:08 / eli-h

Report Definitions:
RL - Analyte Reporting Limit
QCL - Quality Control Limit
MCL - Maximum Contaminant Level
ND - Not detected at the Reporting Limit (RL)

LABORATORY ANALYTICAL REPORT

Prepared by Gillette, WY Branch

Client: Mullinax Inc.
Project: Mullinax
Lab ID: G24070190-030
Client Sample ID: 08-005-C

Report Date: 08/16/24
Collection Date: 07/10/24
Date Received: 07/11/24
Matrix: Soil

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
PHYSICAL CHARACTERISTICS							
Very Fine Sand	64	wt%		1		ASA15-5	07/26/24 16:05 / eli-h
PHYSICAL CHARACTERISTICS							
Sand	20	%		1		ASA15-5	07/24/24 16:04 / eli-h
Silt	36	%		1		ASA15-5	07/24/24 16:04 / eli-h
Clay	44	%		1		ASA15-5	07/24/24 16:04 / eli-h
Texture	C			1		ASA15-5	07/24/24 16:04 / eli-h
SATURATED PASTE EXTRACT							
pH, sat. paste	8.4	s.u.		0.1		ASA10-3	07/25/24 10:04 / eli-h
Conductivity, sat. paste	4.1	mmhos/cm		0.1		ASA10-3	07/26/24 08:16 / eli-h
Saturation	84.4	%		0.1		USDA27a	07/25/24 08:48 / eli-h
Sodium Adsorption Ratio (SAR)	7.2	unitless		0.1		USDA20b	07/29/24 17:37 / eli-h
CHEMICAL CHARACTERISTICS							
Organic Matter	0.3	%		0.2		ASA29-3	07/31/24 15:10 / eli-h
PHYSICAL CHARACTERISTICS							
Coarse Fragments	13	wt%-dry		2		ASA15-3	07/25/24 09:18 / eli-h
SATURATED PASTE EXTRACT							
Calcium, sat. paste	3.39	meq/L		0.05		SW6010B	07/27/24 01:09 / eli-h
Magnesium, sat. paste	23.5	meq/L		0.08		SW6010B	07/27/24 01:09 / eli-h
Sodium, sat. paste	26.3	meq/L		0.04		SW6010B	07/27/24 01:09 / eli-h
METALS, CACL2 EXTRACTABLE							
Boron	2.8	mg/kg		0.1		SW6010B	07/25/24 21:18 / eli-h
Selenium	ND	mg/kg		0.1		SW6020	07/29/24 17:10 / eli-h

Report Definitions:
RL - Analyte Reporting Limit
QCL - Quality Control Limit
MCL - Maximum Contaminant Level
ND - Not detected at the Reporting Limit (RL)

LABORATORY ANALYTICAL REPORT

Prepared by Gillette, WY Branch

Client: Mullinax Inc.
Project: Mullinax
Lab ID: G24070190-031
Client Sample ID: 09-001-A

Report Date: 08/16/24
Collection Date: 07/10/24
Date Received: 07/11/24
Matrix: Soil

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
PHYSICAL CHARACTERISTICS							
Very Fine Sand	52	wt%		1		ASA15-5	07/26/24 16:05 / eli-h
PHYSICAL CHARACTERISTICS							
Sand	44	%		1		ASA15-5	07/24/24 16:04 / eli-h
Silt	32	%		1		ASA15-5	07/24/24 16:04 / eli-h
Clay	24	%		1		ASA15-5	07/24/24 16:04 / eli-h
Texture	L			1		ASA15-5	07/24/24 16:04 / eli-h
SATURATED PASTE EXTRACT							
pH, sat. paste	6.7	s.u.		0.1		ASA10-3	07/25/24 10:06 / eli-h
Conductivity, sat. paste	0.5	mmhos/cm		0.1		ASA10-3	07/26/24 08:18 / eli-h
Saturation	45.1	%		0.1		USDA27a	07/25/24 08:48 / eli-h
Sodium Adsorption Ratio (SAR)	0.1	unitless		0.1		USDA20b	07/29/24 17:37 / eli-h
CHEMICAL CHARACTERISTICS							
Organic Matter	2.9	%		0.2		ASA29-3	07/31/24 15:10 / eli-h
PHYSICAL CHARACTERISTICS							
Coarse Fragments	12	wt%-dry		2		ASA15-3	07/25/24 09:18 / eli-h
SATURATED PASTE EXTRACT							
Calcium, sat. paste	3.57	meq/L		0.05		SW6010B	07/27/24 01:13 / eli-h
Magnesium, sat. paste	1.73	meq/L		0.08		SW6010B	07/27/24 01:13 / eli-h
Sodium, sat. paste	0.17	meq/L		0.04		SW6010B	07/27/24 01:13 / eli-h
METALS, CACL2 EXTRACTABLE							
Boron	0.4	mg/kg		0.1		SW6010B	07/25/24 21:22 / eli-h
Selenium	ND	mg/kg		0.1		SW6020	07/29/24 17:18 / eli-h

Report Definitions:
RL - Analyte Reporting Limit
QCL - Quality Control Limit
MCL - Maximum Contaminant Level
ND - Not detected at the Reporting Limit (RL)

LABORATORY ANALYTICAL REPORT

Prepared by Gillette, WY Branch

Client: Mullinax Inc.
Project: Mullinax
Lab ID: G24070190-032
Client Sample ID: 09-002-B+

Report Date: 08/16/24
Collection Date: 07/10/24
Date Received: 07/11/24
Matrix: Soil

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
PHYSICAL CHARACTERISTICS							
Very Fine Sand	57	wt%		1		ASA15-5	07/26/24 16:05 / eli-h
PHYSICAL CHARACTERISTICS							
Sand	28	%		1		ASA15-5	07/24/24 16:04 / eli-h
Silt	30	%		1		ASA15-5	07/24/24 16:04 / eli-h
Clay	42	%		1		ASA15-5	07/24/24 16:04 / eli-h
Texture	C			1		ASA15-5	07/24/24 16:04 / eli-h
SATURATED PASTE EXTRACT							
pH, sat. paste	7.2	s.u.		0.1		ASA10-3	07/25/24 10:07 / eli-h
Conductivity, sat. paste	0.5	mmhos/cm		0.1		ASA10-3	07/26/24 08:19 / eli-h
Saturation	68.2	%		0.1		USDA27a	07/25/24 08:48 / eli-h
Sodium Adsorption Ratio (SAR)	0.1	unitless		0.1		USDA20b	07/29/24 17:37 / eli-h
CHEMICAL CHARACTERISTICS							
Organic Matter	1.8	%		0.2		ASA29-3	07/31/24 15:10 / eli-h
PHYSICAL CHARACTERISTICS							
Coarse Fragments	28	wt%-dry		2		ASA15-3	07/25/24 09:18 / eli-h
SATURATED PASTE EXTRACT							
Calcium, sat. paste	3.84	meq/L		0.05		SW6010B	07/27/24 01:17 / eli-h
Magnesium, sat. paste	1.74	meq/L		0.08		SW6010B	07/27/24 01:17 / eli-h
Sodium, sat. paste	0.17	meq/L		0.04		SW6010B	07/27/24 01:17 / eli-h
METALS, CACL2 EXTRACTABLE							
Boron	0.4	mg/kg		0.1		SW6010B	07/25/24 21:26 / eli-h
Selenium	ND	mg/kg		0.1		SW6020	07/29/24 17:20 / eli-h

Report Definitions:
RL - Analyte Reporting Limit
QCL - Quality Control Limit
MCL - Maximum Contaminant Level
ND - Not detected at the Reporting Limit (RL)

LABORATORY ANALYTICAL REPORT

Prepared by Gillette, WY Branch

Client: Mullinax Inc.
Project: Mullinax
Lab ID: G24070190-033
Client Sample ID: 09-003-B+K

Report Date: 08/16/24
Collection Date: 07/10/24
Date Received: 07/11/24
Matrix: Soil

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
PHYSICAL CHARACTERISTICS							
Very Fine Sand	70	wt%		1		ASA15-5	07/26/24 16:05 / eli-h
PHYSICAL CHARACTERISTICS							
Sand	26	%		1		ASA15-5	07/24/24 16:04 / eli-h
Silt	34	%		1		ASA15-5	07/24/24 16:04 / eli-h
Clay	40	%		1		ASA15-5	07/24/24 16:04 / eli-h
Texture	C			1		ASA15-5	07/24/24 16:04 / eli-h
SATURATED PASTE EXTRACT							
pH, sat. paste	8.2	s.u.		0.1		ASA10-3	07/25/24 10:07 / eli-h
Conductivity, sat. paste	0.3	mmhos/cm		0.1		ASA10-3	07/26/24 08:20 / eli-h
Saturation	57.6	%		0.1		USDA27a	07/25/24 08:49 / eli-h
Sodium Adsorption Ratio (SAR)	0.7	unitless		0.1		USDA20b	07/29/24 17:37 / eli-h
CHEMICAL CHARACTERISTICS							
Organic Matter	0.8	%		0.2		ASA29-3	07/31/24 15:10 / eli-h
PHYSICAL CHARACTERISTICS							
Coarse Fragments	17	wt%-dry		2		ASA15-3	07/25/24 09:18 / eli-h
SATURATED PASTE EXTRACT							
Calcium, sat. paste	1.25	meq/L		0.05		SW6010B	07/27/24 01:20 / eli-h
Magnesium, sat. paste	1.93	meq/L		0.08		SW6010B	07/27/24 01:20 / eli-h
Sodium, sat. paste	0.88	meq/L		0.04		SW6010B	07/27/24 01:20 / eli-h
METALS, CACL2 EXTRACTABLE							
Boron	0.5	mg/kg		0.1		SW6010B	07/25/24 21:30 / eli-h
Selenium	ND	mg/kg		0.1		SW6020	07/29/24 17:23 / eli-h

Report Definitions:
RL - Analyte Reporting Limit
QCL - Quality Control Limit
MCL - Maximum Contaminant Level
ND - Not detected at the Reporting Limit (RL)

LABORATORY ANALYTICAL REPORT

Prepared by Gillette, WY Branch

Client: Mullinax Inc.
Project: Mullinax
Lab ID: G24070190-034
Client Sample ID: 09-004-BCK

Report Date: 08/16/24
Collection Date: 07/10/24
Date Received: 07/11/24
Matrix: Soil

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
PHYSICAL CHARACTERISTICS							
Very Fine Sand	54	wt%		1		ASA15-5	07/26/24 16:05 / eli-h
PHYSICAL CHARACTERISTICS							
Sand	34	%		1		ASA15-5	07/24/24 16:04 / eli-h
Silt	32	%		1		ASA15-5	07/24/24 16:04 / eli-h
Clay	34	%		1		ASA15-5	07/24/24 16:04 / eli-h
Texture	CL			1		ASA15-5	07/24/24 16:04 / eli-h
SATURATED PASTE EXTRACT							
pH, sat. paste	8.6	s.u.		0.1		ASA10-3	07/25/24 10:09 / eli-h
Conductivity, sat. paste	1.0	mmhos/cm		0.1		ASA10-3	07/26/24 08:21 / eli-h
Saturation	54.6	%		0.1		USDA27a	07/25/24 08:49 / eli-h
Sodium Adsorption Ratio (SAR)	4.6	unitless		0.1		USDA20b	07/29/24 17:37 / eli-h
CHEMICAL CHARACTERISTICS							
Organic Matter	0.2	%		0.2		ASA29-3	07/31/24 15:10 / eli-h
PHYSICAL CHARACTERISTICS							
Coarse Fragments	10	wt%-dry		2		ASA15-3	07/25/24 09:18 / eli-h
SATURATED PASTE EXTRACT							
Calcium, sat. paste	0.74	meq/L		0.05		SW6010B	07/27/24 01:24 / eli-h
Magnesium, sat. paste	2.75	meq/L		0.08		SW6010B	07/27/24 01:24 / eli-h
Sodium, sat. paste	6.11	meq/L		0.04		SW6010B	07/27/24 01:24 / eli-h
METALS, CACL2 EXTRACTABLE							
Boron	0.8	mg/kg		0.1		SW6010B	07/25/24 21:33 / eli-h
Selenium	ND	mg/kg		0.1		SW6020	07/29/24 17:25 / eli-h

Report Definitions:
RL - Analyte Reporting Limit
QCL - Quality Control Limit
MCL - Maximum Contaminant Level
ND - Not detected at the Reporting Limit (RL)

LABORATORY ANALYTICAL REPORT

Prepared by Gillette, WY Branch

Client: Mullinax Inc.
Project: Mullinax
Lab ID: G24070190-035
Client Sample ID: 09-005-C

Report Date: 08/16/24
Collection Date: 07/10/24
Date Received: 07/11/24
Matrix: Soil

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
PHYSICAL CHARACTERISTICS							
Very Fine Sand	63	wt%		1		ASA15-5	07/26/24 16:05 / eli-h
PHYSICAL CHARACTERISTICS							
Sand	40	%		1		ASA15-5	07/24/24 16:04 / eli-h
Silt	32	%		1		ASA15-5	07/24/24 16:04 / eli-h
Clay	28	%		1		ASA15-5	07/24/24 16:04 / eli-h
Texture	CL			1		ASA15-5	07/24/24 16:04 / eli-h
SATURATED PASTE EXTRACT							
pH, sat. paste	8.6	s.u.		0.1		ASA10-3	07/25/24 10:10 / eli-h
Conductivity, sat. paste	2.0	mmhos/cm		0.1		ASA10-3	07/26/24 08:22 / eli-h
Saturation	51.9	%		0.1		USDA27a	07/25/24 08:49 / eli-h
Sodium Adsorption Ratio (SAR)	6.3	unitless		0.1		USDA20b	07/29/24 17:37 / eli-h
CHEMICAL CHARACTERISTICS							
Organic Matter	0.2	%		0.2		ASA29-3	07/31/24 15:10 / eli-h
PHYSICAL CHARACTERISTICS							
Coarse Fragments	ND	wt%-dry		2		ASA15-3	07/25/24 09:18 / eli-h
SATURATED PASTE EXTRACT							
Calcium, sat. paste	0.91	meq/L		0.05		SW6010B	07/27/24 01:28 / eli-h
Magnesium, sat. paste	7.21	meq/L		0.08		SW6010B	07/27/24 01:28 / eli-h
Sodium, sat. paste	12.7	meq/L		0.04		SW6010B	07/27/24 01:28 / eli-h
METALS, CACL2 EXTRACTABLE							
Boron	1.8	mg/kg		0.1		SW6010B	07/25/24 21:37 / eli-h
Selenium	ND	mg/kg		0.1		SW6020	07/29/24 17:27 / eli-h

Report Definitions:
RL - Analyte Reporting Limit
QCL - Quality Control Limit
MCL - Maximum Contaminant Level
ND - Not detected at the Reporting Limit (RL)

LABORATORY ANALYTICAL REPORT

Prepared by Gillette, WY Branch

Client: Mullinax Inc.
Project: Mullinax
Lab ID: G24070190-036
Client Sample ID: 10-001-A

Report Date: 08/16/24
Collection Date: 07/10/24
Date Received: 07/11/24
Matrix: Soil

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
PHYSICAL CHARACTERISTICS							
Very Fine Sand	32	wt%		1		ASA15-5	07/26/24 16:05 / eli-h
PHYSICAL CHARACTERISTICS							
Sand	50	%		1		ASA15-5	07/24/24 16:04 / eli-h
Silt	12	%		1		ASA15-5	07/24/24 16:04 / eli-h
Clay	38	%		1		ASA15-5	07/24/24 16:04 / eli-h
Texture	SC			1		ASA15-5	07/24/24 16:04 / eli-h
SATURATED PASTE EXTRACT							
pH, sat. paste	7.4	s.u.		0.1		ASA10-3	07/25/24 10:11 / eli-h
Conductivity, sat. paste	0.6	mmhos/cm		0.1		ASA10-3	07/26/24 08:23 / eli-h
Saturation	58.3	%		0.1		USDA27a	07/25/24 08:49 / eli-h
Sodium Adsorption Ratio (SAR)	ND	unitless		0.1		USDA20b	07/29/24 17:37 / eli-h
CHEMICAL CHARACTERISTICS							
Organic Matter	5.0	%		0.2		ASA29-3	07/31/24 15:10 / eli-h
PHYSICAL CHARACTERISTICS							
Coarse Fragments	17	wt%-dry		2		ASA15-3	07/25/24 09:18 / eli-h
SATURATED PASTE EXTRACT							
Calcium, sat. paste	5.09	meq/L		0.05		SW6010B	07/27/24 01:40 / eli-h
Magnesium, sat. paste	1.13	meq/L		0.08		SW6010B	07/27/24 01:40 / eli-h
Sodium, sat. paste	0.14	meq/L		0.04		SW6010B	07/27/24 01:40 / eli-h
METALS, CACL2 EXTRACTABLE							
Boron	0.6	mg/kg		0.1		SW6010B	07/25/24 21:41 / eli-h
Selenium	ND	mg/kg		0.1		SW6020	07/29/24 17:29 / eli-h

Report Definitions:
RL - Analyte Reporting Limit
QCL - Quality Control Limit
MCL - Maximum Contaminant Level
ND - Not detected at the Reporting Limit (RL)

LABORATORY ANALYTICAL REPORT

Prepared by Gillette, WY Branch

Client: Mullinax Inc.
Project: Mullinax
Lab ID: G24070190-037
Client Sample ID: 10-002-B+1

Report Date: 08/16/24
Collection Date: 07/10/24
Date Received: 07/11/24
Matrix: Soil

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
PHYSICAL CHARACTERISTICS							
Very Fine Sand	31	wt%		1		ASA15-5	07/26/24 16:05 / eli-h
PHYSICAL CHARACTERISTICS							
Sand	44	%		1		ASA15-5	07/24/24 16:04 / eli-h
Silt	22	%		1		ASA15-5	07/24/24 16:04 / eli-h
Clay	34	%		1		ASA15-5	07/24/24 16:04 / eli-h
Texture	CL			1		ASA15-5	07/24/24 16:04 / eli-h
SATURATED PASTE EXTRACT							
pH, sat. paste	7.4	s.u.		0.1		ASA10-3	07/25/24 10:15 / eli-h
Conductivity, sat. paste	0.5	mmhos/cm		0.1		ASA10-3	07/26/24 08:24 / eli-h
Saturation	55.4	%		0.1		USDA27a	07/25/24 08:49 / eli-h
Sodium Adsorption Ratio (SAR)	ND	unitless		0.1		USDA20b	07/29/24 17:37 / eli-h
CHEMICAL CHARACTERISTICS							
Organic Matter	3.0	%		0.2		ASA29-3	07/31/24 15:10 / eli-h
PHYSICAL CHARACTERISTICS							
Coarse Fragments	10	wt%-dry		2		ASA15-3	07/25/24 09:18 / eli-h
SATURATED PASTE EXTRACT							
Calcium, sat. paste	4.62	meq/L		0.05		SW6010B	07/27/24 01:44 / eli-h
Magnesium, sat. paste	0.89	meq/L		0.08		SW6010B	07/27/24 01:44 / eli-h
Sodium, sat. paste	0.12	meq/L		0.04		SW6010B	07/27/24 01:44 / eli-h
METALS, CACL2 EXTRACTABLE							
Boron	0.6	mg/kg		0.1		SW6010B	07/25/24 21:56 / eli-h
Selenium	ND	mg/kg		0.1		SW6020	07/29/24 17:34 / eli-h

Report Definitions:
RL - Analyte Reporting Limit
QCL - Quality Control Limit
MCL - Maximum Contaminant Level
ND - Not detected at the Reporting Limit (RL)

LABORATORY ANALYTICAL REPORT

Prepared by Gillette, WY Branch

Client: Mullinax Inc.
Project: Mullinax
Lab ID: G24070190-038
Client Sample ID: 10-005-C1

Report Date: 08/16/24
Collection Date: 07/10/24
Date Received: 07/11/24
Matrix: Soil

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
PHYSICAL CHARACTERISTICS							
Very Fine Sand	76	wt%		1		ASA15-5	07/26/24 16:05 / eli-h
PHYSICAL CHARACTERISTICS							
Sand	10	%		1		ASA15-5	07/24/24 16:04 / eli-h
Silt	24	%		1		ASA15-5	07/24/24 16:04 / eli-h
Clay	66	%		1		ASA15-5	07/24/24 16:04 / eli-h
Texture	C			1		ASA15-5	07/24/24 16:04 / eli-h
SATURATED PASTE EXTRACT							
pH, sat. paste	8.3	s.u.		0.1		ASA10-3	07/25/24 10:15 / eli-h
Conductivity, sat. paste	1.7	mmhos/cm		0.1		ASA10-3	07/26/24 08:25 / eli-h
Saturation	85.6	%		0.1		USDA27a	07/25/24 08:50 / eli-h
Sodium Adsorption Ratio (SAR)	2.8	unitless		0.1		USDA20b	07/29/24 17:37 / eli-h
CHEMICAL CHARACTERISTICS							
Organic Matter	0.7	%		0.2		ASA29-3	07/31/24 15:10 / eli-h
PHYSICAL CHARACTERISTICS							
Coarse Fragments	37	wt%-dry		2		ASA15-3	07/25/24 09:18 / eli-h
SATURATED PASTE EXTRACT							
Calcium, sat. paste	2.42	meq/L		0.05		SW6010B	07/27/24 01:47 / eli-h
Magnesium, sat. paste	10.4	meq/L		0.08		SW6010B	07/27/24 01:47 / eli-h
Sodium, sat. paste	7.17	meq/L		0.04		SW6010B	07/27/24 01:47 / eli-h
METALS, CACL2 EXTRACTABLE							
Boron	2.9	mg/kg		0.1		SW6010B	07/25/24 22:00 / eli-h
Selenium	0.2	mg/kg		0.1		SW6020	07/29/24 17:36 / eli-h

Report Definitions:
RL - Analyte Reporting Limit
QCL - Quality Control Limit
MCL - Maximum Contaminant Level
ND - Not detected at the Reporting Limit (RL)

LABORATORY ANALYTICAL REPORT

Prepared by Gillette, WY Branch

Client: Mullinax Inc.
Project: Mullinax
Lab ID: G24070190-039
Client Sample ID: 10-006-C2

Report Date: 08/16/24
Collection Date: 07/10/24
Date Received: 07/11/24
Matrix: Soil

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
PHYSICAL CHARACTERISTICS							
Very Fine Sand	96	wt%		1		ASA15-5	07/26/24 16:05 / eli-h
PHYSICAL CHARACTERISTICS							
Sand	6	%		1		ASA15-5	07/24/24 16:04 / eli-h
Silt	28	%		1		ASA15-5	07/24/24 16:04 / eli-h
Clay	66	%		1		ASA15-5	07/24/24 16:04 / eli-h
Texture	C			1		ASA15-5	07/24/24 16:04 / eli-h
SATURATED PASTE EXTRACT							
pH, sat. paste	7.9	s.u.		0.1		ASA10-3	07/25/24 10:17 / eli-h
Conductivity, sat. paste	4.9	mmhos/cm		0.1		ASA10-3	07/26/24 08:27 / eli-h
Saturation	92.0	%		0.1		USDA27a	08/01/24 09:19 / eli-h
Sodium Adsorption Ratio (SAR)	2.0	unitless		0.1		USDA20b	07/29/24 17:37 / eli-h
CHEMICAL CHARACTERISTICS							
Organic Matter	0.3	%		0.2		ASA29-3	07/31/24 15:10 / eli-h
PHYSICAL CHARACTERISTICS							
Coarse Fragments	25	wt%-dry		2		ASA15-3	07/25/24 09:18 / eli-h
SATURATED PASTE EXTRACT							
Calcium, sat. paste	19	meq/L		0.05		SW6010B	07/27/24 01:55 / eli-h
Magnesium, sat. paste	43.7	meq/L		0.08		SW6010B	07/27/24 01:55 / eli-h
Sodium, sat. paste	10.9	meq/L		0.04		SW6010B	07/27/24 01:55 / eli-h
METALS, CACL2 EXTRACTABLE							
Boron	3.5	mg/kg		0.1		SW6010B	07/25/24 22:04 / eli-h
Selenium	0.2	mg/kg		0.1		SW6020	07/29/24 17:38 / eli-h

Report Definitions:
RL - Analyte Reporting Limit
QCL - Quality Control Limit
MCL - Maximum Contaminant Level
ND - Not detected at the Reporting Limit (RL)

LABORATORY ANALYTICAL REPORT

Prepared by Gillette, WY Branch

Client: Mullinax Inc.
Project: Mullinax
Lab ID: G24070190-040
Client Sample ID: 11-001-A

Report Date: 08/16/24
Collection Date: 07/10/24
Date Received: 07/11/24
Matrix: Soil

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
PHYSICAL CHARACTERISTICS							
Very Fine Sand	52	wt%		1		ASA15-5	07/26/24 16:05 / eli-h
PHYSICAL CHARACTERISTICS							
Sand	34	%		1		ASA15-5	07/24/24 16:04 / eli-h
Silt	26	%		1		ASA15-5	07/24/24 16:04 / eli-h
Clay	40	%		1		ASA15-5	07/24/24 16:04 / eli-h
Texture	C			1		ASA15-5	07/24/24 16:04 / eli-h
SATURATED PASTE EXTRACT							
pH, sat. paste	7.0	s.u.		0.1		ASA10-3	07/25/24 10:18 / eli-h
Conductivity, sat. paste	0.7	mmhos/cm		0.1		ASA10-3	07/26/24 08:28 / eli-h
Saturation	68.2	%		0.1		USDA27a	07/25/24 08:50 / eli-h
Sodium Adsorption Ratio (SAR)	ND	unitless		0.1		USDA20b	07/29/24 17:37 / eli-h
CHEMICAL CHARACTERISTICS							
Organic Matter	4.0	%		0.2		ASA29-3	07/31/24 15:10 / eli-h
PHYSICAL CHARACTERISTICS							
Coarse Fragments	15	wt%-dry		2		ASA15-3	07/25/24 09:18 / eli-h
SATURATED PASTE EXTRACT							
Calcium, sat. paste	6.04	meq/L		0.05		SW6010B	07/27/24 01:59 / eli-h
Magnesium, sat. paste	1.79	meq/L		0.08		SW6010B	07/27/24 01:59 / eli-h
Sodium, sat. paste	0.11	meq/L		0.04		SW6010B	07/27/24 01:59 / eli-h
METALS, CACL2 EXTRACTABLE							
Boron	0.5	mg/kg		0.1		SW6010B	07/25/24 22:08 / eli-h
Selenium	ND	mg/kg		0.1		SW6020	07/29/24 17:40 / eli-h

Report Definitions:
RL - Analyte Reporting Limit
QCL - Quality Control Limit
MCL - Maximum Contaminant Level
ND - Not detected at the Reporting Limit (RL)

LABORATORY ANALYTICAL REPORT

Prepared by Gillette, WY Branch

Client: Mullinax Inc.
Project: Mullinax
Lab ID: G24070190-041
Client Sample ID: 11-002-B+K1

Report Date: 08/16/24
Collection Date: 07/10/24
Date Received: 07/11/24
Matrix: Soil

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
PHYSICAL CHARACTERISTICS							
Very Fine Sand	54	wt%		1		ASA15-5	07/26/24 16:05 / eli-h
PHYSICAL CHARACTERISTICS							
Sand	28	%		1		ASA15-5	07/24/24 16:04 / eli-h
Silt	26	%		1		ASA15-5	07/24/24 16:04 / eli-h
Clay	46	%		1		ASA15-5	07/24/24 16:04 / eli-h
Texture	C			1		ASA15-5	07/24/24 16:04 / eli-h
SATURATED PASTE EXTRACT							
pH, sat. paste	7.8	s.u.		0.1		ASA10-3	07/25/24 10:33 / eli-h
Conductivity, sat. paste	0.4	mmhos/cm		0.1		ASA10-3	07/26/24 08:34 / eli-h
Saturation	58.6	%		0.1		USDA27a	07/25/24 09:19 / eli-h
Sodium Adsorption Ratio (SAR)	0.1	unitless		0.1		USDA20b	07/29/24 17:37 / eli-h
CHEMICAL CHARACTERISTICS							
Organic Matter	1.6	%		0.2		ASA29-3	07/31/24 15:10 / eli-h
PHYSICAL CHARACTERISTICS							
Coarse Fragments	28	wt%-dry		2		ASA15-3	07/25/24 09:18 / eli-h
SATURATED PASTE EXTRACT							
Calcium, sat. paste	3.08	meq/L		0.05		SW6010B	07/27/24 02:26 / eli-h
Magnesium, sat. paste	1.61	meq/L		0.08		SW6010B	07/27/24 02:26 / eli-h
Sodium, sat. paste	0.22	meq/L		0.04		SW6010B	07/27/24 02:26 / eli-h
METALS, CACL2 EXTRACTABLE							
Boron	0.4	mg/kg		0.1		SW6010B	07/25/24 22:23 / eli-h
Selenium	ND	mg/kg		0.1		SW6020	07/31/24 21:32 / eli-h

Report Definitions:
RL - Analyte Reporting Limit
QCL - Quality Control Limit
MCL - Maximum Contaminant Level
ND - Not detected at the Reporting Limit (RL)

LABORATORY ANALYTICAL REPORT

Prepared by Gillette, WY Branch

Client: Mullinax Inc.
Project: Mullinax
Lab ID: G24070190-042
Client Sample ID: 11-003-B+K2

Report Date: 08/16/24
Collection Date: 07/10/24
Date Received: 07/11/24
Matrix: Soil

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
PHYSICAL CHARACTERISTICS							
Very Fine Sand	55	wt%		1		ASA15-5	07/31/24 15:44 / eli-h
PHYSICAL CHARACTERISTICS							
Sand	34	%		1		ASA15-5	07/29/24 15:44 / eli-h
Silt	20	%		1		ASA15-5	07/29/24 15:44 / eli-h
Clay	46	%		1		ASA15-5	07/29/24 15:44 / eli-h
Texture	C			1		ASA15-5	07/29/24 15:44 / eli-h
SATURATED PASTE EXTRACT							
pH, sat. paste	8.4	s.u.		0.1		ASA10-3	07/25/24 10:34 / eli-h
Conductivity, sat. paste	0.2	mmhos/cm		0.1		ASA10-3	07/26/24 08:35 / eli-h
Saturation	60.9	%		0.1		USDA27a	07/25/24 09:19 / eli-h
Sodium Adsorption Ratio (SAR)	1.6	unitless		0.1		USDA20b	07/29/24 17:37 / eli-h
CHEMICAL CHARACTERISTICS							
Organic Matter	0.3	%		0.2		ASA29-3	07/31/24 15:10 / eli-h
PHYSICAL CHARACTERISTICS							
Coarse Fragments	23	wt%-dry		2		ASA15-3	07/25/24 09:18 / eli-h
SATURATED PASTE EXTRACT							
Calcium, sat. paste	0.52	meq/L		0.05		SW6010B	07/27/24 02:41 / eli-h
Magnesium, sat. paste	0.87	meq/L		0.08		SW6010B	07/27/24 02:41 / eli-h
Sodium, sat. paste	1.31	meq/L		0.04		SW6010B	07/27/24 02:41 / eli-h
METALS, CACL2 EXTRACTABLE							
Boron	0.5	mg/kg		0.1		SW6010B	07/25/24 22:27 / eli-h
Selenium	ND	mg/kg		0.1		SW6020	07/31/24 21:45 / eli-h

Report Definitions:
RL - Analyte Reporting Limit
QCL - Quality Control Limit
MCL - Maximum Contaminant Level
ND - Not detected at the Reporting Limit (RL)

LABORATORY ANALYTICAL REPORT

Prepared by Gillette, WY Branch

Client: Mullinax Inc.
Project: Mullinax
Lab ID: G24070190-043
Client Sample ID: 11-004-BCK

Report Date: 08/16/24
Collection Date: 07/10/24
Date Received: 07/11/24
Matrix: Soil

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
PHYSICAL CHARACTERISTICS							
Very Fine Sand	60	wt%		1		ASA15-5	07/31/24 15:44 / eli-h
PHYSICAL CHARACTERISTICS							
Sand	36	%		1		ASA15-5	07/29/24 15:44 / eli-h
Silt	24	%		1		ASA15-5	07/29/24 15:44 / eli-h
Clay	40	%		1		ASA15-5	07/29/24 15:44 / eli-h
Texture	C			1		ASA15-5	07/29/24 15:44 / eli-h
SATURATED PASTE EXTRACT							
pH, sat. paste	8.8	s.u.		0.1		ASA10-3	07/25/24 10:35 / eli-h
Conductivity, sat. paste	0.4	mmhos/cm		0.1		ASA10-3	07/26/24 08:36 / eli-h
Saturation	73.0	%		0.1		USDA27a	07/25/24 09:20 / eli-h
Sodium Adsorption Ratio (SAR)	3.5	unitless		0.1		USDA20b	07/29/24 17:37 / eli-h
CHEMICAL CHARACTERISTICS							
Organic Matter	ND	%		0.2		ASA29-3	07/31/24 15:10 / eli-h
PHYSICAL CHARACTERISTICS							
Coarse Fragments	13	wt%-dry		2		ASA15-3	07/25/24 09:18 / eli-h
SATURATED PASTE EXTRACT							
Calcium, sat. paste	0.4	meq/L		0.05		SW6010B	07/27/24 02:45 / eli-h
Magnesium, sat. paste	1.06	meq/L		0.08		SW6010B	07/27/24 02:45 / eli-h
Sodium, sat. paste	2.98	meq/L		0.04		SW6010B	07/27/24 02:45 / eli-h
METALS, CACL2 EXTRACTABLE							
Boron	2.0	mg/kg		0.1		SW6010B	07/25/24 22:31 / eli-h
Selenium	ND	mg/kg		0.1		SW6020	07/31/24 21:48 / eli-h

Report Definitions:
RL - Analyte Reporting Limit
QCL - Quality Control Limit
MCL - Maximum Contaminant Level
ND - Not detected at the Reporting Limit (RL)

LABORATORY ANALYTICAL REPORT

Prepared by Gillette, WY Branch

Client: Mullinax Inc.
Project: Mullinax
Lab ID: G24070190-044
Client Sample ID: 11-005-CK

Report Date: 08/16/24
Collection Date: 07/10/24
Date Received: 07/11/24
Matrix: Soil

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
PHYSICAL CHARACTERISTICS							
Very Fine Sand	71	wt%		1		ASA15-5	07/31/24 15:44 / eli-h
PHYSICAL CHARACTERISTICS							
Sand	38	%		1		ASA15-5	07/29/24 15:44 / eli-h
Silt	24	%		1		ASA15-5	07/29/24 15:44 / eli-h
Clay	38	%		1		ASA15-5	07/29/24 15:44 / eli-h
Texture	CL			1		ASA15-5	07/29/24 15:44 / eli-h
SATURATED PASTE EXTRACT							
pH, sat. paste	8.7	s.u.		0.1		ASA10-3	07/25/24 10:36 / eli-h
Conductivity, sat. paste	1.2	mmhos/cm		0.1		ASA10-3	07/26/24 08:37 / eli-h
Saturation	64.1	%		0.1		USDA27a	07/25/24 09:20 / eli-h
Sodium Adsorption Ratio (SAR)	5.0	unitless		0.1		USDA20b	07/29/24 17:37 / eli-h
CHEMICAL CHARACTERISTICS							
Organic Matter	ND	%		0.2		ASA29-3	07/31/24 15:10 / eli-h
PHYSICAL CHARACTERISTICS							
Coarse Fragments	10	wt%-dry		2		ASA15-3	07/25/24 09:18 / eli-h
SATURATED PASTE EXTRACT							
Calcium, sat. paste	0.6	meq/L		0.05		SW6010B	07/27/24 02:49 / eli-h
Magnesium, sat. paste	3.78	meq/L		0.08		SW6010B	07/27/24 02:49 / eli-h
Sodium, sat. paste	7.39	meq/L		0.04		SW6010B	07/27/24 02:49 / eli-h
METALS, CACL2 EXTRACTABLE							
Boron	3.2	mg/kg		0.1		SW6010B	07/25/24 22:42 / eli-h
Selenium	ND	mg/kg		0.1		SW6020	07/31/24 21:51 / eli-h

Report Definitions:
RL - Analyte Reporting Limit
QCL - Quality Control Limit
MCL - Maximum Contaminant Level
ND - Not detected at the Reporting Limit (RL)

LABORATORY ANALYTICAL REPORT

Prepared by Gillette, WY Branch

Client: Mullinax Inc.
Project: Mullinax
Lab ID: G24070190-045
Client Sample ID: 12-001-A

Report Date: 08/16/24
Collection Date: 07/11/24
Date Received: 07/11/24
Matrix: Soil

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
PHYSICAL CHARACTERISTICS							
Very Fine Sand	93	wt%		1		ASA15-5	07/31/24 15:44 / eli-h
PHYSICAL CHARACTERISTICS							
Sand	18	%		1		ASA15-5	07/29/24 15:44 / eli-h
Silt	30	%		1		ASA15-5	07/29/24 15:44 / eli-h
Clay	52	%		1		ASA15-5	07/29/24 15:44 / eli-h
Texture	C			1		ASA15-5	07/29/24 15:44 / eli-h
SATURATED PASTE EXTRACT							
pH, sat. paste	7.8	s.u.		0.1		ASA10-3	07/25/24 10:37 / eli-h
Conductivity, sat. paste	0.3	mmhos/cm		0.1		ASA10-3	07/26/24 08:38 / eli-h
Saturation	87.0	%		0.1		USDA27a	07/25/24 09:20 / eli-h
Sodium Adsorption Ratio (SAR)	0.2	unitless		0.1		USDA20b	07/29/24 17:37 / eli-h
CHEMICAL CHARACTERISTICS							
Organic Matter	1.2	%		0.2		ASA29-3	07/31/24 15:10 / eli-h
PHYSICAL CHARACTERISTICS							
Coarse Fragments	11	wt%-dry		2		ASA15-3	07/25/24 09:18 / eli-h
SATURATED PASTE EXTRACT							
Calcium, sat. paste	1.39	meq/L		0.05		SW6010B	07/27/24 02:53 / eli-h
Magnesium, sat. paste	1.66	meq/L		0.08		SW6010B	07/27/24 02:53 / eli-h
Sodium, sat. paste	0.31	meq/L		0.04		SW6010B	07/27/24 02:53 / eli-h
METALS, CACL2 EXTRACTABLE							
Boron	0.6	mg/kg		0.1		SW6010B	07/25/24 22:46 / eli-h
Selenium	ND	mg/kg		0.1		SW6020	07/31/24 21:54 / eli-h

Report Definitions:
RL - Analyte Reporting Limit
QCL - Quality Control Limit
MCL - Maximum Contaminant Level
ND - Not detected at the Reporting Limit (RL)

LABORATORY ANALYTICAL REPORT

Prepared by Gillette, WY Branch

Client: Mullinax Inc.
Project: Mullinax
Lab ID: G24070190-046
Client Sample ID: 12-002-B+g

Report Date: 08/16/24
Collection Date: 07/11/24
Date Received: 07/11/24
Matrix: Soil

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
PHYSICAL CHARACTERISTICS							
Very Fine Sand	97	wt%		1		ASA15-5	07/31/24 15:44 / eli-h
PHYSICAL CHARACTERISTICS							
Sand	38	%		1		ASA15-5	07/29/24 15:44 / eli-h
Silt	16	%		1		ASA15-5	07/29/24 15:44 / eli-h
Clay	46	%		1		ASA15-5	07/29/24 15:44 / eli-h
Texture	C			1		ASA15-5	07/29/24 15:44 / eli-h
SATURATED PASTE EXTRACT							
pH, sat. paste	8.4	s.u.		0.1		ASA10-3	07/25/24 10:38 / eli-h
Conductivity, sat. paste	0.2	mmhos/cm		0.1		ASA10-3	07/26/24 08:39 / eli-h
Saturation	101	%		0.1		USDA27a	07/25/24 09:20 / eli-h
Sodium Adsorption Ratio (SAR)	1.1	unitless		0.1		USDA20b	07/29/24 17:37 / eli-h
CHEMICAL CHARACTERISTICS							
Organic Matter	0.6	%		0.2		ASA29-3	07/31/24 15:10 / eli-h
PHYSICAL CHARACTERISTICS							
Coarse Fragments	27	wt%-dry		2		ASA15-3	07/25/24 09:18 / eli-h
SATURATED PASTE EXTRACT							
Calcium, sat. paste	0.56	meq/L		0.05		SW6010B	07/27/24 02:57 / eli-h
Magnesium, sat. paste	0.84	meq/L		0.08		SW6010B	07/27/24 02:57 / eli-h
Sodium, sat. paste	0.95	meq/L		0.04		SW6010B	07/27/24 02:57 / eli-h
METALS, CACL2 EXTRACTABLE							
Boron	1.0	mg/kg		0.1		SW6010B	07/25/24 23:01 / eli-h
Selenium	ND	mg/kg		0.1		SW6020	07/31/24 21:57 / eli-h

Report Definitions:
RL - Analyte Reporting Limit
QCL - Quality Control Limit
MCL - Maximum Contaminant Level
ND - Not detected at the Reporting Limit (RL)

LABORATORY ANALYTICAL REPORT

Prepared by Gillette, WY Branch

Client: Mullinax Inc.
Project: Mullinax
Lab ID: G24070190-047
Client Sample ID: 12-003-Bg1

Report Date: 08/16/24
Collection Date: 07/11/24
Date Received: 07/11/24
Matrix: Soil

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
PHYSICAL CHARACTERISTICS							
Very Fine Sand	99	wt%		1		ASA15-5	07/31/24 15:44 / eli-h
PHYSICAL CHARACTERISTICS							
Sand	18	%		1		ASA15-5	07/29/24 15:44 / eli-h
Silt	24	%		1		ASA15-5	07/29/24 15:44 / eli-h
Clay	58	%		1		ASA15-5	07/29/24 15:44 / eli-h
Texture	C			1		ASA15-5	07/29/24 15:44 / eli-h
SATURATED PASTE EXTRACT							
pH, sat. paste	8.2	s.u.		0.1		ASA10-3	07/25/24 10:39 / eli-h
Conductivity, sat. paste	4.7	mmhos/cm		0.1		ASA10-3	07/26/24 08:40 / eli-h
Saturation	109	%		0.1		USDA27a	07/25/24 09:20 / eli-h
Sodium Adsorption Ratio (SAR)	2.9	unitless		0.1		USDA20b	07/29/24 17:37 / eli-h
CHEMICAL CHARACTERISTICS							
Organic Matter	0.6	%		0.2		ASA29-3	07/31/24 15:10 / eli-h
PHYSICAL CHARACTERISTICS							
Coarse Fragments	30	wt%-dry		2		ASA15-3	07/25/24 09:18 / eli-h
SATURATED PASTE EXTRACT							
Calcium, sat. paste	18.2	meq/L		0.05		SW6010B	07/27/24 03:00 / eli-h
Magnesium, sat. paste	33.4	meq/L		0.08		SW6010B	07/27/24 03:00 / eli-h
Sodium, sat. paste	14.9	meq/L		0.04		SW6010B	07/27/24 03:00 / eli-h
METALS, CACL2 EXTRACTABLE							
Boron	4.8	mg/kg		0.1		SW6010B	07/25/24 23:09 / eli-h
Selenium	ND	mg/kg		0.1		SW6020	07/31/24 22:03 / eli-h

Report Definitions:
RL - Analyte Reporting Limit
QCL - Quality Control Limit
MCL - Maximum Contaminant Level
ND - Not detected at the Reporting Limit (RL)

LABORATORY ANALYTICAL REPORT

Prepared by Gillette, WY Branch

Client: Mullinax Inc.
Project: Mullinax
Lab ID: G24070190-048
Client Sample ID: 12-004-Bg2

Report Date: 08/16/24
Collection Date: 07/11/24
Date Received: 07/11/24
Matrix: Soil

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
PHYSICAL CHARACTERISTICS							
Very Fine Sand	84	wt%		1		ASA15-5	07/31/24 15:44 / eli-h
PHYSICAL CHARACTERISTICS							
Sand	10	%		1		ASA15-5	07/29/24 15:44 / eli-h
Silt	22	%		1		ASA15-5	07/29/24 15:44 / eli-h
Clay	68	%		1		ASA15-5	07/29/24 15:44 / eli-h
Texture	C			1		ASA15-5	07/29/24 15:44 / eli-h
SATURATED PASTE EXTRACT							
pH, sat. paste	7.7	s.u.		0.1		ASA10-3	07/25/24 10:40 / eli-h
Conductivity, sat. paste	5.7	mmhos/cm		0.1		ASA10-3	07/26/24 08:41 / eli-h
Saturation	118	%		0.1		USDA27a	07/25/24 09:20 / eli-h
Sodium Adsorption Ratio (SAR)	4.6	unitless		0.1		USDA20b	07/29/24 17:37 / eli-h
CHEMICAL CHARACTERISTICS							
Organic Matter	4.3	%		0.2		ASA29-3	07/31/24 15:10 / eli-h
PHYSICAL CHARACTERISTICS							
Coarse Fragments	56	wt%-dry		2		ASA15-3	07/25/24 09:18 / eli-h
SATURATED PASTE EXTRACT							
Calcium, sat. paste	13	meq/L		0.09		SW6010B	07/27/24 03:43 / eli-h
Magnesium, sat. paste	47.7	meq/L		0.08		SW6010B	07/27/24 03:43 / eli-h
Sodium, sat. paste	25.4	meq/L		0.04		SW6010B	07/30/24 06:48 / eli-h
METALS, CACL2 EXTRACTABLE							
Boron	0.7	mg/kg		0.1		SW6010B	07/25/24 23:12 / eli-h
Selenium	0.3	mg/kg		0.1		SW6020	07/31/24 22:06 / eli-h

Report Definitions:
RL - Analyte Reporting Limit
QCL - Quality Control Limit
MCL - Maximum Contaminant Level
ND - Not detected at the Reporting Limit (RL)

LABORATORY ANALYTICAL REPORT

Prepared by Gillette, WY Branch

Client: Mullinax Inc.
Project: Mullinax
Lab ID: G24070190-049
Client Sample ID: 12-005-Bg3

Report Date: 08/16/24
Collection Date: 07/11/24
Date Received: 07/11/24
Matrix: Soil

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
PHYSICAL CHARACTERISTICS							
Very Fine Sand	99	wt%		1		ASA15-5	07/31/24 15:44 / eli-h
PHYSICAL CHARACTERISTICS							
Sand	4	%		1		ASA15-5	07/29/24 15:44 / eli-h
Silt	34	%		1		ASA15-5	07/29/24 15:44 / eli-h
Clay	62	%		1		ASA15-5	07/29/24 15:44 / eli-h
Texture	C			1		ASA15-5	07/29/24 15:44 / eli-h
SATURATED PASTE EXTRACT							
pH, sat. paste	7.6	s.u.		0.1		ASA10-3	07/25/24 10:42 / eli-h
Conductivity, sat. paste	5.5	mmhos/cm		0.1		ASA10-3	07/26/24 08:43 / eli-h
Saturation	96.7	%		0.1		USDA27a	07/30/24 08:29 / eli-h
Sodium Adsorption Ratio (SAR)	3.6	unitless		0.1		USDA20b	07/29/24 17:37 / eli-h
CHEMICAL CHARACTERISTICS							
Organic Matter	0.7	%		0.2		ASA29-3	07/31/24 15:10 / eli-h
PHYSICAL CHARACTERISTICS							
Coarse Fragments	72	wt%-dry		2		ASA15-3	07/25/24 09:18 / eli-h
SATURATED PASTE EXTRACT							
Calcium, sat. paste	19.7	meq/L		0.09		SW6010B	07/27/24 03:51 / eli-h
Magnesium, sat. paste	42.8	meq/L		0.08		SW6010B	07/27/24 03:51 / eli-h
Sodium, sat. paste	20.1	meq/L		0.04		SW6010B	07/30/24 14:03 / eli-h
METALS, CACL2 EXTRACTABLE							
Boron	0.4	mg/kg		0.1		SW6010B	07/25/24 23:16 / eli-h
Selenium	0.3	mg/kg		0.1		SW6020	07/31/24 22:09 / eli-h

Report Definitions:
RL - Analyte Reporting Limit
QCL - Quality Control Limit
MCL - Maximum Contaminant Level
ND - Not detected at the Reporting Limit (RL)

LABORATORY ANALYTICAL REPORT

Prepared by Gillette, WY Branch

Client: Mullinax Inc.
Project: Mullinax
Lab ID: G24070190-050
Client Sample ID: 13-001-A

Report Date: 08/16/24
Collection Date: 07/10/24
Date Received: 07/11/24
Matrix: Soil

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
PHYSICAL CHARACTERISTICS							
Very Fine Sand	44	wt%		1		ASA15-5	07/31/24 15:44 / eli-h
PHYSICAL CHARACTERISTICS							
Sand	44	%		1		ASA15-5	07/29/24 15:44 / eli-h
Silt	28	%		1		ASA15-5	07/29/24 15:44 / eli-h
Clay	28	%		1		ASA15-5	07/29/24 15:44 / eli-h
Texture	CL			1		ASA15-5	07/29/24 15:44 / eli-h
SATURATED PASTE EXTRACT							
pH, sat. paste	6.4	s.u.		0.1		ASA10-3	07/25/24 10:43 / eli-h
Conductivity, sat. paste	0.5	mmhos/cm		0.1		ASA10-3	07/26/24 08:44 / eli-h
Saturation	40.8	%		0.1		USDA27a	07/25/24 09:21 / eli-h
Sodium Adsorption Ratio (SAR)	0.1	unitless		0.1		USDA20b	07/29/24 17:37 / eli-h
CHEMICAL CHARACTERISTICS							
Organic Matter	2.1	%		0.2		ASA29-3	07/31/24 15:10 / eli-h
PHYSICAL CHARACTERISTICS							
Coarse Fragments	15	wt%-dry		2		ASA15-3	07/25/24 09:18 / eli-h
SATURATED PASTE EXTRACT							
Calcium, sat. paste	2.12	meq/L		0.05		SW6010B	07/27/24 03:54 / eli-h
Magnesium, sat. paste	3.15	meq/L		0.08		SW6010B	07/27/24 03:54 / eli-h
Sodium, sat. paste	0.21	meq/L		0.04		SW6010B	07/30/24 14:07 / eli-h
METALS, CACL2 EXTRACTABLE							
Boron	0.4	mg/kg		0.1		SW6010B	07/25/24 23:28 / eli-h
Selenium	ND	mg/kg		0.1		SW6020	07/31/24 22:12 / eli-h

Report Definitions:
RL - Analyte Reporting Limit
QCL - Quality Control Limit
MCL - Maximum Contaminant Level
ND - Not detected at the Reporting Limit (RL)

LABORATORY ANALYTICAL REPORT

Prepared by Gillette, WY Branch

Client: Mullinax Inc.
Project: Mullinax
Lab ID: G24070190-051
Client Sample ID: 13-002-B+

Report Date: 08/16/24
Collection Date: 07/10/24
Date Received: 07/11/24
Matrix: Soil

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
PHYSICAL CHARACTERISTICS							
Very Fine Sand	35	wt%		1		ASA15-5	07/31/24 15:44 / eli-h
PHYSICAL CHARACTERISTICS							
Sand	28	%		1		ASA15-5	07/29/24 15:44 / eli-h
Silt	26	%		1		ASA15-5	07/29/24 15:44 / eli-h
Clay	46	%		1		ASA15-5	07/29/24 15:44 / eli-h
Texture	C			1		ASA15-5	07/29/24 15:44 / eli-h
SATURATED PASTE EXTRACT							
pH, sat. paste	6.7	s.u.		0.1		ASA10-3	07/25/24 10:44 / eli-h
Conductivity, sat. paste	0.2	mmhos/cm		0.1		ASA10-3	07/26/24 08:45 / eli-h
Saturation	57.8	%		0.1		USDA27a	07/25/24 09:21 / eli-h
Sodium Adsorption Ratio (SAR)	0.2	unitless		0.1		USDA20b	07/29/24 17:37 / eli-h
CHEMICAL CHARACTERISTICS							
Organic Matter	1.2	%		0.2		ASA29-3	07/31/24 15:10 / eli-h
PHYSICAL CHARACTERISTICS							
Coarse Fragments	29	wt%-dry		2		ASA15-3	07/25/24 09:18 / eli-h
SATURATED PASTE EXTRACT							
Calcium, sat. paste	0.82	meq/L		0.05		SW6010B	07/27/24 03:58 / eli-h
Magnesium, sat. paste	1.2	meq/L		0.08		SW6010B	07/27/24 03:58 / eli-h
Sodium, sat. paste	0.24	meq/L		0.04		SW6010B	07/30/24 14:11 / eli-h
METALS, CACL2 EXTRACTABLE							
Boron	0.8	mg/kg		0.1		SW6010B	07/25/24 23:32 / eli-h
Selenium	ND	mg/kg		0.1		SW6020	07/31/24 22:21 / eli-h

Report Definitions:
RL - Analyte Reporting Limit
QCL - Quality Control Limit
MCL - Maximum Contaminant Level
ND - Not detected at the Reporting Limit (RL)

LABORATORY ANALYTICAL REPORT

Prepared by Gillette, WY Branch

Client: Mullinax Inc.
Project: Mullinax
Lab ID: G24070190-052
Client Sample ID: 13-003-B+K1

Report Date: 08/16/24
Collection Date: 07/10/24
Date Received: 07/11/24
Matrix: Soil

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
PHYSICAL CHARACTERISTICS							
Very Fine Sand	41	wt%		1		ASA15-5	07/31/24 15:44 / eli-h
PHYSICAL CHARACTERISTICS							
Sand	38	%		1		ASA15-5	07/29/24 15:44 / eli-h
Silt	26	%		1		ASA15-5	07/29/24 15:44 / eli-h
Clay	36	%		1		ASA15-5	07/29/24 15:44 / eli-h
Texture	CL			1		ASA15-5	07/29/24 15:44 / eli-h
SATURATED PASTE EXTRACT							
pH, sat. paste	8.1	s.u.		0.1		ASA10-3	07/25/24 10:46 / eli-h
Conductivity, sat. paste	0.3	mmhos/cm		0.1		ASA10-3	07/26/24 08:46 / eli-h
Saturation	51.1	%		0.1		USDA27a	07/25/24 09:21 / eli-h
Sodium Adsorption Ratio (SAR)	0.3	unitless		0.1		USDA20b	07/29/24 17:37 / eli-h
CHEMICAL CHARACTERISTICS							
Organic Matter	0.8	%		0.2		ASA29-3	07/31/24 15:10 / eli-h
PHYSICAL CHARACTERISTICS							
Coarse Fragments	27	wt%-dry		2		ASA15-3	07/25/24 09:18 / eli-h
SATURATED PASTE EXTRACT							
Calcium, sat. paste	1.4	meq/L		0.05		SW6010B	07/27/24 04:02 / eli-h
Magnesium, sat. paste	2.1	meq/L		0.08		SW6010B	07/27/24 04:02 / eli-h
Sodium, sat. paste	0.33	meq/L		0.04		SW6010B	07/30/24 14:15 / eli-h
METALS, CACL2 EXTRACTABLE							
Boron	0.6	mg/kg		0.1		SW6010B	07/25/24 23:35 / eli-h
Selenium	ND	mg/kg		0.1		SW6020	07/31/24 22:24 / eli-h

Report Definitions:
RL - Analyte Reporting Limit
QCL - Quality Control Limit
MCL - Maximum Contaminant Level
ND - Not detected at the Reporting Limit (RL)

LABORATORY ANALYTICAL REPORT

Prepared by Gillette, WY Branch

Client: Mullinax Inc.
Project: Mullinax
Lab ID: G24070190-053
Client Sample ID: 13-004-B+K2

Report Date: 08/16/24
Collection Date: 07/10/24
Date Received: 07/11/24
Matrix: Soil

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
PHYSICAL CHARACTERISTICS							
Very Fine Sand	38	wt%		1		ASA15-5	07/31/24 15:44 / eli-h
PHYSICAL CHARACTERISTICS							
Sand	38	%		1		ASA15-5	07/29/24 15:44 / eli-h
Silt	28	%		1		ASA15-5	07/29/24 15:44 / eli-h
Clay	34	%		1		ASA15-5	07/29/24 15:44 / eli-h
Texture	CL			1		ASA15-5	07/29/24 15:44 / eli-h
SATURATED PASTE EXTRACT							
pH, sat. paste	8.0	s.u.		0.1		ASA10-3	07/25/24 10:47 / eli-h
Conductivity, sat. paste	1.3	mmhos/cm		0.1		ASA10-3	07/26/24 08:47 / eli-h
Saturation	50.7	%		0.1		USDA27a	07/25/24 09:22 / eli-h
Sodium Adsorption Ratio (SAR)	0.2	unitless		0.1		USDA20b	07/29/24 17:37 / eli-h
CHEMICAL CHARACTERISTICS							
Organic Matter	0.5	%		0.2		ASA29-3	07/31/24 15:10 / eli-h
PHYSICAL CHARACTERISTICS							
Coarse Fragments	12	wt%-dry		2		ASA15-3	07/25/24 09:18 / eli-h
SATURATED PASTE EXTRACT							
Calcium, sat. paste	6.92	meq/L		0.05		SW6010B	07/27/24 04:06 / eli-h
Magnesium, sat. paste	8.57	meq/L		0.08		SW6010B	07/27/24 04:06 / eli-h
Sodium, sat. paste	0.61	meq/L		0.04		SW6010B	07/30/24 14:19 / eli-h
METALS, CACL2 EXTRACTABLE							
Boron	0.6	mg/kg		0.1		SW6010B	07/25/24 23:39 / eli-h
Selenium	ND	mg/kg		0.1		SW6020	07/31/24 22:27 / eli-h

Report Definitions:
RL - Analyte Reporting Limit
QCL - Quality Control Limit
MCL - Maximum Contaminant Level
ND - Not detected at the Reporting Limit (RL)

LABORATORY ANALYTICAL REPORT

Prepared by Gillette, WY Branch

Client: Mullinax Inc.
Project: Mullinax
Lab ID: G24070190-054
Client Sample ID: 13-005-BCK

Report Date: 08/16/24
Collection Date: 07/10/24
Date Received: 07/11/24
Matrix: Soil

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
PHYSICAL CHARACTERISTICS							
Very Fine Sand	42	wt%		1		ASA15-5	07/31/24 15:44 / eli-h
PHYSICAL CHARACTERISTICS							
Sand	40	%		1		ASA15-5	07/29/24 15:44 / eli-h
Silt	26	%		1		ASA15-5	07/29/24 15:44 / eli-h
Clay	34	%		1		ASA15-5	07/29/24 15:44 / eli-h
Texture	CL			1		ASA15-5	07/29/24 15:44 / eli-h
SATURATED PASTE EXTRACT							
pH, sat. paste	8.0	s.u.		0.1		ASA10-3	07/25/24 10:48 / eli-h
Conductivity, sat. paste	3.6	mmhos/cm		0.1		ASA10-3	07/26/24 08:48 / eli-h
Saturation	47.6	%		0.1		USDA27a	07/25/24 09:22 / eli-h
Sodium Adsorption Ratio (SAR)	0.6	unitless		0.1		USDA20b	07/29/24 17:37 / eli-h
CHEMICAL CHARACTERISTICS							
Organic Matter	0.5	%		0.2		ASA29-3	07/31/24 15:10 / eli-h
PHYSICAL CHARACTERISTICS							
Coarse Fragments	ND	wt%-dry		2		ASA15-3	07/25/24 09:18 / eli-h
SATURATED PASTE EXTRACT							
Calcium, sat. paste	20.3	meq/L		0.05		SW6010B	07/27/24 04:10 / eli-h
Magnesium, sat. paste	31.1	meq/L		0.08		SW6010B	07/27/24 04:10 / eli-h
Sodium, sat. paste	3.28	meq/L		0.04		SW6010B	07/30/24 14:23 / eli-h
METALS, CACL2 EXTRACTABLE							
Boron	1.5	mg/kg		0.1		SW6010B	07/25/24 23:43 / eli-h
Selenium	ND	mg/kg		0.1		SW6020	07/31/24 22:30 / eli-h

Report Definitions:
RL - Analyte Reporting Limit
QCL - Quality Control Limit
MCL - Maximum Contaminant Level
ND - Not detected at the Reporting Limit (RL)

LABORATORY ANALYTICAL REPORT

Prepared by Gillette, WY Branch

Client: Mullinax Inc.
Project: Mullinax
Lab ID: G24070190-055
Client Sample ID: 13-006-CK

Report Date: 08/16/24
Collection Date: 07/10/24
Date Received: 07/11/24
Matrix: Soil

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
PHYSICAL CHARACTERISTICS							
Very Fine Sand	52	wt%		1		ASA15-5	07/31/24 15:44 / eli-h
PHYSICAL CHARACTERISTICS							
Sand	30	%		1		ASA15-5	08/01/24 15:21 / eli-h
Silt	34	%		1		ASA15-5	08/01/24 15:21 / eli-h
Clay	36	%		1		ASA15-5	08/01/24 15:21 / eli-h
Texture	CL			1		ASA15-5	08/01/24 15:21 / eli-h
SATURATED PASTE EXTRACT							
pH, sat. paste	8.1	s.u.		0.1		ASA10-3	07/25/24 10:49 / eli-h
Conductivity, sat. paste	6.8	mmhos/cm		0.1		ASA10-3	07/26/24 08:49 / eli-h
Saturation	56.0	%		0.1		USDA27a	07/25/24 09:22 / eli-h
Sodium Adsorption Ratio (SAR)	3.1	unitless		0.1		USDA20b	07/29/24 17:37 / eli-h
CHEMICAL CHARACTERISTICS							
Organic Matter	0.2	%		0.2		ASA29-3	07/31/24 15:10 / eli-h
PHYSICAL CHARACTERISTICS							
Coarse Fragments	14	wt%-dry		2		ASA15-3	07/25/24 09:18 / eli-h
SATURATED PASTE EXTRACT							
Calcium, sat. paste	20.7	meq/L		0.09		SW6010B	07/27/24 04:14 / eli-h
Magnesium, sat. paste	73.4	meq/L		0.08		SW6010B	07/27/24 04:14 / eli-h
Sodium, sat. paste	20.6	meq/L		0.04		SW6010B	07/30/24 14:26 / eli-h
METALS, CACL2 EXTRACTABLE							
Boron	1.6	mg/kg		0.1		SW6010B	07/25/24 23:47 / eli-h
Selenium	0.1	mg/kg		0.1		SW6020	07/31/24 22:34 / eli-h

Report Definitions:
RL - Analyte Reporting Limit
QCL - Quality Control Limit
MCL - Maximum Contaminant Level
ND - Not detected at the Reporting Limit (RL)

LABORATORY ANALYTICAL REPORT

Prepared by Gillette, WY Branch

Client: Mullinax Inc.
Project: Mullinax
Lab ID: G24070190-056
Client Sample ID: 14-001-Ap

Report Date: 08/16/24
Collection Date: 07/10/24
Date Received: 07/11/24
Matrix: Soil

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
PHYSICAL CHARACTERISTICS							
Very Fine Sand	51	wt%		1		ASA15-5	07/31/24 15:44 / eli-h
PHYSICAL CHARACTERISTICS							
Sand	42	%		1		ASA15-5	07/29/24 15:44 / eli-h
Silt	40	%		1		ASA15-5	07/29/24 15:44 / eli-h
Clay	18	%		1		ASA15-5	07/29/24 15:44 / eli-h
Texture	L			1		ASA15-5	07/29/24 15:44 / eli-h
SATURATED PASTE EXTRACT							
pH, sat. paste	7.0	s.u.		0.1		ASA10-3	07/25/24 10:50 / eli-h
Conductivity, sat. paste	0.5	mmhos/cm		0.1		ASA10-3	07/26/24 08:50 / eli-h
Saturation	33.7	%		0.1		USDA27a	07/25/24 09:22 / eli-h
Sodium Adsorption Ratio (SAR)	1.8	unitless		0.1		USDA20b	07/29/24 17:37 / eli-h
CHEMICAL CHARACTERISTICS							
Organic Matter	1.5	%		0.2		ASA29-3	07/31/24 15:10 / eli-h
PHYSICAL CHARACTERISTICS							
Coarse Fragments	14	wt%-dry		2		ASA15-3	07/25/24 09:18 / eli-h
SATURATED PASTE EXTRACT							
Calcium, sat. paste	1.58	meq/L		0.05		SW6010B	07/27/24 04:25 / eli-h
Magnesium, sat. paste	1.94	meq/L		0.08		SW6010B	07/27/24 04:25 / eli-h
Sodium, sat. paste	2.38	meq/L		0.04		SW6010B	07/27/24 04:25 / eli-h
METALS, CACL2 EXTRACTABLE							
Boron	0.3	mg/kg		0.1		SW6010B	07/25/24 23:51 / eli-h
Selenium	ND	mg/kg		0.1		SW6020	07/31/24 22:37 / eli-h

Report Definitions:
RL - Analyte Reporting Limit
QCL - Quality Control Limit
MCL - Maximum Contaminant Level
ND - Not detected at the Reporting Limit (RL)

LABORATORY ANALYTICAL REPORT

Prepared by Gillette, WY Branch

Client: Mullinax Inc.
Project: Mullinax
Lab ID: G24070190-057
Client Sample ID: 14-002-B+

Report Date: 08/16/24
Collection Date: 07/10/24
Date Received: 07/11/24
Matrix: Soil

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
PHYSICAL CHARACTERISTICS							
Very Fine Sand	56	wt%		1		ASA15-5	07/31/24 15:44 / eli-h
PHYSICAL CHARACTERISTICS							
Sand	26	%		1		ASA15-5	07/29/24 15:44 / eli-h
Silt	28	%		1		ASA15-5	07/29/24 15:44 / eli-h
Clay	46	%		1		ASA15-5	07/29/24 15:44 / eli-h
Texture	C			1		ASA15-5	07/29/24 15:44 / eli-h
SATURATED PASTE EXTRACT							
pH, sat. paste	7.8	s.u.		0.1		ASA10-3	07/25/24 10:51 / eli-h
Conductivity, sat. paste	1.2	mmhos/cm		0.1		ASA10-3	07/26/24 08:51 / eli-h
Saturation	67.8	%		0.1		USDA27a	07/25/24 09:22 / eli-h
Sodium Adsorption Ratio (SAR)	5.1	unitless		0.1		USDA20b	07/29/24 17:37 / eli-h
CHEMICAL CHARACTERISTICS							
Organic Matter	1.5	%		0.2		ASA29-3	07/31/24 15:10 / eli-h
PHYSICAL CHARACTERISTICS							
Coarse Fragments	54	wt%-dry		2		ASA15-3	07/25/24 09:18 / eli-h
SATURATED PASTE EXTRACT							
Calcium, sat. paste	1.34	meq/L		0.05		SW6010B	07/27/24 04:29 / eli-h
Magnesium, sat. paste	4.12	meq/L		0.08		SW6010B	07/27/24 04:29 / eli-h
Sodium, sat. paste	8.4	meq/L		0.04		SW6010B	07/27/24 04:29 / eli-h
METALS, CACL2 EXTRACTABLE							
Boron	1.2	mg/kg		0.1		SW6010B	07/25/24 23:59 / eli-h
Selenium	ND	mg/kg		0.1		SW6020	07/31/24 22:43 / eli-h

Report Definitions:
RL - Analyte Reporting Limit
QCL - Quality Control Limit
MCL - Maximum Contaminant Level
ND - Not detected at the Reporting Limit (RL)

LABORATORY ANALYTICAL REPORT

Prepared by Gillette, WY Branch

Client: Mullinax Inc.
Project: Mullinax
Lab ID: G24070190-058
Client Sample ID: 14-003-B+K

Report Date: 08/16/24
Collection Date: 07/10/24
Date Received: 07/11/24
Matrix: Soil

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
PHYSICAL CHARACTERISTICS							
Very Fine Sand	49	wt%		1		ASA15-5	07/31/24 15:44 / eli-h
PHYSICAL CHARACTERISTICS							
Sand	24	%		1		ASA15-5	08/01/24 15:21 / eli-h
Silt	24	%		1		ASA15-5	08/01/24 15:21 / eli-h
Clay	52	%		1		ASA15-5	08/01/24 15:21 / eli-h
Texture	C			1		ASA15-5	08/01/24 15:21 / eli-h
SATURATED PASTE EXTRACT							
pH, sat. paste	8.2	s.u.		0.1		ASA10-3	07/25/24 10:51 / eli-h
Conductivity, sat. paste	8.8	mmhos/cm		0.1		ASA10-3	07/26/24 08:52 / eli-h
Saturation	64.3	%		0.1		USDA27a	07/25/24 09:22 / eli-h
Sodium Adsorption Ratio (SAR)	6.2	unitless		0.1		USDA20b	07/29/24 17:37 / eli-h
CHEMICAL CHARACTERISTICS							
Organic Matter	1.0	%		0.2		ASA29-3	07/31/24 15:10 / eli-h
PHYSICAL CHARACTERISTICS							
Coarse Fragments	25	wt%-dry		2		ASA15-3	07/25/24 09:18 / eli-h
SATURATED PASTE EXTRACT							
Calcium, sat. paste	22.5	meq/L		0.09		SW6010B	07/27/24 04:33 / eli-h
Magnesium, sat. paste	77.2	meq/L		0.08		SW6010B	07/27/24 04:33 / eli-h
Sodium, sat. paste	44	meq/L		0.04		SW6010B	07/27/24 04:33 / eli-h
METALS, CACL2 EXTRACTABLE							
Boron	2.7	mg/kg		0.1		SW6010B	07/26/24 00:02 / eli-h
Selenium	ND	mg/kg		0.1		SW6020	07/31/24 22:46 / eli-h

Report Definitions:
RL - Analyte Reporting Limit
QCL - Quality Control Limit
MCL - Maximum Contaminant Level
ND - Not detected at the Reporting Limit (RL)

LABORATORY ANALYTICAL REPORT

Prepared by Gillette, WY Branch

Client: Mullinax Inc.
Project: Mullinax
Lab ID: G24070190-059
Client Sample ID: 14-004-C1

Report Date: 08/16/24
Collection Date: 07/10/24
Date Received: 07/11/24
Matrix: Soil

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
PHYSICAL CHARACTERISTICS							
Very Fine Sand	73	wt%		1		ASA15-5	07/31/24 15:44 / eli-h
PHYSICAL CHARACTERISTICS							
Sand	22	%		1		ASA15-5	07/29/24 15:44 / eli-h
Silt	36	%		1		ASA15-5	07/29/24 15:44 / eli-h
Clay	42	%		1		ASA15-5	07/29/24 15:44 / eli-h
Texture	C			1		ASA15-5	07/29/24 15:44 / eli-h
SATURATED PASTE EXTRACT							
pH, sat. paste	8.5	s.u.		0.1		ASA10-3	07/25/24 10:53 / eli-h
Conductivity, sat. paste	4.7	mmhos/cm		0.1		ASA10-3	07/26/24 08:54 / eli-h
Saturation	68.9	%		0.1		USDA27a	07/25/24 09:23 / eli-h
Sodium Adsorption Ratio (SAR)	8.6	unitless		0.1		USDA20b	07/29/24 17:37 / eli-h
CHEMICAL CHARACTERISTICS							
Organic Matter	0.4	%		0.2		ASA29-3	07/31/24 15:10 / eli-h
PHYSICAL CHARACTERISTICS							
Coarse Fragments	5	wt%-dry		2		ASA15-3	07/25/24 09:18 / eli-h
SATURATED PASTE EXTRACT							
Calcium, sat. paste	4.26	meq/L		0.05		SW6010B	07/27/24 04:41 / eli-h
Magnesium, sat. paste	22.8	meq/L		0.08		SW6010B	07/27/24 04:41 / eli-h
Sodium, sat. paste	31.5	meq/L		0.04		SW6010B	07/27/24 04:41 / eli-h
METALS, CACL2 EXTRACTABLE							
Boron	3.9	mg/kg		0.1		SW6010B	07/26/24 00:14 / eli-h
Selenium	ND	mg/kg		0.1		SW6020	07/31/24 22:49 / eli-h

Report Definitions:
RL - Analyte Reporting Limit
QCL - Quality Control Limit
MCL - Maximum Contaminant Level
ND - Not detected at the Reporting Limit (RL)

LABORATORY ANALYTICAL REPORT

Prepared by Gillette, WY Branch

Client: Mullinax Inc.
Project: Mullinax
Lab ID: G24070190-060
Client Sample ID: 14-005-C2

Report Date: 08/16/24
Collection Date: 07/10/24
Date Received: 07/11/24
Matrix: Soil

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
PHYSICAL CHARACTERISTICS							
Very Fine Sand	73	wt%		1		ASA15-5	07/31/24 15:44 / eli-h
PHYSICAL CHARACTERISTICS							
Sand	20	%		1		ASA15-5	07/29/24 15:44 / eli-h
Silt	38	%		1		ASA15-5	07/29/24 15:44 / eli-h
Clay	42	%		1		ASA15-5	07/29/24 15:44 / eli-h
Texture	C			1		ASA15-5	07/29/24 15:44 / eli-h
SATURATED PASTE EXTRACT							
pH, sat. paste	8.7	s.u.		0.1		ASA10-3	07/25/24 10:54 / eli-h
Conductivity, sat. paste	1.9	mmhos/cm		0.1		ASA10-3	07/26/24 08:54 / eli-h
Saturation	82.3	%		0.1		USDA27a	07/25/24 09:23 / eli-h
Sodium Adsorption Ratio (SAR)	8.6	unitless		0.1		USDA20b	07/29/24 17:37 / eli-h
CHEMICAL CHARACTERISTICS							
Organic Matter	0.4	%		0.2		ASA29-3	07/31/24 15:10 / eli-h
PHYSICAL CHARACTERISTICS							
Coarse Fragments	10	wt%-dry		2		ASA15-3	07/25/24 09:18 / eli-h
SATURATED PASTE EXTRACT							
Calcium, sat. paste	1.06	meq/L		0.05		SW6010B	07/27/24 04:45 / eli-h
Magnesium, sat. paste	5.09	meq/L		0.08		SW6010B	07/27/24 04:45 / eli-h
Sodium, sat. paste	15	meq/L		0.04		SW6010B	07/27/24 04:45 / eli-h
METALS, CACL2 EXTRACTABLE							
Boron	2.7	mg/kg		0.1		SW6010B	07/26/24 00:18 / eli-h
Selenium	ND	mg/kg		0.1		SW6020	07/31/24 22:52 / eli-h

Report Definitions:
RL - Analyte Reporting Limit
QCL - Quality Control Limit
MCL - Maximum Contaminant Level
ND - Not detected at the Reporting Limit (RL)

LABORATORY ANALYTICAL REPORT

Prepared by Gillette, WY Branch

Client: Mullinax Inc.
Project: Mullinax
Lab ID: G24070190-061
Client Sample ID: 15-001-A

Report Date: 08/16/24
Collection Date: 07/10/24
Date Received: 07/11/24
Matrix: Soil

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
PHYSICAL CHARACTERISTICS							
Very Fine Sand	31	wt%		1		ASA15-5	07/31/24 15:44 / eli-h
PHYSICAL CHARACTERISTICS							
Sand	20	%		1		ASA15-5	07/29/24 15:44 / eli-h
Silt	46	%		1		ASA15-5	07/29/24 15:44 / eli-h
Clay	34	%		1		ASA15-5	07/29/24 15:44 / eli-h
Texture	SiCL			1		ASA15-5	07/29/24 15:44 / eli-h
SATURATED PASTE EXTRACT							
pH, sat. paste	7.1	s.u.		0.1		ASA10-3	07/26/24 09:43 / eli-h
Conductivity, sat. paste	0.7	mmhos/cm		0.1		ASA10-3	07/26/24 12:58 / eli-h
Saturation	53.3	%		0.1		USDA27a	07/26/24 07:31 / eli-h
Sodium Adsorption Ratio (SAR)	0.1	unitless		0.1		USDA20b	07/29/24 17:37 / eli-h
CHEMICAL CHARACTERISTICS							
Organic Matter	3.1	%		0.2		ASA29-3	07/31/24 15:10 / eli-h
PHYSICAL CHARACTERISTICS							
Coarse Fragments	12	wt%-dry		2		ASA15-3	07/25/24 09:18 / eli-h
SATURATED PASTE EXTRACT							
Calcium, sat. paste	4.92	meq/L		0.05		SW6010B	07/30/24 04:22 / eli-h
Magnesium, sat. paste	2.79	meq/L		0.08		SW6010B	07/30/24 04:22 / eli-h
Sodium, sat. paste	0.27	meq/L		0.04		SW6010B	07/30/24 04:22 / eli-h
METALS, CACL2 EXTRACTABLE							
Boron	0.3	mg/kg		0.1		SW6010B	07/27/24 11:03 / eli-h
Selenium	ND	mg/kg		0.1		SW6020	07/31/24 23:13 / eli-h

Report Definitions:
RL - Analyte Reporting Limit
QCL - Quality Control Limit
MCL - Maximum Contaminant Level
ND - Not detected at the Reporting Limit (RL)

LABORATORY ANALYTICAL REPORT

Prepared by Gillette, WY Branch

Client: Mullinax Inc.
Project: Mullinax
Lab ID: G24070190-062
Client Sample ID: 15-002-B+

Report Date: 08/16/24
Collection Date: 07/10/24
Date Received: 07/11/24
Matrix: Soil

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
PHYSICAL CHARACTERISTICS							
Very Fine Sand	62	wt%		1		ASA15-5	07/31/24 15:44 / eli-h
PHYSICAL CHARACTERISTICS							
Sand	24	%		1		ASA15-5	07/29/24 15:44 / eli-h
Silt	30	%		1		ASA15-5	07/29/24 15:44 / eli-h
Clay	46	%		1		ASA15-5	07/29/24 15:44 / eli-h
Texture	C			1		ASA15-5	07/29/24 15:44 / eli-h
SATURATED PASTE EXTRACT							
pH, sat. paste	6.9	s.u.		0.1		ASA10-3	07/26/24 09:44 / eli-h
Conductivity, sat. paste	0.6	mmhos/cm		0.1		ASA10-3	07/26/24 12:59 / eli-h
Saturation	64.1	%		0.1		USDA27a	07/26/24 07:31 / eli-h
Sodium Adsorption Ratio (SAR)	ND	unitless		0.1		USDA20b	07/29/24 17:37 / eli-h
CHEMICAL CHARACTERISTICS							
Organic Matter	1.7	%		0.2		ASA29-3	07/31/24 15:10 / eli-h
PHYSICAL CHARACTERISTICS							
Coarse Fragments	27	wt%-dry		2		ASA15-3	07/25/24 09:18 / eli-h
SATURATED PASTE EXTRACT							
Calcium, sat. paste	3.95	meq/L		0.05		SW6010B	07/30/24 04:37 / eli-h
Magnesium, sat. paste	2.33	meq/L		0.08		SW6010B	07/30/24 04:37 / eli-h
Sodium, sat. paste	0.12	meq/L		0.04		SW6010B	07/30/24 04:37 / eli-h
METALS, CACL2 EXTRACTABLE							
Boron	0.4	mg/kg		0.1		SW6010B	07/27/24 11:07 / eli-h
Selenium	ND	mg/kg		0.1		SW6020	07/31/24 23:25 / eli-h

Report Definitions:
RL - Analyte Reporting Limit
QCL - Quality Control Limit
MCL - Maximum Contaminant Level
ND - Not detected at the Reporting Limit (RL)

LABORATORY ANALYTICAL REPORT

Prepared by Gillette, WY Branch

Client: Mullinax Inc.
Project: Mullinax
Lab ID: G24070190-063
Client Sample ID: 15-003-B+K1

Report Date: 08/16/24
Collection Date: 07/10/24
Date Received: 07/11/24
Matrix: Soil

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
PHYSICAL CHARACTERISTICS							
Very Fine Sand	52	wt%		1		ASA15-5	07/31/24 15:44 / eli-h
PHYSICAL CHARACTERISTICS							
Sand	24	%		1		ASA15-5	07/29/24 15:44 / eli-h
Silt	32	%		1		ASA15-5	07/29/24 15:44 / eli-h
Clay	44	%		1		ASA15-5	07/29/24 15:44 / eli-h
Texture	C			1		ASA15-5	07/29/24 15:44 / eli-h
SATURATED PASTE EXTRACT							
pH, sat. paste	8.1	s.u.		0.1		ASA10-3	07/26/24 09:47 / eli-h
Conductivity, sat. paste	0.3	mmhos/cm		0.1		ASA10-3	07/26/24 13:00 / eli-h
Saturation	57.4	%		0.1		USDA27a	07/26/24 07:31 / eli-h
Sodium Adsorption Ratio (SAR)	0.3	unitless		0.1		USDA20b	07/29/24 17:37 / eli-h
CHEMICAL CHARACTERISTICS							
Organic Matter	1.5	%		0.2		ASA29-3	07/31/24 15:10 / eli-h
PHYSICAL CHARACTERISTICS							
Coarse Fragments	28	wt%-dry		2		ASA15-3	07/25/24 09:18 / eli-h
SATURATED PASTE EXTRACT							
Calcium, sat. paste	1.71	meq/L		0.05		SW6010B	07/30/24 04:40 / eli-h
Magnesium, sat. paste	1.75	meq/L		0.08		SW6010B	07/30/24 04:40 / eli-h
Sodium, sat. paste	0.39	meq/L		0.04		SW6010B	07/30/24 04:40 / eli-h
METALS, CACL2 EXTRACTABLE							
Boron	0.5	mg/kg		0.1		SW6010B	07/27/24 11:11 / eli-h
Selenium	ND	mg/kg		0.1		SW6020	07/31/24 23:28 / eli-h

Report Definitions:
RL - Analyte Reporting Limit
QCL - Quality Control Limit
MCL - Maximum Contaminant Level
ND - Not detected at the Reporting Limit (RL)

LABORATORY ANALYTICAL REPORT

Prepared by Gillette, WY Branch

Client: Mullinax Inc.
Project: Mullinax
Lab ID: G24070190-064
Client Sample ID: 15-004-B+K2

Report Date: 08/16/24
Collection Date: 07/10/24
Date Received: 07/11/24
Matrix: Soil

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
PHYSICAL CHARACTERISTICS							
Very Fine Sand	45	wt%		1		ASA15-5	07/31/24 15:44 / eli-h
PHYSICAL CHARACTERISTICS							
Sand	22	%		1		ASA15-5	07/29/24 15:44 / eli-h
Silt	34	%		1		ASA15-5	07/29/24 15:44 / eli-h
Clay	44	%		1		ASA15-5	07/29/24 15:44 / eli-h
Texture	C			1		ASA15-5	07/29/24 15:44 / eli-h
SATURATED PASTE EXTRACT							
pH, sat. paste	8.4	s.u.		0.1		ASA10-3	07/26/24 09:50 / eli-h
Conductivity, sat. paste	0.4	mmhos/cm		0.1		ASA10-3	07/26/24 13:01 / eli-h
Saturation	63.3	%		0.1		USDA27a	07/26/24 07:31 / eli-h
Sodium Adsorption Ratio (SAR)	1.7	unitless		0.1		USDA20b	07/29/24 17:37 / eli-h
CHEMICAL CHARACTERISTICS							
Organic Matter	1.1	%		0.2		ASA29-3	07/31/24 15:10 / eli-h
PHYSICAL CHARACTERISTICS							
Coarse Fragments	19	wt%-dry		2		ASA15-3	07/25/24 09:18 / eli-h
SATURATED PASTE EXTRACT							
Calcium, sat. paste	0.82	meq/L		0.05		SW6010B	07/30/24 04:44 / eli-h
Magnesium, sat. paste	2.11	meq/L		0.08		SW6010B	07/30/24 04:44 / eli-h
Sodium, sat. paste	2.05	meq/L		0.04		SW6010B	07/30/24 04:44 / eli-h
METALS, CACL2 EXTRACTABLE							
Boron	0.7	mg/kg		0.1		SW6010B	07/27/24 11:15 / eli-h
Selenium	ND	mg/kg		0.1		SW6020	07/31/24 23:32 / eli-h

Report Definitions:
RL - Analyte Reporting Limit
QCL - Quality Control Limit
MCL - Maximum Contaminant Level
ND - Not detected at the Reporting Limit (RL)

LABORATORY ANALYTICAL REPORT

Prepared by Gillette, WY Branch

Client: Mullinax Inc.
Project: Mullinax
Lab ID: G24070190-065
Client Sample ID: 15-005-BCK

Report Date: 08/16/24
Collection Date: 07/10/24
Date Received: 07/11/24
Matrix: Soil

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
PHYSICAL CHARACTERISTICS							
Very Fine Sand	49	wt%		1		ASA15-5	07/31/24 15:44 / eli-h
PHYSICAL CHARACTERISTICS							
Sand	24	%		1		ASA15-5	07/29/24 15:44 / eli-h
Silt	30	%		1		ASA15-5	07/29/24 15:44 / eli-h
Clay	46	%		1		ASA15-5	07/29/24 15:44 / eli-h
Texture	C			1		ASA15-5	07/29/24 15:44 / eli-h
SATURATED PASTE EXTRACT							
pH, sat. paste	8.6	s.u.		0.1		ASA10-3	07/26/24 09:54 / eli-h
Conductivity, sat. paste	1.6	mmhos/cm		0.1		ASA10-3	07/26/24 13:02 / eli-h
Saturation	64.6	%		0.1		USDA27a	07/26/24 07:32 / eli-h
Sodium Adsorption Ratio (SAR)	3.2	unitless		0.1		USDA20b	07/29/24 17:37 / eli-h
CHEMICAL CHARACTERISTICS							
Organic Matter	1.2	%		0.2		ASA29-3	07/31/24 15:10 / eli-h
PHYSICAL CHARACTERISTICS							
Coarse Fragments	11	wt%-dry		2		ASA15-3	07/25/24 09:18 / eli-h
SATURATED PASTE EXTRACT							
Calcium, sat. paste	1.64	meq/L		0.05		SW6010B	07/30/24 04:48 / eli-h
Magnesium, sat. paste	9.82	meq/L		0.08		SW6010B	07/30/24 04:48 / eli-h
Sodium, sat. paste	7.77	meq/L		0.04		SW6010B	07/30/24 04:48 / eli-h
METALS, CACL2 EXTRACTABLE							
Boron	1.9	mg/kg		0.1		SW6010B	07/27/24 11:19 / eli-h
Selenium	ND	mg/kg		0.1		SW6020	07/31/24 23:35 / eli-h

Report Definitions:
RL - Analyte Reporting Limit
QCL - Quality Control Limit
MCL - Maximum Contaminant Level
ND - Not detected at the Reporting Limit (RL)

LABORATORY ANALYTICAL REPORT

Prepared by Gillette, WY Branch

Client: Mullinax Inc.
Project: Mullinax
Lab ID: G24070190-066
Client Sample ID: 15-006-CK

Report Date: 08/16/24
Collection Date: 07/10/24
Date Received: 07/11/24
Matrix: Soil

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
PHYSICAL CHARACTERISTICS							
Very Fine Sand	63	wt%		1		ASA15-5	07/31/24 15:44 / eli-h
PHYSICAL CHARACTERISTICS							
Sand	22	%		1		ASA15-5	07/29/24 15:44 / eli-h
Silt	40	%		1		ASA15-5	07/29/24 15:44 / eli-h
Clay	38	%		1		ASA15-5	07/29/24 15:44 / eli-h
Texture	CL			1		ASA15-5	07/29/24 15:44 / eli-h
SATURATED PASTE EXTRACT							
pH, sat. paste	8.4	s.u.		0.1		ASA10-3	07/26/24 09:56 / eli-h
Conductivity, sat. paste	4.0	mmhos/cm		0.1		ASA10-3	07/26/24 13:03 / eli-h
Saturation	57.9	%		0.1		USDA27a	07/26/24 07:32 / eli-h
Sodium Adsorption Ratio (SAR)	3.0	unitless		0.1		USDA20b	07/29/24 17:37 / eli-h
CHEMICAL CHARACTERISTICS							
Organic Matter	0.3	%		0.2		ASA29-3	07/31/24 15:10 / eli-h
PHYSICAL CHARACTERISTICS							
Coarse Fragments	5	wt%-dry		2		ASA15-3	07/25/24 09:18 / eli-h
SATURATED PASTE EXTRACT							
Calcium, sat. paste	6.84	meq/L		0.05		SW6010B	07/30/24 04:52 / eli-h
Magnesium, sat. paste	38.8	meq/L		0.08		SW6010B	07/30/24 04:52 / eli-h
Sodium, sat. paste	14.2	meq/L		0.04		SW6010B	07/30/24 04:52 / eli-h
METALS, CACL2 EXTRACTABLE							
Boron	4.1	mg/kg		0.1		SW6010B	07/27/24 11:33 / eli-h
Selenium	ND	mg/kg		0.1		SW6020	07/31/24 23:38 / eli-h

Report Definitions:
RL - Analyte Reporting Limit
QCL - Quality Control Limit
MCL - Maximum Contaminant Level
ND - Not detected at the Reporting Limit (RL)

LABORATORY ANALYTICAL REPORT

Prepared by Gillette, WY Branch

Client: Mullinax Inc.
Project: Mullinax
Lab ID: G24070190-067
Client Sample ID: 16-001-A

Report Date: 08/16/24
Collection Date: 07/10/24
Date Received: 07/11/24
Matrix: Soil

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
PHYSICAL CHARACTERISTICS							
Very Fine Sand	56	wt%		1		ASA15-5	07/31/24 15:44 / eli-h
PHYSICAL CHARACTERISTICS							
Sand	28	%		1		ASA15-5	07/29/24 15:44 / eli-h
Silt	30	%		1		ASA15-5	07/29/24 15:44 / eli-h
Clay	42	%		1		ASA15-5	07/29/24 15:44 / eli-h
Texture	C			1		ASA15-5	07/29/24 15:44 / eli-h
SATURATED PASTE EXTRACT							
pH, sat. paste	7.5	s.u.		0.1		ASA10-3	07/26/24 09:57 / eli-h
Conductivity, sat. paste	1.4	mmhos/cm		0.1		ASA10-3	07/26/24 13:04 / eli-h
Saturation	73.6	%		0.1		USDA27a	07/26/24 07:32 / eli-h
Sodium Adsorption Ratio (SAR)	5.4	unitless		0.1		USDA20b	07/29/24 17:37 / eli-h
CHEMICAL CHARACTERISTICS							
Organic Matter	2.6	%		0.2		ASA29-3	07/31/24 15:10 / eli-h
PHYSICAL CHARACTERISTICS							
Coarse Fragments	40	wt%-dry		2		ASA15-3	07/25/24 09:18 / eli-h
SATURATED PASTE EXTRACT							
Calcium, sat. paste	2.21	meq/L		0.05		SW6010B	07/30/24 05:34 / eli-h
Magnesium, sat. paste	5.22	meq/L		0.08		SW6010B	07/30/24 05:34 / eli-h
Sodium, sat. paste	10.4	meq/L		0.04		SW6010B	07/30/24 05:34 / eli-h
METALS, CACL2 EXTRACTABLE							
Boron	1.5	mg/kg		0.1		SW6010B	07/27/24 12:20 / eli-h
Selenium	ND	mg/kg		0.1		SW6020	07/31/24 23:44 / eli-h

Report Definitions:
RL - Analyte Reporting Limit
QCL - Quality Control Limit
MCL - Maximum Contaminant Level
ND - Not detected at the Reporting Limit (RL)

LABORATORY ANALYTICAL REPORT

Prepared by Gillette, WY Branch

Client: Mullinax Inc.
Project: Mullinax
Lab ID: G24070190-068
Client Sample ID: 16-002-B+

Report Date: 08/16/24
Collection Date: 07/10/24
Date Received: 07/11/24
Matrix: Soil

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
PHYSICAL CHARACTERISTICS							
Very Fine Sand	56	wt%		1		ASA15-5	07/31/24 15:44 / eli-h
PHYSICAL CHARACTERISTICS							
Sand	20	%		1		ASA15-5	08/05/24 15:21 / eli-h
Silt	46	%		1		ASA15-5	08/05/24 15:21 / eli-h
Clay	34	%		1		ASA15-5	08/05/24 15:21 / eli-h
Texture	SiCL			1		ASA15-5	08/05/24 15:21 / eli-h
SATURATED PASTE EXTRACT							
pH, sat. paste	8.0	s.u.		0.1		ASA10-3	07/26/24 09:58 / eli-h
Conductivity, sat. paste	5.8	mmhos/cm		0.1		ASA10-3	07/26/24 13:05 / eli-h
Saturation	67.8	%		0.1		USDA27a	07/26/24 07:32 / eli-h
Sodium Adsorption Ratio (SAR)	5.5	unitless		0.1		USDA20b	07/29/24 17:37 / eli-h
CHEMICAL CHARACTERISTICS							
Organic Matter	1.0	%		0.2		ASA29-3	07/31/24 15:10 / eli-h
PHYSICAL CHARACTERISTICS							
Coarse Fragments	26	wt%-dry		2		ASA15-3	07/25/24 09:18 / eli-h
SATURATED PASTE EXTRACT							
Calcium, sat. paste	22.3	meq/L		0.09		SW6010B	07/30/24 05:38 / eli-h
Magnesium, sat. paste	40.1	meq/L		0.08		SW6010B	07/30/24 05:38 / eli-h
Sodium, sat. paste	30.7	meq/L		0.04		SW6010B	07/30/24 05:38 / eli-h
METALS, CACL2 EXTRACTABLE							
Boron	4.9	mg/kg		0.1		SW6010B	07/27/24 12:23 / eli-h
Selenium	ND	mg/kg		0.1		SW6020	07/31/24 23:47 / eli-h

Report Definitions:
RL - Analyte Reporting Limit
QCL - Quality Control Limit
MCL - Maximum Contaminant Level
ND - Not detected at the Reporting Limit (RL)

LABORATORY ANALYTICAL REPORT

Prepared by Gillette, WY Branch

Client: Mullinax Inc.
Project: Mullinax
Lab ID: G24070190-069
Client Sample ID: 16-003-BCK

Report Date: 08/16/24
Collection Date: 07/10/24
Date Received: 07/11/24
Matrix: Soil

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
PHYSICAL CHARACTERISTICS							
Very Fine Sand	71	wt%		1		ASA15-5	07/31/24 15:44 / eli-h
PHYSICAL CHARACTERISTICS							
Sand	20	%		1		ASA15-5	07/29/24 15:44 / eli-h
Silt	54	%		1		ASA15-5	07/29/24 15:44 / eli-h
Clay	26	%		1		ASA15-5	07/29/24 15:44 / eli-h
Texture	SiL			1		ASA15-5	07/29/24 15:44 / eli-h
SATURATED PASTE EXTRACT							
pH, sat. paste	8.1	s.u.		0.1		ASA10-3	07/26/24 10:01 / eli-h
Conductivity, sat. paste	10.4	mmhos/cm		0.1		ASA10-3	07/26/24 13:06 / eli-h
Saturation	52.8	%		0.1		USDA27a	07/26/24 07:32 / eli-h
Sodium Adsorption Ratio (SAR)	13.0	unitless		0.1		USDA20b	07/29/24 17:37 / eli-h
CHEMICAL CHARACTERISTICS							
Organic Matter	0.3	%		0.2		ASA29-3	07/31/24 15:10 / eli-h
PHYSICAL CHARACTERISTICS							
Coarse Fragments	10	wt%-dry		2		ASA15-3	07/25/24 09:18 / eli-h
SATURATED PASTE EXTRACT							
Calcium, sat. paste	17.9	meq/L		0.09		SW6010B	07/30/24 05:46 / eli-h
Magnesium, sat. paste	65.1	meq/L		0.08		SW6010B	07/30/24 05:46 / eli-h
Sodium, sat. paste	83.8	meq/L		0.04		SW6010B	07/30/24 05:46 / eli-h
METALS, CACL2 EXTRACTABLE							
Boron	4.5	mg/kg		0.1		SW6010B	07/27/24 12:27 / eli-h
Selenium	ND	mg/kg		0.1		SW6020	07/31/24 23:50 / eli-h

Report Definitions:
RL - Analyte Reporting Limit
QCL - Quality Control Limit
MCL - Maximum Contaminant Level
ND - Not detected at the Reporting Limit (RL)

LABORATORY ANALYTICAL REPORT

Prepared by Gillette, WY Branch

Client: Mullinax Inc.
Project: Mullinax
Lab ID: G24070190-070
Client Sample ID: 16-004-C1

Report Date: 08/16/24
Collection Date: 07/10/24
Date Received: 07/11/24
Matrix: Soil

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
PHYSICAL CHARACTERISTICS							
Very Fine Sand	55	wt%		1		ASA15-5	07/31/24 15:44 / eli-h
PHYSICAL CHARACTERISTICS							
Sand	28	%		1		ASA15-5	07/29/24 15:44 / eli-h
Silt	58	%		1		ASA15-5	07/29/24 15:44 / eli-h
Clay	14	%		1		ASA15-5	07/29/24 15:44 / eli-h
Texture	SiL			1		ASA15-5	07/29/24 15:44 / eli-h
SATURATED PASTE EXTRACT							
pH, sat. paste	8.2	s.u.		0.1		ASA10-3	07/26/24 10:01 / eli-h
Conductivity, sat. paste	5.3	mmhos/cm		0.1		ASA10-3	07/26/24 13:07 / eli-h
Saturation	45.0	%		0.1		USDA27a	07/26/24 07:32 / eli-h
Sodium Adsorption Ratio (SAR)	15.5	unitless		0.1		USDA20b	07/29/24 17:37 / eli-h
CHEMICAL CHARACTERISTICS							
Organic Matter	ND	%		0.2		ASA29-3	07/31/24 15:10 / eli-h
PHYSICAL CHARACTERISTICS							
Coarse Fragments	7	wt%-dry		2		ASA15-3	07/25/24 09:18 / eli-h
SATURATED PASTE EXTRACT							
Calcium, sat. paste	2.84	meq/L		0.09		SW6010B	07/30/24 05:50 / eli-h
Magnesium, sat. paste	17.7	meq/L		0.08		SW6010B	07/30/24 05:50 / eli-h
Sodium, sat. paste	49.7	meq/L		0.04		SW6010B	07/30/24 05:50 / eli-h
METALS, CACL2 EXTRACTABLE							
Boron	1.3	mg/kg		0.1		SW6010B	07/27/24 12:31 / eli-h
Selenium	ND	mg/kg		0.1		SW6020	07/31/24 23:53 / eli-h

Report Definitions:
RL - Analyte Reporting Limit
QCL - Quality Control Limit
MCL - Maximum Contaminant Level
ND - Not detected at the Reporting Limit (RL)

LABORATORY ANALYTICAL REPORT

Prepared by Gillette, WY Branch

Client: Mullinax Inc.
Project: Mullinax
Lab ID: G24070190-071
Client Sample ID: 17-001-A

Report Date: 08/16/24
Collection Date: 07/10/24
Date Received: 07/11/24
Matrix: Soil

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
PHYSICAL CHARACTERISTICS							
Very Fine Sand	70	wt%		1		ASA15-5	07/31/24 15:44 / eli-h
PHYSICAL CHARACTERISTICS							
Sand	38	%		1		ASA15-5	07/29/24 15:44 / eli-h
Silt	36	%		1		ASA15-5	07/29/24 15:44 / eli-h
Clay	26	%		1		ASA15-5	07/29/24 15:44 / eli-h
Texture	L			1		ASA15-5	07/29/24 15:44 / eli-h
SATURATED PASTE EXTRACT							
pH, sat. paste	7.0	s.u.		0.1		ASA10-3	07/26/24 10:04 / eli-h
Conductivity, sat. paste	0.6	mmhos/cm		0.1		ASA10-3	07/26/24 13:08 / eli-h
Saturation	53.7	%		0.1		USDA27a	07/26/24 07:32 / eli-h
Sodium Adsorption Ratio (SAR)	ND	unitless		0.1		USDA20b	07/29/24 17:37 / eli-h
CHEMICAL CHARACTERISTICS							
Organic Matter	2.7	%		0.2		ASA29-3	07/31/24 15:10 / eli-h
PHYSICAL CHARACTERISTICS							
Coarse Fragments	12	wt%-dry		2		ASA15-3	07/25/24 09:18 / eli-h
SATURATED PASTE EXTRACT							
Calcium, sat. paste	4.43	meq/L		0.05		SW6010B	07/30/24 05:54 / eli-h
Magnesium, sat. paste	2.15	meq/L		0.08		SW6010B	07/30/24 05:54 / eli-h
Sodium, sat. paste	0.16	meq/L		0.04		SW6010B	07/30/24 05:54 / eli-h
METALS, CACL2 EXTRACTABLE							
Boron	0.2	mg/kg		0.1		SW6010B	07/27/24 12:35 / eli-h
Selenium	ND	mg/kg		0.1		SW6020	08/01/24 00:02 / eli-h

Report Definitions:
RL - Analyte Reporting Limit
QCL - Quality Control Limit
MCL - Maximum Contaminant Level
ND - Not detected at the Reporting Limit (RL)

LABORATORY ANALYTICAL REPORT

Prepared by Gillette, WY Branch

Client: Mullinax Inc.
Project: Mullinax
Lab ID: G24070190-072
Client Sample ID: 17-002-B+K1

Report Date: 08/16/24
Collection Date: 07/10/24
Date Received: 07/11/24
Matrix: Soil

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
PHYSICAL CHARACTERISTICS							
Very Fine Sand	78	wt%		1		ASA15-5	07/31/24 15:44 / eli-h
PHYSICAL CHARACTERISTICS							
Sand	22	%		1		ASA15-5	07/29/24 15:44 / eli-h
Silt	34	%		1		ASA15-5	07/29/24 15:44 / eli-h
Clay	44	%		1		ASA15-5	07/29/24 15:44 / eli-h
Texture	C			1		ASA15-5	07/29/24 15:44 / eli-h
SATURATED PASTE EXTRACT							
pH, sat. paste	7.3	s.u.		0.1		ASA10-3	07/26/24 10:06 / eli-h
Conductivity, sat. paste	0.4	mmhos/cm		0.1		ASA10-3	07/26/24 13:09 / eli-h
Saturation	67.7	%		0.1		USDA27a	07/26/24 07:32 / eli-h
Sodium Adsorption Ratio (SAR)	0.1	unitless		0.1		USDA20b	07/29/24 17:37 / eli-h
CHEMICAL CHARACTERISTICS							
Organic Matter	1.4	%		0.2		ASA29-3	07/31/24 15:10 / eli-h
PHYSICAL CHARACTERISTICS							
Coarse Fragments	33	wt%-dry		2		ASA15-3	07/25/24 09:18 / eli-h
SATURATED PASTE EXTRACT							
Calcium, sat. paste	3.52	meq/L		0.05		SW6010B	07/30/24 05:58 / eli-h
Magnesium, sat. paste	1.73	meq/L		0.08		SW6010B	07/30/24 05:58 / eli-h
Sodium, sat. paste	0.16	meq/L		0.04		SW6010B	07/30/24 05:58 / eli-h
METALS, CACL2 EXTRACTABLE							
Boron	0.4	mg/kg		0.1		SW6010B	07/27/24 12:39 / eli-h
Selenium	ND	mg/kg		0.1		SW6020	08/01/24 00:05 / eli-h

Report Definitions:
RL - Analyte Reporting Limit
QCL - Quality Control Limit
MCL - Maximum Contaminant Level
ND - Not detected at the Reporting Limit (RL)

LABORATORY ANALYTICAL REPORT

Prepared by Gillette, WY Branch

Client: Mullinax Inc.
Project: Mullinax
Lab ID: G24070190-073
Client Sample ID: 17-003-B+K2

Report Date: 08/16/24
Collection Date: 07/10/24
Date Received: 07/11/24
Matrix: Soil

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
PHYSICAL CHARACTERISTICS							
Very Fine Sand	64	wt%		1		ASA15-5	07/31/24 15:44 / eli-h
PHYSICAL CHARACTERISTICS							
Sand	24	%		1		ASA15-5	07/29/24 15:44 / eli-h
Silt	32	%		1		ASA15-5	07/29/24 15:44 / eli-h
Clay	44	%		1		ASA15-5	07/29/24 15:44 / eli-h
Texture	C			1		ASA15-5	07/29/24 15:44 / eli-h
SATURATED PASTE EXTRACT							
pH, sat. paste	8.0	s.u.		0.1		ASA10-3	07/26/24 10:07 / eli-h
Conductivity, sat. paste	0.3	mmhos/cm		0.1		ASA10-3	07/26/24 13:10 / eli-h
Saturation	54.2	%		0.1		USDA27a	07/26/24 07:32 / eli-h
Sodium Adsorption Ratio (SAR)	0.1	unitless		0.1		USDA20b	07/29/24 17:37 / eli-h
CHEMICAL CHARACTERISTICS							
Organic Matter	0.8	%		0.2		ASA29-3	07/31/24 15:10 / eli-h
PHYSICAL CHARACTERISTICS							
Coarse Fragments	32	wt%-dry		2		ASA15-3	07/25/24 09:18 / eli-h
SATURATED PASTE EXTRACT							
Calcium, sat. paste	1.86	meq/L		0.05		SW6010B	07/30/24 06:01 / eli-h
Magnesium, sat. paste	1.19	meq/L		0.08		SW6010B	07/30/24 06:01 / eli-h
Sodium, sat. paste	0.15	meq/L		0.04		SW6010B	07/30/24 06:01 / eli-h
METALS, CACL2 EXTRACTABLE							
Boron	0.4	mg/kg		0.1		SW6010B	07/27/24 12:43 / eli-h
Selenium	ND	mg/kg		0.1		SW6020	08/01/24 00:08 / eli-h

Report Definitions:
RL - Analyte Reporting Limit
QCL - Quality Control Limit
MCL - Maximum Contaminant Level
ND - Not detected at the Reporting Limit (RL)

LABORATORY ANALYTICAL REPORT

Prepared by Gillette, WY Branch

Client: Mullinax Inc.
Project: Mullinax
Lab ID: G24070190-074
Client Sample ID: 17-005-C2

Report Date: 08/16/24
Collection Date: 07/10/24
Date Received: 07/11/24
Matrix: Soil

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
PHYSICAL CHARACTERISTICS							
Very Fine Sand	63	wt%		1		ASA15-5	07/31/24 15:44 / eli-h
PHYSICAL CHARACTERISTICS							
Sand	48	%		1		ASA15-5	07/29/24 15:44 / eli-h
Silt	46	%		1		ASA15-5	07/29/24 15:44 / eli-h
Clay	6	%		1		ASA15-5	07/29/24 15:44 / eli-h
Texture	SL			1		ASA15-5	07/29/24 15:44 / eli-h
SATURATED PASTE EXTRACT							
pH, sat. paste	8.2	s.u.		0.1		ASA10-3	07/26/24 10:11 / eli-h
Conductivity, sat. paste	1.3	mmhos/cm		0.1		ASA10-3	07/26/24 13:12 / eli-h
Saturation	45.9	%		0.1		USDA27a	07/26/24 07:32 / eli-h
Sodium Adsorption Ratio (SAR)	0.3	unitless		0.1		USDA20b	07/29/24 17:37 / eli-h
CHEMICAL CHARACTERISTICS							
Organic Matter	ND	%		0.2		ASA29-3	07/31/24 15:10 / eli-h
PHYSICAL CHARACTERISTICS							
Coarse Fragments	5	wt%-dry		2		ASA15-3	07/25/24 09:18 / eli-h
SATURATED PASTE EXTRACT							
Calcium, sat. paste	1.92	meq/L		0.05		SW6010B	07/30/24 06:05 / eli-h
Magnesium, sat. paste	10.7	meq/L		0.08		SW6010B	07/30/24 06:05 / eli-h
Sodium, sat. paste	0.79	meq/L		0.04		SW6010B	07/30/24 06:05 / eli-h
METALS, CACL2 EXTRACTABLE							
Boron	0.4	mg/kg		0.1		SW6010B	07/27/24 12:47 / eli-h
Selenium	ND	mg/kg		0.1		SW6020	08/01/24 00:11 / eli-h

Report Definitions:
RL - Analyte Reporting Limit
QCL - Quality Control Limit
MCL - Maximum Contaminant Level
ND - Not detected at the Reporting Limit (RL)

LABORATORY ANALYTICAL REPORT

Prepared by Gillette, WY Branch

Client: Mullinax Inc.
Project: Mullinax
Lab ID: G24070190-075
Client Sample ID: 18-001-A

Report Date: 08/16/24
Collection Date: 07/10/24
Date Received: 07/11/24
Matrix: Soil

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
PHYSICAL CHARACTERISTICS							
Very Fine Sand	65	wt%		1		ASA15-5	07/31/24 15:44 / eli-h
PHYSICAL CHARACTERISTICS							
Sand	36	%		1		ASA15-5	07/29/24 15:44 / eli-h
Silt	40	%		1		ASA15-5	07/29/24 15:44 / eli-h
Clay	24	%		1		ASA15-5	07/29/24 15:44 / eli-h
Texture	L			1		ASA15-5	07/29/24 15:44 / eli-h
SATURATED PASTE EXTRACT							
pH, sat. paste	6.5	s.u.		0.1		ASA10-3	07/26/24 10:12 / eli-h
Conductivity, sat. paste	0.3	mmhos/cm		0.1		ASA10-3	07/26/24 13:13 / eli-h
Saturation	38.1	%		0.1		USDA27a	07/26/24 07:33 / eli-h
Sodium Adsorption Ratio (SAR)	0.6	unitless		0.1		USDA20b	07/29/24 17:37 / eli-h
CHEMICAL CHARACTERISTICS							
Organic Matter	1.6	%		0.2		ASA29-3	07/31/24 15:10 / eli-h
PHYSICAL CHARACTERISTICS							
Coarse Fragments	13	wt%-dry		2		ASA15-3	07/25/24 09:18 / eli-h
SATURATED PASTE EXTRACT							
Calcium, sat. paste	0.91	meq/L		0.05		SW6010B	07/30/24 06:17 / eli-h
Magnesium, sat. paste	1.39	meq/L		0.08		SW6010B	07/30/24 06:17 / eli-h
Sodium, sat. paste	0.59	meq/L		0.04		SW6010B	07/30/24 06:17 / eli-h
METALS, CACL2 EXTRACTABLE							
Boron	0.3	mg/kg		0.1		SW6010B	07/27/24 12:50 / eli-h
Selenium	ND	mg/kg		0.1		SW6020	08/01/24 00:14 / eli-h

Report Definitions:
RL - Analyte Reporting Limit
QCL - Quality Control Limit
MCL - Maximum Contaminant Level
ND - Not detected at the Reporting Limit (RL)

LABORATORY ANALYTICAL REPORT

Prepared by Gillette, WY Branch

Client: Mullinax Inc.
Project: Mullinax
Lab ID: G24070190-076
Client Sample ID: 18-002-B+

Report Date: 08/16/24
Collection Date: 07/10/24
Date Received: 07/11/24
Matrix: Soil

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
PHYSICAL CHARACTERISTICS							
Very Fine Sand	77	wt%		1		ASA15-5	07/31/24 15:44 / eli-h
PHYSICAL CHARACTERISTICS							
Sand	20	%		1		ASA15-5	07/29/24 15:44 / eli-h
Silt	32	%		1		ASA15-5	07/29/24 15:44 / eli-h
Clay	48	%		1		ASA15-5	07/29/24 15:44 / eli-h
Texture	C			1		ASA15-5	07/29/24 15:44 / eli-h
SATURATED PASTE EXTRACT							
pH, sat. paste	6.5	s.u.		0.1		ASA10-3	07/26/24 10:14 / eli-h
Conductivity, sat. paste	0.2	mmhos/cm		0.1		ASA10-3	07/26/24 13:14 / eli-h
Saturation	70.2	%		0.1		USDA27a	07/26/24 07:33 / eli-h
Sodium Adsorption Ratio (SAR)	1.4	unitless		0.1		USDA20b	07/29/24 17:37 / eli-h
CHEMICAL CHARACTERISTICS							
Organic Matter	1.5	%		0.2		ASA29-3	07/31/24 15:10 / eli-h
PHYSICAL CHARACTERISTICS							
Coarse Fragments	47	wt%-dry		2		ASA15-3	07/25/24 09:18 / eli-h
SATURATED PASTE EXTRACT							
Calcium, sat. paste	0.54	meq/L		0.05		SW6010B	07/30/24 06:21 / eli-h
Magnesium, sat. paste	0.86	meq/L		0.08		SW6010B	07/30/24 06:21 / eli-h
Sodium, sat. paste	1.14	meq/L		0.04		SW6010B	07/30/24 06:21 / eli-h
METALS, CACL2 EXTRACTABLE							
Boron	0.6	mg/kg		0.1		SW6010B	07/27/24 13:02 / eli-h
Selenium	ND	mg/kg		0.1		SW6020	08/01/24 00:17 / eli-h

Report Definitions:
RL - Analyte Reporting Limit
QCL - Quality Control Limit
MCL - Maximum Contaminant Level
ND - Not detected at the Reporting Limit (RL)

LABORATORY ANALYTICAL REPORT

Prepared by Gillette, WY Branch

Client: Mullinax Inc.
Project: Mullinax
Lab ID: G24070190-077
Client Sample ID: 18-003-B+K1

Report Date: 08/16/24
Collection Date: 07/10/24
Date Received: 07/11/24
Matrix: Soil

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
PHYSICAL CHARACTERISTICS							
Very Fine Sand	78	wt%		1		ASA15-5	07/31/24 15:44 / eli-h
PHYSICAL CHARACTERISTICS							
Sand	20	%		1		ASA15-5	07/29/24 15:44 / eli-h
Silt	40	%		1		ASA15-5	07/29/24 15:44 / eli-h
Clay	40	%		1		ASA15-5	07/29/24 15:44 / eli-h
Texture	C			1		ASA15-5	07/29/24 15:44 / eli-h
SATURATED PASTE EXTRACT							
pH, sat. paste	8.4	s.u.		0.1		ASA10-3	07/26/24 10:16 / eli-h
Conductivity, sat. paste	1.1	mmhos/cm		0.1		ASA10-3	07/26/24 13:14 / eli-h
Saturation	58.7	%		0.1		USDA27a	07/26/24 07:33 / eli-h
Sodium Adsorption Ratio (SAR)	3.9	unitless		0.1		USDA20b	07/29/24 17:37 / eli-h
CHEMICAL CHARACTERISTICS							
Organic Matter	0.7	%		0.2		ASA29-3	07/31/24 15:10 / eli-h
PHYSICAL CHARACTERISTICS							
Coarse Fragments	34	wt%-dry		2		ASA15-3	07/25/24 09:18 / eli-h
SATURATED PASTE EXTRACT							
Calcium, sat. paste	1.34	meq/L		0.05		SW6010B	07/30/24 06:24 / eli-h
Magnesium, sat. paste	4.97	meq/L		0.08		SW6010B	07/30/24 06:24 / eli-h
Sodium, sat. paste	6.91	meq/L		0.04		SW6010B	07/30/24 06:24 / eli-h
METALS, CACL2 EXTRACTABLE							
Boron	1.1	mg/kg		0.1		SW6010B	07/27/24 13:09 / eli-h
Selenium	ND	mg/kg		0.1		SW6020	08/01/24 00:23 / eli-h

Report Definitions:
RL - Analyte Reporting Limit
QCL - Quality Control Limit
MCL - Maximum Contaminant Level
ND - Not detected at the Reporting Limit (RL)

LABORATORY ANALYTICAL REPORT

Prepared by Gillette, WY Branch

Client: Mullinax Inc.
Project: Mullinax
Lab ID: G24070190-078
Client Sample ID: 18-004-B+K2

Report Date: 08/16/24
Collection Date: 07/10/24
Date Received: 07/11/24
Matrix: Soil

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
PHYSICAL CHARACTERISTICS							
Very Fine Sand	68	wt%		1		ASA15-5	07/31/24 15:44 / eli-h
PHYSICAL CHARACTERISTICS							
Sand	28	%		1		ASA15-5	07/29/24 15:44 / eli-h
Silt	34	%		1		ASA15-5	07/29/24 15:44 / eli-h
Clay	38	%		1		ASA15-5	07/29/24 15:44 / eli-h
Texture	CL			1		ASA15-5	07/29/24 15:44 / eli-h
SATURATED PASTE EXTRACT							
pH, sat. paste	8.1	s.u.		0.1		ASA10-3	07/26/24 10:16 / eli-h
Conductivity, sat. paste	6.5	mmhos/cm		0.1		ASA10-3	07/26/24 13:15 / eli-h
Saturation	53.2	%		0.1		USDA27a	07/26/24 07:33 / eli-h
Sodium Adsorption Ratio (SAR)	3.4	unitless		0.1		USDA20b	07/29/24 17:37 / eli-h
CHEMICAL CHARACTERISTICS							
Organic Matter	0.5	%		0.2		ASA29-3	07/31/24 15:10 / eli-h
PHYSICAL CHARACTERISTICS							
Coarse Fragments	19	wt%-dry		2		ASA15-3	07/25/24 09:18 / eli-h
SATURATED PASTE EXTRACT							
Calcium, sat. paste	21.8	meq/L		0.09		SW6010B	07/30/24 06:28 / eli-h
Magnesium, sat. paste	65.4	meq/L		0.08		SW6010B	07/30/24 06:28 / eli-h
Sodium, sat. paste	22.2	meq/L		0.04		SW6010B	07/30/24 06:28 / eli-h
METALS, CACL2 EXTRACTABLE							
Boron	1.6	mg/kg		0.1		SW6010B	07/27/24 13:13 / eli-h
Selenium	0.4	mg/kg		0.1		SW6020	08/01/24 00:26 / eli-h

Report Definitions:
RL - Analyte Reporting Limit
QCL - Quality Control Limit
MCL - Maximum Contaminant Level
ND - Not detected at the Reporting Limit (RL)

LABORATORY ANALYTICAL REPORT

Prepared by Gillette, WY Branch

Client: Mullinax Inc.
Project: Mullinax
Lab ID: G24070190-079
Client Sample ID: 18-005-B+K3

Report Date: 08/16/24
Collection Date: 07/10/24
Date Received: 07/11/24
Matrix: Soil

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
PHYSICAL CHARACTERISTICS							
Very Fine Sand	70	wt%		1		ASA15-5	07/31/24 15:44 / eli-h
PHYSICAL CHARACTERISTICS							
Sand	32	%		1		ASA15-5	07/29/24 15:44 / eli-h
Silt	32	%		1		ASA15-5	07/29/24 15:44 / eli-h
Clay	36	%		1		ASA15-5	07/29/24 15:44 / eli-h
Texture	CL			1		ASA15-5	07/29/24 15:44 / eli-h
SATURATED PASTE EXTRACT							
pH, sat. paste	8.2	s.u.		0.1		ASA10-3	07/26/24 10:18 / eli-h
Conductivity, sat. paste	4.7	mmhos/cm		0.1		ASA10-3	07/26/24 13:17 / eli-h
Saturation	49.3	%		0.1		USDA27a	07/26/24 07:33 / eli-h
Sodium Adsorption Ratio (SAR)	3.9	unitless		0.1		USDA20b	07/29/24 17:37 / eli-h
CHEMICAL CHARACTERISTICS							
Organic Matter	0.4	%		0.2		ASA29-3	07/31/24 15:10 / eli-h
PHYSICAL CHARACTERISTICS							
Coarse Fragments	5	wt%-dry		2		ASA15-3	07/25/24 09:18 / eli-h
SATURATED PASTE EXTRACT							
Calcium, sat. paste	12.8	meq/L		0.05		SW6010B	07/30/24 06:36 / eli-h
Magnesium, sat. paste	38.8	meq/L		0.08		SW6010B	07/30/24 06:36 / eli-h
Sodium, sat. paste	19.9	meq/L		0.04		SW6010B	07/30/24 06:36 / eli-h
METALS, CACL2 EXTRACTABLE							
Boron	1.4	mg/kg		0.1		SW6010B	07/27/24 13:17 / eli-h
Selenium	0.3	mg/kg		0.1		SW6020	08/01/24 00:29 / eli-h

Report Definitions:
RL - Analyte Reporting Limit
QCL - Quality Control Limit
MCL - Maximum Contaminant Level
ND - Not detected at the Reporting Limit (RL)

LABORATORY ANALYTICAL REPORT

Prepared by Gillette, WY Branch

Client: Mullinax Inc.
Project: Mullinax
Lab ID: G24070190-080
Client Sample ID: 18-006-BC+K

Report Date: 08/16/24
Collection Date: 07/10/24
Date Received: 07/11/24
Matrix: Soil

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
PHYSICAL CHARACTERISTICS							
Very Fine Sand	70	wt%		1		ASA15-5	07/31/24 15:44 / eli-h
PHYSICAL CHARACTERISTICS							
Sand	32	%		1		ASA15-5	07/29/24 15:44 / eli-h
Silt	32	%		1		ASA15-5	07/29/24 15:44 / eli-h
Clay	36	%		1		ASA15-5	07/29/24 15:44 / eli-h
Texture	CL			1		ASA15-5	07/29/24 15:44 / eli-h
SATURATED PASTE EXTRACT							
pH, sat. paste	8.2	s.u.		0.1		ASA10-3	07/26/24 10:19 / eli-h
Conductivity, sat. paste	3.5	mmhos/cm		0.1		ASA10-3	07/26/24 13:17 / eli-h
Saturation	53.4	%		0.1		USDA27a	07/26/24 07:33 / eli-h
Sodium Adsorption Ratio (SAR)	3.8	unitless		0.1		USDA20b	07/29/24 17:37 / eli-h
CHEMICAL CHARACTERISTICS							
Organic Matter	0.5	%		0.2		ASA29-3	07/31/24 15:10 / eli-h
PHYSICAL CHARACTERISTICS							
Coarse Fragments	5	wt%-dry		2		ASA15-3	07/25/24 09:18 / eli-h
SATURATED PASTE EXTRACT							
Calcium, sat. paste	9.44	meq/L		0.05		SW6010B	07/30/24 06:40 / eli-h
Magnesium, sat. paste	24.9	meq/L		0.08		SW6010B	07/30/24 06:40 / eli-h
Sodium, sat. paste	15.9	meq/L		0.04		SW6010B	07/30/24 06:40 / eli-h
METALS, CACL2 EXTRACTABLE							
Boron	1.4	mg/kg		0.1		SW6010B	07/27/24 13:21 / eli-h
Selenium	0.1	mg/kg		0.1		SW6020	08/01/24 00:33 / eli-h

Report Definitions:
RL - Analyte Reporting Limit
QCL - Quality Control Limit
MCL - Maximum Contaminant Level
ND - Not detected at the Reporting Limit (RL)

LABORATORY ANALYTICAL REPORT

Prepared by Gillette, WY Branch

Client: Mullinax Inc.
Project: Mullinax
Lab ID: G24070190-081
Client Sample ID: 19-001-A

Report Date: 08/16/24
Collection Date: 07/10/24
Date Received: 07/11/24
Matrix: Soil

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
PHYSICAL CHARACTERISTICS							
Very Fine Sand	78	wt%		1		ASA15-5	07/31/24 15:44 / eli-h
PHYSICAL CHARACTERISTICS							
Sand	12	%		1		ASA15-5	07/29/24 15:44 / eli-h
Silt	30	%		1		ASA15-5	07/29/24 15:44 / eli-h
Clay	58	%		1		ASA15-5	07/29/24 15:44 / eli-h
Texture	C			1		ASA15-5	07/29/24 15:44 / eli-h
SATURATED PASTE EXTRACT							
pH, sat. paste	7.5	s.u.		0.1		ASA10-3	07/26/24 10:26 / eli-h
Conductivity, sat. paste	0.6	mmhos/cm		0.1		ASA10-3	07/26/24 13:22 / eli-h
Saturation	76.7	%		0.1		USDA27a	07/26/24 07:49 / eli-h
Sodium Adsorption Ratio (SAR)	0.7	unitless		0.1		USDA20b	07/29/24 17:37 / eli-h
CHEMICAL CHARACTERISTICS							
Organic Matter	3.7	%		0.2		ASA29-3	07/26/24 11:49 / eli-h
PHYSICAL CHARACTERISTICS							
Coarse Fragments	41	wt%-dry		2		ASA15-3	07/25/24 09:18 / eli-h
SATURATED PASTE EXTRACT							
Calcium, sat. paste	3.94	meq/L		0.05		SW6010B	07/30/24 07:53 / eli-h
Magnesium, sat. paste	2.53	meq/L		0.08		SW6010B	07/30/24 07:53 / eli-h
Sodium, sat. paste	1.15	meq/L		0.04		SW6010B	07/30/24 14:53 / eli-h
METALS, CACL2 EXTRACTABLE							
Boron	0.7	mg/kg		0.1		SW6010B	07/27/24 13:36 / eli-h
Selenium	ND	mg/kg		0.1		SW6020	07/30/24 17:35 / eli-h

Report Definitions:
RL - Analyte Reporting Limit
QCL - Quality Control Limit
MCL - Maximum Contaminant Level
ND - Not detected at the Reporting Limit (RL)

LABORATORY ANALYTICAL REPORT

Prepared by Gillette, WY Branch

Client: Mullinax Inc.
Project: Mullinax
Lab ID: G24070190-082
Client Sample ID: 19-002-B+

Report Date: 08/16/24
Collection Date: 07/10/24
Date Received: 07/11/24
Matrix: Soil

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
PHYSICAL CHARACTERISTICS							
Very Fine Sand	88	wt%		1		ASA15-5	07/31/24 15:44 / eli-h
PHYSICAL CHARACTERISTICS							
Sand	12	%		1		ASA15-5	07/29/24 15:44 / eli-h
Silt	28	%		1		ASA15-5	07/29/24 15:44 / eli-h
Clay	60	%		1		ASA15-5	07/29/24 15:44 / eli-h
Texture	C			1		ASA15-5	07/29/24 15:44 / eli-h
SATURATED PASTE EXTRACT							
pH, sat. paste	8.0	s.u.		0.1		ASA10-3	07/26/24 10:27 / eli-h
Conductivity, sat. paste	0.7	mmhos/cm		0.1		ASA10-3	07/26/24 13:23 / eli-h
Saturation	87.5	%		0.1		USDA27a	07/26/24 07:50 / eli-h
Sodium Adsorption Ratio (SAR)	3.0	unitless		0.1		USDA20b	07/29/24 17:37 / eli-h
CHEMICAL CHARACTERISTICS							
Organic Matter	1.1	%		0.2		ASA29-3	07/26/24 11:49 / eli-h
PHYSICAL CHARACTERISTICS							
Coarse Fragments	45	wt%-dry		2		ASA15-3	07/25/24 09:18 / eli-h
SATURATED PASTE EXTRACT							
Calcium, sat. paste	1.82	meq/L		0.05		SW6010B	07/30/24 08:08 / eli-h
Magnesium, sat. paste	2.25	meq/L		0.08		SW6010B	07/30/24 08:08 / eli-h
Sodium, sat. paste	4.21	meq/L		0.04		SW6010B	07/30/24 14:57 / eli-h
METALS, CACL2 EXTRACTABLE							
Boron	0.7	mg/kg		0.1		SW6010B	07/27/24 13:48 / eli-h
Selenium	ND	mg/kg		0.04		SW6020	07/30/24 17:42 / eli-h

Report Definitions:
RL - Analyte Reporting Limit
QCL - Quality Control Limit
MCL - Maximum Contaminant Level
ND - Not detected at the Reporting Limit (RL)

LABORATORY ANALYTICAL REPORT

Prepared by Gillette, WY Branch

Client: Mullinax Inc.
Project: Mullinax
Lab ID: G24070190-083
Client Sample ID: 19-003-C1

Report Date: 08/16/24
Collection Date: 07/10/24
Date Received: 07/11/24
Matrix: Soil

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
PHYSICAL CHARACTERISTICS							
Very Fine Sand	59	wt%		1		ASA15-5	07/31/24 15:44 / eli-h
PHYSICAL CHARACTERISTICS							
Sand	4	%		1		ASA15-5	07/29/24 15:44 / eli-h
Silt	24	%		1		ASA15-5	07/29/24 15:44 / eli-h
Clay	72	%		1		ASA15-5	07/29/24 15:44 / eli-h
Texture	C			1		ASA15-5	07/29/24 15:44 / eli-h
SATURATED PASTE EXTRACT							
pH, sat. paste	8.3	s.u.		0.1		ASA10-3	07/26/24 10:28 / eli-h
Conductivity, sat. paste	5.1	mmhos/cm		0.1		ASA10-3	07/26/24 13:24 / eli-h
Saturation	106	%		0.1		USDA27a	07/30/24 08:29 / eli-h
Sodium Adsorption Ratio (SAR)	8.2	unitless		0.1		USDA20b	07/29/24 17:37 / eli-h
CHEMICAL CHARACTERISTICS							
Organic Matter	0.4	%		0.2		ASA29-3	07/26/24 11:49 / eli-h
PHYSICAL CHARACTERISTICS							
Coarse Fragments	44	wt%-dry		2		ASA15-3	07/25/24 09:18 / eli-h
SATURATED PASTE EXTRACT							
Calcium, sat. paste	6.48	meq/L		0.05		SW6010B	07/30/24 08:12 / eli-h
Magnesium, sat. paste	29.9	meq/L		0.08		SW6010B	07/30/24 08:12 / eli-h
Sodium, sat. paste	33.9	meq/L		0.04		SW6010B	07/30/24 15:01 / eli-h
METALS, CACL2 EXTRACTABLE							
Boron	1.6	mg/kg		0.1		SW6010B	07/27/24 13:51 / eli-h
Selenium	ND	mg/kg		0.1		SW6020	07/30/24 17:44 / eli-h

Report Definitions:
RL - Analyte Reporting Limit
QCL - Quality Control Limit
MCL - Maximum Contaminant Level
ND - Not detected at the Reporting Limit (RL)

QA/QC Summary Report

Prepared by Helena, MT Branch

Client: Mullinax Inc. **Work Order:** G24070190 **Report Date:** 08/08/24

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: ASA10-3									Analytical Run: SOIL EC_240725A	
Lab ID: CCV_1_240724_1	Continuing Calibration Verification Standard								07/24/24 11:43	
Conductivity, sat. paste		4.78	mmhos/cm	0.10	96	90	110			
Lab ID: CCV1_1_240724_1	Continuing Calibration Verification Standard								07/24/24 11:43	
Conductivity, sat. paste		0.927	mmhos/cm	0.10	93	90	110			
Lab ID: CCV_3_240724_1	Continuing Calibration Verification Standard								07/24/24 11:56	
Conductivity, sat. paste		4.70	mmhos/cm	0.10	94	90	110			
Method: ASA10-3									Batch: 72924	
Lab ID: MB-72924	Method Blank					Run: SOIL EC_240725A			07/24/24 11:44	
Conductivity, sat. paste		ND	mmhos/cm	0.05						
Lab ID: LCS-72924	Laboratory Control Sample					Run: SOIL EC_240725A			07/24/24 11:45	
Conductivity, sat. paste		3.46	mmhos/cm	0.10	89	80	120			
Lab ID: G24070190-008ADUP	Sample Duplicate					Run: SOIL EC_240725A			07/24/24 11:54	
Conductivity, sat. paste		0.717	mmhos/cm	0.10				10	20	
Lab ID: G24070190-018ADUP	Sample Duplicate					Run: SOIL EC_240725A			07/24/24 12:05	
Conductivity, sat. paste		0.667	mmhos/cm	0.10				14	20	

Qualifiers:

RL - Analyte Reporting Limit

ND - Not detected at the Reporting Limit (RL)

QA/QC Summary Report

Prepared by Helena, MT Branch

Client: Mullinax Inc. **Work Order:** G24070190 **Report Date:** 08/08/24

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: ASA10-3									Analytical Run: SOIL EC_240726B	
Lab ID: ICV_1_240724_1	Initial Calibration Verification Standard								07/26/24 08:03	
Conductivity, sat. paste		1.36	mmhos/cm	0.10	96	90	110			
Lab ID: CCV_1_240724_1	Continuing Calibration Verification Standard								07/26/24 08:03	
Conductivity, sat. paste		4.74	mmhos/cm	0.10	95	90	110			
Lab ID: CCV1_1_240724_1	Continuing Calibration Verification Standard								07/26/24 08:04	
Conductivity, sat. paste		0.954	mmhos/cm	0.10	95	90	110			
Lab ID: ICV_1_240724_1	Initial Calibration Verification Standard								07/26/24 08:30	
Conductivity, sat. paste		1.35	mmhos/cm	0.10	96	90	110			
Lab ID: CCV_1_240724_1	Continuing Calibration Verification Standard								07/26/24 08:31	
Conductivity, sat. paste		4.67	mmhos/cm	0.10	93	90	110			
Lab ID: CCV1_1_240724_1	Continuing Calibration Verification Standard								07/26/24 08:31	
Conductivity, sat. paste		0.953	mmhos/cm	0.10	95	90	110			
Lab ID: ICV_1_240725_1	Initial Calibration Verification Standard								07/26/24 12:47	
Conductivity, sat. paste		1.29	mmhos/cm	0.10	91	90	110			
Lab ID: CCV_1_240725_1	Continuing Calibration Verification Standard								07/26/24 12:55	
Conductivity, sat. paste		5.04	mmhos/cm	0.10	101	90	110			
Lab ID: CCV1_1_240725_1	Continuing Calibration Verification Standard								07/26/24 12:56	
Conductivity, sat. paste		0.919	mmhos/cm	0.10	92	90	110			
Lab ID: ICV_1_240725_1	Initial Calibration Verification Standard								07/26/24 13:19	
Conductivity, sat. paste		1.30	mmhos/cm	0.10	92	90	110			
Lab ID: CCV_1_240725_1	Continuing Calibration Verification Standard								07/26/24 13:19	
Conductivity, sat. paste		4.83	mmhos/cm	0.10	97	90	110			
Lab ID: CCV1_1_240725_1	Continuing Calibration Verification Standard								07/26/24 13:20	
Conductivity, sat. paste		0.914	mmhos/cm	0.10	91	90	110			
Method: ASA10-3									Batch: 72925	
Lab ID: MB-72925	Method Blank					Run: SOIL EC_240726B			07/26/24 08:04	
Conductivity, sat. paste		ND	mmhos/cm	0.05						
Lab ID: LCS-72925	Laboratory Control Sample					Run: SOIL EC_240726B			07/26/24 08:05	
Conductivity, sat. paste		3.93	mmhos/cm	0.10	101	80	120			
Lab ID: G24070190-028ADUP	Sample Duplicate					Run: SOIL EC_240726B			07/26/24 08:14	
Conductivity, sat. paste		0.643	mmhos/cm	0.10				13	20	
Lab ID: G24070190-038ADUP	Sample Duplicate					Run: SOIL EC_240726B			07/26/24 08:26	
Conductivity, sat. paste		1.74	mmhos/cm	0.10				0.3	20	
Method: ASA10-3									Batch: 72926	

Qualifiers:

RL - Analyte Reporting Limit

ND - Not detected at the Reporting Limit (RL)

QA/QC Summary Report

Prepared by Helena, MT Branch

Client: Mullinax Inc. **Work Order:** G24070190 **Report Date:** 08/08/24

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: ASA10-3										Batch: 72926
Lab ID: G24070190-058ADUP	Sample Duplicate					Run: SOIL EC_240726B				07/26/24 08:53
Conductivity, sat. paste		8.47	mmhos/cm	0.10				4.3	20	
Lab ID: MB-72926	Method Blank					Run: SOIL EC_240726B				07/26/24 08:32
Conductivity, sat. paste		ND	mmhos/cm	0.05						
Lab ID: LCS-72926	Laboratory Control Sample					Run: SOIL EC_240726B				07/26/24 08:33
Conductivity, sat. paste		3.56	mmhos/cm	0.10	92	80	120			
Lab ID: G24070190-048ADUP	Sample Duplicate					Run: SOIL EC_240726B				07/26/24 08:42
Conductivity, sat. paste		5.89	mmhos/cm	0.10				3.2	20	
Method: ASA10-3										Batch: 72927
Lab ID: MB-72927	Method Blank					Run: SOIL EC_240726B				07/26/24 12:56
Conductivity, sat. paste		ND	mmhos/cm	0.05						
Lab ID: LCS-72927	Laboratory Control Sample					Run: SOIL EC_240726B				07/26/24 12:57
Conductivity, sat. paste		3.46	mmhos/cm	0.10	89	80	120			
Lab ID: G24070190-068ADUP	Sample Duplicate					Run: SOIL EC_240726B				07/26/24 13:05
Conductivity, sat. paste		5.17	mmhos/cm	0.10				11	20	
Lab ID: G24070190-078ADUP	Sample Duplicate					Run: SOIL EC_240726B				07/26/24 13:16
Conductivity, sat. paste		5.93	mmhos/cm	0.10				9.0	20	
Method: ASA10-3										Batch: 72928
Lab ID: MB-72928	Method Blank					Run: SOIL EC_240726B				07/26/24 13:20
Conductivity, sat. paste		ND	mmhos/cm	0.05						
Lab ID: LCS-72928	Laboratory Control Sample					Run: SOIL EC_240726B				07/26/24 13:21
Conductivity, sat. paste		3.49	mmhos/cm	0.10	90	80	120			
Lab ID: H24070616-006ADUP	Sample Duplicate					Run: SOIL EC_240726B				07/26/24 13:30
Conductivity, sat. paste		3.44	mmhos/cm	0.10				0.5	20	
Lab ID: H24070616-016ADUP	Sample Duplicate					Run: SOIL EC_240726B				07/26/24 13:39
Conductivity, sat. paste		1.97	mmhos/cm	0.10				1.4	20	

Qualifiers:

RL - Analyte Reporting Limit

ND - Not detected at the Reporting Limit (RL)

QA/QC Summary Report

Prepared by Helena, MT Branch

Client: Mullinax Inc. **Work Order:** G24070190 **Report Date:** 08/08/24

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: **ASA10-3**							al Run: SOIL PH METER - ORION A211_240725A			
Lab ID: **CCV_1_240723_1**	Continuing Calibration Verification Standard									07/24/24 09:10
pH, sat. paste		7.02	s.u.	0.10	100	98.6	101.4			
Lab ID: **CCV1_1_240723_1**	Continuing Calibration Verification Standard									07/24/24 09:10
pH, sat. paste		4.01	s.u.	0.10	100	97.5	102.5			
Lab ID: **CCV_3_240723_1**	Continuing Calibration Verification Standard									07/24/24 09:21
pH, sat. paste		7.02	s.u.	0.10	100	98.6	101.4			
Method: **ASA10-3**										Batch: 72924
Lab ID: **LCS-72924**	Laboratory Control Sample					Run: SOIL PH METER - ORION A2				07/24/24 09:12
pH, sat. paste		7.91	s.u.	0.10	99	95	105			
Lab ID: **G24070190-008ADUP**	Sample Duplicate					Run: SOIL PH METER - ORION A2				07/24/24 09:19
pH, sat. paste		7.10	s.u.	0.10				0.1	20	
Lab ID: **G24070190-018ADUP**	Sample Duplicate					Run: SOIL PH METER - ORION A2				07/24/24 09:29
pH, sat. paste		6.68	s.u.	0.10				0.3	20	

Qualifiers:

RL - Analyte Reporting Limit

ND - Not detected at the Reporting Limit (RL)

QA/QC Summary Report

Prepared by Helena, MT Branch

Client: Mullinax Inc. **Work Order:** G24070190 **Report Date:** 08/08/24

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: ASA10-3							al Run: SOIL PH METER - ORION A211_240726B			
Lab ID: ICV_1_240724_1		Initial Calibration Verification Standard							07/25/24 09:50	
pH, sat. paste		7.04	s.u.	0.10	101	98.6	101.4			
Lab ID: CCV_1_240724_1		Continuing Calibration Verification Standard							07/25/24 09:51	
pH, sat. paste		7.04	s.u.	0.10	101	98.6	101.4			
Lab ID: CCV1_1_240724_1		Continuing Calibration Verification Standard							07/25/24 09:52	
pH, sat. paste		4.02	s.u.	0.10	100	97.5	102.5			
Lab ID: ICV_1_240724_1		Initial Calibration Verification Standard							07/25/24 10:30	
pH, sat. paste		7.04	s.u.	0.10	101	98.6	101.4			
Lab ID: CCV_1_240724_1		Continuing Calibration Verification Standard							07/25/24 10:31	
pH, sat. paste		7.05	s.u.	0.10	101	98.6	101.4			
Lab ID: CCV1_1_240724_1		Continuing Calibration Verification Standard							07/25/24 10:31	
pH, sat. paste		4.00	s.u.	0.10	100	97.5	102.5			
Lab ID: CCV_3_240724_1		Continuing Calibration Verification Standard							07/25/24 10:43	
pH, sat. paste		7.01	s.u.	0.10	100	98.6	101.4			
Method: ASA10-3									Batch: 72925	
Lab ID: LCS-72925		Laboratory Control Sample				Run: SOIL PH METER - ORION A2			07/25/24 09:53	
pH, sat. paste		7.91	s.u.	0.10	99	95	105			
Lab ID: G24070190-028ADUP		Sample Duplicate				Run: SOIL PH METER - ORION A2			07/25/24 10:02	
pH, sat. paste		7.25	s.u.	0.10				0.0	20	
Lab ID: G24070190-038ADUP		Sample Duplicate				Run: SOIL PH METER - ORION A2			07/25/24 10:17	
pH, sat. paste		8.33	s.u.	0.10				0.1	20	
Method: ASA10-3									Batch: 72926	
Lab ID: LCS-72926		Laboratory Control Sample				Run: SOIL PH METER - ORION A2			07/25/24 10:32	
pH, sat. paste		7.90	s.u.	0.10	99	95	105			
Lab ID: G24070190-048ADUP		Sample Duplicate				Run: SOIL PH METER - ORION A2			07/25/24 10:41	
pH, sat. paste		7.73	s.u.	0.10				0.0	20	
Lab ID: G24070190-058ADUP		Sample Duplicate				Run: SOIL PH METER - ORION A2			07/25/24 10:52	
pH, sat. paste		8.21	s.u.	0.10				0.2	20	

Qualifiers:

RL - Analyte Reporting Limit

ND - Not detected at the Reporting Limit (RL)

QA/QC Summary Report

Prepared by Helena, MT Branch

Client: Mullinax Inc. **Work Order:** G24070190 **Report Date:** 08/08/24

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: ASA10-3							al Run: SOIL PH METER - ORION A211_240726C			
Lab ID: ICV_1_240725_1	Initial Calibration Verification Standard									07/26/24 09:38
pH, sat. paste		7.01	s.u.	0.10	100	98.6	101.4			
Lab ID: CCV_1_240725_1	Continuing Calibration Verification Standard									07/26/24 09:39
pH, sat. paste		6.99	s.u.	0.10	100	98.6	101.4			
Lab ID: CCV1_1_240725_1	Continuing Calibration Verification Standard									07/26/24 09:40
pH, sat. paste		4.00	s.u.	0.10	100	97.5	102.5			
Lab ID: ICV_1_240725_1	Initial Calibration Verification Standard									07/26/24 10:21
pH, sat. paste		6.99	s.u.	0.10	100	98.6	101.4			
Lab ID: CCV_1_240725_1	Continuing Calibration Verification Standard									07/26/24 10:21
pH, sat. paste		6.97	s.u.	0.10	100	98.6	101.4			
Lab ID: CCV1_1_240725_1	Continuing Calibration Verification Standard									07/26/24 10:22
pH, sat. paste		3.97	s.u.	0.10	99	97.5	102.5			
Method: ASA10-3										Batch: 72927
Lab ID: LCS-72927	Laboratory Control Sample					Run: SOIL PH METER - ORION A2				07/26/24 09:42
pH, sat. paste		7.91	s.u.	0.10	99	95	105			
Lab ID: G24070190-068ADUP	Sample Duplicate					Run: SOIL PH METER - ORION A2				07/26/24 09:59
pH, sat. paste		8.00	s.u.	0.10				0.1	20	
Lab ID: G24070190-078ADUP	Sample Duplicate					Run: SOIL PH METER - ORION A2				07/26/24 10:17
pH, sat. paste		8.14	s.u.	0.10				0.0	20	
Method: ASA10-3										Batch: 72928
Lab ID: LCS-72928	Laboratory Control Sample					Run: SOIL PH METER - ORION A2				07/26/24 10:23
pH, sat. paste		7.86	s.u.	0.10	99	95	105			
Lab ID: H24070616-006ADUP	Sample Duplicate					Run: SOIL PH METER - ORION A2				07/26/24 10:47
pH, sat. paste		7.67	s.u.	0.10				0.0	20	

Qualifiers:

RL - Analyte Reporting Limit

ND - Not detected at the Reporting Limit (RL)

QA/QC Summary Report

Prepared by Helena, MT Branch

Client: Mullinax Inc. **Work Order:** G24070190 **Report Date:** 08/08/24

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: **ASA15-5**										Batch: 72930
Lab ID: **LCS-72930**	3	Laboratory Control Sample				Run: SOIL HYDROMETER_240726				07/24/24 16:04
Sand		50.0	%	1.0	104	70	130			
Silt		32.0	%	1.0	110	70	130			
Clay		18.0	%	1.0	78	70	130			
Lab ID: **G24070190-006ADUP**	4	Sample Duplicate				Run: SOIL HYDROMETER_240726				07/24/24 16:04
Sand		40.0	%	1.0				5.1	20	
Silt		26.0	%	1.0				7.4	20	
Clay		34.0	%	1.0				0.0	20	
Texture		CL		1.0						
Lab ID: **G24070190-016ADUP**	4	Sample Duplicate				Run: SOIL HYDROMETER_240726				07/24/24 16:04
Sand		40.0	%	1.0				0.0	20	
Silt		32.0	%	1.0				0.0	20	
Clay		28.0	%	1.0				0.0	20	
Texture		CL		1.0						
Lab ID: **G24070190-026ADUP**	4	Sample Duplicate				Run: SOIL HYDROMETER_240726				07/24/24 16:04
Sand		32.0	%	1.0				0.0	20	
Silt		54.0	%	1.0				0.0	20	
Clay		14.0	%	1.0				0.0	20	
Texture		SiL		1.0						
Lab ID: **G24070190-036ADUP**	4	Sample Duplicate				Run: SOIL HYDROMETER_240726				07/24/24 16:04
Sand		50.0	%	1.0				0.0	20	
Silt		14.0	%	1.0				15	20	
Clay		36.0	%	1.0				5.4	20	
Texture		SC		1.0						
Lab ID: **G24070190-041ADUP**	4	Sample Duplicate				Run: SOIL HYDROMETER_240726				07/24/24 16:04
Sand		28.0	%	1.0				0.0	20	
Silt		26.0	%	1.0				0.0	20	
Clay		46.0	%	1.0				0.0	20	
Texture		C		1.0						
Lab ID: **LCS-72930**		Laboratory Control Sample				Run: SOIL HYDROMETER_240726				07/26/24 16:05
Very Fine Sand		35	wt%	1	97	50	133			
Lab ID: **G24070190-006ADUP**		Sample Duplicate				Run: SOIL HYDROMETER_240726				07/26/24 16:05
Very Fine Sand		54	wt%	1				0.3	30	
Lab ID: **G24070190-016ADUP**		Sample Duplicate				Run: SOIL HYDROMETER_240726				07/26/24 16:05
Very Fine Sand		48	wt%	1				0.8	30	
Lab ID: **G24070190-026ADUP**		Sample Duplicate				Run: SOIL HYDROMETER_240726				07/26/24 16:05
Very Fine Sand		73	wt%	1				0.6	30	
Lab ID: **G24070190-036ADUP**		Sample Duplicate				Run: SOIL HYDROMETER_240726				07/26/24 16:05
Very Fine Sand		36	wt%	1				12	30	

Qualifiers:

RL - Analyte Reporting Limit

ND - Not detected at the Reporting Limit (RL)

QA/QC Summary Report

Prepared by Helena, MT Branch

Client: Mullinax Inc. **Work Order:** G24070190 **Report Date:** 08/08/24

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: **ASA15-5**										Batch: 72930
Lab ID: **G24070190-041ADUP**	Sample Duplicate					Run: SOIL HYDROMETER_240726				07/26/24 16:05
Very Fine Sand		55	wt%	1				2.4	30	

Qualifiers:

RL - Analyte Reporting Limit

ND - Not detected at the Reporting Limit (RL)

QA/QC Summary Report

Prepared by Helena, MT Branch

Client: Mullinax Inc. **Work Order:** G24070190 **Report Date:** 08/08/24

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: ASA15-5										Batch: 72931
Lab ID: G24070190-046ADUP	4	Sample Duplicate				Run: SOIL HYDROMETER_240731				07/29/24 15:44
Sand		42.0	%	1.0				10	20	
Silt		14.0	%	1.0				13	20	
Clay		44.0	%	1.0				4.4	20	
Texture		C		1.0						
Lab ID: G24070190-056ADUP	4	Sample Duplicate				Run: SOIL HYDROMETER_240731				07/29/24 15:44
Sand		42.0	%	1.0				0.0	20	
Silt		40.0	%	1.0				0.0	20	
Clay		18.0	%	1.0				0.0	20	
Texture		L		1.0						
Lab ID: G24070190-066ADUP	4	Sample Duplicate				Run: SOIL HYDROMETER_240731				07/29/24 15:44
Sand		22.0	%	1.0				0.0	20	
Silt		40.0	%	1.0				0.0	20	
Clay		38.0	%	1.0				0.0	20	
Texture		CL		1.0						
Lab ID: G24070190-076ADUP	4	Sample Duplicate				Run: SOIL HYDROMETER_240731				07/29/24 15:44
Sand		22.0	%	1.0				9.5	20	
Silt		28.0	%	1.0				13	20	
Clay		50.0	%	1.0				4.1	20	
Texture		C		1.0						
Lab ID: G24070190-083ADUP	4	Sample Duplicate				Run: SOIL HYDROMETER_240731				07/29/24 15:44
Sand		6.00	%	1.0				40	20	
Silt		24.0	%	1.0				0.0	20	
Clay		70.0	%	1.0				2.8	20	
Texture		C		1.0						
Lab ID: LCS-72931	3	Laboratory Control Sample				Run: SOIL HYDROMETER_240731				07/29/24 15:44
Sand		48.0	%	1.0	100	70	130			
Silt		30.0	%	1.0	103	70	130			
Clay		22.0	%	1.0	96	70	130			
Method: ASA15-5										Batch: R197182
Lab ID: LCS-72931		Laboratory Control Sample				Run: SOIL HYDROMETER_240731				07/31/24 15:44
Very Fine Sand		33	wt%	1	91	50	133			
Lab ID: G24070190-083ADUP		Sample Duplicate				Run: SOIL HYDROMETER_240731				07/31/24 15:44
Very Fine Sand		69	wt%	1				16	30	
Lab ID: G24070190-046ADUP		Sample Duplicate				Run: SOIL HYDROMETER_240731				07/31/24 15:44
Very Fine Sand		98	wt%	1				0.6	30	
Lab ID: G24070190-056ADUP		Sample Duplicate				Run: SOIL HYDROMETER_240731				07/31/24 15:44
Very Fine Sand		51	wt%	1				1.5	30	

Qualifiers:

RL - Analyte Reporting Limit

ND - Not detected at the Reporting Limit (RL)

QA/QC Summary Report

Prepared by Helena, MT Branch

Client: Mullinax Inc. **Work Order:** G24070190 **Report Date:** 08/08/24

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: ASA15-5										Batch: R197182
Lab ID: G24070190-066ADUP		Sample Duplicate				Run: SOIL HYDROMETER_240731				07/31/24 15:44
Very Fine Sand		66	wt%	1				4.9	30	
Lab ID: G24070190-076ADUP		Sample Duplicate				Run: SOIL HYDROMETER_240731				07/31/24 15:44
Very Fine Sand		77	wt%	1				0.6	30	
Method: ASA15-5										Batch: 73122
Lab ID: LCS-73122	3	Laboratory Control Sample				Run: SOIL HYDROMETER_240806				08/01/24 15:21
Sand		48.0	%	1.0	100	70	130			
Silt		28.0	%	1.0	97	70	130			
Clay		24.0	%	1.0	104	70	130			
Method: ASA15-5										Batch: 73163
Lab ID: G24070190-068ADUP	4	Sample Duplicate				Run: SOIL HYDROMETER_240806				08/05/24 15:21
Sand		18.0	%	1.0				11	20	
Silt		48.0	%	1.0				4.3	20	
Clay		34.0	%	1.0				0.0	20	
Texture		SiCL		1.0						
Lab ID: LCS-73163	3	Laboratory Control Sample				Run: SOIL HYDROMETER_240806				08/05/24 15:21
Sand		50.0	%	1.0	104	70	130			
Silt		26.0	%	1.0	90	70	130			
Clay		24.0	%	1.0	104	70	130			

Qualifiers:

RL - Analyte Reporting Limit

ND - Not detected at the Reporting Limit (RL)

QA/QC Summary Report

Prepared by Helena, MT Branch

Client: Mullinax Inc. **Work Order:** G24070190 **Report Date:** 08/08/24

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: **ASA29-3**										Batch: 72938
Lab ID: **LCS-72938**	Laboratory Control Sample					Run: MISC SOILS_240726A				07/26/24 11:49
Organic Matter		1.14	%	0.17	95	70	130			
Lab ID: **MB-72938**	Method Blank					Run: MISC SOILS_240726A				07/26/24 11:49
Organic Matter		0.02	%	0.02						
Lab ID: **H24070499-006ADUP**	Sample Duplicate					Run: MISC SOILS_240726A				07/26/24 11:49
Organic Matter		0.513	%	0.17						

Qualifiers:

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QA/QC Summary Report

Prepared by Helena, MT Branch

Client: Mullinax Inc. **Work Order:** G24070190 **Report Date:** 08/08/24

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: ASA29-3										Batch: 72934
Lab ID: LCS-72934	Laboratory Control Sample					Run: MISC SOILS_240731A				07/31/24 15:10
Organic Matter		1.15	%	0.17	95	70	130			
Lab ID: MB-72934	Method Blank					Run: MISC SOILS_240731A				07/31/24 15:10
Organic Matter		ND	%	0.02						
Lab ID: G24070190-009ADUP	Sample Duplicate					Run: MISC SOILS_240731A				07/31/24 15:10
Organic Matter		2.38	%	0.17						
Lab ID: G24070190-019ADUP	Sample Duplicate					Run: MISC SOILS_240731A				07/31/24 15:10
Organic Matter		1.45	%	0.17						
Method: ASA29-3										Batch: 72935
Lab ID: LCS-72935	Laboratory Control Sample					Run: MISC SOILS_240731A				07/31/24 15:10
Organic Matter		1.30	%	0.17	108	70	130			
Lab ID: MB-72935	Method Blank					Run: MISC SOILS_240731A				07/31/24 15:10
Organic Matter		0.02	%	0.02						
Lab ID: G24070190-029ADUP	Sample Duplicate					Run: MISC SOILS_240731A				07/31/24 15:10
Organic Matter		0.591	%	0.17						
Lab ID: G24070190-039ADUP	Sample Duplicate					Run: MISC SOILS_240731A				07/31/24 15:10
Organic Matter		0.321	%	0.17						
Method: ASA29-3										Batch: 72936
Lab ID: LCS-72936	Laboratory Control Sample					Run: MISC SOILS_240731A				07/31/24 15:10
Organic Matter		1.28	%	0.17	106	70	130			
Lab ID: MB-72936	Method Blank					Run: MISC SOILS_240731A				07/31/24 15:10
Organic Matter		0.03	%	0.02						
Lab ID: G24070190-049ADUP	Sample Duplicate					Run: MISC SOILS_240731A				07/31/24 15:10
Organic Matter		0.687	%	0.17						
Lab ID: G24070190-059ADUP	Sample Duplicate					Run: MISC SOILS_240731A				07/31/24 15:10
Organic Matter		0.491	%	0.17						
Method: ASA29-3										Batch: 72937
Lab ID: LCS-72937	Laboratory Control Sample					Run: MISC SOILS_240731A				07/31/24 15:10
Organic Matter		1.18	%	0.17	98	70	130			
Lab ID: MB-72937	Method Blank					Run: MISC SOILS_240731A				07/31/24 15:10
Organic Matter		ND	%	0.02						
Lab ID: G24070190-069ADUP	Sample Duplicate					Run: MISC SOILS_240731A				07/31/24 15:10
Organic Matter		0.316	%	0.17						
Lab ID: G24070190-079ADUP	Sample Duplicate					Run: MISC SOILS_240731A				07/31/24 15:10
Organic Matter		0.350	%	0.17						

Qualifiers:

RL - Analyte Reporting Limit

ND - Not detected at the Reporting Limit (RL)

QA/QC Summary Report

Prepared by Helena, MT Branch

Client: Mullinax Inc. **Work Order:** G24070190 **Report Date:** 08/08/24

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: **SW6010B**									Analytical Run: ICP2-HE_240725A	
Lab ID: **ICV**		Initial Calibration Verification Standard							07/25/24 08:59	
Boron		0.797	mg/L	0.10	100	90	110			
Lab ID: **CCV**		Continuing Calibration Verification Standard							07/25/24 09:09	
Boron		2.53	mg/L	0.10	101	90	110			
Lab ID: **ICSA**		Interference Check Sample A							07/25/24 09:20	
Boron		ND	mg/L	0.10		0	0			
Lab ID: **ICSAB**		Interference Check Sample AB							07/25/24 09:24	
Boron		0.955	mg/L	0.10	95	80	120			
Method: **SW6010B**									Batch: 72949	
Lab ID: **MB-72949**		Method Blank				Run: ICP2-HE_240725A			07/25/24 17:21	
Boron		ND	mg/kg	0.02						
Lab ID: **LFB-72949**		Laboratory Fortified Blank				Run: ICP2-HE_240725A			07/25/24 17:25	
Boron		3.85	mg/kg	0.10	96	80	120			
Lab ID: **LCS-72949**		Laboratory Control Sample				Run: ICP2-HE_240725A			07/25/24 17:29	
Boron		1.19	mg/kg	0.10	91	70	130			
Lab ID: **G24070190-005AMSD2**		Sample Matrix Spike Duplicate				Run: ICP2-HE_240725A			07/25/24 18:07	
Boron		4.05	mg/kg	0.10	93	75	125	0.7	20	
Lab ID: **G24070190-006Adup**		Sample Duplicate				Run: ICP2-HE_240725A			07/25/24 18:14	
Boron		0.369	mg/kg	0.10				4.0	20	
Lab ID: **G24070190-016Adup**		Sample Duplicate				Run: ICP2-HE_240725A			07/25/24 19:12	
Boron		0.258	mg/kg	0.10				2.5	20	
Method: **SW6010B**									Batch: 72950	
Lab ID: **MB-72950**		Method Blank				Run: ICP2-HE_240725A			07/25/24 19:31	
Boron		ND	mg/kg	0.02						
Lab ID: **LFB-72950**		Laboratory Fortified Blank				Run: ICP2-HE_240725A			07/25/24 19:35	
Boron		3.90	mg/kg	0.10	98	80	120			
Lab ID: **LCS-72950**		Laboratory Control Sample				Run: ICP2-HE_240725A			07/25/24 19:39	
Boron		1.24	mg/kg	0.10	95	70	130			
Lab ID: **G24070190-025AMS2**		Sample Matrix Spike				Run: ICP2-HE_240725A			07/25/24 20:13	
Boron		4.14	mg/kg	0.10	94	75	125			
Lab ID: **G24070190-025AMSD2**		Sample Matrix Spike Duplicate				Run: ICP2-HE_240725A			07/25/24 20:17	
Boron		4.16	mg/kg	0.10	95	75	125	0.7	20	
Lab ID: **G24070190-026Adup**		Sample Duplicate				Run: ICP2-HE_240725A			07/25/24 20:24	
Boron		0.443	mg/kg	0.10				5.9	20	

Qualifiers:

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QA/QC Summary Report

Prepared by Helena, MT Branch

Client: Mullinax Inc. **Work Order:** G24070190 **Report Date:** 08/08/24

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: **SW6010B**										Batch: 72950
Lab ID: **G24070190-036Adup**	Sample Duplicate					Run: ICP2-HE_240725A				07/25/24 21:45
Boron		0.588	mg/kg	0.10				8.1	20	
Method: **SW6010B**										Batch: 72951
Lab ID: **MB-72951**	Method Blank					Run: ICP2-HE_240725A				07/25/24 22:12
Boron		ND	mg/kg	0.02						
Lab ID: **LFB-72951**	Laboratory Fortified Blank					Run: ICP2-HE_240725A				07/25/24 22:16
Boron		3.82	mg/kg	0.10	95	80	120			
Lab ID: **LCS-72951**	Laboratory Control Sample					Run: ICP2-HE_240725A				07/25/24 22:19
Boron		1.14	mg/kg	0.10	88	70	130			
Lab ID: **G24070190-045AMS2**	Sample Matrix Spike					Run: ICP2-HE_240725A				07/25/24 22:54
Boron		4.51	mg/kg	0.10	97	75	125			
Lab ID: **G24070190-045AMSD2**	Sample Matrix Spike Duplicate					Run: ICP2-HE_240725A				07/25/24 22:57
Boron		4.44	mg/kg	0.10	96	75	125	1.5	20	
Lab ID: **G24070190-046Adup**	Sample Duplicate					Run: ICP2-HE_240725A				07/25/24 23:05
Boron		0.987	mg/kg	0.10				0.7	20	
Lab ID: **G24070190-056Adup**	Sample Duplicate					Run: ICP2-HE_240725A				07/25/24 23:55
Boron		0.271	mg/kg	0.10				0.9	20	

Qualifiers:

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QA/QC Summary Report

Prepared by Helena, MT Branch

Client: Mullinax Inc. **Work Order:** G24070190 **Report Date:** 08/08/24

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: SW6010B										Analytical Run: ICP2-HE_240726B
Lab ID: ICV	4	Initial Calibration Verification Standard								07/26/24 08:56
Boron		0.795	mg/L	0.10	99	90	110			
Calcium		41.2	mg/L	1.0	103	90	110			
Magnesium		40.9	mg/L	1.0	102	90	110			
Sodium		40.4	mg/L	1.0	101	90	110			
Lab ID: CCV	4	Continuing Calibration Verification Standard								07/26/24 09:22
Boron		2.50	mg/L	0.10	100	90	110			
Calcium		26.7	mg/L	1.0	107	90	110			
Magnesium		26.3	mg/L	1.0	105	90	110			
Sodium		25.4	mg/L	1.0	102	90	110			
Lab ID: ICSA	4	Interference Check Sample A								07/26/24 09:34
Boron		ND	mg/L	0.10		0	0			
Calcium		485	mg/L	1.0	97	80	120			
Magnesium		500	mg/L	1.0	100	80	120			
Sodium		ND	mg/L	1.0		0	0			
Lab ID: ICSAB	4	Interference Check Sample AB								07/26/24 09:38
Boron		0.965	mg/L	0.10	97	80	120			
Calcium		491	mg/L	1.0	98	80	120			
Magnesium		503	mg/L	1.0	101	80	120			
Sodium		20.9	mg/L	1.0	104	80	120			
Method: SW6010B										Batch: 72924
Lab ID: MB-72924	6	Method Blank				Run: ICP2-HE_240726B				07/26/24 21:35
Calcium		ND	mg/L	0.2						
Magnesium		ND	mg/L	0.05						
Sodium		0.05	mg/L	0.03						
Calcium, sat. paste		ND	meq/L	0.009						
Magnesium, sat. paste		ND	meq/L	0.004						
Sodium, sat. paste		0.002	meq/L	0.001						
Lab ID: LFB-72924	6	Laboratory Fortified Blank				Run: ICP2-HE_240726B				07/26/24 21:46
Calcium		46.3	mg/L	1.0	93	80	120			
Magnesium		46.2	mg/L	1.0	92	80	120			
Sodium		48.4	mg/L	1.0	97	80	120			
Calcium, sat. paste		2.31	meq/L	0.050	93	80	120			
Magnesium, sat. paste		3.80	meq/L	0.082	92	80	120			
Sodium, sat. paste		2.10	meq/L	0.043	97	80	120			
Lab ID: LCS-72924	6	Laboratory Control Sample				Run: ICP2-HE_240726B				07/26/24 21:50
Calcium		288	mg/L	1.0	95	70	130			
Magnesium		99.1	mg/L	1.0	84	70	130			
Sodium		469	mg/L	1.0	92	70	130			
Calcium, sat. paste		14.4	meq/L	0.050	95	70	130			
Magnesium, sat. paste		8.16	meq/L	0.082	84	70	130			
Sodium, sat. paste		20.4	meq/L	0.043	92	70	130			

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QA/QC Summary Report

Prepared by Helena, MT Branch

Client: Mullinax Inc. **Work Order:** G24070190 **Report Date:** 08/08/24

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: SW6010B										Batch: 72924
Lab ID: LCS-72924	6	Laboratory Control Sample				Run: ICP2-HE_240726B				07/26/24 21:50
Lab ID: G24070190-001AMS2	6	Sample Matrix Spike				Run: ICP2-HE_240726B				07/26/24 22:02
Calcium		154	mg/L	1.0	92	70	130			
Magnesium		107	mg/L	1.0	94	70	130			
Sodium		99.9	mg/L	1.0	97	70	130			
Calcium, sat. paste		7.66	meq/L	0.050	92	70	130			
Magnesium, sat. paste		8.80	meq/L	0.082	94	70	130			
Sodium, sat. paste		4.34	meq/L	0.043	97	70	130			
Lab ID: G24070190-001AMSD2	6	Sample Matrix Spike Duplicate				Run: ICP2-HE_240726B				07/26/24 22:05
Calcium		153	mg/L	1.0	91	70	130	0.6	20	
Magnesium		105	mg/L	1.0	91	70	130	2.3	20	
Sodium		97.0	mg/L	1.0	95	70	130	2.9	20	
Calcium, sat. paste		7.62	meq/L	0.050	91	70	130	0.6	20	
Magnesium, sat. paste		8.61	meq/L	0.082	91	70	130	2.3	20	
Sodium, sat. paste		4.22	meq/L	0.043	95	70	130	2.9	20	
Lab ID: G24070190-008Adup	6	Sample Duplicate				Run: ICP2-HE_240726B				07/26/24 22:44
Calcium		141	mg/L	1.0				7.9	30	
Magnesium		19.3	mg/L	1.0				7.0	30	
Sodium		1.43	mg/L	1.0				1.3	30	
Calcium, sat. paste		7.05	meq/L	0.050				7.9	30	
Magnesium, sat. paste		1.59	meq/L	0.082				7.0	30	
Sodium, sat. paste		0.0623	meq/L	0.043				1.3	30	
Lab ID: G24070190-018Adup	6	Sample Duplicate				Run: ICP2-HE_240726B				07/26/24 23:36
Calcium		90.3	mg/L	1.0				16	30	
Magnesium		40.0	mg/L	1.0				15	30	
Sodium		3.85	mg/L	1.0				13	30	
Calcium, sat. paste		4.50	meq/L	0.050				16	30	
Magnesium, sat. paste		3.29	meq/L	0.082				15	30	
Sodium, sat. paste		0.167	meq/L	0.043				13	30	
Method: SW6010B										Batch: 72925
Lab ID: MB-72925	6	Method Blank				Run: ICP2-HE_240726B				07/26/24 23:52
Calcium		ND	mg/L	0.2						
Magnesium		ND	mg/L	0.05						
Sodium		0.06	mg/L	0.03						
Calcium, sat. paste		ND	meq/L	0.009						
Magnesium, sat. paste		ND	meq/L	0.004						
Sodium, sat. paste		0.003	meq/L	0.001						
Lab ID: LFB-72925	6	Laboratory Fortified Blank				Run: ICP2-HE_240726B				07/26/24 23:56
Calcium		44.0	mg/L	1.0	88	80	120			
Magnesium		43.4	mg/L	1.0	87	80	120			
Sodium		46.2	mg/L	1.0	92	80	120			
Calcium, sat. paste		2.20	meq/L	0.050	88	80	120			

Qualifiers:

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QA/QC Summary Report

Prepared by Helena, MT Branch

Client: Mullinax Inc. **Work Order:** G24070190 **Report Date:** 08/08/24

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: SW6010B										Batch: 72925
Lab ID: LFB-72925	6	Laboratory Fortified Blank				Run: ICP2-HE_240726B				07/26/24 23:56
Magnesium, sat. paste		3.58	meq/L	0.082	87	80	120			
Sodium, sat. paste		2.01	meq/L	0.043	92	80	120			
Lab ID: LCS-72925	6	Laboratory Control Sample				Run: ICP2-HE_240726B				07/27/24 00:07
Calcium		323	mg/L	1.0	107	70	130			
Magnesium		111	mg/L	1.0	93	70	130			
Sodium		520	mg/L	1.0	102	70	130			
Calcium, sat. paste		16.1	meq/L	0.050	107	70	130			
Magnesium, sat. paste		9.10	meq/L	0.082	93	70	130			
Sodium, sat. paste		22.6	meq/L	0.043	102	70	130			
Lab ID: G24070190-021AMS2	6	Sample Matrix Spike				Run: ICP2-HE_240726B				07/27/24 00:19
Calcium		100	mg/L	1.0	88	70	130			
Magnesium		112	mg/L	1.0	86	70	130			
Sodium		251	mg/L	1.0	101	70	130			
Calcium, sat. paste		5.01	meq/L	0.050	88	70	130			
Magnesium, sat. paste		9.21	meq/L	0.082	86	70	130			
Sodium, sat. paste		10.9	meq/L	0.043	101	70	130			
Lab ID: G24070190-021AMSD2	6	Sample Matrix Spike Duplicate				Run: ICP2-HE_240726B				07/27/24 00:23
Calcium		107	mg/L	1.0	94	70	130	6.3	20	
Magnesium		118	mg/L	1.0	93	70	130	5.6	20	
Sodium		251	mg/L	1.0	101	70	130	0	20	
Calcium, sat. paste		5.34	meq/L	0.050	94	70	130	6.3	20	
Magnesium, sat. paste		9.74	meq/L	0.082	93	70	130	5.6	20	
Sodium, sat. paste		10.9	meq/L	0.043	101	70	130	0	20	
Lab ID: G24070190-028Adup	6	Sample Duplicate				Run: ICP2-HE_240726B				07/27/24 01:01
Calcium		12.6	mg/L	1.0				2.5	30	
Magnesium		16.0	mg/L	1.0				15	30	
Sodium		107	mg/L	1.0				14	30	
Calcium, sat. paste		0.628	meq/L	0.050				2.5	30	
Magnesium, sat. paste		1.32	meq/L	0.082				15	30	
Sodium, sat. paste		4.67	meq/L	0.043				14	30	
Lab ID: G24070190-038Adup	6	Sample Duplicate				Run: ICP2-HE_240726B				07/27/24 01:51
Calcium		47.9	mg/L	1.0				1.1	30	
Magnesium		126	mg/L	1.0				0.8	30	
Sodium		163	mg/L	1.0				1.3	30	
Calcium, sat. paste		2.39	meq/L	0.050				1.1	30	
Magnesium, sat. paste		10.3	meq/L	0.082				0.8	30	
Sodium, sat. paste		7.08	meq/L	0.043				1.3	30	
Method: SW6010B										Batch: 72926
Lab ID: MB-72926	6	Method Blank				Run: ICP2-HE_240726B				07/27/24 02:07
Calcium		ND	mg/L	0.2						
Magnesium		ND	mg/L	0.05						

Qualifiers:

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QA/QC Summary Report

Prepared by Helena, MT Branch

Client: Mullinax Inc. **Work Order:** G24070190 **Report Date:** 08/08/24

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: SW6010B										Batch: 72926
Lab ID: MB-72926	6	Method Blank				Run: ICP2-HE_240726B				07/27/24 02:07
Sodium		0.05	mg/L	0.03						
Calcium, sat. paste		ND	meq/L	0.009						
Magnesium, sat. paste		ND	meq/L	0.004						
Sodium, sat. paste		0.002	meq/L	0.001						
Lab ID: LFB-72926	6	Laboratory Fortified Blank				Run: ICP2-HE_240726B				07/27/24 02:11
Calcium		47.7	mg/L	1.0	95	80	120			
Magnesium		47.1	mg/L	1.0	94	80	120			
Sodium		47.4	mg/L	1.0	95	80	120			
Calcium, sat. paste		2.38	meq/L	0.050	95	80	120			
Magnesium, sat. paste		3.88	meq/L	0.082	94	80	120			
Sodium, sat. paste		2.06	meq/L	0.043	95	80	120			
Lab ID: LCS-72926	6	Laboratory Control Sample				Run: ICP2-HE_240726B				07/27/24 02:14
Calcium		283	mg/L	1.0	93	70	130			
Magnesium		97.2	mg/L	1.0	82	70	130			
Sodium		473	mg/L	1.0	93	70	130			
Calcium, sat. paste		14.1	meq/L	0.050	93	70	130			
Magnesium, sat. paste		8.00	meq/L	0.082	82	70	130			
Sodium, sat. paste		20.6	meq/L	0.043	93	70	130			
Lab ID: G24070190-041AMS2	6	Sample Matrix Spike				Run: ICP2-HE_240726B				07/27/24 02:34
Calcium		149	mg/L	1.0	88	70	130			
Magnesium		109	mg/L	1.0	90	70	130			
Sodium		102	mg/L	1.0	97	70	130			
Calcium, sat. paste		7.46	meq/L	0.050	88	70	130			
Magnesium, sat. paste		9.00	meq/L	0.082	90	70	130			
Sodium, sat. paste		4.43	meq/L	0.043	97	70	130			
Lab ID: G24070190-041AMSD2	6	Sample Matrix Spike Duplicate				Run: ICP2-HE_240726B				07/27/24 02:37
Calcium		151	mg/L	1.0	90	70	130	1.2	20	
Magnesium		111	mg/L	1.0	91	70	130	1.5	20	
Sodium		102	mg/L	1.0	97	70	130	0.2	20	
Calcium, sat. paste		7.55	meq/L	0.050	90	70	130	1.2	20	
Magnesium, sat. paste		9.13	meq/L	0.082	91	70	130	1.5	20	
Sodium, sat. paste		4.42	meq/L	0.043	97	70	130	0.2	20	
Lab ID: G24070190-048Adup	6	Sample Duplicate				Run: ICP2-HE_240726B				07/27/24 03:47
Calcium		270	mg/L	1.9				3.6	30	
Magnesium		605	mg/L	1.0				4.4	30	
Sodium		606	mg/L	1.0				4.5	30	
Calcium, sat. paste		13.5	meq/L	0.094				3.6	30	
Magnesium, sat. paste		49.8	meq/L	0.082				4.4	30	
Sodium, sat. paste		26.3	meq/L	0.043					30	
Lab ID: G24070190-058Adup	6	Sample Duplicate				Run: ICP2-HE_240726B				07/27/24 04:37
Calcium		418	mg/L	1.9				7.7	30	

Qualifiers:

RL - Analyte Reporting Limit

ND - Not detected at the Reporting Limit (RL)

QA/QC Summary Report

Prepared by Helena, MT Branch

Client: Mullinax Inc. **Work Order:** G24070190 **Report Date:** 08/08/24

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: SW6010B										Batch: 72926
Lab ID: G24070190-058Adup	6	Sample Duplicate				Run: ICP2-HE_240726B				07/27/24 04:37
Magnesium		879	mg/L	1.0				6.5	30	
Sodium		970	mg/L	1.0				4.2	30	
Calcium, sat. paste		20.9	meq/L	0.094				7.7	30	
Magnesium, sat. paste		72.4	meq/L	0.082				6.5	30	
Sodium, sat. paste		42.2	meq/L	0.043				4.2	30	
Method: SW6010B										Batch: 72952
Lab ID: MB-72952		Method Blank				Run: ICP2-HE_240726B				07/27/24 10:44
Boron		ND	mg/kg	0.02						
Lab ID: LFB-72952		Laboratory Fortified Blank				Run: ICP2-HE_240726B				07/27/24 10:48
Boron		3.76	mg/kg	0.10	94	80	120			
Lab ID: LCS-72952		Laboratory Control Sample				Run: ICP2-HE_240726B				07/27/24 10:52
Boron		1.11	mg/kg	0.10	85	70	130			
Lab ID: G24070190-065AMS2		Sample Matrix Spike				Run: ICP2-HE_240726B				07/27/24 11:26
Boron		5.66	mg/kg	0.10	93	75	125			
Lab ID: G24070190-065AMSD2		Sample Matrix Spike Duplicate				Run: ICP2-HE_240726B				07/27/24 11:30
Boron		5.77	mg/kg	0.10	96	75	125	2.0	20	
Lab ID: G24070190-066Adup		Sample Duplicate				Run: ICP2-HE_240726B				07/27/24 11:37
Boron		4.29	mg/kg	0.10				4.0	20	
Lab ID: G24070190-076Adup		Sample Duplicate				Run: ICP2-HE_240726B				07/27/24 13:06
Boron		0.573	mg/kg	0.10				3.8	20	
Method: SW6010B										Batch: 72953
Lab ID: MB-72953		Method Blank				Run: ICP2-HE_240726B				07/27/24 13:25
Boron		ND	mg/kg	0.02						
Lab ID: LFB-72953		Laboratory Fortified Blank				Run: ICP2-HE_240726B				07/27/24 13:29
Boron		3.77	mg/kg	0.10	94	80	120			
Lab ID: LCS-72953		Laboratory Control Sample				Run: ICP2-HE_240726B				07/27/24 13:32
Boron		1.22	mg/kg	0.10	94	70	130			
Lab ID: H24070608-001AMS2		Sample Matrix Spike				Run: ICP2-HE_240726B				07/27/24 14:03
Boron		5.00	mg/kg	0.10	93	75	125			
Lab ID: H24070608-001AMSD2		Sample Matrix Spike Duplicate				Run: ICP2-HE_240726B				07/27/24 14:07
Boron		5.06	mg/kg	0.10	95	75	125	1.2	20	
Lab ID: H24070608-003Adup		Sample Duplicate				Run: ICP2-HE_240726B				07/27/24 14:18
Boron		1.67	mg/kg	0.10				2.5	20	

Qualifiers:

RL - Analyte Reporting Limit

ND - Not detected at the Reporting Limit (RL)

QA/QC Summary Report

Prepared by Helena, MT Branch

Client: Mullinax Inc. **Work Order:** G24070190 **Report Date:** 08/08/24

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: SW6010B										Analytical Run: ICP2-HE_240729C
Lab ID: ICV	3	Initial Calibration Verification Standard								07/29/24 15:55
Calcium		39.9	mg/L	1.0	100	90	110			
Magnesium		40.0	mg/L	1.0	100	90	110			
Sodium		40.8	mg/L	1.0	102	90	110			
Lab ID: CCV	3	Continuing Calibration Verification Standard								07/29/24 15:59
Calcium		25.3	mg/L	1.0	101	90	110			
Magnesium		25.2	mg/L	1.0	101	90	110			
Sodium		25.5	mg/L	1.0	102	90	110			
Lab ID: ICSA	3	Interference Check Sample A								07/29/24 16:11
Calcium		461	mg/L	1.0	92	80	120			
Magnesium		496	mg/L	1.0	99	80	120			
Sodium		ND	mg/L	1.0		0	0			
Lab ID: ICSAB	3	Interference Check Sample AB								07/29/24 16:15
Calcium		457	mg/L	1.0	91	80	120			
Magnesium		492	mg/L	1.0	98	80	120			
Sodium		20.3	mg/L	1.0	101	80	120			
Method: SW6010B										Batch: 72927
Lab ID: MB-72927	6	Method Blank				Run: ICP2-HE_240729C				07/30/24 04:02
Calcium		ND	mg/L	0.2						
Magnesium		ND	mg/L	0.05						
Sodium		0.07	mg/L	0.03						
Calcium, sat. paste		ND	meq/L	0.009						
Magnesium, sat. paste		ND	meq/L	0.004						
Sodium, sat. paste		0.003	meq/L	0.001						
Lab ID: LFB-72927	6	Laboratory Fortified Blank				Run: ICP2-HE_240729C				07/30/24 04:06
Calcium		43.9	mg/L	1.0	88	80	120			
Magnesium		43.9	mg/L	1.0	88	80	120			
Sodium		47.2	mg/L	1.0	94	80	120			
Calcium, sat. paste		2.19	meq/L	0.050	88	80	120			
Magnesium, sat. paste		3.61	meq/L	0.082	88	80	120			
Sodium, sat. paste		2.05	meq/L	0.043	94	80	120			
Lab ID: LCS-72927	6	Laboratory Control Sample				Run: ICP2-HE_240729C				07/30/24 04:18
Calcium		277	mg/L	1.0	91	70	130			
Magnesium		94.3	mg/L	1.0	79	70	130			
Sodium		478	mg/L	1.0	94	70	130			
Calcium, sat. paste		13.8	meq/L	0.050	91	70	130			
Magnesium, sat. paste		7.76	meq/L	0.082	79	70	130			
Sodium, sat. paste		20.8	meq/L	0.043	94	70	130			
Lab ID: G24070190-061AMS2	6	Sample Matrix Spike				Run: ICP2-HE_240729C				07/30/24 04:29
Calcium		187	mg/L	1.0	89	70	130			
Magnesium		125	mg/L	1.0	92	70	130			

Qualifiers:

RL - Analyte Reporting Limit

ND - Not detected at the Reporting Limit (RL)

QA/QC Summary Report

Prepared by Helena, MT Branch

Client: Mullinax Inc. **Work Order:** G24070190 **Report Date:** 08/08/24

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: SW6010B										Batch: 72927
Lab ID: G24070190-061AMS2	6	Sample Matrix Spike				Run: ICP2-HE_240729C				07/30/24 04:29
Sodium		102	mg/L	1.0	96	70	130			
Calcium, sat. paste		9.34	meq/L	0.050	89	70	130			
Magnesium, sat. paste		10.3	meq/L	0.082	92	70	130			
Sodium, sat. paste		4.45	meq/L	0.043	96	70	130			
Lab ID: G24070190-061AMSD2	6	Sample Matrix Spike Duplicate				Run: ICP2-HE_240729C				07/30/24 04:33
Calcium		193	mg/L	1.0	94	70	130	2.8	20	
Magnesium		128	mg/L	1.0	94	70	130	2.0	20	
Sodium		101	mg/L	1.0	95	70	130	0.8	20	
Calcium, sat. paste		9.61	meq/L	0.050	94	70	130	2.8	20	
Magnesium, sat. paste		10.5	meq/L	0.082	94	70	130	2.0	20	
Sodium, sat. paste		4.41	meq/L	0.043	95	70	130	0.8	20	
Lab ID: G24070190-068Adup	6	Sample Duplicate				Run: ICP2-HE_240729C				07/30/24 05:42
Calcium		384	mg/L	1.9				15	30	
Magnesium		413	mg/L	1.0				17	30	
Sodium		605	mg/L	1.0				15	30	
Calcium, sat. paste		19.2	meq/L	0.094				15	30	
Magnesium, sat. paste		33.9	meq/L	0.082				17	30	
Sodium, sat. paste		26.3	meq/L	0.043				15	30	
Lab ID: G24070190-078Adup	6	Sample Duplicate				Run: ICP2-HE_240729C				07/30/24 06:32
Calcium		427	mg/L	1.9				2.6	30	
Magnesium		742	mg/L	1.0				6.9	30	
Sodium		469	mg/L	1.0				8.7	30	
Calcium, sat. paste		21.3	meq/L	0.094				2.6	30	
Magnesium, sat. paste		61.1	meq/L	0.082				6.9	30	
Sodium, sat. paste		20.4	meq/L	0.043				8.7	30	
Method: SW6010B										Batch: 72928
Lab ID: MB-72928	6	Method Blank				Run: ICP2-HE_240729C				07/30/24 07:34
Calcium		ND	mg/L	0.2						
Magnesium		ND	mg/L	0.05						
Sodium		0.04	mg/L	0.03						
Calcium, sat. paste		ND	meq/L	0.009						
Magnesium, sat. paste		ND	meq/L	0.004						
Sodium, sat. paste		0.002	meq/L	0.001						
Lab ID: LFB-72928	6	Laboratory Fortified Blank				Run: ICP2-HE_240729C				07/30/24 07:38
Calcium		49.0	mg/L	1.0	98	80	120			
Magnesium		48.5	mg/L	1.0	97	80	120			
Sodium		49.8	mg/L	1.0	100	80	120			
Calcium, sat. paste		2.44	meq/L	0.050	98	80	120			
Magnesium, sat. paste		3.99	meq/L	0.082	97	80	120			
Sodium, sat. paste		2.16	meq/L	0.043	99	80	120			

Qualifiers:

RL - Analyte Reporting Limit

ND - Not detected at the Reporting Limit (RL)

QA/QC Summary Report

Prepared by Helena, MT Branch

Client: Mullinax Inc. **Work Order:** G24070190 **Report Date:** 08/08/24

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: SW6010B										Batch: 72928
Lab ID: LCS-72928	6	Laboratory Control Sample				Run: ICP2-HE_240729C				07/30/24 07:49
Calcium		291	mg/L	1.0	96	70	130			
Magnesium		98.7	mg/L	1.0	83	70	130			
Sodium		484	mg/L	1.0	95	70	130			
Calcium, sat. paste		14.5	meq/L	0.050	96	70	130			
Magnesium, sat. paste		8.13	meq/L	0.082	83	70	130			
Sodium, sat. paste		21.1	meq/L	0.043	95	70	130			
Lab ID: G24070190-081AMS2	6	Sample Matrix Spike				Run: ICP2-HE_240729C				07/30/24 08:01
Calcium		180	mg/L	1.0	101	70	130			
Magnesium		132	mg/L	1.0	101	70	130			
Sodium		133	mg/L	1.0	105	70	130			
Calcium, sat. paste		8.97	meq/L	0.050	101	70	130			
Magnesium, sat. paste		10.8	meq/L	0.082	101	70	130			
Sodium, sat. paste		5.77	meq/L	0.043	133	70	130			S
Lab ID: G24070190-081AMSD2	6	Sample Matrix Spike Duplicate				Run: ICP2-HE_240729C				07/30/24 08:05
Calcium		176	mg/L	1.0	97	70	130	2.3	20	
Magnesium		129	mg/L	1.0	98	70	130	1.9	20	
Sodium		132	mg/L	1.0	104	70	130	0.8	20	
Calcium, sat. paste		8.77	meq/L	0.050	97	70	130	2.3	20	
Magnesium, sat. paste		10.6	meq/L	0.082	98	70	130	1.9	20	
Sodium, sat. paste		5.73	meq/L	0.043	132	70	130	0.8	20	S
Lab ID: H24070616-006Adup	6	Sample Duplicate				Run: ICP2-HE_240729C				07/30/24 08:52
Calcium		461	mg/L	1.0				1.2	30	
Magnesium		364	mg/L	1.0				0.6	30	
Sodium		82.5	mg/L	1.0				0.3	30	
Calcium, sat. paste		23.0	meq/L	0.050				1.2	30	
Magnesium, sat. paste		29.9	meq/L	0.082				0.6	30	
Sodium, sat. paste		3.59	meq/L	0.043				0.3	30	
Method: SW6010B										Analytical Run: ICP2-HE_240730A
Lab ID: ICV		Initial Calibration Verification Standard								07/30/24 10:56
Sodium		40.7	mg/L	1.0	102	90	110			
Lab ID: CCV		Continuing Calibration Verification Standard								07/30/24 11:00
Sodium		24.8	mg/L	1.0	99	90	110			
Lab ID: ICSA		Interference Check Sample A								07/30/24 11:11
Sodium		ND	mg/L	1.0		0	0			
Lab ID: ICSAB		Interference Check Sample AB								07/30/24 11:15
Sodium		20.6	mg/L	1.0	103	80	120			

Qualifiers:

RL - Analyte Reporting Limit

ND - Not detected at the Reporting Limit (RL)

S - Spike recovery outside of advisory limits

QA/QC Summary Report

Prepared by Helena, MT Branch

Client: Mullinax Inc. **Work Order:** G24070190 **Report Date:** 08/08/24

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: **SW6020**									Analytical Run: ICPMS205-H_240729A	
Lab ID: **ICV**	Initial Calibration Verification Standard								07/29/24 13:28	
Selenium		0.0624	mg/L	0.0010	104	90	110			
Lab ID: **ICSA**	Interference Check Sample A								07/29/24 13:37	
Selenium		ND	mg/L	0.0010						
Lab ID: **ICSAB**	Interference Check Sample AB								07/29/24 13:43	
Selenium		0.00977	mg/L	0.0010	98	70	130			
Lab ID: **CCV**	Continuing Calibration Verification Standard								07/29/24 16:27	
Selenium		0.0522	mg/L	0.0010	104	90	110			
Lab ID: **CCV**	Continuing Calibration Verification Standard								07/29/24 17:12	
Selenium		0.0516	mg/L	0.0010	103	90	110			
Method: **SW6020**									Batch: 72949	
Lab ID: **MB-72949**	Method Blank					Run: ICPMS205-H_240729A			07/29/24 15:17	
Selenium		ND	mg/kg	0.002						
Lab ID: **LCS-72949**	Laboratory Control Sample					Run: ICPMS205-H_240729A			07/29/24 15:19	
Selenium		0.284	mg/kg	0.10	106	70	130			
Lab ID: **LFB-72949**	Laboratory Fortified Blank					Run: ICPMS205-H_240729A			07/29/24 15:21	
Selenium		1.02	mg/kg	0.10	102	80	120			
Lab ID: **G24070190-001AMS**	Sample Matrix Spike					Run: ICPMS205-H_240729A			07/29/24 15:30	
Selenium		1.02	mg/kg	0.10	101	75	125			
Lab ID: **G24070190-006Adup**	Sample Duplicate					Run: ICPMS205-H_240729A			07/29/24 15:45	
Selenium		ND	mg/kg	0.10					20	
Lab ID: **G24070190-016Adup**	Sample Duplicate					Run: ICPMS205-H_240729A			07/29/24 16:16	
Selenium		ND	mg/kg	0.10					20	
Method: **SW6020**									Batch: 72950	
Lab ID: **MB-72950**	Method Blank					Run: ICPMS205-H_240729A			07/29/24 16:33	
Selenium		ND	mg/kg	0.002						
Lab ID: **LCS-72950**	Laboratory Control Sample					Run: ICPMS205-H_240729A			07/29/24 16:35	
Selenium		0.286	mg/kg	0.10	107	70	130			
Lab ID: **LFB-72950**	Laboratory Fortified Blank					Run: ICPMS205-H_240729A			07/29/24 16:37	
Selenium		1.04	mg/kg	0.10	104	80	120			
Lab ID: **G24070190-021AMS**	Sample Matrix Spike					Run: ICPMS205-H_240729A			07/29/24 16:46	
Selenium		1.03	mg/kg	0.10	102	75	125			
Lab ID: **G24070190-026Adup**	Sample Duplicate					Run: ICPMS205-H_240729A			07/29/24 17:01	
Selenium		ND	mg/kg	0.10					20	

Qualifiers:

RL - Analyte Reporting Limit

ND - Not detected at the Reporting Limit (RL)

QA/QC Summary Report

Prepared by Helena, MT Branch

Client: Mullinax Inc. **Work Order:** G24070190 **Report Date:** 08/08/24

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: **SW6020**										Batch: 72950
Lab ID: **G24070190-036Adup**	Sample Duplicate					Run: ICPMS205-H_240729A				07/29/24 17:31
Selenium		ND	mg/kg	0.10					20	
Method: **SW6020**										Batch: 72953
Lab ID: **MB-72953**	Method Blank					Run: ICPMS205-H_240729A				07/30/24 17:29
Selenium		0.005	mg/kg	0.002						
Lab ID: **LCS-72953**	Laboratory Control Sample					Run: ICPMS205-H_240729A				07/30/24 17:31
Selenium		0.300	mg/kg	0.10	112	70	130			
Lab ID: **LFB-72953**	Laboratory Fortified Blank					Run: ICPMS205-H_240729A				07/30/24 17:33
Selenium		1.03	mg/kg	0.10	103	80	120			
Lab ID: **G24070190-081AMS**	Sample Matrix Spike					Run: ICPMS205-H_240729A				07/30/24 17:40
Selenium		0.980	mg/kg	0.10	97	75	125			
Lab ID: **H24070608-003Adup**	Sample Duplicate					Run: ICPMS205-H_240729A				07/30/24 17:53
Selenium		0.0584	mg/kg	0.040				1.9	20	
Lab ID: **H24070608-014Adup**	Sample Duplicate					Run: ICPMS205-H_240729A				07/30/24 18:25
Selenium		0.0518	mg/kg	0.040				2.0	20	

Qualifiers:

RL - Analyte Reporting Limit

ND - Not detected at the Reporting Limit (RL)

QA/QC Summary Report

Prepared by Helena, MT Branch

Client: Mullinax Inc. **Work Order:** G24070190 **Report Date:** 08/08/24

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: **SW6020**									Analytical Run: ICPMS205-H_240731C	
Lab ID: **ICV**		Initial Calibration Verification Standard								07/31/24 13:18
Selenium		0.0625	mg/L	0.0010	104	90	110			
Lab ID: **ICSA**		Interference Check Sample A								07/31/24 20:59
Selenium		ND	mg/L	0.0010						
Lab ID: **ICSAB**		Interference Check Sample AB								07/31/24 21:05
Selenium		0.00946	mg/L	0.0010	95	70	130			
Lab ID: **CCV**		Continuing Calibration Verification Standard								07/31/24 21:14
Selenium		0.0514	mg/L	0.0010	103	90	110			
Lab ID: **CCV**		Continuing Calibration Verification Standard								07/31/24 22:15
Selenium		0.0523	mg/L	0.0010	105	90	110			
Lab ID: **CCV**		Continuing Calibration Verification Standard								07/31/24 22:55
Selenium		0.0530	mg/L	0.0010	106	90	110			
Lab ID: **CCV**		Continuing Calibration Verification Standard								07/31/24 23:56
Selenium		0.0517	mg/L	0.0010	103	90	110			
Method: **SW6020**										Batch: 72951
Lab ID: **MB-72951**		Method Blank				Run: ICPMS205-H_240731C				07/31/24 21:20
Selenium		ND	mg/kg	0.002						
Lab ID: **LCS-72951**		Laboratory Control Sample				Run: ICPMS205-H_240731C				07/31/24 21:23
Selenium		0.289	mg/kg	0.10	108	70	130			
Lab ID: **LFB-72951**		Laboratory Fortified Blank				Run: ICPMS205-H_240731C				07/31/24 21:26
Selenium		1.05	mg/kg	0.10	105	80	120			
Lab ID: **G24070190-041AMS**		Sample Matrix Spike				Run: ICPMS205-H_240731C				07/31/24 21:39
Selenium		1.04	mg/kg	0.10	104	75	125			
Lab ID: **G24070190-046Adup**		Sample Duplicate				Run: ICPMS205-H_240731C				07/31/24 22:00
Selenium		ND	mg/kg	0.10					20	
Lab ID: **G24070190-056Adup**		Sample Duplicate				Run: ICPMS205-H_240731C				07/31/24 22:40
Selenium		ND	mg/kg	0.10					20	
Method: **SW6020**										Batch: 72952
Lab ID: **MB-72952**		Method Blank				Run: ICPMS205-H_240731C				07/31/24 23:01
Selenium		ND	mg/kg	0.002						
Lab ID: **LCS-72952**		Laboratory Control Sample				Run: ICPMS205-H_240731C				07/31/24 23:04
Selenium		0.294	mg/kg	0.10	110	70	130			
Lab ID: **LFB-72952**		Laboratory Fortified Blank				Run: ICPMS205-H_240731C				07/31/24 23:07
Selenium		1.06	mg/kg	0.10	106	80	120			

Qualifiers:

RL - Analyte Reporting Limit

ND - Not detected at the Reporting Limit (RL)

QA/QC Summary Report

Prepared by Helena, MT Branch

Client: Mullinax Inc. **Work Order:** G24070190 **Report Date:** 08/08/24

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: **SW6020**										Batch: 72952
Lab ID: **G24070190-061AMS**	Sample Matrix Spike					Run: ICPMS205-H_240731C				07/31/24 23:19
Selenium		1.04	mg/kg	0.10	104	75	125			
Lab ID: **G24070190-066Adup**	Sample Duplicate					Run: ICPMS205-H_240731C				07/31/24 23:41
Selenium		ND	mg/kg	0.10					20	
Lab ID: **G24070190-076Adup**	Sample Duplicate					Run: ICPMS205-H_240731C				08/01/24 00:20
Selenium		ND	mg/kg	0.10					20	

Qualifiers:

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QA/QC Summary Report

Prepared by Helena, MT Branch

Client: Mullinax Inc. **Work Order:** G24070190 **Report Date:** 08/08/24

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: USDA20b										Batch: R197205
Lab ID: G24070190-008ADUP	Sample Duplicate					Run: SOIL CALC_240801A			07/29/24 17:37	
Sodium Adsorption Ratio (SAR)		ND	unitless	0.10					30	
Lab ID: G24070190-018ADUP	Sample Duplicate					Run: SOIL CALC_240801A			07/29/24 17:37	
Sodium Adsorption Ratio (SAR)		ND	unitless	0.10					30	
Lab ID: G24070190-028ADUP	Sample Duplicate					Run: SOIL CALC_240801A			07/29/24 17:37	
Sodium Adsorption Ratio (SAR)		4.73	unitless	0.10				8.5	30	
Lab ID: G24070190-038ADUP	Sample Duplicate					Run: SOIL CALC_240801A			07/29/24 17:37	
Sodium Adsorption Ratio (SAR)		2.81	unitless	0.10				0.7	30	
Lab ID: G24070190-048ADUP	Sample Duplicate					Run: SOIL CALC_240801A			07/29/24 17:37	
Sodium Adsorption Ratio (SAR)		4.74	unitless	0.10				2.6	30	
Lab ID: G24070190-058ADUP	Sample Duplicate					Run: SOIL CALC_240801A			07/29/24 17:37	
Sodium Adsorption Ratio (SAR)		6.18	unitless	0.10				0.8	30	
Lab ID: G24070190-068ADUP	Sample Duplicate					Run: SOIL CALC_240801A			07/29/24 17:37	
Sodium Adsorption Ratio (SAR)		5.11	unitless	0.10				7.2	30	
Lab ID: G24070190-078ADUP	Sample Duplicate					Run: SOIL CALC_240801A			07/29/24 17:37	
Sodium Adsorption Ratio (SAR)		3.18	unitless	0.10				5.5	30	
Lab ID: LCS-72924	Laboratory Control Sample					Run: SOIL CALC_240801A			07/29/24 17:37	
Sodium Adsorption Ratio (SAR)		6.08	unitless	0.10	91	80	120			
Lab ID: LCS-72925	Laboratory Control Sample					Run: SOIL CALC_240801A			07/29/24 17:37	
Sodium Adsorption Ratio (SAR)		6.37	unitless	0.10	96	80	120			
Lab ID: LCS-72926	Laboratory Control Sample					Run: SOIL CALC_240801A			07/29/24 17:37	
Sodium Adsorption Ratio (SAR)		6.18	unitless	0.10	93	80	120			
Lab ID: LCS-72927	Laboratory Control Sample					Run: SOIL CALC_240801A			07/29/24 17:37	
Sodium Adsorption Ratio (SAR)		6.33	unitless	0.10	95	80	120			

Qualifiers:

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QA/QC Summary Report

Prepared by Helena, MT Branch

Client: Mullinax Inc. **Work Order:** G24070190 **Report Date:** 08/08/24

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: **USDA27a**										Batch: 72924
Lab ID: **LCS-72924**	Laboratory Control Sample					Run: SOIL DRYING OVEN 2_24072				07/24/24 08:02
Saturation		39.3	%	0.10	94	80	120			
Lab ID: **G24070190-008ADUP**	Sample Duplicate					Run: SOIL DRYING OVEN 2_24072				07/24/24 08:18
Saturation		54.0	%	0.10				2.2	20	
Lab ID: **G24070190-018ADUP**	Sample Duplicate					Run: SOIL DRYING OVEN 2_24072				07/24/24 08:19
Saturation		59.2	%	0.10				1.1	20	
Method: **USDA27a**										Batch: 72966
Lab ID: **LCS-72966**	Laboratory Control Sample					Run: SOIL DRYING OVEN 2_24072				07/24/24 10:34
Saturation		43.1	%	0.10	103	80	120			
Lab ID: **H24060861-018ADUP**	Sample Duplicate					Run: SOIL DRYING OVEN 2_24072				07/24/24 10:38
Saturation		55.9	%	0.10				7.7	20	
Method: **USDA27a**										Batch: 72925
Lab ID: **LCS-72925**	Laboratory Control Sample					Run: SOIL DRYING OVEN 2_24072				07/25/24 08:46
Saturation		41.1	%	0.10	99	80	120			
Lab ID: **G24070190-028ADUP**	Sample Duplicate					Run: SOIL DRYING OVEN 2_24072				07/25/24 08:48
Saturation		77.2	%	0.10				3.8	20	
Lab ID: **G24070190-038ADUP**	Sample Duplicate					Run: SOIL DRYING OVEN 2_24072				07/25/24 08:50
Saturation		91.8	%	0.10				7.0	20	
Method: **USDA27a**										Batch: 72926
Lab ID: **LCS-72926**	Laboratory Control Sample					Run: SOIL DRYING OVEN 2_24072				07/25/24 09:19
Saturation		42.3	%	0.10	101	80	120			
Lab ID: **G24070190-048ADUP**	Sample Duplicate					Run: SOIL DRYING OVEN 2_24072				07/25/24 09:21
Saturation		118	%	0.10				0.1	20	
Lab ID: **G24070190-058ADUP**	Sample Duplicate					Run: SOIL DRYING OVEN 2_24072				07/25/24 09:23
Saturation		68.9	%	0.10				6.9	20	

Qualifiers:

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QA/QC Summary Report

Prepared by Helena, MT Branch

Client: Mullinax Inc. **Work Order:** G24070190 **Report Date:** 08/08/24

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: USDA27a										Batch: 72927
Lab ID: LCS-72927	Laboratory Control Sample					Run: SOIL DRYING OVEN 2_24072				07/26/24 07:31
Saturation		41.6	%	0.10	100	80	120			
Lab ID: G24070190-068ADUP	Sample Duplicate					Run: SOIL DRYING OVEN 2_24072				07/26/24 07:32
Saturation		67.6	%	0.10				0.3	20	
Lab ID: G24070190-078ADUP	Sample Duplicate					Run: SOIL DRYING OVEN 2_24072				07/26/24 07:33
Saturation		59.3	%	0.10				11	20	
Method: USDA27a										Batch: 72928
Lab ID: LCS-72928	Laboratory Control Sample					Run: SOIL DRYING OVEN 2_24072				07/26/24 07:49
Saturation		40.7	%	0.10	97	80	120			
Lab ID: H24070616-006ADUP	Sample Duplicate					Run: SOIL DRYING OVEN 2_24072				07/26/24 07:50
Saturation		47.4	%	0.10				0.9	20	
Method: USDA27a										Batch: 73021
Lab ID: LCS-73021	Laboratory Control Sample					Run: SOIL DRYING OVEN 2_24073				07/30/24 08:28
Saturation		44.1	%	0.10	106	80	120			
Lab ID: G24070190-022ADUP	Sample Duplicate					Run: SOIL DRYING OVEN 2_24073				07/30/24 08:28
Saturation		91.9	%	0.10				9.6	20	
Method: USDA27a										Batch: 73111
Lab ID: LCS-73111	Laboratory Control Sample					Run: SOIL DRYING OVEN 2_24080				08/01/24 09:18
Saturation		42.1	%	0.10	101	80	120			
Lab ID: H24070778-010ADUP	Sample Duplicate					Run: SOIL DRYING OVEN 2_24080				08/01/24 09:18
Saturation		121	%	0.10				4.7	20	

Qualifiers:

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QA/QC Summary Report

Prepared by Helena, MT Branch

Client: Mullinax Inc. **Work Order:** G24070190 **Report Date:** 08/08/24

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: ASA10-3									Analytical Run: SOIL EC_240725A	
Lab ID: CCV_1_240724_1	Continuing Calibration Verification Standard								07/24/24 11:43	
Conductivity, sat. paste		4.78	mmhos/cm	0.10	96	90	110			
Lab ID: CCV1_1_240724_1	Continuing Calibration Verification Standard								07/24/24 11:43	
Conductivity, sat. paste		0.927	mmhos/cm	0.10	93	90	110			
Lab ID: CCV_3_240724_1	Continuing Calibration Verification Standard								07/24/24 11:56	
Conductivity, sat. paste		4.70	mmhos/cm	0.10	94	90	110			
Method: ASA10-3									Batch: 72924	
Lab ID: MB-72924	Method Blank					Run: SOIL EC_240725A			07/24/24 11:44	
Conductivity, sat. paste		ND	mmhos/cm	0.05						
Lab ID: LCS-72924	Laboratory Control Sample					Run: SOIL EC_240725A			07/24/24 11:45	
Conductivity, sat. paste		3.46	mmhos/cm	0.10	89	80	120			
Lab ID: G24070190-008ADUP	Sample Duplicate					Run: SOIL EC_240725A			07/24/24 11:54	
Conductivity, sat. paste		0.717	mmhos/cm	0.10				10	20	
Lab ID: G24070190-018ADUP	Sample Duplicate					Run: SOIL EC_240725A			07/24/24 12:05	
Conductivity, sat. paste		0.667	mmhos/cm	0.10				14	20	

Qualifiers:

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QA/QC Summary Report

Prepared by Helena, MT Branch

Client: Mullinax Inc. **Work Order:** G24070190 **Report Date:** 08/08/24

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: ASA10-3									Analytical Run: SOIL EC_240726B	
Lab ID: ICV_1_240724_1	Initial Calibration Verification Standard								07/26/24 08:03	
Conductivity, sat. paste		1.36	mmhos/cm	0.10	96	90	110			
Lab ID: CCV_1_240724_1	Continuing Calibration Verification Standard								07/26/24 08:03	
Conductivity, sat. paste		4.74	mmhos/cm	0.10	95	90	110			
Lab ID: CCV1_1_240724_1	Continuing Calibration Verification Standard								07/26/24 08:04	
Conductivity, sat. paste		0.954	mmhos/cm	0.10	95	90	110			
Lab ID: ICV_1_240724_1	Initial Calibration Verification Standard								07/26/24 08:30	
Conductivity, sat. paste		1.35	mmhos/cm	0.10	96	90	110			
Lab ID: CCV_1_240724_1	Continuing Calibration Verification Standard								07/26/24 08:31	
Conductivity, sat. paste		4.67	mmhos/cm	0.10	93	90	110			
Lab ID: CCV1_1_240724_1	Continuing Calibration Verification Standard								07/26/24 08:31	
Conductivity, sat. paste		0.953	mmhos/cm	0.10	95	90	110			
Lab ID: ICV_1_240725_1	Initial Calibration Verification Standard								07/26/24 12:47	
Conductivity, sat. paste		1.29	mmhos/cm	0.10	91	90	110			
Lab ID: CCV_1_240725_1	Continuing Calibration Verification Standard								07/26/24 12:55	
Conductivity, sat. paste		5.04	mmhos/cm	0.10	101	90	110			
Lab ID: CCV1_1_240725_1	Continuing Calibration Verification Standard								07/26/24 12:56	
Conductivity, sat. paste		0.919	mmhos/cm	0.10	92	90	110			
Lab ID: ICV_1_240725_1	Initial Calibration Verification Standard								07/26/24 13:19	
Conductivity, sat. paste		1.30	mmhos/cm	0.10	92	90	110			
Lab ID: CCV_1_240725_1	Continuing Calibration Verification Standard								07/26/24 13:19	
Conductivity, sat. paste		4.83	mmhos/cm	0.10	97	90	110			
Lab ID: CCV1_1_240725_1	Continuing Calibration Verification Standard								07/26/24 13:20	
Conductivity, sat. paste		0.914	mmhos/cm	0.10	91	90	110			
Method: ASA10-3									Batch: 72925	
Lab ID: MB-72925	Method Blank					Run: SOIL EC_240726B			07/26/24 08:04	
Conductivity, sat. paste		ND	mmhos/cm	0.05						
Lab ID: LCS-72925	Laboratory Control Sample					Run: SOIL EC_240726B			07/26/24 08:05	
Conductivity, sat. paste		3.93	mmhos/cm	0.10	101	80	120			
Lab ID: G24070190-028ADUP	Sample Duplicate					Run: SOIL EC_240726B			07/26/24 08:14	
Conductivity, sat. paste		0.643	mmhos/cm	0.10				13	20	
Lab ID: G24070190-038ADUP	Sample Duplicate					Run: SOIL EC_240726B			07/26/24 08:26	
Conductivity, sat. paste		1.74	mmhos/cm	0.10				0.3	20	
Method: ASA10-3									Batch: 72926	

Qualifiers:

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QA/QC Summary Report

Prepared by Helena, MT Branch

Client: Mullinax Inc. **Work Order:** G24070190 **Report Date:** 08/08/24

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: ASA10-3										Batch: 72926
Lab ID: G24070190-058ADUP	Sample Duplicate					Run: SOIL EC_240726B				07/26/24 08:53
Conductivity, sat. paste		8.47	mmhos/cm	0.10				4.3	20	
Lab ID: MB-72926	Method Blank					Run: SOIL EC_240726B				07/26/24 08:32
Conductivity, sat. paste		ND	mmhos/cm	0.05						
Lab ID: LCS-72926	Laboratory Control Sample					Run: SOIL EC_240726B				07/26/24 08:33
Conductivity, sat. paste		3.56	mmhos/cm	0.10	92	80	120			
Lab ID: G24070190-048ADUP	Sample Duplicate					Run: SOIL EC_240726B				07/26/24 08:42
Conductivity, sat. paste		5.89	mmhos/cm	0.10				3.2	20	
Method: ASA10-3										Batch: 72927
Lab ID: MB-72927	Method Blank					Run: SOIL EC_240726B				07/26/24 12:56
Conductivity, sat. paste		ND	mmhos/cm	0.05						
Lab ID: LCS-72927	Laboratory Control Sample					Run: SOIL EC_240726B				07/26/24 12:57
Conductivity, sat. paste		3.46	mmhos/cm	0.10	89	80	120			
Lab ID: G24070190-068ADUP	Sample Duplicate					Run: SOIL EC_240726B				07/26/24 13:05
Conductivity, sat. paste		5.17	mmhos/cm	0.10				11	20	
Lab ID: G24070190-078ADUP	Sample Duplicate					Run: SOIL EC_240726B				07/26/24 13:16
Conductivity, sat. paste		5.93	mmhos/cm	0.10				9.0	20	
Method: ASA10-3										Batch: 72928
Lab ID: MB-72928	Method Blank					Run: SOIL EC_240726B				07/26/24 13:20
Conductivity, sat. paste		ND	mmhos/cm	0.05						
Lab ID: LCS-72928	Laboratory Control Sample					Run: SOIL EC_240726B				07/26/24 13:21
Conductivity, sat. paste		3.49	mmhos/cm	0.10	90	80	120			
Lab ID: H24070616-006ADUP	Sample Duplicate					Run: SOIL EC_240726B				07/26/24 13:30
Conductivity, sat. paste		3.44	mmhos/cm	0.10				0.5	20	
Lab ID: H24070616-016ADUP	Sample Duplicate					Run: SOIL EC_240726B				07/26/24 13:39
Conductivity, sat. paste		1.97	mmhos/cm	0.10				1.4	20	

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QA/QC Summary Report

Prepared by Helena, MT Branch

Client: Mullinax Inc. **Work Order:** G24070190 **Report Date:** 08/08/24

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: **ASA10-3**							al Run: SOIL PH METER - ORION A211_240725A			
Lab ID: **CCV_1_240723_1**	Continuing Calibration Verification Standard									07/24/24 09:10
pH, sat. paste		7.02	s.u.	0.10	100	98.6	101.4			
Lab ID: **CCV1_1_240723_1**	Continuing Calibration Verification Standard									07/24/24 09:10
pH, sat. paste		4.01	s.u.	0.10	100	97.5	102.5			
Lab ID: **CCV_3_240723_1**	Continuing Calibration Verification Standard									07/24/24 09:21
pH, sat. paste		7.02	s.u.	0.10	100	98.6	101.4			
Method: **ASA10-3**										Batch: 72924
Lab ID: **LCS-72924**	Laboratory Control Sample					Run: SOIL PH METER - ORION A2				07/24/24 09:12
pH, sat. paste		7.91	s.u.	0.10	99	95	105			
Lab ID: **G24070190-008ADUP**	Sample Duplicate					Run: SOIL PH METER - ORION A2				07/24/24 09:19
pH, sat. paste		7.10	s.u.	0.10				0.1	20	
Lab ID: **G24070190-018ADUP**	Sample Duplicate					Run: SOIL PH METER - ORION A2				07/24/24 09:29
pH, sat. paste		6.68	s.u.	0.10				0.3	20	

Qualifiers:

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QA/QC Summary Report

Prepared by Helena, MT Branch

Client: Mullinax Inc. **Work Order:** G24070190 **Report Date:** 08/08/24

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: **ASA10-3**							al Run: SOIL PH METER - ORION A211_240726B			
Lab ID: **ICV_1_240724_1**	Initial Calibration Verification Standard									07/25/24 09:50
pH, sat. paste		7.04	s.u.	0.10	101	98.6	101.4			
Lab ID: **CCV_1_240724_1**	Continuing Calibration Verification Standard									07/25/24 09:51
pH, sat. paste		7.04	s.u.	0.10	101	98.6	101.4			
Lab ID: **CCV1_1_240724_1**	Continuing Calibration Verification Standard									07/25/24 09:52
pH, sat. paste		4.02	s.u.	0.10	100	97.5	102.5			
Lab ID: **ICV_1_240724_1**	Initial Calibration Verification Standard									07/25/24 10:30
pH, sat. paste		7.04	s.u.	0.10	101	98.6	101.4			
Lab ID: **CCV_1_240724_1**	Continuing Calibration Verification Standard									07/25/24 10:31
pH, sat. paste		7.05	s.u.	0.10	101	98.6	101.4			
Lab ID: **CCV1_1_240724_1**	Continuing Calibration Verification Standard									07/25/24 10:31
pH, sat. paste		4.00	s.u.	0.10	100	97.5	102.5			
Lab ID: **CCV_3_240724_1**	Continuing Calibration Verification Standard									07/25/24 10:43
pH, sat. paste		7.01	s.u.	0.10	100	98.6	101.4			
Method: **ASA10-3**										Batch: 72925
Lab ID: **LCS-72925**	Laboratory Control Sample					Run: SOIL PH METER - ORION A2				07/25/24 09:53
pH, sat. paste		7.91	s.u.	0.10	99	95	105			
Lab ID: **G24070190-028ADUP**	Sample Duplicate					Run: SOIL PH METER - ORION A2				07/25/24 10:02
pH, sat. paste		7.25	s.u.	0.10				0.0	20	
Lab ID: **G24070190-038ADUP**	Sample Duplicate					Run: SOIL PH METER - ORION A2				07/25/24 10:17
pH, sat. paste		8.33	s.u.	0.10				0.1	20	
Method: **ASA10-3**										Batch: 72926
Lab ID: **LCS-72926**	Laboratory Control Sample					Run: SOIL PH METER - ORION A2				07/25/24 10:32
pH, sat. paste		7.90	s.u.	0.10	99	95	105			
Lab ID: **G24070190-048ADUP**	Sample Duplicate					Run: SOIL PH METER - ORION A2				07/25/24 10:41
pH, sat. paste		7.73	s.u.	0.10				0.0	20	
Lab ID: **G24070190-058ADUP**	Sample Duplicate					Run: SOIL PH METER - ORION A2				07/25/24 10:52
pH, sat. paste		8.21	s.u.	0.10				0.2	20	

Qualifiers:

RL - Analyte Reporting Limit

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QA/QC Summary Report

Prepared by Helena, MT Branch

Client: Mullinax Inc. **Work Order:** G24070190 **Report Date:** 08/08/24

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: ASA10-3							al Run: SOIL PH METER - ORION A211_240726C			
Lab ID: ICV_1_240725_1	Initial Calibration Verification Standard									07/26/24 09:38
pH, sat. paste		7.01	s.u.	0.10	100	98.6	101.4			
Lab ID: CCV_1_240725_1	Continuing Calibration Verification Standard									07/26/24 09:39
pH, sat. paste		6.99	s.u.	0.10	100	98.6	101.4			
Lab ID: CCV1_1_240725_1	Continuing Calibration Verification Standard									07/26/24 09:40
pH, sat. paste		4.00	s.u.	0.10	100	97.5	102.5			
Lab ID: ICV_1_240725_1	Initial Calibration Verification Standard									07/26/24 10:21
pH, sat. paste		6.99	s.u.	0.10	100	98.6	101.4			
Lab ID: CCV_1_240725_1	Continuing Calibration Verification Standard									07/26/24 10:21
pH, sat. paste		6.97	s.u.	0.10	100	98.6	101.4			
Lab ID: CCV1_1_240725_1	Continuing Calibration Verification Standard									07/26/24 10:22
pH, sat. paste		3.97	s.u.	0.10	99	97.5	102.5			
Method: ASA10-3										Batch: 72927
Lab ID: LCS-72927	Laboratory Control Sample					Run: SOIL PH METER - ORION A2				07/26/24 09:42
pH, sat. paste		7.91	s.u.	0.10	99	95	105			
Lab ID: G24070190-068ADUP	Sample Duplicate					Run: SOIL PH METER - ORION A2				07/26/24 09:59
pH, sat. paste		8.00	s.u.	0.10				0.1	20	
Lab ID: G24070190-078ADUP	Sample Duplicate					Run: SOIL PH METER - ORION A2				07/26/24 10:17
pH, sat. paste		8.14	s.u.	0.10				0.0	20	
Method: ASA10-3										Batch: 72928
Lab ID: LCS-72928	Laboratory Control Sample					Run: SOIL PH METER - ORION A2				07/26/24 10:23
pH, sat. paste		7.86	s.u.	0.10	99	95	105			
Lab ID: H24070616-006ADUP	Sample Duplicate					Run: SOIL PH METER - ORION A2				07/26/24 10:47
pH, sat. paste		7.67	s.u.	0.10				0.0	20	

Qualifiers:

RL - Analyte Reporting Limit

ND - Not detected at the Reporting Limit (RL)

QA/QC Summary Report

Prepared by Helena, MT Branch

Client: Mullinax Inc. **Work Order:** G24070190 **Report Date:** 08/08/24

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: **ASA15-5**										Batch: 72930
Lab ID: **LCS-72930**	3	Laboratory Control Sample				Run: SOIL HYDROMETER_240726				07/24/24 16:04
Sand		50.0	%	1.0	104	70	130			
Silt		32.0	%	1.0	110	70	130			
Clay		18.0	%	1.0	78	70	130			
Lab ID: **G24070190-006ADUP**	4	Sample Duplicate				Run: SOIL HYDROMETER_240726				07/24/24 16:04
Sand		40.0	%	1.0				5.1	20	
Silt		26.0	%	1.0				7.4	20	
Clay		34.0	%	1.0				0.0	20	
Texture		CL		1.0						
Lab ID: **G24070190-016ADUP**	4	Sample Duplicate				Run: SOIL HYDROMETER_240726				07/24/24 16:04
Sand		40.0	%	1.0				0.0	20	
Silt		32.0	%	1.0				0.0	20	
Clay		28.0	%	1.0				0.0	20	
Texture		CL		1.0						
Lab ID: **G24070190-026ADUP**	4	Sample Duplicate				Run: SOIL HYDROMETER_240726				07/24/24 16:04
Sand		32.0	%	1.0				0.0	20	
Silt		54.0	%	1.0				0.0	20	
Clay		14.0	%	1.0				0.0	20	
Texture		SiL		1.0						
Lab ID: **G24070190-036ADUP**	4	Sample Duplicate				Run: SOIL HYDROMETER_240726				07/24/24 16:04
Sand		50.0	%	1.0				0.0	20	
Silt		14.0	%	1.0				15	20	
Clay		36.0	%	1.0				5.4	20	
Texture		SC		1.0						
Lab ID: **G24070190-041ADUP**	4	Sample Duplicate				Run: SOIL HYDROMETER_240726				07/24/24 16:04
Sand		28.0	%	1.0				0.0	20	
Silt		26.0	%	1.0				0.0	20	
Clay		46.0	%	1.0				0.0	20	
Texture		C		1.0						
Lab ID: **LCS-72930**		Laboratory Control Sample				Run: SOIL HYDROMETER_240726				07/26/24 16:05
Very Fine Sand		35	wt%	1	97	50	133			
Lab ID: **G24070190-006ADUP**		Sample Duplicate				Run: SOIL HYDROMETER_240726				07/26/24 16:05
Very Fine Sand		54	wt%	1				0.3	30	
Lab ID: **G24070190-016ADUP**		Sample Duplicate				Run: SOIL HYDROMETER_240726				07/26/24 16:05
Very Fine Sand		48	wt%	1				0.8	30	
Lab ID: **G24070190-026ADUP**		Sample Duplicate				Run: SOIL HYDROMETER_240726				07/26/24 16:05
Very Fine Sand		73	wt%	1				0.6	30	
Lab ID: **G24070190-036ADUP**		Sample Duplicate				Run: SOIL HYDROMETER_240726				07/26/24 16:05
Very Fine Sand		36	wt%	1				12	30	

Qualifiers:

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QA/QC Summary Report

Prepared by Helena, MT Branch

Client: Mullinax Inc. **Work Order:** G24070190 **Report Date:** 08/08/24

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: **ASA15-5**										Batch: 72930
Lab ID: **G24070190-041ADUP**	Sample Duplicate					Run: SOIL HYDROMETER_240726				07/26/24 16:05
Very Fine Sand		55	wt%	1				2.4	30	

Qualifiers:

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QA/QC Summary Report

Prepared by Helena, MT Branch

Client: Mullinax Inc. **Work Order:** G24070190 **Report Date:** 08/08/24

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: ASA15-5										Batch: 72931
Lab ID: G24070190-046ADUP	4	Sample Duplicate				Run: SOIL HYDROMETER_240731			07/29/24 15:44	
Sand		42.0	%	1.0				10	20	
Silt		14.0	%	1.0				13	20	
Clay		44.0	%	1.0				4.4	20	
Texture		C		1.0						
Lab ID: G24070190-056ADUP	4	Sample Duplicate				Run: SOIL HYDROMETER_240731			07/29/24 15:44	
Sand		42.0	%	1.0				0.0	20	
Silt		40.0	%	1.0				0.0	20	
Clay		18.0	%	1.0				0.0	20	
Texture		L		1.0						
Lab ID: G24070190-066ADUP	4	Sample Duplicate				Run: SOIL HYDROMETER_240731			07/29/24 15:44	
Sand		22.0	%	1.0				0.0	20	
Silt		40.0	%	1.0				0.0	20	
Clay		38.0	%	1.0				0.0	20	
Texture		CL		1.0						
Lab ID: G24070190-076ADUP	4	Sample Duplicate				Run: SOIL HYDROMETER_240731			07/29/24 15:44	
Sand		22.0	%	1.0				9.5	20	
Silt		28.0	%	1.0				13	20	
Clay		50.0	%	1.0				4.1	20	
Texture		C		1.0						
Lab ID: G24070190-083ADUP	4	Sample Duplicate				Run: SOIL HYDROMETER_240731			07/29/24 15:44	
Sand		6.00	%	1.0				40	20	
Silt		24.0	%	1.0				0.0	20	
Clay		70.0	%	1.0				2.8	20	
Texture		C		1.0						
Lab ID: LCS-72931	3	Laboratory Control Sample				Run: SOIL HYDROMETER_240731			07/29/24 15:44	
Sand		48.0	%	1.0	100	70	130			
Silt		30.0	%	1.0	103	70	130			
Clay		22.0	%	1.0	96	70	130			
Method: ASA15-5										Batch: R197182
Lab ID: LCS-72931		Laboratory Control Sample				Run: SOIL HYDROMETER_240731			07/31/24 15:44	
Very Fine Sand		33	wt%	1	91	50	133			
Lab ID: G24070190-083ADUP		Sample Duplicate				Run: SOIL HYDROMETER_240731			07/31/24 15:44	
Very Fine Sand		69	wt%	1				16	30	
Lab ID: G24070190-046ADUP		Sample Duplicate				Run: SOIL HYDROMETER_240731			07/31/24 15:44	
Very Fine Sand		98	wt%	1				0.6	30	
Lab ID: G24070190-056ADUP		Sample Duplicate				Run: SOIL HYDROMETER_240731			07/31/24 15:44	
Very Fine Sand		51	wt%	1				1.5	30	

Qualifiers:

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QA/QC Summary Report

Prepared by Helena, MT Branch

Client: Mullinax Inc. **Work Order:** G24070190 **Report Date:** 08/08/24

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: ASA15-5										Batch: R197182
Lab ID: G24070190-066ADUP		Sample Duplicate				Run: SOIL HYDROMETER_240731				07/31/24 15:44
Very Fine Sand		66	wt%	1				4.9	30	
Lab ID: G24070190-076ADUP		Sample Duplicate				Run: SOIL HYDROMETER_240731				07/31/24 15:44
Very Fine Sand		77	wt%	1				0.6	30	
Method: ASA15-5										Batch: 73122
Lab ID: LCS-73122	3	Laboratory Control Sample				Run: SOIL HYDROMETER_240806				08/01/24 15:21
Sand		48.0	%	1.0	100	70	130			
Silt		28.0	%	1.0	97	70	130			
Clay		24.0	%	1.0	104	70	130			
Method: ASA15-5										Batch: 73163
Lab ID: G24070190-068ADUP	4	Sample Duplicate				Run: SOIL HYDROMETER_240806				08/05/24 15:21
Sand		18.0	%	1.0				11	20	
Silt		48.0	%	1.0				4.3	20	
Clay		34.0	%	1.0				0.0	20	
Texture		SiCL		1.0						
Lab ID: LCS-73163	3	Laboratory Control Sample				Run: SOIL HYDROMETER_240806				08/05/24 15:21
Sand		50.0	%	1.0	104	70	130			
Silt		26.0	%	1.0	90	70	130			
Clay		24.0	%	1.0	104	70	130			

Qualifiers:

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QA/QC Summary Report

Prepared by Helena, MT Branch

Client: Mullinax Inc. **Work Order:** G24070190 **Report Date:** 08/08/24

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: **ASA29-3**										Batch: 72938
Lab ID: **LCS-72938**	Laboratory Control Sample					Run: MISC SOILS_240726A				07/26/24 11:49
Organic Matter		1.14	%	0.17	95	70	130			
Lab ID: **MB-72938**	Method Blank					Run: MISC SOILS_240726A				07/26/24 11:49
Organic Matter		0.02	%	0.02						
Lab ID: **H24070499-006ADUP**	Sample Duplicate					Run: MISC SOILS_240726A				07/26/24 11:49
Organic Matter		0.513	%	0.17						

Qualifiers:

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QA/QC Summary Report

Prepared by Helena, MT Branch

Client: Mullinax Inc. **Work Order:** G24070190 **Report Date:** 08/08/24

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: ASA29-3										Batch: 72934
Lab ID: LCS-72934	Laboratory Control Sample					Run: MISC SOILS_240731A				07/31/24 15:10
Organic Matter		1.15	%	0.17	95	70	130			
Lab ID: MB-72934	Method Blank					Run: MISC SOILS_240731A				07/31/24 15:10
Organic Matter		ND	%	0.02						
Lab ID: G24070190-009ADUP	Sample Duplicate					Run: MISC SOILS_240731A				07/31/24 15:10
Organic Matter		2.38	%	0.17						
Lab ID: G24070190-019ADUP	Sample Duplicate					Run: MISC SOILS_240731A				07/31/24 15:10
Organic Matter		1.45	%	0.17						
Method: ASA29-3										Batch: 72935
Lab ID: LCS-72935	Laboratory Control Sample					Run: MISC SOILS_240731A				07/31/24 15:10
Organic Matter		1.30	%	0.17	108	70	130			
Lab ID: MB-72935	Method Blank					Run: MISC SOILS_240731A				07/31/24 15:10
Organic Matter		0.02	%	0.02						
Lab ID: G24070190-029ADUP	Sample Duplicate					Run: MISC SOILS_240731A				07/31/24 15:10
Organic Matter		0.591	%	0.17						
Lab ID: G24070190-039ADUP	Sample Duplicate					Run: MISC SOILS_240731A				07/31/24 15:10
Organic Matter		0.321	%	0.17						
Method: ASA29-3										Batch: 72936
Lab ID: LCS-72936	Laboratory Control Sample					Run: MISC SOILS_240731A				07/31/24 15:10
Organic Matter		1.28	%	0.17	106	70	130			
Lab ID: MB-72936	Method Blank					Run: MISC SOILS_240731A				07/31/24 15:10
Organic Matter		0.03	%	0.02						
Lab ID: G24070190-049ADUP	Sample Duplicate					Run: MISC SOILS_240731A				07/31/24 15:10
Organic Matter		0.687	%	0.17						
Lab ID: G24070190-059ADUP	Sample Duplicate					Run: MISC SOILS_240731A				07/31/24 15:10
Organic Matter		0.491	%	0.17						
Method: ASA29-3										Batch: 72937
Lab ID: LCS-72937	Laboratory Control Sample					Run: MISC SOILS_240731A				07/31/24 15:10
Organic Matter		1.18	%	0.17	98	70	130			
Lab ID: MB-72937	Method Blank					Run: MISC SOILS_240731A				07/31/24 15:10
Organic Matter		ND	%	0.02						
Lab ID: G24070190-069ADUP	Sample Duplicate					Run: MISC SOILS_240731A				07/31/24 15:10
Organic Matter		0.316	%	0.17						
Lab ID: G24070190-079ADUP	Sample Duplicate					Run: MISC SOILS_240731A				07/31/24 15:10
Organic Matter		0.350	%	0.17						

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QA/QC Summary Report

Prepared by Helena, MT Branch

Client: Mullinax Inc. **Work Order:** G24070190 **Report Date:** 08/08/24

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: **SW6010B**									Analytical Run: ICP2-HE_240725A	
Lab ID: **ICV**		Initial Calibration Verification Standard							07/25/24 08:59	
Boron		0.797	mg/L	0.10	100	90	110			
Lab ID: **CCV**		Continuing Calibration Verification Standard							07/25/24 09:09	
Boron		2.53	mg/L	0.10	101	90	110			
Lab ID: **ICSA**		Interference Check Sample A							07/25/24 09:20	
Boron		ND	mg/L	0.10		0	0			
Lab ID: **ICSAB**		Interference Check Sample AB							07/25/24 09:24	
Boron		0.955	mg/L	0.10	95	80	120			
Method: **SW6010B**									Batch: 72949	
Lab ID: **MB-72949**		Method Blank				Run: ICP2-HE_240725A			07/25/24 17:21	
Boron		ND	mg/kg	0.02						
Lab ID: **LFB-72949**		Laboratory Fortified Blank				Run: ICP2-HE_240725A			07/25/24 17:25	
Boron		3.85	mg/kg	0.10	96	80	120			
Lab ID: **LCS-72949**		Laboratory Control Sample				Run: ICP2-HE_240725A			07/25/24 17:29	
Boron		1.19	mg/kg	0.10	91	70	130			
Lab ID: **G24070190-005AMSD2**		Sample Matrix Spike Duplicate				Run: ICP2-HE_240725A			07/25/24 18:07	
Boron		4.05	mg/kg	0.10	93	75	125	0.7	20	
Lab ID: **G24070190-006Adup**		Sample Duplicate				Run: ICP2-HE_240725A			07/25/24 18:14	
Boron		0.369	mg/kg	0.10				4.0	20	
Lab ID: **G24070190-016Adup**		Sample Duplicate				Run: ICP2-HE_240725A			07/25/24 19:12	
Boron		0.258	mg/kg	0.10				2.5	20	
Method: **SW6010B**									Batch: 72950	
Lab ID: **MB-72950**		Method Blank				Run: ICP2-HE_240725A			07/25/24 19:31	
Boron		ND	mg/kg	0.02						
Lab ID: **LFB-72950**		Laboratory Fortified Blank				Run: ICP2-HE_240725A			07/25/24 19:35	
Boron		3.90	mg/kg	0.10	98	80	120			
Lab ID: **LCS-72950**		Laboratory Control Sample				Run: ICP2-HE_240725A			07/25/24 19:39	
Boron		1.24	mg/kg	0.10	95	70	130			
Lab ID: **G24070190-025AMS2**		Sample Matrix Spike				Run: ICP2-HE_240725A			07/25/24 20:13	
Boron		4.14	mg/kg	0.10	94	75	125			
Lab ID: **G24070190-025AMSD2**		Sample Matrix Spike Duplicate				Run: ICP2-HE_240725A			07/25/24 20:17	
Boron		4.16	mg/kg	0.10	95	75	125	0.7	20	
Lab ID: **G24070190-026Adup**		Sample Duplicate				Run: ICP2-HE_240725A			07/25/24 20:24	
Boron		0.443	mg/kg	0.10				5.9	20	

Qualifiers:

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QA/QC Summary Report

Prepared by Helena, MT Branch

Client: Mullinax Inc. **Work Order:** G24070190 **Report Date:** 08/08/24

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: **SW6010B**										Batch: 72950
Lab ID: **G24070190-036Adup**	Sample Duplicate					Run: ICP2-HE_240725A				07/25/24 21:45
Boron		0.588	mg/kg	0.10				8.1	20	
Method: **SW6010B**										Batch: 72951
Lab ID: **MB-72951**	Method Blank					Run: ICP2-HE_240725A				07/25/24 22:12
Boron		ND	mg/kg	0.02						
Lab ID: **LFB-72951**	Laboratory Fortified Blank					Run: ICP2-HE_240725A				07/25/24 22:16
Boron		3.82	mg/kg	0.10	95	80	120			
Lab ID: **LCS-72951**	Laboratory Control Sample					Run: ICP2-HE_240725A				07/25/24 22:19
Boron		1.14	mg/kg	0.10	88	70	130			
Lab ID: **G24070190-045AMS2**	Sample Matrix Spike					Run: ICP2-HE_240725A				07/25/24 22:54
Boron		4.51	mg/kg	0.10	97	75	125			
Lab ID: **G24070190-045AMSD2**	Sample Matrix Spike Duplicate					Run: ICP2-HE_240725A				07/25/24 22:57
Boron		4.44	mg/kg	0.10	96	75	125	1.5	20	
Lab ID: **G24070190-046Adup**	Sample Duplicate					Run: ICP2-HE_240725A				07/25/24 23:05
Boron		0.987	mg/kg	0.10				0.7	20	
Lab ID: **G24070190-056Adup**	Sample Duplicate					Run: ICP2-HE_240725A				07/25/24 23:55
Boron		0.271	mg/kg	0.10				0.9	20	

Qualifiers:

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QA/QC Summary Report

Prepared by Helena, MT Branch

Client: Mullinax Inc. **Work Order:** G24070190 **Report Date:** 08/08/24

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: SW6010B										Analytical Run: ICP2-HE_240726B
Lab ID: ICV	4	Initial Calibration Verification Standard								07/26/24 08:56
Boron		0.795	mg/L	0.10	99	90	110			
Calcium		41.2	mg/L	1.0	103	90	110			
Magnesium		40.9	mg/L	1.0	102	90	110			
Sodium		40.4	mg/L	1.0	101	90	110			
Lab ID: CCV	4	Continuing Calibration Verification Standard								07/26/24 09:22
Boron		2.50	mg/L	0.10	100	90	110			
Calcium		26.7	mg/L	1.0	107	90	110			
Magnesium		26.3	mg/L	1.0	105	90	110			
Sodium		25.4	mg/L	1.0	102	90	110			
Lab ID: ICSA	4	Interference Check Sample A								07/26/24 09:34
Boron		ND	mg/L	0.10		0	0			
Calcium		485	mg/L	1.0	97	80	120			
Magnesium		500	mg/L	1.0	100	80	120			
Sodium		ND	mg/L	1.0		0	0			
Lab ID: ICSAB	4	Interference Check Sample AB								07/26/24 09:38
Boron		0.965	mg/L	0.10	97	80	120			
Calcium		491	mg/L	1.0	98	80	120			
Magnesium		503	mg/L	1.0	101	80	120			
Sodium		20.9	mg/L	1.0	104	80	120			
Method: SW6010B										Batch: 72924
Lab ID: MB-72924	6	Method Blank				Run: ICP2-HE_240726B				07/26/24 21:35
Calcium		ND	mg/L	0.2						
Magnesium		ND	mg/L	0.05						
Sodium		0.05	mg/L	0.03						
Calcium, sat. paste		ND	meq/L	0.009						
Magnesium, sat. paste		ND	meq/L	0.004						
Sodium, sat. paste		0.002	meq/L	0.001						
Lab ID: LFB-72924	6	Laboratory Fortified Blank				Run: ICP2-HE_240726B				07/26/24 21:46
Calcium		46.3	mg/L	1.0	93	80	120			
Magnesium		46.2	mg/L	1.0	92	80	120			
Sodium		48.4	mg/L	1.0	97	80	120			
Calcium, sat. paste		2.31	meq/L	0.050	93	80	120			
Magnesium, sat. paste		3.80	meq/L	0.082	92	80	120			
Sodium, sat. paste		2.10	meq/L	0.043	97	80	120			
Lab ID: LCS-72924	6	Laboratory Control Sample				Run: ICP2-HE_240726B				07/26/24 21:50
Calcium		288	mg/L	1.0	95	70	130			
Magnesium		99.1	mg/L	1.0	84	70	130			
Sodium		469	mg/L	1.0	92	70	130			
Calcium, sat. paste		14.4	meq/L	0.050	95	70	130			
Magnesium, sat. paste		8.16	meq/L	0.082	84	70	130			
Sodium, sat. paste		20.4	meq/L	0.043	92	70	130			

Qualifiers:

RL - Analyte Reporting Limit

ND - Not detected at the Reporting Limit (RL)

QA/QC Summary Report

Prepared by Helena, MT Branch

Client: Mullinax Inc. **Work Order:** G24070190 **Report Date:** 08/08/24

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: SW6010B										Batch: 72924
Lab ID: LCS-72924	6	Laboratory Control Sample				Run: ICP2-HE_240726B				07/26/24 21:50
Lab ID: G24070190-001AMS2	6	Sample Matrix Spike				Run: ICP2-HE_240726B				07/26/24 22:02
Calcium		154	mg/L	1.0	92	70	130			
Magnesium		107	mg/L	1.0	94	70	130			
Sodium		99.9	mg/L	1.0	97	70	130			
Calcium, sat. paste		7.66	meq/L	0.050	92	70	130			
Magnesium, sat. paste		8.80	meq/L	0.082	94	70	130			
Sodium, sat. paste		4.34	meq/L	0.043	97	70	130			
Lab ID: G24070190-001AMSD2	6	Sample Matrix Spike Duplicate				Run: ICP2-HE_240726B				07/26/24 22:05
Calcium		153	mg/L	1.0	91	70	130	0.6	20	
Magnesium		105	mg/L	1.0	91	70	130	2.3	20	
Sodium		97.0	mg/L	1.0	95	70	130	2.9	20	
Calcium, sat. paste		7.62	meq/L	0.050	91	70	130	0.6	20	
Magnesium, sat. paste		8.61	meq/L	0.082	91	70	130	2.3	20	
Sodium, sat. paste		4.22	meq/L	0.043	95	70	130	2.9	20	
Lab ID: G24070190-008Adup	6	Sample Duplicate				Run: ICP2-HE_240726B				07/26/24 22:44
Calcium		141	mg/L	1.0				7.9	30	
Magnesium		19.3	mg/L	1.0				7.0	30	
Sodium		1.43	mg/L	1.0				1.3	30	
Calcium, sat. paste		7.05	meq/L	0.050				7.9	30	
Magnesium, sat. paste		1.59	meq/L	0.082				7.0	30	
Sodium, sat. paste		0.0623	meq/L	0.043				1.3	30	
Lab ID: G24070190-018Adup	6	Sample Duplicate				Run: ICP2-HE_240726B				07/26/24 23:36
Calcium		90.3	mg/L	1.0				16	30	
Magnesium		40.0	mg/L	1.0				15	30	
Sodium		3.85	mg/L	1.0				13	30	
Calcium, sat. paste		4.50	meq/L	0.050				16	30	
Magnesium, sat. paste		3.29	meq/L	0.082				15	30	
Sodium, sat. paste		0.167	meq/L	0.043				13	30	
Method: SW6010B										Batch: 72925
Lab ID: MB-72925	6	Method Blank				Run: ICP2-HE_240726B				07/26/24 23:52
Calcium		ND	mg/L	0.2						
Magnesium		ND	mg/L	0.05						
Sodium		0.06	mg/L	0.03						
Calcium, sat. paste		ND	meq/L	0.009						
Magnesium, sat. paste		ND	meq/L	0.004						
Sodium, sat. paste		0.003	meq/L	0.001						
Lab ID: LFB-72925	6	Laboratory Fortified Blank				Run: ICP2-HE_240726B				07/26/24 23:56
Calcium		44.0	mg/L	1.0	88	80	120			
Magnesium		43.4	mg/L	1.0	87	80	120			
Sodium		46.2	mg/L	1.0	92	80	120			
Calcium, sat. paste		2.20	meq/L	0.050	88	80	120			

Qualifiers:

RL - Analyte Reporting Limit

ND - Not detected at the Reporting Limit (RL)

QA/QC Summary Report

Prepared by Helena, MT Branch

Client: Mullinax Inc. **Work Order:** G24070190 **Report Date:** 08/08/24

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: SW6010B										Batch: 72925
Lab ID: LFB-72925	6	Laboratory Fortified Blank				Run: ICP2-HE_240726B				07/26/24 23:56
Magnesium, sat. paste		3.58	meq/L	0.082	87	80	120			
Sodium, sat. paste		2.01	meq/L	0.043	92	80	120			
Lab ID: LCS-72925	6	Laboratory Control Sample				Run: ICP2-HE_240726B				07/27/24 00:07
Calcium		323	mg/L	1.0	107	70	130			
Magnesium		111	mg/L	1.0	93	70	130			
Sodium		520	mg/L	1.0	102	70	130			
Calcium, sat. paste		16.1	meq/L	0.050	107	70	130			
Magnesium, sat. paste		9.10	meq/L	0.082	93	70	130			
Sodium, sat. paste		22.6	meq/L	0.043	102	70	130			
Lab ID: G24070190-021AMS2	6	Sample Matrix Spike				Run: ICP2-HE_240726B				07/27/24 00:19
Calcium		100	mg/L	1.0	88	70	130			
Magnesium		112	mg/L	1.0	86	70	130			
Sodium		251	mg/L	1.0	101	70	130			
Calcium, sat. paste		5.01	meq/L	0.050	88	70	130			
Magnesium, sat. paste		9.21	meq/L	0.082	86	70	130			
Sodium, sat. paste		10.9	meq/L	0.043	101	70	130			
Lab ID: G24070190-021AMSD2	6	Sample Matrix Spike Duplicate				Run: ICP2-HE_240726B				07/27/24 00:23
Calcium		107	mg/L	1.0	94	70	130	6.3	20	
Magnesium		118	mg/L	1.0	93	70	130	5.6	20	
Sodium		251	mg/L	1.0	101	70	130	0	20	
Calcium, sat. paste		5.34	meq/L	0.050	94	70	130	6.3	20	
Magnesium, sat. paste		9.74	meq/L	0.082	93	70	130	5.6	20	
Sodium, sat. paste		10.9	meq/L	0.043	101	70	130	0	20	
Lab ID: G24070190-028Adup	6	Sample Duplicate				Run: ICP2-HE_240726B				07/27/24 01:01
Calcium		12.6	mg/L	1.0				2.5	30	
Magnesium		16.0	mg/L	1.0				15	30	
Sodium		107	mg/L	1.0				14	30	
Calcium, sat. paste		0.628	meq/L	0.050				2.5	30	
Magnesium, sat. paste		1.32	meq/L	0.082				15	30	
Sodium, sat. paste		4.67	meq/L	0.043				14	30	
Lab ID: G24070190-038Adup	6	Sample Duplicate				Run: ICP2-HE_240726B				07/27/24 01:51
Calcium		47.9	mg/L	1.0				1.1	30	
Magnesium		126	mg/L	1.0				0.8	30	
Sodium		163	mg/L	1.0				1.3	30	
Calcium, sat. paste		2.39	meq/L	0.050				1.1	30	
Magnesium, sat. paste		10.3	meq/L	0.082				0.8	30	
Sodium, sat. paste		7.08	meq/L	0.043				1.3	30	
Method: SW6010B										Batch: 72926
Lab ID: MB-72926	6	Method Blank				Run: ICP2-HE_240726B				07/27/24 02:07
Calcium		ND	mg/L	0.2						
Magnesium		ND	mg/L	0.05						

Qualifiers:

RL - Analyte Reporting Limit

ND - Not detected at the Reporting Limit (RL)

QA/QC Summary Report

Prepared by Helena, MT Branch

Client: Mullinax Inc. **Work Order:** G24070190 **Report Date:** 08/08/24

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: SW6010B										Batch: 72926
Lab ID: MB-72926	6	Method Blank				Run: ICP2-HE_240726B				07/27/24 02:07
Sodium		0.05	mg/L	0.03						
Calcium, sat. paste		ND	meq/L	0.009						
Magnesium, sat. paste		ND	meq/L	0.004						
Sodium, sat. paste		0.002	meq/L	0.001						
Lab ID: LFB-72926	6	Laboratory Fortified Blank				Run: ICP2-HE_240726B				07/27/24 02:11
Calcium		47.7	mg/L	1.0	95	80	120			
Magnesium		47.1	mg/L	1.0	94	80	120			
Sodium		47.4	mg/L	1.0	95	80	120			
Calcium, sat. paste		2.38	meq/L	0.050	95	80	120			
Magnesium, sat. paste		3.88	meq/L	0.082	94	80	120			
Sodium, sat. paste		2.06	meq/L	0.043	95	80	120			
Lab ID: LCS-72926	6	Laboratory Control Sample				Run: ICP2-HE_240726B				07/27/24 02:14
Calcium		283	mg/L	1.0	93	70	130			
Magnesium		97.2	mg/L	1.0	82	70	130			
Sodium		473	mg/L	1.0	93	70	130			
Calcium, sat. paste		14.1	meq/L	0.050	93	70	130			
Magnesium, sat. paste		8.00	meq/L	0.082	82	70	130			
Sodium, sat. paste		20.6	meq/L	0.043	93	70	130			
Lab ID: G24070190-041AMS2	6	Sample Matrix Spike				Run: ICP2-HE_240726B				07/27/24 02:34
Calcium		149	mg/L	1.0	88	70	130			
Magnesium		109	mg/L	1.0	90	70	130			
Sodium		102	mg/L	1.0	97	70	130			
Calcium, sat. paste		7.46	meq/L	0.050	88	70	130			
Magnesium, sat. paste		9.00	meq/L	0.082	90	70	130			
Sodium, sat. paste		4.43	meq/L	0.043	97	70	130			
Lab ID: G24070190-041AMSD2	6	Sample Matrix Spike Duplicate				Run: ICP2-HE_240726B				07/27/24 02:37
Calcium		151	mg/L	1.0	90	70	130	1.2	20	
Magnesium		111	mg/L	1.0	91	70	130	1.5	20	
Sodium		102	mg/L	1.0	97	70	130	0.2	20	
Calcium, sat. paste		7.55	meq/L	0.050	90	70	130	1.2	20	
Magnesium, sat. paste		9.13	meq/L	0.082	91	70	130	1.5	20	
Sodium, sat. paste		4.42	meq/L	0.043	97	70	130	0.2	20	
Lab ID: G24070190-048Adup	6	Sample Duplicate				Run: ICP2-HE_240726B				07/27/24 03:47
Calcium		270	mg/L	1.9				3.6	30	
Magnesium		605	mg/L	1.0				4.4	30	
Sodium		606	mg/L	1.0				4.5	30	
Calcium, sat. paste		13.5	meq/L	0.094				3.6	30	
Magnesium, sat. paste		49.8	meq/L	0.082				4.4	30	
Sodium, sat. paste		26.3	meq/L	0.043					30	
Lab ID: G24070190-058Adup	6	Sample Duplicate				Run: ICP2-HE_240726B				07/27/24 04:37
Calcium		418	mg/L	1.9				7.7	30	

Qualifiers:

RL - Analyte Reporting Limit

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QA/QC Summary Report

Prepared by Helena, MT Branch

Client: Mullinax Inc. **Work Order:** G24070190 **Report Date:** 08/08/24

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: SW6010B										Batch: 72926
Lab ID: G24070190-058Adup	6	Sample Duplicate				Run: ICP2-HE_240726B				07/27/24 04:37
Magnesium		879	mg/L	1.0				6.5	30	
Sodium		970	mg/L	1.0				4.2	30	
Calcium, sat. paste		20.9	meq/L	0.094				7.7	30	
Magnesium, sat. paste		72.4	meq/L	0.082				6.5	30	
Sodium, sat. paste		42.2	meq/L	0.043				4.2	30	
Method: SW6010B										Batch: 72952
Lab ID: MB-72952		Method Blank				Run: ICP2-HE_240726B				07/27/24 10:44
Boron		ND	mg/kg	0.02						
Lab ID: LFB-72952		Laboratory Fortified Blank				Run: ICP2-HE_240726B				07/27/24 10:48
Boron		3.76	mg/kg	0.10	94	80	120			
Lab ID: LCS-72952		Laboratory Control Sample				Run: ICP2-HE_240726B				07/27/24 10:52
Boron		1.11	mg/kg	0.10	85	70	130			
Lab ID: G24070190-065AMS2		Sample Matrix Spike				Run: ICP2-HE_240726B				07/27/24 11:26
Boron		5.66	mg/kg	0.10	93	75	125			
Lab ID: G24070190-065AMSD2		Sample Matrix Spike Duplicate				Run: ICP2-HE_240726B				07/27/24 11:30
Boron		5.77	mg/kg	0.10	96	75	125	2.0	20	
Lab ID: G24070190-066Adup		Sample Duplicate				Run: ICP2-HE_240726B				07/27/24 11:37
Boron		4.29	mg/kg	0.10				4.0	20	
Lab ID: G24070190-076Adup		Sample Duplicate				Run: ICP2-HE_240726B				07/27/24 13:06
Boron		0.573	mg/kg	0.10				3.8	20	
Method: SW6010B										Batch: 72953
Lab ID: MB-72953		Method Blank				Run: ICP2-HE_240726B				07/27/24 13:25
Boron		ND	mg/kg	0.02						
Lab ID: LFB-72953		Laboratory Fortified Blank				Run: ICP2-HE_240726B				07/27/24 13:29
Boron		3.77	mg/kg	0.10	94	80	120			
Lab ID: LCS-72953		Laboratory Control Sample				Run: ICP2-HE_240726B				07/27/24 13:32
Boron		1.22	mg/kg	0.10	94	70	130			
Lab ID: H24070608-001AMS2		Sample Matrix Spike				Run: ICP2-HE_240726B				07/27/24 14:03
Boron		5.00	mg/kg	0.10	93	75	125			
Lab ID: H24070608-001AMSD2		Sample Matrix Spike Duplicate				Run: ICP2-HE_240726B				07/27/24 14:07
Boron		5.06	mg/kg	0.10	95	75	125	1.2	20	
Lab ID: H24070608-003Adup		Sample Duplicate				Run: ICP2-HE_240726B				07/27/24 14:18
Boron		1.67	mg/kg	0.10				2.5	20	

Qualifiers:

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QA/QC Summary Report

Prepared by Helena, MT Branch

Client: Mullinax Inc. **Work Order:** G24070190 **Report Date:** 08/08/24

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: SW6010B										Analytical Run: ICP2-HE_240729C
Lab ID: ICV	3	Initial Calibration Verification Standard								07/29/24 15:55
Calcium		39.9	mg/L	1.0	100	90	110			
Magnesium		40.0	mg/L	1.0	100	90	110			
Sodium		40.8	mg/L	1.0	102	90	110			
Lab ID: CCV	3	Continuing Calibration Verification Standard								07/29/24 15:59
Calcium		25.3	mg/L	1.0	101	90	110			
Magnesium		25.2	mg/L	1.0	101	90	110			
Sodium		25.5	mg/L	1.0	102	90	110			
Lab ID: ICSA	3	Interference Check Sample A								07/29/24 16:11
Calcium		461	mg/L	1.0	92	80	120			
Magnesium		496	mg/L	1.0	99	80	120			
Sodium		ND	mg/L	1.0		0	0			
Lab ID: ICSAB	3	Interference Check Sample AB								07/29/24 16:15
Calcium		457	mg/L	1.0	91	80	120			
Magnesium		492	mg/L	1.0	98	80	120			
Sodium		20.3	mg/L	1.0	101	80	120			
Method: SW6010B										Batch: 72927
Lab ID: MB-72927	6	Method Blank				Run: ICP2-HE_240729C				07/30/24 04:02
Calcium		ND	mg/L	0.2						
Magnesium		ND	mg/L	0.05						
Sodium		0.07	mg/L	0.03						
Calcium, sat. paste		ND	meq/L	0.009						
Magnesium, sat. paste		ND	meq/L	0.004						
Sodium, sat. paste		0.003	meq/L	0.001						
Lab ID: LFB-72927	6	Laboratory Fortified Blank				Run: ICP2-HE_240729C				07/30/24 04:06
Calcium		43.9	mg/L	1.0	88	80	120			
Magnesium		43.9	mg/L	1.0	88	80	120			
Sodium		47.2	mg/L	1.0	94	80	120			
Calcium, sat. paste		2.19	meq/L	0.050	88	80	120			
Magnesium, sat. paste		3.61	meq/L	0.082	88	80	120			
Sodium, sat. paste		2.05	meq/L	0.043	94	80	120			
Lab ID: LCS-72927	6	Laboratory Control Sample				Run: ICP2-HE_240729C				07/30/24 04:18
Calcium		277	mg/L	1.0	91	70	130			
Magnesium		94.3	mg/L	1.0	79	70	130			
Sodium		478	mg/L	1.0	94	70	130			
Calcium, sat. paste		13.8	meq/L	0.050	91	70	130			
Magnesium, sat. paste		7.76	meq/L	0.082	79	70	130			
Sodium, sat. paste		20.8	meq/L	0.043	94	70	130			
Lab ID: G24070190-061AMS2	6	Sample Matrix Spike				Run: ICP2-HE_240729C				07/30/24 04:29
Calcium		187	mg/L	1.0	89	70	130			
Magnesium		125	mg/L	1.0	92	70	130			

Qualifiers:

RL - Analyte Reporting Limit

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QA/QC Summary Report

Prepared by Helena, MT Branch

Client: Mullinax Inc. **Work Order:** G24070190 **Report Date:** 08/08/24

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: SW6010B										Batch: 72927
Lab ID: G24070190-061AMS2	6	Sample Matrix Spike				Run: ICP2-HE_240729C				07/30/24 04:29
Sodium		102	mg/L	1.0	96	70	130			
Calcium, sat. paste		9.34	meq/L	0.050	89	70	130			
Magnesium, sat. paste		10.3	meq/L	0.082	92	70	130			
Sodium, sat. paste		4.45	meq/L	0.043	96	70	130			
Lab ID: G24070190-061AMSD2	6	Sample Matrix Spike Duplicate				Run: ICP2-HE_240729C				07/30/24 04:33
Calcium		193	mg/L	1.0	94	70	130	2.8	20	
Magnesium		128	mg/L	1.0	94	70	130	2.0	20	
Sodium		101	mg/L	1.0	95	70	130	0.8	20	
Calcium, sat. paste		9.61	meq/L	0.050	94	70	130	2.8	20	
Magnesium, sat. paste		10.5	meq/L	0.082	94	70	130	2.0	20	
Sodium, sat. paste		4.41	meq/L	0.043	95	70	130	0.8	20	
Lab ID: G24070190-068Adup	6	Sample Duplicate				Run: ICP2-HE_240729C				07/30/24 05:42
Calcium		384	mg/L	1.9				15	30	
Magnesium		413	mg/L	1.0				17	30	
Sodium		605	mg/L	1.0				15	30	
Calcium, sat. paste		19.2	meq/L	0.094				15	30	
Magnesium, sat. paste		33.9	meq/L	0.082				17	30	
Sodium, sat. paste		26.3	meq/L	0.043				15	30	
Lab ID: G24070190-078Adup	6	Sample Duplicate				Run: ICP2-HE_240729C				07/30/24 06:32
Calcium		427	mg/L	1.9				2.6	30	
Magnesium		742	mg/L	1.0				6.9	30	
Sodium		469	mg/L	1.0				8.7	30	
Calcium, sat. paste		21.3	meq/L	0.094				2.6	30	
Magnesium, sat. paste		61.1	meq/L	0.082				6.9	30	
Sodium, sat. paste		20.4	meq/L	0.043				8.7	30	
Method: SW6010B										Batch: 72928
Lab ID: MB-72928	6	Method Blank				Run: ICP2-HE_240729C				07/30/24 07:34
Calcium		ND	mg/L	0.2						
Magnesium		ND	mg/L	0.05						
Sodium		0.04	mg/L	0.03						
Calcium, sat. paste		ND	meq/L	0.009						
Magnesium, sat. paste		ND	meq/L	0.004						
Sodium, sat. paste		0.002	meq/L	0.001						
Lab ID: LFB-72928	6	Laboratory Fortified Blank				Run: ICP2-HE_240729C				07/30/24 07:38
Calcium		49.0	mg/L	1.0	98	80	120			
Magnesium		48.5	mg/L	1.0	97	80	120			
Sodium		49.8	mg/L	1.0	100	80	120			
Calcium, sat. paste		2.44	meq/L	0.050	98	80	120			
Magnesium, sat. paste		3.99	meq/L	0.082	97	80	120			
Sodium, sat. paste		2.16	meq/L	0.043	99	80	120			

Qualifiers:

RL - Analyte Reporting Limit

ND - Not detected at the Reporting Limit (RL)

QA/QC Summary Report

Prepared by Helena, MT Branch

Client: Mullinax Inc. **Work Order:** G24070190 **Report Date:** 08/08/24

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: SW6010B										Batch: 72928
Lab ID: LCS-72928	6	Laboratory Control Sample				Run: ICP2-HE_240729C				07/30/24 07:49
Calcium		291	mg/L	1.0	96	70	130			
Magnesium		98.7	mg/L	1.0	83	70	130			
Sodium		484	mg/L	1.0	95	70	130			
Calcium, sat. paste		14.5	meq/L	0.050	96	70	130			
Magnesium, sat. paste		8.13	meq/L	0.082	83	70	130			
Sodium, sat. paste		21.1	meq/L	0.043	95	70	130			
Lab ID: G24070190-081AMS2	6	Sample Matrix Spike				Run: ICP2-HE_240729C				07/30/24 08:01
Calcium		180	mg/L	1.0	101	70	130			
Magnesium		132	mg/L	1.0	101	70	130			
Sodium		133	mg/L	1.0	105	70	130			
Calcium, sat. paste		8.97	meq/L	0.050	101	70	130			
Magnesium, sat. paste		10.8	meq/L	0.082	101	70	130			
Sodium, sat. paste		5.77	meq/L	0.043	133	70	130			S
Lab ID: G24070190-081AMSD2	6	Sample Matrix Spike Duplicate				Run: ICP2-HE_240729C				07/30/24 08:05
Calcium		176	mg/L	1.0	97	70	130	2.3	20	
Magnesium		129	mg/L	1.0	98	70	130	1.9	20	
Sodium		132	mg/L	1.0	104	70	130	0.8	20	
Calcium, sat. paste		8.77	meq/L	0.050	97	70	130	2.3	20	
Magnesium, sat. paste		10.6	meq/L	0.082	98	70	130	1.9	20	
Sodium, sat. paste		5.73	meq/L	0.043	132	70	130	0.8	20	S
Lab ID: H24070616-006Adup	6	Sample Duplicate				Run: ICP2-HE_240729C				07/30/24 08:52
Calcium		461	mg/L	1.0				1.2	30	
Magnesium		364	mg/L	1.0				0.6	30	
Sodium		82.5	mg/L	1.0				0.3	30	
Calcium, sat. paste		23.0	meq/L	0.050				1.2	30	
Magnesium, sat. paste		29.9	meq/L	0.082				0.6	30	
Sodium, sat. paste		3.59	meq/L	0.043				0.3	30	
Method: SW6010B										Analytical Run: ICP2-HE_240730A
Lab ID: ICV		Initial Calibration Verification Standard								07/30/24 10:56
Sodium		40.7	mg/L	1.0	102	90	110			
Lab ID: CCV		Continuing Calibration Verification Standard								07/30/24 11:00
Sodium		24.8	mg/L	1.0	99	90	110			
Lab ID: ICSA		Interference Check Sample A								07/30/24 11:11
Sodium		ND	mg/L	1.0		0	0			
Lab ID: ICSAB		Interference Check Sample AB								07/30/24 11:15
Sodium		20.6	mg/L	1.0	103	80	120			

Qualifiers:

RL - Analyte Reporting Limit

ND - Not detected at the Reporting Limit (RL)

S - Spike recovery outside of advisory limits

QA/QC Summary Report

Prepared by Helena, MT Branch

Client: Mullinax Inc. **Work Order:** G24070190 **Report Date:** 08/08/24

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: **SW6020**									Analytical Run: ICPMS205-H_240729A	
Lab ID: **ICV**	Initial Calibration Verification Standard								07/29/24 13:28	
Selenium		0.0624	mg/L	0.0010	104	90	110			
Lab ID: **ICSA**	Interference Check Sample A								07/29/24 13:37	
Selenium		ND	mg/L	0.0010						
Lab ID: **ICSAB**	Interference Check Sample AB								07/29/24 13:43	
Selenium		0.00977	mg/L	0.0010	98	70	130			
Lab ID: **CCV**	Continuing Calibration Verification Standard								07/29/24 16:27	
Selenium		0.0522	mg/L	0.0010	104	90	110			
Lab ID: **CCV**	Continuing Calibration Verification Standard								07/29/24 17:12	
Selenium		0.0516	mg/L	0.0010	103	90	110			
Method: **SW6020**									Batch: 72949	
Lab ID: **MB-72949**	Method Blank					Run: ICPMS205-H_240729A			07/29/24 15:17	
Selenium		ND	mg/kg	0.002						
Lab ID: **LCS-72949**	Laboratory Control Sample					Run: ICPMS205-H_240729A			07/29/24 15:19	
Selenium		0.284	mg/kg	0.10	106	70	130			
Lab ID: **LFB-72949**	Laboratory Fortified Blank					Run: ICPMS205-H_240729A			07/29/24 15:21	
Selenium		1.02	mg/kg	0.10	102	80	120			
Lab ID: **G24070190-001AMS**	Sample Matrix Spike					Run: ICPMS205-H_240729A			07/29/24 15:30	
Selenium		1.02	mg/kg	0.10	101	75	125			
Lab ID: **G24070190-006Adup**	Sample Duplicate					Run: ICPMS205-H_240729A			07/29/24 15:45	
Selenium		ND	mg/kg	0.10					20	
Lab ID: **G24070190-016Adup**	Sample Duplicate					Run: ICPMS205-H_240729A			07/29/24 16:16	
Selenium		ND	mg/kg	0.10					20	
Method: **SW6020**									Batch: 72950	
Lab ID: **MB-72950**	Method Blank					Run: ICPMS205-H_240729A			07/29/24 16:33	
Selenium		ND	mg/kg	0.002						
Lab ID: **LCS-72950**	Laboratory Control Sample					Run: ICPMS205-H_240729A			07/29/24 16:35	
Selenium		0.286	mg/kg	0.10	107	70	130			
Lab ID: **LFB-72950**	Laboratory Fortified Blank					Run: ICPMS205-H_240729A			07/29/24 16:37	
Selenium		1.04	mg/kg	0.10	104	80	120			
Lab ID: **G24070190-021AMS**	Sample Matrix Spike					Run: ICPMS205-H_240729A			07/29/24 16:46	
Selenium		1.03	mg/kg	0.10	102	75	125			
Lab ID: **G24070190-026Adup**	Sample Duplicate					Run: ICPMS205-H_240729A			07/29/24 17:01	
Selenium		ND	mg/kg	0.10					20	

Qualifiers:

RL - Analyte Reporting Limit

ND - Not detected at the Reporting Limit (RL)

QA/QC Summary Report

Prepared by Helena, MT Branch

Client: Mullinax Inc. **Work Order:** G24070190 **Report Date:** 08/08/24

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: **SW6020**										Batch: 72950
Lab ID: **G24070190-036Adup**		Sample Duplicate				Run: ICPMS205-H_240729A				07/29/24 17:31
Selenium		ND	mg/kg	0.10					20	
Method: **SW6020**										Batch: 72953
Lab ID: **MB-72953**		Method Blank				Run: ICPMS205-H_240729A				07/30/24 17:29
Selenium		0.005	mg/kg	0.002						
Lab ID: **LCS-72953**		Laboratory Control Sample				Run: ICPMS205-H_240729A				07/30/24 17:31
Selenium		0.300	mg/kg	0.10	112	70	130			
Lab ID: **LFB-72953**		Laboratory Fortified Blank				Run: ICPMS205-H_240729A				07/30/24 17:33
Selenium		1.03	mg/kg	0.10	103	80	120			
Lab ID: **G24070190-081AMS**		Sample Matrix Spike				Run: ICPMS205-H_240729A				07/30/24 17:40
Selenium		0.980	mg/kg	0.10	97	75	125			
Lab ID: **H24070608-003Adup**		Sample Duplicate				Run: ICPMS205-H_240729A				07/30/24 17:53
Selenium		0.0584	mg/kg	0.040				1.9	20	
Lab ID: **H24070608-014Adup**		Sample Duplicate				Run: ICPMS205-H_240729A				07/30/24 18:25
Selenium		0.0518	mg/kg	0.040				2.0	20	

Qualifiers:

RL - Analyte Reporting Limit

ND - Not detected at the Reporting Limit (RL)

QA/QC Summary Report

Prepared by Helena, MT Branch

Client: Mullinax Inc. **Work Order:** G24070190 **Report Date:** 08/08/24

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: **SW6020**									Analytical Run: ICPMS205-H_240731C	
Lab ID: **ICV**		Initial Calibration Verification Standard							07/31/24 13:18	
Selenium		0.0625	mg/L	0.0010	104	90	110			
Lab ID: **ICSA**		Interference Check Sample A							07/31/24 20:59	
Selenium		ND	mg/L	0.0010						
Lab ID: **ICSAB**		Interference Check Sample AB							07/31/24 21:05	
Selenium		0.00946	mg/L	0.0010	95	70	130			
Lab ID: **CCV**		Continuing Calibration Verification Standard							07/31/24 21:14	
Selenium		0.0514	mg/L	0.0010	103	90	110			
Lab ID: **CCV**		Continuing Calibration Verification Standard							07/31/24 22:15	
Selenium		0.0523	mg/L	0.0010	105	90	110			
Lab ID: **CCV**		Continuing Calibration Verification Standard							07/31/24 22:55	
Selenium		0.0530	mg/L	0.0010	106	90	110			
Lab ID: **CCV**		Continuing Calibration Verification Standard							07/31/24 23:56	
Selenium		0.0517	mg/L	0.0010	103	90	110			
Method: **SW6020**									Batch: 72951	
Lab ID: **MB-72951**		Method Blank				Run: ICPMS205-H_240731C			07/31/24 21:20	
Selenium		ND	mg/kg	0.002						
Lab ID: **LCS-72951**		Laboratory Control Sample				Run: ICPMS205-H_240731C			07/31/24 21:23	
Selenium		0.289	mg/kg	0.10	108	70	130			
Lab ID: **LFB-72951**		Laboratory Fortified Blank				Run: ICPMS205-H_240731C			07/31/24 21:26	
Selenium		1.05	mg/kg	0.10	105	80	120			
Lab ID: **G24070190-041AMS**		Sample Matrix Spike				Run: ICPMS205-H_240731C			07/31/24 21:39	
Selenium		1.04	mg/kg	0.10	104	75	125			
Lab ID: **G24070190-046Adup**		Sample Duplicate				Run: ICPMS205-H_240731C			07/31/24 22:00	
Selenium		ND	mg/kg	0.10					20	
Lab ID: **G24070190-056Adup**		Sample Duplicate				Run: ICPMS205-H_240731C			07/31/24 22:40	
Selenium		ND	mg/kg	0.10					20	
Method: **SW6020**									Batch: 72952	
Lab ID: **MB-72952**		Method Blank				Run: ICPMS205-H_240731C			07/31/24 23:01	
Selenium		ND	mg/kg	0.002						
Lab ID: **LCS-72952**		Laboratory Control Sample				Run: ICPMS205-H_240731C			07/31/24 23:04	
Selenium		0.294	mg/kg	0.10	110	70	130			
Lab ID: **LFB-72952**		Laboratory Fortified Blank				Run: ICPMS205-H_240731C			07/31/24 23:07	
Selenium		1.06	mg/kg	0.10	106	80	120			

Qualifiers:

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QA/QC Summary Report

Prepared by Helena, MT Branch

Client: Mullinax Inc. **Work Order:** G24070190 **Report Date:** 08/08/24

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: **SW6020**										Batch: 72952
Lab ID: **G24070190-061AMS**	Sample Matrix Spike					Run: ICPMS205-H_240731C				07/31/24 23:19
Selenium		1.04	mg/kg	0.10	104	75	125			
Lab ID: **G24070190-066Adup**	Sample Duplicate					Run: ICPMS205-H_240731C				07/31/24 23:41
Selenium		ND	mg/kg	0.10					20	
Lab ID: **G24070190-076Adup**	Sample Duplicate					Run: ICPMS205-H_240731C				08/01/24 00:20
Selenium		ND	mg/kg	0.10					20	

Qualifiers:

RL - Analyte Reporting Limit

ND - Not detected at the Reporting Limit (RL)

QA/QC Summary Report

Prepared by Helena, MT Branch

Client: Mullinax Inc. **Work Order:** G24070190 **Report Date:** 08/08/24

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: USDA20b										Batch: R197205
Lab ID: G24070190-008ADUP	Sample Duplicate					Run: SOIL CALC_240801A			07/29/24 17:37	
Sodium Adsorption Ratio (SAR)		ND	unitless	0.10					30	
Lab ID: G24070190-018ADUP	Sample Duplicate					Run: SOIL CALC_240801A			07/29/24 17:37	
Sodium Adsorption Ratio (SAR)		ND	unitless	0.10					30	
Lab ID: G24070190-028ADUP	Sample Duplicate					Run: SOIL CALC_240801A			07/29/24 17:37	
Sodium Adsorption Ratio (SAR)		4.73	unitless	0.10				8.5	30	
Lab ID: G24070190-038ADUP	Sample Duplicate					Run: SOIL CALC_240801A			07/29/24 17:37	
Sodium Adsorption Ratio (SAR)		2.81	unitless	0.10				0.7	30	
Lab ID: G24070190-048ADUP	Sample Duplicate					Run: SOIL CALC_240801A			07/29/24 17:37	
Sodium Adsorption Ratio (SAR)		4.74	unitless	0.10				2.6	30	
Lab ID: G24070190-058ADUP	Sample Duplicate					Run: SOIL CALC_240801A			07/29/24 17:37	
Sodium Adsorption Ratio (SAR)		6.18	unitless	0.10				0.8	30	
Lab ID: G24070190-068ADUP	Sample Duplicate					Run: SOIL CALC_240801A			07/29/24 17:37	
Sodium Adsorption Ratio (SAR)		5.11	unitless	0.10				7.2	30	
Lab ID: G24070190-078ADUP	Sample Duplicate					Run: SOIL CALC_240801A			07/29/24 17:37	
Sodium Adsorption Ratio (SAR)		3.18	unitless	0.10				5.5	30	
Lab ID: LCS-72924	Laboratory Control Sample					Run: SOIL CALC_240801A			07/29/24 17:37	
Sodium Adsorption Ratio (SAR)		6.08	unitless	0.10	91	80	120			
Lab ID: LCS-72925	Laboratory Control Sample					Run: SOIL CALC_240801A			07/29/24 17:37	
Sodium Adsorption Ratio (SAR)		6.37	unitless	0.10	96	80	120			
Lab ID: LCS-72926	Laboratory Control Sample					Run: SOIL CALC_240801A			07/29/24 17:37	
Sodium Adsorption Ratio (SAR)		6.18	unitless	0.10	93	80	120			
Lab ID: LCS-72927	Laboratory Control Sample					Run: SOIL CALC_240801A			07/29/24 17:37	
Sodium Adsorption Ratio (SAR)		6.33	unitless	0.10	95	80	120			

Qualifiers:

RL - Analyte Reporting Limit

ND - Not detected at the Reporting Limit (RL)

QA/QC Summary Report

Prepared by Helena, MT Branch

Client: Mullinax Inc. **Work Order:** G24070190 **Report Date:** 08/08/24

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: **USDA27a**										Batch: 72924
Lab ID: **LCS-72924**	Laboratory Control Sample					Run: SOIL DRYING OVEN 2_24072				07/24/24 08:02
Saturation		39.3	%	0.10	94	80	120			
Lab ID: **G24070190-008ADUP**	Sample Duplicate					Run: SOIL DRYING OVEN 2_24072				07/24/24 08:18
Saturation		54.0	%	0.10				2.2	20	
Lab ID: **G24070190-018ADUP**	Sample Duplicate					Run: SOIL DRYING OVEN 2_24072				07/24/24 08:19
Saturation		59.2	%	0.10				1.1	20	
Method: **USDA27a**										Batch: 72966
Lab ID: **LCS-72966**	Laboratory Control Sample					Run: SOIL DRYING OVEN 2_24072				07/24/24 10:34
Saturation		43.1	%	0.10	103	80	120			
Lab ID: **H24060861-018ADUP**	Sample Duplicate					Run: SOIL DRYING OVEN 2_24072				07/24/24 10:38
Saturation		55.9	%	0.10				7.7	20	
Method: **USDA27a**										Batch: 72925
Lab ID: **LCS-72925**	Laboratory Control Sample					Run: SOIL DRYING OVEN 2_24072				07/25/24 08:46
Saturation		41.1	%	0.10	99	80	120			
Lab ID: **G24070190-028ADUP**	Sample Duplicate					Run: SOIL DRYING OVEN 2_24072				07/25/24 08:48
Saturation		77.2	%	0.10				3.8	20	
Lab ID: **G24070190-038ADUP**	Sample Duplicate					Run: SOIL DRYING OVEN 2_24072				07/25/24 08:50
Saturation		91.8	%	0.10				7.0	20	
Method: **USDA27a**										Batch: 72926
Lab ID: **LCS-72926**	Laboratory Control Sample					Run: SOIL DRYING OVEN 2_24072				07/25/24 09:19
Saturation		42.3	%	0.10	101	80	120			
Lab ID: **G24070190-048ADUP**	Sample Duplicate					Run: SOIL DRYING OVEN 2_24072				07/25/24 09:21
Saturation		118	%	0.10				0.1	20	
Lab ID: **G24070190-058ADUP**	Sample Duplicate					Run: SOIL DRYING OVEN 2_24072				07/25/24 09:23
Saturation		68.9	%	0.10				6.9	20	

Qualifiers:

RL - Analyte Reporting Limit

ND - Not detected at the Reporting Limit (RL)

QA/QC Summary Report

Prepared by Helena, MT Branch

Client: Mullinax Inc. **Work Order:** G24070190 **Report Date:** 08/08/24

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: USDA27a										Batch: 72927
Lab ID: LCS-72927	Laboratory Control Sample					Run: SOIL DRYING OVEN 2_24072				07/26/24 07:31
Saturation		41.6	%	0.10	100	80	120			
Lab ID: G24070190-068ADUP	Sample Duplicate					Run: SOIL DRYING OVEN 2_24072				07/26/24 07:32
Saturation		67.6	%	0.10				0.3	20	
Lab ID: G24070190-078ADUP	Sample Duplicate					Run: SOIL DRYING OVEN 2_24072				07/26/24 07:33
Saturation		59.3	%	0.10				11	20	
Method: USDA27a										Batch: 72928
Lab ID: LCS-72928	Laboratory Control Sample					Run: SOIL DRYING OVEN 2_24072				07/26/24 07:49
Saturation		40.7	%	0.10	97	80	120			
Lab ID: H24070616-006ADUP	Sample Duplicate					Run: SOIL DRYING OVEN 2_24072				07/26/24 07:50
Saturation		47.4	%	0.10				0.9	20	
Method: USDA27a										Batch: 73021
Lab ID: LCS-73021	Laboratory Control Sample					Run: SOIL DRYING OVEN 2_24073				07/30/24 08:28
Saturation		44.1	%	0.10	106	80	120			
Lab ID: G24070190-022ADUP	Sample Duplicate					Run: SOIL DRYING OVEN 2_24073				07/30/24 08:28
Saturation		91.9	%	0.10				9.6	20	
Method: USDA27a										Batch: 73111
Lab ID: LCS-73111	Laboratory Control Sample					Run: SOIL DRYING OVEN 2_24080				08/01/24 09:18
Saturation		42.1	%	0.10	101	80	120			
Lab ID: H24070778-010ADUP	Sample Duplicate					Run: SOIL DRYING OVEN 2_24080				08/01/24 09:18
Saturation		121	%	0.10				4.7	20	

Qualifiers:

RL - Analyte Reporting Limit

ND - Not detected at the Reporting Limit (RL)

Work Order Receipt Checklist

Mullinax Inc.

G24070190

Login completed by: Misty Stephens
Date Received: 7/11/2024
Reviewed by: cjohnson
Received by: MS
Reviewed Date: 7/17/2024
Carrier name: Hand Deliver

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on all shipping container(s)/cooler(s)?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on all sample bottles?	Yes ☐	No ☐	Not Present ☑
Chain of custody present?	Yes ☑	No ☐	
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☐	No ☑	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☑	No ☐	
All samples received within holding time? (Exclude analyses that are considered field parameters such as pH, DO, Res Cl, Sulfite, Ferrous Iron, etc.)	Yes ☑	No ☐	
Temp Blank received in all shipping container(s)/cooler(s)?	Yes ☐	No ☐	Not Applicable ☑
Container/Temp Blank temperature:	NA°C From Field		
Containers requiring zero headspace have no headspace or bubble that is <6mm (1/4").	Yes ☐	No ☐	No VOA vials submitted ☑
Water - pH acceptable upon receipt?	Yes ☐	No ☐	Not Applicable ☑

Standard Reporting Procedures:

Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH, Dissolved Oxygen and Residual Chlorine, are qualified as being analyzed outside of recommended holding time.

Solid/soil samples are reported on a wet weight basis (as received) unless specifically indicated. If moisture corrected, data units are typically noted as –dry. For agricultural and mining soil parameters/characteristics, all samples are dried and ground prior to sample analysis.

The reference date for Radon analysis is the sample collection date. The reference date for all other Radiochemical analyses is the analysis date. Radiochemical precision results represent a 2-sigma Total Measurement Uncertainty.

For methods that require zero headspace or require preservation check at the time of analysis due to potential interference, the pH is verified at analysis. Nonconforming sample pH is documented as part of the analysis and included in the sample analysis comments.

Trip Blanks and/or Blind Duplicate samples are assigned the earliest collection time for the associated requested analysis in order to evaluate the holding time unless specifically indicated.

Contact and Corrective Action Comments:

Sample #38 has Sample Name on Chain of Custody. as "10-005-C1" Sample name on container is "10-005-B+2". Proceeded with sample ID on the Chain of Custody.

Work Order Receipt Checklist - Continued

Mullinax Inc. G24070190

Sample #39 has Sample Name on Chain of Customer as "10-006-C2" Sample name on container is "10-006-6". Proceeded with sample ID on the Chain of Custody.

Sample #75 has Sample name on Chain of customer as "18-001-A" Sample name on container is "18-001" Proceeded with
sample ID on the Chain of Custody.

Per request of Energy Laboratories project Manager Misty Stephens, this report and invoice need to be submitted under Mullinax - Chantel S. Johnson 07/11/2024

ENERGY LABORATORIES
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Chain of Custody & Analytical Request Record

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Page 1 of 9

Account Information (Billing information)

Company/Name	Grouse Mountain Environmental Consultants
Contact	Greg Shedd
Phone	(307) 684-2112
Mailing Address	760 W. Fetterman St.
City, State, Zip	Buffalo, WY 82834
Email	
Receive Invoice	☒ Hard Copy ☒ Email
Receive Report	☒ Hard Copy ☒ Email
Purchase Order	
Quote	17459
Bottle Order	

Report Information (if different than Account Information)

Company/Name	Same
Contact	
Phone	
Mailing Address	
City, State, Zip	
Email	
Receive Report	☐ Hard Copy ☐ Email
Special Report/Formats:	☐ LEVEL IV ☐ NELAC ☐ EDD/EDT (contact laboratory) ☐ Other

Comments

Project Information

Project Name, PWSID, Permit, etc.	Mullinax
Sampler Name	Katie Jansson
Sampler Phone	(479) 304-9654
Sample Origin State	WY
EPA/State Compliance	☐ Yes ☐ No

URANIUM MINING CLIENTS MUST indicate sample type.
☐ NOT Source or Byproduct Material
☐ Source/Processed Ore (Ground or Refined) **CALL BEFORE SENDING
☐ 11e.(2) Byproduct Material (Can ONLY be Submitted to ELI Casper Location)

Matrix Codes
A - Air
W - Water
S - Soils/Solids
V - Vegetation
B - Bioassay
O - Other
DW - Drinking Water

All turnaround times are standard unless marked as RUSH.
Energy Laboratories MUST be contacted prior to RUSH sample submittal for charges and scheduling – See Instructions Page

	Sample Identification (Name, Location, Interval, etc.)	Collection Date	Collection Time	Number of Containers	Matrix (See Codes Above)	Analysis Requested	See Attached	RUSH TAT	ELI LAB ID (Laboratory Use Only)
1	1-001-A	7/11/24							240190
2	1-002-Bt	7/11/24							
3	2-001-A	7/10/24							
4	2-002-Btk	7/10/24							
5	2-004-Ck2	7/10/24							
6	2-005-Ck3	7/10/24							
7	3-001-Btb	7/11/24							
8	4-001-A	7/10/24							
9	4-002-Bt1	7/10/24							
10	4-003-Bt2	7/10/24							

Custody Record MUST be signed	Relinquished by (print)	Date/Time	Signature	Received by (print)	Date/Time	Signature
	Katie Jansson	7/11/24 2:54p	Katie Jansson			
	Relinquished by (print)	Date/Time	Signature	Received by Laboratory (print)	Date/Time	Signature
					7/11/24	

LABORATORY USE ONLY

Shipped By	Cooler ID(s)	Custody Seals Y N C B	Intact Y N	Receipt Temp °C	Temp Blank Y N	On Ice Y N	Payment Type CC Cash Check	Amount $	Receipt Number (cash/check only)

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Account Information *(Billing information)*

Company/Name Same		
Contact		
Phone		
Mailing Address		
City, State, Zip		
Email		
Receive Invoice ☐Hard Copy ☐Email	Receive Report ☐Hard Copy ☐Email	
Purchase Order	Quote	Bottle Order

Report Information *(if different than Account Information)*

Company/Name
Contact
Phone
Mailing Address
City, State, Zip
Email
Receive Report ☐Hard Copy ☐Email
Special Report/Formats: ☐ LEVEL IV ☐ NELAC ☐ EDD/EDT *(contact laboratory)* ☐ Other_____

Comments

Project Information

Project Name, PWSID, Permit, etc.	
Sampler Name	Sampler Phone
Sample Origin State	EPA/State Compliance ☐ Yes ☐ No

URANIUM MINING CLIENTS MUST indicate sample type.
☐ NOT Source or Byproduct Material
☐ Source/Processed Ore (Ground or Refined) **CALL BEFORE SENDING
☐ 11e.(2) Byproduct Material (Can ONLY be Submitted to ELI Casper Location)

Matrix Codes
A - Air
W - Water
S - Soils/Solids
V - Vegetation
B - Bioassay
O - Other
DW - Drinking Water

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	Sample Identification *(Name, Location, Interval, etc.)*	Collection Date	Collection Time	Number of Containers	Matrix *(See Codes Above)*	Analysis Requested	See Attached	RUSH TAT	ELI LAB ID *Laboratory Use Only*
1	4-004-BtK1	7/10/24							
2	4-005-BCtK	7/10/24							
3	4-006-CK	7/10/24							
4	5-001-A	7/11/24							
5	5-002-Bt	7/11/24							
6	5-003-BtK1	7/11/24							
7	5-004-BtK2	7/11/24							
8	6-001-A	7/10/24							
9	6-002-Bt	7/10/24							
10	6-003-BtK1	7/10/24							

Custody Record MUST be signed	Relinquished by (print)	Date/Time	Signature	Received by (print)	Date/Time	Signature
	Katie Jonsson	7/11/24 2:56p				
	Relinquished by (print)	Date/Time	Signature	Received by Laboratory (print)	Date/Time	Signature
					7/11/24	

LABORATORY USE ONLY

Shipped By	Cooler ID(s)	Custody Seals Y N C B	Intact Y N	Receipt Temp °C	Temp Blank Y N	On Ice Y N	Payment Type CC Cash Check_____	Amount $	Receipt Number *(cash/check only)*

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Company/Name	Same
Contact	
Phone	
Mailing Address	
City, State, Zip	
Email	
Receive Invoice ☐Hard Copy ☐Email	Receive Report ☐Hard Copy ☐Email
Purchase Order / Quote / Bottle Order	

Report Information *(if different than Account Information)*

Company/Name
Contact
Phone
Mailing Address
City, State, Zip
Email
Receive Report ☐Hard Copy ☐Email
Special Report/Formats: ☐ LEVEL IV ☐ NELAC ☐ EDD/EDT *(contact laboratory)* ☐ Other_____

Comments

Project Information

Project Name, PWSID, Permit, etc.	
Sampler Name	Sampler Phone
Sample Origin State	EPA/State Compliance ☐ Yes ☐ No

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	Sample Identification *(Name, Location, Interval, etc.)*	Collection Date	Collection Time	Number of Containers	Matrix *(See Codes Above)*	Analysis Requested	See Attached	RUSH TAT	ELI LAB ID *Laboratory Use Only*
1	6-004-Btk2	7/10/24							
2	6-005-Btk	7/10/24							
3	7-001-A	7/10/24							
4	7-002-Bt	7/10/24							
5	7-003-Btk	7/10/24							
6	8-001-A	7/10/24							
7	8-002-Bt1	7/10/24							
8	8-003-Bt2	7/10/24							
9	8-004-BCk	7/10/24							
10	8-005-C	7/10/24							

Custody Record MUST be signed	Relinquished by (print)	Date/Time	Signature	Received by (print)	Date/Time	Signature
	Katie Jansson	7/11/24 2:56p				
	Relinquished by (print)	Date/Time	Signature	Received by Laboratory (print)	Date/Time	Signature
					7/11/24	

LABORATORY USE ONLY

Shipped By	Cooler ID(s)	Custody Seals Y N C B	Intact Y N	Receipt Temp °C	Temp Blank Y N	On Ice Y N	Payment Type CC Cash Check_____	Amount $	Receipt Number *(cash/check only)*

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Account Information (Billing information)

Company/Name	SGME
Contact	
Phone	
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City, State, Zip	
Email	
Receive Invoice ☐Hard Copy ☐Email	Receive Report ☐Hard Copy ☐Email
Purchase Order / Quote / Bottle Order	

Report Information (if different than Account Information)

Company/Name
Contact
Phone
Mailing Address
City, State, Zip
Email
Receive Report ☐Hard Copy ☐Email
Special Report/Formats: ☐ LEVEL IV ☐ NELAC ☐ EDD/EDT (contact laboratory) ☐ Other_____

Comments

Project Information

Project Name, PWSID, Permit, etc.	
Sampler Name	Sampler Phone
Sample Origin State	EPA/State Compliance ☐ Yes ☐ No

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	Sample Identification (Name, Location, Interval, etc.)	Collection Date	Collection Time	Number of Containers	Matrix (See Codes Above)	Analysis Requested	See Attached	RUSH TAT	ELI LAB ID (Laboratory Use Only)
1	9-001-A	7/10/24							
2	9-002-Bt	7/10/24							
3	9-003-Btk	7/10/24							
4	9-004-BCk	7/10/24							
5	9-005-C	7/10/24							
6	10-001-A	7/10/24							
7	10-002-Bt1	7/10/24							
8	10-005-C1	7/10/24							
9	10-006-C2	7/10/24							
10	~~11-001-A~~								

Custody Record MUST be signed	Relinquished by (print)	Date/Time	Signature	Received by (print)	Date/Time	Signature
	Katie Jansson	7/11/24 2:56p				
	Relinquished by (print)	Date/Time	Signature	Received by Laboratory (print)	Date/Time	Signature
					7/11/24	

LABORATORY USE ONLY

Shipped By	Cooler ID(s)	Custody Seals Y N C B	Intact Y N	Receipt Temp °C	Temp Blank Y N	On Ice Y N	Payment Type CC Cash Check_____	Amount $	Receipt Number (cash/check only)

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Contact	
Phone	
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City, State, Zip	
Email	
Receive Invoice ☐Hard Copy ☐Email	Receive Report ☐Hard Copy ☐Email
Purchase Order / Quote / Bottle Order	

Report Information *(if different than Account Information)*

Company/Name
Contact
Phone
Mailing Address
City, State, Zip
Email
Receive Report ☐Hard Copy ☐Email
Special Report/Formats: ☐ LEVEL IV ☐ NELAC ☐ EDD/EDT *(contact laboratory)* ☐ Other_____

Comments

Project Information

Project Name, PWSID, Permit, etc.	
Sampler Name	Sampler Phone
Sample Origin State	EPA/State Compliance ☐ Yes ☐ No

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	Sample Identification *(Name, Location, Interval, etc.)*	Collection Date	Collection Time	Number of Containers	Matrix *(See Codes Above)*	Analysis Requested	See Attached	RUSH TAT	ELI LAB ID *Laboratory Use Only*
1	11-001-A	7/10/24							
2	11-002-Btk1	7/10/24							
3	11-003-Btk2	7/10/24							
4	11-004-BCk	7/10/24							
5	11-005-Ck	7/10/24							
6	12-001-A	7/11/24							
7	12-002-Btg	7/11/24							
8	12-003-Bg1	7/11/24							
9	12-004-Bg2	7/11/24							
10	12-005-Bg3	7/11/24							

Custody Record MUST be signed	Relinquished by (print)	Date/Time	Signature	Received by (print)	Date/Time	Signature
	Katie Jansson	7/11/24 2:56p				
	Relinquished by (print)	Date/Time	Signature	Received by Laboratory (print)	Date/Time	Signature
					7/11/24	

LABORATORY USE ONLY

Shipped By	Cooler ID(s)	Custody Seals Y N C B	Intact Y N	Receipt Temp °C	Temp Blank Y N	On Ice Y N	Payment Type CC Cash Check_____	Amount $	Receipt Number *(cash/check only)*

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Account Information *(Billing information)*

Company/Name	Same
Contact	
Phone	
Mailing Address	
City, State, Zip	
Email	
Receive Invoice ☐Hard Copy ☐Email	Receive Report ☐Hard Copy ☐Email
Purchase Order / Quote / Bottle Order	

Report Information *(if different than Account Information)*

Company/Name
Contact
Phone
Mailing Address
City, State, Zip
Email
Receive Report ☐Hard Copy ☐Email
Special Report/Formats: ☐ LEVEL IV ☐ NELAC ☐ EDD/EDT *(contact laboratory)* ☐ Other_____

Comments

Project Information

Project Name, PWSID, Permit, etc.	
Sampler Name	Sampler Phone
Sample Origin State	EPA/State Compliance ☐ Yes ☐ No

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	Sample Identification *(Name, Location, Interval, etc.)*	Collection Date	Collection Time	Number of Containers	Matrix *(See Codes Above)*	Analysis Requested	See Attached	RUSH TAT	ELI LAB ID *Laboratory Use Only*
1	13-001-A	7/10/24							
2	13-002-Bt	7/10/24							
3	13-003-Btk1	7/10/24							
4	13-004-Btk2	7/10/24							
5	13-005-BCk	7/10/24							
6	13-006-Ck	7/10/24							
7	14-001-Ap	7/10/24							
8	14-002-Bt	7/10/24							
9	14-003-Btk	7/10/24							
10	14-004-C1	7/10/24							

Custody Record MUST be signed	Relinquished by (print)	Date/Time	Signature	Received by (print)	Date/Time	Signature
	Katie Jansson	7/11/24 2:30p				
	Relinquished by (print)	Date/Time	Signature	Received by Laboratory (print)	Date/Time	Signature

LABORATORY USE ONLY

Shipped By	Cooler ID(s)	Custody Seals Y N C B	Intact Y N	Receipt Temp °C	Temp Blank Y N	On Ice Y N	Payment Type CC Cash Check_____	Amount $	Receipt Number *(cash/check only)*

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Company/Name	Same
Contact	
Phone	
Mailing Address	
City, State, Zip	
Email	
Receive Invoice ☐Hard Copy ☐Email	Receive Report ☐Hard Copy ☐Email
Purchase Order / Quote / Bottle Order	

Report Information *(if different than Account Information)*

Company/Name
Contact
Phone
Mailing Address
City, State, Zip
Email
Receive Report ☐Hard Copy ☐Email
Special Report/Formats: ☐ LEVEL IV ☐ NELAC ☐ EDD/EDT *(contact laboratory)* ☐ Other_____

Comments

Project Information

Project Name, PWSID, Permit, etc.	
Sampler Name	Sampler Phone
Sample Origin State	EPA/State Compliance ☐ Yes ☐ No

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	Sample Identification *(Name, Location, Interval, etc.)*	Collection Date	Collection Time	Number of Containers	Matrix *(See Codes Above)*	Analysis Requested	See Attached	RUSH TAT	ELI LAB ID *Laboratory Use Only*
1	14-005-C2	7/10/24							
2	15-001-A	7/10/24							
3	15-002-Bt	7/10/24							
4	15-003-Btk1	7/10/24							
5	15-004-Btk2	7/10/24							
6	15-005-Bck	7/10/24							
7	15-006-Ck	7/10/24							
8	16-001-A	7/10/24							
9	16-002-Bt	7/10/24							
10	16-003-Bck	7/10/24							

Custody Record MUST be signed	Relinquished by (print)	Date/Time	Signature	Received by (print)	Date/Time	Signature
	Katie Jansson	7/11/24 2:56p				
	Relinquished by (print)	Date/Time	Signature	Received by Laboratory (print)	Date/Time	Signature

LABORATORY USE ONLY

Shipped By	Cooler ID(s)	Custody Seals Y N C B	Intact Y N	Receipt Temp °C	Temp Blank Y N	On Ice Y N	Payment Type CC Cash Check_____	Amount $	Receipt Number *(cash/check only)*

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Phone	
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Receive Invoice ☐Hard Copy ☐Email	Receive Report ☐Hard Copy ☐Email
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Special Report/Formats: ☐ LEVEL IV ☐ NELAC ☐ EDD/EDT *(contact laboratory)* ☐ Other_____

Comments

Project Information

Project Name, PWSID, Permit, etc.	
Sampler Name	Sampler Phone
Sample Origin State	EPA/State Compliance ☐ Yes ☐ No

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O - Other
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Sample Identification *(Name, Location, Interval, etc.)*	Collection Date	Collection Time	Number of Containers	Matrix *(See Codes Above)*	Analysis Requested	See Attached	RUSH TAT	ELI LAB ID *Laboratory Use Only*
1 16-004-C1	7/10/24							
2 17-001-A	7/10/24							
3 17-002-Bt1	7/10/24							
4 17-003-Bt2	7/10/24							
5 17-005-C2	7/10/24							
6 18-001-A	7/10/24							
7 18-002-Bt	7/10/24							
8 18-003-Bt1	7/10/24							
9 18-004-Bt2	7/10/24							
10 18-005-Bt3	7/10/24							

Custody Record MUST be signed	Relinquished by (print)	Date/Time	Signature	Received by (print)	Date/Time	Signature
	Katie Jansson	7/11/24 2:56				
	Relinquished by (print)	Date/Time	Signature	Received by Laboratory (print)	Date/Time	Signature

LABORATORY USE ONLY

Shipped By	Cooler ID(s)	Custody Seals Y N C B	Intact Y N	Receipt Temp °C	Temp Blank Y N	On Ice Y N	Payment Type CC Cash Check_____	Amount $	Receipt Number *(cash/check only)*

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Company/Name	Stone
Contact	
Phone	
Mailing Address	
City, State, Zip	
Email	
Receive Invoice ☐Hard Copy ☐Email	Receive Report ☐Hard Copy ☐Email
Purchase Order / Quote / Bottle Order	

Report Information *(if different than Account Information)*

Company/Name
Contact
Phone
Mailing Address
City, State, Zip
Email
Receive Report ☐Hard Copy ☐Email
Special Report/Formats: ☐ LEVEL IV ☐ NELAC ☐ EDD/EDT *(contact laboratory)* ☐ Other_____

Comments

Project Information

Project Name, PWSID, Permit, etc.	
Sampler Name	Sampler Phone
Sample Origin State	EPA/State Compliance ☐ Yes ☐ No

URANIUM MINING CLIENTS MUST indicate sample type.
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O - Other
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	Sample Identification *(Name, Location, Interval, etc.)*	Collection Date	Collection Time	Number of Containers	Matrix *(See Codes Above)*	Analysis Requested	See Attached	RUSH TAT	ELI LAB ID *Laboratory Use Only*
1	18-006-BCtk	7/10/24							
2	19-001-A	7/10/24							
3	19-002-Bt	7/10/24							
4	19-003-Cl	7/10/24							
5									
6									
7									
8									
9									
10									

Custody Record MUST be signed	Relinquished by (print)	Date/Time	Signature	Received by (print)	Date/Time	Signature
	Katie Jonsson	7/11/24 2:56				
	Relinquished by (print)	Date/Time	Signature	Received by Laboratory (print)	Date/Time	Signature
					7/11/24	

LABORATORY USE ONLY

Shipped By	Cooler ID(s)	Custody Seals Y N C B	Intact Y N	Receipt Temp °C	Temp Blank Y N	On Ice Y N	Payment Type CC Cash Check_____	Amount $	Receipt Number *(cash/check only)*

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Addendum D7.B

NRCS Soil Map Unit Descriptions

Sheridan County Area, Wyoming

120—Cedak-Recluse loams, 6 to 9 percent slopes

Map Unit Setting

National map unit symbol: 2yv7f
Elevation: 3,580 to 5,060 feet
Mean annual precipitation: 15 to 19 inches
Mean annual air temperature: 45 to 50 degrees F
Frost-free period: 105 to 130 days
Farmland classification: Not prime farmland

Map Unit Composition

Cedak and similar soils: 45 percent
Recluse and similar soils: 40 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Cedak

Setting

Landform: Hills
Landform position (two-dimensional): Shoulder, backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Slope alluvium derived from sandstone and shale over residuum weathered from calcareous sandstone

Typical profile

A - 0 to 4 inches: loam
Bt - 4 to 24 inches: clay loam
Bk - 24 to 30 inches: loam
Cr - 30 to 79 inches: bedrock

Properties and qualities

Slope: 6 to 9 percent
Depth to restrictive feature: 20 to 40 inches to paralithic bedrock
Drainage class: Well drained
Runoff class: High
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately high (0.00 to 0.20 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 10 percent
Maximum salinity: Nonsaline to very slightly saline (0.3 to 2.0 mmhos/cm)
Sodium adsorption ratio, maximum: 8.0
Available water supply, 0 to 60 inches: Low (about 5.4 inches)

Interpretive groups

Land capability classification (irrigated): 6e
Land capability classification (nonirrigated): 4e
Hydrologic Soil Group: C
Ecological site: R043BY422WY - Loamy (Ly) 15-19" Northern Plains Precipitation Zone
Hydric soil rating: No

Description of Recluse

Setting

Landform: Hills, fan remnants
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Side slope
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Alluvium derived from sandstone and shale

Typical profile

A - 0 to 14 inches: loam
Bt - 14 to 30 inches: clay loam
Bk - 30 to 79 inches: loam

Properties and qualities

Slope: 6 to 9 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Runoff class: Medium
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.60 to 2.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 14 percent
Maximum salinity: Nonsaline to very slightly saline (0.3 to 2.0 mmhos/cm)
Sodium adsorption ratio, maximum: 3.0
Available water supply, 0 to 60 inches: High (about 10.9 inches)

Interpretive groups

Land capability classification (irrigated): 6e
Land capability classification (nonirrigated): 4e
Hydrologic Soil Group: B
Ecological site: R043BY422WY - Loamy (Ly) 15-19" Northern Plains Precipitation Zone
Hydric soil rating: No

Minor Components

Platmak

Percent of map unit: 4 percent
Landform: Fan remnants, hills
Landform position (two-dimensional): Footslope

Landform position (three-dimensional): Side slope
Down-slope shape: Linear
Across-slope shape: Linear
Ecological site: R043BY422WY - Loamy (Ly) 15-19" Northern Plains Precipitation Zone
Hydric soil rating: No

Nuncho

Percent of map unit: 4 percent
Landform: Fan remnants, hills
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Side slope
Down-slope shape: Linear
Across-slope shape: Linear
Ecological site: R043BY404WY - Clayey (Cy) 15-19" Northern Plains Precipitation Zone
Hydric soil rating: No

Moskee

Percent of map unit: 4 percent
Landform: Fan remnants, hills
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Side slope
Down-slope shape: Linear
Across-slope shape: Linear
Ecological site: R043BY450WY - Sandy (Sy) 15-19" Northern Plains Precipitation Zone
Hydric soil rating: No

Emigrant

Percent of map unit: 3 percent
Landform: Hills
Landform position (two-dimensional): Shoulder, backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Linear
Across-slope shape: Linear
Ecological site: R043BY422WY - Loamy (Ly) 15-19" Northern Plains Precipitation Zone
Hydric soil rating: No

Data Source Information

Soil Survey Area: Sheridan County Area, Wyoming
Survey Area Data: Version 23, Sep 9, 2022

Sheridan County Area, Wyoming

169—Jonpol-Platmak complex, 0 to 9 percent slopes

Map Unit Setting

National map unit symbol: 2yryl
Elevation: 3,580 to 4,840 feet
Mean annual precipitation: 15 to 17 inches
Mean annual air temperature: 45 to 50 degrees F
Frost-free period: 105 to 130 days
Farmland classification: Not prime farmland

Map Unit Composition

Jonpol and similar soils: 41 percent
Platmak and similar soils: 39 percent
Minor components: 20 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Jonpol

Setting

Landform: Terraces, hillslopes, mesas, ridges, hills
Down-slope shape: Linear, convex
Across-slope shape: Linear
Parent material: Slope alluvium derived from sandstone and shale and/or colluvium derived from sandstone and shale and/or residuum weathered from sandstone and shale and/or alluvium derived from sandstone and shale

Typical profile

A - 0 to 3 inches: loam
Bt - 3 to 19 inches: clay
Btk - 19 to 32 inches: loam
Cr - 32 to 79 inches: bedrock

Properties and qualities

Slope: 0 to 9 percent
Depth to restrictive feature: 20 to 40 inches to paralithic bedrock
Drainage class: Well drained
Runoff class: High
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately high (0.00 to 0.20 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 14 percent
Maximum salinity: Nonsaline to very slightly saline (0.3 to 2.0 mmhos/cm)
Sodium adsorption ratio, maximum: 3.0
Available water supply, 0 to 60 inches: Low (about 5.1 inches)

Interpretive groups

Land capability classification (irrigated): 4e
Land capability classification (nonirrigated): 4e
Hydrologic Soil Group: D
Ecological site: R058BY222WY - Loamy (Ly) 15-17" PZ
Hydric soil rating: No

Description of Platmak

Setting

Landform: Hillslopes, mesas, terraces, ridges, hills
Landform position (two-dimensional): Footslope, toeslope
Landform position (three-dimensional): Base slope, side slope
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Slope alluvium derived from calcareous shale

Typical profile

A - 0 to 4 inches: loam
Bt - 4 to 27 inches: clay
Bk - 27 to 79 inches: clay loam

Properties and qualities

Slope: 0 to 9 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Runoff class: High
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.60 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 14 percent
Gypsum, maximum content: 1 percent
Maximum salinity: Nonsaline to very slightly saline (1.0 to 2.0 mmhos/cm)
Sodium adsorption ratio, maximum: 3.0
Available water supply, 0 to 60 inches: High (about 10.7 inches)

Interpretive groups

Land capability classification (irrigated): 3e
Land capability classification (nonirrigated): 3e
Hydrologic Soil Group: C
Ecological site: R058BY222WY - Loamy (Ly) 15-17" PZ
Hydric soil rating: No

Minor Components

Harlan

Percent of map unit: 5 percent
Landform: Alluvial fans, hillslopes, ridges, hills
Landform position (two-dimensional): Toeslope
Down-slope shape: Linear, convex

Across-slope shape: Linear
Ecological site: R043BY422WY - Loamy (Ly) 15-19" Northern Plains Precipitation Zone
Hydric soil rating: No

Recluse

Percent of map unit: 5 percent
Landform: Fan remnants, alluvial fans
Down-slope shape: Linear
Across-slope shape: Linear
Ecological site: R058BY222WY - Loamy (Ly) 15-17" PZ
Hydric soil rating: No

Cedak

Percent of map unit: 4 percent
Landform: Alluvial fans, hills
Landform position (two-dimensional): Shoulder, backslope
Landform position (three-dimensional): Side slope, base slope
Down-slope shape: Linear
Across-slope shape: Linear
Ecological site: R058BY222WY - Loamy (Ly) 15-17" PZ
Hydric soil rating: No

Nuncho

Percent of map unit: 3 percent
Landform: Fan remnants, alluvial fans
Landform position (two-dimensional): Footslope, toeslope
Down-slope shape: Linear
Across-slope shape: Linear
Ecological site: R058BY204WY - Clayey (Cy) 15-17" PZ
Hydric soil rating: No

Kirtley

Percent of map unit: 3 percent
Landform: Hills
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Interfluve, side slope
Down-slope shape: Linear
Across-slope shape: Linear
Ecological site: R058BY222WY - Loamy (Ly) 15-17" PZ
Hydric soil rating: No

Data Source Information

Soil Survey Area: Sheridan County Area, Wyoming
Survey Area Data: Version 23, Sep 9, 2022

Sheridan County Area, Wyoming

198—Nuncho-Emigrant association, 9 to 15 percent slopes

Map Unit Setting

National map unit symbol: d3v0
Elevation: 3,500 to 4,500 feet
Mean annual precipitation: 15 to 17 inches
Mean annual air temperature: 45 to 48 degrees F
Frost-free period: 110 to 120 days
Farmland classification: Not prime farmland

Map Unit Composition

Nuncho and similar soils: 40 percent
Emigrant and similar soils: 35 percent
Minor components: 25 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Nuncho

Setting

Landform: Hills
Landform position (three-dimensional): Side slope
Down-slope shape: Linear
Across-slope shape: Convex

Typical profile

A - 0 to 2 inches: loam
B - 2 to 35 inches: clay loam
B - 35 to 60 inches: clay loam

Properties and qualities

Slope: 9 to 15 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.20 to 0.60 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 15 percent
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water supply, 0 to 60 inches: High (about 11.0 inches)

Interpretive groups

Land capability classification (irrigated): 4e
Land capability classification (nonirrigated): 4e
Hydrologic Soil Group: C
Ecological site: R043BY422WY - Loamy (Ly) 15-19" Northern Plains Precipitation Zone

Hydric soil rating: No

Description of Emigrant

Setting

Landform: Ridges, hills
Landform position (three-dimensional): Side slope
Down-slope shape: Linear
Across-slope shape: Convex

Typical profile

A - 0 to 5 inches: loam
B - 5 to 12 inches: clay loam
B - 12 to 38 inches: clay loam
Cr - 38 to 60 inches: bedrock

Properties and qualities

Slope: 9 to 15 percent
Depth to restrictive feature: 20 to 40 inches to paralithic bedrock
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately high (0.00 to 0.20 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 14 percent
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water supply, 0 to 60 inches: Moderate (about 6.6 inches)

Interpretive groups

Land capability classification (irrigated): 4e
Land capability classification (nonirrigated): 4e
Hydrologic Soil Group: C
Ecological site: R043BY422WY - Loamy (Ly) 15-19" Northern Plains Precipitation Zone
Hydric soil rating: No

Minor Components

Cedak

Percent of map unit: 7 percent
Ecological site: R043BY422WY - Loamy (Ly) 15-19" Northern Plains Precipitation Zone
Hydric soil rating: No

Very deep reddish brown clayey soils

Percent of map unit: 6 percent
Hydric soil rating: No

Platmak

Percent of map unit: 6 percent
Ecological site: R043BY422WY - Loamy (Ly) 15-19" Northern Plains Precipitation Zone

Hydric soil rating: No

Recluse

Percent of map unit: 6 percent
Ecological site: R043BY422WY - Loamy (Ly) 15-19" Northern Plains Precipitation Zone
Hydric soil rating: No

Data Source Information

Soil Survey Area: Sheridan County Area, Wyoming
Survey Area Data: Version 23, Sep 9, 2022

Sheridan County Area, Wyoming

209—Parmleed-Worfka association, moist, 9 to 25 percent slopes

Map Unit Setting

National map unit symbol: d3qw
Elevation: 3,530 to 4,540 feet
Mean annual precipitation: 15 to 19 inches
Mean annual air temperature: 45 to 48 degrees F
Frost-free period: 110 to 120 days
Farmland classification: Not prime farmland

Map Unit Composition

Parmleed, moist, and similar soils: 45 percent
Worfka, moist, and similar soils: 40 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Parmleed, Moist

Setting

Landform: Ridges, hills
Landform position (three-dimensional): Side slope
Down-slope shape: Linear
Across-slope shape: Convex
Parent material: Residuum weathered from shale and/or alluvium derived from shale

Typical profile

A - 0 to 8 inches: loam
Bt - 8 to 29 inches: clay
Bk - 29 to 32 inches: clay loam
Cr - 32 to 60 inches: bedrock

Properties and qualities

Slope: 9 to 25 percent
Depth to restrictive feature: 20 to 40 inches to paralithic bedrock
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately high (0.00 to 0.20 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 14 percent
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Sodium adsorption ratio, maximum: 5.0
Available water supply, 0 to 60 inches: Low (about 5.7 inches)

Interpretive groups

Land capability classification (irrigated): 6e
Land capability classification (nonirrigated): 6e
Hydrologic Soil Group: D
Ecological site: R043BY422WY - Loamy (Ly) 15-19" Northern Plains Precipitation Zone
Hydric soil rating: No

Description of Worfka, Moist

Setting

Landform: Ridges, hills
Landform position (three-dimensional): Side slope
Down-slope shape: Linear
Across-slope shape: Convex
Parent material: Residuum weathered from shale and/or colluvium derived from shale

Typical profile

A - 0 to 1 inches: loam
Bt - 1 to 8 inches: clay
Bk - 8 to 11 inches: clay loam
Cr - 11 to 60 inches: bedrock

Properties and qualities

Slope: 9 to 25 percent
Depth to restrictive feature: 10 to 20 inches to paralithic bedrock
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately high (0.00 to 0.20 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 15 percent
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water supply, 0 to 60 inches: Very low (about 1.8 inches)

Interpretive groups

Land capability classification (irrigated): 7e
Land capability classification (nonirrigated): 7e
Hydrologic Soil Group: D
Ecological site: R043BY462WY - Shallow Loamy (SwLy) 15-19" Northern Plains Precipitation Zone
Hydric soil rating: No

Minor Components

Bidman

Percent of map unit: 5 percent
Landform: Fan remnants
Ecological site: R058BY122WY - Loamy (Ly) 10-14" PZ
Hydric soil rating: No

Renohill

Percent of map unit: 5 percent
Ecological site: R043BY404WY - Clayey (Cy) 15-19" Northern Plains Precipitation Zone
Hydric soil rating: No

Rock outcrop

Percent of map unit: 3 percent
Hydric soil rating: No

Shingle

Percent of map unit: 2 percent
Ecological site: R043BY462WY - Shallow Loamy (SwLy) 15-19" Northern Plains Precipitation Zone
Hydric soil rating: No

Data Source Information

Soil Survey Area: Sheridan County Area, Wyoming
Survey Area Data: Version 23, Sep 9, 2022

Sheridan County Area, Wyoming

213—Platmak loam, 3 to 6 percent slopes

Map Unit Setting

National map unit symbol: d3qr
Elevation: 3,530 to 4,540 feet
Mean annual precipitation: 15 to 19 inches
Mean annual air temperature: 45 to 48 degrees F
Frost-free period: 110 to 120 days
Farmland classification: Prime farmland if irrigated

Map Unit Composition

Platmak and similar soils: 80 percent
Minor components: 20 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Platmak

Setting

Landform: Fan remnants, alluvial fans
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Alluvium derived from sandstone and shale

Typical profile

A - 0 to 2 inches: loam
Bt - 2 to 13 inches: clay loam
Bk - 13 to 60 inches: loam

Properties and qualities

Slope: 3 to 6 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.20 to 0.60 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 15 percent
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water supply, 0 to 60 inches: High (about 10.2 inches)

Interpretive groups

Land capability classification (irrigated): 3e
Land capability classification (nonirrigated): 3e
Hydrologic Soil Group: C
Ecological site: R043BY422WY - Loamy (Ly) 15-19" Northern Plains Precipitation Zone
Hydric soil rating: No

Minor Components

Nuncho

Percent of map unit: 10 percent
Ecological site: R043BY404WY - Clayey (Cy) 15-19" Northern Plains Precipitation Zone
Hydric soil rating: No

Recluse

Percent of map unit: 10 percent
Ecological site: R043BY422WY - Loamy (Ly) 15-19" Northern Plains Precipitation Zone
Other vegetative classification: Loamy, 15-19 Northern Plains (046XY122WY_4)
Hydric soil rating: No

Data Source Information

Soil Survey Area: Sheridan County Area, Wyoming
Survey Area Data: Version 23, Sep 9, 2022

Sheridan County Area, Wyoming

216—Platsher loam, 3 to 6 percent slopes

Map Unit Setting

National map unit symbol: d3qn
Elevation: 3,500 to 4,500 feet
Mean annual precipitation: 15 to 17 inches
Mean annual air temperature: 45 to 48 degrees F
Frost-free period: 110 to 120 days
Farmland classification: Farmland of statewide importance, if irrigated

Map Unit Composition

Platsher and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Platsher

Setting

Landform: Fan remnants, alluvial fans
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Alluvium derived from sedimentary rock

Typical profile

A - 0 to 2 inches: loam
Bt - 2 to 15 inches: clay
Bk - 15 to 36 inches: clay loam
2Bk - 36 to 60 inches: gravelly loam

Properties and qualities

Slope: 3 to 6 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 35 percent
Gypsum, maximum content: 2 percent
Maximum salinity: Very slightly saline to slightly saline (2.0 to 4.0 mmhos/cm)
Sodium adsorption ratio, maximum: 5.0
Available water supply, 0 to 60 inches: Moderate (about 8.9 inches)

Interpretive groups

Land capability classification (irrigated): 3e
Land capability classification (nonirrigated): 3e

Hydrologic Soil Group: C
Ecological site: R043BY422WY - Loamy (Ly) 15-19" Northern Plains Precipitation Zone
Hydric soil rating: No

Minor Components

Nuncho
Percent of map unit: 5 percent
Ecological site: R043BY404WY - Clayey (Cy) 15-19" Northern Plains Precipitation Zone
Hydric soil rating: No

Wolfvar
Percent of map unit: 5 percent
Ecological site: R043BY422WY - Loamy (Ly) 15-19" Northern Plains Precipitation Zone
Hydric soil rating: No

Wolf
Percent of map unit: 5 percent
Ecological site: R043BY422WY - Loamy (Ly) 15-19" Northern Plains Precipitation Zone
Hydric soil rating: No

Data Source Information

Soil Survey Area: Sheridan County Area, Wyoming
Survey Area Data: Version 23, Sep 9, 2022

Sheridan County Area, Wyoming

220—Platsher-Wolfvar loams, 3 to 6 percent slopes

Map Unit Setting

National map unit symbol: d3qj
Elevation: 3,530 to 4,540 feet
Mean annual precipitation: 15 to 19 inches
Mean annual air temperature: 45 to 48 degrees F
Frost-free period: 110 to 120 days
Farmland classification: Farmland of statewide importance, if irrigated

Map Unit Composition

Platsher and similar soils: 50 percent
Wolfvar and similar soils: 35 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Platsher

Setting

Landform: Fan remnants, alluvial fans
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Alluvium derived from sedimentary rock

Typical profile

A - 0 to 9 inches: loam
Bt - 9 to 20 inches: clay loam
Bk - 20 to 37 inches: clay loam
2Bk - 37 to 60 inches: gravelly loam

Properties and qualities

Slope: 3 to 6 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.20 to 0.57 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 35 percent
Gypsum, maximum content: 2 percent
Maximum salinity: Very slightly saline to slightly saline (2.0 to 4.0 mmhos/cm)
Sodium adsorption ratio, maximum: 5.0
Available water supply, 0 to 60 inches: Moderate (about 9.0 inches)

Interpretive groups

Land capability classification (irrigated): 3e

Land capability classification (nonirrigated): 3e
Hydrologic Soil Group: C
Ecological site: R043BY422WY - Loamy (Ly) 15-19" Northern Plains Precipitation Zone
Hydric soil rating: No

Description of Wolfvar

Setting

Landform: Alluvial fans, fan remnants
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Alluvium derived from sedimentary rock

Typical profile

A - 0 to 2 inches: loam
Bt - 2 to 16 inches: clay loam
2C1 - 16 to 23 inches: gravelly loam
2C2 - 23 to 60 inches: extremely gravelly loamy sand

Properties and qualities

Slope: 3 to 6 percent
Depth to restrictive feature: 20 to 40 inches to strongly contrasting textural stratification
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.20 to 0.60 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 35 percent
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Sodium adsorption ratio, maximum: 5.0
Available water supply, 0 to 60 inches: Low (about 3.7 inches)

Interpretive groups

Land capability classification (irrigated): 3e
Land capability classification (nonirrigated): 3e
Hydrologic Soil Group: C
Ecological site: R043BY422WY - Loamy (Ly) 15-19" Northern Plains Precipitation Zone
Hydric soil rating: No

Minor Components

Wolf

Percent of map unit: 5 percent
Ecological site: R043BY422WY - Loamy (Ly) 15-19" Northern Plains Precipitation Zone
Other vegetative classification: LOAMY (15-19NP) (058BY122WY_6)
Hydric soil rating: No

Nuncho

Percent of map unit: 5 percent
Ecological site: R043BY404WY - Clayey (Cy) 15-19" Northern Plains Precipitation Zone
Hydric soil rating: No

Platsher variant

Percent of map unit: 5 percent
Ecological site: R043BY474WY - Subirrigated (Sb) 15-19" Northern Plains Precipitation Zone
Hydric soil rating: No

Data Source Information

Soil Survey Area: Sheridan County Area, Wyoming
Survey Area Data: Version 23, Sep 9, 2022

Sheridan County Area, Wyoming

221—Platsher-Wolfvar complex, 6 to 9 percent slopes

Map Unit Setting

National map unit symbol: d3qh
Elevation: 3,530 to 4,540 feet
Mean annual precipitation: 15 to 19 inches
Mean annual air temperature: 45 to 48 degrees F
Frost-free period: 110 to 120 days
Farmland classification: Not prime farmland

Map Unit Composition

Platsher and similar soils: 40 percent
Wolfvar and similar soils: 30 percent
Minor components: 30 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Platsher

Setting

Landform: Hills
Landform position (three-dimensional): Side slope
Down-slope shape: Linear
Across-slope shape: Convex
Parent material: Alluvium derived from sedimentary rock

Typical profile

A - 0 to 2 inches: clay loam
Bt - 2 to 18 inches: clay
Bk - 18 to 39 inches: silty clay loam
2Bk - 39 to 60 inches: cobbly clay loam

Properties and qualities

Slope: 6 to 9 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 35 percent
Gypsum, maximum content: 2 percent
Maximum salinity: Very slightly saline to slightly saline (2.0 to 4.0 mmhos/cm)
Sodium adsorption ratio, maximum: 5.0
Available water supply, 0 to 60 inches: High (about 9.1 inches)

Interpretive groups

Land capability classification (irrigated): 4e

Land capability classification (nonirrigated): 4e
Hydrologic Soil Group: C
Ecological site: R043BY422WY - Loamy (Ly) 15-19" Northern Plains Precipitation Zone
Hydric soil rating: No

Description of Wolfvar

Setting

Landform: Hills
Landform position (three-dimensional): Side slope
Down-slope shape: Linear
Across-slope shape: Convex
Parent material: Alluvium derived from sedimentary rock

Typical profile

A - 0 to 1 inches: loam
Bt - 1 to 16 inches: clay
2C1 - 16 to 24 inches: gravelly clay loam
2C2 - 24 to 60 inches: extremely gravelly loamy sand

Properties and qualities

Slope: 6 to 9 percent
Depth to restrictive feature: 20 to 40 inches to strongly contrasting textural stratification
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 35 percent
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Sodium adsorption ratio, maximum: 5.0
Available water supply, 0 to 60 inches: Low (about 3.8 inches)

Interpretive groups

Land capability classification (irrigated): 4e
Land capability classification (nonirrigated): 4e
Hydrologic Soil Group: C
Ecological site: R043BY422WY - Loamy (Ly) 15-19" Northern Plains Precipitation Zone
Hydric soil rating: No

Minor Components

Wolf

Percent of map unit: 13 percent
Ecological site: R043BY422WY - Loamy (Ly) 15-19" Northern Plains Precipitation Zone
Other vegetative classification: LOAMY (15-19NP) (058BY122WY_6)
Hydric soil rating: No

Nuncho

Percent of map unit: 12 percent
Ecological site: R043BY404WY - Clayey (Cy) 15-19" Northern Plains Precipitation Zone
Hydric soil rating: No

Areas > 9 percent slopes

Percent of map unit: 5 percent
Hydric soil rating: No

Data Source Information

Soil Survey Area: Sheridan County Area, Wyoming
Survey Area Data: Version 23, Sep 9, 2022

Sheridan County Area, Wyoming

244—Samday-Gayhart-Hilight clay loams, moist, 2 to 60 percent slopes

Map Unit Setting

National map unit symbol: d36t
Elevation: 3,530 to 4,540 feet
Mean annual precipitation: 15 to 19 inches
Mean annual air temperature: 45 to 48 degrees F
Frost-free period: 110 to 120 days
Farmland classification: Not prime farmland

Map Unit Composition

Samday, moist, and similar soils: 35 percent
Gayhart, moist, and similar soils: 25 percent
Hilight, moist, and similar soils: 20 percent
Minor components: 20 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Samday, Moist

Setting

Landform: Ridges, hills
Landform position (three-dimensional): Side slope
Down-slope shape: Linear
Across-slope shape: Convex
Parent material: Residuum weathered from shale and/or colluvium derived from shale

Typical profile

A - 0 to 2 inches: clay loam
C - 2 to 14 inches: clay
Cr - 14 to 60 inches: bedrock

Properties and qualities

Slope: 2 to 60 percent
Depth to restrictive feature: 10 to 20 inches to paralithic bedrock
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately high (0.00 to 0.20 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 10 percent
Gypsum, maximum content: 2 percent
Maximum salinity: Nonsaline to slightly saline (0.0 to 4.0 mmhos/cm)
Sodium adsorption ratio, maximum: 5.0
Available water supply, 0 to 60 inches: Very low (about 2.3 inches)

Interpretive groups

Land capability classification (irrigated): 7e
Land capability classification (nonirrigated): 7e
Hydrologic Soil Group: D
Ecological site: R043BY458WY - Shallow Clayey (SwCy) 15-19" Northern Plains Precipitation Zone
Hydric soil rating: No

Description of Gayhart, Moist

Setting

Landform: Ridges, hills
Landform position (three-dimensional): Side slope
Down-slope shape: Linear
Across-slope shape: Convex
Parent material: Residuum weathered from shale and/or alluvium derived from shale

Typical profile

A - 0 to 2 inches: clay loam
C - 2 to 32 inches: clay
Cr - 32 to 60 inches: bedrock

Properties and qualities

Slope: 2 to 60 percent
Depth to restrictive feature: 20 to 40 inches to paralithic bedrock
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately high (0.00 to 0.20 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 15 percent
Gypsum, maximum content: 3 percent
Maximum salinity: Nonsaline to moderately saline (0.0 to 8.0 mmhos/cm)
Sodium adsorption ratio, maximum: 5.0
Available water supply, 0 to 60 inches: Low (about 4.5 inches)

Interpretive groups

Land capability classification (irrigated): 7e
Land capability classification (nonirrigated): 7e
Hydrologic Soil Group: D
Ecological site: R043BY404WY - Clayey (Cy) 15-19" Northern Plains Precipitation Zone
Hydric soil rating: No

Description of Hilight, Moist

Setting

Landform: Ridges, hills
Landform position (three-dimensional): Side slope
Down-slope shape: Linear

Across-slope shape: Convex
Parent material: Residuum weathered from shale

Typical profile

A - 0 to 1 inches: clay loam
C - 1 to 12 inches: clay
Cr - 12 to 60 inches: bedrock

Properties and qualities

Slope: 2 to 60 percent
Depth to restrictive feature: 10 to 20 inches to paralithic bedrock
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately high (0.00 to 0.20 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water supply, 0 to 60 inches: Very low (about 1.8 inches)

Interpretive groups

Land capability classification (irrigated): 7e
Land capability classification (nonirrigated): 7e
Hydrologic Soil Group: D
Ecological site: R043BY458WY - Shallow Clayey (SwCy) 15-19" Northern Plains Precipitation Zone
Hydric soil rating: No

Minor Components

Rock outcrop

Percent of map unit: 10 percent
Hydric soil rating: No

Bahl

Percent of map unit: 10 percent
Ecological site: R058BY104WY - Clayey (Cy) 10-14" PZ
Hydric soil rating: No

Data Source Information

Soil Survey Area: Sheridan County Area, Wyoming
Survey Area Data: Version 23, Sep 9, 2022

Sheridan County Area, Wyoming

258—Shingle-Nihill complex, moist, 3 to 80 percent slopes

Map Unit Setting

National map unit symbol: d3mz
Elevation: 3,530 to 4,540 feet
Mean annual precipitation: 15 to 17 inches
Mean annual air temperature: 45 to 48 degrees F
Frost-free period: 110 to 120 days
Farmland classification: Not prime farmland

Map Unit Composition

Shingle, moist, and similar soils: 40 percent
Nihill, moist, and similar soils: 35 percent
Minor components: 25 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Shingle, Moist

Setting

Landform: Ridges, hills
Landform position (three-dimensional): Side slope
Down-slope shape: Linear
Across-slope shape: Convex
Parent material: Residuum weathered from shale

Typical profile

A - 0 to 4 inches: loam
AC - 4 to 17 inches: loam
Cr - 17 to 60 inches: bedrock

Properties and qualities

Slope: 3 to 80 percent
Depth to restrictive feature: 10 to 20 inches to paralithic bedrock
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately high (0.00 to 0.20 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 15 percent
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Sodium adsorption ratio, maximum: 5.0
Available water supply, 0 to 60 inches: Low (about 3.0 inches)

Interpretive groups

Land capability classification (irrigated): 7e
Land capability classification (nonirrigated): 7e
Hydrologic Soil Group: D

Ecological site: R043BY462WY - Shallow Loamy (SwLy) 15-19" Northern Plains Precipitation Zone
Hydric soil rating: No

Description of Nihill, Moist

Setting

Landform: Hills
Landform position (three-dimensional): Side slope
Down-slope shape: Linear
Across-slope shape: Convex
Parent material: Gravelly alluvium derived from igneous, metamorphic and sedimentary rock

Typical profile

A - 0 to 5 inches: gravelly loam
Bk1 - 5 to 29 inches: very gravelly clay loam
Bk2 - 29 to 60 inches: very gravelly sandy clay loam

Properties and qualities

Slope: 3 to 80 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 1.98 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 15 percent
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water supply, 0 to 60 inches: Low (about 3.8 inches)

Interpretive groups

Land capability classification (irrigated): 7e
Land capability classification (nonirrigated): 7e
Hydrologic Soil Group: B
Ecological site: R043BY462WY - Shallow Loamy (SwLy) 15-19" Northern Plains Precipitation Zone
Hydric soil rating: No

Minor Components

Kishona

Percent of map unit: 5 percent
Ecological site: R043BY422WY - Loamy (Ly) 15-19" Northern Plains Precipitation Zone
Hydric soil rating: No

Theedle

Percent of map unit: 5 percent
Ecological site: R043BY422WY - Loamy (Ly) 15-19" Northern Plains Precipitation Zone
Hydric soil rating: No

Cushman

Percent of map unit: 5 percent
Ecological site: R043BY422WY - Loamy (Ly) 15-19" Northern Plains Precipitation Zone
Hydric soil rating: No

Wolf

Percent of map unit: 5 percent
Ecological site: R043BY422WY - Loamy (Ly) 15-19" Northern Plains Precipitation Zone
Other vegetative classification: LOAMY (15-19NP) (058BY122WY_6)
Hydric soil rating: No

Wolfvar

Percent of map unit: 5 percent
Ecological site: R043BY422WY - Loamy (Ly) 15-19" Northern Plains Precipitation Zone
Other vegetative classification: LOAMY (15-19NP) (058BY122WY_6)
Hydric soil rating: No

Data Source Information

Soil Survey Area: Sheridan County Area, Wyoming
Survey Area Data: Version 23, Sep 9, 2022

Sheridan County Area, Wyoming

269—Shingle-Theedle-Kishona complex, moist, 3 to 30 percent slopes

Map Unit Setting

National map unit symbol: 2xtvb
Elevation: 3,480 to 5,080 feet
Mean annual precipitation: 15 to 17 inches
Mean annual air temperature: 45 to 50 degrees F
Frost-free period: 105 to 130 days
Farmland classification: Not prime farmland

Map Unit Composition

Shingle, moist, and similar soils: 31 percent
Theedle, moist, and similar soils: 29 percent
Kishona, moist, and similar soils: 20 percent
Minor components: 20 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Shingle, Moist

Setting

Landform: Hills
Landform position (two-dimensional): Summit, shoulder
Landform position (three-dimensional): Side slope, crest
Down-slope shape: Linear
Across-slope shape: Convex
Parent material: Residuum weathered from sandstone and shale

Typical profile

A - 0 to 2 inches: clay loam
AC - 2 to 16 inches: clay loam
Cr - 16 to 79 inches: bedrock

Properties and qualities

Slope: 9 to 30 percent
Depth to restrictive feature: 5 to 20 inches to paralithic bedrock
Drainage class: Well drained
Runoff class: Very high
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately high (0.00 to 0.20 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 14 percent
Maximum salinity: Nonsaline to very slightly saline (0.3 to 2.0 mmhos/cm)
Sodium adsorption ratio, maximum: 8.0
Available water supply, 0 to 60 inches: Very low (about 2.9 inches)

Interpretive groups

Land capability classification (irrigated): 7e
Land capability classification (nonirrigated): 6e
Hydrologic Soil Group: D
Ecological site: R043BY462WY - Shallow Loamy (SwLy) 15-19" Northern Plains Precipitation Zone
Hydric soil rating: No

Description of Theedle, Moist

Setting

Landform: Hills
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Linear
Across-slope shape: Convex
Parent material: Slope alluvium over residuum weathered from sandstone and shale

Typical profile

A - 0 to 2 inches: loam
AC - 2 to 22 inches: loam
Cr - 22 to 79 inches: bedrock

Properties and qualities

Slope: 9 to 15 percent
Depth to restrictive feature: 20 to 40 inches to paralithic bedrock
Drainage class: Well drained
Runoff class: High
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately high (0.00 to 0.20 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 10 percent
Maximum salinity: Nonsaline to very slightly saline (0.3 to 2.0 mmhos/cm)
Sodium adsorption ratio, maximum: 8.0
Available water supply, 0 to 60 inches: Low (about 3.7 inches)

Interpretive groups

Land capability classification (irrigated): 6e
Land capability classification (nonirrigated): 6e
Hydrologic Soil Group: C
Ecological site: R043BY422WY - Loamy (Ly) 15-19" Northern Plains Precipitation Zone
Hydric soil rating: No

Description of Kishona, Moist

Setting

Landform: Hills
Landform position (two-dimensional): Backslope, footslope

Landform position (three-dimensional): Side slope
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Slope alluvium derived from sandstone and shale

Typical profile

A - 0 to 2 inches: loam
Bk - 2 to 79 inches: clay loam

Properties and qualities

Slope: 3 to 10 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Runoff class: Medium
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.60 to 2.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 14 percent
Maximum salinity: Nonsaline to slightly saline (0.3 to 4.0 mmhos/cm)
Sodium adsorption ratio, maximum: 8.0
Available water supply, 0 to 60 inches: High (about 11.9 inches)

Interpretive groups

Land capability classification (irrigated): 6e
Land capability classification (nonirrigated): 4e
Hydrologic Soil Group: B
Ecological site: R043BY422WY - Loamy (Ly) 15-19" Northern Plains Precipitation Zone
Hydric soil rating: No

Minor Components

Samday, moist

Percent of map unit: 8 percent
Landform: Hills
Landform position (two-dimensional): Summit, shoulder
Landform position (three-dimensional): Side slope, crest
Down-slope shape: Linear
Across-slope shape: Convex
Ecological site: R058BY158WY - Shallow Clayey (SwCy) 10-14" PZ
Hydric soil rating: No

Cushman, moist

Percent of map unit: 7 percent
Landform: Hills
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Linear
Across-slope shape: Linear
Ecological site: R043BY422WY - Loamy (Ly) 15-19" Northern Plains Precipitation Zone

Hydric soil rating: No

Rock outcrop

Percent of map unit: 5 percent
Hydric soil rating: No

Data Source Information

Soil Survey Area: Sheridan County Area, Wyoming
Survey Area Data: Version 23, Sep 9, 2022

Sheridan County Area, Wyoming

274—Shingle-Worf complex, moist, 9 to 15 percent slopes

Map Unit Setting

National map unit symbol: d3pz
Elevation: 3,500 to 5,000 feet
Mean annual precipitation: 12 to 14 inches
Mean annual air temperature: 45 to 48 degrees F
Frost-free period: 110 to 120 days
Farmland classification: Not prime farmland

Map Unit Composition

Shingle, moist, and similar soils: 50 percent
Worf, moist, and similar soils: 25 percent
Minor components: 25 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Shingle, Moist

Setting

Landform: Ridges, hills
Landform position (three-dimensional): Side slope
Down-slope shape: Linear
Across-slope shape: Convex
Parent material: Residuum weathered from shale

Typical profile

A - 0 to 3 inches: clay loam
AC - 3 to 17 inches: clay loam
Cr - 17 to 60 inches: bedrock

Properties and qualities

Slope: 9 to 15 percent
Depth to restrictive feature: 10 to 20 inches to paralithic bedrock
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately high (0.00 to 0.20 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 15 percent
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Sodium adsorption ratio, maximum: 5.0
Available water supply, 0 to 60 inches: Low (about 3.0 inches)

Interpretive groups

Land capability classification (irrigated): 6e
Land capability classification (nonirrigated): 6e
Hydrologic Soil Group: D

Ecological site: R043BY462WY - Shallow Loamy (SwLy) 15-19" Northern Plains Precipitation Zone
Hydric soil rating: No

Description of Worf, Moist

Setting

Landform: Ridges, hills
Landform position (three-dimensional): Side slope
Down-slope shape: Linear
Across-slope shape: Convex

Typical profile

A - 0 to 2 inches: loam
B - 2 to 11 inches: clay loam
B - 11 to 14 inches: loam
Cr - 14 to 60 inches: bedrock

Properties and qualities

Slope: 9 to 15 percent
Depth to restrictive feature: 10 to 20 inches to paralithic bedrock
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately high (0.00 to 0.20 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 12 percent
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water supply, 0 to 60 inches: Very low (about 2.4 inches)

Interpretive groups

Land capability classification (irrigated): 6e
Land capability classification (nonirrigated): 6e
Hydrologic Soil Group: D
Ecological site: R043BY462WY - Shallow Loamy (SwLy) 15-19" Northern Plains Precipitation Zone
Hydric soil rating: No

Minor Components

Samday

Percent of map unit: 5 percent
Ecological site: R058BY158WY - Shallow Clayey (SwCy) 10-14" PZ
Hydric soil rating: No

Theedle

Percent of map unit: 5 percent
Ecological site: R043BY422WY - Loamy (Ly) 15-19" Northern Plains Precipitation Zone
Hydric soil rating: No

Rock outcrop

Percent of map unit: 5 percent

Hydric soil rating: No

Shingle variant

Percent of map unit: 5 percent
Ecological site: R043BY462WY - Shallow Loamy (SwLy) 15-19" Northern Plains Precipitation Zone
Hydric soil rating: No

Cushman

Percent of map unit: 5 percent
Ecological site: R043BY422WY - Loamy (Ly) 15-19" Northern Plains Precipitation Zone
Hydric soil rating: No

Data Source Information

Soil Survey Area: Sheridan County Area, Wyoming
Survey Area Data: Version 23, Sep 9, 2022

Sheridan County Area, Wyoming

303—Wolf loam, 3 to 6 percent slopes

Map Unit Setting

National map unit symbol: d3nt
Elevation: 3,530 to 4,540 feet
Mean annual precipitation: 15 to 19 inches
Mean annual air temperature: 45 to 50 degrees F
Frost-free period: 105 to 130 days
Farmland classification: Not prime farmland

Map Unit Composition

Wolf and similar soils: 80 percent
Minor components: 20 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Wolf

Setting

Landform: Fan remnants, alluvial fans
Landform position (two-dimensional): Footslope, toeslope
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Alluvium derived from igneous, metamorphic and sedimentary rock

Typical profile

A - 0 to 2 inches: loam
Btk - 2 to 12 inches: clay loam
2Bk1 - 12 to 36 inches: gravelly sandy loam
2Bk2 - 36 to 60 inches: cobbly sandy loam

Properties and qualities

Slope: 3 to 6 percent
Depth to restrictive feature: 8 to 16 inches to strongly contrasting textural stratification
Drainage class: Well drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 1.98 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 30 percent
Maximum salinity: Very slightly saline to slightly saline (2.0 to 4.0 mmhos/cm)
Sodium adsorption ratio, maximum: 5.0
Available water supply, 0 to 60 inches: Very low (about 2.3 inches)

Interpretive groups

Land capability classification (irrigated): 4e
Land capability classification (nonirrigated): 4e
Hydrologic Soil Group: B
Ecological site: R043BY422WY - Loamy (Ly) 15-19" Northern Plains Precipitation Zone
Hydric soil rating: No

Minor Components

Platsher

Percent of map unit: 6 percent
Landform: Terraces, fan remnants
Landform position (two-dimensional): Footslope, toeslope
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Ecological site: R043BY422WY - Loamy (Ly) 15-19" Northern Plains Precipitation Zone
Hydric soil rating: No

Recluse

Percent of map unit: 6 percent
Landform: Alluvial fans, fan remnants, hills
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Side slope, base slope
Down-slope shape: Linear
Across-slope shape: Linear
Ecological site: R043BY422WY - Loamy (Ly) 15-19" Northern Plains Precipitation Zone
Hydric soil rating: No

Nuncho

Percent of map unit: 5 percent
Landform: Fan remnants, alluvial fans
Landform position (two-dimensional): Toeslope
Down-slope shape: Linear
Across-slope shape: Linear
Ecological site: R043BY404WY - Clayey (Cy) 15-19" Northern Plains Precipitation Zone
Hydric soil rating: No

Wolfvar, very bouldery surface

Percent of map unit: 3 percent
Landform: Terraces, fan remnants
Landform position (two-dimensional): Footslope, toeslope
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Ecological site: R043BY408WY - Coarse Upland (CU) 15-19" Northern Plains Precipitation Zone

Hydric soil rating: No

Data Source Information

Soil Survey Area: Sheridan County Area, Wyoming
Survey Area Data: Version 23, Sep 9, 2022

Sheridan County Area, Wyoming

305—Worfka-Samday-Shingle complex, moist, 6 to 30 percent slopes

Map Unit Setting

National map unit symbol: 2yv6z
Elevation: 3,540 to 4,750 feet
Mean annual precipitation: 15 to 17 inches
Mean annual air temperature: 45 to 50 degrees F
Frost-free period: 105 to 130 days
Farmland classification: Not prime farmland

Map Unit Composition

Worfka, moist, and similar soils: 35 percent
Shingle, moist, and similar soils: 25 percent
Samday, moist, and similar soils: 25 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Worfka, Moist

Setting

Landform: Hills
Landform position (two-dimensional): Summit, shoulder
Landform position (three-dimensional): Side slope, crest
Down-slope shape: Linear
Across-slope shape: Convex
Parent material: Residuum weathered from shale and/or colluvium derived from shale

Typical profile

A - 0 to 1 inches: loam
Bt - 1 to 9 inches: clay
Bk - 9 to 19 inches: clay
Cr - 19 to 79 inches: bedrock

Properties and qualities

Slope: 6 to 30 percent
Depth to restrictive feature: 10 to 20 inches to paralithic bedrock
Drainage class: Well drained
Runoff class: Very high
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately high (0.00 to 0.20 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 14 percent
Maximum salinity: Nonsaline to very slightly saline (0.3 to 2.0 mmhos/cm)
Sodium adsorption ratio, maximum: 3.0

Available water supply, 0 to 60 inches: Very low (about 2.9 inches)

Interpretive groups

Land capability classification (irrigated): 7e
Land capability classification (nonirrigated): 6e
Hydrologic Soil Group: D
Ecological site: R043BY462WY - Shallow Loamy (SwLy) 15-19" Northern Plains Precipitation Zone
Hydric soil rating: No

Description of Samday, Moist

Setting

Landform: Hills
Landform position (two-dimensional): Summit, shoulder
Landform position (three-dimensional): Side slope, crest
Down-slope shape: Linear
Across-slope shape: Convex
Parent material: Residuum weathered from shale

Typical profile

A - 0 to 2 inches: clay loam
C - 2 to 17 inches: clay
Cr - 17 to 79 inches: bedrock

Properties and qualities

Slope: 6 to 30 percent
Depth to restrictive feature: 6 to 20 inches to paralithic bedrock
Drainage class: Well drained
Runoff class: Very high
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately high (0.00 to 0.20 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 14 percent
Gypsum, maximum content: 2 percent
Maximum salinity: Nonsaline to very slightly saline (0.3 to 2.0 mmhos/cm)
Sodium adsorption ratio, maximum: 8.0
Available water supply, 0 to 60 inches: Very low (about 2.8 inches)

Interpretive groups

Land capability classification (irrigated): 7e
Land capability classification (nonirrigated): 6e
Hydrologic Soil Group: D
Ecological site: R043BY458WY - Shallow Clayey (SwCy) 15-19" Northern Plains Precipitation Zone
Hydric soil rating: No

Description of Shingle, Moist

Setting

Landform: Hills

Landform position (two-dimensional): Summit, shoulder
Landform position (three-dimensional): Side slope, crest
Down-slope shape: Linear
Across-slope shape: Convex
Parent material: Residuum weathered from sandstone and shale

Typical profile

A - 0 to 2 inches: clay loam
AC - 2 to 19 inches: clay loam
Cr - 19 to 79 inches: bedrock

Properties and qualities

Slope: 6 to 30 percent
Depth to restrictive feature: 5 to 20 inches to paralithic bedrock
Drainage class: Well drained
Runoff class: Very high
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately high (0.00 to 0.20 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 14 percent
Maximum salinity: Nonsaline to very slightly saline (0.3 to 2.0 mmhos/cm)
Sodium adsorption ratio, maximum: 8.0
Available water supply, 0 to 60 inches: Low (about 3.8 inches)

Interpretive groups

Land capability classification (irrigated): 7e
Land capability classification (nonirrigated): 6e
Hydrologic Soil Group: D
Ecological site: R043BY462WY - Shallow Loamy (SwLy) 15-19" Northern Plains Precipitation Zone
Hydric soil rating: No

Minor Components

Renohill, moist

Percent of map unit: 5 percent
Landform: Hills
Landform position (two-dimensional): Summit, shoulder, backslope
Landform position (three-dimensional): Side slope, crest
Down-slope shape: Linear
Across-slope shape: Convex, linear
Ecological site: R043BY404WY - Clayey (Cy) 15-19" Northern Plains Precipitation Zone
Hydric soil rating: No

Theedle, moist

Percent of map unit: 5 percent
Landform: Hills
Landform position (two-dimensional): Summit, shoulder, backslope
Landform position (three-dimensional): Side slope, crest
Down-slope shape: Linear

Across-slope shape: Convex, linear
Ecological site: R043BY422WY - Loamy (Ly) 15-19" Northern Plains Precipitation Zone
Hydric soil rating: No

Rock outcrop
Percent of map unit: 5 percent
Hydric soil rating: No

Data Source Information

Soil Survey Area: Sheridan County Area, Wyoming
Survey Area Data: Version 23, Sep 9, 2022

Sheridan County Area, Wyoming

306—Worthenton clay loam, 0 to 3 percent slopes

Map Unit Setting

National map unit symbol: d3nq
Elevation: 3,500 to 4,500 feet
Mean annual precipitation: 10 to 14 inches
Mean annual air temperature: 45 to 48 degrees F
Frost-free period: 110 to 125 days
Farmland classification: Not prime farmland

Map Unit Composition

Worthenton and similar soils: 90 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Worthenton

Setting

Landform: Oxbows, flood plains, drainageways
Down-slope shape: Linear
Across-slope shape: Linear

Typical profile

Oi - 0 to 2 inches: slightly decomposed plant material
H1 - 2 to 10 inches: clay loam
H2 - 10 to 21 inches: silty clay loam
H3 - 21 to 62 inches: clay loam

Properties and qualities

Slope: 0 to 3 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Poorly drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.20 to 0.57 in/hr)
Depth to water table: About 6 to 18 inches
Frequency of flooding: OccasionalNone
Frequency of ponding: None
Calcium carbonate, maximum content: 15 percent
Gypsum, maximum content: 2 percent
Maximum salinity: Very slightly saline to moderately saline (2.0 to 8.0 mmhos/cm)
Sodium adsorption ratio, maximum: 5.0
Available water supply, 0 to 60 inches: High (about 10.4 inches)

Interpretive groups

Land capability classification (irrigated): 6w
Land capability classification (nonirrigated): 6w
Hydrologic Soil Group: C/D
Ecological site: R058BY178WY - Wetland (WL) 10-17" PZ

Hydric soil rating: Yes

Minor Components

Haverdad

Percent of map unit: 5 percent
Ecological site: R058BY128WY - Lowland (LL) 10-14" PZ
Hydric soil rating: No

Water

Percent of map unit: 3 percent
Hydric soil rating: No

Ponded soils

Percent of map unit: 2 percent
Landform: Drainageways, oxbows
Hydric soil rating: Yes

Data Source Information

Soil Survey Area: Sheridan County Area, Wyoming
Survey Area Data: Version 23, Sep 9, 2022

Addendum D7.C

Representative Profile Photographs

Pit 1-Sample 1

Pit 1-Sample 2

Pit 1-Sample 3

Pit 2-Sample 1

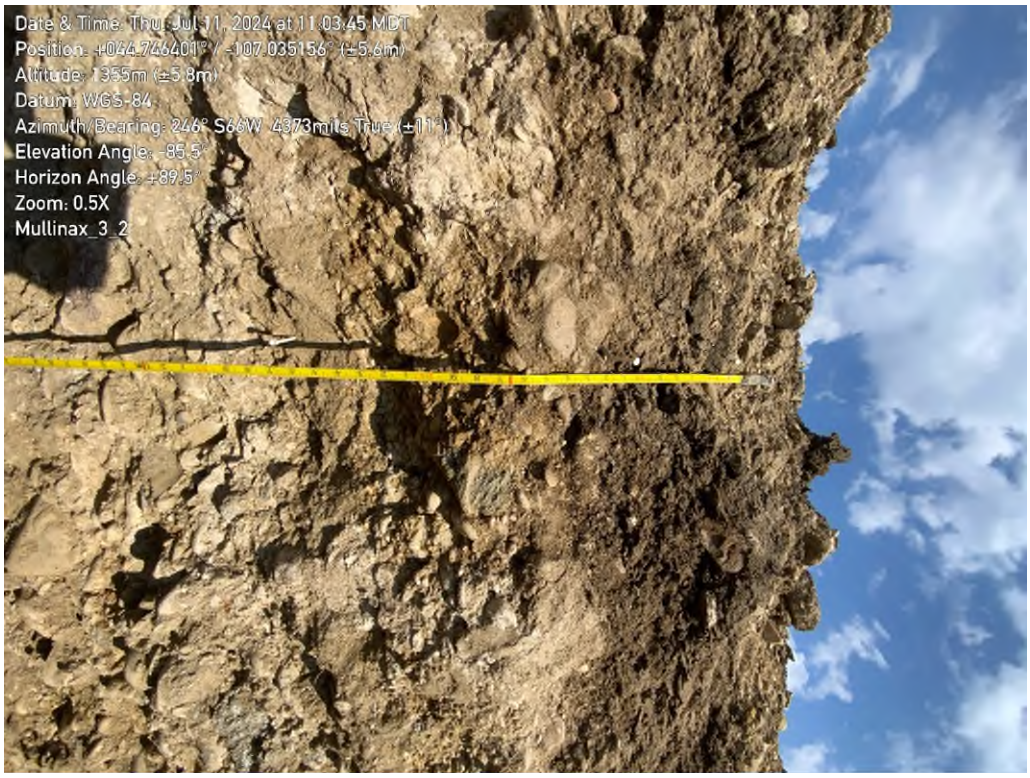
Pit 2-Sample 2

Pit 2-Sample 3

Pit 2-Sample 4

Pit 3-Sample 1

Pit 3-Sample 2



Pit 3-Sample 3

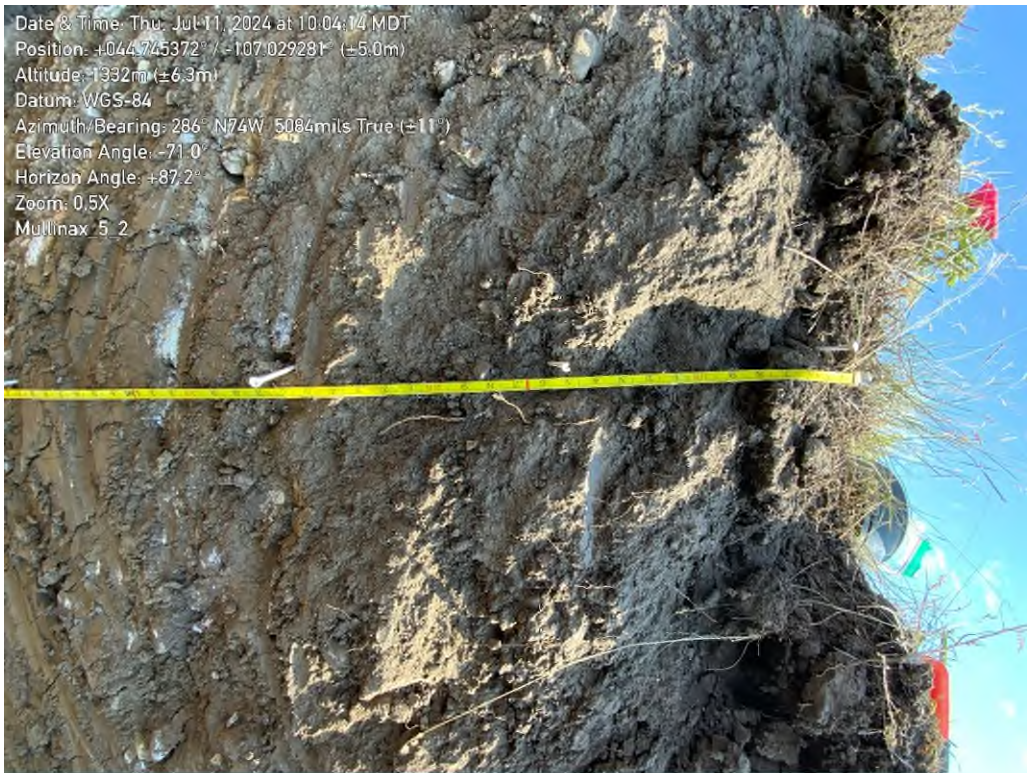
Pit 4-Sample 1

Pit 4-Sample 2

Pit 4-Sample 3

Pit 5-Sample 1

Pit 5-Sample 2

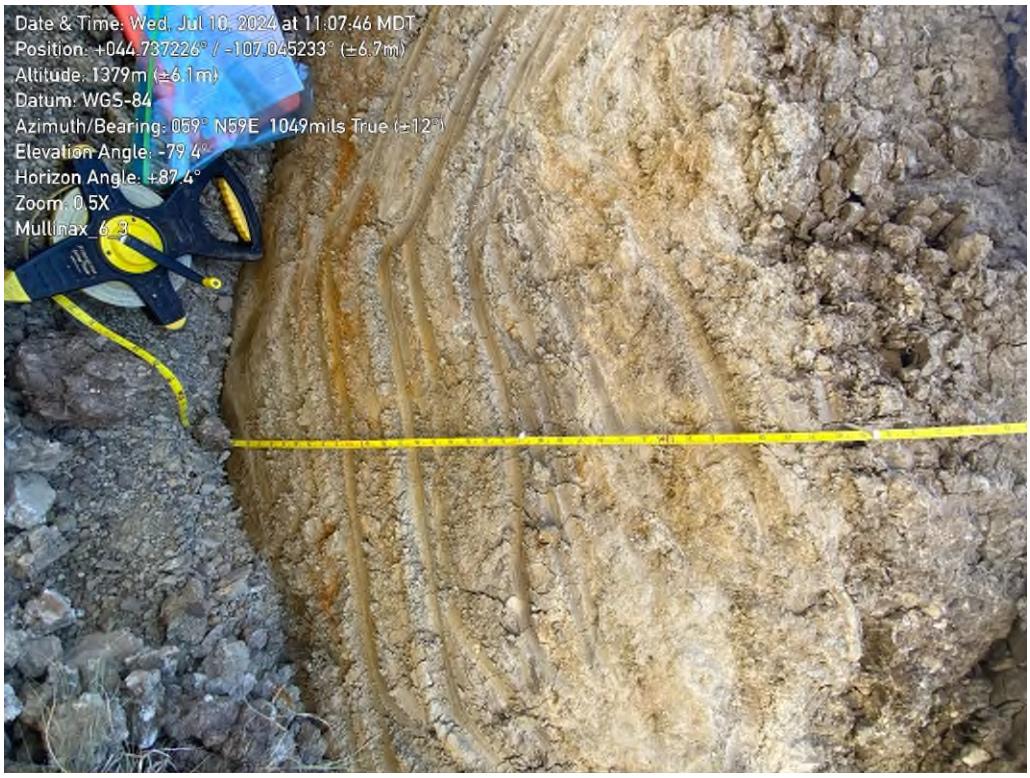


Pit 5-Sample 3

Pit 6-Sample 1

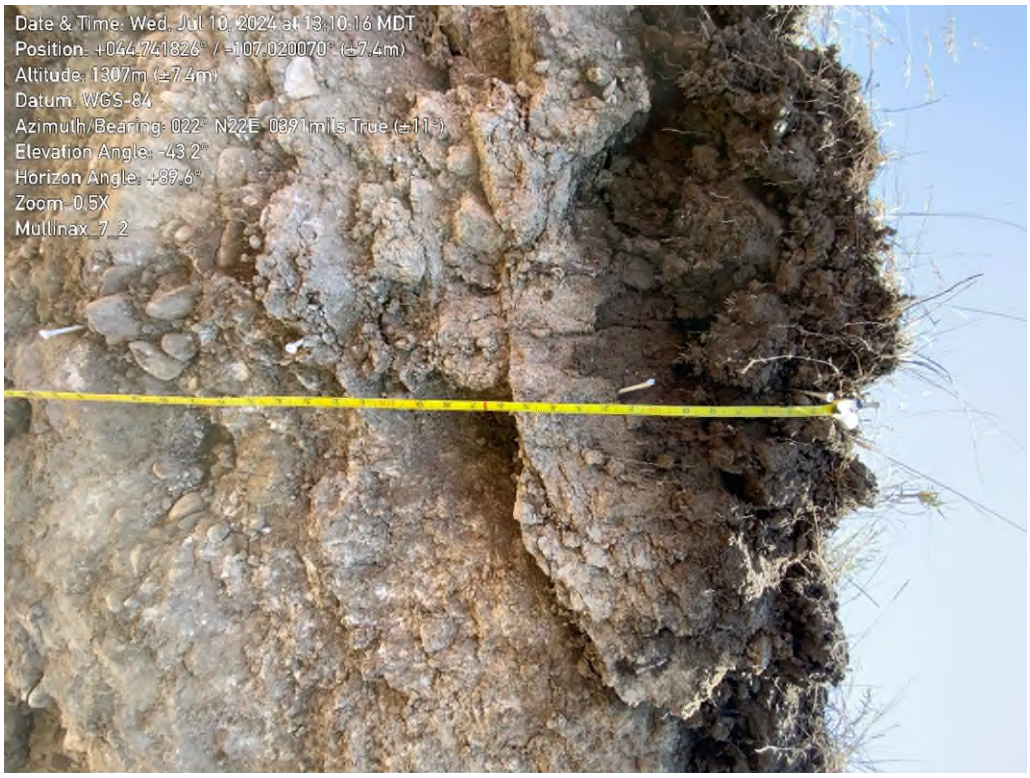
Pit 6-Sample 2

Pit 6-Sample 3



Pit 7-Sample 1

Pit 7-Sample 2

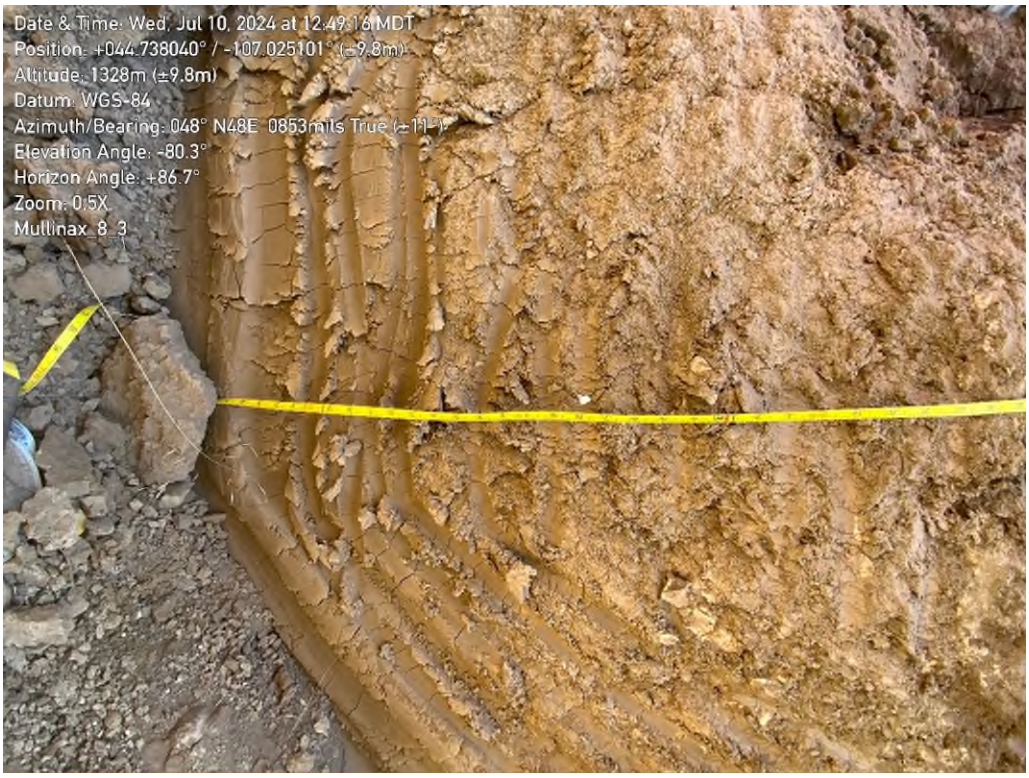


Pit 7-Sample 3

Pit 8-Sample 1

Pit 8-Sample 2

Pit 8-Sample 3



Pit 9-Sample 1

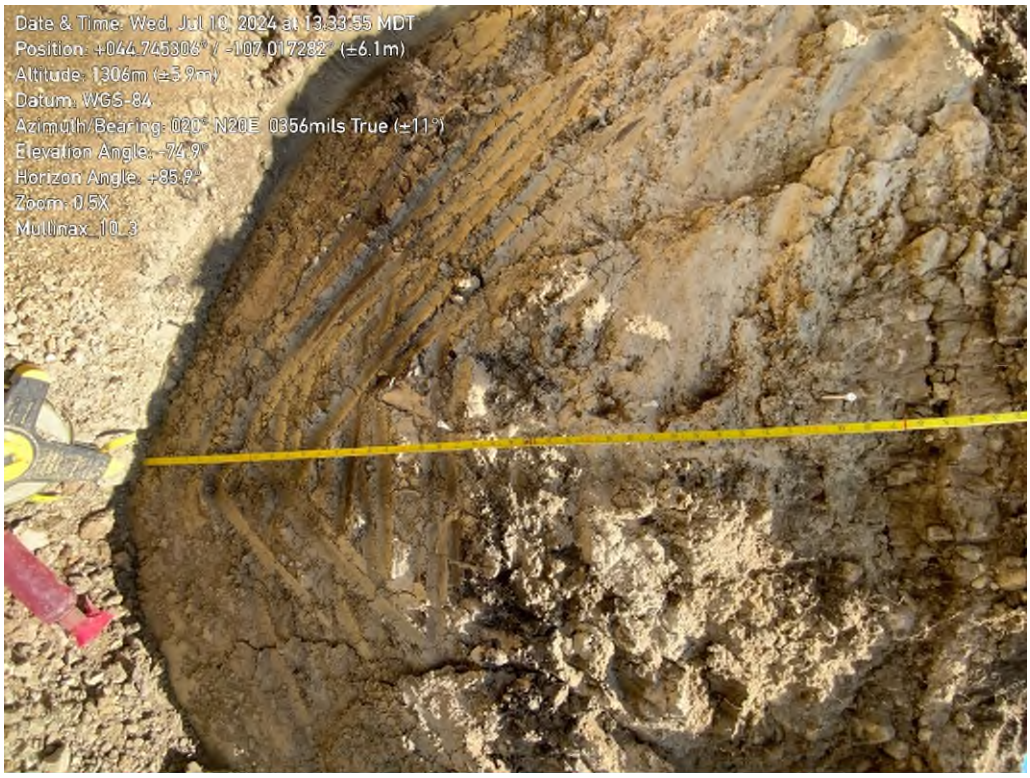
Pit 9-Sample 2

Pit 9-Sample 3

Pit 10-Sample 1

Pit 10-Sample 2

Pit 10-Sample 3



Pit 11-Sample 1

Pit 11-Sample 2

Pit 11-Sample 3

Pit 11-Sample 4

Pit 12-Sample 1

Pit 12-Sample 2

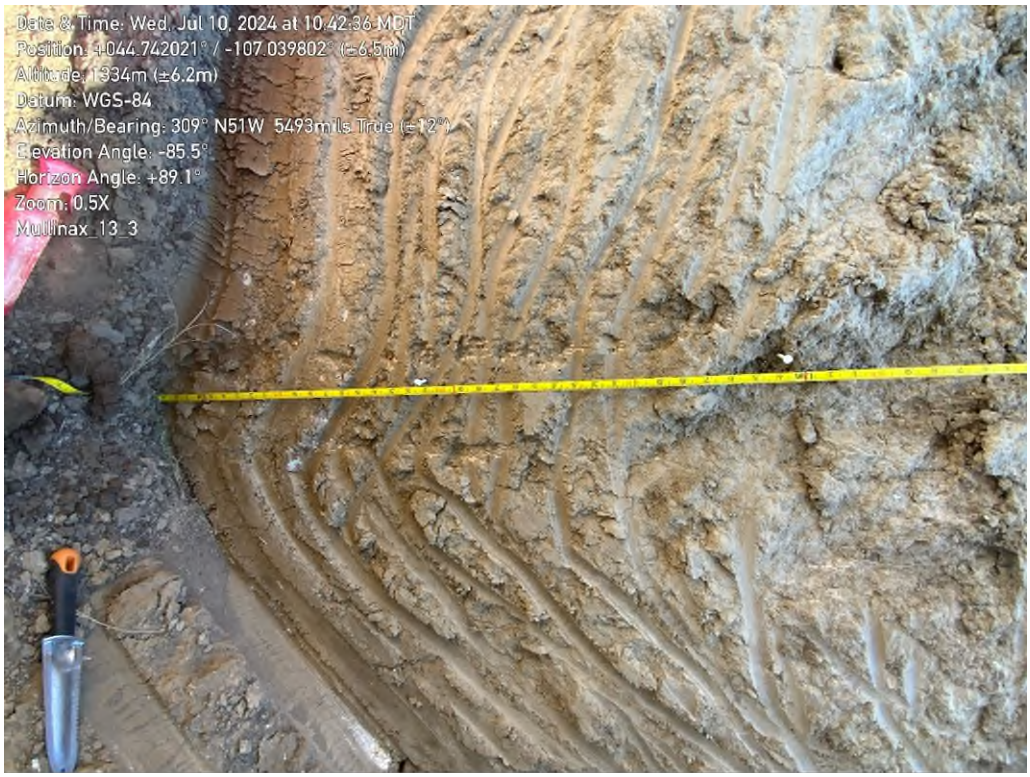
Pit 12-Sample 3

Pit 12-Sample 4

Pit 13-Sample 1

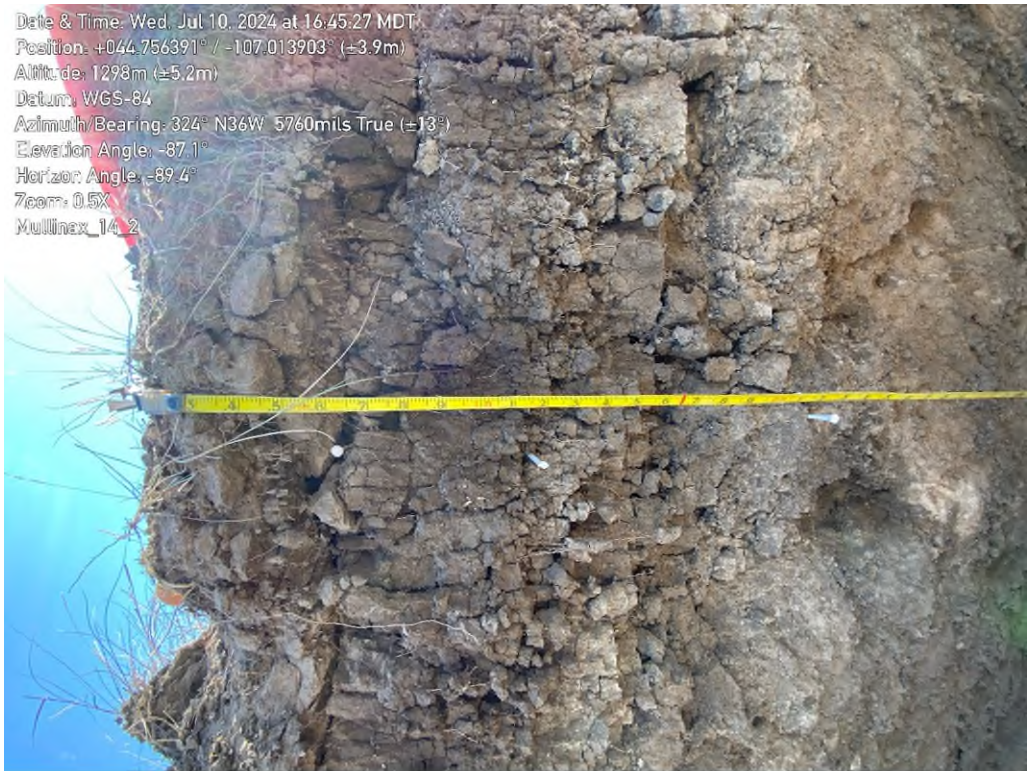
Pit 13-Sample 2

Pit 13-Sample 3



Pit 14-Sample 1

Pit 14-Sample 2

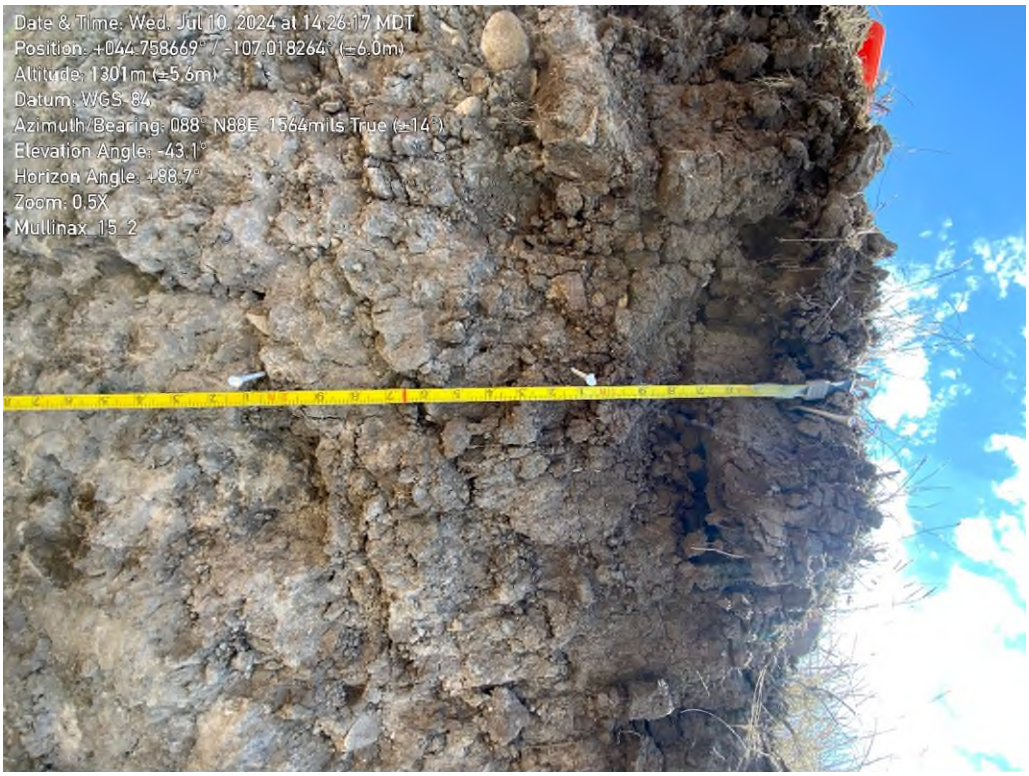


Pit 14-Sample 3

Pit 15-Sample 1

Pit 15-Sample 1

Pit 15-Sample 2



Pit 15-Sample 3

Pit 16-Sample 1

Pit 16-Sample 2

Pit 16-Sample 3

Pit 17-Sample 1

Pit 17-Sample 2

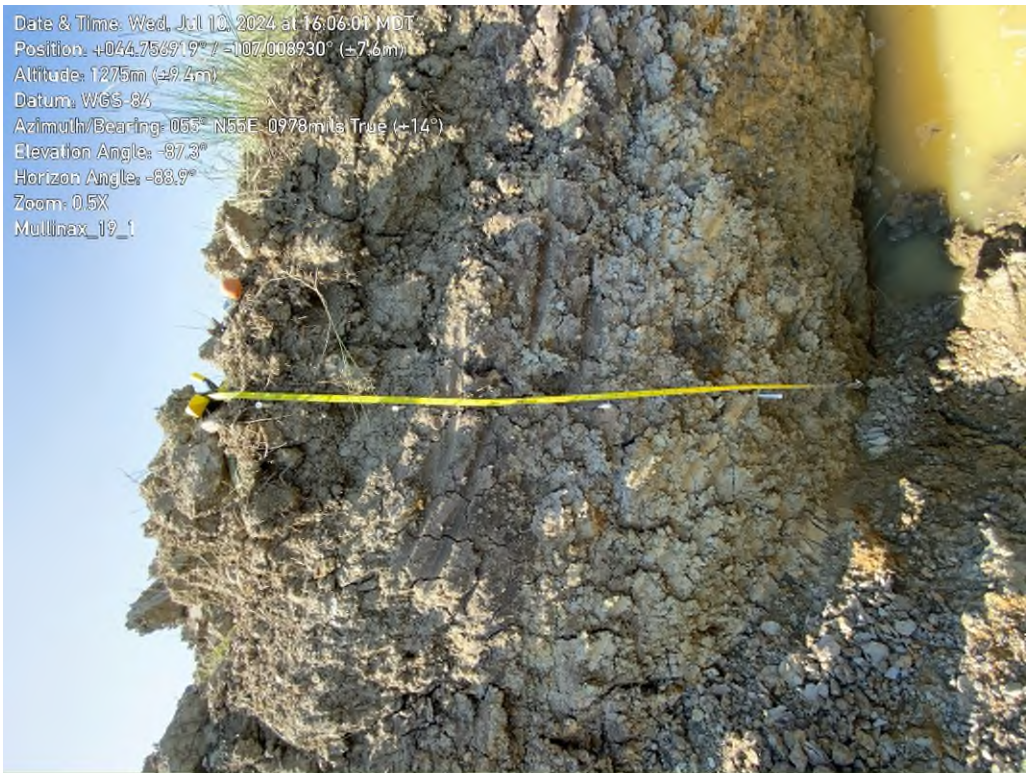
Pit 17-Sample 3

Pit 18-Sample 1

Pit 18-Sample 2

Pit 18-Sample 3

Pit 19-Sample 1



Pit 19-Sample 2

Pit 19-Sample 3

Pit 19-Sample 4

Pit 19-Sample 5

Addendum D7.D

Field Profile Description Forms

Observe Site: | Date Observe Site: Date | Date Observe Site: Date | Observer: KJ | Date Observe Site:

Plot ID: Pit Location: 7/11/24

In inches

1	Depth:	6			Horizon:	A	Modifier:	
	Color:				Texture:		% Clay:	
	Structure:	sbk		Grade:	1	Size	Eff:	
			% Vol	Type	Notes:			
	Frags:	1	1	gr				
		2						
		3						

2	Depth:	18			Horizon:	Bt	Modifier:	
	Color:				Texture:		% Clay:	
	Structure:	pr		Grade:	2	Size	Eff:	
			% Vol	Type	Notes:			
	Frags:	1	3	gr				
		2						
		3						

3	Depth:	27.6			Horizon:	C1	Modifier:	
	Color:				Texture:		% Clay:	
	Structure:	sg		Grade:		Size	Eff:	
			% Vol	Type	Notes:			
	Frags:	1	25	cb	sandy + gravelly			
		2	20	gr				
		3						

4	Depth:	39.6			Horizon:	C2	Modifier:	
	Color:				Texture:		% Clay:	
	Structure:	sg		Grade:		Size	Eff:	
			% Vol	Type	Notes:			
	Frags:	1	25	gr	" "			
		2	15	cb				
		3						

5	Depth:	63.6+			Horizon:	C3	Modifier:	
	Color:				Texture:		% Clay:	
	Structure:	sg		Grade:		Size	Eff:	
			% Vol	Type	Notes:			
	Frags:	1	40	gr	" "			
		2	35	cb				
		3						

6	Depth:				Horizon:		Modifier:	
	Color:				Texture:		% Clay:	
	Structure:			Grade:		Size	Eff:	
			% Vol	Type	Notes:			
	Frags:	1						
		2						

Site: 2 Date: 7/10/24 Observer: KJ

Plot ID: Pit Location:

In inches

1	Depth:	8.4		Horizon:	A	Modifier:	
	Color:			Texture:		% Clay:	
	Structure:	Sbk	Grade:	2	Size	Eff:	
		% Vol	Type	Notes:			
	Frags: 1	1	gr				
	Frags: 2						
	Frags: 3						

2	Depth:	24		Horizon:	Btk	Modifier:	
	Color:			Texture:		% Clay:	
	Structure:	Sbk	Grade:	2	Size	Eff:	
		% Vol	Type	Notes:			
	Frags: 1	6	gr				
	Frags: 2						
	Frags: 3						

3	Depth:	37.2		Horizon:	Ck1	Modifier:	
	Color:			Texture:	SL	% Clay:	14
	Structure:	Sbk	Grade:	1	Size	Eff:	
		% Vol	Type	Notes:			
	Frags: 1	40	CN				
	Frags: 2	10	gr				
	Frags: 3						

4	Depth:	51.6		Horizon:	Ck2	Modifier:	
	Color:			Texture:		% Clay:	
	Structure:	Sbk	Grade:	1	Size	Eff:	
		% Vol	Type	Notes:			
	Frags: 1	12	gr				
	Frags: 2						
	Frags: 3						

5	Depth:	72+		Horizon:	Ck3	Modifier:	
	Color:			Texture:		% Clay:	
	Structure:	SL	Grade:	mg	Size	Eff:	
		% Vol	Type	Notes:			
	Frags: 1	1	gr				
	Frags: 2						
	Frags: 3						

6	Depth:			Horizon:		Modifier:	
	Color:			Texture:		% Clay:	
	Structure:		Grade:		Size	Eff:	
		% Vol	Type	Notes:			
	Frags: 1						
	Frags: 2						
	Frags: 3						

Site: 3 Date: 7/11/24 Observer: KG

Plot ID: Pit Location: in inches

1

Depth:	4.8		Horizon:	A?	Modifier:	
Color:			Texture:		% Clay:	
Structure:		Grade:		Size		Eff:

		% Vol	Type	Notes:
Frags:	1	30	gr	human induced epipedon
	2	8	cb	Above this is overburden from the excavator - this is in a gravel parking lot
	3			

2

Depth:	14.4		Horizon:	Btb	Modifier:	
Color:			Texture:		% Clay:	
Structure:	sbk	Grade:	2	Size		Eff:

		% Vol	Type	Notes:
Frags:	1	8	cb	buried B horizon
	2	10	gr	
	3			

3

Depth:	32.4		Horizon:	CK1	Modifier:	
Color:			Texture:		% Clay:	
Structure:	sg	Grade:		Size		Eff:

		% Vol	Type	Notes:
Frags:	1	25	gr	
	2	12	cb	
	3			

4

Depth:	69.6+		Horizon:	CK2	Modifier:	
Color:			Texture:		% Clay:	
Structure:	sg	Grade:		Size		Eff:

		% Vol	Type	Notes:
Frags:	1	8	ST	thick, but looks like the same depositional event
	2	25	cb	
	3	33	gr	

5

Depth:			Horizon:		Modifier:	
Color:			Texture:		% Clay:	
Structure:		Grade:		Size		Eff:

		% Vol	Type	Notes:
Frags:	1			
	2			
	3			

6

Depth:			Horizon:		Modifier:	
Color:			Texture:		% Clay:	
Structure:		Grade:		Size		Eff:

		% Vol	Type	Notes:
Frags:	1			
	2			
	3			

Observe Site: #4 Date: 7/10/24 Observer:

Plot ID: Pit Location: In inches

1	Depth:	3.6			Horizon:	A	Modifier:	
	Color:				Texture:		% Clay:	
	Structure:	sbk		Grade:	2	Size	Eff:	
			% Vol	Type	Notes:			
	Frags:	1	5	gr				
		2						
		3						

2	Depth:	15.6			Horizon:	Bt1	Modifier:	
	Color:				Texture:		% Clay:	
	Structure:	pr		Grade:	3	Size	Eff:	
			% Vol	Type	Notes:			
	Frags:	1	80	cb				
		2	40	gr				
		3						

3	Depth:	27			Horizon:	Bt2	Modifier:	
	Color:				Texture:		% Clay:	
	Structure:	pr		Grade:	2	Size	Eff:	
			% Vol	Type	Notes:			
	Frags:	1	2	gr				
		2	2	cb				
		3						

4	Depth:	43.2			Horizon:	Btk1	Modifier:	
	Color:				Texture:		% Clay:	
	Structure:	sbk		Grade:	2	Size	Eff:	
			% Vol	Type	Notes:			
	Frags:	1	1	gr				
		2						
		3						

5	Depth:	55.2			Horizon:	BCtk	Modifier:	
	Color:				Texture:		% Clay:	
	Structure:	sbk		Grade:	1	Size	Eff:	
			% Vol	Type	Notes:			
	Frags:	1	1	gr				
		2						
		3						

6	Depth:	108.4+			Horizon:	Ck	Modifier:	
	Color:				Texture:		% Clay:	
	Structure:	sbk		Grade:	mg	Size	Eff:	
			% Vol	Type	Notes:			
	Frags:	1	1	gr	very dense			
		2						
		3						

Site: S Date: 7/11/24 Observer: KJ 12 inches

Plot ID: Pit Location:

1								
Depth:	5.4			Horizon:	A		Modifier:	
Color:				Texture:			% Clay:	
Structure:	sbk		Grade:	1	Size		Eff:	
		% Vol	Type	Notes:				
Frags:	1	1	gr					
	2							
	3							

2								
Depth:	19.2			Horizon:	Bt		Modifier:	
Color:				Texture:			% Clay:	
Structure:	sbk		Grade:	2	Size		Eff:	
		% Vol	Type	Notes:				
Frags:	1	1	gr					
	2							
	3							

3								
Depth:	31.2			Horizon:	Btk1		Modifier:	
Color:				Texture:			% Clay:	
Structure:	sbk		Grade:	2	Size		Eff:	
		% Vol	Type	Notes:				
Frags:	1	5	gr					
	2							
	3							

4								
Depth:	49.2			Horizon:	Btk2		Modifier:	
Color:				Texture:			% Clay:	
Structure:	sbk		Grade:	1	Size		Eff:	
		% Vol	Type	Notes:				
Frags:	1	5	gr					
	2	5	cb					
	3							

5								
Depth:	60+			Horizon:	C		Modifier:	
Color:				Texture:			% Clay:	
Structure:	sg		Grade:		Size		Eff:	
		% Vol	Type	Notes:				
Frags:	1	40	cb					
	2	33	gr					
	3							

6								
Depth:				Horizon:			Modifier:	
Color:				Texture:			% Clay:	
Structure:			Grade:		Size		Eff:	
		% Vol	Type	Notes:				
Frags:	1							
	2							
	3							

Observe Site: 6 Date: 7/10/24 Date Observer: KJ Date Observe Site:

Plot ID: Pit Location: In inches

1	Depth:	4.8			Horizon:	A	Modifier:	
	Color:				Texture:		% Clay:	
	Structure:	sbk	Grade:	2	Size		Eff:	
			% Vol	Type	Notes:			
	Frags:	1	2	sr				
		2						
		3						

2	Depth:	13.8			Horizon:	Bt	Modifier:	
	Color:				Texture:		% Clay:	
	Structure:	pr	Grade:	2	Size		Eff:	
			% Vol	Type	Notes:			
	Frags:	1	2	sr				
		2	5	cb				
		3						

3	Depth:	30			Horizon:	Btk1	Modifier:	
	Color:				Texture:		% Clay:	
	Structure:	sbk	Grade:	2	Size		Eff:	
			% Vol	Type	Notes:			
	Frags:	1	3	gr				
		2	15	cb				
		3						

4	Depth:	48			Horizon:	Btk2	Modifier:	
	Color:				Texture:		% Clay:	
	Structure:	sbk	Grade:	2	Size		Eff:	
			% Vol	Type	Notes:			
	Frags:	1	1	gr	common, large iron concentrations			
		2						
		3						

5	Depth:	71.4+			Horizon:	BCtk	Modifier:	
	Color:				Texture:		% Clay:	
	Structure:	sbk	Grade:	1	Size		Eff:	
			% Vol	Type	Notes:	many,		
	Frags:	1	1	gr	large, iron concentrations			
		2						
		3						

6	Depth:				Horizon:		Modifier:	
	Color:				Texture:		% Clay:	
	Structure:		Grade:		Size		Eff:	
			% Vol	Type	Notes:			
	Frags:	1						
		2						
		3						

Site: 7 Date: 7/10/24 Observer: KG

Plot ID: Pit Location: in inches

1	Depth:	4.8		Horizon:	A		Modifier:	
	Color:			Texture:			% Clay:	
	Structure:	sbk	Grade:	2	Size		Eff:	
			% Vol	Type	Notes:			
	Frags:	1	2	gr				
		2						
		3						

2	Depth:	13.2		Horizon:	Bt		Modifier:	
	Color:			Texture:			% Clay:	
	Structure:	pr	Grade:	2	Size		Eff:	
			% Vol	Type	Notes:			
	Frags:	1	2	gr				
		2						
		3						

3	Depth:	27.6		Horizon:	Btk		Modifier:	
	Color:			Texture:			% Clay:	
	Structure:	sbk	Grade:	2	Size		Eff:	
			% Vol	Type	Notes:			
	Frags:	1	4	gr				
		2						
		3						

4	Depth:	38.4		Horizon:	Btk2		Modifier:	
	Color:			Texture:			% Clay:	
	Structure:	sbk	Grade:	2	Size		Eff:	
			% Vol	Type	Notes:			
	Frags:	1	20	gr				
		2	17	cb				
		3						

5	Depth:	52.8		Horizon:	BCk		Modifier:	
	Color:			Texture:			% Clay:	
	Structure:	sbk	Grade:	1	Size		Eff:	
			% Vol	Type	Notes:			
	Frags:	1	10	ST				
		2	20	cb				
		3	7	gr				

6	Depth:	69.6+		Horizon:	C		Modifier:	
	Color:			Texture:			% Clay:	
	Structure:	sg	Grade:		Size		Eff:	
			% Vol	Type	Notes:			
	Frags:	1	25	cb	sandy			
		2	15	gr				
		3						

Site: 8 Date: 7/10/24 Date Observer: KJ

Plot ID: Pit Location:

In Inches

1	Depth:	6		Horizon:	A	Modifier:	
	Color:			Texture:		% Clay:	
	Structure:	Sbk	Grade:	2	Size	Eff:	

		% Vol	Type	Notes:
Frags:	1	1	Gr	
	2			
	3			

2	Depth:	15.6		Horizon:	B+1	Modifier:	
	Color:			Texture:		% Clay:	
	Structure:	pr	Grade:	2	Size	Eff:	

		% Vol	Type	Notes:
Frags:	1	1	Gr	
	2			
	3			

3	Depth:	26.4		Horizon:	B+2	Modifier:	
	Color:			Texture:		% Clay:	
	Structure:	pr	Grade:	2	Size	Eff:	

		% Vol	Type	Notes:
Frags:	1	1	Gr	
	2			
	3			

4	Depth:	44.4		Horizon:	BCk	Modifier:	
	Color:			Texture:		% Clay:	
	Structure:	Sbk	Grade:	1	Size	Eff:	

		% Vol	Type	Notes:
Frags:	1	3	Gr	
	2			
	3			

5	Depth:	70.8+		Horizon:	C	Modifier:	
	Color:			Texture:		% Clay:	
	Structure:	SL	Grade:	vms	Size	Eff:	

		% Vol	Type	Notes:
Frags:	1	1	1	Clayey
	2			
	3			

6	Depth:			Horizon:		Modifier:	
	Color:			Texture:		% Clay:	
	Structure:		Grade:		Size	Eff:	

		% Vol	Type	Notes:
Frags:	1			
	2			
	3			

Observe Site: 9 Date: 7/10/24 Date Observer: KJ Pit Observe Site:

Plot ID: Pit Location: in inches

1	Depth:	4.2			Horizon:	A	Modifier:	
	Color:				Texture:		% Clay:	
	Structure:	sbk	Grade:	2	Size		Eff:	
		% Vol	Type	Notes:				
	Frags: 1	1	gr					
	Frags: 2							
	Frags: 3							

2	Depth:	14.4			Horizon:	B+	Modifier:	
	Color:				Texture:		% Clay:	
	Structure:	pr	Grade:	3	Size		Eff:	
		% Vol	Type	Notes:				
	Frags: 1	5	cb					
	Frags: 2	1	gr					
	Frags: 3							

3	Depth:	33.6			Horizon:	B+C	Modifier:	
	Color:				Texture:		% Clay:	
	Structure:	sbk	Grade:	2	Size		Eff:	
		% Vol	Type	Notes:				
	Frags: 1	8	cb					
	Frags: 2	2	gr					
	Frags: 3							

4	Depth:	57.6			Horizon:	BC	Modifier:	
	Color:				Texture:		% Clay:	
	Structure:	sbk	Grade:	1	Size		Eff:	
		% Vol	Type	Notes:				
	Frags: 1	5	gr					
	Frags: 2							
	Frags: 3							

5	Depth:	72+			Horizon:	C	Modifier:	
	Color:				Texture:		% Clay:	
	Structure:	sl	Grade:	mg	Size		Eff:	
		% Vol	Type	Notes:				
	Frags: 1	1	gr					
	Frags: 2							
	Frags: 3							

6	Depth:				Horizon:		Modifier:	
	Color:				Texture:		% Clay:	
	Structure:		Grade:		Size		Eff:	
		% Vol	Type	Notes:				
	Frags: 1							
	Frags: 2							
	Frags: 3							

Observer Site: 10 Date: 7/10/24 Date Observer: ICJ in inches

Plot ID: Pit Location:

1							
Depth:	3.6		Horizon:	A		Modifier:	
Color:			Texture:			% Clay:	
Structure:	gr	Grade:	2	Size		Eff:	
	% Vol	Type	Notes:				
Frags: 1	7	gr					
Frags: 2							
Frags: 3							

2							
Depth:	7.2		Horizon:	Bt1		Modifier:	
Color:			Texture:			% Clay:	
Structure:	pr	Grade:	2	Size		Eff:	
	% Vol	Type	Notes:				
Frags: 1	12	gr					
Frags: 2							
Frags: 3							

3							
Depth:	21.6		Horizon:	Bt2		Modifier:	
Color:			Texture:			% Clay:	
Structure:	sbk	Grade:	2	Size		Eff:	
	% Vol	Type	Notes:				
Frags: 1	30	gr					
Frags: 2	8	cb					
Frags: 3	tth						

4							
Depth:	32.4		Horizon:	BCt		Modifier:	
Color:			Texture:			% Clay:	
Structure:	sbk	Grade:	1	Size		Eff:	
	% Vol	Type	Notes:				
Frags: 1	25	gr					
Frags: 2	15	cb					
Frags: 3							

5							
Depth:	44.4		Horizon:	C1		Modifier:	
Color:			Texture:			% Clay:	
Structure:	sbk	Grade:	1	Size		Eff:	
	% Vol	Type	Notes:				
Frags: 1	2	gr					
Frags: 2							
Frags: 3							

6							
Depth:	69.6+		Horizon:	C2		Modifier:	
Color:			Texture:			% Clay:	
Structure:	SL	Grade:	mG	Size		Eff:	
	% Vol	Type	Notes:				
Frags: 1							
Frags: 2							
Frags: 3							

Site: #11 Date: 7/10/24 Observer: KJ

Plot ID: Pit Location:

In inches

1	Depth:	9			Horizon:	A	Modifier:	
	Color:				Texture:		% Clay:	
	Structure:	Sbk		Grade:	2	Size	Eff:	
			% Vol	Type	Notes:			
	Frags:	1	3	gr				
		2	8	cb				
		3						

2	Depth:	21.6			Horizon:	Btk1	Modifier:	
	Color:				Texture:		% Clay:	
	Structure:	pr		Grade:	3	Size	Eff:	
			% Vol	Type	Notes:			
	Frags:	1	25	cb				
		2	8	gr				
		3						

3	Depth:	37.2			Horizon:	Btk2	Modifier:	
	Color:				Texture:		% Clay:	
	Structure:	pr		Grade:	2	Size	Eff:	
			% Vol	Type	Notes:			
	Frags:	1	30	cb	gravel was in pocket to the right of profile, not in profile			
		2	15	gr				
		3						

4	Depth:	60			Horizon:	BCk	Modifier:	
	Color:				Texture:		% Clay:	
	Structure:	Sbk		Grade:	1	Size	Eff:	
			% Vol	Type	Notes:			
	Frags:	1	1	gr				
		2						
		3						

5	Depth:	75+			Horizon:	Ck	Modifier:	
	Color:				Texture:		% Clay:	
	Structure:	SL		Grade:	mg	Size	Eff:	
			% Vol	Type	Notes:			
	Frags:	1			large carb patch			
		2						
		3						

6	Depth:				Horizon:		Modifier:	
	Color:				Texture:		% Clay:	
	Structure:			Grade:		Size	Eff:	
			% Vol	Type	Notes:			
	Frags:	1						
		2						
		3						

Observe Site: 12 Date: 7/10/24 Observer: PG

Plot ID: Pit Location: in inches

1	Depth:	7.2		Horizon:	A		Modifier:	
	Color:			Texture:			% Clay:	
	Structure:	sbk	Grade:	1	Size		Eff:	
			% Vol	Type	Notes:			
	Frags:	1	1	gr	high clay throughout			
		2						
		3						

2	Depth:	21.6		Horizon:	Btg		Modifier:	
	Color:			Texture:			% Clay:	
	Structure:	pr	Grade:	3	Size		Eff:	
			% Vol	Type	Notes:			
	Frags:	1	1	gr				
		2						
		3						

3	Depth:	37.2		Horizon:	Bg1		Modifier:	
	Color:			Texture:			% Clay:	
	Structure:	pl	Grade:	3	Size		Eff:	
			% Vol	Type	Notes:			
	Frags:	1	1	gr				
		2						
		3						

4	Depth:	46.2		Horizon:	Bg2		Modifier:	
	Color:			Texture:			% Clay:	
	Structure:	pl	Grade:	3	Size		Eff:	
			% Vol	Type	Notes:			
	Frags:	1	1	gr	Coal seam			
		2						
		3						

5	Depth:	61.2		Horizon:	Bg3		Modifier:	
	Color:			Texture:			% Clay:	
	Structure:	abk	Grade:	3	Size		Eff:	
			% Vol	Type	Notes:			
	Frags:	1	1	gr				
		2						
		3						

6	Depth:	72		Horizon:	Cr		Modifier:	
	Color:			Texture:			% Clay:	
	Structure:		Grade:		Size		Eff:	
			% Vol	Type	Notes:			
	Frags:	1			soft weathered shale			
		2						
		3						

Observer Site: #13 Date: 7/10/24 Date Observer: KJ

Plot ID: Pit Location: 14 inches

1	Depth:	4.8			Horizon:	A	Modifier:	
	Color:				Texture:		% Clay:	
	Structure:	sbk		Grade:	2	Size	Eff:	
			% Vol	Type	Notes:			
	Frags:	1	1	gr				
		2						
		3						

2	Depth:	17.4			Horizon:	B+	Modifier:	
	Color:				Texture:		% Clay:	
	Structure:	pr		Grade:	3	Size	Eff:	
			% Vol	Type	Notes:			
	Frags:	1	1	gr				
		2						
		3						

3	Depth:	24.6			Horizon:	B+k	Modifier:	
	Color:				Texture:		% Clay:	
	Structure:	sbk		Grade:	2	Size	Eff:	
			% Vol	Type	Notes:			
	Frags:	1	1	gr				
		2						
		3						

4	Depth:	40.8			Horizon:	B/A+k2	Modifier:	
	Color:				Texture:		% Clay:	
	Structure:	sbk		Grade:	2	Size	Eff:	
			% Vol	Type	Notes:			
	Frags:	1	1	gr				
		2						
		3						

5	Depth:	61.2			Horizon:	BCk	Modifier:	
	Color:				Texture:		% Clay:	
	Structure:	sbk		Grade:	1	Size	Eff:	
			% Vol	Type	Notes:			
	Frags:	1	1	gr				
		2						
		3						

6	Depth:	84+			Horizon:	Ck	Modifier:	
	Color:				Texture:		% Clay:	
	Structure:	sl		Grade:	ma	Size	Eff:	
			% Vol	Type	Notes:			
	Frags:							

Observer: #14 Date Observed: 7/10/24 Data Entered: KJ Date Observed:

Plot ID: Pit Location: In Inches

1	Depth:	7.2			Horizon:	Ap	Modifier:	
	Color:				Texture:		% Clay:	
	Structure:	sbk		Grade:	1	Size	Eff:	
			% Vol	Type	Notes:			
	Frags:	1	2	gr				
		2						
		3						

2	Depth:	14.4			Horizon:	Bt	Modifier:	
	Color:				Texture:		% Clay:	
	Structure:	pr		Grade:	2	Size	Eff:	
			% Vol	Type	Notes:			
	Frags:	1	2	gr				
		2						
		3						

3	Depth:	27.6			Horizon:	Btk	Modifier:	
	Color:				Texture:		% Clay:	
	Structure:	pr		Grade:	2	Size	Eff:	
			% Vol	Type	Notes:			
	Frags:	1	3	gr				
		2						
		3						

4	Depth:	45.6			Horizon:	C1	Modifier:	
	Color:				Texture:		% Clay:	
	Structure:	sbk		Grade:	1	Size	Eff:	
			% Vol	Type	Notes:			
	Frags:	1	2	gr				
		2						
		3						

5	Depth:	68.4+			Horizon:	C2	Modifier:	
	Color:				Texture:		% Clay:	
	Structure:	sl		Grade:	mg	Size	Eff:	
			% Vol	Type	Notes:			
	Frags:	1	2	gr				
		2						
		3						

6	Depth:				Horizon:		Modifier:	
	Color:				Texture:		% Clay:	
	Structure:			Grade:		Size	Eff:	
			% Vol	Type	Notes:			
	Frags:	1						
		2						
		3						

Observer Site: 15 Date: 7/10/24 Date Observer: KJ Site: In inches

Plot ID: Pit Location:

1	Depth:	3.6			Horizon:	A	Modifier:	
	Color:				Texture:		% Clay:	
	Structure:	Sbk		Grade:	2	Size	Eff:	
			% Vol	Type	Notes:			
	Frags:	1	1	gr				
		2						
		3						

2	Depth:	13.2			Horizon:	Bt	Modifier:	
	Color:				Texture:		% Clay:	
	Structure:	pr		Grade:	3	Size	Eff:	
			% Vol	Type	Notes:			
	Frags:	1	5	gr				
		2						
		3						

3	Depth:	25.2			Horizon:	Btk1	Modifier:	
	Color:				Texture:		% Clay:	
	Structure:	pr		Grade:	2	Size	Eff:	
			% Vol	Type	Notes:			
	Frags:	1	18	gr				
		2						
		3						

4	Depth:	39.6			Horizon:	Btk2	Modifier:	
	Color:				Texture:		% Clay:	
	Structure:	Sbk		Grade:	2	Size	Eff:	
			% Vol	Type	Notes:			
	Frags:	1	5	gr				
		2						
		3						

5	Depth:	54			Horizon:	BCk	Modifier:	
	Color:				Texture:		% Clay:	
	Structure:	Sbk		Grade:	1	Size	Eff:	
			% Vol	Type	Notes:			
	Frags:	1	3	gr	frag carb patch			
		2						
		3						

6	Depth:	68.4+			Horizon:	Ck	Modifier:	
	Color:				Texture:		% Clay:	
	Structure:	Sbk		Grade:	1	Size	Eff:	
			% Vol	Type	Notes:			
	Frags:	1	5	ob				
		2						
		3						

#16 7/10/2[illegible] KJ

Plot ID: Pit Location: in inches

1						
Depth:	7.2		Horizon:	A	Modifier:	
Color:			Texture:		% Clay:	
Structure:	sbk	Grade:	2	Size	Eff:	
	% Vol	Type	Notes:			
Frags: 1	1	gr				
Frags: 2						
Frags: 3						

2						
Depth:	16.8		Horizon:	Bt	Modifier:	
Color:			Texture:		% Clay:	
Structure:	pr	Grade:	2	Size	Eff:	
	% Vol	Type	Notes:			
Frags: 1	2	gr				
Frags: 2						
Frags: 3						

3						
Depth:	30		Horizon:	BCk	Modifier:	
Color:			Texture:		% Clay:	
Structure:	sbk	Grade:	2	Size	Eff:	
	% Vol	Type	Notes:			
Frags: 1	2	gr				
Frags: 2						
Frags: 3						

4						
Depth:	43.2		Horizon:	C1	Modifier:	
Color:			Texture:		% Clay:	
Structure:	sg	Grade:	MG	Size	Eff:	
	% Vol	Type	Notes:			
Frags: 1	2	gr				
Frags: 2						
Frags: 3						

5						
Depth:	69.6+		Horizon:	C2	Modifier:	
Color:			Texture:		% Clay:	
Structure:	sg	Grade:		Size	Eff:	
	% Vol	Type	Notes: gravel layer w/ sand in between			
Frags: 1	30	cb				
Frags: 2	42	gr				
Frags: 3						

6						
Depth:			Horizon:		Modifier:	
Color:			Texture:		% Clay:	
Structure:		Grade:		Size	Eff:	
	% Vol	Type	Notes:			
Frags: 1						
Frags: 2						
Frags: 3						

Observe Site: 17 Date: 7/10/24 Observer: KJ

in inches

Plot ID: Pit Location:

1

Depth:	4.8	Horizon:	A	Modifier:	
Color:		Texture:		% Clay:	
Structure:	sbk	Grade:	1	Size	Eff:

Frags:		% Vol	Type	Notes:
	1	2	gr	
	2			
	3			

2

Depth:	16.8	Horizon:	Btk1	Modifier:	
Color:		Texture:		% Clay:	
Structure:	pr	Grade:	2	Size	Eff:

Frags:		% Vol	Type	Notes:
	1	3	cb	
	2	5	gr	
	3			

3

Depth:	31.2	Horizon:	Btk2	Modifier:	
Color:		Texture:		% Clay:	
Structure:	sbk	Grade:	2	Size	Eff:

Frags:		% Vol	Type	Notes:
	1	50%	cb	
	2	7	gr	
	3			

4

Depth:	51	Horizon:	C1	Modifier:	
Color:		Texture:		% Clay:	
Structure:	sg	Grade:	mg	Size	Eff:

Frags:		% Vol	Type	Notes:
	1	22	cb	soft loamy pockets, sandy pockets
	2	15	gr	
	3			

5

Depth:	72+	Horizon:	C2	Modifier:	
Color:		Texture:		% Clay:	
Structure:	sg	Grade:	mg	Size	Eff:

Frags:		% Vol	Type	Notes:
	1	3	gr	
	2			
	3			

6

Depth:		Horizon:		Modifier:	
Color:		Texture:		% Clay:	
Structure:		Grade:		Size	Eff:

Frags:		% Vol	Type	Notes:
	1			
	2			
	3			

Site: #18 Date: 7/10/24 Observer: KJ

Plot ID: Pit Location:

Depths in inches

1	Depth:	6			Horizon:	A	Modifier:	
	Color:				Texture:		% Clay:	
	Structure:	Sbk		Grade:	2	Size	Eff:	
			% Vol	Type	Notes:			
	Frags:	1	1	gr				
		2						
		3						

2	Depth:	16.8			Horizon:	Bt	Modifier:	
	Color:				Texture:		% Clay:	
	Structure:	pr		Grade:	3	Size	Eff:	
			% Vol	Type	Notes:			
	Frags:	1	1	gr				
		2						
		3						

3	Depth:	28.8			Horizon:	Btk1	Modifier:	
	Color:				Texture:		% Clay:	
	Structure:	Sbk		Grade:	2	Size	Eff:	
			% Vol	Type	Notes:			
	Frags:	1	1	gr				
		2						
		3						

4	Depth:	39.6			Horizon:	Btk2	Modifier:	
	Color:				Texture:		% Clay:	
	Structure:	Sbk		Grade:	2	Size	Eff:	
			% Vol	Type	Notes:			
	Frags:	1	1	gr				
		2						
		3						

5	Depth:	52.2			Horizon:	Btk3	Modifier:	
	Color:				Texture:		% Clay:	
	Structure:	Sbk		Grade:	2	Size	Eff:	
			% Vol	Type	Notes:			
	Frags:	1	1	gr				
		2						
		3						

6	Depth:	72+			Horizon:	BCtk	Modifier:	
	Color:				Texture:		% Clay:	
	Structure:	Sbk		Grade:	2	Size	Eff:	
			% Vol	Type	Notes:			
	Frags:	1	1	gr				
		2						
		3						

Plot ID: 19 Pit Location: Inches

1	Depth:	3.6		Horizon:	A	Modifier:	
	Color:			Texture:		% Clay:	
	Structure:	SBK	Grade:	2	Size	Eff:	
		% Vol	Type	Notes:			
	Frags: 1	1	Gr	Wet & clayey all the way down			
	Frags: 2						
	Frags: 3						

2	Depth:	10.8		Horizon:	Bt	Modifier:	
	Color:			Texture:		% Clay:	
	Structure:	Pr	Grade:	2	Size	Eff:	
		% Vol	Type	Notes:			
	Frags: 1						
	Frags: 2						
	Frags: 3						

3	Depth:	27.6		Horizon:	Cr	Modifier:	
	Color:			Texture:		% Clay:	
	Structure:	SBK	Grade:	2	Size	Eff:	
		% Vol	Type	Notes:	~~Many Prominent Fe concen~~ ~~trations~~, Possible Cr, There looks to be weathered shale with yellow precipitate		
	Frags: 1						
	Frags: 2						
	Frags: 3						

4	Depth:	44.4		Horizon:	Cr	Modifier:	
	Color:			Texture:		% Clay:	
	Structure:	SBK	Grade:	1	Size	Eff:	
		% Vol	Type	Notes:	There are many Prominent Fe concentrations		
	Frags: 1						
	Frags: 2						
	Frags: 3						

5	Depth:	60		Horizon:	Cr	Modifier:	
	Color:			Texture:		% Clay:	
	Structure:		Grade:		Size	Eff:	
		% Vol	Type	Notes:			
	Frags: 1						
	Frags: 2				Many, prominent Fe concentr		
	Frags: 3						

6	Depth:			Horizon:		Modifier:	
	Color:			Texture:		% Clay:	
	Structure:		Grade:		Size	Eff:	
		% Vol	Type	Notes:			
	Frags: 1						
	Frags: 2						
	Frags: 3						

Addendum D7.E

Soils Map No. D7.E-1, D7.E-2 , D7.E-3

- 120 Cedak-Recluse loams 6 to 9 percent slopes
- 169 Jonpol-Platmak complex 0 to 9 percent slopes
- 198 Nuncho-Emigrant association 9 to 15 percent slopes
- 209 Parmleed-Worfka association moist 9 to 25 percent slopes
- 213 Platmak loam 3 to 6 percent slopes
- 216 Platsher loam 3 to 6 percent slopes
- 220 Platsher-Wolfvar loams 3 to 6 percent slopes
- 221 Platsher-Wolfvar complex 6 to 9 percent slopes
- 244 Samday-Gayhart-Hilight clay loams moist 2 to 60 percent slopes
- 258 Shingle-Nihill complex moist 3 to 80 percent slopes
- 269 Shingle-Theedle-Kishona complex moist 3 to 80 percent slopes
- 274 Shingle-Worf complex moist 9 to 15 percent slopes
- 303 Wolf loam 3 to 6 percent slopes
- 305 Worfka-Samday-Shingle complex moist 6 to 30 percent slopes
- 306 Worthenton clay loam 0 to 3 percent slopes

GROUSE MOUNTAIN
ENVIRONMENTAL CONSULTANTS
760 W. Fetterman Buffalo, WY 82834
Phone: 307.684.2112 Fax: 307.684.2142

0 0.125 0.25 0.5 Miles

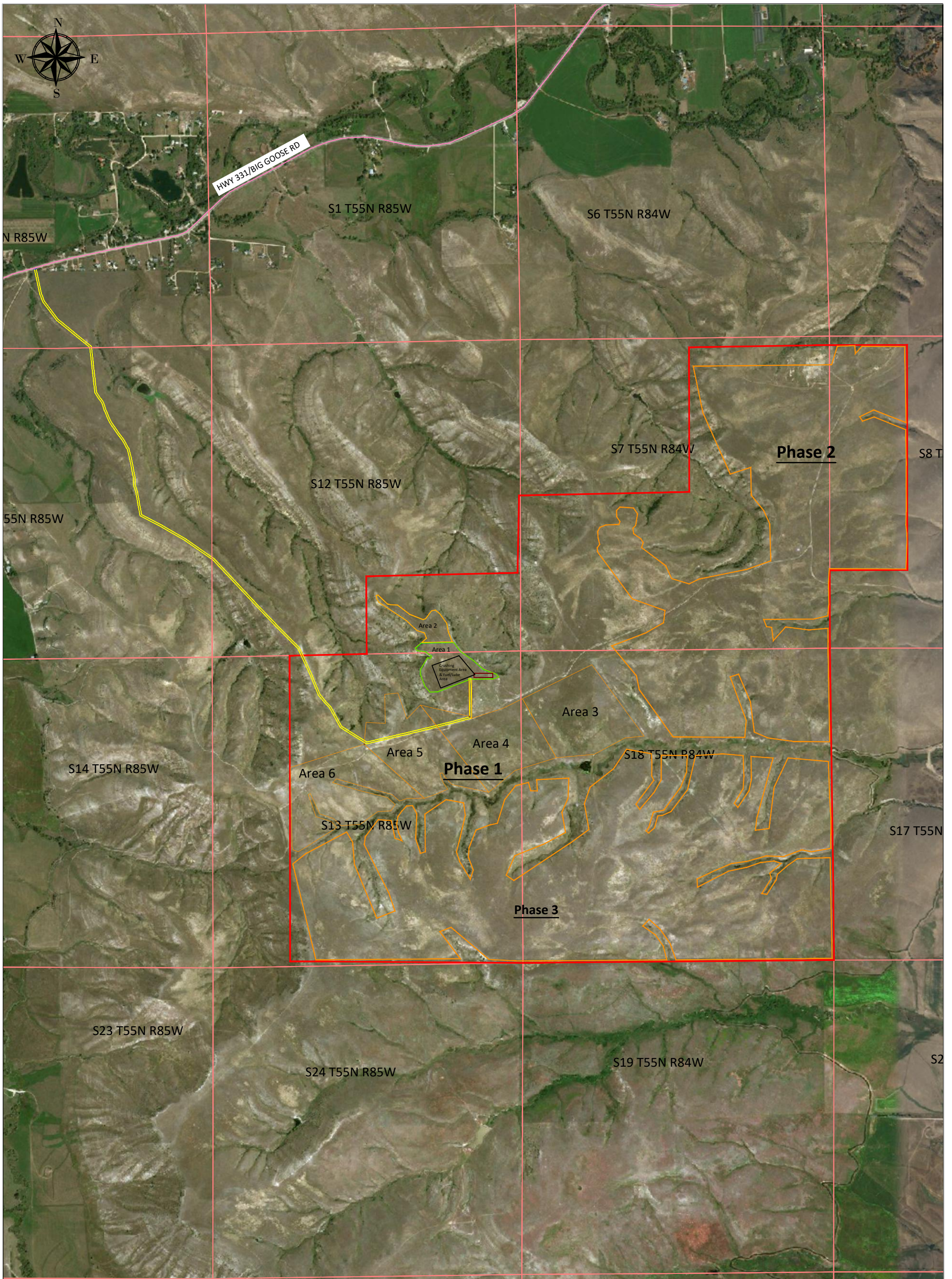
Maxar, Microsoft

Map No. D.7.E-1: NRCS Soil Map Units and Sampling Locations for Topsoil & Overburden

- Soil Sampling Locations
- Existing Haul Road
- Permit Boundary
- Affected Area

Coordinate System: NAD 1983 UTM Zone 13N
Projection: Transverse Mercator
Datum: North American 1983
Units: Meter
Scale: 1:8,400
Date: 9/12/2024
Created by: gshedd
File Name: Forbes_Pit_Soils_2024

N W E S



LEGEND

- Gravel Pit Boundaries
- Affected Area
- Sections
- Big Goose Road
- Haul Road
- LMO Boundary
- Top Soil
- Equipment Area

Notes:

Map No. D.7.E-2: Mine Plan Map

Forbes Pit
Mine Plan Map

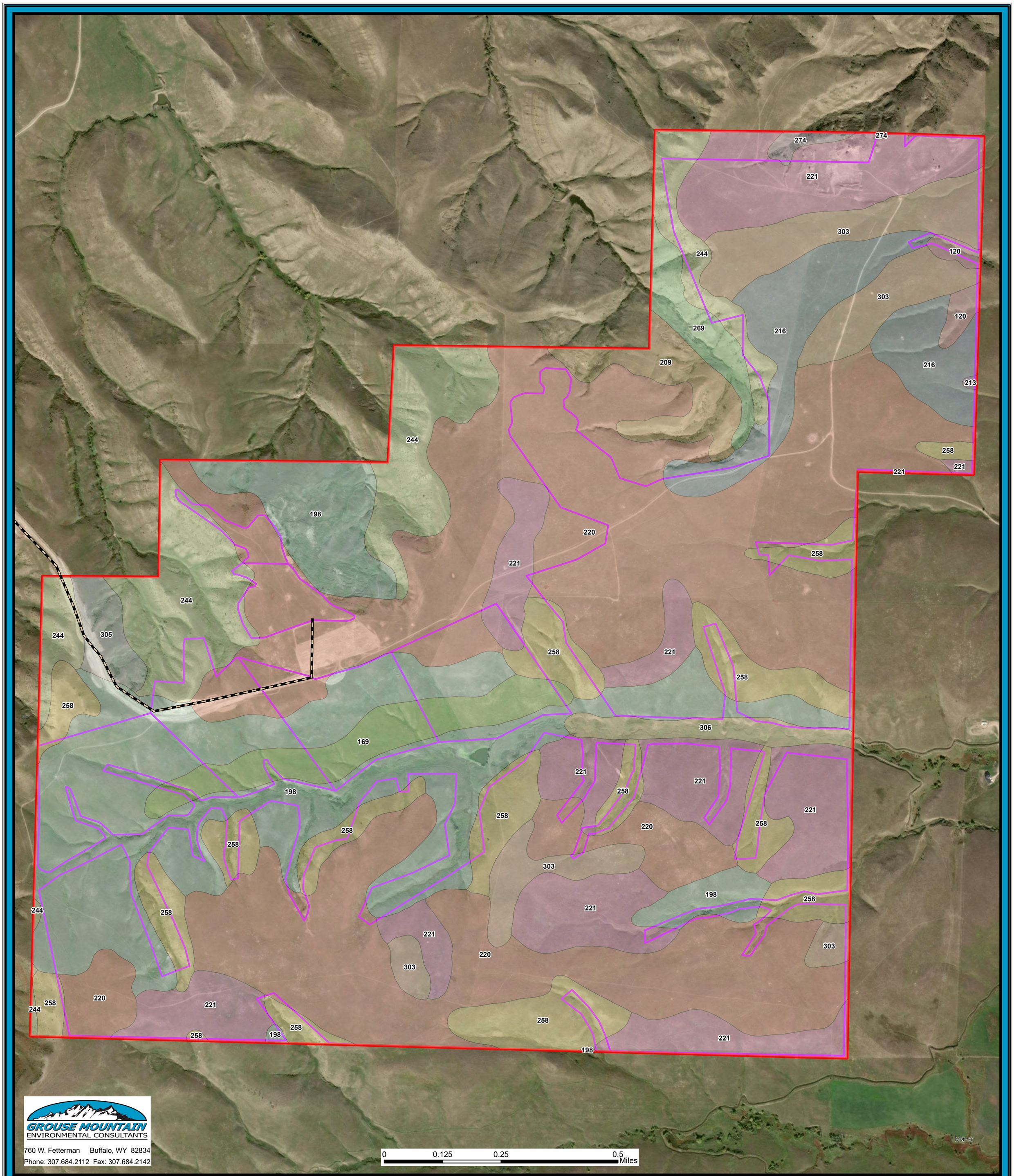
MULLINAX
SAND & GRAVEL

(307)674-4466 P.O. Box 2044 Sheridan, Wyoming 82801

0 250 500 Feet

Scale: 1"=1500'

Date: Jan. 5, 2023



Map No. D.7.E-3: Topsoil and Overburden Salvage Depths

NRCS Soil Series and Topsoil/Subsoil Salvage Depths

- 120 Cedak-Recluse loams - 10.8"/0"
- 169 Jonpol-Platmak complex - 16.8"/43.2"
- 198 Nuncho-Emigrant association - 31.2"/18"
- 209 Parmleed-Worfka association - n/a
- 213 Platmak loam - 16.8"/14.4"
- 216 Platsher loam - 16.8"/14.4"
- 220 Platsher-Wolfvar loams - 14.4"/0"
- 221 Platsher-Wolfvar complex - 26.4"/18"
- 244 Samday-Gayhart-Hilight clay loams - 7.2"/52.8"
- 258 Shingle-Nihill complex - 7.2"/25.2"
- 269 Shingle-Theedle-Kishona complex - 26.40"/18"
- 274 Shingle-Worf complex - 26.40"/18"
- 303 Wolf loam - 27.6"/18"
- 305 Worfka-Samday-Shingle complex - n/a
- 306 Worthenton clay loam - 31.2"/18"

- Existing Haul Road
- Permit Boundary
- Affected Area

Coordinate System: NAD 1983 UTM Zone 13N
Projection: Transverse Mercator
Datum: North American 1983
Units: Meter
Scale: 1:8,400
Date: 9/12/2024
Created by: gshedd
File Name: Forbes_Pit_Soils_2024

N W E S