March 4, 2025

Dan Peterson
Environmental Specialist
Chevron Rockies Business Unit
Noble Energy, Inc.
2115 117th Avenue
Greeley, CO 80631

Re: **Maggie B13-12 Flowline**
Reclamation Plan
NWSW, Section 13, Township 5 N, Range 64 W
Weld County, Colorado

Mr. Peterson:

Tasman, Inc. (Tasman) has prepared this Reclamation Plan (Plan) on behalf of Noble Energy, Inc. (Noble) for the Maggie B13-12 Flowline in Weld County, Colorado (Site). The Colorado Energy and Carbon Management Commission (ECMC) has assigned this project Remediation Project No. 25018. Surface areas disturbed by remediation activities shall be reclaimed per ECMC Rules 1003 *Interim Reclamation* and 1004 *Final Reclamation of Well Sites and Associated Production Facilities*. Additional remedial activities and assessment results associated with this project were presented to and approved by the ECMC in previously submitted Form 27 reports. In anticipation of reclamation activities, Tasman completed a Site inspection on October 15, 2024; the associated field notes and photo logs are included as Attachment A.

Site Description

The Site is located in Weld County in northeastern Colorado, in the NWSW Quarter-Quarter of Section 13, Township 5 North, Range 64 West near the intersection of County Road (CR) 388 and CR 59, approximately 3 miles northeast of the town of Kersey (Figures 1 and 3-A). There are no mapped Fish and Wildlife Service (FWS) Wetlands within 500 feet of the Site (Figures 2 and 3-B). The current landowners are Michelle J. and Stephen P. Cockroft.

Site Background

Flowline decommissioning and Site assessment activities were initiated in November 2022 by Fremont Environmental, Inc. (Fremont). One confirmation soil sample (2FL01@3.0') was collected and submitted to Summit Scientific Laboratory (Summit) for analysis of ECMC Table 915-1 Organic Compounds in Soils, total petroleum hydrocarbons (TPH) as total volatile hydrocarbons (C_6-C_{10}) and total extractable hydrocarbons (C10-C36), and Soil Suitability for Reclamation constituents. In addition, one background sample (BKG01@6.0'') was collected and submitted to Summit for analysis of ECMC Table 915-1 reclamation constituents. Analytical results indicated that the pH value in the confirmation soil sample was above the applicable ECMC Table 915-1 regulatory standards and Site-specific background concentrations. Confirmation soil sample locations and analytical results are presented in Figure 3-C and Table 1, respectively. Background soil sample locations and analytical results are presented in Figure 4 and Table 2, respectively.

Soils and Vegetation Information

The primary soil type at the Ustic Torriorthents, moderately steep, the closest mapped soil series Dacono clay loam with a 1-3% slope (Attachment B). Dacono Clay Loam soils consist of deep, well drained soils that formed in alluvial parent materials with some modification in the upper part by loess deposits. Dacono soils are found on high terraces and have 0-6% slopes. Native vegetation in such soils is blue gramma, prairie sandreed, sideoats gramma, needleandthread, three awn, sand dropseed, and sand sagebrush. Such soils are for native pastureland or irrigated cropland in vegetable crop production.

On October 15, 2024, Tasman completed a Site inspection to evaluate general soil and vegetive conditions. Current land use surrounding the Site is an active produce farm and the associated farm access road. The residual road base from the former flowline connection, with the separator and tank battery, and access road remains in place per the communication with the landowner. Mixed weed growth was observed at southern section of the Site; vegetation observed includes field bindweed, *Kochia,* and Russian Thistle.

Reclamation Operations and Erosion Control

As the Site and surrounding area is an active farm and farm access road, reclamation seeding will not be completed.

Stormwater compliance to prevent soil erosion shall be maintained by a combination of earthwork practices and placement of non-erodible surfaces. No stormwater inspections related to remediation or reclamation activities will be required. If stormwater management is required, it will be implemented.

Annual Final Reclamation Monitoring

The Site will continue to operate as an active farm and farm access road; therefore, Final Reclamation annual inspections and/or monitoring will not be completed at this time.

Conclusion

Based on analytical results collected during the November 2022 Site assessment and an understanding of the current Site conditions and agricultural practices of the Site, under the current use and management of the property by the landowner, there will be no long-term impacts to soil suitability at the Site and surrounding land. Analytical results collected during the November 2022 Site assessment indicated the observed pH exceedances were located three feet below ground surface (bgs), which is below the primary rooting zone.

If you have any questions about this reclamation plan, do not hesitate to contact me at 303.726.9642 or acook@tasman-geo.com.

Sincerely,

Alex Cook, TECS, QSM

Alex Cook, TECS, QSM

Environmental Scientist

Figures:

1. Site Location Map
2. Site Overview Map
3. Soil Sampling and Boring Location Maps
    A. Site Location Map (Fremont)
    B. Site Map (Fremont)
    C. Soil Chemistry Map (Fremont)
4. Soil Chemistry Map – Facility (Fremont)

Table:

1. Summary of Soil Suitability for Reclamation – Flowline (Fremont)
2. Summary of Soil Suitability for Reclamation – Facility (Fremont)

Attachments:

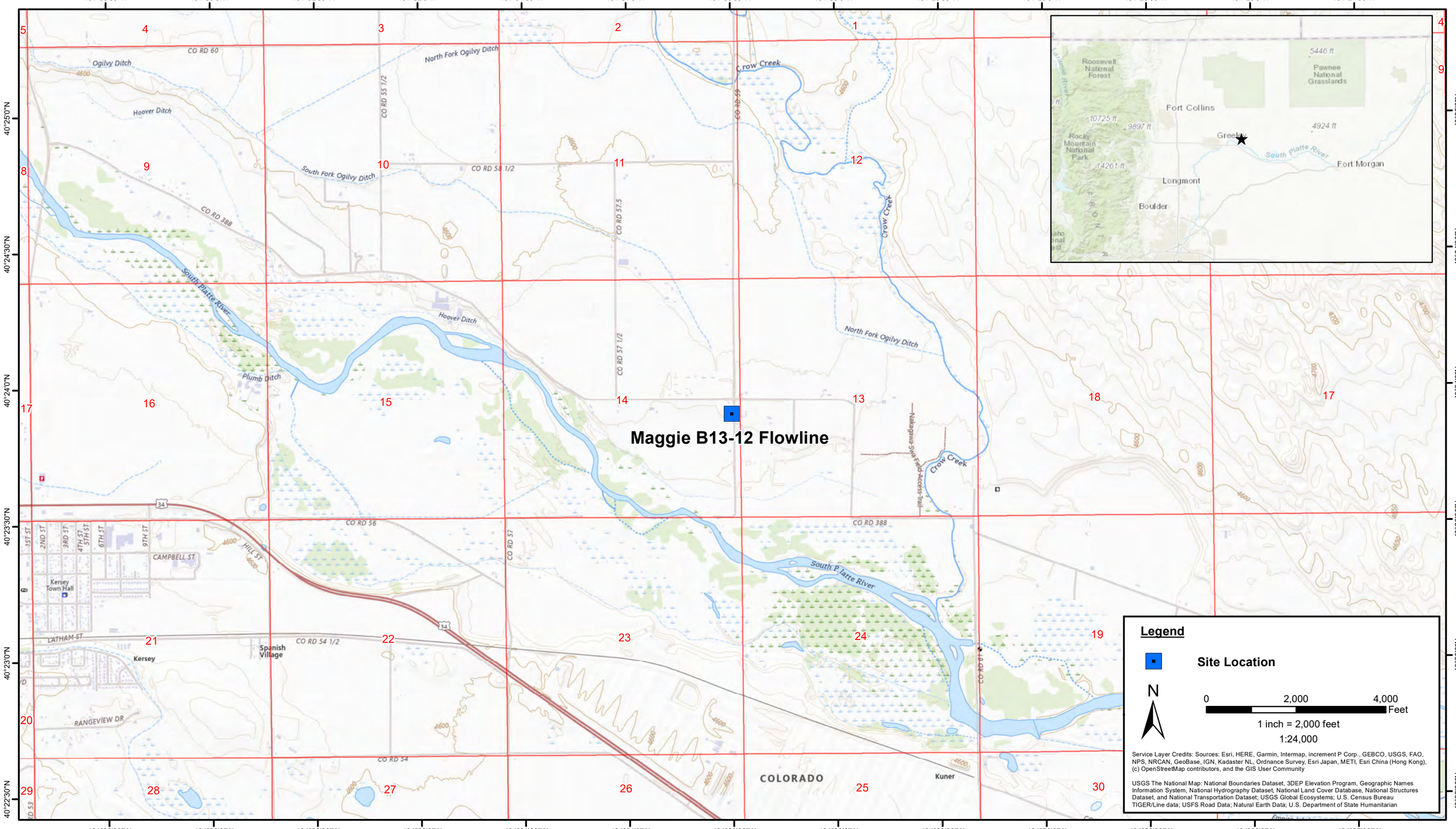
A. Vegetation Monitoring Report
B. United States Department of Agriculture (USDA) Custom Soil Resource Report

FIGURE 1

Site Location Map

104°33'30"W 104°33'0"W 104°32'30"W 104°32'0"W 104°31'30"W 104°31'0"W 104°30'30"W 104°30'0"W 104°29'30"W 104°29'0"W 104°28'30"W 104°28'0"W 104°27'30"W

40°25'0"N 40°24'30"N 40°24'0"N 40°23'30"N 40°23'0"N 40°22'30"N



Legend

Site Location

N

0 2,000 4,000 Feet

1 inch = 2,000 feet

1:24,000

Service Layer Credits: Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), (c) OpenStreetMap contributors, and the GIS User Community

USGS The National Map: National Boundaries Dataset, 3DEP Elevation Program, Geographic Names Information System, National Hydrography Dataset, National Land Cover Database, National Structures Dataset, and National Transportation Dataset; USGS Global Ecosystems; U.S. Census Bureau TIGER/Line data; USFS Road Data; Natural Earth Data; U.S. Department of State Humanitarian

DATE: October 2024 DESIGNED BY: J. Whritenour DRAWN BY: J. Woffinden	**Tasman, Inc.** **6855 W. 119th Ave** **Broomfield, CO 80020**	**Noble Energy Inc. - 100322 - DJ Basin** **Maggie B13-12 Flowline** NWSW, Section 13, Township 5 North, Range 64 West Weld County, Colorado	Site Location Map	Figure 1

FIGURE 2

Site Overview Map

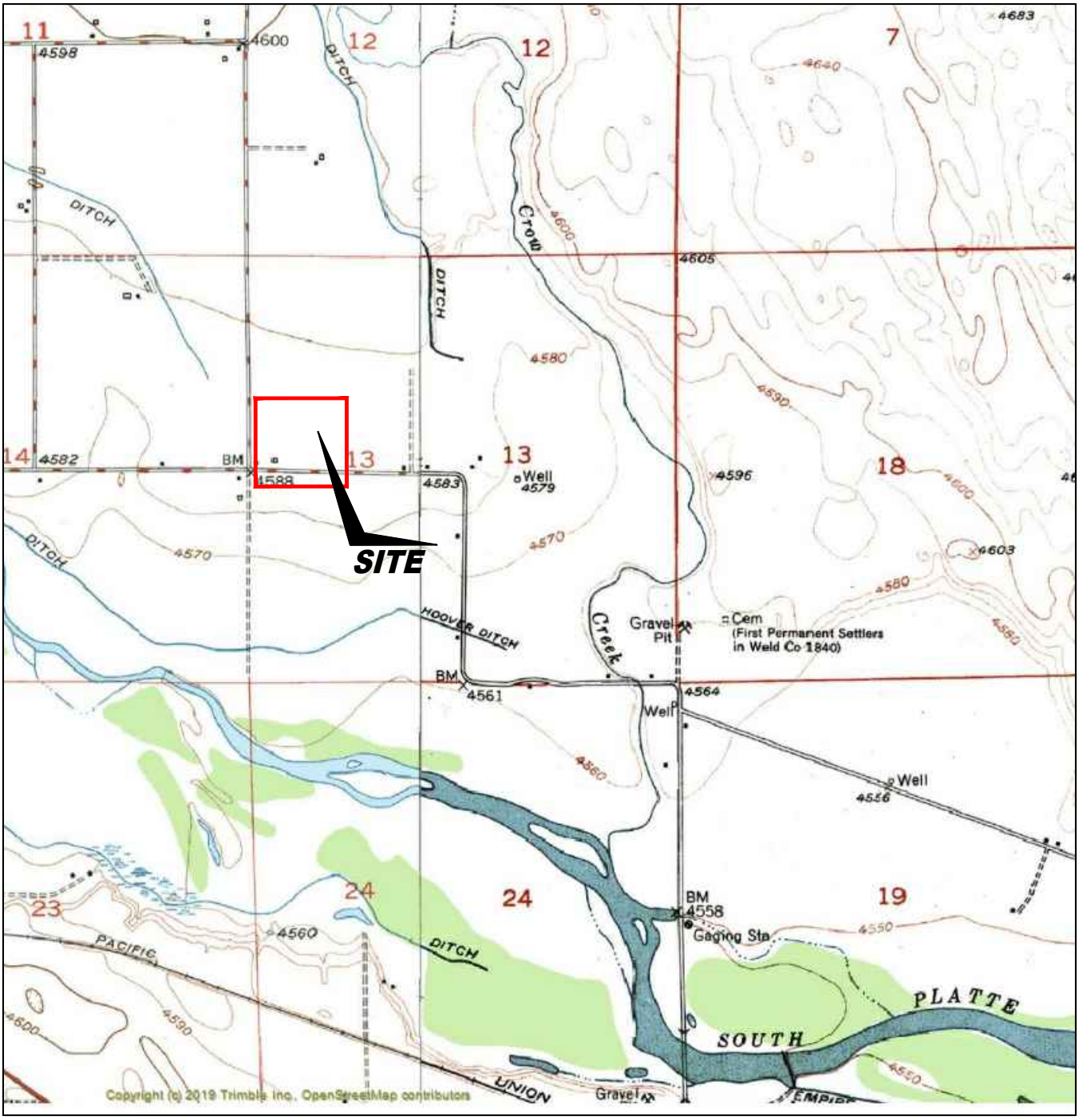
DATE: October 2024 DESIGNED BY: A. Cook DRAWN BY: J. Woffinden	**Tasman, Inc.** **6855 W. 119th Ave** **Broomfield, CO 80020**	**Noble Energy, Inc. - 100322 - DJ Basin** **Maggie B13-12 Flowline** NWSW, Section 13, Township 5 North, Range 64 West Weld County, Colorado	Site Overview Map	Figure 2

FIGURE 3

Figure 3-A, Site Location Map (Fremont)

Figure 3-B, Site Map (Fremont)

Figure 3-C, Soil Chemistry Map (Fremont)



N

Scale (miles)
0 0.1 0.2 0.3 0.4 0.5 0.6 0.7 0.8 0.9 1
0 1000 2000 3000 4000 5000
Scale (feet)

USGS 7.5 MINUTE SERIES (TOPOGRAPHIC)

Figure 3-A.
SITE LOCATION MAP

NOBLE ENERGY, INC. ~ MAGGIE B 13-12
NWSW Sec. 13, T5N, R64W, 6th PM
Weld County, Colorado
40.397587°, -104.506306°

Project #	API #	Facility #
C022-182	**05-123-17924**	**250121**
Date	Remediation #	Filename
01/03/23	**13719**	**22182T**

FREMONT ENVIRONMENTAL

LEGEND

WELL HEAD LOCATION
PID READING LOCATION
ABOVE GROUND STORAGE TANK
BUILDING
BUILDING
FORMER
FORMER FACILITY
FLOW LINE
FENCE LINE
CONTAINMENT BERM
2FL01 (3.0')
PID 0.0 ppm
PID READING LOCATION IDENTIFICATION
PHOTO IONIZATION DETECTION (ppm)

Figure 3-B.
SITE MAP

NOBLE ENERGY, INC. ~ MAGGIE B 13-12
NWSW Sec. 13, T5N, R64W, 6th PM
Weld County, Colorado
40.397587°, -104.506306°

Project No.	API #	Facility #
C022-182	**05-123-17924**	**250121**
Date	Remediation #	Filename
01/03/23	**13719**	**22182Q**

FREMONT ENVIRONMENTAL

LEGEND

WELL HEAD LOCATION
SOIL SAMPLE LOCATION
ABOVE GROUND STORAGE TANK
BUILDING
BUILDING
FORMER FACILITY
FLOW LINE
FENCE LINE
CONTAINMENT BERM

11/14/2022	
2FL01 @ 3'	
ACE	<0.005
Ant	<0.005
BaA	<0.005
BbF	<0.005
BkF	<0.005
BaP	<0.005
Chr	<0.005
DBahAnt	<0.005
FLU	<0.005
FL	<0.005
I 1,2,3cdPY	<0.005
1-MN	<0.005
2-MN	<0.005
PY	<0.005

DATE SAMPLED
SAMPLE ID and DEPTH (ft)
ACENAPHTHENE (mg/kg)
ANTHRACENE (mg/kg)
BENZO (A) ANTHRACENE (mg/kg)
BENZO (B) FLUORANTHENE (mg/kg)
BENZO (K) FLUORANTHENE(mg/kg)
BENZO (A) PYRENE (mg/kg)
CHRYSENE (mg/kg)
DIBENZ (A,H) ANTHRACENE (mg/kg)
FLUORANTHENE (mg/kg)
FLUORENE (mg/kg)
INDENO (1,2,3-CD) PYRENE(mg/kg)
1-METHYLNAPHTHALENE (mg/kg)
2-METHYLNAPHTHALENE (mg/kg)
PYRENE (mg/kg)

11/14/2022	
2FL01 @3'	
B	<0.0020
T	<0.0050
E	<0.0050
X	<0.010
1,2,4-TB	<0.0050
1,3,5-TB	<0.0050
N	<0.010
G	<0.50
D	<50
O	<50

DATE SAMPLED
SAMPLE ID and DEPTH (ft)
BENZENE (mg/kg)
TOLUENE (mg/kg)
ETHYLBENZENE (mg/kg)
TOTAL XYLENES (mg/kg)
1,2,4-TRIMETHYLBENZENE (mg/kg)
1,3,5-TRIMETHYLBENZENE (mg/kg)
NAPHTHALENE (mg/kg)
TPH-GRO (mg/kg)
TPH-DRO (mg/kg)
TPH-ORO (mg/kg)

11/14/2022	
2FL01 @3'	
SAR	53.76
pH	9.4
EC	3.34
BORON	5.4

DATE SAMPLED
SAMPLE ID & DEPTH (ft)
SAR (units)
pH (pH units)
EC (mmhos/cm)
BORON (mg/L)

Figure 3-C.
SOIL CHEMISTRY MAP

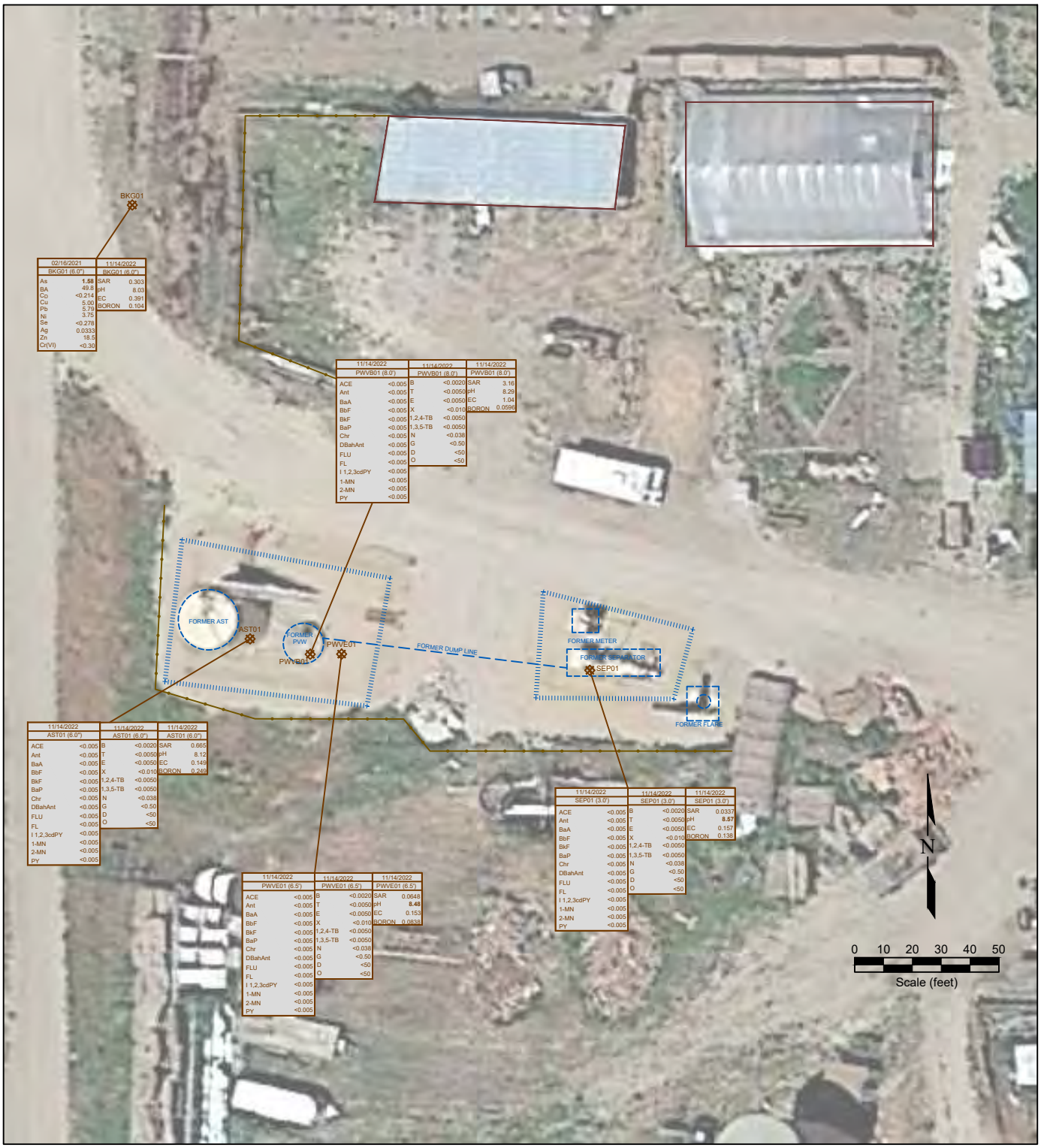
NOBLE ENERGY, INC. ~ MAGGIE B 13-12
NWSW Sec. 13, T5N, R64W, 6th PM
Weld County, Colorado
40.397587°, -104.506306°

Project No.	API #	Facility #
C022-182	**05-123-17924**	**250121**
Date	Remediation #	Filename
01/03/23	**13719**	**22182Q**

FREMONT ENVIRONMENTAL

Figure 4

Soil Chemistry Map – Facility (Fremont)



LEGEND

WELL HEAD LOCATION
SOIL SAMPLE LOCATION
ABOVE GROUND STORAGE TANK
BUILDING
BUILDING FORMER FACILITY
FLOW LINE
DUMP LINE
FENCE LINE
CONTAINMENT BERM

11/14/2022	
2FL01 @ 3'	
ACE	<0.005
Ant	<0.005
BaA	<0.005
BbF	<0.005
BkF	<0.005
BaP	<0.005
Chr	<0.005
DBahAnt	<0.005
FLU	<0.005
FL	<0.005
I 1,2,3cdPY	<0.005
1-MN	<0.005
2-MN	<0.005
PY	<0.005

DATE SAMPLED
SAMPLE ID and DEPTH (ft)
ACENAPHTHENE (mg/kg)
ANTHRACENE (mg/kg)
BENZO (A) ANTHRACENE (mg/kg)
BENZO (B) FLUORANTHENE (mg/kg)
BENZO (K) FLUORANTHENE(mg/kg)
BENZO (A) PYRENE (mg/kg)
CHRYSENE (mg/kg)
DIBENZ (A,H) ANTHRACENE (mg/kg)
FLUORANTHENE (mg/kg)
FLUORENE (mg/kg)
INDENO (1,2,3-CD) PYRENE(mg/kg)
1-METHYLNAPHTHALENE (mg/kg)
2-METHYLNAPHTHALENE (mg/kg)
PYRENE (mg/kg)

11/14/2022	
2FL01 @3'	
B	<0.0020
T	<0.0050
E	<0.0050
X	<0.010
1,2,4-TB	<0.0050
1,3,5-TB	<0.0050
N	<0.010
G	<0.50
D	<50
O	<50

DATE SAMPLED
SAMPLE ID and DEPTH (ft)
BENZENE (mg/kg)
TOLUENE (mg/kg)
ETHYLBENZENE (mg/kg)
TOTAL XYLENES (mg/kg)
1,2,4-TRIMETHYLBENZENE (mg/kg)
1,3,5-TRIMETHYLBENZENE (mg/kg)
NAPHTHALENE (mg/kg)
TPH-GRO (mg/kg)
TPH-DRO (mg/kg)
TPH-ORO (mg/kg)

02/16/2021	
BKG01 (6.0")	
As	1.58
BA	49.8
Cd	<0.214
Cu	5.00
Pb	5.79
Ni	3.75
Se	<0.278
Ag	0.0333
Zn	18.5
Cr(VI)	<0.30

DATE SAMPLED
SAMPLE ID and DEPTH (ft)
ARSENIC (mg/kg)
BARIUM (mg/kg)
CADMIUM (mg/kg)
COPPER (mg/kg)
LEAD (mg/kg)
NICKEL (mg/kg)
SELENIUM (mg/kg)
SILVER (mg/kg)
ZINC (mg/kg)
HEXAVALENT CHROMIUM (mg/kg)

11/14/2022	
2FL01 @3'	
SAR	53.76
pH	9.4
EC	3.34
BORON	5.4

DATE SAMPLED
SAMPLE ID & DEPTH (ft)
SAR (units)
pH (pH units)
EC (mmhos/cm)
BORON (mg/L)

Figure 4
SOIL CHEMISTRY MAP

NOBLE ENERGY, INC. ~ MAGGIE B 13-12
NWSW Sec. 13, T5N, R64W, 6th PM Weld County, Colorado
40.397587°, -104.506306°

Project No.	API #	Facility #
C022-182	**05-123-17924**	**467489**
Date	Remediation #	Filename
1/18/23	**25018**	**22182QFC**

FREMONT ENVIRONMENTAL

TABLE 1

Summary of Soil Suitability for Reclamation – Flowline (Fremont)

TABLE 1

SUMMARY OF SOIL SUITIBILITY FOR RECLAMATION

NOBLE ENERGY INC.

MAGGIE B13-12, WELD COUNTY, COLORADO

FREMONT PROJECT NO. C022-182

Sample ID	Sample Date	Depth (ft)	EC (mmhos/cm)	pH	SAR	Boron (mg/L)
COGCC Table 915-1 Soil Suitability Limits			<4	6 - 8.3	<6	2
Site Specific Background Concentration/Value						
2FL01@3.0'	11/14/2022	3.0 Ft	0.154	**8.71**	0.0825	0.0380

Bold faced values exceed the COGCC Table 915-1 concentrations

Yellow highlighted 915-1 Limits indicate the referenced soil screening level (SSL)

Table 2

Summary of Soil Suitability for Reclamation – Facility (Fremont)

TABLE 2

SUMMARY OF SOIL SUITIBILITY FOR RECLAMATION

NOBLE ENERGY INC.

MAGGIE B13-12, WELD COUNTY, COLORADO

FREMONT PROJECT NO. C022-182

Sample ID	Sample Date	Depth (ft)	EC (mmhos/cm)	pH	SAR	Boron (mg/L)
COGCC Table 915-1 Soil Suitability Limits			<4	6 - 8.3	<6	2
Site Specific Background Concentration/Value						
AST01@6.0"	11/14/2022	0.5 Ft	0.419	8.12	0.665	0.249
PWVB01@8.0'	11/14/2022	8.0 Ft	1.04	8.29	3.16	0.0596
PWVE01@6.5'	11/14/2022	6.5 Ft	0.153	**8.48**	0.0648	0.0838
SEP01@3.0'	11/14/2022	3.0 Ft	0.157	**8.57**	0.0337	0.138
BKG01@6.0"	11/14/2022	0.5 Ft	0.391	8.03	0.303	0.104

Bold faced values exceed the COGCC Table 915-1 concentrations

Yellow highlighted 915-1 Limits indicate the referenced soil screening level (SSL)

ATTACHMENT A

Vegetation Monitoring Report

Vegetation Monitoring Report

Project: Maggie B13-12 Flowline

Date & Time: 10/15/2024 11:13

Tasman Personnel: Alex Cook

Weather: Sunny, Windy (5-15 mph), 63F

Client: Noble Energy Inc.

Stormwater Issues: None Observed

Debris/Trash On-Site: None Observed

Equipment On-Site: No equipment has been removed.

Observations:

All equipment has been removed and clean fill was emplaced to match the surrounding contour. The road base was left in place per
the landowner request as the main farm access road and parking and /or storage for agricultural equipment. Minor weed growth was
observed, field bindweed was located across the area.

	Site Status	Comments
Vegetation Present?	Yes	Noxious weeds
Noxious or invasive weeds present?	Yes	Field bindweed
Have weeds been managed according to the narrative?	No	No initial site assessment.

Photo Log (descriptions below)

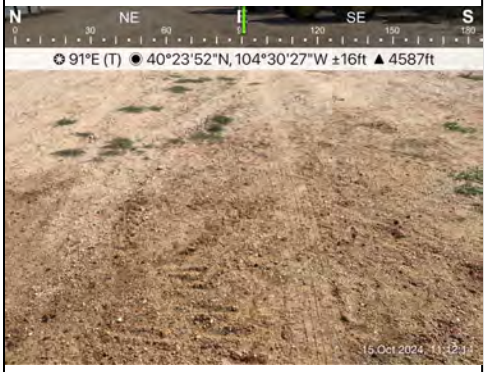
P1 - Looking north from the center of the Site, road base has been left in place per land owner request.

P2 - Looking east from the center of the Site, road base has been left in place per land owner request.

P3 - Looking south from the center of the Site, road base has been left in place per land owner request.

Photo Log Continued (descriptions below)

P4 - Looking west from the center of the Site, the Site is being used as farm equipment parking/storage.



P5 - Clean road base and backfill have been emplaced to match the existing contour.

P6 - Clean road base and backfill have been emplaced to match the existing contour.

P7 - Looking west along the former access road, now being used as a farm access road.

P8 - Looking east along the former access road, now being used as a farm access road.

P9 - Weed growth up close, field bindweed growth present. All weeds are maintained by the landowner.

P10 - Weed growth up close, field bindweed growth present. All weeds are maintained by the landowner.

P11 - The Site has been turned over to farm equipment storage/parking by the land owner.

P12 - The Site has been turned over to farm equipment storage/parking by the land owner.

Legend

Photo Location

Notes

1) All locations are approximate unless otherwise noted.
2) Buried infrastructure has been spatially projected

GPS – Global Positioning System

0 ft. 30 ft. 60 ft.

N

Image Source: Google Earth; Google 2021
Projection: WGS 1984, UTM Zone 13 North

DATE: October 24, 2024 DESIGNED BY: A. Cook DRAWN BY: A. Cook	**Tasman, Inc.** **6855 W 119th Avenue** **Broomfield, CO 80020**	**Noble Energy, Inc. – 100322 – DJ Basin** **Maggie B13-12 Flowline** NWSW, Section 13, Township 5 North, Range 64 West Weld County, Colorado	Reclamation Site Visit Map	FIGURE 1

ATTACHMENT B

USDA Custom Soil Resource Report

United States Department of Agriculture

NRCS

Natural Resources Conservation Service

A product of the National Cooperative Soil Survey, a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local participants

Custom Soil Resource Report for Weld County, Colorado, Southern Part

Maggie B13-12 Flowline

October 14, 2024

Preface

Soil surveys contain information that affects land use planning in survey areas. They highlight soil limitations that affect various land uses and provide information about the properties of the soils in the survey areas. Soil surveys are designed for many different users, including farmers, ranchers, foresters, agronomists, urban planners, community officials, engineers, developers, builders, and home buyers. Also, conservationists, teachers, students, and specialists in recreation, waste disposal, and pollution control can use the surveys to help them understand, protect, or enhance the environment.

Various land use regulations of Federal, State, and local governments may impose special restrictions on land use or land treatment. Soil surveys identify soil properties that are used in making various land use or land treatment decisions. The information is intended to help the land users identify and reduce the effects of soil limitations on various land uses. The landowner or user is responsible for identifying and complying with existing laws and regulations.

Although soil survey information can be used for general farm, local, and wider area planning, onsite investigation is needed to supplement this information in some cases. Examples include soil quality assessments (http://www.nrcs.usda.gov/wps/portal/nrcs/main/soils/health/) and certain conservation and engineering applications. For more detailed information, contact your local USDA Service Center (https://offices.sc.egov.usda.gov/locator/app?agency=nrcs) or your NRCS State Soil Scientist (http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/contactus/?cid=nrcs142p2_053951).

Great differences in soil properties can occur within short distances. Some soils are seasonally wet or subject to flooding. Some are too unstable to be used as a foundation for buildings or roads. Clayey or wet soils are poorly suited to use as septic tank absorption fields. A high water table makes a soil poorly suited to basements or underground installations.

The National Cooperative Soil Survey is a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local agencies. The Natural Resources Conservation Service (NRCS) has leadership for the Federal part of the National Cooperative Soil Survey.

Information about soils is updated periodically. Updated information is available through the NRCS Web Soil Survey, the site for official soil survey information.

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Contents

How Soil Surveys Are Made

Soil surveys are made to provide information about the soils and miscellaneous areas in a specific area. They include a description of the soils and miscellaneous areas and their location on the landscape and tables that show soil properties and limitations affecting various uses. Soil scientists observed the steepness, length, and shape of the slopes; the general pattern of drainage; the kinds of crops and native plants; and the kinds of bedrock. They observed and described many soil profiles. A soil profile is the sequence of natural layers, or horizons, in a soil. The profile extends from the surface down into the unconsolidated material in which the soil formed or from the surface down to bedrock. The unconsolidated material is devoid of roots and other living organisms and has not been changed by other biological activity.

Currently, soils are mapped according to the boundaries of major land resource areas (MLRAs). MLRAs are geographically associated land resource units that share common characteristics related to physiography, geology, climate, water resources, soils, biological resources, and land uses (USDA, 2006). Soil survey areas typically consist of parts of one or more MLRA.

The soils and miscellaneous areas in a survey area occur in an orderly pattern that is related to the geology, landforms, relief, climate, and natural vegetation of the area. Each kind of soil and miscellaneous area is associated with a particular kind of landform or with a segment of the landform. By observing the soils and miscellaneous areas in the survey area and relating their position to specific segments of the landform, a soil scientist develops a concept, or model, of how they were formed. Thus, during mapping, this model enables the soil scientist to predict with a considerable degree of accuracy the kind of soil or miscellaneous area at a specific location on the landscape.

Commonly, individual soils on the landscape merge into one another as their characteristics gradually change. To construct an accurate soil map, however, soil scientists must determine the boundaries between the soils. They can observe only a limited number of soil profiles. Nevertheless, these observations, supplemented by an understanding of the soil-vegetation-landscape relationship, are sufficient to verify predictions of the kinds of soil in an area and to determine the boundaries.

Soil scientists recorded the characteristics of the soil profiles that they studied. They noted soil color, texture, size and shape of soil aggregates, kind and amount of rock fragments, distribution of plant roots, reaction, and other features that enable them to identify soils. After describing the soils in the survey area and determining their properties, the soil scientists assigned the soils to taxonomic classes (units). Taxonomic classes are concepts. Each taxonomic class has a set of soil characteristics with precisely defined limits. The classes are used as a basis for comparison to classify soils systematically. Soil taxonomy, the system of taxonomic classification used in the United States, is based mainly on the kind and character of soil properties and the arrangement of horizons within the profile. After the soil

scientists classified and named the soils in the survey area, they compared the individual soils with similar soils in the same taxonomic class in other areas so that they could confirm data and assemble additional data based on experience and research.

The objective of soil mapping is not to delineate pure map unit components; the objective is to separate the landscape into landforms or landform segments that have similar use and management requirements. Each map unit is defined by a unique combination of soil components and/or miscellaneous areas in predictable proportions. Some components may be highly contrasting to the other components of the map unit. The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The delineation of such landforms and landform segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, onsite investigation is needed to define and locate the soils and miscellaneous areas.

Soil scientists make many field observations in the process of producing a soil map. The frequency of observation is dependent upon several factors, including scale of mapping, intensity of mapping, design of map units, complexity of the landscape, and experience of the soil scientist. Observations are made to test and refine the soil-landscape model and predictions and to verify the classification of the soils at specific locations. Once the soil-landscape model is refined, a significantly smaller number of measurements of individual soil properties are made and recorded. These measurements may include field measurements, such as those for color, depth to bedrock, and texture, and laboratory measurements, such as those for content of sand, silt, clay, salt, and other components. Properties of each soil typically vary from one point to another across the landscape.

Observations for map unit components are aggregated to develop ranges of characteristics for the components. The aggregated values are presented. Direct measurements do not exist for every property presented for every map unit component. Values for some properties are estimated from combinations of other properties.

While a soil survey is in progress, samples of some of the soils in the area generally are collected for laboratory analyses and for engineering tests. Soil scientists interpret the data from these analyses and tests as well as the field-observed characteristics and the soil properties to determine the expected behavior of the soils under different uses. Interpretations for all of the soils are field tested through observation of the soils in different uses and under different levels of management. Some interpretations are modified to fit local conditions, and some new interpretations are developed to meet local needs. Data are assembled from other sources, such as research information, production records, and field experience of specialists. For example, data on crop yields under defined levels of management are assembled from farm records and from field or plot experiments on the same kinds of soil.

Predictions about soil behavior are based not only on soil properties but also on such variables as climate and biological activity. Soil conditions are predictable over long periods of time, but they are not predictable from year to year. For example, soil scientists can predict with a fairly high degree of accuracy that a given soil will have a high water table within certain depths in most years, but they cannot predict that a high water table will always be at a specific level in the soil on a specific date.

After soil scientists located and identified the significant natural bodies of soil in the survey area, they drew the boundaries of these bodies on aerial photographs and

identified each as a specific map unit. Aerial photographs show trees, buildings, fields, roads, and rivers, all of which help in locating boundaries accurately.

Soil Map

The soil map section includes the soil map for the defined area of interest, a list of soil map units on the map and extent of each map unit, and cartographic symbols displayed on the map. Also presented are various metadata about data used to produce the map, and a description of each soil map unit.

Custom Soil Resource Report
Soil Map (Maggie B13-12 Flowline)

Map Scale: 1:1,860 if printed on A landscape (11" x 8.5") sheet.

N

Meters
0 25 50 100 150

Feet
0 50 100 200 300

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 13N WGS84

MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils
- Soil Map Unit Polygons
- Soil Map Unit Lines
- Soil Map Unit Points

Special Point Features
- Blowout
- Borrow Pit
- Clay Spot
- Closed Depression
- Gravel Pit
- Gravelly Spot
- Landfill
- Lava Flow
- Marsh or swamp
- Mine or Quarry
- Miscellaneous Water
- Perennial Water
- Rock Outcrop
- Saline Spot
- Sandy Spot
- Severely Eroded Spot
- Sinkhole
- Slide or Slip
- Sodic Spot
- Spoil Area
- Stony Spot
- Very Stony Spot
- Wet Spot
- Other
- Special Line Features

Water Features
- Streams and Canals

Transportation
- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background
- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Weld County, Colorado, Southern Part
Survey Area Data: Version 23, Aug 29, 2024

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Jun 8, 2021—Jun 12, 2021

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend (Maggie B13-12 Flowline)

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
21	Dacono clay loam, 0 to 1 percent slopes	1.6	9.5%
22	Dacono clay loam, 1 to 3 percent slopes	2.8	16.5%
41	Nunn clay loam, 0 to 1 percent slopes	9.7	57.7%
68	Ustic Torriorthents, moderately steep	2.7	16.3%
Totals for Area of Interest		**16.8**	**100.0%**

Map Unit Descriptions (Maggie B13-12 Flowline)

The map units delineated on the detailed soil maps in a soil survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions, along with the maps, can be used to determine the composition and properties of a unit.

A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some minor components that belong to taxonomic classes other than those of the major soils.

Most minor soils have properties similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting, or similar, components. They may or may not be mentioned in a particular map unit description. Other minor components, however, have properties and behavioral characteristics divergent enough to affect use or to require different management. These are called contrasting, or dissimilar, components. They generally are in small areas and could not be mapped separately because of the scale used. Some small areas of strongly contrasting soils or miscellaneous areas are identified by a special symbol on the maps. If included in the database for a given area, the contrasting minor components are identified in the map unit descriptions along with some characteristics of each. A few areas of minor components may not have been observed, and consequently they are not mentioned in the descriptions, especially where the pattern was so complex that it was impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape.

The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate pure taxonomic classes but rather to separate the landscape into landforms or landform segments that have similar use and management requirements. The delineation of such segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, however, onsite investigation is needed to define and locate the soils and miscellaneous areas.

An identifying symbol precedes the map unit name in the map unit descriptions. Each description includes general facts about the unit and gives important soil properties and qualities.

Soils that have profiles that are almost alike make up a *soil series*. Except for differences in texture of the surface layer, all the soils of a series have major horizons that are similar in composition, thickness, and arrangement.

Soils of one series can differ in texture of the surface layer, slope, stoniness, salinity, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Alpha silt loam, 0 to 2 percent slopes, is a phase of the Alpha series.

Some map units are made up of two or more major soils or miscellaneous areas. These map units are complexes, associations, or undifferentiated groups.

A *complex* consists of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the maps. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas. Alpha-Beta complex, 0 to 6 percent slopes, is an example.

An *association* is made up of two or more geographically associated soils or miscellaneous areas that are shown as one unit on the maps. Because of present or anticipated uses of the map units in the survey area, it was not considered practical or necessary to map the soils or miscellaneous areas separately. The pattern and relative proportion of the soils or miscellaneous areas are somewhat similar. Alpha-Beta association, 0 to 2 percent slopes, is an example.

An *undifferentiated group* is made up of two or more soils or miscellaneous areas that could be mapped individually but are mapped as one unit because similar interpretations can be made for use and management. The pattern and proportion of the soils or miscellaneous areas in a mapped area are not uniform. An area can be made up of only one of the major soils or miscellaneous areas, or it can be made up of all of them. Alpha and Beta soils, 0 to 2 percent slopes, is an example.

Some surveys include *miscellaneous areas*. Such areas have little or no soil material and support little or no vegetation. Rock outcrop is an example.

Weld County, Colorado, Southern Part

21—Dacono clay loam, 0 to 1 percent slopes

Map Unit Setting

National map unit symbol: 361y
Elevation: 4,550 to 4,970 feet
Mean annual precipitation: 14 to 18 inches
Mean annual air temperature: 48 to 52 degrees F
Frost-free period: 140 to 160 days
Farmland classification: Prime farmland if irrigated

Map Unit Composition

Dacono and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Dacono

Setting

Landform: Terraces
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Mixed alluvium

Typical profile

H1 - 0 to 12 inches: clay loam
H2 - 12 to 21 inches: clay loam
H3 - 21 to 27 inches: clay loam
H4 - 27 to 60 inches: very gravelly sand

Properties and qualities

Slope: 0 to 1 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Runoff class: Low
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: Moderate (about 6.3 inches)

Interpretive groups

Land capability classification (irrigated): 2s
Land capability classification (nonirrigated): 3s
Hydrologic Soil Group: C
Ecological site: R067BY042CO - Clayey Plains
Hydric soil rating: No

Minor Components

Heldt

Percent of map unit: 5 percent

Hydric soil rating: No

Nunn

Percent of map unit: 5 percent
Hydric soil rating: No

Altvan

Percent of map unit: 5 percent
Hydric soil rating: No

22—Dacono clay loam, 1 to 3 percent slopes

Map Unit Setting

National map unit symbol: 361z
Elevation: 4,550 to 4,970 feet
Mean annual precipitation: 14 to 18 inches
Mean annual air temperature: 48 to 52 degrees F
Frost-free period: 140 to 160 days
Farmland classification: Prime farmland if irrigated

Map Unit Composition

Dacono and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Dacono

Setting

Landform: Terraces
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Mixed alluvium

Typical profile

H1 - 0 to 12 inches: clay loam
H2 - 12 to 21 inches: clay loam
H3 - 21 to 27 inches: clay loam
H4 - 27 to 60 inches: very gravelly sand

Properties and qualities

Slope: 1 to 3 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Runoff class: Low
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: Moderate (about 6.3 inches)

Interpretive groups

Land capability classification (irrigated): 2e
Land capability classification (nonirrigated): 3s
Hydrologic Soil Group: C
Ecological site: R067BY042CO - Clayey Plains
Hydric soil rating: No

Minor Components

Altvan

Percent of map unit: 9 percent
Hydric soil rating: No

Nunn

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

41—Nunn clay loam, 0 to 1 percent slopes

Map Unit Setting

National map unit symbol: 2tlng
Elevation: 4,100 to 5,700 feet
Mean annual precipitation: 14 to 15 inches
Mean annual air temperature: 48 to 52 degrees F
Frost-free period: 135 to 152 days
Farmland classification: Prime farmland if irrigated

Map Unit Composition

Nunn and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Nunn

Setting

Landform: Terraces
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Pleistocene aged alluvium and/or eolian deposits

Typical profile

Ap - 0 to 6 inches: clay loam
Bt1 - 6 to 10 inches: clay loam
Bt2 - 10 to 26 inches: clay loam
Btk - 26 to 31 inches: clay loam
Bk1 - 31 to 47 inches: loam
Bk2 - 47 to 80 inches: loam

Properties and qualities

Slope: 0 to 1 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 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: 7 percent
Maximum salinity: Nonsaline (0.1 to 1.0 mmhos/cm)
Sodium adsorption ratio, maximum: 0.5
Available water supply, 0 to 60 inches: High (about 9.1 inches)

Interpretive groups

Land capability classification (irrigated): 3e
Land capability classification (nonirrigated): 4e
Hydrologic Soil Group: C
Ecological site: R067BY042CO - Clayey Plains
Hydric soil rating: No

Minor Components

Heldt

Percent of map unit: 10 percent
Landform: Terraces
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Ecological site: R067BY042CO - Clayey Plains
Hydric soil rating: No

Wages

Percent of map unit: 5 percent
Landform: Terraces
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Ecological site: R067BY002CO - Loamy Plains
Hydric soil rating: No

68—Ustic Torriorthents, moderately steep

Map Unit Setting

National map unit symbol: 363l
Elevation: 4,450 to 5,100 feet
Mean annual precipitation: 10 to 16 inches
Mean annual air temperature: 46 to 54 degrees F
Frost-free period: 120 to 160 days

Farmland classification: Not prime farmland

Map Unit Composition

Ustic torriorthents and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Ustic Torriorthents

Setting

Landform: Breaks, escarpments
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Gravelly alluvium

Typical profile

H1 - 0 to 10 inches: gravelly sand
H2 - 10 to 60 inches: gravelly sand

Properties and qualities

Slope: 9 to 15 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Excessively drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): High to very high (5.95 to 19.98 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 5 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): None specified
Land capability classification (nonirrigated): 7s
Hydrologic Soil Group: A
Ecological site: R067BY063CO - Gravel Breaks
Hydric soil rating: No

Minor Components

Columbo

Percent of map unit: 10 percent
Hydric soil rating: No

Eckley

Percent of map unit: 3 percent
Hydric soil rating: No

Otero

Percent of map unit: 2 percent
Hydric soil rating: No

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