Groundwater Monitoring
Work Plan 35125

Former Unocal Bulk Plant

203 Division Street

Polson, MT 59860

Facility ID# 56-13778, Release# 4422, Work Plan ID# 35125

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WCEC Project No. 2602-0542

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1.0 Introduction

West Central Environmental Consultants (WCEC) has prepared this Groundwater Monitoring Work Plan for the Former Unocal Bulk Plant facility (Facility ID# 56-13778, Release# 4422) located at 203 Division Street in Polson, MT [Figure 1]. Additional corrective actions were requested by the Montana Department of Environmental Quality (MTDEQ) in correspondence dated January 14, 2026. The purpose of the scope of work included in this Work Plan is to continue compliance monitoring of petroleum concentrations in groundwater related to Release# 4422.

1.1 Site Location

The Former Unocal Bulk Plant facility is located on the corner of Division Street and 2nd Street East in Polson, Lake County, Montana. A site location map is provided as Figure 1. The Public Land Survey System (PLSS) description for the site is the NE/4, NE/4, Section 9, T22N, R20W. The approximate geographic coordinates are N 47.688066°, W 114.159969°. Township, range, and section information was obtained using the United States Geological Survey (USGS) Polson, Montana 1:24,000 Quadrangle. The site is located within the Finley Point-Frontal Flathead Lake Hydrologic Unit (5th Code).

1.2 Site Geology

The surficial geology in the vicinity of the site is dominated by varved glacio-lacustrine sequences deposited during the Pleistocene glaciation. These deposits consist primarily of very fine-grained silts and clays with relatively low permeability. The varved lake sediments in the area are approximately 30 feet thick and are generally characterized as being homogeneous. They are frequently interspersed with micro-fractures containing more coarse-grained silts and sands, which provide an element of heterogeneity to the overall clayey silt formation. Although the micro-fractures have a random orientation pattern, they appear to be semi-continuous laterally and are important preferential pathways for the transport of water and contaminants into the subsurface based on field observations and data collected throughout the remedial activities completed at the site. Sediments below 30 feet are typically interbedded sands and silts with higher transmissivity values than the upper clayey silt zone [Eide, 2003].

The uppermost bedrock units in the vicinity of Polson are Pre-Cambrian rocks of the Proterozoic Belt Supergroup. The Belt Supergroup exposures in the area are further classified as the Wallace Formation, the Ravalli Group, and the Pritchard Formation, all of which are dominated by argillites [Boettcher, 1982]. Most wells in the local area are completed near the contact between the overlaying glacial deposits and lower Belt rocks at approximately 80 feet below ground surface (bgs). Depth to shallow groundwater at the site varies

seasonally from near the surface during wet periods to approximately 20 feet bgs when the lake sediments dry out. The inferred groundwater flow direction is to the north-northwest towards Flathead Lake. Localized gradients are also present in the hydrogeologic framework of the clayey silt formation, with micro-fractures and other preferential pathways that may not follow the overall north-northwest flow direction.

2.0 Site History

The site is located on Montana Rail Link (MRL) lease property and was operated as a bulk petroleum fuel storage and dispensing facility (Unocal) from the late 1960s until 1998. Originally, the facility consisted of six bulk fuel tanks, a bulk loading rack, dispensing equipment, and a wood floored oil warehouse building. In December of 1972, Bjork Distributors purchased the equipment and structures at the site and assumed the property lease. At the time of purchase, the bulk petroleum storage terminal consisted of two aboveground storage tanks (ASTs), a customer card lock dispenser, above and below ground product piping, and an oil storage warehouse building [Figure 2]. The ASTs at the site consisted of one 8,000 gallon AST used for diesel storage and one 8,000 gallon AST used for gasoline storage, both located within an unlined soil berm. Bjork Distributors sub-leased the facility to Stuart Morton in the early 1990s. Bjork Distributors maintained the status of primary lessee with Stuart Morton listed as the operator of the facility.

On August 18, 1998, petroleum contamination was discovered at the facility during the dismantling and removal of the product storage and dispensing equipment. A 30-day release report was filed with the MTDEQ documenting the release. On August 17, 2005, the MTDEQ issued a request for a follow-up remedial investigation at the facility. WCEC prepared and submitted the *Soil and Groundwater Investigation Work Plan* dated October 28, 2005 [WCEC, 2005] on behalf of Bjork Distributors and Stuart Morton. The MTDEQ approved the work plan in a letter dated November 30, 2005.

2.1 Soil Boring Investigations

During the initial site investigation, a total of 13 soil borings were completed to depths varying from 12 to 20 feet bgs. Shallow subsurface soil contamination was encountered in the vicinity of the former fuel storage, dispensing, and piping equipment. Source area contamination in this area appeared to be the result of numerous small spills over a long period of time. Soil contamination was also found at the soil/groundwater interface downgradient (north) of the source area. Deeper contamination encountered in these boreholes completed off the subject property may be attributable to contaminant migration from the surficial/shallow subsurface source area located on the Unocal lease property.

Based on the results of the initial soil boring investigation, the MTDEQ requested that an additional soil boring investigation be conducted to delineate the horizontal extent of contamination resulting from the release, and to identify any additional source areas located downgradient of the Former Unocal lease property. A total of nine soil borings were completed at the site to depths varying from 20 to 24 feet bgs during the second soil boring investigation.

Surficial soil contamination, primarily diesel range contamination, was encountered in boreholes located to the north of the former railroad spur line, on the Former Amoco lease property (also leased by Bjork Distributors). The Former Amoco Bulk Plant consisted of a concrete AST basin which held four tanks (gasoline, diesel, and heating oil), and a bulk fuel rack [Figure 2]. The analytical results from the additional soil boring investigation indicated that a second source area, primarily composed of diesel range contaminants, was originating from the Former Amoco Bulk Plant location.

The horizontal and vertical extent of contamination was delineated during the soil boring investigations. Soil contaminants were present at the highest concentrations in sand fractures interspersed within the varved sediment sequences beneath the former product storage and dispensing equipment. Based on the extent and magnitude of impacts to soils at the site, the MTDEQ requested that an excavation be conducted at the Former Unocal facility to remove contaminated soils surrounding the former bulk petroleum storage and dispensing equipment. Excavation of all accessible impacted soils at the Former Amoco facility was planned to be performed in conjunction with the remedial activities at the Former Unocal facility.

2.2 Remedial Excavation

The remedial excavation activities were completed during the week of August 4, 2008. The onsite project manager used a combination of field observations and data collected during the soil boring investigations to direct the excavation contractor in removing impacted soils. Contaminated soils were loaded directly into dump trucks for disposal at a one-time landfarm for petroleum contaminated soils located approximately 3 miles from Polson, Montana. Soils that did not exhibit hydrocarbon impacts were stockpiled at the site for use as backfill material.

A map depicting the excavation area is included as Figure 2. The excavation was advanced horizontally and vertically until field screening indicated that petroleum contamination was no longer present. The maximum depth reached during the excavation was approximately 15 feet bgs. Static groundwater was not encountered. The horizontal extent of the excavation was limited to the south by the telecommunications utility corridor along Division Street. Approximately 1,600 cubic yards of contaminated soil were removed and delivered to the one-time landfarm. Soil confirmation sampling of the sidewalls and pit bottom was conducted to quantify any residual soil contamination.

With the exception of one sample (SSW7) collected from the south sidewall adjacent to the telecommunications utility corridor, all soil confirmation samples from the excavation returned results below the applicable MTDEQ Risk-Based Screening Levels (RBSLs). A sample was also collected from within the utility corridor itself to confirm that contamination is not migrating along the fiber optic line. Based on the results from these samples, it does not appear that the telecommunications utility corridor is serving as a conduit for contaminant migration at the site.

2.3 Monitoring Well Installation

In order to quantify impacts to groundwater, provide groundwater flow direction and gradient data, and to further assess contaminant origin and migration at the site, six groundwater monitoring wells were installed on December 3 and 4, 2008. Monitoring well locations were determined by WCEC and MTDEQ personnel during an onsite meeting. Wells were sited outside the excavation boundaries in native soils to provide an accurate representation of the groundwater potentiometric surface. HazTech Drilling, Inc., of Billings, Montana was contracted to install the groundwater monitoring wells. An additional six groundwater monitoring wells were installed at the Former Amoco Bulk Plant facility on December 4 and 5, 2008. Wells from both sites are monitored simultaneously to delineate the commingling groundwater contaminant plume present in the area.

Following the monitoring well installation, wells were developed using a diaphragm pump and disposable polyethylene hosing to remove approximately 20 well volumes. Casing elevations were surveyed to the specifications outlined in the MTDEQ *Technical Guidance Document #2* using Global Positioning System (GPS), total station, and transit level equipment. The North American Vertical Datum of 1988 (NAVD 88) referenced to a local United States Geological Survey (USGS) benchmark was used to determine casing elevations.

2.4 Laser-Induced Fluorescence (LIF) Investigations

WCEC conducted an LIF investigation at the Former Amoco Bulk Plant between May 6 and May 9, 2014. A total of 51 LIF boreholes and 3 dual-tube boreholes were emplaced during the investigation. From June 11 to June 16, 2014, WCEC completed a separate LIF investigation at the neighboring Morton's Cardtrol and Bulk Plant which included the advancement of 38 LIF boreholes and 3 dual-tube boreholes. Both of the investigations progressed onto the Former Unocal Bulk Plant release site as necessary to fully delineate the light non-aqueous phase liquid (LNAPL) plume(s).

The data from the two investigations were combined for input into three dimensional kriging calculations to create a 3D *Integrated Site Visualization™* (ISV) of the extent and magnitude of the LNAPL plume body. The LNAPL plume was then analyzed in the context of a multiple lines of evidence approach which included historical and current analytical data and site-specific hydrogeological principals to derive an advanced conceptual site model (CSM).

As a result of these comprehensive investigations, the extent and magnitude of LNAPL in the vicinity of the Former Unocal Bulk Plant has been fully characterized, both horizontally and vertically. Complete details of the LIF investigations can be found in the respective reports submitted by WCEC to the MTDEQ for each facility [WCEC, 2014a], [WCEC, 2014b].

3.0 Scope of Work

The scope of work requested by MTDEQ includes:

- Use the standardized Work Plan and Report formats found under the Guidance dropdown at the Petroleum Tank Cleanup Section (PTCS) webpage. Please submit a Petroleum Tank Release Compensation Board (PTRCB) Groundwater Monitoring and Sampling Unit Cost Worksheet (enclosed and available under the Forms and Worksheets tab at the PTRCB webpage).

- Propose a plan to monitor, gauge, and sample groundwater at Facility monitoring wells. Collect groundwater samples by low-flow sampling methodology according to DEQ's Groundwater Sampling Guidance found under the Guidance dropdown at the PTCS webpage.

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

- Dispose of purge water according to the Disposal of Untreated Purge Water from Monitoring Wells flowchart found under the Guidance dropdown at the PTCS webpage.

- Validate all laboratory analytical data using DEQ's Data Validation Summary Form (DVSF) found under the Guidance dropdown at the PTCS webpage.

- Discuss ongoing WP tasks and results with DEQ's 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 Groundwater Monitoring Work Plan and Report Guidance for Petroleum Releases found under the Guidance dropdown at the PTCS webpage.

- 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 format sections described in the Groundwater Monitoring Work Plan and Report Guidance for Petroleum Releases found under the Guidance dropdown at the PTCS webpage and the following:
    - Cumulative groundwater data tables.
    - Updated site features and potentiometric surface maps.

- An updated Release Closure Plan (RCP).
- Append groundwater monitoring field forms, laboratory analytical data, completed DVSFs, and the updated RCP.

3.1 Groundwater Monitoring

Groundwater samples will be collected from monitoring well MW2U [Figure 2] on an annual basis during low groundwater conditions in 2026, 2027, and 2028. Well sampling will be conducted according to WCEC Standard Operating Procedures (SOPs) and MTDEQ Guidance for low-flow sampling using a peristaltic pump for purging and sample collection [MTDEQ, 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. Stabilization criteria for the groundwater quality parameters are listed in the attached SOPs. Drawdown during purging will be minimized to less than 0.3 feet by lowering the pump speed setting. Intermittent operation of the pump will be also be employed if necessary to maintain drawdown at less than 0.3 feet. Purge water will be handled according to the MTDEQ Purge Water Disposal Flowchart. Depth to water measurements will be recorded from all site wells to provide an accurate potentiometric surface plot, flow direction, and gradient.

Groundwater quality parameter, purge, and stabilization data for each well will be recorded in the field using WCEC's Well Sampling Form. Sample collection will be completed following stabilization of groundwater quality parameters. Groundwater samples will be preserved with hydrochloric acid, packed on ice, and delivered to Energy Laboratories in Helena, Montana under chain of custody. Groundwater samples from monitoring well MW2U will be submitted for analysis of VPH and lead scavengers constituents as outlined in MTDEQ guidance [MTDEQ, 2024].

3.2 Report Preparation

After each of the first two annual groundwater monitoring events in 2026 and 2027, WCEC will prepare Interim Data Submittal (IDS) reports for review by the MTDEQ. IDS report review by MTDEQ will include decisions regarding the analytical requirements, such as the necessity of continuing with lead scavengers analysis for example, and the potential for release closure based on the most recent results. At the conclusion of three years of annual groundwater monitoring in 2028, WCEC will submit a Groundwater Monitoring Report detailing the results of all of the annual groundwater monitoring events. Laboratory analytical data will be validated using the MTDEQ 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 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 also be presented in the RCP and the Groundwater Monitoring Report. Closure of the release will be recommended after two successive seasonal groundwater monitoring events with all groundwater samples below RBSLs.

4.0 Estimated Costs & Project Timeline

The scope of work outlined in this work plan is tentatively scheduled to begin in September 2026, pending approval from the MTDEQ. The attached *PTRCB Groundwater Monitoring & Sampling Unit Cost Worksheet* details anticipated project costs to complete the MTDEQ required scope of work.

4.1 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 September 30, 2026: First annual groundwater monitoring and sampling event.

Interim Data Submittal (IDS) – Planned completion by December 31, 2026: IDS for review by MTDEQ.

Event 2 – Planned completion by September 30, 2027: Second annual groundwater monitoring and sampling event.

Interim Data Submittal (IDS) – Planned completion by December 31, 2027: IDS for review by MTDEQ.

Event 2 – Planned completion by September 30, 2028: Third annual groundwater monitoring and sampling event.

Groundwater Monitoring Report – Planned submittal by December 31, 2028: Final report submittal to MTDEQ.

The deadlines listed above may be adjusted if delays are encountered through the work plan approval process.

5.0 References

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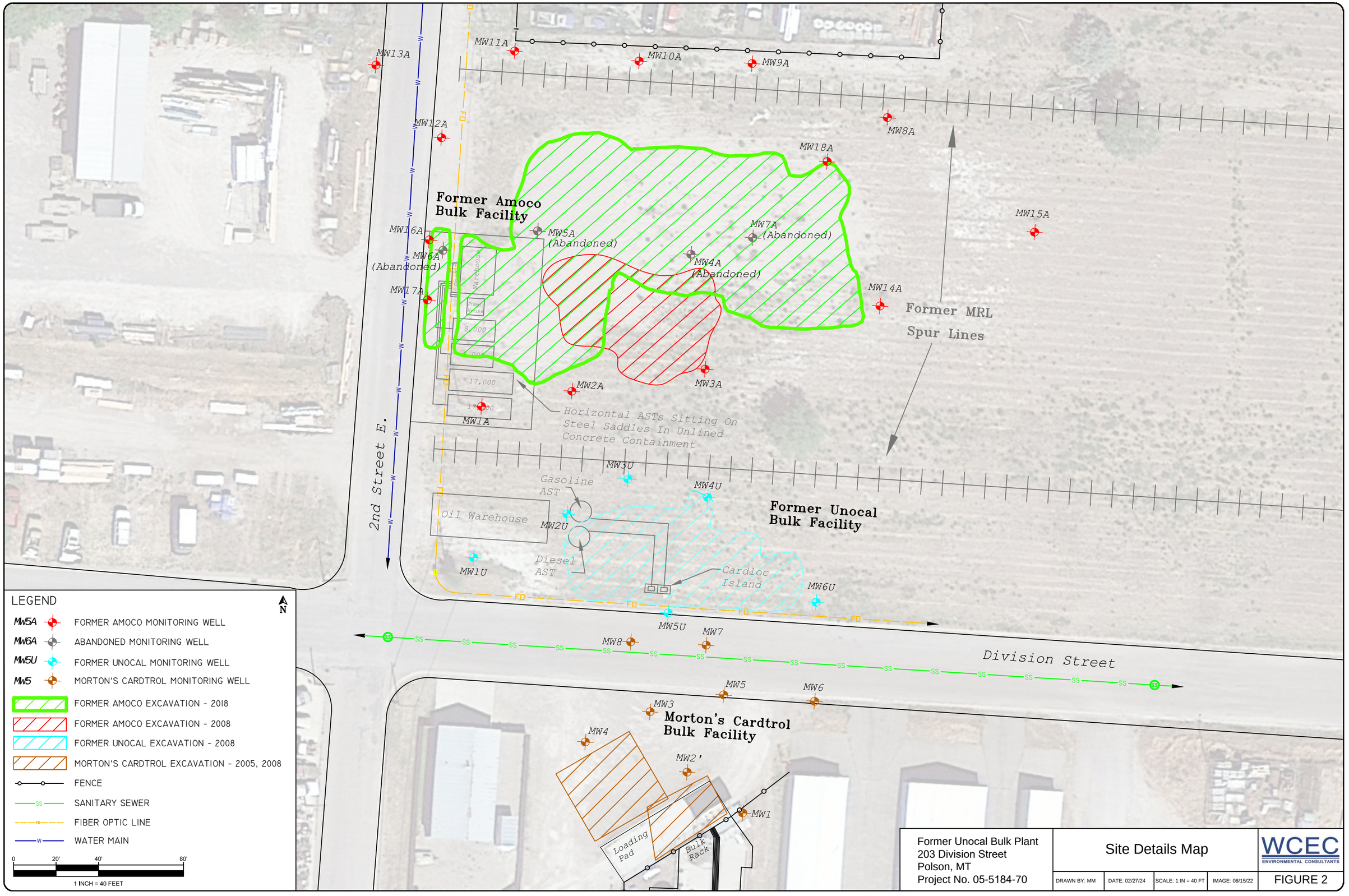
West Central Environmental Consultants. (WCEC, 2014a). *May 2014 Laser-Induced Fluorescence (LIF) Investigation Report*. Former Amoco Bulk Plant. August 29, 2014.

West Central Environmental Consultants. (WCEC, 2014b). *June 2014 Laser-Induced Fluorescence (LIF) Investigation Report*. Morton's Cardtrol and Bulk Plant. October 13, 2014.

Figures

Former Unocal Bulk Plant 203 Division Street Polson, MT Project No. 05-5184-70	**Site Location Map**				WCEC ENVIRONMENTAL CONSULTANTS
	DRAWN BY: MM	DATE: 10/28/14	SOURCE: ESRI	IMAGE: 07/18/11	**FIGURE 1**



Former Unocal Bulk Plant
203 Division Street
Polson, MT
Project No. 05-5184-70

Site Details Map

WCEC ENVIRONMENTAL CONSULTANTS

DRAWN BY: MM	DATE: 02/27/24	SCALE: 1 IN = 40 FT	IMAGE: 08/15/22	FIGURE 2