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ENVIRONMENT

Subject:
RCRA Remedy Implementation and Corrective Measures Summary
MID005356696 - RACER SMI Land and Green Point Landfill
Saginaw, Michigan

Date:
August 30, 2016

Contact:
Scott Clearwater

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Our ref:
B0064434.2016

Dear Ms. Armbruster:

This letter has been prepared on behalf of the Revitalizing Auto Communities Environmental Response (RACER) Trust to identify the reports that document remedy implementation/corrective measures conducted at the Saginaw Malleable Industrial (SMI) Land and Green Point Landfill (GPL) (the Facility) in Saginaw, Michigan (Figure 1). Arcadis previously submitted a Resource Conservation and Recovery Act (RCRA) Facility Investigation Summary letter on January 27, 2016.

The purpose of a Resource Conservation and Recovery Act (RCRA) Corrective Measures Study is to identify and evaluate potential corrective action alternatives that address affected media at the Facility, and to identify a final corrective measures alternative that, once implemented would achieve target cleanup standards. The following reports summarize the reports that substantively fulfilled the purpose of the Corrective Measures Study for the Facility:

- *Remedial Investigation (RI) Report, July 5, 2001 (BBL):* Provides a summary of the environmental setting, investigation activities, investigation results, RI activities completed, and the nature and extent of chemical constituents.
- *Feasibility Study (FS) Report, July 29, 2003 (BBL):* Provides the Human Health Evaluation (HHE) and the Ecological Risk Assessment (ERA) as well as proposed remedial actions.

- *Remedial Action Plan (RAP) Report, July 30, 2008, (Modified on December 31, 2008) (Arcadis)*: Provides proposed remedial actions including an addendum to the HHE that evaluates additional data collected since the RI and FS.
- *Risk-Based Disposal Work Plan for PCB-Impacted Material, May 8, 2015 [Conestoga-Rovers & Associates (CRA)]:* Provides a summary of the delineation of polychlorinated biphenyls (PCBs) in the concrete floor slab and in soil in the I27.7 Manhole Area and proposed remedial plan. Risks associated with PCBs in concrete and soil will be significantly reduced after implementation of the proposed Work Plan.

Below is a list of reports, along with a brief summary of the corrective measures discussed in that report, that describe the corrective measures completed at the Facility to achieve targeted cleanup standards, as outlined in the reports summarized above, and based on the approved remediation strategy from the RAP dated June 30, 2008, which was updated in December 2008, and approved by the Michigan Department of Environmental Quality (MDEQ) in February 2009.

- *Melting Department Area Investigation and Remediation Report, April 1997 (CRA)*: The Melting Department Area was cleaned, capacitors in this area were replaced, and rooms containing PCBs above action levels were remediated by removing flooring material and soils containing PCBs at concentrations greater than the generic Industrial Direct Contact Criteria to the extent practicable given the access limitations within the plant. PCBs were left in place at depth (approximately 20 ft bgs) and covered with flowable fill.
- *Green Point Landfill Final Engineering Design Report, January 1998 (BBL)*: Construction of the landfill cap extended into wetland areas to the west and south. The newly developed mitigation wetland was constructed in July and August 1997 with approval of the MDEQ under Parts 31 and 303 of Michigan Act 451.
- *Green Point Landfill Cover System Certification Report, January 2000 (BBL)*: Construction of the landfill cap was completed consistent with Part 115 of Michigan Act 451. Green Point Landfill (GPL) was closed as part of an interim response action under Part 201 and in accordance with a Consent Judgment between General Motors, Waste Management Inc., and the State of Michigan. Annual monitoring is ongoing at GPL.
- *RI Report, July 5, 2001 (BBL):* A soil excavation was completed in 1998 to remove PCB-impacted soils in the Former Railyard Area. Confirmation samples indicated the soils containing PCBs at concentrations greater than MDEQ generic industrial criteria were removed.
- *RI Report, July 5, 2001 (BBL):* Two Type III Landfills existed at the Facility: the eastern landfill and the central landfill. The eastern landfill started receiving waste in 1979 and was closed in 1984. The central landfill received wastes from 1984 until approximately 1990. Closure certifications for these two landfills have been filed with MDEQ. The MDEQ received a closure plan for the eastern landfill on November 6, 1985, and the central landfill received a closure approval dated November 8, 1991 according to the online MDEQ Waste Data System.

- *Feasibility Study Report, July 2003 (BBL):* GM completed weekly PCB sampling and analysis of the sewer discharge to the publicly-owned treatment works (POTW). GM conducted extensive testing, cleanup, and remediation of sewers including replacement, lining, abandonment, and cleaning in coordination with the City of Saginaw. Additionally, more recently in 2010, all inputs to the City sewer that transects the Facility were bulkheaded and in 2015 the City sewer that transected the Facility was bulkheaded and all flow was diverted to another City sewer not on the Facility. Please refer to Figure 2 for the sewer layout and locations of bulkheads.
- *Feasibility Study Report, July 2003 (BBL):* Drum Remediation Area/Former Hillock Area: In 1987, GM excavated, overpacked, and staged 339 drums/drum fragments from the western portion of the area. In 1998, GM collected and disposed of surface metal debris, collected additional surface drums and overpacked them as needed, restaged the previous 339 drums, and excavated 23 test pits (removing drums and drum fragments). In February 1990, 408 tons of staged material was disposed. In June 1990, 1,538 tons of non-hazardous waste and 8 drums were disposed off-site. In 1994 and 1995, an additional total of three drums were removed from the Facility. Soil and fill that constituted the remaining unexcavated part of the area were excavated to the water table and placed with the fill materials of the GPL prior to capping. Clean fill was used to bring the Hillock Area back to grade.
- *Summary of Interim Response Activities Associated with the East/West Ditch Filling and Removal of Manganese Impacted Soil in Saginaw River Berm, GMPT SMI, September 2005 (CRA)*: Manganese-impacted soils from an on-Site berm along the Saginaw River as well as soils from the Crotty Street mitigation wetland project were used to fill in the bottom of the remaining channel of the SMI former water recirculation system. These soils were capped by two feet of clean fill and topsoil and re-seeded. Although the standard (MDEQ generic residential Particulate Soil Inhalation Criteria [PSIC] standard) was not achieved in the floors of the excavations, 2 to 3 feet of fill was placed over the floors thereby eliminating the pathway of particulate air inhalation for those areas.
- *Remedial Action Plan (RAP) Report July 30, 2008, (Modified on December 31, 2008) (Arcadis)*: Operations at the SMI plant ceased in 2007. Decommissioning and demolition of the plant was completed from 2009 to 2010, and the potential for additional impacts from operations has been eliminated. Additionally, a corrective measure was completed in 2001 by adding a soil cover consisting of eight inches of clean fill and seeding with grass at the former CTC Parking Lot East of the Plant.
- *LNAPL Status Presentation November 7, 2014 (CRA):*
    - Southwest Plant LNAPL Area – An automated LNAPL and Groundwater Recovery System was installed in 1997. Prior to 2003, sewer cleaning, replacement, and lining was conducted. Current activities include: quarterly monitoring of LNAPL
    - Quench Pit Area – Active LNAPL recovery system was installed in February 2002. Sewer bulkheading, cleaning, replacement, and lining were also conducted. As part of the demolition, 55,000 gallons of LNAPL were removed from the quench pits and immediately adjacent area. Current activities include: active LNAPL recovery and quarterly monitoring.

  - Stormwater Pond Lining – All sediment in the pond was solidified and stabilized in place prior to the pond being lined with a high-density polyethylene liner in August 2000.

- *Planned:* Concrete of the former Plant slab impacted with PCBs greater than 10 ppm is planned for removal and the slab will then be covered with a clay cap. Soil in the I27.7 manhole area impacted with PCBs greater than 100 ppm is planned for removal with remaining PCB impacted soil to be covered with a clay cap.

Additional planned Corrective Measures include finalizing and recording declaration of restrictive covenants to limit future land and resource use and identify other prohibitions. Restrictions at the Facility are included in the attached Table 1.

LNAPL and groundwater monitoring will continue in accordance with approved monitoring plans.

Please contact me with any questions.

Sincerely,

Arcadis U.S., Inc.

Scott Clearwater

Certified Project Manager

Copies:

John McCabe (MDEQ)

John-Eric Pardys (GHD)

Dave Favero (RACER)

Enclosures:

Tables

1 Summary of Site-Specific Conditions and Recommended Deed Restrictions

Figures

1 Site Layout and Features

2 Sewer Bulkheads Associated With City Sewer That Traverses the Saginaw Malleable Industrial Land

TABLE 1
SUMMARY OF SITE-SPECIFIC CONDITIONS AND RECOMMENDED DEED RESTRICTIONS*
RACER TRUST
SAGINAW MALLEABLE INDUSTRIAL LAND,
GREEN POINT LANDFILL,
AND PENINSULA PROPERTY
SAGINAW, MICHIGAN

ID	Site Area	Constituent(s) Triggering Response Action (*)	Exposure Point Concentration	Potential Exposure and Relevant (**) Exposure Pathway	Generic MDEQ Non-Residential Criteria Exceeded	Current RC needs
1	Site Wide Restrictions	See below	See below	Drinking water, Vapor Intrusion, potential for Soil and groundwater impacts to be exacerbated if impacts remaining in place are moved	Non-Res DW, VI	• Non-residential, DW, VI assessment and/or engineered controls, Soil Management
2	Southwest Plant LNAPL Area	Lead (surface) Lead (subsurface) LNAPL	1,320 mg/kg(1) 1,780 mg/kg (1) ---	Dermal contact (maintenance worker, future workers) Dermal contact (intrusive/construction worker)	Non-Res DC (900 mg/kg) Non-Res DC (900 mg/kg) ---	• Infiltration Barrier • Direct Contact Barrier (exposure) • Intrusive Activity Prohibition
3	Quench Pit Area	LNAPL	---	Dermal contact (maintenance worker, future workers) Dermal contact (intrusive/construction worker)	---	• Direct Contact Barrier (exposure) • Intrusive Activity Prohibition
4	Former UST #7 Area	Benzene (subsurface)	21 J mg/kg (1)	Indoor air inhalation (unlikely due to absence of buildings)	SVIIC	• Site Wide Restrictions
5	I27.7 Manhole Area	PCBs (below concrete plant floor)	4,900 mg/kg (1)	Dermal contact (unlikely due to physical barrier)	Non-Res DC	• Direct Contact Barrier (exposure) • Intrusive Activity Prohibition • TSCA Notice
6	Melting Department Area	PCBs (below concrete plant floor)	650 mg/kg (1)	Dermal contact (unlikely due to physical barrier)	Non-Res DC	• Direct Contact Barrier (exposure) • Intrusive Activity Prohibition • TSCA Notice
7	Previous Metal Feedstock Area	Manganese (surface) Manganese (soil column)	6,140 mg/kg (1) 7,410 mg/kg (2)	Particulate soil inhalation (maintenance worker) Particulate soil inhalation (intrusive/construction worker)	PSIC PSIC	• Vegetated Cover (no dirt roads or paths)
8	Former Railyard Area	Lead (surface) Manganese (surface) Manganese (soil column)	1,370 mg/kg (1) 3,540 mg/kg (2) 3,770 mg/kg (2)	Dermal contact (Maintenance worker, future workers) Particulate soil inhalation (maintenance worker) Particulate soil inhalation (intrusive/construction worker)	Non-Res DC PSIC PSIC	• Direct Contact Barrier • Vegetated Cover (no dirt roads or paths)
9	Saginaw River Boundary	Manganese (surface) Manganese (soil column)	2,330 mg/kg (2) 5,800 mg/kg (2)	Particulate soil inhalation (maintenance worker) Particulate soil inhalation (intrusive/construction worker)	PSIC PSIC	• Vegetated Cover (no dirt roads or paths)
10	Green Point Landfill	Integrity of the landfill	---	---	---	• Vegetated Cover • Intrusive Activity Prohibition • Infiltration Barrier • Direct Contact Barrier
11	Type III Landfills	Integrity of the landfill	---	---	---	• Vegetated Cover • Intrusive Activity Prohibition
12	Drum Remediation Area/Former Hillock	Vinyl Chloride (groundwater)	2,300 ug/L (1)	Dermal contact with impacted groundwater (intrusive/ construction worker)	GCC	• Intrusive Activity Prohibition
13	Former CTC Parking Lot East of Main Plant	Manganese (under soil and grass barrier)	11,600 mg/kg (1)	Particulate soil inhalation (intrusive/construction worker)	PSIC	• Vegetated Cover (no dirt roads or paths) •
14	Parking Lot North of Buffer Basin	Manganese (under parking lot)	11,900 mg/kg (1)	Particulate soil inhalation (intrusive/construction worker)	PSIC	• Vegetated/Asphalt Cover •

TABLE 1
SUMMARY OF SITE-SPECIFIC CONDITIONS AND RECOMMENDED DEED RESTRICTIONS*
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SAGINAW MALLEABLE INDUSTRIAL LAND,
GREEN POINT LANDFILL,
AND PENINSULA PROPERTY
SAGINAW, MICHIGAN

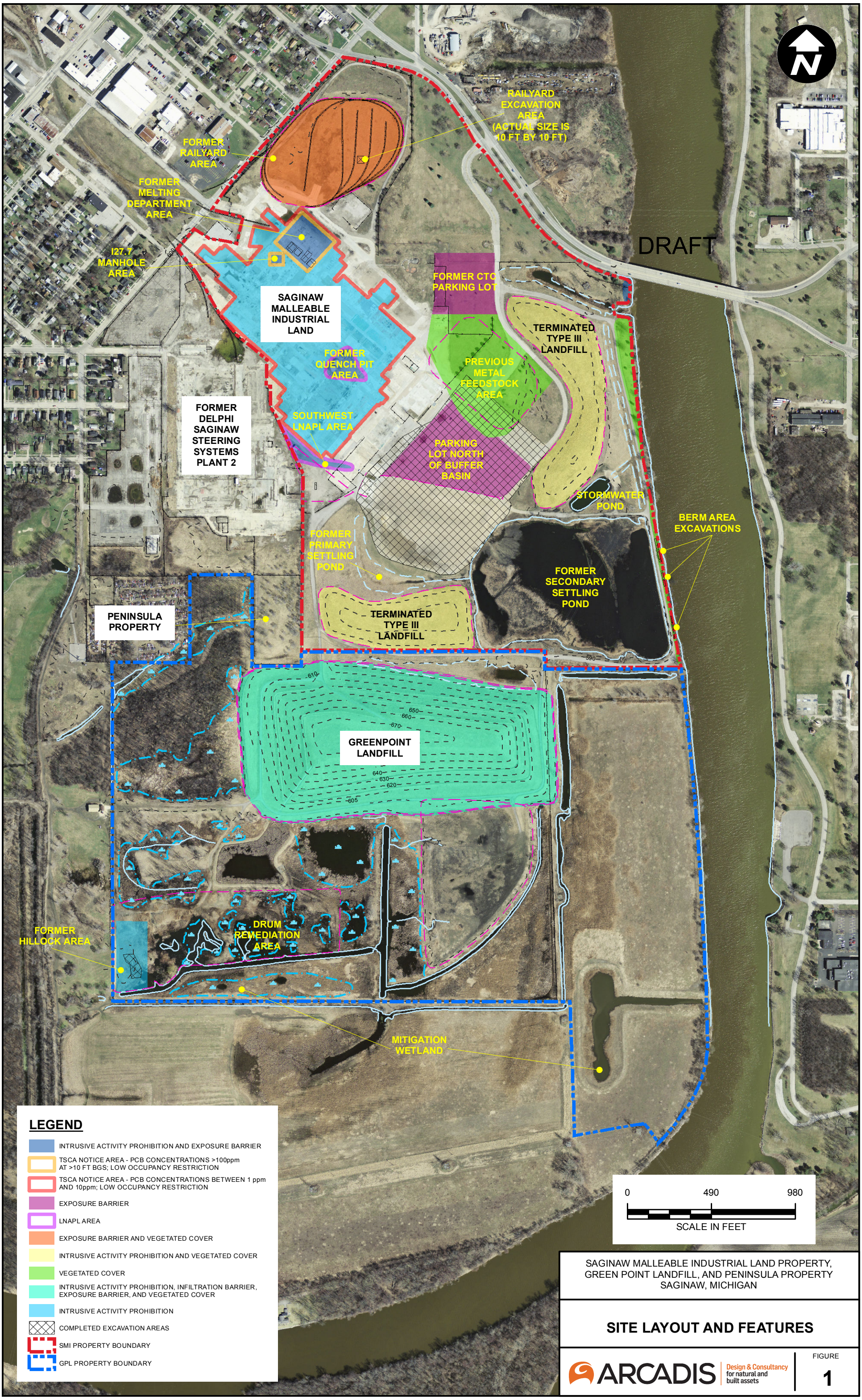
ID	Site Area	Constituent(s) Triggering Response Action (*)	Exposure Point Concentration	Potential Exposure and Relevant (**) Exposure Pathway	Generic MDEQ Non-Residential Criteria Exceeded	Current RC needs
15	Former Center Street Dump Area	LNAPL	---	Dermal contact (maintenance worker, future workers) Dermal contact (intrusive/construction worker)	---	• Exposure barrier
16	Peninsula Property Vegetated Soil Cap	Lead (below cap) Manganese (under soil and grass barrier)	---	Dermal contact (intrusive/construction worker, future workers) Particulate soil inhalation (intrusive/construction worker)	Vegetated Soil Cap is in place controlling exposure PSIC	• Exposure barrier (cap) installed 2015 needs to remain • Vegetated Cover (no dirt roads or paths)
17	Former SMI Plant Slab	PCBs	---	Dermal contact (maintenance worker, future workers) Dermal contact (intrusive/construction worker)	---	• Intrusive Activity Prohibition

Notes:
- This table has been prepared based on information presented in the *Feasibility Study Report* (BBL, July 2003) (FS Report), *Human Health Evaluation Report* (BBL, July 2003) (HHE Report), *Ecological Risk Assessment Report* (Exponent, January 2003) (ERA Report), Supplemental Site data that has been submitted to the MDEQ in monthly reports, and *Human Health Addendum* (ARCADIS, July 2008).
- Current RC needs were determined based on analytical results compared to Part 201 Criteria from the 2009 RAP* = in addition to the site-wide Non-Residential use limitation.
- ** = Exposure pathway is relevant only if the following four elements exist:
  - a source and mechanism of chemical release to the environment;
  - a relevant environmental transport medium;
  - a relevant point of exposure to the chemical present in the medium; and
  - a route of uptake at the exposure point.

The *Human Health Evaluation Report* (BBL, July 2003) (HHE Report) details the potential receptors and risks to visitors, maintenance workers, and productions workers. See Sections 6.3, 6.4, and 6.5.1 of the HHE for assumptions and risk evaluation.
[1] = maximum concentration.
[2] = 95% UCL concentration.

Acronyms/Abbreviations:

Non-Res DC – Non-Residential Direct Contact.
GVIIC – Groundwater Volatilization Indoor Air Inhalation Criteria.
SVIIC –Soil Volatilization to Indoor Air Inhalation Criteria.
PSIC – Particulate Soil Inhalation Criteria.
LNAPL – Light Non-Aqueous Phase Liquid.
mg/kg – milligrams/per kilogram
PCBs – Polychlorinated Biphenyls.
RA – Remedial Action.
ug/L – micrograms per liter.
UST – Underground Storage Tank.
--- – Not applicable.
DW – Drinking Water
VI – Vapor Intrusion



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NO	Revision	Date	Initial

LEGEND

- RACER MALLEABLE IRON INDUSTRIAL LAND PROPERTY LINE (APPROX.)
- MAIN SEWER TO CITY - SANITARY, STORM AND PROCESS
- INTERNAL SITE SEWER
- ABANDONED SEWER LINE
- BULKHEAD/ABANDONMENT COMPLETED BY CRA
- BULKHEAD COMPLETED BY NORTH AMERICA DISMANTLING CORPORATION
- SEWER SLEEVE INSTALLED (1998)
- BULKHEAD COMPLETED BY CITY OF SAGINAW
- MANHOLE
- CATCHBASIN
- CURE IN PLACE PIPE
- CURE IN PLACE PIPE
- MANHOLE INSPECTED FOR ACTIVE FLOW

SCALE VERIFICATION

THIS BAR MEASURES 1" ON ORIGINAL. ADJUST SCALE ACCORDINGLY.

Approved

DRAWING STATUS

Status	Date	Initial

REVITALIZING AUTO COMMUNITIES
REVITALIZING AUTO COMMUITIES
MALLEABLE IRON INDUSTRIAL LAND

SAGINAW, MICHIGAN

SEWER BULKHEADS ASSOCIATED WITH CITY SEWER THAT TRAVERSES THE SAGINAW MALLEABLE INDUSTRIAL LAND

GHD

Source Reference:

Project Manager:	Reviewed By:	Date:	
MT	JP	FEBRUARY 2016	
Scale:	Project NO:	Report NO:	Drawing NO:
1" = 60'	07878-T03	MEMO157	figure 2