



RCRA Facility Investigation Calumet Montana Refinery Public Meeting

October 19, 2023

Great Falls, Montana



RCRA Facility Investigation Key Stakeholder Representatives

Joe Dauner

Calumet Montana Refining (CMR)

David Heidlauf

Ramboll Americas Engineering Solutions (Ramboll)

Eric Clanton

Montana Department of Environmental Quality (MDEQ)

Project Background

- The Calumet Montana Refinery (Refinery) RCRA Facility Investigation (RFI) and Baseline Risk Assessment (BRA) are being completed to comply with the requirements of the MDEQ RCRA Corrective Action Order dated Sept. 27, 2012.
- The Refinery began operation in 1922 and has had multiple site owners. Calumet purchased the Refinery in 2012.
- Ramboll was retained as Calumet's environmental contractor in 2018. Ramboll has updated the site conceptual model and has prepared RFI and BRA Work Plans that MDEQ approved on May 19, 2023.

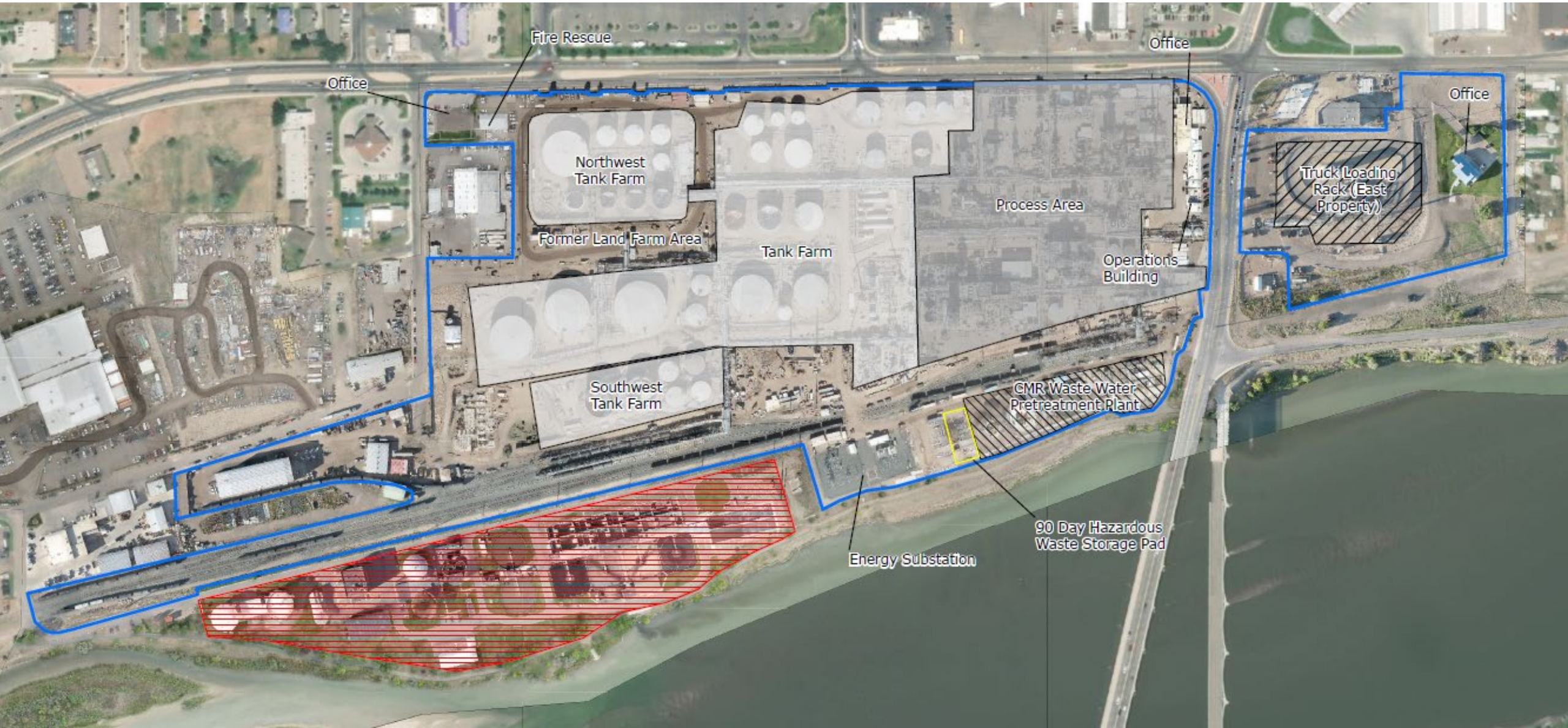


RCRA Corrective Action Status

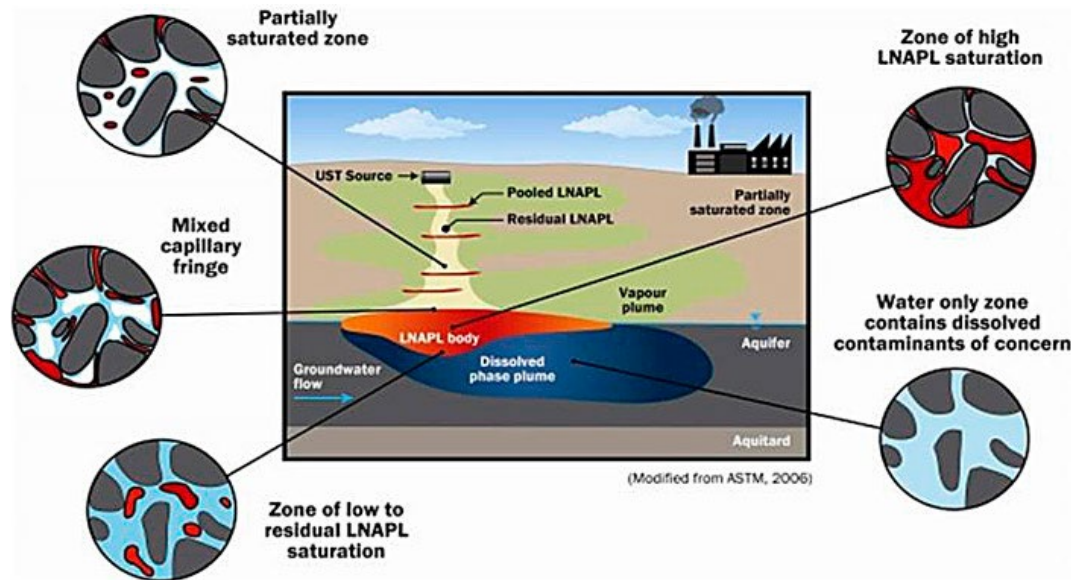
Where CMR has been and is at:

- 2012: Corrective Action Order on Consent
- 2014 – Present: Calumet conducted several Interim Measures (IM)
- 2019-2020: EPA conducted an Optimization Review
- May 19, 2023: MDEQ approved RFI and BRA Work Plans

Calumet Montana Refinery Layout



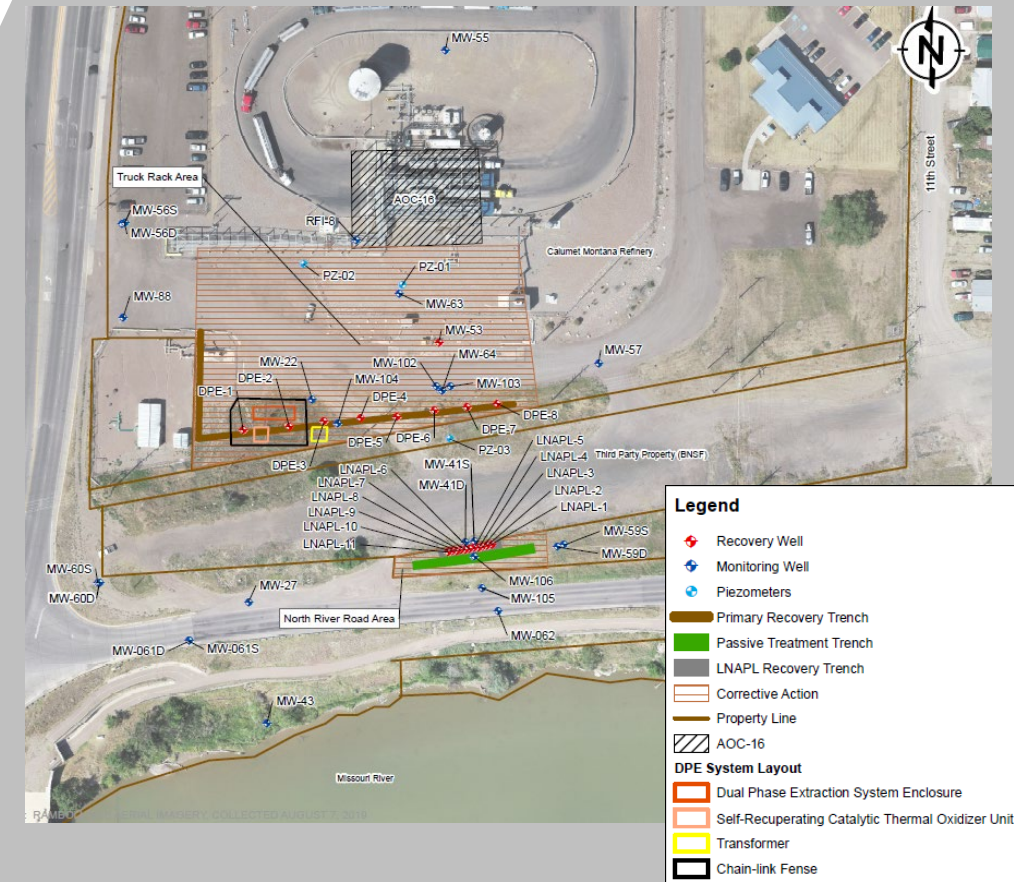
AOC 16 - Truck Loading Rack IM Remedy Goals



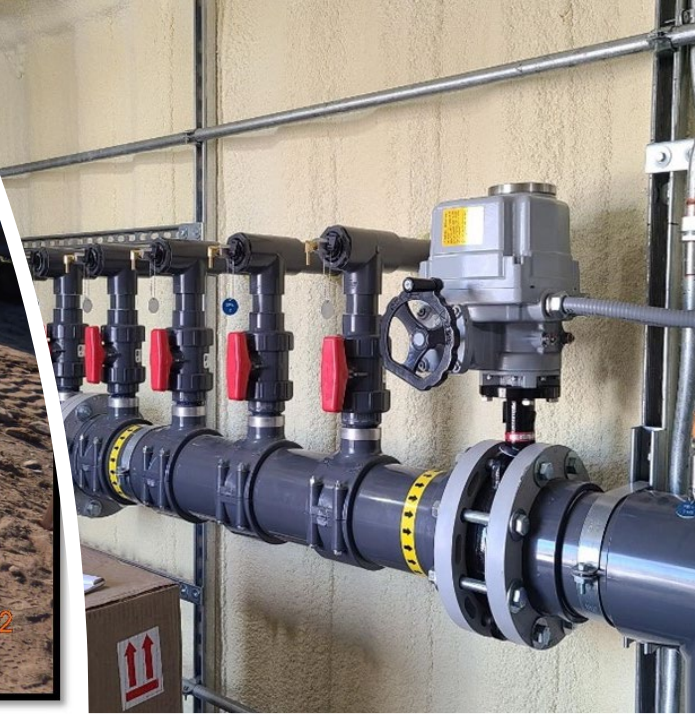
- Reduction of mobile Light Non-Aqueous Phase Liquid (LNAPL) from the Truck Loading Rack Source Area (Source Area).
- Mitigate dissolved phase petroleum constituents from migrating south from the Source Area to the Missouri River.
- Contain dissolved phase petroleum constituents present along the north side of North River Road from migrating to the Missouri River.

AOC-16 / Truck Loading Rack IM Remedies

- AOC-16 IM Remedies Constructed Fall 2021:
 - Dual-Phase Extraction (DPE) Remediation System in Truck Loading Rack
 - LNAPL recovery trench and passive treatment trench (PTT) utilizing colloidal activated carbon at an area along North River Road
- AOC-16 IM LNAPL Trench Extended Summer 2022
- AOC-16 IM Remedies Currently Operational



DPE Remediation System and LNAPL & PTT Trenches



One Hundred-Year-Old Refinery Complex

**FOR THE FLAG
SHE LOVES**



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GREAT FALLS, MONTANA

No Idle Boast--

This claim of ours that no better motor fuel is made than **CHIEF MONTO GASOLINE** is a **PROVEN FACT!**

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**CHIEF MONTO
GASOLINE**
and
Major Motor Oils

"THE lower the endpoint, the better the gasoline!"
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CHIEF MONTO is a 100 percent Montana product... distilled from crude oil from the Pondera field... refined at the plant of the Home Oil and Refining Company in Great Falls, employing only Montana men and Montana capital. TRY Chief Monto! Give it every test that can be devised in determining high quality in gasoline... and watch it win them all!



Cut the cost of farm production with
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A tractor fuel that can save you money with safety... use it in your tractor instead of gasoline. Costs but 6 to 10 cents per gallon.

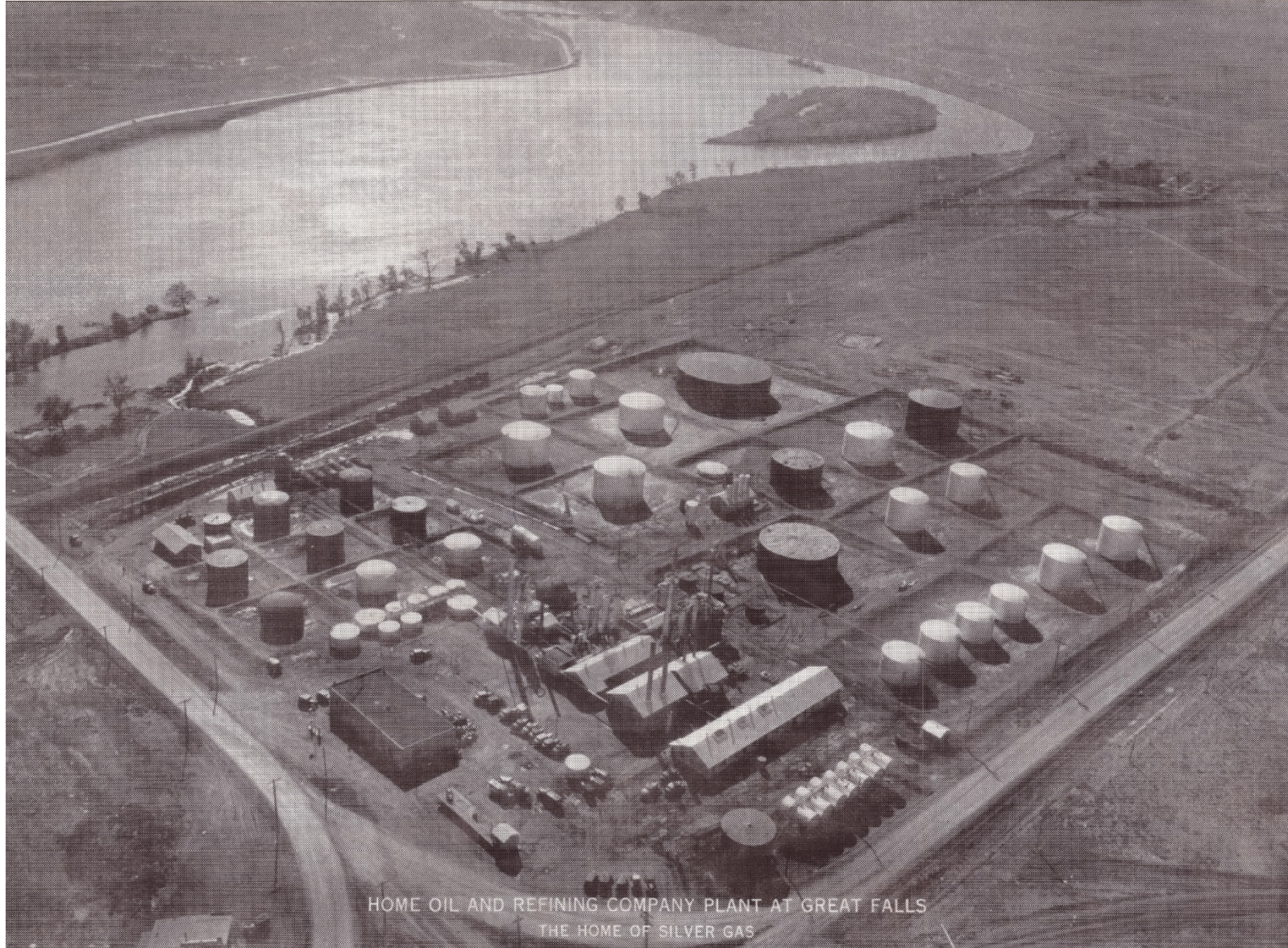
HOME OIL & REFINING COMPANY

Wholesale and Retail Great Falls, Montana



One of the Northwest's most modern refineries—the plant of the Home Oil and Refining Company at the north end of the Trench street bridge.

1922 – 1933 Timeframe



HOME OIL AND REFINING COMPANY PLANT AT GREAT FALLS
THE HOME OF SILVER GAS

1946 Timeframe



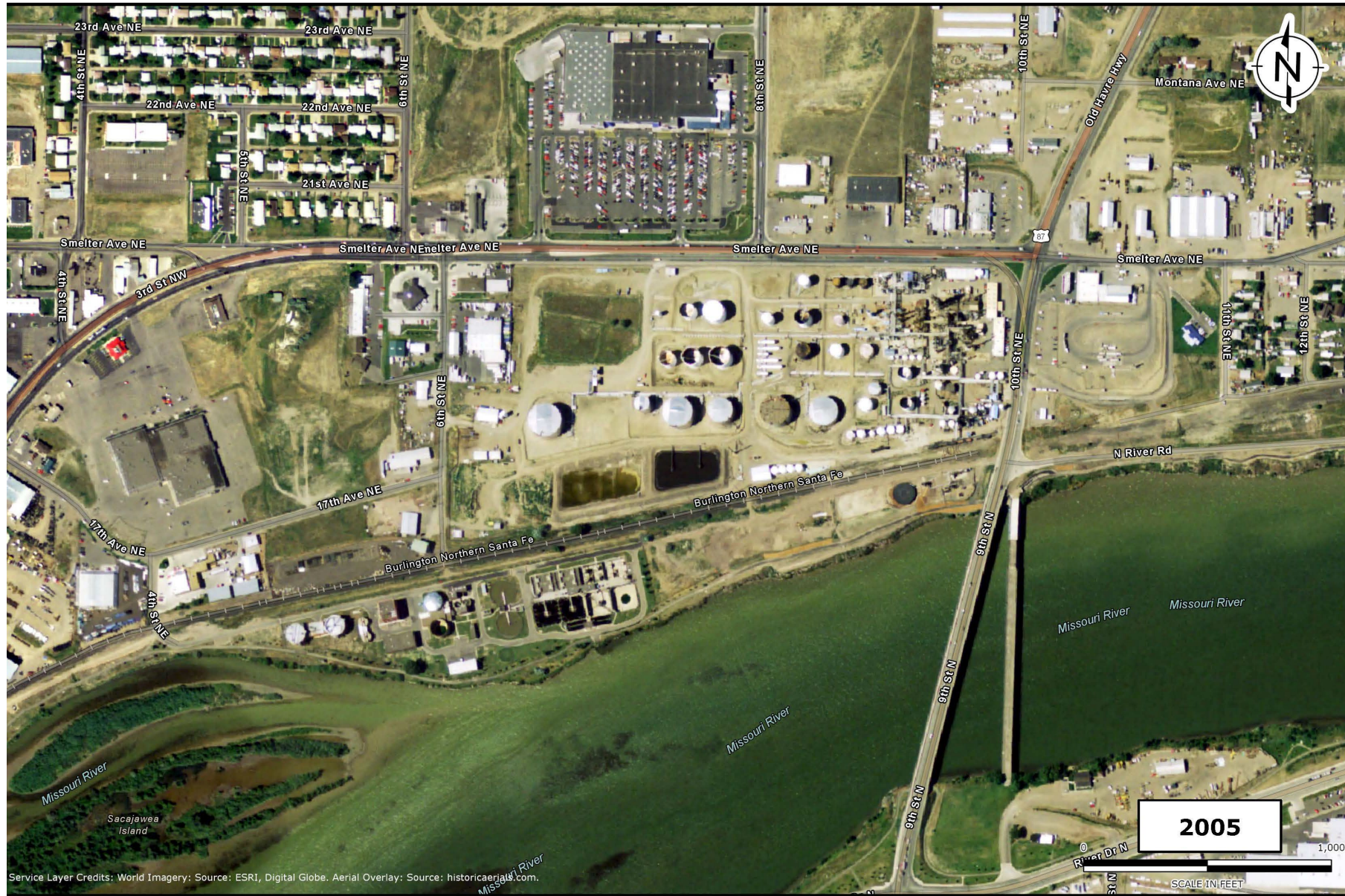
1966 Timeframe



1995 Timeframe



2005 Timeframe



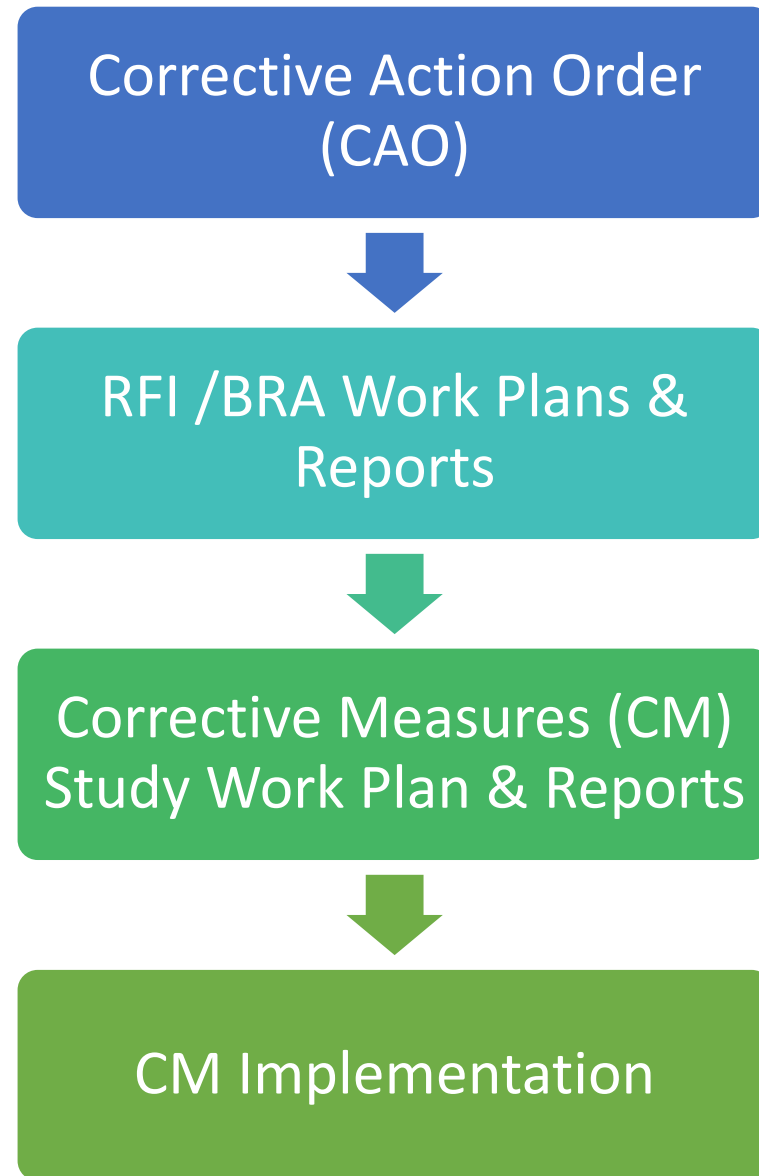
2011 Timeframe



2019 Timeframe



RFI / CM Process



IM Work
Plans &
Reports

RFI Drivers / GOALS



HUMAN EXPOSURE
UNDER CONTROL



GROUNDWATER
UNDER CONTROL



FINAL REMEDY
CONSTRUCTION

RFI Questions To Be Addressed

Where are Contaminant Sources – i.e. Mass

What are the Background Concentrations -
Inorganics

What is the Site Geologic & Hydrogeologic Setting

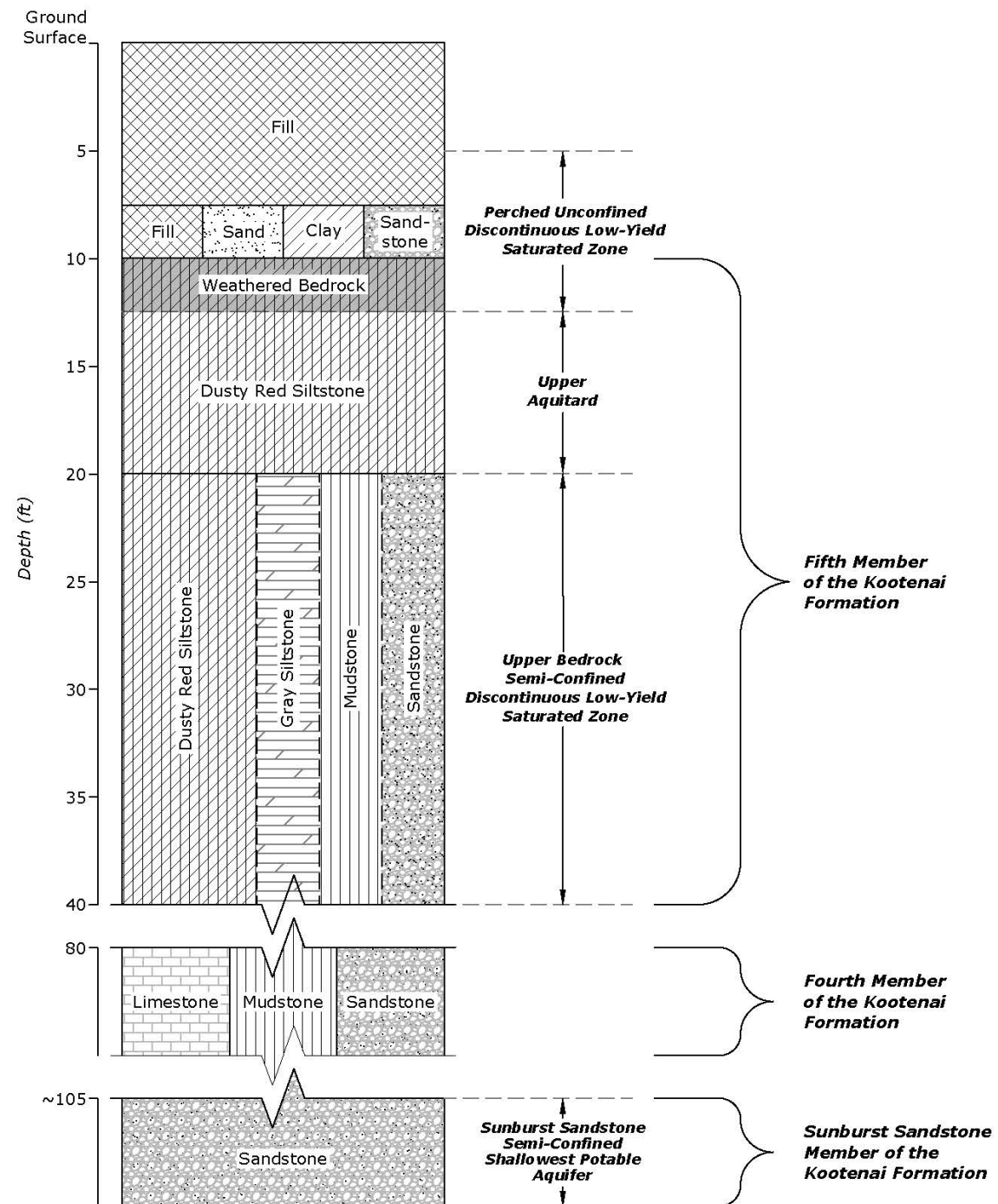
What are the Contaminant Pathways of Concern –
Natural & Manmade (sewers)

What are the Receptors of Concern

What are the Risk to the Receptors – Human &
Ecological

Hydrogeologic Conceptual Site Model

1. Perched Unconfined Discontinuous low-yield Saturated Zone
2. Upper Aquitard
3. Upper Bedrock Semi-Confined Discontinuous low-yield Saturated Zone
4. Sunburst Sandstone Semi-confined Shallow Most Potable Aquifer



RFI Approach

Determine nature and extent of impacted media

- Delineate soil and groundwater impacts of areas to be investigated
- Evaluate potential groundwater migration pathways
- Evaluate impact, if any, to the shallowest potable aquifer – Sunburst Formation
- Investigate refinery on-site sewer system
- Delineate impact from legacy refinery operations
- Evaluate utility preferential pathways
- Characterize natural source zone depletion

BRA Approach

Human health & ecological baseline risk assessments (“HHRA” and “ERA”) to be completed **“in accordance with MDEQ & USEPA guidance”**

HHRA: Estimates potential risks to workers from exposure to contaminants in soil and shallow groundwater (0-10 ft bgs)

ERA: Estimates potential risk to biota, solely in areas where “habitat” is present (shallow soil, puddled water)

- Onsite: Focus on limited areas where some plants, bare soil, and puddled water are present (e.g., bermed areas in tank farm, southern fence line area)
- Includes evaluation of birds in riparian areas along river

RFI Areas To Be Investigated





RFI WORK PLAN
CALUMET MONTANA REFINING, LLC
GREAT FALLS, MONTANA

May 2023



May 19, 2023

Sent by E-mail and Certified Mail

Joe Dauner
Environmental Manager
Calumet Montana Refining, LLC
1900 10th Street N.E.
Great Falls, MT 59404

Subject: Approval of the Calumet Montana Refining, LLC, 2023 RFI and RA Work Plans

Dear Mr. Dauner:

The Montana Department of Environmental Quality (DEQ) received electronic copies of the revised Resource Conservation and Recovery Act (RCRA) Facility Investigation (RFI) Work Plan and the Baseline Risk Assessment (RA) Work Plan from Ramboll, Inc., on behalf of Calumet Montana Refining, LLC (CMR). The Work Plans are dated April 24, 2023, and were submitted in accordance with the Corrective Action Order on Consent MHWCAO-12-01 (Order). DEQ approves the Work Plans.

During a site visit on April 18, 2023, CMR and Ramboll explained that the Community Relations Plan was still going through CMR corporate review. DEQ agreed that the Community Relations Plan could be submitted after the rest of the Work Plans. DEQ also agreed that a public comment period is not necessary during the RFI process. Please submit the Community Relations Plan within 90 calendar days of receipt of this letter.

In accordance with Condition VIII.A.1.b. and e. of the Order, CMR shall demonstrate financial assurance and liability insurance coverage for implementation of the Work Plans. CMR must submit to DEQ the required financial assurance and liability insurance coverage within 75 calendar days of receipt of this letter.

If you have any questions or concerns, please contact me.

Sincerely,

Eric Clanton
Hazardous Waste Specialist
Waste Management Bureau
Phone: 406-444-2876
email: eric.clanton2@mt.gov

cc: Addressee: Joseph.Dauner@calumetspecialty.com
Mike Gipson, Calumet Montana Refining, LLC: Mike.Gipson@calumetspecialty.com
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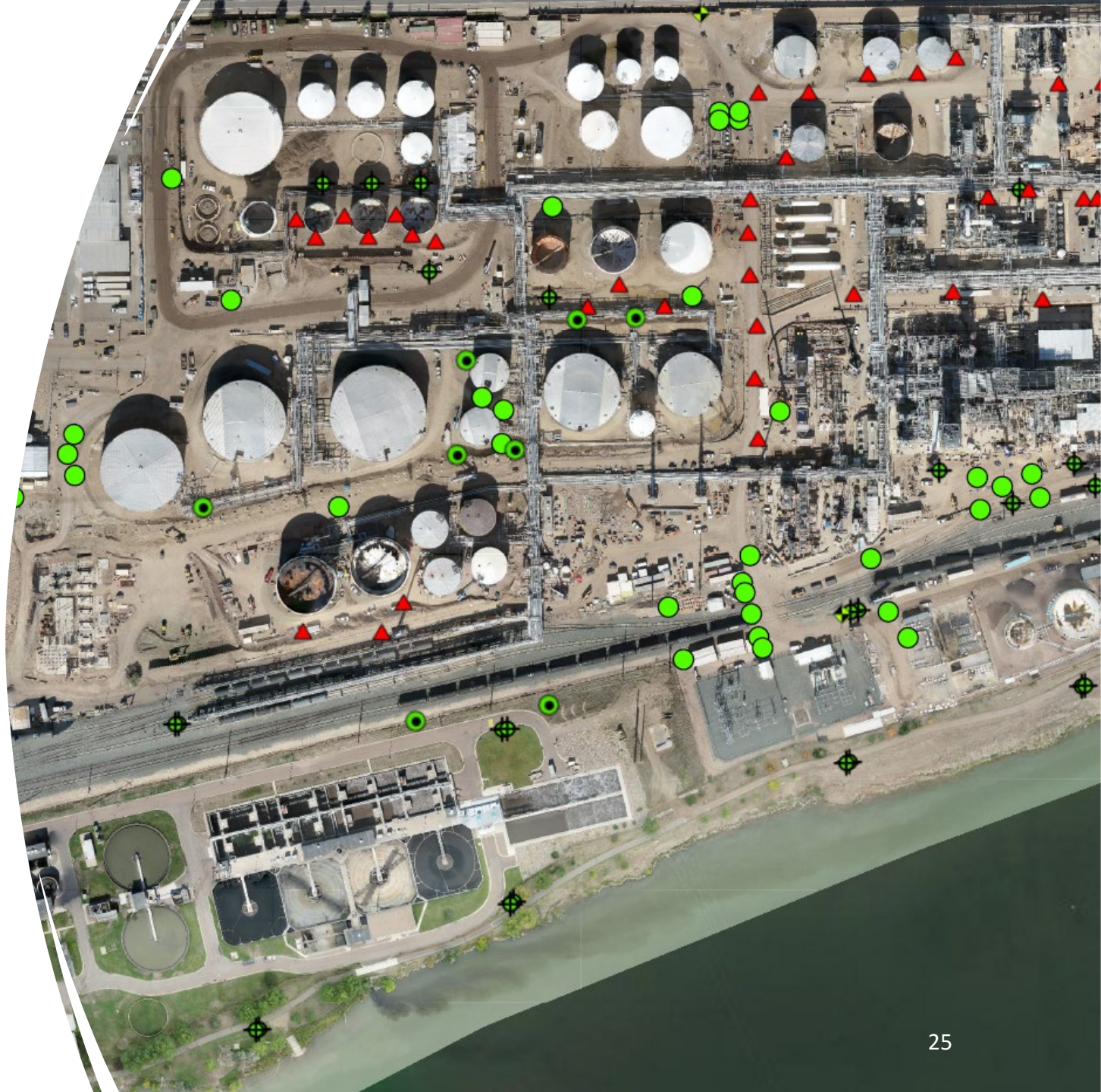


BASELINE RISK ASSESSMENT
(BRA)WORK PLAN
CALUMET MONTANA REFINING, LLC
GREAT FALLS, MONTANA

May 2023

RFI Phase 1 Scope of Work

- Drill 57 Shallow Monitoring Wells
- Drill 3 Deep Monitoring Wells
- Advance 59 Soil Borings
- Advance 104 LIF Borings
- Abandon 16 Monitoring Wells
- Conduct Hydraulic Slug Testing on 17 Monitoring Wells
- Collect One Round of Groundwater Samples from 119 Monitoring Wells





Existing
Groundwater
Monitoring
Locations





New Fall 2023
Groundwater
Monitoring
Locations





RFI
Sampling
Locations





SNU-MW-001

Sunburst
Monitoring
Well
Locations

SNU-MW-002

SNU-MW-003

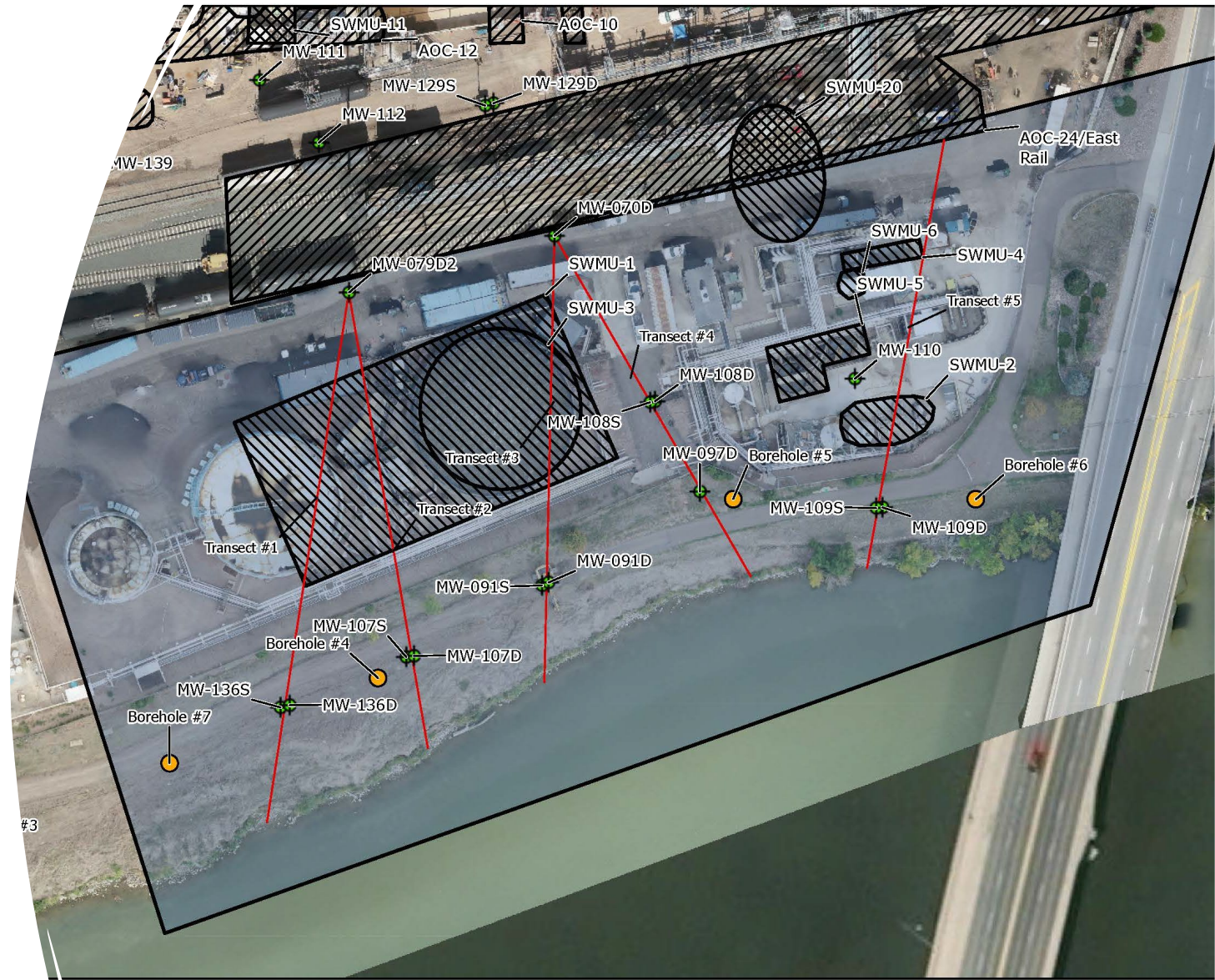


Potential
Groundwater
Migration
Pathways



Eastern Site Boundary
Groundwater Pathway
Already Delineated

East Groundwater Migration Pathway Corridor



**EAST TRANSECT (NEAR API AREA)
EVALUATION OF GROUNDWATER MIGRATION PATHWAY TO RIVER
INVESTIGATIVE UNIT #12B**

Drone imagery collected
September 2022

0 125 250 Feet

Calumet Montana Refinery, LLC
1500 10th Street Northeast
Great Falls, Montana

Missouri Riverbank Petroleum Impacts



Central Groundwater Migration Pathway Corridor



Central Corridor Boundary
AOC
SWMU
Borehole #1

Outfalls
Central Transect
MDT Storm Sewer

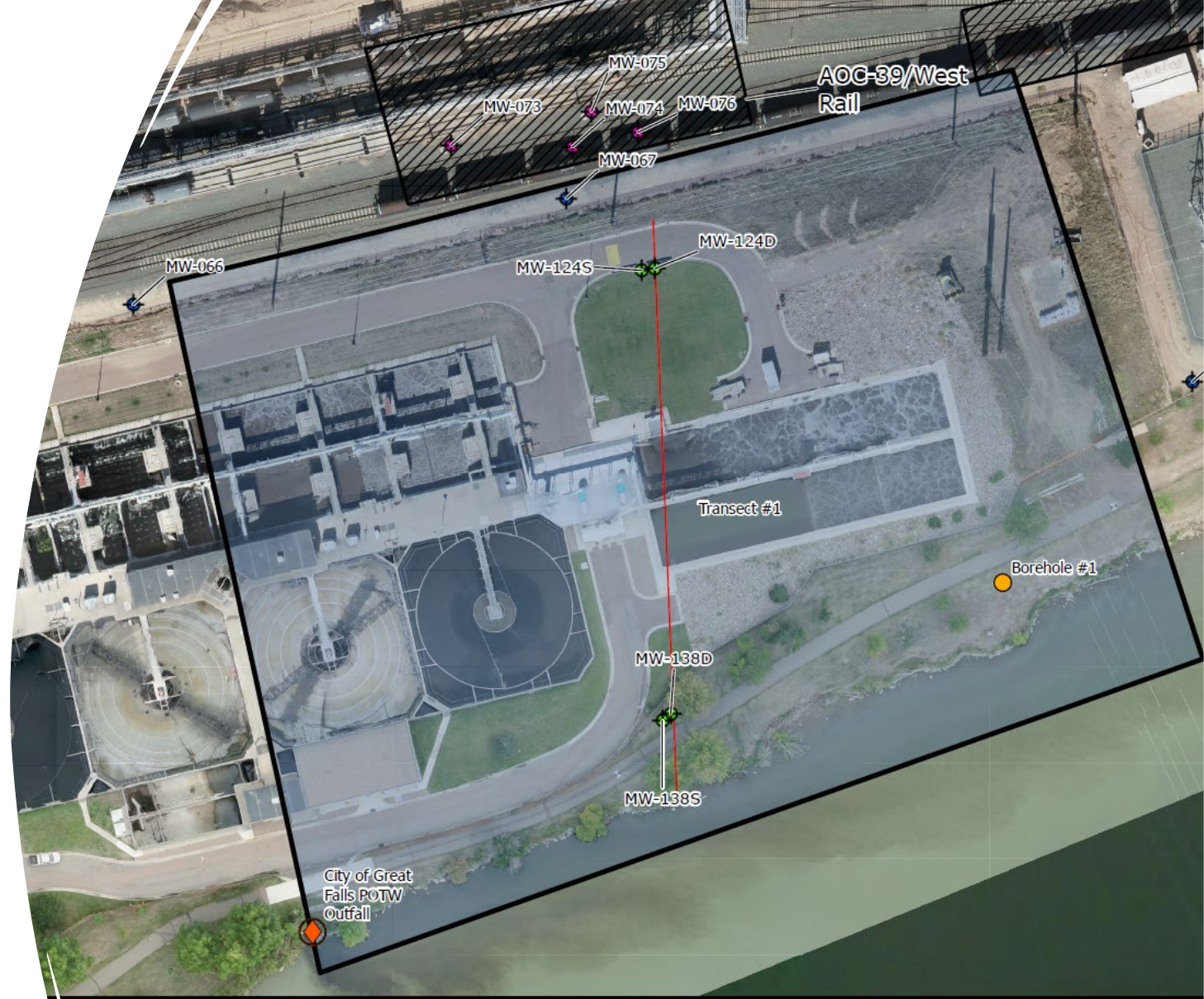
CENTRAL TRANSECT (NEAR MDT STORMWATER SEWER)
EVALUATION OF GROUNDWATER MIGRATION PATHWAY TO RIVER
INVESTIGATIVE UNIT #

Drone imagery collected
September 2022

0 125 250 Feet

Casimmet Montana Refinery,
1900 10th Street North
Great Falls, MT

West Groundwater Migration Pathway Corridor



- Proposed Monitoring Well
- Existing Recovery Well
- Existing Monitoring Well
- Existing Soil Boring

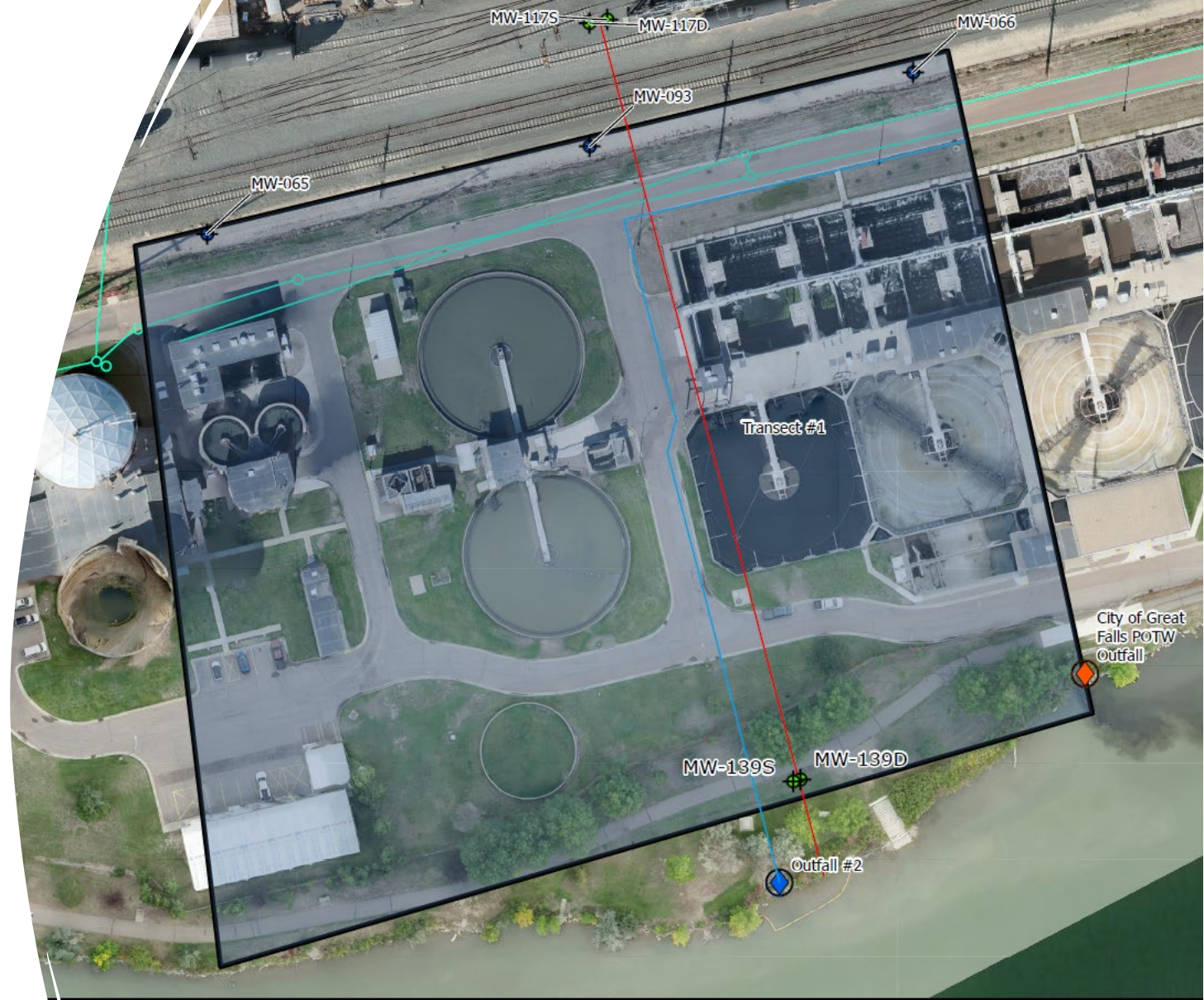
WEST TRANSECT (NEAR WEST RAIL LOADING)
EVALUATION OF GROUNDWATER MIGRATION PATHWAY TO
INVESTIGATIVE U

Drone imagery collected
September 2022

0 125 250 Feet

Calumet Montana Refi
1900 10th Stre
Great Fa

Western Site Boundary Groundwater Migration Pathway Corridor



- Western Corridor Boundary
- City of Great Falls POTW Outfall
- Outfalls
- Existing Monitoring Well
- Proposed Monitoring Well

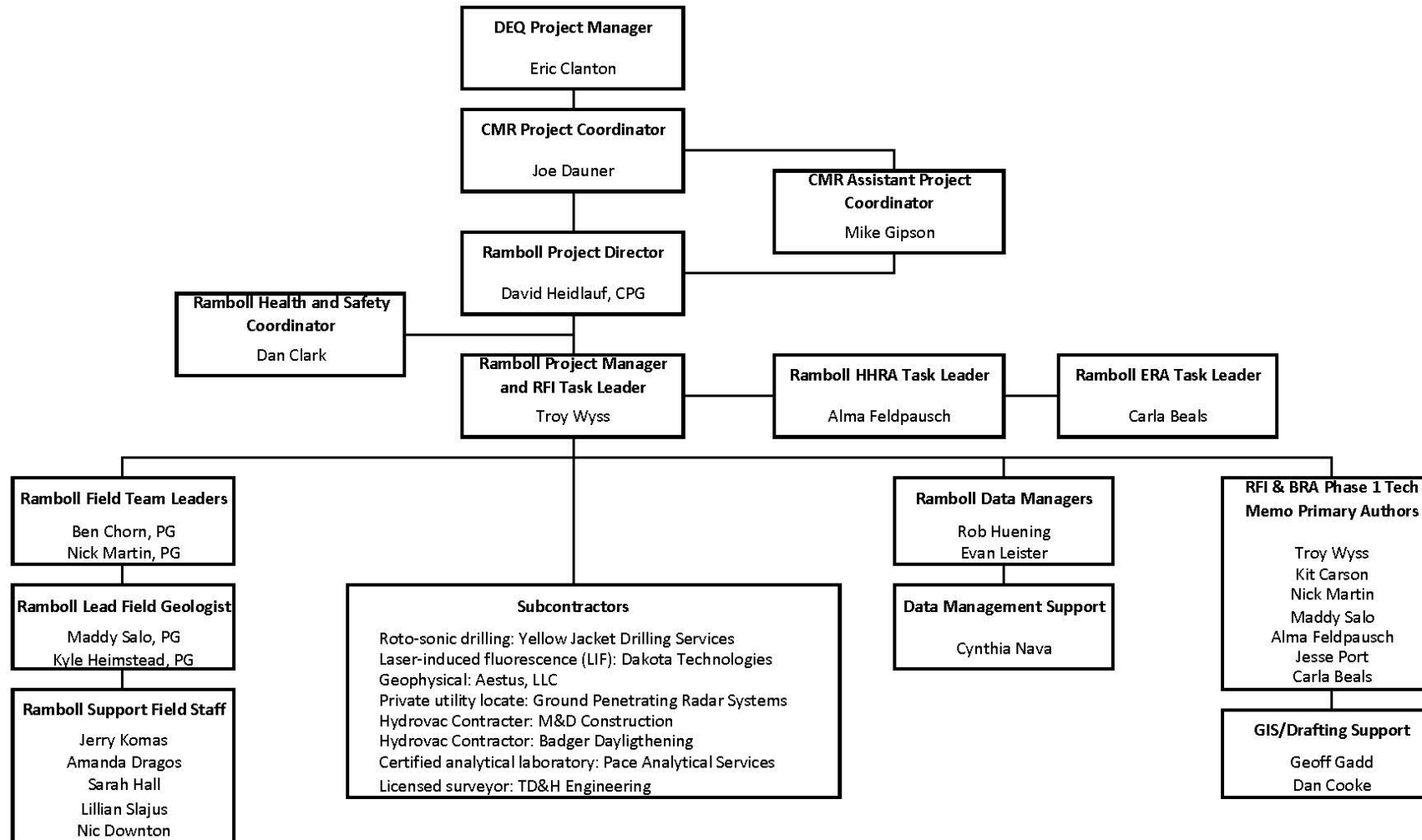
Drone imagery collected
September 2022

0 125 250 Feet

**WESTERN SITE BOUNDARY TRANSECT
EVALUATION OF GROUNDWATER MIGRATION
PATHWAY TO RIVER
INVESTIGATIVE UNIT #12E**

Calumet Montana Refinery, LLC
1900 10th Street Northeast
Great Falls, Montana

RFI and BRA Organization Chart



RFI Phase 1A Project Completion Status

RFI - Phase 1a Tasks			
	Monitoring Wells	Soil Borings	Sunburst Wells
Locations Completed	44	30	0
Locations Remaining	12	24	3
% of Total Completed	79%	56%	0%
	Well Development	Well Abandonment	Surface Soil Borings
Locations Completed	0	0	0
Locations Remaining	56	16	22
% of Total Completed	0%	0%	0%

Notes:

- 1) One well and one soil boring removed from RFI program due to infrastructure conflicts
- 2) The advancement of four soil borings will be deferred to spring 2024 due to infrastructure conflicts

RFI Phase1Drilling within the Refinery



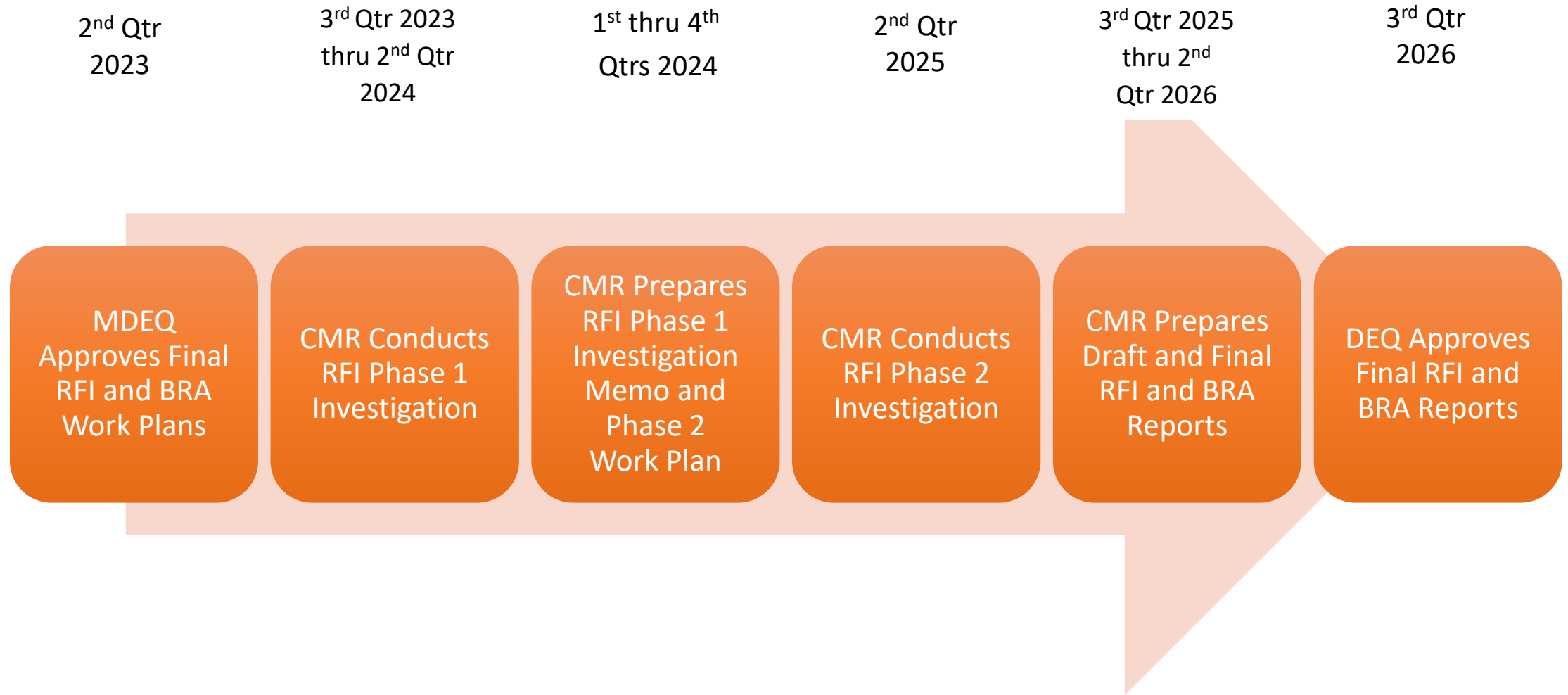
RFI Phase1Drilling along the Bike Path



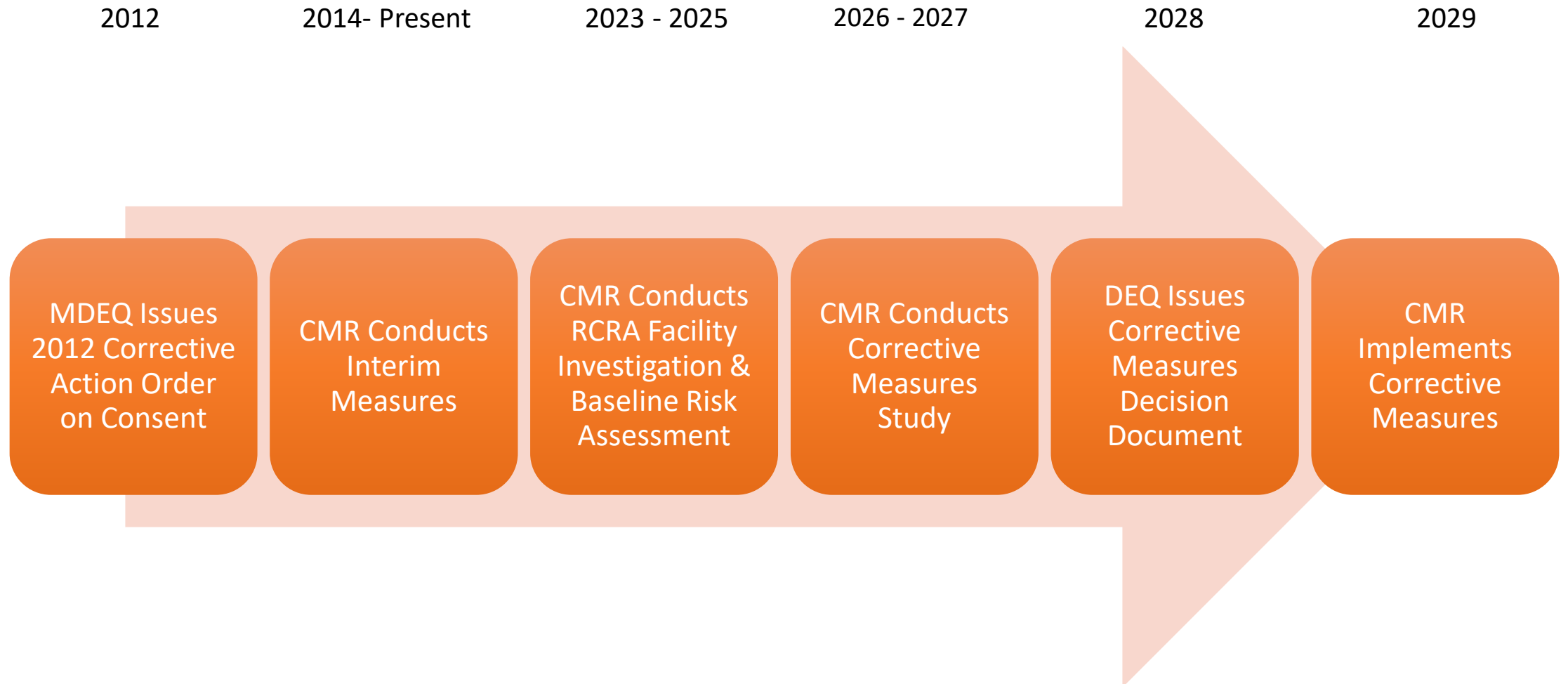
RFI Phase 2 Investigation Tasks

- Will Collect One Round of Groundwater Samples from 63 RFI Phase 1 Installed Monitoring Wells
- Will Conduct Natural Source Zone Depletion Nested Soil Gas and E-flux sampling in the Legacy Refinery LNAPL Plume area
- May Drill and Install additional data gap monitoring wells – number and depth to be determined
- May Conduct additional delineation Soil Borings – number to be determined
- May Conduct additional LIF Borings – number to be determined

RFI and BRA Implementation Roadmap



RCRA Corrective Action Roadmap



Get to YES is an acronym:

Get an Exit Strategy

Environmental cleanup to protective levels is the goal

Think performance standards

Tailor sustainable solutions considering risk management

Okay for remedy to change

Yield to changes in focus

Engineering and science are the solution

Success – document it!



Community Involvement



This site provides information regarding the Site-Wide Corrective Action taking place at the refinery.



CMR is providing this fact sheet to explain investigation activities at the site, but it is not a technical document.

Introduction

The purpose of this document is to provide an update to the public and residents that live near Calumet Montana Refining, LLC (CMR) located at 1900 10th Street N.E. Great Falls, Montana (as shown below). A summary of the ongoing Resource Conservation and Recovery Act (RCRA) Facility Investigation (RFI) activities at the Site are described in this Fact Sheet.



Site History

The site has operated as a refinery since 1922 under numerous owners/operators. Between 1979 to 1985 a land treatment unit (LTU) was operated at the site to treat petroleum impacted wastes. The LTU was considered a regulated unit under the Montana Hazardous Waste Act and federal RCRA and required a hazardous waste permit.

The facility was issued hazardous waste permit MTHWP-95-02 on September 22, 1995. The permit was issued jointly by the Montana Department of Environmental Quality (MDEQ) and the United States Environmental Protection Agency (USEPA) and included requirements for post-closure care of the LTU and for facility-wide corrective action.

In September 2012, hazardous waste permit MTHWP-95-02 was terminated and a Corrective Action Order on Consent (Order) was issued by MDEQ to oversee the clean-up of the Site. The Order identified a total of 34 Solid Waste Management Units (SWMUs) and Areas of Concern (AOCs). SWMUs are areas

RCRA Facility Investigation Calumet Montana Refining, LLC Fact Sheet August 2023

PUBLIC MEETING
Thursday, October 19, 2023

7:00 - 8:30 pm

C.M. Russell High School
Bill Will Auditorium
228 17th Ave. NW
Great Falls, MT 59404

where solid wastes were historically placed and AOCs are areas where a release of a hazardous waste occurred (or is suspected to have occurred), which may present an unacceptable risk to the environment and/or human health. SWMUs and AOCs may have been impacted by hazardous wastes, spilled or released products, or other materials handled on-site. Since the Order was issued, additional SWMUs and AOCs have been identified.

CMR acquired the refinery in 2012 and currently produces approximately 15,000 barrels a day of various petroleum products, in addition to approximately 15,000 barrels a day of renewable diesel from non-petroleum feedstocks on behalf Montana Renewables, LLC. The site occupies approximately 60 acres.

RCRA Facility Investigation

As part of the facility-wide corrective action, CMR is required to complete an RFI with the purpose of gathering enough information to characterize the nature and extent of site-related contamination and to assess the risk to human health and the environment that any contamination poses. On March 30, 2022, CMR received a Letter of Direction from the MDEQ requiring the development and submittal of a RFI Work Plan and a Baseline Risk Assessment (BRA) Work Plan. Technical staff and risk assessors from the MDEQ, USEPA, and CMR participated in scoping meetings to reach agreement on the RFI strategy and approach. Phase 1 of the RFI will begin this fall, Phase 2 of the RFI will begin in the spring of 2025, and the BRA will begin in the summer of 2025.

A description of the agreed upon RFI strategy and approach is summarized as follows:

- The potential for petroleum impacted groundwater to migrate to the Missouri River will be evaluated along the southern boundary of the site through the installation and sampling of groundwater monitoring wells.
- Sampling to assess the nature and extent of on-site soil and groundwater impact at 33 SWMUs/AOCs and across the site will be conducted. A total of approximately 57 groundwater monitoring wells and 59 soil borings will be installed/drilled and sampled. Additionally, laser-induced fluorescence (LIF) will be advanced at 104 locations across the Site to identify and delineate potential petroleum impact in the subsurface.
- A site-wide groundwater monitoring effort will be conducted to document the current impact of petroleum constituents to site groundwater. Approximately 119 groundwater monitoring wells will be sampled.
- Data collected as part of the investigation will be used to generate a BRA, which will include human health exposure and toxicity assessments as well as ecological exposure and effects assessments.



Community Involvement

Throughout the RFI process, CMR will keep the public informed through fact sheets, press releases, meetings, and other appropriate activities. CMR will respond to public inquiries regarding questions pertaining to the RFI process.

CMR will hold a public meeting on Thursday, October 19, 2023, from 7 to 8:30 pm at C.M. Russell High School in the Bill Will Auditorium to present the three-year RFI program. The meeting will provide an opportunity to meet CMR representatives and to ask questions. We hope you will consider attending.

Information Repository

An Information Repository has been established to store publicly available documents related to recent corrective action activities. The Information Repository can be found at www.CMRsite.com/repository.

For More Information

If you have questions or need more information, please contact the following CMR or MDEQ representatives:

Mr. Joe Dauner
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Phone: (406) 444-2876
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Overall RFI Objectives

The target objectives of the RFI activities are:

- Further define and/or identify the spatial distribution and magnitude of subsurface impacts;
- Potentially identify additional unknown areas of impact;
- Evaluate the potential for off-site migration;
- Characterize site-wide environmental conditions, and;
- Support the site-wide baseline human health and ecological risk assessments.

RFI Informational Contacts

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Questions

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