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2 January 2025

HSR Massey #5-31

Remediation #27643

Operator # NOBLE 100322

This Supplemental Site Investigation Summary has been prepared by Environmental Resources Management, Inc. (ERM), on behalf of Chevron, for the HSR Massey #5-31 (Remediation #27643) Site. As detailed in the third quarter 2024 Supplemental Site Investigation and Remediation Workplan (Form 27) received by the Colorado Energy and Carbon Management Commission (ECMC) received on 19 September 2024 (Document #403906509), Eagle Environmental Consulting, Inc. (Eagle) performed wellhead and flowline closure activities in April and June 2023, respectively. According to the Flowline Closure Data Packet submitted by Eagle, one soil sample associated with the former flowline, FL01-E@5', exceeds the ECMC Table 915-1 regulatory standards for residual pH. This exceedance requires further action to delineate and assess pH at the Site related to background levels.

ERM performed shallow delineation and background soil sampling via hand auger around the former flowline as depicted on **Figure 1**. The analytical results from the August 2024 Site investigation activities performed by ERM are summarized in the following sections and presented in **Table 1**.

## SITE INVESTIGATION ACTIVITIES

### SOIL SAMPLING

On 15 and 16 August 2024, ERM advanced four flowline delineation soil borings (WH-01-N, WH-01-S, WH-01-E, and WH-01-W) within the former operations boundary of the HSR Massey #5-31 Site to delineate pH exceedance from sample FL01-E@5'. Samples were collected at 3-, 5-, and 7-feet below ground surface (bgs) intervals at each respective boring location. Although the Sample IDs indicate "WH" for "Well Head", the borings were advanced to delineate sample FL01-E@5' associated with the former flowline.

Eight soil borings (BG-01 through BG-08) were advanced to evaluate background concentrations of target analytes with samples collected from the non-impacted area of the Site. Samples were collected from the 4-feet bgs interval from all background sampling locations.

A total of 20 soil samples, including the 12 associated with the flowline and eight background samples, were submitted to Summit Scientific Laboratory, an accredited laboratory located in Golden, Colorado, for analysis of pH by United States Environmental Protection Agency (EPA) Method 9045D.

## RESULTS

The analytical results for pH are summarized in **Table 1** and the laboratory analytical report is included in **Attachment A**. Sampling locations and corresponding analytical results and PID readings for the 15 and 16 August 2024 sampling event are illustrated on **Figure 1**.

Upon receipt of laboratory analytical results, data were reviewed for general quality control and assurance measures. The following notable observations and data qualifiers were associated with this data set:

- Soil samples at the time of laboratory receipt were 8.39 degrees Celsius (°C), outside the acceptable range of 0 to 6°C. The samples were delivered the same day of sampling on bagged ice and were observed to be actively cooling.
- All sample bottles were received intact, and samples analyzed within their respective hold times.
- No data qualifier codes were flagged in the analytical results.

Laboratory analytical results reported exceedance of ECMC Table 915-1 regulatory standards for Soil Suitability for Reclamation in four of the 20 soil samples submitted for pH analysis. pH and exceedances are summarized below:

## FLOWLINE DELINEATION SAMPLES

- Flowline delineation borings exceed the ECMC Table 915-1 pH range of 6.0 to 8.3 standard units (SU) in four of the 12 samples collected. Analytical results for pH ranged from 7.5 to 8.8 SUs.

## BACKGROUND SAMPLES

- All background samples were reported within the ECMC Table 915-1 pH range of 6.0 to 8.3 SUs. Analytical results for pH ranged from 6.6 to 8.2 SUs.

## SOIL SUITABILITY FOR RECLAMATION STATUS

The analytical results for pH in soil samples collected from delineation borings around the HSR Massey #5-31 flowline exceed the ECMC Table 915-1 range of 6.0 to 8.3 SUs in four of the 12 delineation borings (WH-01-E at 7-feet bgs, WH-01-N at 5- and 7-feet bgs, and WH-01-W at 7-feet bgs).

ERM recommends conducting further assessment of pH on-Site and the background samples from non-impacted portions of the Site in 1<sup>st</sup> Quarter 2025.



TABLE

**Table 1**  
**SUMMARY OF SOIL SUITABILITY RECLAMATION IN SOIL CHEMISTRY DATA**  
**OPERATOR (NOBLE 100322 OR PDC 69175)**  
**HSR-Massey #5-31, Weld County, Colorado**  
**REM# 27643**

Analyte			pH (Standard Units)
ECMC Table 915-1 Limits (Protection of Groundwater SSL)			<b>6-8.3</b>
Maximum Background Concentration			<b>8.2</b>
Sample ID	Sample Date	Depth (ft)	Results
Background Samples			
BG-01	08/15/2024	4 ft	7.6
BG-02	08/15/2024	4 ft	7.5
BG-03	08/15/2024	4 ft	7.6
BG-04	08/15/2024	4 ft	8.2
BG-05	08/15/2024	4 ft	6.9
BG-06	08/15/2024	4 ft	6.6
BG-07	08/15/2024	4 ft	7.8
BG-08	08/15/2024	4 ft	7.8
Flowline Delineation Samples			
WH-01-E	08/15/2024	3 ft	7.8
WH-01-E	08/15/2024	5 ft	7.6
WH-01-E	08/15/2024	7 ft	<b>8.3</b>
WH-01-N	08/16/2024	3 ft	7.5
WH-01-N	08/16/2024	5 ft	<b>8.5</b>
WH-01-N	08/16/2024	7 ft	<b>8.8</b>
WH-01-S	08/16/2024	3 ft	7.8
WH-01-S	08/16/2024	5 ft	7.7
WH-01-S	08/16/2024	7 ft	8.0
WH-01-W	08/16/2024	3 ft	8.1
WH-01-W	08/16/2024	5 ft	8.1
WH-01-W	08/16/2024	7 ft	<b>8.6</b>

Notes:

pH units = pH units

SAR = Sodium Adsorption Ratio

CO-ECMC = Colorado Energy and Carbon Management Commission

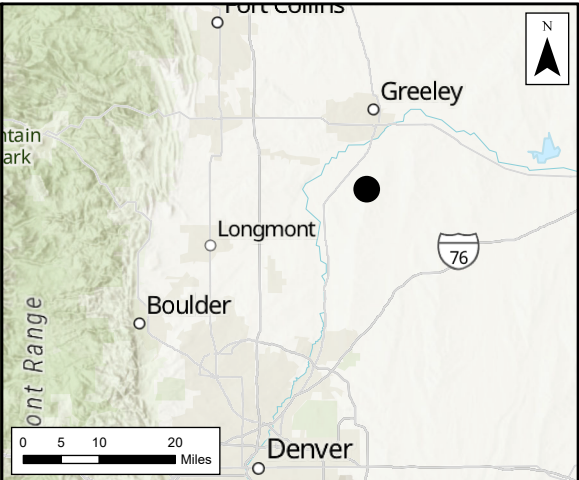
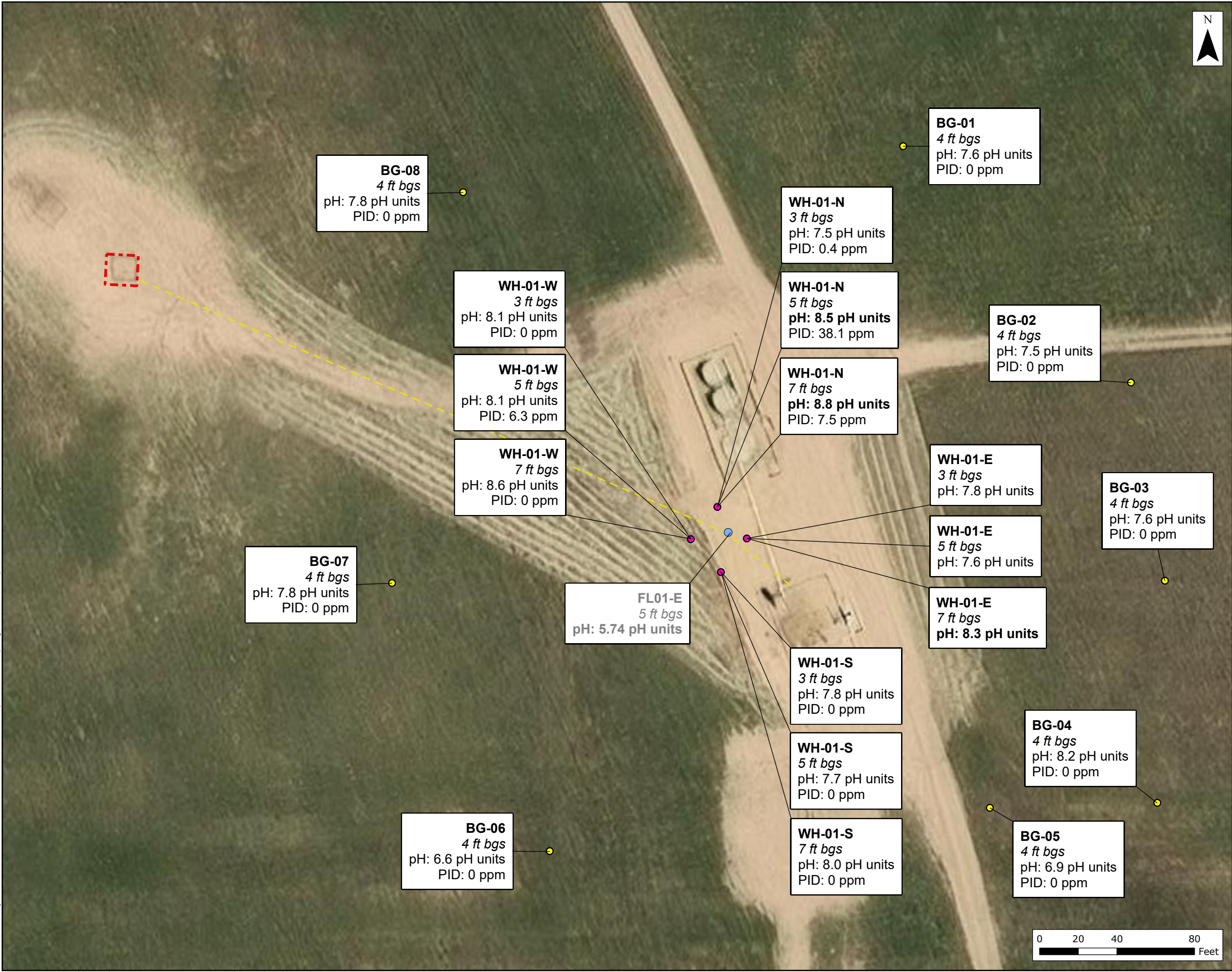
Bold and blue analytical result values exceed the ECMC Table 915-1 limit(s)

Although Sample IDs indicate "WH" for "Well Head" the borings were advanced to delineate sample FL01-E@5' associated with the former flowline.



FIGURE





### Legend

- Background
- Flowline Delineation
- Wellhead Delineation
- Former Sample Location
- Former Flowline
- Former Wellhead

### Notes:

**Bold** values exceed the ECMC criteria for soil suitability.  
ft bgs = feet below ground surface;

ECMC = Energy and Carbon Management Commission  
PID = Photo Ionization Detector  
ppm = parts per million

ECMC Table 915-1 limit(s)  
pH = 6.0-8.3 pH units

**Figure 1**  
**Soils Analytical Data**  
**15–16 August 2024**  
**HSR-Massey #5-31**  
**REM# 27643**  
**Operator: 100322**  
RBU Remediation Field Survey  
Chevron  
Weld County, Colorado





## ATTACHMENT A LABORATORY ANALYTICAL REPORT