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April 24, 2025

Eric Krueger
MT Department of Environmental Quality
Petroleum Tank Cleanup Section
Martel Building Ste 3B, 220 West Lamme St.
Bozeman, MT 59715
Eric.Krueger@mt.gov

Re: **Groundwater Monitoring Work Plan 35027** for the Petroleum Release at Mountain West Coop, 63932 U.S. Highway 93, Ronan, MT; Facility ID 24-04530, Release 873, Work Plan 35027.

Dear Mr. Krueger:

Enclosed for your review is the **Groundwater Monitoring Work Plan 35027** for the petroleum release at the Mountain View Coop located at 63932 U.S. Highway 93, Ronan, Montana; Facility ID 24-04530, Release 873, Work Plan 35027.

Thank you for your consideration of this work plan. If you have any questions or concerns, please call or contact me via e-mail mmorris@wcec.com.

Sincerely,

Myles Morris, PG
Senior Project Manager

Enclosure

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# Groundwater Monitoring
# Work Plan 35027

**Mountain West Coop**

**63932 U.S. Highway 93**

**Ronan, MT 59864**

**Facility ID 24-04530, Release 873, Work Plan 35027**

**Prepared for:**

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**April 24, 2025**

**WCEC Project No. 2407-1077**

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**Estimated Costs – Groundwater Monitoring Work Plan 35027**

**PTRCB Groundwater Monitoring and Sampling Unit Cost Worksheet**

# 1.0 Introduction

West Central Environmental Consultants (WCEC) has prepared this Groundwater Monitoring Work Plan for the Mountain West Coop facility located at 63932 U.S. Highway 93 in Ronan, Montana [Figure 1]. Additional corrective actions were requested by the Montana Department of Environmental Quality (DEQ) in the letter dated March 24, 2025. The purpose of the scope of work included in this Work Plan (WP) is to continue compliance monitoring of petroleum hydrocarbons in groundwater and help determine a pathway to future remediation and resolution of the release.

## 1.1 Site Location

The Mountain West Coop facility is located at 63932 U.S. Highway 93 in Ronan, Montana. A site location map is included as Figure 1 and a site details map is included as Figure 2. The Public Land Survey System (PLSS) description for the site is the SW/4, SW/4, NE/4 of Section 01, T20N, R20W. The approximate geographic coordinates are N 47.517977°, W 114.096563°. Township, range, and section information was obtained using the United States Geological Survey (USGS) Ronan, Montana 1:24,000 Quadrangle. The site is located within the Pablo Reservoir-Flathead River Hydrologic Unit (5$^{th}$ Code).

## 1.2 Site Geology

The surficial geology of the Mission Valley is dominated by Quaternary glacial and alluvial deposits. The alluvial deposits are underlain and interbedded with outwash, till, and glacio-lacustrine silts and clays associated with the Pleistocene glaciation. Valley margins in the area consist of thinning layers of alluvium and glacio-lacustrine sediments underlain by Tertiary basin-fill and bedrock comprised of the Belt Supergroup [LaFave et al., 2004]. Lithological data obtained from subsurface remediation activities conducted at the facility indicate that soils are generally composed of fine-grained silts and clays derived from Glacial Lake Missoula sedimentation processes. The silts and clays are interbedded with saturated fine-grained sand lenses that appear to be the principal water bearing units for the uppermost shallow groundwater system.

The Flathead River is the primary drainage for the Mission Valley, flowing south from Flathead Lake along the western margin of the valley. Overall, regional groundwater flow in the valley is to the west-southwest from recharge zones in the Mission Mountains to discharge areas at the Flathead River. Internal drainage of the valley has been greatly modified by a system of reservoirs and canals used for agricultural purposes. The local groundwater flow direction at the facility mimics surface topography bearing to the south-southwest towards Crow Creek. Depth to groundwater varies from approximately 13 to 18 feet below ground surface (bgs) [TetraTech, 2018].

## 1.3 Site History

Release 873 was discovered on September 3, 1991, when free product (FP) was noted in a leak detection well (RC-4) [Chen, 1992]. The source of the release was determined to be the UST basin that was located directly west of the dispenser island canopy. These USTs were removed in May 1997 and a new UST basin was constructed to the north of the former location. A remedial excavation was completed to remove petroleum impacted soil encountered during the UST decommissioning [Maxim, 1997]. A soil vapor extraction (SVE) system was constructed in August 2001 with the installation of four SVE wells (SVE-1 – SVE-4) [Maxim, 2002]. The SVE system operated until 2013 when it was shut down due to diminishing removal rates [TetraTech, 2013]. Groundwater monitoring was last completed in 2018 with samples exceeding RBSLs for benzene and MTBE [TetraTech, 2018].

## 2.0 Scope of Work

The scope of work requested by the DEQ consists of:

- Properly abandon groundwater monitoring well RC-6 according to Montana Department of Natural Resources and Conservation (DNRC) regulations.

- Conduct monitoring well repairs as needed to maintain the viability of the existing wells as data collection points. Redevelop wells that have silted in to facilitate ongoing groundwater sampling. Resurvey wells as outlined in DEQ guidance to enable accurate groundwater flow direction and gradient calculations.

- Propose a plan to monitor, gauge, and sample groundwater at Facility monitoring wells. Collect groundwater samples using low-flow sampling methodology according to DEQ Groundwater Sampling Guidance [DEQ, 2018].

- Analyze groundwater samples for petroleum constituents as required by the DEQ Montana Risk-Based Corrective Action Guidance for Petroleum Releases [DEQ, 2024].

- Dispose of purge water according to the DEQ Disposal of Untreated Purge Water from Monitoring Wells.

- Validate laboratory analytical data using the DEQ Data Validation Summary Form (DVSF).

- Discuss ongoing WP tasks and results with the DEQ project manager, submit written agreed-upon WP modifications as required to complete the WP objectives.

- Prepare and submit an Interim Data Submittal (IDS) for each interim groundwater monitoring event. The IDS is expected to include the discussion, data, tables, and figures described in the DEQ Groundwater Monitoring Work Plan and Report Guidance.

- Prepare and submit one Groundwater Monitoring Report detailing the method and results of all groundwater monitoring events completed under this WP. The Groundwater Monitoring Report is expected to include all content, figures, tables, and appendices described in the DEQ Groundwater Monitoring Work Plan and Report Guidance, including:
    - An updated Release Closure Plan (RCP).
    - Method and description of monitoring well abandonment.

  - Append a copy of the well abandonment form, groundwater monitoring field forms, laboratory analytical data, completed DVSFs, and the updated RCP.

- Submit WP and reports electronically following the PTCS submittal requirements.

## 2.1 Monitoring Well Abandonment, Repair, and Redevelopment

Monitoring well RC-6 is currently plugged by sediment all the way to the top of the well casing and is no longer viable as a data collection point. RC-6 is upgradient of the release source and groundwater samples from this location have consistently been below RBSLs for the duration of the release. Monitoring well RC-6 will be abandoned according to DNRC regulations. Well abandonment activities will be supervised by a Montana licensed monitoring well constructor. A well abandonment log will be submitted to the Montana Bureau of Mines and Geology (MBMG) to update the Groundwater Information Center (GWIC) database.

After monitoring well RC-6 is abandoned, ten monitoring wells will remain at the site that are all in need of some level of repair. The monument at RC-4 has been damaged and needs to be replaced and secured with new concrete. The casing has heaved at RC-4 and needs to be cut down and resurveyed. The four SVE wells and monitoring well RC-13 were installed with 12-inch monuments equipped with ¾-inch bolts that have now seized and need to be replaced to allow access to the wells. Every well at the site needs bolts replaced and threads re-tapped to secure the monument lids. Additionally, well plug replacements are required at every well location to seal the wells and prevent surface water intrusion/plugging as occurred at RC-6.

Five monitoring wells need to be redeveloped, including all four SVE wells and RC-4. These wells have silted in at thicknesses varying from 1.5 to 5 feet. This sediment needs to be removed to create sufficient storage in the well for groundwater sample collection. These monitoring wells will be redeveloped during high groundwater conditions using the surge and purge technique to remove the sediment from the bottom of the well screen.

## 2.2 Monitoring Well Survey

The horizontal location and top of casing elevation for existing monitoring wells will be surveyed according to DEQ requirements. WCEC will obtain horizontal coordinates for the monitoring wells using a Trimble Geo7X centimeter GPS referenced to a temporary control point set in Montana State Plane coordinates, US Survey Feet. A survey of the vertical well casing elevations will be completed to Fourth Order accuracy using a Nikon Ax-2s auto-level transit with a measurement precision of 0.01 feet. The top of casing elevations will be correlated to the North American Vertical Datum of 1988 (NAVD 88) using a GPS derived onsite control point and will be cross referenced for consistency with current elevations at existing monitoring wells.

## 2.3 Groundwater Monitoring

Groundwater monitoring will be performed on a semiannual basis during high and low groundwater conditions for a period of one year. Depth to water measurements will be recorded from all site wells to provide an accurate potentiometric surface plot, flow direction, and gradient. Groundwater samples will be collected from monitoring wells RC-4, RC-11, RC-12, RC-13, RC-14R, SVE-1, SVE-2, SVE-3, and SVE-4 for laboratory analysis. The first semiannual groundwater monitoring event will be scheduled for a minimum of two weeks after the well repair/development event, to allow the wells to equilibrate with the formation post-development.

Well sampling will be conducted according to WCEC Standard Operating Procedures (SOPs) and DEQ Guidance for low-flow sampling using a peristaltic pump for purging and sample collection [DEQ, 2018]. Groundwater quality parameter data (conductivity, pH, salinity, dissolved oxygen, temperature, turbidity, and ORP) will be acquired during well purging using a flow through cell attached to the peristaltic pump. Purge water will be handled according to the DEQ Purge Water Disposal Flowchart.

Groundwater sample collection will be completed following stabilization of groundwater quality parameters. Groundwater quality parameter, purge, and stabilization data for each well are recorded in the field using WCEC's Well Sampling Form. If present, any accumulations of free product (FP) in the monitoring wells will be noted and FP thicknesses will be recorded. Groundwater samples will not be collected from any wells that contain a measurable thickness of FP.

Groundwater samples will be preserved with hydrochloric acid, packed on ice, and delivered to Energy Laboratories in Helena, Montana under chain of custody. All groundwater samples will be submitted for analysis of VPH, EPH, and lead scavengers constituents as outlined in DEQ guidance [DEQ, 2024].

## 2.4 Report Preparation

WCEC will prepare an Interim Data Submittal (IDS) after the first semiannual groundwater monitoring event is completed. At the conclusion of second semiannual groundwater monitoring, WCEC will submit a Groundwater Monitoring Report detailing the cumulative results of both semiannual groundwater monitoring events and the monitoring well abandonment, repair, redevelopment, and survey activities. Laboratory analytical data will be validated using the DEQ Data Validation Summary Form (DVSF) with a completed DVSF appended to each laboratory analytical report. The report will include the content, figures, cumulative data tables for soil and groundwater, and appendices outlined in the Groundwater Monitoring Report format guidance, which includes preparing a Release Closure Plan (RCP). A thorough discussion regarding the groundwater analytical results with recommendations for further corrective actions will be

presented in the RCP and the Groundwater Monitoring Report. Documentation of the RC-6 well abandonment will also be provided.

# 3.0 Estimated Costs & Project Timeline

The scope of work outlined in this work plan is tentatively scheduled to begin in Summer 2025, pending review by the DEQ. The attached *Estimated Costs – Additional Corrective Action Work Plan 35027* spreadsheet and *PTRCB Groundwater Sampling & Unit Cost Worksheet* detail anticipated project costs to complete the DEQ required scope of work.

## 3.1 Planned Workflow & Cost Explanations

WCEC will complete the scope of work included in this work plan during three individual field events with completion and reporting milestones as follows:

**Event 1 – Planned completion by July 15, 2025:** Monitoring well abandonment, repair, redevelopment, and resurvey. This event will require 3 staff for one field day.

**Event 2 – Planned completion by July 31, 2025:** First semiannual groundwater monitoring and sampling event.

**Interim Data Submittal (IDS) – Planned completion by October 31, 2025:** IDS for review by CHS and DEQ.

**Event 3 – Planned completion by December 31, 2025:** Second semiannual groundwater monitoring and sampling event.

**Groundwater Monitoring Report – Planned submittal by March 31, 2026:** Final report submittal to CHS and DEQ.

In consultation with DEQ, the planned workflow may be adjusted as necessary based on updated analytical results. WCEC will recommend additional remedial actions to bring the release to closure based on the analytical results from the semiannual groundwater monitoring events.

# 4.0 References

**Chen-Northern.** (Chen, 1992). *Initial Response and Abatement Investigation of a Petroleum Fuel Release*. April 1992.

**LaFave, J.I., Smith, L.N., Patton, T.W.** (LaFave et al., 2004). *Groundwater Resources of the Flathead Lake Area: Flathead, Lake, Missoula, and Sanders Counties, Montana: Part A*. Montana Bureau of Mines and Geology: Groundwater Assessment Atlas 2A.

**Maxim Technologies.** (Maxim, 1997). *Fuel-Impacted Soil Overexcavation Report*. August 28, 1997.

**Maxim Technologies.** (Maxim, 2002). *SVE System Installation and Monitoring and Quarterly Groundwater Monitoring Report*. February 2002.

**Montana Department of Environmental Quality.** (MTDEQ, 2018). *Groundwater Sampling Guidance.* March 6, 2018.

**Montana Department of Environmental Quality.** (MTDEQ, 2024). *Montana Risk-Based Corrective Action Guidance for Petroleum Releases*. February 2024.

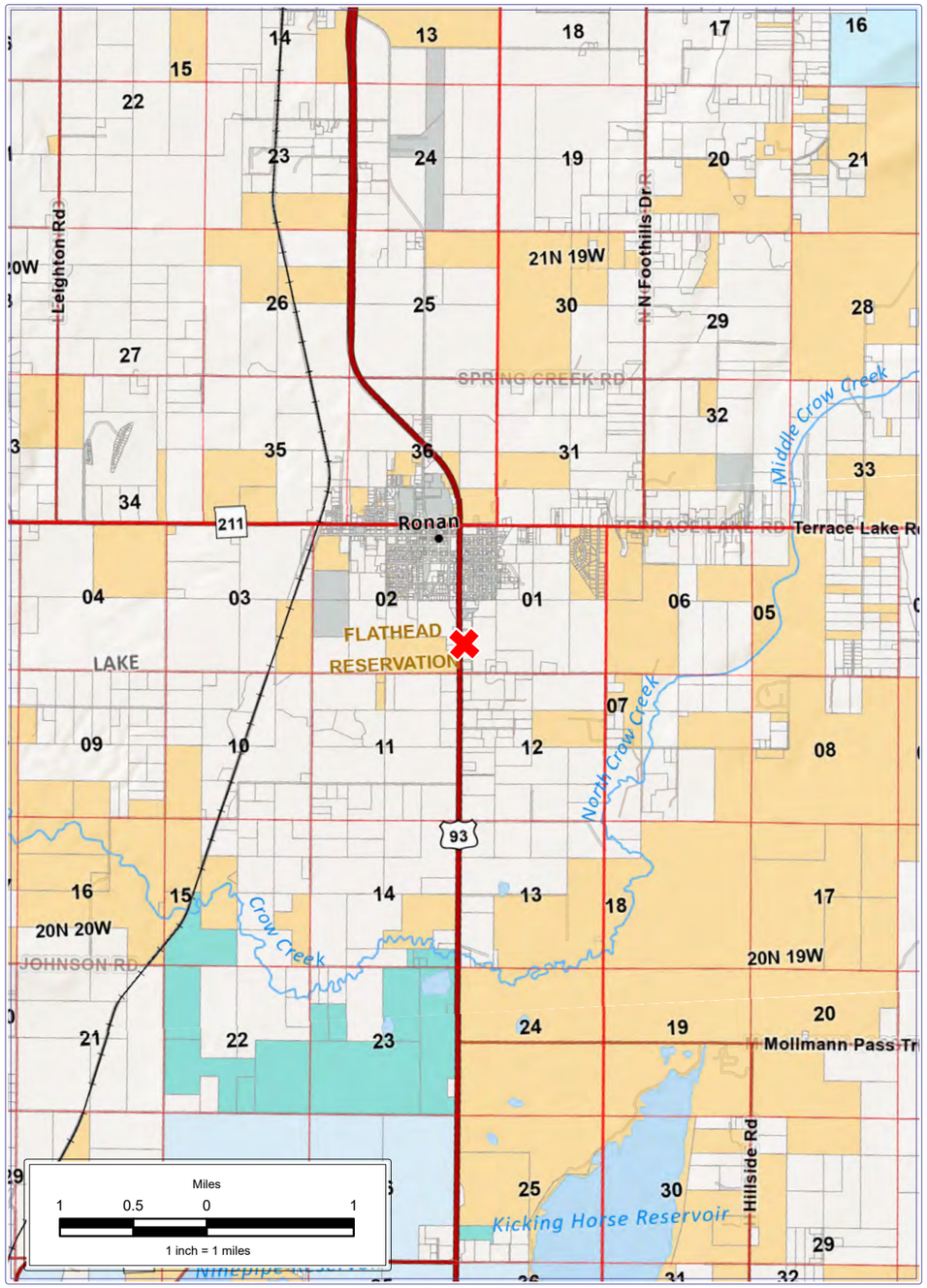
**TetraTech.** (TetraTech, 2013). *Groundwater Monitoring and SVE System O&M*. January 24, 2013.

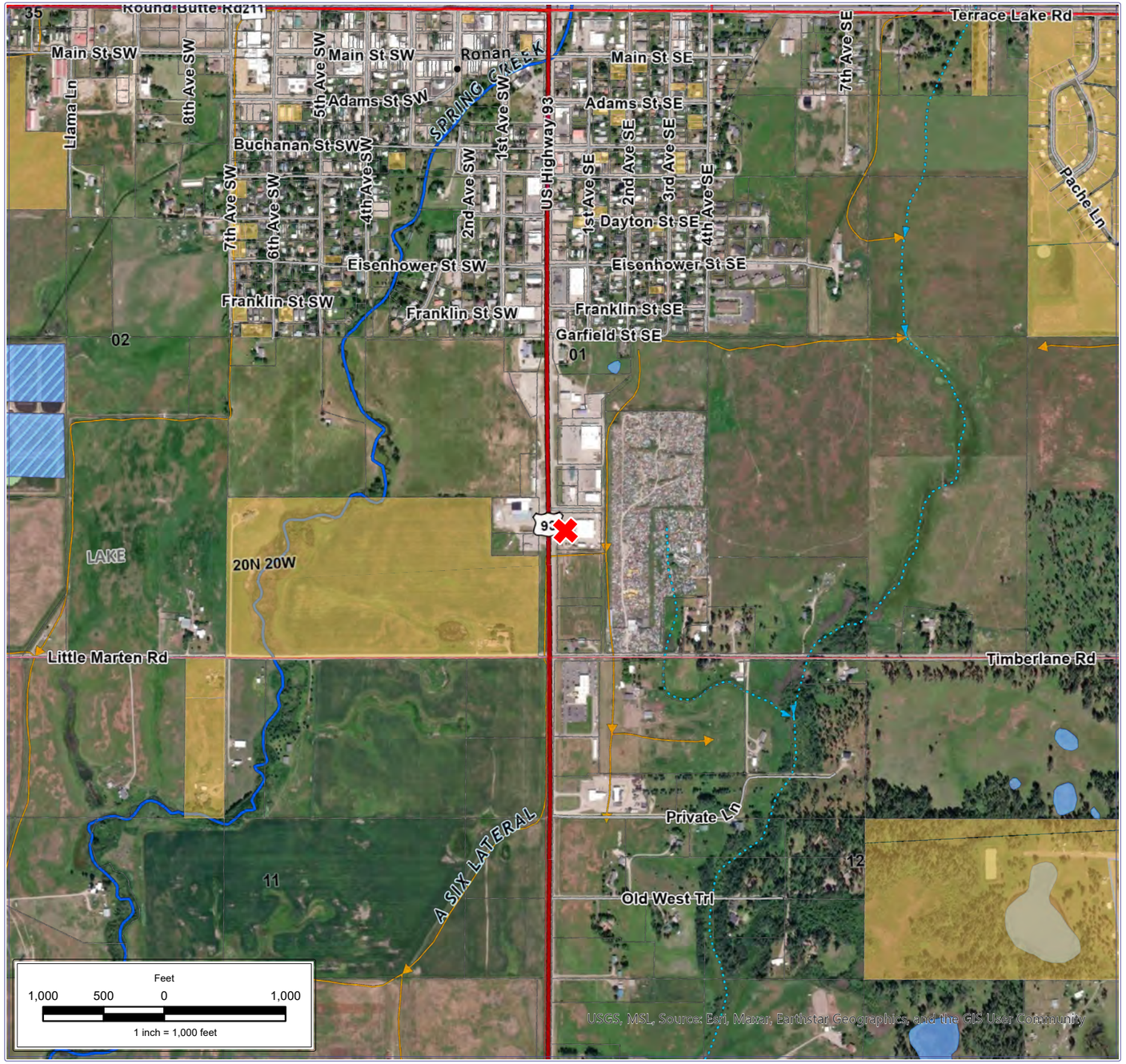
**TetraTech.** (TetraTech, 2018). *Additional Corrective Action Report*. June 15, 2018.

# Figures

Figure 1: Site Location

Figure 2: Site Details




Site Location

N

# Site Location

Mountain West Coop
63932 U.S. Highway 93
Ronan, MT

DRAWN BY: MM
DATE: 04/22/25
SCALE: 1:12,000

PROJECT NUMBER: 2407-1077

IMAGE SOURCE: ESRI BASEMAPS

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**FIGURE 1**

**LEGEND**

Monitoring Well

N

Feet

50 25 0 1 in = 50 ft 50

US Highway 93

93

RC-6

USTs

SVE-1

Mountain West Coop

SVE-2

SVE-4

Dispenser Canopy

SVE-3

RC-4

RC-12

RC-5

RC-13

RC-14R

RC-11

Mountain West Coop
63932 U.S. Highway 93
Ronan, MT

## Site Details

JOB NO.: 2407-1077 | DATE: 04/23/25 | DRAWN BY: MM | IMAGE DATE: 09/03/24

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**FIGURE 2**