

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 5

IN THE MATTER OF:

ADMINISTRATIVE SETTLEMENT
AGREEMENT AND ORDER ON
CONSENT FOR REMOVAL ACTION

Respondent:

Middleground Island of the Tittabawassee
River, Saginaw River & Bay Site

The Dow Chemical Company

Docket No. V-W-20-C-013

Proceeding Under Sections 104, 106(a), 107
and 122 of the Comprehensive
Environmental Response, Compensation,
and Liability Act, as amended, 42 U.S.C. §§
9604, 9606(a), 9607 and 9622

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I. JURISDICTION AND GENERAL PROVISIONS

1. This Administrative Settlement Agreement and Order on Consent (“Settlement Agreement”) is entered into voluntarily by the United States Environmental Protection Agency (“U.S. EPA”) and The Dow Chemical Company (“Dow” or “Respondent”). This Settlement Agreement provides for Dow’s performance of a non-time critical removal action selected by U.S. EPA, and the payment of certain response costs incurred by the United States at or in connection with addressing soil contaminated with dioxins and furans at Middleground Island (“MGI”) of the Tittabawassee River, Saginaw River & Bay site (“TRSR&B Site”), Michigan, as defined in the Administrative Order on Consent (“2010 AOC”) entered in In The Matter of: The Dow Chemical Company, CERCLA Docket No. V-W-10-C-942, with an effective date of January 21, 2010.
2. This Settlement Agreement is issued under the authority vested in the President of the United States by Sections 104, 106(a), 107 and 122 of the Comprehensive Environmental Response, Compensation, and Liability Act of 1980, 42 U.S.C. §§ 9604, 9606(a), 9607 and 9622, as amended (“CERCLA”). This authority has been delegated to the Administrator of the U.S. EPA by Executive Order No. 12580, January 23, 1987, 52 Federal Register 2923 (Jan. 29, 1987), and further delegated to the Regional Administrators by U.S. EPA Delegation Nos. 14-14-A (Determinations of Imminent and Substantial Endangerment, Nov. 1, 2001), 14-14-C (Administrative Actions Through Consent Orders, Apr. 15, 1994) and 14-14-D (Cost Recovery Non-Judicial Agreements and Administrative Consent Orders, May 11, 1994), and further redelegated by the Regional Administrator of U.S. EPA Region 5 to the Director, Superfund & Emergency Management Division, Region 5, by Regional Delegation Nos. 14-14-A, 14-14-C and 14-14-D.
3. U.S. EPA has notified the State of Michigan (the “State”) of this action pursuant to Section 106(a) of CERCLA, 42 U.S.C. § 9606(a).
4. U.S. EPA and Respondent recognize that this Settlement Agreement has been negotiated in good faith and that the actions undertaken by Respondent in accordance with this Settlement Agreement do not constitute an admission of any liability. Respondent does not admit, and retains the right to controvert in any proceedings other than proceedings to implement or enforce this Settlement Agreement, the basis of or validity of the findings of facts, conclusions of law, and determinations in Sections IV (Findings of Fact) and V (Conclusions of Law and Determinations) of this Settlement Agreement. Respondent agrees to comply with and be bound by the terms of this Settlement Agreement and further agrees that it will not contest the basis or validity of this Settlement Agreement or its terms in any proceeding to implement or enforce this Settlement Agreement.

II. PARTIES BOUND

5. This Settlement Agreement applies to and is binding upon U.S. EPA and upon Respondent and its successors and assigns. Any change in ownership or corporate status of Respondent including, but not limited to, any transfer of assets or real or personal property shall not alter Respondent's responsibilities under this Settlement Agreement.
6. Respondent is required to carry out all activities required by this Settlement Agreement.
7. Respondent shall ensure that its contractors, subcontractors, and representatives comply with this Settlement Agreement. Respondent shall be responsible for any noncompliance with this Settlement Agreement.

III. DEFINITIONS

8. Unless otherwise expressly provided herein, terms used in this Settlement Agreement which are defined in CERCLA or in regulations promulgated under CERCLA shall have the meaning assigned to them in CERCLA or in such regulations. Whenever terms listed below are used in this Settlement Agreement or in the appendices attached hereto and incorporated hereunder, the following definitions shall apply:
 - a. "2010 AOC" shall mean the Administrative Order on Consent entered in In The Matter of: The Dow Chemical Company, CERCLA Docket No. V-W-10-C-942, with an effective date of January 21, 2010.
 - b. "2010 SOW" shall mean the Statement of Work attached as Appendix A to the 2010 AOC.
 - c. "Action Memorandum" shall mean the U.S. EPA Action Memorandum relating to the Site, and all attachments thereto. The Action Memorandum is attached as Attachment A.
 - d. "Affected Property" shall mean all real property at the Site and any other real property where U.S. EPA determines, at any time, that access or land, water, or other resource use restrictions are needed to implement the removal action.
 - e. "CERCLA" shall mean the Comprehensive Environmental Response, Compensation, and Liability Act of 1980, as amended, 42 U.S.C. §§ 9601, *et seq.*
 - f. "Dioxin" or "dioxins" or "furan" or "furans" shall mean the seventeen chlorinated dibenzo-p-dioxins and chlorinated dibenzofurans identified by the World Health Organization in *The 2005 World Health Organization Re-evaluation of Human and Mammalian Toxic Equivalency Factors for Dioxins and Dioxin-like Compounds*, and as set forth below:

Congener (Full-Name)	Congener (Abbreviation)	CAS No
Dioxins		
2,3,7,8-Tetrachlorodibenzo-p-dioxin	2,3,7,8-TCDD	1746-01-6
1,2,3,7,8-Pentachlorodibenzo-p-dioxin	1,2,3,7,8-PCDD	40321-76-4
1,2,3,4,7,8- Hexachlorodibenzo-p-dioxin	1,4-HxCDD	39227-28-6
1,2,3,6,7,8- Hexachlorodibenzo-p-dioxin	1,6-HxCDD	57653-85-7
1,2,3,7,8,9- Hexachlorodibenzo-p-dioxin	1,9-HxCDD	19408-74-3
1,2,3,4,6,7,8- Heptachlorodibenzo-p-dioxin	1,4,8-HpCDD	35822-39-4
1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin	OCDD	3268-87-9
Furans		
2,3,7,8-Tetrachlorodibenzofuran	2,3,7,8-TCDF	51207-31-9
1,2,3,7,8-Pentachlorodibenzofuran	1,2,3,7,8-PCDF	57117-41-6
2,3,4,7,8-Pentachlorodibenzofuran	2,3,4,7,8-PCDF	57117-31-4
1,2,3,4,7,8-Hexachlorodibenzofuran	1,4-HxCDF	70648-26-9
1,2,3,6,7,8- Hexachlorodibenzofuran	1,6-HxCDF	57117-44-9
1,2,3,7,8,9- Hexachlorodibenzofuran	1,9-HxCDF	72918-21-9
2,3,4,6,7,8- Hexachlorodibenzofuran	4,6-HxCDF	60851-34-5
1,2,3,4,6,7,8- Heptachlorodibenzofuran	1,4,6-HpCDF	67562-39-4
1,2,3,4,7,8,9- Heptachlorodibenzofuran	1,4,9-HpCDF	55673-89-7
1,2,3,4,6,7,8,9-Octachlorodibenzofuran	OCDF	39001-02-0

Individual dioxins and furans are assessed using a toxic equivalency factor (“TEF”), which is an estimate of the relative toxicity of the compounds to 2,3,7,8-tetrachlorodibenzo-p-dioxin. These converted concentrations are then added together to determine the “toxic equivalence concentration” (“TEQ”) of the dioxin and furan compounds as a whole.

- g. “Effective Date” shall be the effective date of this Settlement Agreement as provided in Paragraph 93.
- h. “EGLE” shall mean the Michigan Department of Environment, Great Lakes and Energy. EGLE was formerly known as the Michigan Department of Environmental Quality or “MDEQ.”
- i. “Engineering Evaluation and Cost Analysis” or “EE/CA” shall mean the *Middleground Island Engineering Evaluation/ Cost Analysis*, dated January 17, 2020.
- j. “Future Response Costs” shall mean all costs, including, but not limited to, direct and indirect costs, that the United States incurs in reviewing or developing deliverables submitted pursuant to this Settlement Agreement, in overseeing

implementation of the Work, or otherwise implementing, overseeing, or enforcing this Settlement Agreement, including but not limited to, payroll costs, contractor costs, travel costs, laboratory costs, the costs incurred pursuant to Section IX (Property Requirements) (including, but not limited to, cost of attorney time and any monies paid to secure or enforce access or land, water, or other resource use restrictions, including, but not limited to, the amount of just compensation), Section XIII (Emergency Response and Notification of Releases), community involvement, Section XVI (Dispute Resolution), and all litigation costs. Future Response Costs shall also include Agency for Toxic Substances and Disease Registry (ATSDR) costs regarding the Site.

- k. “Interest” shall mean interest at the rate specified for interest on investments of the U.S. EPA Hazardous Substance Superfund established by 26 U.S.C. § 9507, compounded annually on October 1 of each year, in accordance with 42 U.S.C. § 9607(a). The applicable rate of interest shall be the rate in effect at the time the interest accrues. The rate of interest is subject to change on October 1 of each year. Rates are available online at <http://www2.epa.gov/superfund/superfund-interest-rates>.
- l. “National Contingency Plan” or “NCP” shall mean the National Oil and Hazardous Substances Pollution Contingency Plan promulgated pursuant to Section 105 of CERCLA, 42 U.S.C. § 9605, codified at 40 C.F.R. Part 300, and any amendments thereto.
- m. “Paragraph” shall mean a portion of this Settlement Agreement identified by an Arabic numeral or an upper- or lower-case letter.
- n. “Parties” shall mean U.S. EPA and Respondent.
- o. “RCRA” shall mean the Solid Waste Disposal Act, as amended, 42 U.S.C. §§ 6901, *et seq.* (also known as the Resource Conservation and Recovery Act).
- p. “Respondent” shall mean The Dow Chemical Company.
- q. “Section” shall mean a portion of this Settlement Agreement identified by a Roman numeral.
- r. “Settlement Agreement” shall mean this Administrative Settlement Agreement and Order on Consent and all appendices attached hereto (listed in Section XXIX). In the event of conflict between this Settlement Agreement and any appendix, this Settlement Agreement shall control.
- s. “Site,” for the purposes of this Settlement Agreement, shall mean Middleground Island of the TRSR&B Site, and nearby areas required to do the Work. Middleground Island is in the Saginaw River approximately seven miles upstream

(south) of Saginaw Bay. About 41 acres of the 175-acre island consists of residential properties or lots that could be residential in the future. The remainder of the island includes recreational, commercial, and closed waste disposal properties. The Action Memorandum for the Site is attached as Attachment A to this Settlement Agreement. The general location of Middleground Island and the current land use on the island are depicted in Attachment B. Work at the Site will be conducted at eligible residential properties where dioxins/furans in soil exceed U.S. EPA's site-specific human direct contact criteria of 250 parts per trillion ("ppt") TEQ for residential soil ("Cleanup Number"). Eligible properties currently include: MG_12-13; MG_14-15; MG_16-17; MG_18; MG_20-22; MG_29; MG_31; MG_32; MG_33; MG_38; MG_39; MG_41-42; MG_44; MG_50; and MG_51-55. Additional details about these properties, including personally identifiable information, must be retained by Dow and made available to EPA upon request.

- t. "State" shall mean the State of Michigan.
- u. "TRSR&B Site Special Account" shall mean the special account within the U.S. EPA Hazardous Substance Superfund, established for the TRSR&B Site by U.S. EPA pursuant to Section 122(b)(3) of CERCLA, 42 U.S.C. § 9622(b)(3).
- v. "Transfer" shall mean to sell, assign, convey, lease, mortgage, or grant a security interest in, or where used as a noun, a sale, assignment, conveyance, or other disposition of any interest by operation of law or otherwise.
- w. "United States" shall mean the United States of America and each department, agency, and instrumentality of the United States, including U.S. EPA.
- x. "U.S. EPA" shall mean the United States Environmental Protection Agency and its successor departments, agencies, or instrumentalities.
- y. "Waste Material" shall mean (1) any "hazardous substance" under Section 101(14) of CERCLA, 42 U.S.C. § 9601(14); (2) any pollutant or contaminant under Section 101(33) of CERCLA, 42 U.S.C. § 9601(33); (3) any "solid waste" under Section 1004(27) of RCRA, 42 U.S.C. § 6903(27); (4) any "contaminant" as defined by Section 11102 of NREPA, Mich. Comp. Laws § 324.11102(1) ; and (5) any "hazardous substance" as defined by Section 20101 of NREPA, Mich. Comp. Laws § 324.20101(1)(x).
- z. "Work" shall mean all activities and obligations Respondent is required to perform under this Settlement Agreement except those required by Section XI (Record Retention).

IV. FINDINGS OF FACT

9. Based on available information, including the Administrative Record in this matter, U.S. EPA hereby finds that:
 - a. The Site encompasses the area described in Paragraph 8.s. of this Settlement Agreement. The Site is the location where Respondent has disposed of hazardous substances, pollutants, or contaminants, or where such materials have or may have come to be located.
 - b. The Dow Chemical Company is a Delaware corporation and its registered agent is The Corporation Trust Company with an address of Corporation Trust Center, 1209 Orange Street, Wilmington, Delaware.
 - c. Dow's Midland Plant began operations in 1897. The Midland Plant covers approximately 1,900 acres. The majority of the Midland Plant is located on the east side of the Tittabawassee River and south of the City of Midland.
 - d. The Tittabawassee River is a tributary to the Saginaw River, draining 2,600 square miles of land in the Saginaw River watershed. The Tittabawassee River flows south and east for a distance of approximately 80 miles to its confluence with the Shiawassee River approximately 22 miles southeast of Midland. Prior to the recent events in May 2020 where two upstream hydroelectric dam embankments failed, the Tittabawassee River flow upstream of the Midland Plant was regulated by the Secord, Smallwood, Edenville, and Sanford dams. The previous operation of the hydroelectric station at Sanford resulted in water releases from Sanford Dam during peak electricity usage periods to provide peaking power to Consumer's Energy. Sanford Lake had limited flood storage capacity due to a narrow range of permitted lake levels. Both the Edenville and Sanford dam embankments failed on May 19, 2020, releasing the water from both impoundments down the Tittabawassee River. Under the current situation, the Tittabawassee River will have a flow more similar to the run of the river. The Dow Dam is located adjacent to the Midland Plant. Below the Dow Dam, the river flow is free-flowing to its confluence with the Shiawassee and Saginaw Rivers and into Saginaw Bay. Prior to the recent dam failures, the Tittabawassee River flow and water level would fluctuate daily in response to releases from the Sanford Dam. The average and 100-year flood discharge for the Tittabawassee River based on data from 1937 to 1984 are approximately 1,700 cubic feet per second ("cfs") and 45,000 cfs, respectively. The relatively large ratio between the 100-year flood discharge and the long-term average discharge (26.5) indicates that the river is "flashy," or has a flow regime that is characterized by highly variable flows with a rapid rate of change.
 - e. The average monthly discharge from 1937 to 2003 for the Tittabawassee River 2,000 feet downstream of the Dow Dam ranged from approximately 600 cfs (in August) to 3,900 cfs (in March), with an average of 1,700 cfs. Discharge is typically highest in

March and April during spring snowmelt and runoff. Prior to the recent dam failures, the maximum recorded historical crest of the Tittabawassee River occurred in 1986. A large storm in September 1986 produced up to 14 inches of rain in 12 hours. The discharge of the river near the Dow Dam reached nearly 40,000 cfs, and the river stage was 10 feet above flood stage at its crest. Flows greater than 20,000 cfs have occurred in 28 events over the 107 years between 1910 and 2020, with flows greater than 30,000 cfs occurring in 1912, 1916, 1946, 1948, 1986, 2017 and, most recently, in May 2020, when the river discharge reached 51,400 cfs. In May 2020, 4 to 6 inches of rain fell in the upper portions of the watershed over 48 hours causing flows into Wixom Lake at a rate higher than the Edenville Dam could discharge. The Edenville dam embankment gave way sending a surge of water into Sanford Lake. Later in the same evening, the Sanford Dam embankment was breached and a catastrophic failure soon followed. The Tittabawassee River was predicted to reach a peak discharge rate of just under 40,000 cfs prior to the failure of the Edenville and Sanford Dams. The added impoundment water from the two dams contributed to a peak discharge of 51,400 cfs and the historic water elevation of 35.05 feet at the USGS gaging station in Midland, Michigan.

- f. The Saginaw River is formed by the confluence of the Tittabawassee and Shiawassee Rivers. The Saginaw River is approximately 22 miles long and flows through Saginaw, Michigan and from there to Bay City, where the river discharges into Saginaw Bay in Lake Huron.
- g. Water levels and flows in the lower Tittabawassee and Saginaw Rivers are strongly influenced by fluctuations in the water levels of the Great Lakes, particularly Lake Huron, and seiche conditions in Saginaw Bay.
- h. Portions of the Tittabawassee River and Saginaw River floodplains are periodically inundated by floodwaters.
- i. Over the time of its operation, the Midland Plant has produced over 1,000 different organic and inorganic chemicals. These chemicals include the manufacture of 24 chlorophenolic compounds since the 1930s.
- j. Earlier in the history of the Midland Plant, wastes were discharged directly into the Tittabawassee River and, sometime later, wastes were stored and partially treated in settling ponds prior to discharge to the River. Other wastes were disposed of at the Midland Plant either on land or by burning. Flooding of the Midland Plant property may have resulted in discharges to the Tittabawassee River of stored brines and untreated or partially treated process wastewaters. Over time, changes in waste management practices included installation and operation of a modern wastewater treatment plant as well as use of incinerators instead of open burning. Changes in the wastewater treatment plant and subsequent incorporation of pollution controls into both the operations of and emissions from the incinerators have reduced or eliminated non-permitted releases and emissions from the Midland Plant.

- k. Pursuant to Section 3006 of RCRA, 42 U.S.C. § 6926, the Administrator of U.S. EPA may authorize a State to administer the RCRA hazardous waste program in lieu of the federal program when the Administrator finds that the State program meets certain conditions. Any violation of regulations promulgated pursuant to Subtitle C (Sections 3001-3023 of RCRA, 42 U.S.C. §§ 6921-6939e) or of any state provision authorized pursuant to Section 3006 of RCRA, 42 U.S.C. § 6926, constitutes a violation of RCRA, subject to the assessment of civil penalties and issuance of compliance orders as provided in Section 3008 of RCRA, 42 U.S.C. § 6928. Pursuant to Section 3006(b) of RCRA, 42 U.S.C. § 6926(b), the Administrator of U.S. EPA granted the State of Michigan final authorization to administer a state hazardous waste program in lieu of the federal government's base RCRA program effective October 30, 1986. 51 Fed. Reg. 36,804 (Oct. 16, 1986). The U.S. EPA granted Michigan final authorization to administer certain Hazardous and Solid Waste Amendments of 1984 and additional RCRA requirements effective January 23, 1990, 54 Fed. Reg. 48,608 (Nov. 24, 1989); June 24, 1991, 56 Fed. Reg. 18,517 (Apr. 23, 1991); November 30, 1993, 58 Fed. Reg. 51,244 (Oct. 1, 1993); April 8, 1996, 61 Fed. Reg. 4,742 (Feb. 8, 1996); December 28, 1998, 63 Fed. Reg. 57,912 (Oct. 29, 1998) (stayed and corrected effective June 1, 1999, 64 Fed. Reg. 10,111 (Mar. 2, 1999)); July 31, 2002, 67 Fed. Reg. 49,617 (Jul. 31, 2002); March 9, 2006, 71 Fed. Reg. 12141 (March 9, 2006); January 7, 2008, 73 Fed. Reg. 1077 (January 7, 2008); March 2, 2010, 75 Fed. Reg. 9345 (March 2, 2010); and August 28, 2015 80 Fed. Reg. 52194 (August 28, 2015). U.S. EPA authorized Michigan regulations are codified at Michigan Part 111 Administrative Rules, Mich. Admin. Code rr. 299.9101-299.11109. See also 40 C.F.R. §§ 272.1150-272.1151.
- l. The former Michigan Department of Environmental Quality, now Michigan Department of Environment, Great Lake and Energy ("EGLE"), reissued to Dow its current RCRA Hazardous Waste Management Facility Operating License for the Midland Plant, with an effective date of September 25, 2015 (the "License"). Under its License, and the previous licenses, Dow has been conducting corrective action work. Under work previously conducted under the RCRA License, primary source control has been completed.
- m. The TRSR&B Site starts at the Tittabawassee and Chippewa confluence, at a local landmark, the Tridge. It includes the 24-mile lower Tittabawassee River, the 22-mile Saginaw River and portions of Saginaw Bay. The TRSR&B Site is being addressed in a general upstream to downstream approach. The Tittabawassee River was divided into seven 3-4-mile segments.
- n. U.S. EPA's and EGLE's understanding of potential hazardous substances in soil and sediment at the TRSR&B Site is based on various sampling, analysis, and studies regarding dioxin/furans and other contaminants, in the Tittabawassee River, the Saginaw River, and Saginaw Bay. Multiple rounds of sampling have been conducted at the TRSR&B Site, including extensive sampling for dioxins and furans,

which has identified TEQ levels ranging from non-detect to over 100,000 ppt. More than 200 other secondary constituents of interest (“SCOIs”) have been sampled for in a subset of samples, and some have also been detected at the TRSR&B Site. A specific list of the SCOIs is contained in Attachment G to Volume 1 of Dow’s December 1, 2006, “Remedial Investigation Work Plan (RIWP): Tittabawassee River and Upper Saginaw River and Floodplain Soils – Midland, Michigan,” which is part of the Administrative Record.

- o. TEQ contamination of some areas of the TRSR&B Site sediment, riverbanks, and floodplain soil adjacent to and downstream of the Midland Plant has been documented.
- p. In 2014, U.S. EPA, working with MDEQ, established site-specific direct contact dioxin Cleanup Numbers for floodplain soil. The Cleanup Number for maintained residential properties is 250 ppt TEQ. The Cleanup Number for other land uses is 2,000 ppt TEQ. The Cleanup Numbers are based on site-specific data on climate, exposure to house dust vs, soil, and bioavailability. The numbers are based on potential non-cancer effects for the most sensitive receptor – the young child resident (i.e., a Hazard Index of approximately 1).
- q. Supplemental focused sampling and analysis has been performed under the 2010 SOW to characterize soil on MGI. The sampling, analysis, studies, and orders relied on by U.S. EPA and EGLE include, but are not limited to, the sampling, analysis, studies, and orders listed in Attachment A to this Settlement Agreement. In particular, the EE/CA summarizes Site conditions.
- r. To provide an up-to-date screening of Saginaw River floodplain conditions Dow took incremental composite samples from soil in several areas along the Saginaw River in November 2018, including three samples from the residential (south) end of MGI. All three of the MGI samples had dioxin levels higher than U.S. EPA’s residential Cleanup Number of 250 ppt TEQ.
- s. In 2019 Dow took soil samples from many sampling units (“SUs”) on MGI. Most of the SUs were at residences or properties that are not currently residential but could be in the future. Seventeen of the 45 residential SUs had dioxin levels exceeding 250 ppt, with the maximum of 1,290 ppt TEQ. Interim exposure controls were offered and implemented at some residential properties in 2019. None of the other land use SUs exceeded U.S. EPA’s other land use Cleanup Number of 2,000 ppt TEQ. The 2018 and 2019 soil sampling documents that soil in some residential areas on MGI exceeds U.S. EPA’s residential Cleanup Number.
- t. Historically, Middleground Island was primarily wetlands until the island was developed for more industrial use by logging and salt industries in the 1800s and early 1900s. Starting around the turn of the twentieth century, Middleground Island was used for both controlled and uncontrolled landfilling and dumping of waste

materials including construction debris, brush, and river dredge material. The more well documented disposal sites on the island were operated by the City of Bay City in the central portion of the island along the western bank. Bay City Middleground Landfill operated from 1956 until 1984 when the State ordered this landfill closed. It was proposed to the National Priorities List in 1995 but addressed under the State's remediation program. Adjacent to the landfill was the U.S. Army Corps of Engineers' Middleground confined disposal facility ("CDF").

- u. The dioxins found in Middleground Island soil are believed to be from the historical use of dredge materials as fill on the island. In 1910, the Saginaw River became an authorized federal navigation channel. Regular dredging in the Saginaw River has been conducted over time by the U.S. Army Corps of Engineers. The Corps created the Middleground CDF and used it as a disposal location for Saginaw River dredge material from 1973 until 1984. Dredged sediment from the CDF was used as daily cover material at the adjacent Bay City Middleground Landfill. Reportedly, the dredged sediment was also available for use as fill material in residential yards on the island.
- v. Human access to the Site is available to people living at privately owned properties or visiting the island. Wildlife in the area also has access to the Site.
- w. In order to implement response actions at the TRSR&B Site, U.S. EPA and Dow have entered into numerous separate Administrative Settlement Agreements and Orders on Consent ("AOCs") under the authority of Sections 104, 106(a), 107, and 122 of CERCLA.
 - i. On July 12, 2007, U.S. EPA and Dow entered into an AOC for a CERCLA time critical removal to dredge and dispose of a sediment deposit at Reach D adjacent to Dow's Midland plant. U.S. EPA provided Dow with notification of the completion of this AOC on October 15, 2008.
 - ii. On July 12, 2007, U.S. EPA and Dow entered into an AOC for a CERCLA time critical removal at Reaches J/K to remove and dispose of riverbank soils, cap an upland area, and fence off a wetland area. U.S. EPA provided Dow with notification of the completion of this AOC on May 2, 2008.
 - iii. On July 12, 2007, U.S. EPA and Dow entered into an AOC for a CERCLA time critical removal to dredge and dispose of a sediment deposit at Reach O. U.S. EPA provided Dow with notification of the completion of this AOC on April 10, 2008.
 - iv. On November 15, 2007, U.S. EPA and Dow entered into an AOC for a CERCLA time critical removal to dredge and dispose of a sediment deposit near Wickes Park in the Saginaw River. U.S. EPA provided Dow with notification of the completion of this AOC on August 4, 2008.

- v. On July 15, 2008, U.S. EPA and Dow entered into an AOC for a CERCLA time critical removal to remove and dispose of floodplain soil around residential properties at Riverside Boulevard and clean the inside of occupied homes. U.S. EPA provided Dow with notification of the completion of this AOC on February 1, 2010.
- vi. On February 27, 2009, U.S. EPA and Dow entered into an AOC for a CERCLA time critical removal to remove and dispose of floodplain soil at West Michigan Park and conduct soil removal and/or barrier controls at adjacent residential properties. U.S. EPA provided Dow with notification of the completion of this AOC on September 11, 2012.
- vii. On May 26, 2011, U.S. EPA and Dow entered into an AOC for a CERCLA non-time critical removal action to provide interim exposure controls at eligible floodplain properties. The work under this AOC is ongoing.
- viii. On July 8, 2011, U.S. EPA and Dow entered into an AOC for a CERCLA non-time critical removal action to remove a small eroding island and cap adjacent sediment in Reach MM. U.S. EPA provided Dow with notification of the completion of this AOC on July 12, 2012.
- ix. On November 1, 2011, U.S. EPA and Dow entered into an AOC for a CERCLA non-time critical removal action to remove and destroy dense non-aqueous phase liquids from the Tittabawassee River and install hydraulic control barriers and caps at Sediment Management Areas in Segment 1. U.S. EPA provided Dow with notification of the completion of this AOC on September 27, 2017.
- x. On November 21, 2013, U.S. EPA and Dow entered into an AOC for a CERCLA non-time critical removal action to address SMAs and BMAs within Segment 2. U.S. EPA provided Dow with notification of the completion of this AOC on September 6, 2019.
- xi. On January 8, 2015, U.S. EPA and Dow entered into an AOC for a CERCLA non-time critical removal action to address soil contaminated with dioxins and furans within the Tittabawassee River 8-year floodplain of the TRSR&B Site. The work under this AOC is ongoing.
- xii. On February 25, 2016, U.S. EPA and Dow entered into an AOC for a CERCLA non-time critical removal action to address SMAs and BMAs within Segment 3. U.S. EPA provided Dow with notification of the completion of this AOC on October 3, 2019.

- xiii. On February 8, 2017, U.S. EPA and Dow entered into an AOC for a CERCLA non-time critical removal action to address SMAs and BMAs within Segments 4 & 5. The work under this AOC is ongoing.
- xiv. On May 21, 2019, U.S. EPA and Dow entered into an AOC for a CERCLA non-time critical removal action to address SMAs and BMAs within Segments 6 & 7. The work under this AOC is ongoing.
- x. Effective January 21, 2010, U.S. EPA, MDEQ and Dow entered into the 2010 AOC, under which Dow agreed to perform remedial investigation, feasibility study, and/or engineering evaluation and cost analysis, as well as response design (with U.S. EPA and MDEQ oversight) at the TRSR&B Site. The work under the 2010 AOC is ongoing.
- y. Dioxins and furans are listed as hazardous constituents in Appendix VIII to Part 261 of Title 40 of the Code of Federal Regulations, 40 C.F.R. pt. 261 app. VIII, and Part 111 of NREPA, Mich. Comp. Laws §§ 324.11101-324.11153, and as hazardous substances in Part 201 of NREPA, Mich. Comp. Laws §§ 324.20101-324.20142.

V. CONCLUSIONS OF LAW AND DETERMINATIONS

- 10. Based on the Findings of Fact set forth above, and the Administrative Record supporting this removal action, U.S. EPA has determined that:
 - a. The TRSR&B Site, within which the Site is located, is a “facility” as defined by Section 101(9) of CERCLA, 42 U.S.C. § 9601(9).
 - b. The contamination found at the Site, as identified in the Findings of Fact above, includes a “hazardous substance” as defined by Section 101(14) of CERCLA, 42 U.S.C. § 9601(14).
 - c. Respondent is a “person” as defined by Section 101(21) of CERCLA, 42 U.S.C. § 9601(21).
 - d. Respondent is a responsible party under Section 107(a) of CERCLA, 42 U.S.C. § 9607(a), and is liable for performance of response action and for response costs incurred and to be incurred at the Site.
 - i. Respondent is the “owner” and/or “operator” of the facility, as defined by Section 101(20) of CERCLA, 42 U.S.C. § 9601(20), and within the meaning of Section 107(a)(1) of CERCLA, 42 U.S.C. § 9607(a)(1).
 - ii. Respondent was the “owner” and/or “operator” of a facility at the time of disposal of hazardous substances at the facility, as defined by Section 101(20) of

CERCLA, 42 U.S.C. § 9601(20), and within the meaning of Section 107(a)(2) of CERCLA, 42 U.S.C. § 9607(a)(2).

- e. The conditions described in the Findings of Fact above constitute an actual or threatened “release” of a hazardous substance from the facility into the “environment” as defined by Sections 101(22) and 101(8) of CERCLA, 42 U.S.C. §§ 9601(22) and 9601(8).
- f. The conditions present at the Site may constitute a threat to public health, welfare, or the environment because of an actual or threatened release of a hazardous substance from the facility within the meaning of Section 106(a) of CERCLA, 42 U.S.C. § 9606(a) and based upon the factors set forth in Section 300.415(b)(2) of the National Oil and Hazardous Substances Pollution Contingency Plan, as amended (“NCP”), 40 CFR §300.415(b)(2). These factors include, but are not limited to, the following:
 - i. Actual or potential exposure to nearby human populations, animals, or the food chain from hazardous substances or pollutants or contaminants. This factor is present at the Site due to the existence of MGI surface soil contaminated with dioxins/furans at levels that may contribute to unacceptable risks in humans from long term direct contact exposure (i.e., inadvertent ingestion and dermal absorption).
 - ii. High levels of hazardous substances or pollutants or contaminants in MGI floodplain soil largely at or near the surface that may migrate. This factor is present at the Site due to the existence of elevated TEQ in some surface soil samples taken from 0 – 6 inches below ground surface. The Site is subject to periodic flooding.
- g. The removal action required by this Settlement Agreement is necessary to protect the public health, welfare, or the environment and, if carried out in compliance with the terms of this Settlement Agreement, will be consistent with the NCP, as provided in Section 300.700(c)(3)(ii) of the NCP.

VI. SETTLEMENT AGREEMENT AND ORDER

- 11. Based upon the Findings of Fact, Conclusions of Law, and Determinations set forth above, and the Administrative Record for this Site, it is hereby Ordered and Agreed that Respondent shall comply with all provisions of this Settlement Agreement, including, but not limited to, all attachments to this Settlement Agreement and all documents incorporated by reference into this Settlement Agreement.

VII. DESIGNATION OF CONTRACTOR, PROJECT COORDINATOR, AND ON-SCENE COORDINATOR

12. Respondent shall retain one or more contractors to perform the Work and shall notify U.S. EPA of the name(s) and qualifications of such contractor(s) per the schedule in the approved Work Plan. Respondent shall also notify U.S. EPA of the name(s) and qualification(s) of any other contractor(s) or subcontractor(s) retained to perform the Work at least 5 business days prior to commencement of such Work. U.S. EPA retains the right to disapprove of any or all of the contractors and/or subcontractors retained by Respondent. If U.S. EPA disapproves of a selected contractor, Respondent shall retain a different contractor and shall notify U.S. EPA of that contractor's name and qualifications within 3 business days of U.S. EPA's disapproval. With respect to any proposed contractor, as appropriate, Respondent shall demonstrate that the proposed contractor demonstrates compliance with ASQ/ANSI E4:2014 "Quality management systems for environmental information and technology programs – Requirements with guidance for use" (American Society for Quality, February 2014), by submitting a copy of the proposed contractor's Quality Management Plan ("QMP"). The QMP should be prepared consistent with "EPA Requirements for Quality Management Plans (QA/R-2)" (EPA/240/B0-1/002, reissued May 2006), or equivalent documentation as required by U.S. EPA. The qualifications of the persons undertaking the Work for Respondent shall be subject to U.S. EPA's review for verification that such persons meet minimum technical background and experience requirements.
13. Respondent has designated, and U.S. EPA has not disapproved, Todd Konechne as its Project Coordinator who shall be responsible for administration of all actions by Respondent required by this Settlement Agreement. To the greatest extent possible, the Project Coordinator shall be present on Site or readily available during Site work. U.S. EPA retains the right to disapprove of the designated Project Coordinator. If U.S. EPA disapproves of the designated Project Coordinator, Respondent shall retain a different Project Coordinator and shall notify U.S. EPA of that person's name, address, telephone number, email address, and qualifications within 4 business days following U.S. EPA's disapproval. Receipt by Respondent's Project Coordinator of any notice or communication from U.S. EPA relating to this Settlement Agreement shall constitute receipt by Respondent.
14. U.S. EPA has designated Mary P. Logan of the Remedial Response Branch #2, Region 5, as its Remedial Project Manager/On-Scene Coordinator ("RPM/OSC"). U.S. EPA and Respondent shall have the right, subject to Paragraph 13, to change their respective designated RPM/OSC or Project Coordinator. U.S. EPA shall notify the Respondent, and Respondent shall notify U.S. EPA, as early as possible before such a change is made, but in no case less than 24 hours before such a change. The initial notification may be made orally but it shall be promptly followed by a written notice.
15. The RPM/OSC shall be responsible for overseeing Respondent's implementation of this Settlement Agreement. The RPM/OSC shall have the authority vested in an OSC by the

NCP, including the authority to halt, conduct, or direct any Work required by this Settlement Agreement, or to direct any other removal action undertaken at the Site. Absence of the RPM/OSC from the Site shall not be cause for stoppage of work unless specifically directed by the RPM/OSC.

VIII. WORK TO BE PERFORMED

16. Respondent shall perform, at a minimum, all actions necessary to implement the Action Memorandum, approved Work Plan and all approved designs submitted pursuant to this Settlement Agreement and the approved Work Plan. The actions to be implemented generally include, but are not limited to, the following:
 - a. Conduct pre-removal field investigations to document pre-construction conditions on Evergreen Drive, each property that will undergo cleanup, temporary staging areas, and access and traffic routes. This documentation will be used to compare pre- and post-construction conditions.
 - b. Develop temporary staging areas and access to the Site to meet project requirements. Such areas may include, but are not limited to, soil staging, equipment storage and decontamination, mobilization/demobilization, worker access, and exclusion zones.
 - c. Attempt to gain access to sample properties MG_45-46 and MG_56. If access is provided, provide an addendum to the MGI sampling plan. Once approved, sample in accordance with the MGI sampling plan addendum. If soil exceeds 250 ppt TEQ the property will be eligible for cleanup.
 - d. For each eligible property, develop a property-specific design, after an opportunity for input from each property owner. The removal action activities developed in each property-specific design shall consist of: document pre-construction conditions; clear and prepare the area; excavate soil to the design depth; place a marker layer (if needed); backfill excavated areas with clean fill and/or topsoil to the design grade (generally the original grade, with topsoil as the surface lift); and restore the property per the property-specific design. Eligible properties currently include: MG_12-13; MG_14-15; MG_16-17; MG_18; MG_20-22; MG_29; MG_31; MG_32; MG_33; MG_38; MG_39; MG_41-42; MG_44; MG_50; and MG_51-55.
 - e. Obtain access agreements and implement the Work at each property parcel in accordance with the approved property-specific design and approved schedule.
 - f. Develop and implement a Traffic Management Plan.
 - g. Conduct monitoring during the construction phase of the Work in accordance with the Work Plan.

- h. Transport and dispose of all soil, waste, and materials removed from the Site as a result of implementing the Work at approved locations in accordance with the Work Plan.
- i. Remove and restore the temporary access, mobilization, and staging areas.
- j. Develop a Restoration Plan and implement it for a minimum of two years, or as otherwise approved by the RPM/OSC.
- k. Document completion of the Work at each property in accordance with the Work Plan.

17. Work Plan and Implementation.

- a. Within 60 calendar days after the Effective Date, Respondent shall submit to U.S. EPA for approval a draft Work Plan for performing the removal action generally described in Paragraph 16 above. The draft Work Plan shall provide a description of, and an expeditious schedule for, the actions required by this Settlement Agreement. The Work Plan shall include a comprehensive description of the project tasks, procedures to accomplish them, quality assurance/quality control systems, project documentation, and project schedule.
 - i. In accordance with the schedule, Respondent shall submit property-specific designs that provide the details on how the Work will be implemented for that specific property. The property-specific design shall identify and address to the extent practicable, unique features and/or special concerns of the property owner.
 - ii. The Work Plan shall include a Traffic Management Plan or a schedule for its submittal.
 - iii. The Work Plan shall include a Restoration Plan or a schedule for its submittal.
 - iv. The Work Plan shall include a plan for monitoring and tracking properties for which the property owner refused sampling or the remedy, if any, or a schedule for its submittal.
- b. U.S. EPA may approve, disapprove, require revisions to, or modify the draft Work Plan in whole or in part. To the extent practicable, and only to the extent consistent with the NCP, U.S. EPA shall first provide Respondent one request for modification and an opportunity to submit the requested modification(s) before U.S. EPA modifies the draft Work Plan. If U.S. EPA requires revisions, Respondent shall submit a revised draft Work Plan within 30 calendar days of receipt of U.S. EPA's notification of the required revisions, or on another schedule approved by the RPM/OSC. Respondent shall implement the Work Plan as approved in writing by U.S. EPA, and all designs as approved in writing by U.S. EPA, in accordance with

the schedule(s) approved by U.S. EPA. Once approved, or approved with modifications, the Work Plan, the schedule, and any subsequent modifications shall be incorporated into and become fully enforceable under this Settlement Agreement.

- c. Upon approval or approval with modifications of the Work Plan Respondent shall commence implementation of the Work in accordance with the schedule included therein. Respondent shall not commence any Work except in conformance with the terms of this Settlement Agreement. Respondent is not restricted from seeking to secure rights of access to property in advance of U.S. EPA approval of the Work Plan.
- d. Unless otherwise provided in this Settlement Agreement, any additional deliverables that require U.S. EPA approval under the Work Plan shall be reviewed and approved by U.S. EPA in accordance with this Paragraph.

18. Submission of Deliverables.

a. General Requirements for Deliverables.

- i. Except as otherwise provided in this Settlement Agreement, Respondent shall direct all submissions required by this Settlement Agreement to the RPM/OSC, Mary Logan at: U.S. EPA, Mail Code SR-6J, 77 W. Jackson Blvd., Chicago, IL 60604; (312) 886-4699; logan.mary@epa.gov. Respondent shall submit all deliverables required by this Settlement Agreement or any approved work plan to U.S. EPA in accordance with the schedule set forth in such plan.
- ii. Respondent shall submit all deliverables in electronic form and, upon request by U.S. EPA, in paper copy form, as well. Technical specifications for sampling and monitoring data and spatial data are addressed in Paragraph 18.b. If any deliverable includes maps, drawings, or other exhibits that are larger than 8.5 x 11 inches, Respondent shall also provide U.S. EPA with paper copies of such exhibits, unless otherwise specified by the RPM/OSC. Respondent shall submit electronic and paper copies of all plans, reports or other submissions required by this Settlement Agreement directly to the EGLE project coordinator for the TRSR&B Site as identified in the 2010 AOC. Where paper copies are required, Respondent is encouraged to make its submissions on recycled paper (which includes significant post-consumer waste paper content where possible) and using two-sided copies.

b. Technical Specifications for Deliverables.

- i. Sampling and monitoring data should be submitted in standard Regional Electronic Data Deliverable (“EDD”) format. Other delivery methods may be allowed if electronic direct submission presents a significant burden or as technology changes.

- ii. Spatial data to be submitted pursuant to Task 6.3 of the 2010 SOW, including spatially-referenced data and geospatial data, should be submitted: (a) in the Environmental Systems Research Institute (ESRI) File Geodatabase format; and (b) as unprojected geographic coordinates in decimal degree format using North American Datum 1983 (NAD83) or World Geodetic System 1984 (WGS84) as the datum. If applicable, submissions should include the collection method(s). Projected coordinates may optionally be included but must be documented. Spatial data should be accompanied by metadata, and such metadata should be compliant with the Federal Geographic Data Committee (FGDC) Content Standard for Digital Geospatial Metadata and its U.S. EPA profile, the EPA Geospatial Metadata Technical Specification. An add-on metadata editor for ESRI software, the EPA Metadata Editor (EME), complies with these FGDC and U.S. EPA metadata requirements and is available at <https://edg.epa.gov/EME/>.
- iii. Each file must include an attribute name for each site unit or sub-unit submitted. Consult <http://www.epa.gov/geospatial/policies.html> for any further available guidance on attribute identification and naming.
- iv. Spatial data submitted by Respondent does not, and is not intended to, define the boundaries of the Site.

19. Health and Safety Plan. Per the approved schedule in the approved Work Plan, Respondent shall submit for U.S. EPA review and comment a plan that ensures the protection of the public health and safety during performance of on-Site work under this Settlement Agreement. Where appropriate, this plan shall incorporate elements of “OSWER Integrated Health and Safety Program Operating Practices for OSWER Field Activities,” Pub. 9285.0-OIC (Nov. 2002), available on the NSCEP database at <http://www.epa.gov/nscep/index.html>, and “EPA’s Emergency Responder Health and Safety Manual,” OSWER Directive 9285.3-12 (July 2005 and updates), available at <http://www.epaosc.org/HealthSafetyManual/manual-index.htm>. In addition, the plan shall comply with all currently applicable Occupational Safety and Health Administration (“OSHA”) regulations found at 29 C.F.R. Part 1910. If U.S. EPA determines that it is appropriate, the plan shall also include contingency planning. Respondent shall incorporate all changes to the plan recommended by U.S. EPA and shall implement the plan during the pendency of the removal action.

20. Quality Assurance and Sampling.

- a. All sampling and analyses performed pursuant to this Settlement Agreement shall conform to U.S. EPA direction, approval, and guidance regarding sampling, quality assurance/quality control (“QA/QC”), data validation, and chain of custody procedures. Respondent shall use the Quality Assurance Project Plan (“QAPP”) that has been developed by Respondent and reviewed and approved by U.S. EPA pursuant to the 2010 AOC, and any updates to the QAPP. This Settlement Agreement and the 2010 AOC require that any updates to the QAPP shall use

applicable U.S. EPA QA/QC guidance, and subsequent amendments to such guidelines.

- b. Respondent shall ensure that all laboratories they utilize for the analysis of samples taken pursuant to this Settlement Agreement have a documented quality system and meet the quality requirements of the QAPP, and that the laboratories perform all analyses according to QAPP-approved methods. Respondent shall ensure that U.S. EPA personnel and its authorized representatives are allowed access at reasonable times to all laboratories utilized by Respondent in implementing this Settlement Agreement. In addition, Respondent shall ensure that such laboratories shall analyze all samples submitted by U.S. EPA pursuant to the QAPP for quality assurance, quality control, and technical activities that will satisfy the stated performance criteria as specified in the QAPP. U.S. EPA may consider Environmental Response Laboratory Network (ERLN) laboratories, laboratories accredited under the National Environmental Laboratory Accreditation Program (NELAP), or laboratories that meet International Standardization Organization (ISO 17025) standards or other nationally recognized programs (<http://www.epa.gov/fem/accredit.htm>) as meeting the quality system requirements.
- c. Respondent shall ensure that all field methodologies utilized in collecting samples for subsequent analysis pursuant to this Settlement Agreement are conducted in accordance with the procedures set forth in the QAPP, or as otherwise approved by U.S. EPA.
- d. Upon request, Respondent shall provide split or duplicate samples to U.S. EPA or its authorized representatives. Respondent shall notify U.S. EPA not less than 3 business days in advance of any sample collection activity, unless shorter notice is agreed to by U.S. EPA. In addition, U.S. EPA or its authorized representative shall have the right to take any additional samples that U.S. EPA deems necessary. Upon request, U.S. EPA shall provide to Respondent split or duplicate samples of any samples it takes as part of its oversight of Respondent's implementation of the Work. Notwithstanding any provision of this Settlement Agreement, U.S. EPA and the State retain all of their authorities and rights to conduct sampling at the Site, including enforcement authorities related thereto, under CERCLA, RCRA, and any other applicable statutes or regulations.
- e. Respondent shall submit to U.S. EPA the results of all sampling and/or tests or other data obtained or generated by or on behalf of Respondent with respect to the Site and/or the implementation of this Settlement Agreement.
- f. Respondent waives any objections to any data gathered, generated, or evaluated by U.S. EPA or Respondent in the performance or oversight of the Work that has been verified according to the QA/QC procedures required by the Settlement Agreement or any U.S. EPA-approved Work Plans or Sampling and Analysis Plans under this Settlement Agreement. If Respondent objects to any other data relating to the Work,

Respondent shall submit to U.S. EPA a report that specifically identifies and explains its objections, describes the acceptable uses of the data, if any, and identifies any limitations to the use of the data. The report must be submitted to U.S. EPA within 30 days after receipt of the report containing the data, or on a schedule otherwise approved by the U.S. EPA RPM/OSC.

21. Progress Reports. Respondent shall submit a written progress report to U.S. EPA concerning actions undertaken pursuant to this Settlement Agreement every 30th day after the date of receipt of U.S. EPA's approval of the Work Plan until issuance of Notice of Completion of Work pursuant to Section XXV, unless otherwise directed in writing by the RPM/OSC. These reports shall describe all significant developments during the preceding period, including the actions performed and any problems encountered, analytical data received during the reporting period, and the developments anticipated during the next reporting period, including a schedule of actions to be performed, anticipated problems, and planned resolutions of past or anticipated problems.
22. Final Report. Within 90 calendar days after completion of all Work required by this Settlement Agreement, other than continuing obligations listed in Section XXV (Notice of Completion), Respondent shall submit for U.S. EPA review a final report summarizing the actions taken to comply with this Settlement Agreement. The final report shall conform, at a minimum, with the requirements set forth in Section 300.165 of the NCP entitled "OSC Reports" and with the guidance set forth in "Superfund Removal Procedures: Removal Response Reporting – POLREPS and OSC Reports" (OSWER Directive No. 9360.3-03, June 1, 1994). The final report shall include: 1) a good faith estimate of total costs or a statement of actual costs incurred in complying with this Settlement Agreement; 2) a listing of quantities and types of materials removed off-Site or handled on-Site; 3) a discussion of removal and disposal options considered for those materials and a listing of the ultimate destination(s) of those materials; 4) a presentation of the final validated analytical results of all sampling and analyses performed; 5) and accompanying appendices containing all relevant documentation generated during the removal action (e.g., manifests, contracts, and permits). The final report shall also include the following certification signed by a responsible corporate official of Respondent or Respondent's Project Coordinator:

"Under penalty of law, I certify that to the best of my knowledge, after appropriate inquiries of all relevant persons involved in the preparation of the report, the information submitted is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."

23. Off-Site Shipments.
 - a. Respondent may ship hazardous substances, pollutants and contaminants from the Site to an off-Site facility only if it complies with Section 121(d)(3) of CERCLA, 42 U.S.C. § 9621(d)(3), and 40 C.F.R. § 300.440. Respondent will be deemed to be in

compliance with CERCLA Section 121(d)(3) and 40 C.F.R. § 300.440 regarding a shipment if Respondent obtains a prior determination from U.S. EPA that the proposed receiving facility for such shipment is acceptable under the criteria of 40 C.F.R. § 300.440(b).

- b. Respondent may ship Waste Material from the Site to an out-of-state waste management facility only if, prior to any shipment, it provides written notice to the appropriate state environmental official in the receiving facility's state and to the RPM/OSC. This written notice requirement shall not apply to any off-Site shipments when the total quantity of all such shipments will not exceed ten cubic yards. The written notice must include the following information, if available: (1) the name and location of the receiving facility; (2) the type and quantity of Waste Material to be shipped; (3) the schedule for the shipment; and (4) the method of transportation. Respondent also shall notify the state environmental official referenced above and the RPM/OSC of any major changes in the shipment plan, such as a decision to ship the Waste Material to a different out-of-state facility. Respondent shall provide the written notice after the award of the contract for the removal action and before the Waste Material is shipped.
- c. Respondent may ship Investigation Derived Waste ("IDW") from the Site to an off-Site facility only if it complies with Section 121(d)(3) of CERCLA, 42 U.S.C. § 9621(d)(3), 40 C.F.R. § 300.440, U.S. EPA's "Guide to Management of Investigation Derived Waste," OSWER 9345.3-03FS (Jan. 1992), and any IDW-specific requirements contained in the Action Memorandum. Wastes shipped off-Site to a laboratory for characterization, and RCRA hazardous wastes that meet the requirements for an exemption from RCRA under 40 C.F.R. § 261.4(e) shipped off-Site for treatability studies, are not subject to 40 C.F.R. § 300.440.

IX. PROPERTY REQUIREMENTS

- 24. If the Site, or any other property where access is needed to implement this Settlement Agreement, is owned or controlled by the Respondent, then Respondent shall, commencing on the Effective Date, provide U.S. EPA, the State, and their representatives, including contractors, with access at all reasonable times to the Site, or such other property, for the purpose of conducting any activity related to this Settlement Agreement. If such access is provided, Respondent may require U.S. EPA, the State, and their representatives to abide by all visitation rules contained in the approved Work Plan.
- 25. Where any action under this Settlement Agreement is to be performed in areas owned by or in possession of someone other than Respondent, Respondent shall use its best efforts to obtain all necessary access agreements per the schedule to be approved as part of the Work Plan, or as otherwise specified in writing by the RPM/OSC. The access agreement(s) shall provide Respondent, U.S. EPA, and their authorized representatives, access to the property to conduct the activities required under this Settlement Agreement.

Respondent shall immediately notify U.S. EPA if after using its best efforts it is unable to obtain such agreements. If best efforts are not successful, Respondent shall describe in writing its efforts to obtain access. U.S. EPA may then assist Respondent in gaining access, to the extent necessary to effectuate the response actions described herein, using such means as U.S. EPA deems appropriate. Respondent shall reimburse U.S. EPA for all costs and attorney's fees incurred by the United States in obtaining such access, in accordance with the procedures in Section XV (Payment of Response Costs).

26. If Respondent acquires Affected Property, it shall not subsequently Transfer its Affected Property unless it has first secured U.S. EPA's approval of, and transferee's consent to, an agreement that: (i) is enforceable by Respondent and U.S. EPA; and (ii) requires the transferee to provide access to and refrain from using the Affected Property to the same extent as is provided under the ICIAP.
27. In the event of any Transfer of Affected Property, unless U.S. EPA otherwise consents in writing, Respondent shall continue to comply with its obligations under the Settlement Agreement, including their obligation to secure access and ensure compliance with any land, water, or other resource use restrictions regarding the Affected Property.
28. Notwithstanding any provision of this Settlement Agreement, U.S. EPA and the State retain all of their access authorities and rights, as well as all of their rights to require land, water, or other resource restrictions, including enforcement authorities related thereto, under CERCLA, RCRA, and any other applicable statutes or regulations.

X. ACCESS TO INFORMATION

29. Respondent shall provide to U.S. EPA or its authorized representative, upon request, copies of all records, reports, documents and other information (including records, reports, documents, and other information in electronic form) (hereinafter referred to as "Records") within its possession or control or that of its contractors or agents relating to activities at the Site or to the implementation of this Settlement Agreement, including, but not limited to, sampling, analysis, chain of custody records, manifests, trucking logs, receipts, reports, sample traffic routing, correspondence, or other documents or information related to the Work. Respondent shall also make available to U.S. EPA or its authorized representative, for purposes of investigation, information gathering, or testimony, its employees, agents, or representatives with knowledge of relevant facts concerning the performance of the Work.
30. Business Confidential Claims. Respondent may assert business confidentiality claims covering part or all of a Record submitted to U.S. EPA under this Settlement Agreement to the extent permitted by and in accordance with Section 104(e)(7) of CERCLA, 42 U.S.C. § 9604(e)(7), and 40 C.F.R. § 2.203(b). Respondent shall segregate and clearly identify all Records or parts thereof submitted under this Settlement Agreement for which Respondent asserts business confidentiality claims. Records determined to be

confidential by U.S. EPA will be afforded the protection specified in 40 C.F.R. Part 2, Subpart B. If no claim of confidentiality accompanies Records when they are submitted to U.S. EPA, or if U.S. EPA has notified Respondent that the documents or information are not confidential under the standards of Section 104(e)(7) of CERCLA or 40 C.F.R. Part 2, Subpart B, the public may be given access to such Records without further notice to Respondent.

31. Privileged and Protected Claims.

- a. Respondent may assert that all or part of a Record requested by U.S. EPA is privileged or protected as provided under federal law, in lieu of providing the Record, provided Respondent complies with Paragraph 31.b, and except as provided in Paragraph 31.c.
- b. If Respondent asserts such a privilege or protection it shall provide U.S. EPA with the following information regarding such Record: its title; its date; the name, title affiliation (e.g., company or firm), and address of the author, of each addressee, and of each recipient; a description of the Record's contents; and the privilege asserted by Respondent. If a claim of privilege or protection applies only to a portion of a Record, Respondent shall provide the Record to U.S. EPA in redacted form to mask the privileged or protected portion only. Respondent shall retain all Records that they claim to be privileged or protected until U.S. EPA has had a reasonable opportunity to dispute the privilege or protection claim and any such dispute has been resolved in Respondent's favor.
- c. Respondent may make no claim of privilege or protection regarding: (1) any data regarding the Site, including, but not limited to, all sampling, analytical, monitoring, hydrogeologic, scientific, chemical, or engineering data, or the portion of any other Record that evidences conditions at or around the Site; or (2) the portion of any Record that Respondent is required to create or generate pursuant to this Settlement Agreement.

32. Notwithstanding any provision of this Settlement Agreement, U.S. EPA and the State retain all of their information gathering authorities and rights, including enforcement authorities related thereto, under CERCLA, RCRA and any other applicable statutes or regulations.

XI. RECORD RETENTION

33. Respondent shall preserve and retain all non-identical copies of Records (including Records in electronic form) now in its possession or control, or that come into its possession or control that relate in any manner to the performance of the Work or the liability of any person under CERCLA with respect to the Site, regardless of any corporate retention policy to the contrary, consistent with the terms, conditions, and

requirements of Section XV (Retention of Records) of the 2010 AOC. Respondent shall also instruct its contractors and agents to preserve all Records of whatever kind, nature or description relating to performance of the Work, consistent with the terms, conditions, and requirements of Section XV (Retention of Records) of the 2010 AOC. Respondent (and its contractors and agents) must retain, in addition, copies of all data generated during the performance of the Work and not contained in the aforementioned Records required to be retained.

34. At the conclusion of this document retention period, Respondent shall notify U.S. EPA at least 90 days prior to the destruction of any such records or documents, and, upon request by U.S. EPA, and except as provided in Paragraph 31 (Privileged and Protected Claims), Respondent shall deliver any such records or documents to U.S. EPA.
35. Respondent hereby certifies that to the best of its knowledge and belief, after thorough inquiry, it has not altered, mutilated, discarded, destroyed or otherwise disposed of any Records (other than identical copies) relating to its potential liability regarding the Site since notification of potential liability by U.S. EPA or the State or the filing of suit against it regarding the Site and that it has fully complied and will fully comply with any and all U.S. EPA and State requests for information pursuant to Sections 104(e) and 122(e) of CERCLA, 42 U.S.C. §§ 9604(e) and 9622(e), and Section 3007 of RCRA, 42 U.S.C. § 6927, and state law.

XII. COMPLIANCE WITH OTHER LAWS

36. Nothing in this Settlement Agreement limits Respondent's obligations to comply with the requirements of all applicable local, state, and federal laws and regulations, except as provided in Section 121(e) of CERCLA, 42 U.S.C. § 6921(e), and 40 C.F.R. §§ 300.400(e) and 300.415(j). In accordance with 40 C.F.R. § 300.415(j), all on-Site actions required pursuant to this Settlement Agreement shall, to the extent practicable, as determined by U.S. EPA, considering the exigencies of the situation, attain applicable or relevant and appropriate requirements ("ARARs") under federal environmental or state environmental or facility siting laws. In the Work Plan required under Paragraph 17 or in the design documents to be submitted pursuant to the Work Plan, the Respondent shall identify ARARs, and propose methods and means to attain the ARARs to the extent practicable, as determined by U.S. EPA, considering the exigencies of the situation.
37. No local, state, or federal permit shall be required for any portion of the Work conducted entirely on-Site (i.e., within the areal extent of contamination or in very close proximity to the contamination and necessary for implementation of the Work), including studies, if the action is selected and carried out in compliance with Section 121 of CERCLA, 42 U.S.C. § 9621. Where any portion of the Work that is not on-Site requires a federal or state permit or approval, Respondent shall submit timely and complete applications and take all other actions necessary to obtain and to comply with all such permits or approvals. Respondent may seek relief under the provisions of Section XVII (Force

Majeure) for any delay in the performance of the Work resulting from a failure to obtain, or a delay in obtaining, any permit or approval required for the Work, provided that they have submitted timely and complete applications and taken all other actions necessary to obtain all such permits or approvals. This Settlement Agreement is not, and shall not be construed to be, a permit issued pursuant to any federal or state statute or regulation.

XIII. EMERGENCY RESPONSE AND NOTIFICATION OF RELEASES

38. Emergency Response. In the event of any action or occurrence during performance of the Work which causes or threatens a release of Waste Material on, at, or from the Site that either constitutes an emergency situation or that may present an immediate threat to public health or welfare or the environment, Respondent shall immediately take all appropriate action to prevent, abate, or minimize such release or threat of release. Respondent shall take these actions in accordance with all applicable provisions of this Settlement Agreement, including, but not limited to, the Health and Safety Plan. Respondent shall also immediately notify the RPM/OSC or, in the event of his/her unavailability, the Regional Duty Officer, Emergency Response Branch, Region 5 at (312) 353-2318, of the incident or Site conditions. The Respondent shall also immediately notify the Pollution Emergency Alerting System (PEAS) at (800) 292-4706 (within Michigan) or at (517) 373-7660 (outside of Michigan). In its notifications, Respondent shall (1) provide to U.S. EPA the name or other contact information for the State notification recipient; (2) provide to the State the name or other contact information for the U.S. EPA notification recipient; and (3) inform both the U.S. EPA contact and the State contact of the response actions being taken by the Respondent. In the event that Respondent fails to take appropriate response action as required by this Paragraph, and U.S. EPA takes such action instead, Respondent shall reimburse U.S. EPA all costs of the response action not inconsistent with the NCP pursuant to Section XV (Payment of Response Costs). Notwithstanding any provision of this Settlement Agreement, U.S. EPA and the State retain all of their authorities and rights to compel emergency notification, including enforcement authorities related thereto, under CERCLA, RCRA, and any other applicable statutes or regulations.
39. Release Reporting. Upon the occurrence of any event during performance of the Work that Respondent is required to report pursuant to Section 103 of CERCLA, 42 U.S.C. § 9603, or Section 304 of the Emergency Planning and Community Right-to-know Act (EPCRA), 42 U.S.C. § 11004, Respondent shall immediately orally notify the RPM/OSC or, in the event of his/her unavailability, the Regional Duty Officer at (312) 353-2318 and the National Response Center at (800) 424-8802. The Respondent shall also immediately notify the Pollution Emergency Alerting System (PEAS) at (800) 292-4706 (within Michigan) or at (517) 373-7660 (outside of Michigan). In its notifications, Respondent shall (1) provide to U.S. EPA the name or other contact information for the State notification recipient; (2) provide to the State the name or other contact information for the U.S. EPA notification recipient; and (3) inform both the U.S. EPA contact and the State contact of the response actions being taken by the Respondent. This reporting

requirement is in addition to, and not in lieu of, reporting under Section 103(c) of CERCLA, 42 U.S.C. § 9603(c), and Section 304 of the Emergency Planning and Community Right-To-Know Act of 1986, 42 U.S.C. § 11004, *et seq.* Notwithstanding any provision of this Settlement Agreement, U.S. EPA and the State retain all of their authorities and rights to compel emergency notification, including enforcement authorities related thereto, under CERCLA, RCRA, and any other applicable statutes or regulations.

40. For any event covered under this Section, Respondent shall submit a written report to U.S. EPA within 7 days after the onset of such event, setting forth the action or event that occurred and the measures taken, and to be taken, to mitigate any release or threat of release or endangerment caused or threatened by the release and to prevent the reoccurrence of such a release or threat of release.

XIV. PAYMENT OF RESPONSE COSTS

41. Payments for Future Response Costs. Respondent shall pay U.S. EPA all Future Response Costs not inconsistent with the NCP.
 - a. Periodic Bills. On a periodic basis, U.S. EPA will send Respondent a bill requiring payment that consists of an Itemized Cost Summary which includes direct and indirect costs incurred by U.S. EPA, its contractors, subcontractors, and the United States Department of Justice. Respondent shall make all payments within 60 calendar days of receipt of each bill requiring payment, except as otherwise provided in Paragraph 43 (Contesting Future Response Costs) according to the following procedures: Payment shall be made to U.S. EPA by Electronic Funds Transfer (“EFT”) in accordance with current EFT procedures to be provided to Respondent by U.S. EPA Region 5. Payment shall be accompanied by a statement identifying the name and address of the party(ies) making payment, the Site name, U.S. EPA Region 5, and the Site/Spill ID Number B5KF.
 - b. Notice of Payment. At the time of payment, Respondent shall send notice that payment has been made to Mary Logan, RPM/OSC, at logan.mary@epa.gov or 77 West Jackson Blvd., SR-6J, Chicago, Illinois, 60604-3590, and to Jeffrey A. Cahn, Associate Regional Counsel, at cahn.jeffrey@epa.gov or 77 West Jackson Boulevard, C-14J, Chicago, Illinois, 60604-3590, and to Catherine Garypie, Associate Regional Counsel, at garypie.catherine@epa.gov or 77 West Jackson Boulevard, C-14J, Chicago, Illinois, 60604-3590 and to the U.S. EPA Cincinnati Finance Office by email at cinwd_acctsreceivable@epa.gov, or by mail at 26 W. Martin Luther King Drive, Cincinnati Ohio 45268. Such notice shall reference the U.S. EPA Site/Spill ID Number B5KF, the U.S. EPA docket number for this action.
 - c. Deposit of Future Response Costs Payments. The total amount paid by Respondent pursuant to Paragraph 41(a) (Periodic Bills) shall be deposited by U.S. EPA in the

TRSR&B Site Special Account within the EPA Hazardous Substance Superfund to be retained and used to conduct or finance response actions at or in connection with the Site, or to be transferred by U.S. EPA to the EPA Hazardous Substance Superfund provided, however, that U.S. EPA may deposit a Future Response Costs payment directly into the EPA Hazardous Substance Superfund if, at the time the payment is received, U.S. EPA estimates that the TRSR&B Site Special Account balance is sufficient to address currently anticipated future response actions to be conducted or financed by U.S. EPA at or in connection with the Site. Any decision by U.S. EPA to deposit a Future Response Costs payment directly into the EPA Hazardous Substance Superfund for this reason shall not be subject to challenge by Respondent pursuant to the dispute resolution provisions of this Settlement Agreement or in any other forum.

42. Interest. In the event that the payments for Future Response Costs are not made within 60 days of Respondent's receipt of a bill, Respondent shall pay Interest on the unpaid balance. The Interest on Future Response Costs shall begin to accrue on the date of the bill and shall continue to accrue until the date of Respondent's payment. Payments of Interest made under this Paragraph shall be in addition to such other remedies or sanctions available to the United States by virtue of Respondent's failure to make timely payments under this Section, including but not limited to, payment of stipulated penalties pursuant to Section XVII.
43. Contesting Future Response Costs. Respondent may initiate the procedures of Section XV (Dispute Resolution) regarding payment of any Future Response Costs billed under Paragraph 41 (Payments for Future Response Costs) if it determines that U.S. EPA has made a mathematical error or included a cost item that is not within the definition of Future Response Costs, or if it believes U.S. EPA incurred excess costs as a direct result of a U.S. EPA action that was inconsistent with a specific provision or provisions of the NCP. To initiate such dispute, Respondent shall submit a Notice of Dispute in writing to the RPM/OSC within 60 days after receipt of the bill. Any such Notice of Dispute shall specifically identify the contested Future Response Costs and the basis for objection. If Respondent submits a Notice of Dispute, Respondent shall within the 60-day period, also as a requirement for initiating the dispute, (a) pay all uncontested Future Response Costs to U.S. EPA in the manner described in Paragraph 41, and (b) establish, in a duly chartered bank or trust company, an interest-bearing escrow account that is insured by the Federal Deposit Insurance Corporation ("FDIC") and remit to that escrow account funds equivalent to the amount of the contested Future Response Costs. Respondent shall send to the RPM/OSC a copy of the transmittal letter and check paying the uncontested Future Response Costs, and a copy of the correspondence that establishes and funds the escrow account, including, but not limited to, information containing the identity of the bank and bank account under which the escrow account is established as well as a bank statement showing the initial balance of the escrow account. If U.S. EPA prevails in the dispute, within 5 days after the resolution of the dispute, Respondent shall pay the sums due (with accrued interest) to U.S. EPA in the manner described in Paragraph 41. If Respondent prevails concerning any aspect of the contested costs, Respondent shall pay that portion

of the costs (plus associated accrued interest) for which they did not prevail to U.S. EPA in the manner described in Paragraph 41. Respondent shall be disbursed any balance of the escrow account. The dispute resolution procedures set forth in this Paragraph in conjunction with the procedures set forth in Section XV (Dispute Resolution) shall be the exclusive mechanisms for resolving disputes regarding Respondent's obligation to reimburse U.S. EPA for its Future Response Costs.

XV. DISPUTE RESOLUTION

44. Unless otherwise expressly provided for in this Settlement Agreement, the dispute resolution procedures of this Section shall be the exclusive mechanism for resolving disputes arising under this Settlement Agreement. The Parties shall attempt to resolve any disagreements concerning this Settlement Agreement expeditiously and informally.
45. Informal Dispute Resolution. If Respondent objects to any U.S. EPA action taken pursuant to this Settlement Agreement, including billings for Future Response Costs, it shall send U.S. EPA a written Notice of Dispute describing its objection(s) within 10 calendar days of such action. U.S. EPA and Respondent shall have 21 calendar days from U.S. EPA's receipt of Respondent's Notice of Dispute to resolve the dispute through informal negotiations (the "Negotiation Period"). The Negotiation Period may be extended at the sole discretion of U.S. EPA. Any agreement reached by the Parties pursuant to this Section shall be in writing and shall, upon signature by the Parties, be incorporated into and become an enforceable part of this Settlement Agreement.
46. Formal Dispute Resolution. If the Parties are unable to reach an agreement within the Negotiation Period, Respondent shall, within 20 days after the end of the Negotiation Period, submit a statement of position to the RPM/OSC. U.S. EPA may, within 20 days thereafter, submit a statement of position. Thereafter, the Director of the Superfund Division, U.S. EPA Region 5 will issue a written decision on the dispute to Respondent. U.S. EPA's decision shall be incorporated into and become an enforceable part of this Settlement Agreement. Respondent shall fulfill the requirement that was the subject of the dispute in accordance with the agreement reached or with U.S. EPA's decision, whichever occurs.
47. Except as provided in Paragraph 43 (Contesting Future Response Costs) or as agreed by U.S. EPA, the invocation of formal dispute resolution procedures under this Section does not extend, postpone, or affect in any way any obligation of Respondent under this Settlement Agreement. Except as provided in Paragraph 56, stipulated penalties with respect to the disputed matter shall continue to accrue, but payment shall be stayed pending resolution of the dispute. Notwithstanding the stay of payment, stipulated penalties shall accrue from the first day of noncompliance with any applicable provision of this Settlement Agreement. In the event that Respondent does not prevail on the disputed issue, stipulated penalties shall be assessed and paid as provided in Section XVII (Stipulated Penalties).

XVI. FORCE MAJEURE

48. Respondent agrees to perform all requirements of this Settlement Agreement within the time limits established under this Settlement Agreement, unless the performance is delayed by a *force majeure*. For purposes of this Settlement Agreement, a *force majeure* is defined as any event arising from causes beyond the control of Respondent, or of any entity controlled by Respondent, including but not limited to its contractors and subcontractors, which delays or prevents the performance of any obligation under this Settlement Agreement despite Respondent's best efforts to fulfill the obligation. The requirement that Respondent exercises "best efforts to fulfill the obligation" includes using best efforts to anticipate any potential *force majeure* and best efforts to address the effects of any potential *force majeure* (a) as it is occurring and (b) following the potential *force majeure* such that the delay and any adverse effects of the delay are minimized to the greatest extent possible. *Force majeure* does not include financial inability to complete the Work or increased cost of performance.
49. If any event occurs or has occurred that may delay the performance of any obligation under this Settlement Agreement for which Respondent intends or may intend to assert a claim of *force majeure*, Respondent shall notify U.S. EPA orally within 24 hours of when Respondent first knew that the event might cause a delay. Within 7 calendar days thereafter, Respondent shall provide to U.S. EPA in writing an explanation and description of the reasons for the delay; the anticipated duration of the delay; all actions taken or to be taken to prevent or minimize the delay; a schedule for implementation of any measures to be taken to prevent or mitigate the delay or the effect of the delay; Respondent's rationale for attributing such delay to a *force majeure*; and a statement as to whether, in the opinion of Respondent, such event may cause or contribute to an endangerment to public health, welfare or the environment. Respondent shall include with any notice all available documentation supporting its claim that the delay was attributable to a *force majeure*. Respondent shall be deemed to know of any circumstance of which Respondent, any entity controlled by Respondent, or Respondent's contractors knew or should have known. Failure to comply with the above requirements regarding an event shall preclude Respondent from asserting any claim of *force majeure* regarding that event, provided, however, that if U.S. EPA, despite the late or incomplete notice, is able to assess to its satisfaction whether the event is a *force majeure* under Paragraph 48 and whether Respondent has exercised its best efforts under Paragraph 48, U.S. EPA may, in its unreviewable discretion, excuse in writing Respondent's failure to submit timely or complete notices under this Paragraph.
50. If U.S. EPA agrees that the delay or anticipated delay is attributable to a *force majeure*, the time for performance of the obligations under this Settlement Agreement that are affected by the *force majeure* will be extended by U.S. EPA for such time as is necessary to complete those obligations. An extension of the time for performance of the obligations affected by the *force majeure* shall not, of itself, extend the time for

performance of any other obligation. If U.S. EPA does not agree that the delay or anticipated delay has been or will be caused by a *force majeure*, U.S. EPA will notify Respondent in writing of its decision. If U.S. EPA agrees that the delay is attributable to a *force majeure*, U.S. EPA will notify Respondent in writing of the length of the extension, if any, for performance of the obligations affected by the *force majeure*.

51. If Respondent elects to invoke the dispute resolution procedures set forth in Section XV (Dispute Resolution), it shall do so no later than 15 days after receipt of U.S. EPA's notice. In any such proceeding, Respondent shall have the burden of demonstrating by a preponderance of the evidence that the delay or anticipated delay has been or will be caused by a *force majeure*, that the duration of the delay or the extension sought was or will be warranted under the circumstances, that best efforts were exercised to avoid and mitigate the effects of the delay, and that Respondent complied with the requirements of Paragraphs 48 and 49. If Respondent carries this burden, the delay at issue shall be deemed not to be a violation by Respondent of the affected obligation of this Settlement Agreement identified to U.S. EPA.
52. The failure by U.S. EPA to timely complete any obligation under the Settlement Agreement is not a violation of the Settlement Agreement, provided, however, that if such failure prevents Respondent from meeting one or more deadlines under the Settlement Agreement, Respondent may seek relief under this Section.

XVII. STIPULATED PENALTIES

53. Respondent shall be liable to U.S. EPA for stipulated penalties in the amounts set forth in Paragraphs 54 and 55 for failure to comply with the requirements of this Settlement Agreement specified below, unless excused under Section XVI (*Force Majeure*) or as otherwise approved by U.S. EPA. "Compliance" by Respondent shall include completion of all activities and obligations, including payments, required under this Settlement Agreement, or any deliverable approved under this Settlement Agreement, in accordance with all applicable requirements of law, this Settlement Agreement and any deliverables approved under this Settlement Agreement and within the specified time schedules established by and approved under this Settlement Agreement.
54. Stipulated Penalty Amounts – Work (Including Payments and Excluding Deliverables).
 - a. The following stipulated penalties shall accrue per violation per day for any noncompliance identified in Paragraph 54(b):

<u>Penalty Per Violation Per Day</u>	<u>Period of Noncompliance</u>
\$500	1st through 14th day
\$1000	15th through 30th day
\$2,500	31st day and beyond

b. Compliance Milestones

- i. Respondent shall submit each of the plans required by this Settlement Agreement, including the Removal Work Plan in accordance with the schedules established in this Settlement Agreement.
- ii. Respondent shall complete each of the tasks required by the plans, including the Removal Work Plan in accordance with the schedules established in the plans.
- iii. Respondent shall implement the Work as prescribed in this Settlement Agreement, and the plans, including the Removal Work Plan.
- iv. Respondent shall pay Future Response Costs as provided in this Settlement Agreement.
- v. Respondent shall establish and maintain financial assurance in compliance with the timelines and other substantive and procedural requirements of Section XXVI (Financial Assurance).

55. Stipulated Penalty Amounts – Deliverables. The following stipulated penalties shall accrue per violation per day for failure to submit timely or adequate deliverables pursuant to this Settlement Agreement:

<u>Penalty Per Violation Per Day</u>	<u>Period of Noncompliance</u>
\$500	1st through 14th day
\$1000	15th through 30th day
\$2,500	31st day and beyond

56. All penalties shall begin to accrue on the day after the complete performance is due or the day a violation occurs and shall continue to accrue through the final day of the correction of the noncompliance or completion of the activity. Penalties shall continue to accrue during any dispute resolution period and shall be paid within 20 days after the agreement or the receipt of U.S. EPA's decision or order. However, stipulated penalties shall not accrue: 1) with respect to a deficient submission under Section VIII (Work to be Performed), during the period, if any, beginning on the 31st day after U.S. EPA's receipt of such submission until the date that U.S. EPA notifies Respondent of any deficiency; and 2) with respect to a decision by the Director of the Superfund Division, Region 5, under Paragraph 46 of Section XV (Formal Dispute Resolution), during the period, if any, beginning on the 21st day after U.S. EPA submits its written statement of position until the date that the Director of the Superfund Division issues a final decision regarding such dispute. Nothing herein shall prevent the simultaneous accrual of separate penalties for separate violations of this Settlement Agreement. U.S. EPA shall consider Respondent's good faith and best efforts in seeking to meet the terms and conditions of this Settlement Agreement and associated Work Plans and schedules.

57. Following U.S. EPA's determination that Respondent has failed to comply with a requirement of this Settlement Agreement, U.S. EPA may give Respondent written notification of the failure and describe the noncompliance. U.S. EPA may send Respondent a written demand for payment of the penalties. However, penalties shall accrue as provided in the preceding Paragraph regardless of whether U.S. EPA has notified Respondent of a violation.
58. All penalties accruing under this Section shall be due and payable to U.S. EPA within 30 days of Respondent's receipt from U.S. EPA of a demand for payment of the penalties, unless Respondent invokes the dispute resolution procedures under Section XV (Dispute Resolution). All payments to U.S. EPA under this Section shall indicate that the payment is for stipulated penalties and shall be made in accordance with Paragraph 41 (Payments for Future Response Costs).
59. The payment of penalties and Interest, if any, shall not alter in any way Respondent's obligation to complete performance of the Work required under this Settlement Agreement.
60. If Respondent fails to pay stipulated penalties when due, Respondent shall pay Interest on the unpaid stipulated penalties as follows: (a) if Respondent has timely invoked dispute resolution such that the obligation to pay stipulated penalties has been stayed pending the outcome of dispute resolution, Interest shall accrue from the date stipulated penalties are due pursuant to Paragraph 56 until the date of payment; and (b) if Respondent fails to timely invoke dispute resolution, Interest shall accrue from the date of demand under Paragraph 58 until the date of payment. If Respondent fails to pay stipulated penalties and Interest when due, the United States may institute proceedings to collect the penalties and Interest.
61. Nothing in this Settlement Agreement shall be construed as prohibiting, altering, or in any way limiting the ability of U.S. EPA to seek any other remedies or sanctions available by virtue of Respondent's violation of this Settlement Agreement or of the statutes and regulations upon which it is based, including, but not limited to, penalties pursuant to Sections 106(b) and 122(l) of CERCLA, 42 U.S.C. §§ 9606(b) and 9622(l), and punitive damages pursuant to Section 107(c)(3) of CERCLA, 42 U.S.C. § 9607(c)(3). Provided, however, that U.S. EPA shall not seek civil penalties pursuant to Section 106(b) or 122(l) of CERCLA or punitive damages pursuant to Section 107(c)(3) of CERCLA for any violation for which a stipulated penalty is provided herein, except in the case of a willful violation of this Settlement Agreement. Should Respondent violate this Settlement Agreement or any portion hereof, U.S. EPA may carry out the required actions unilaterally, pursuant to Section 104 of CERCLA, 42 U.S.C. §9604, and/or may seek judicial enforcement of this Settlement Agreement pursuant to Section 106 of CERCLA, 42 U.S.C. §9606.

62. Notwithstanding any other provision of this Section, U.S. EPA may, in its unreviewable discretion, waive in writing any portion of stipulated penalties or interest that have accrued pursuant to this Settlement Agreement.

XVIII. COVENANT NOT TO SUE BY U.S. EPA

63. In consideration of the actions that will be performed and the payments that will be made by Respondent under the terms of this Settlement Agreement, and except as otherwise specifically provided in this Settlement Agreement, U.S. EPA covenants not to sue or to take administrative action against Respondent pursuant to Sections 106 and 107(a) of CERCLA, 42 U.S.C. §§ 9606 and 9607(a), for the Work and Future Response Costs. This covenant not to sue shall take effect upon the Effective Date and is conditioned upon the complete and satisfactory performance by Respondent of all obligations under this Settlement Agreement, including, but not limited to, payment of Future Response Costs pursuant to Section XV. This covenant not to sue extends only to Respondent and does not extend to any other person.

XIX. RESERVATIONS OF RIGHTS BY U.S. EPA

64. Except as specifically provided in this Settlement Agreement, nothing herein shall limit the power and authority of U.S. EPA or the United States to take, direct, or order all actions necessary to protect public health, welfare, or the environment or to prevent, abate, or minimize an actual or threatened release of hazardous substances, pollutants or contaminants, or hazardous or solid waste on, at, or from the Site (including carrying out the required actions unilaterally pursuant to Section 104 of CERCLA, 42 U.S.C. § 9604, if Respondent violates this Settlement Agreement or any portion thereof). Further, nothing herein shall prevent U.S. EPA from seeking legal or equitable relief to enforce the terms of this Settlement Agreement, from taking other legal or equitable action as it deems appropriate and necessary, or from requiring the Respondent in the future to perform additional activities pursuant to CERCLA or any other applicable law.
65. The covenant set forth in Section XVIII (Covenant Not To Sue By U.S. EPA) above does not pertain to any matters other than those expressly identified therein. U.S. EPA reserves, and this Settlement Agreement is without prejudice to, all rights against Respondent with respect to all other matters, including, but not limited to:
- a. liability for failure by Respondent to meet a requirement of this Settlement Agreement;
 - b. liability for costs not included within the definition of Future Response Costs;
 - c. liability for performance of response action other than the Work;

- d. criminal liability;
- e. liability for violations of federal or state law that occur during or after implementation of the Work;
- f. liability for damages for injury to, destruction of, or loss of natural resources, and for the costs of any natural resource damage assessments;
- g. liability arising from the past, present, or future disposal, release or threat of release of Waste Materials outside of the Site; and
- h. liability for costs incurred or to be incurred by the Agency for Toxic Substances and Disease Registry related to the Site not paid as Future Response Costs under this Settlement Agreement.

XX. COVENANT NOT TO SUE BY RESPONDENT

66. Covenant Not to Sue the United States by Respondent. Except as specifically provided in this Settlement Agreement, Respondent covenants not to sue and agrees not to assert any claims or causes of action against the United States, or its contractors or employees, with respect to the Work, Future Response Costs, or this Settlement Agreement, including but not limited to:
- a. any direct or indirect claim for reimbursement from the Hazardous Substance Superfund established by 26 U.S.C. § 9507, based on Sections 106(b)(2), 107, 111, 112, or 113 of CERCLA, 42 U.S.C. §§ 9606(b)(2), 9607, 9611, 9612, or 9613, or any other provision of law;
 - b. any claim arising out of the Work or arising out of response actions at or in connection with the Site, including any claim under the United States Constitution, the Michigan Constitution, the Tucker Act, 28 U.S.C. § 1491, the Equal Access to Justice Act, 28 U.S.C. § 2412, as amended, or at common law; or
 - c. any claim against the United States pursuant to CERCLA, 42 U.S.C. § 9601, *et seq.*, relating to the Work or Future Response Costs.
67. These covenants not to sue shall not apply in the event the United States brings a cause of action or issues an order pursuant to the reservations set forth in Paragraphs 65(b), (c), and (e)-(g), but only to the extent that Respondent's claims arise from the same response action, response costs, or damages that the United States is seeking pursuant to the applicable reservation.

68. Nothing in this Agreement shall be deemed to constitute approval or preauthorization of a claim within the meaning of Section 111 of CERCLA, 42 U.S.C. § 9611, or 40 C.F.R. § 300.700(d).
69. Respondent agrees not to seek judicial review of a decision to list the Site on the NPL at any time after the Effective Date of this Settlement Agreement based on a claim that changed site conditions that resulted from the performance of the Work in any way affected the basis for listing the Site.

XXI. OTHER CLAIMS

70. By issuance of this Settlement Agreement, the United States and U.S. EPA assume no liability for injuries or damages to persons or property resulting from any acts or omissions of Respondent. The United States or U.S. EPA shall not be deemed a party to any contract entered into by Respondent or its directors, officers, employees, agents, successors, representatives, assigns, contractors, or consultants in carrying out actions pursuant to this Settlement Agreement.
71. Except as expressly provided in Section XVIII (Covenant Not to Sue by U.S. EPA), nothing in this Settlement Agreement constitutes a satisfaction of or release from any claim or cause of action against Respondent or any person not a party to this Settlement Agreement, for any liability such person may have under CERCLA, other statutes, or common law, including but not limited to any claims of the United States for costs, damages and interest under Sections 106 and 107 of CERCLA, 42 U.S.C. §§ 9606 and 9607.
72. No action or decision by U.S. EPA pursuant to this Settlement Agreement shall give rise to any right to judicial review, except as set forth in Section 113(h) of CERCLA, 42 U.S.C. § 9613(h).

XXII. CONTRIBUTION

73. The Parties agree that this Settlement Agreement constitutes an administrative settlement pursuant to which the Respondent has, as of the Effective Date, resolved liability to the United States within the meaning of Sections 113(f)(2) and 122(h)(4) of CERCLA, 42 U.S.C. §§ 9613(f)(2) and 9622(h)(4), and is entitled, as of the Effective Date, to protection from contribution actions or claims as provided by Sections 113(f)(2) and 122(h)(4) of CERCLA, 42 U.S.C. §§ 9613(f)(2) and 9622(h)(4), or as may be otherwise provided by law, for “matters addressed” in this Settlement Agreement. The “matters addressed” in this Settlement Agreement are the Work and Future Response Costs.
74. The Parties further agree that this Settlement Agreement constitutes an administrative settlement pursuant to which the Respondent has, as of the Effective Date, resolved its

liability to the United States within the meaning of Section 113(f)(3)(B) of CERCLA, 42 U.S.C. § 9613(f)(3)(B).

75. Nothing in this Settlement Agreement precludes the United States or Respondent from asserting any claims, causes of action, or demands for indemnification, contribution, or cost recovery against any persons not Parties to this Settlement Agreement. Nothing herein diminishes the right of the United States, pursuant to Section 113(f)(2) and (3), 42 U.S.C. § 9613(f)(2) and (3), to pursue any such persons to obtain additional response costs or response action, and to enter into settlements that give rise to contribution protection pursuant to Section 113(f)(2) of CERCLA, 42 U.S.C. § 9613(f)(2).
76. Respondent shall, with respect to any suit or claim brought by it for matters related to this Settlement Agreement, notify EPA in writing no later than 60 days prior to the initiation of such suit or claim. Respondent also shall, with respect to any suit or claim brought against it for matters related to this Settlement Agreement, notify EPA in writing within 10 days after service of the complaint or claim upon it. In addition, Respondent shall notify EPA within 10 days after service or receipt of any Motion for Summary Judgment and within 10 days after receipt of any order from a court setting a case for trial, for matters related to this Settlement Agreement.

XXIII. INDEMNIFICATION

77. The United States does not assume any liability by entering into this Settlement Agreement or by virtue of any designation of Respondent as U.S. EPA's authorized representatives under Section 104(e) of CERCLA, 42 U.S.C. § 9604(e), and 40 C.F.R. 300.400(d)(3). Respondent shall indemnify, save and hold harmless the United States, its officials, agents, contractors, subcontractors, employees and representatives for or from any and all claims or causes of action arising from, or on account of, negligent or other wrongful acts or omissions of Respondent, its officers, directors, employees, agents, contractors, or subcontractors, and any persons acting on Respondent's behalf or under their control, in carrying out activities pursuant to this Settlement Agreement. In addition, Respondent agrees to pay the United States all costs it incurs, including but not limited to attorneys' fees and other expenses of litigation and settlement arising from, or on account of, claims made against the United States based on negligent or other wrongful acts or omissions of Respondent, its officers, directors, employees, agents, contractors, subcontractors, and any persons acting on its behalf or under its control, in carrying out activities pursuant to this Settlement Agreement. The United States shall not be held out as a party to any contract entered into by or on behalf of Respondent in carrying out activities pursuant to this Settlement Agreement. Neither Respondent nor any such contractor shall be considered an agent of the United States. The Federal Tort Claims Act (28 U.S.C. §§ 2671, 2680) provides coverage for injury or loss of property, or injury or death caused by the negligent or wrongful act or omission of an employee of U.S. EPA while acting within the scope of his or her employment, under circumstances

where U.S. EPA, if a private person, would be liable to the claimant in accordance with the law of the place where the act or omission occurred.

78. The United States shall give Respondent notice of any claim for which the United States plans to seek indemnification pursuant to this Section and shall consult with Respondent prior to settling such claim.
79. Respondent covenants not to sue and agrees not to assert any claims or causes of action against the United States for damages or reimbursement or for set-off of any payments made or to be made to the United States, arising from or on account of any contract, agreement, or arrangement between Respondent and any person for performance of Work on or relating to the Site, including, but not limited to, claims on account of construction delays. In addition, Respondent shall indemnify and hold harmless the United States with respect to any and all claims for damages or reimbursement arising from or on account of any contract, agreement, or arrangement between Respondent and any person for performance of Work on or relating to the Site, including, but not limited to, claims on account of construction delays.

XXIV. MODIFICATIONS

80. The RPM/OSC may modify any plan or schedule in writing or by oral direction. Any oral modification will be memorialized in writing by U.S. EPA promptly, but shall have as its effective date the date of the RPM/OSC's oral direction. Any other requirements of this Settlement Agreement may be modified in writing by mutual agreement of the parties.
81. If Respondent seeks permission to deviate from any approved work plan or schedule, Respondent's Project Coordinator shall submit a written request to U.S. EPA for approval outlining the proposed modification and its basis. Respondent may not proceed with the requested deviation until receiving oral or written approval from the RPM/OSC pursuant to Paragraph 80.
82. No informal advice, guidance, suggestion, or comment by the RPM/OSC or other U.S. EPA representatives regarding any deliverable submitted by Respondent shall relieve Respondent of its obligation to obtain any formal approval required by this Settlement Agreement, or to comply with all requirements of this Settlement Agreement, unless it is formally modified.

XXV. NOTICE OF COMPLETION OF WORK

83. When U.S. EPA determines, after U.S. EPA's review of the Final Report, that all Work has been fully performed in accordance with this Settlement Agreement, with the exception of any continuing obligations required by this Settlement Agreement,

including, *e.g.*, Post-Removal Site Controls, land, water or other resource use restrictions, payment of Future Response Costs, or record retention, U.S. EPA will provide written notice to Respondent. If U.S. EPA determines that any such Work has not been completed in accordance with this Settlement Agreement, U.S. EPA will notify Respondent, provide a list of the deficiencies, and require that Respondent modify the Work Plan if appropriate in order to correct such deficiencies. Respondent shall implement the modified and approved Work Plan and shall submit a modified Final Report in accordance with the U.S. EPA notice. Failure by Respondent to implement the approved modified Work Plan shall be a violation of this Settlement Agreement.

XXVI. FINANCIAL ASSURANCE

84. On, or before, August 31, 2020, or within 45 days of the effective date, whichever is later, Respondent shall establish and maintain financial security in the amount of \$2,000,000 in one or more of the following forms:
- a. A surety bond guaranteeing performance of the Work;
 - b. One or more irrevocable letters of credit equaling the total estimated cost of the Work;
 - c. A trust fund;
 - d. A guarantee to perform the Work by one or more parent corporations or subsidiaries, or by one or more unrelated corporations that have a substantial business relationship with at least one of Respondents; or
 - e. A demonstration that Respondent satisfies the requirements of 40 C.F.R. Part 264.143(f). For these purposes, references in 40 C.F.R. § 264.143(f) to the “sum of current closure and post-closure costs estimates and the current plugging and abandonment costs estimates” shall mean the amount of financial security specified above. If Respondent seeks to provide a demonstration under 40 C.F.R. § 264.143(f) and has provided a similar demonstration at other RCRA or CERCLA sites, the amount for which it is providing financial assurance at those other sites should generally be added to the estimated costs of the Work for this Paragraph.
85. If Respondent seeks to demonstrate the ability to complete the Work through a guarantee by a third party pursuant to Paragraph 84(d) of this Section, Respondent shall demonstrate that the guarantor satisfies the requirements of 40 C.F.R. Part 264.143(f). If Respondent seeks to demonstrate its ability to complete the Work by means of the financial test or the corporate guarantee pursuant to Paragraph 84(d) or (e) of this Section, Respondent shall resubmit sworn statements conveying the information required by 40 C.F.R. Part 264.143(f) annually, within 90 days after the close of each such entity’s fiscal year. If U.S. EPA determines at any time that the financial assurances provided

pursuant to this Section are inadequate, Respondent shall, within 30 days of receipt of notice of U.S. EPA's determination, obtain and present to U.S. EPA for approval one of the other forms of financial assurance listed in Paragraph 84 of this Section.

Respondent's inability to demonstrate financial ability to complete the Work shall not excuse performance of any activities required under this Settlement Agreement.

86. If, after the Effective Date, U.S. EPA determines at any time that the amount of financial security provided pursuant to this Section is inadequate, then Respondent shall, within 30 days of receipt of notice of U.S. EPA's determination, obtain and present to U.S. EPA for approval additional financial security in the amount designated by U.S. EPA and in one of the forms of financial assurance listed in Paragraph 84 of this Section. If, after the Effective Date, Respondent can show that the estimated cost to complete the remaining Work has diminished below the amount set forth in Paragraph 84 of this Section, Respondent may, on any anniversary date of the Effective Date, or at any other time agreed to by the Parties, reduce the amount of the financial security provided under this Section to the estimated cost of the remaining Work to be performed. Respondent shall submit a proposal for such reduction to U.S. EPA, in accordance with the requirements of this Section, and may reduce the amount of the security upon approval by U.S. EPA. In the event of a dispute, Respondent may reduce the amount of the security in accordance with the written decision resolving the dispute.

87. Respondent may change the form of financial assurance provided under this Section at any time, upon notice to and approval by U.S. EPA, provided that the new form of assurance meets the requirements of this Section. In the event of a dispute, Respondent may change the form of the financial assurance only in accordance with the written decision resolving the dispute.

88. Access to Financial Assurance

- a. If U.S. EPA carries out the required actions of this Settlement Agreement unilaterally pursuant to Section 104 of CERCLA, 42 U.S.C. §9604, then, in accordance with any applicable financial assurance mechanism, U.S. EPA is entitled to: (1) the performance of the Work; and/or (2) require that any funds guaranteed be paid in accordance with Paragraph 88.c. In this case, if either: (1) U.S. EPA is unable for any reason to promptly secure the resources guaranteed under any applicable financial assurance mechanism, whether in cash or in kind, to continue and complete the Work; or (2) the financial assurance is provided under Paragraph 84.d or 81.e then U.S. EPA may demand an amount, as determined by U.S. EPA, sufficient to cover the cost of the remaining Work to be performed. Respondent shall, within 45 days of such demand, pay the amount demanded as directed by U.S. EPA.
- b. If U.S. EPA is notified by the issuer of a financial assurance mechanism that it intends to cancel such mechanism, and the Respondent fails to provide an alternative financial assurance mechanism in accordance with this Section at least 30 days prior

to the cancellation date, the funds guaranteed under such mechanism must be paid prior to cancellation in accordance with Paragraph 88.c.

- c. Any amounts required to be paid under this Paragraph 88 shall be, as directed by U.S. EPA: (i) paid to U.S. EPA in order to facilitate the completion of the Work by U.S. EPA or by another person; or (ii) deposited into an interest-bearing account, established at a duly chartered bank or trust company that is insured by the FDIC, in order to facilitate the completion of the Work by another person. If payment is made to U.S. EPA, U.S. EPA may deposit the payment into the EPA Hazardous Substance Superfund or into the TRSR&B Site Special Account within the EPA Hazardous Substance Superfund to be retained and used to conduct or finance response actions at or in connection with the Site, or to be transferred by U.S. EPA to the EPA Hazardous Substance Superfund.

89. Release, Cancellation, or Discontinuation of Financial Assurance. Respondent may release, cancel, or discontinue any financial assurance provided under this Section only: (a) if U.S. EPA issues a Notice of Completion of Work under Section XXV (Notice of Completion of Work); (b) in accordance with U.S. EPA's approval of such release, cancellation, or discontinuation; or (c) if there is a dispute regarding the release, cancellation, or discontinuance of any financial assurance, in accordance with the agreement or final decision resolving such dispute under Section XV (Dispute Resolution).

XXVII. INSURANCE

90. At least 7 days prior to commencing any on-Site work under this Settlement Agreement, Respondent shall secure, and shall maintain until the first anniversary after issuance of Notice of Completion of Work pursuant to Section XXV (Notice of Completion of Work), commercial general liability insurance with limits of one-million dollars (\$1,000,000), for any one occurrence, and automobile insurance with limits of one-million dollars (\$1,000,000), combined single limit, naming U.S. EPA as an additional insured with respect to all liability arising out of the activities performed by or on behalf of Respondent pursuant to this Settlement Agreement. Within the same time period, Respondent shall provide U.S. EPA with certificates of such insurance and a copy of each insurance policy. Respondent shall resubmit such certificates and copies of policies each year on the anniversary of the Effective Date. In addition, for the duration of the Settlement Agreement, Respondent shall satisfy, or shall ensure that its contractors or subcontractors satisfy, all applicable laws and regulations regarding the provision of worker's compensation insurance for all persons performing the Work on behalf of Respondent in furtherance of this Settlement Agreement. If Respondent demonstrates by evidence satisfactory to U.S. EPA that any contractor or subcontractor maintains insurance equivalent to that described above, or insurance covering some or all of the same risks but in an equal or lesser amount, then Respondent need provide only that

portion of the insurance described above which is not maintained by such contractor or subcontractor.

XXVIII. SEVERABILITY/INTEGRATION/ATTACHMENTS

91. If a court issues an order that invalidates any provision of this Settlement Agreement or finds that Respondent has sufficient cause not to comply with one or more provisions of this Settlement Agreement, Respondent shall remain bound to comply with all provisions of this Settlement Agreement not invalidated or determined to be subject to a sufficient cause defense by the court's order.
92. This Settlement Agreement and its attachments constitute the final, complete, and exclusive agreement and understanding among the Parties with respect to the settlement embodied in this Settlement Agreement. The parties acknowledge that there are no representations, agreements or understandings relating to the settlement other than those expressly contained in this Settlement Agreement. The following attachments are incorporated into this Settlement Agreement:

Attachment A – Action Memorandum

Attachment B – MGI Location and Land Use Figures

XXIX. EFFECTIVE DATE

93. This Settlement Agreement shall be effective upon receipt by Respondent of a copy of this Settlement Agreement signed by the Director of the Superfund & Emergency Management Division, U.S. EPA Region 5.


IN THE MATTER OF:

Middleground Island of the TRSR&B Site
The Dow Chemical Company
Midland, Michigan, 48667

The undersigned representative of Respondent certifies he/she is fully authorized to enter into the terms and conditions of this Settlement Agreement and to execute and legally bind the Respondent to this Settlement Agreement.

Agreed this day of 2020:

For Respondent: The Dow Chemical Company

By:  **Mary Draves**
Digitally signed by Mary
Draves
Date: 2020.08.18 13:39:33
-04'00'

Mary Draves
Vice President and Chief Sustainability Officer
EH&S and Sustainability
The Dow Chemical Company

Date: _____

IN THE MATTER OF:

Middleground Island of the TRSR&B Site
The Dow Chemical Company
Midland, Michigan, 48667

It is so ORDERED and Agreed this day of 2020:

By:



Digitally signed by DOUGLAS
BALLOTTI
Date: 2020.08.28 09:28:58 -05'00'

Douglas Ballotti, Director
Superfund & Emergency Management Division
United States Environmental Protection Agency
Region 5

Date: August 28, 2020

ATTACHMENT A

Action Memorandum



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 5
77 WEST JACKSON BOULEVARD
CHICAGO, IL 60604-3590

September 3, 2020

REPLY TO THE ATTENTION OF:
S-6J

MEMORANDUM

SUBJECT: ENFORCEMENT ACTION MEMORANDUM – Request for Approval of Action Memorandum for Non-Time Critical Removal Action at Middleground Island of the Tittabawassee River, Saginaw River & Bay Site, Michigan (Site ID #B5KF)

FROM: Mary P. Logan, Remedial Project Manager

THRU: Nefertiti DiCosmo, Chief
Remedial Response Section 5

Joan Tanaka, Chief
Remedial Response Branch 1

Jason H. El-Zein, Chief
Emergency Response Branch 1

TO: Douglas Ballotti, Director
Superfund & Emergency Management Division

I. PURPOSE

The purpose of this memorandum is to request approval of this Action Memorandum for a non-time critical removal action (NTCRA) to address contaminated soil in residential yards at Middleground Island (MGI) of the Tittabawassee River, Saginaw River & Bay Site, Michigan (Site). The general location of MGI is depicted in Attachment A to this Action Memorandum.

This NTCRA will mitigate actual or potential threats to public health, welfare, or the environment presented by the presence of an uncontrolled release or threat of release of hazardous substances, pollutants, or contaminants, as identified by the presence of elevated levels of polychlorinated dibenzo-p-dioxins (dioxins) and/or polychlorinated dibenzofurans (furans) in soil in residential yards on MGI. More specifically, soil at MGI poses a risk due to actual or potential exposure to nearby human populations from hazardous substances or

pollutants or contaminants. Another factor that may be applicable is high levels of hazardous substances or pollutants or contaminants in the Middleground Island floodplain soil largely at or near the surface that may migrate. Hazardous substances or pollutants or contaminants have or may have come to be located on MGI from The Dow Chemical Company (Dow) Midland Plant property, with an address of 1000 East Main Street, 1790 Building, Midland, Michigan, 48667.

Work under this Action Memorandum will generally occur at specific residential properties on MGI and nearby areas within the Site. Soil at some residential properties on MGI contain elevated levels of dioxin (primarily furans). The term “dioxin” refers to a large family of similar chemicals, including furans. The United States Environmental Protection Agency (U.S. EPA) has concluded that dioxin may cause cancer or other human health effects such as skin problems, liver damage, and reproductive issues, depending on exposures. Dioxin is not created intentionally; in this case, dioxin formed as a byproduct of Dow’s early manufacturing processes. This Action Memorandum discusses dioxin concentrations as the toxic equivalence quotient (TEQ) – a summed estimate of the relative toxicity of the congeners as compared to 2,3,7,8-tetrachlorodibenzo-p-dioxin.

The proposed response actions include removing contaminated soil in people’s yards, replacing it with clean soil, and restoring grasses and plants. Eligible residential properties are those where soil tests show dioxin levels greater than the site-specific residential cleanup number of 250 parts per trillion parts (ppt) TEQ.

U.S. EPA and Dow have agreed to enter into an Administrative Settlement Agreement and Order on Consent (MGI AOC), pursuant to which Dow will perform the removal action described herein with U.S. EPA oversight.

This action will be conducted in accordance with Section 104(a)(1) of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), 42 U.S.C. § 9604(a)(1), and 40 C.F.R. § 300.415 (*Removal Action*) of the National Oil and Hazardous Substances Pollution Contingency Plan (NCP) to abate or eliminate the threats posed to public health and/or the environment. U.S. EPA has consulted, and will continue to consult with, the Michigan Department of Environment, Great Lakes, and Energy (EGLE)¹ on MGI response actions. This action is anticipated to require one construction season to implement and is expected to begin in 2021. This action will be implemented by Dow, the potentially responsible party, under a CERCLA Section 106/122 agreement. As such, pursuant to NCP Section 300.415(k)(3), the requirements to terminate response after \$2 million has been obligated or 12 months have elapsed from the date of the initial response do not apply.

II. SITE CONDITIONS AND BACKGROUND

CERCLIS ID#: MID980994354

Category: Non-Time Critical Removal Action

¹ Formerly Michigan Department of Environmental Quality or MDEQ.

A. Physical Location and Description

The Tittabawassee River, Saginaw River & Bay Site starts at the confluence of the Tittabawassee and Chippewa Rivers at Midland, MI. The Site is defined in the Administrative Settlement Agreement and Order on Consent for Remedial Investigation, Feasibility Study and/or Engineering Evaluation and Cost Analysis, and Response Design, entered In The Matter of: The Dow Chemical Company, CERCLA Docket No. V-W-10-C-942, with an effective date of January 21, 2010 (2010 AOC). The Site is the area located in and along the lower 24 miles of the Tittabawassee River and its floodplains, starting upstream of Dow's Midland Plant, and extending downstream to, and including, the 22-mile Saginaw River and its floodplains, and Saginaw Bay; and any other areas in or proximate to the Tittabawassee River and its floodplains, the Saginaw River and its floodplains, and Saginaw Bay, where hazardous substances, pollutants, or contaminants from the Midland Plant have or may have come to be located. The Site is being addressed in a general upstream to downstream approach.

Middleground Island is in the Saginaw River approximately seven miles upstream (south) of Saginaw Bay (see Attachment A). About 41 acres of the 175-acre island consists of residential properties or properties that could become residential. The remainder includes recreational, commercial, and closed waste disposal properties. In the 1950s, a few residential homes began to appear on the southern point of MGI. Development of additional homes continued during the next few decades and currently there are 37 residential homes on the island. Current land use on MGI is depicted in Attachment B. Human access to the Site is available to people living at privately owned properties or visiting the island. Wildlife in the area also has access to the Site.

B. Background

The Midland Plant began operations in 1897 and eventually grew to be a 1,900 acre facility. Over the time of its operation, the Midland Plant has produced over 1,000 different organic and inorganic chemicals. Early in the history of the Midland Plant, wastes were discharged directly into the Tittabawassee River and, later, wastes were stored and partially treated in settling ponds prior to discharge to the River. One major historical process used at the Midland Plant was the chloralkali process, which used electric current to extract chemicals from brine. Much of the TEQ throughout the Site is believed to have been released in the early 1900s in the form of furan-contaminated graphitic particles that came from breakdown of the carbon anodes used in the chloralkali process. The furan contamination was unknown at that time and was formed as a byproduct of the process. Once released to the Tittabawassee River, the graphitic waste particles moved downstream with the bedload and mixed with Saginaw River sediment. Current waste management practices, including the wastewater treatment plant and groundwater and surface water control, have reduced or eliminated non-permitted releases from Dow's Midland plant.

Historically, Middleground Island was primarily wetlands until the island was developed for more industrial use by logging and salt industries in the 1800s and early 1900s. Starting around the turn of the twentieth century, Middleground Island was used for both controlled and uncontrolled landfilling and dumping of waste materials including construction debris, brush,

and river dredge material. The more well-documented disposal sites on the island were operated by the City of Bay City in the central portion of the island along the western bank. Bay City Middleground Landfill operated from 1956 until 1984 when the State ordered this landfill closed. It was proposed to the National Priorities List (NPL) in 1995 but addressed under the State's remediation program.

The dioxins found in Middleground Island soil are believed to be from the historical use of dredge materials as fill on the island. In 1910, the Saginaw River became an authorized federal navigation channel. Regular dredging in the Saginaw River has been conducted over time by the U.S. Army Corps of Engineers (Corps). The Corps created the Middleground confined disposal facility (CDF) and used it as a disposal location for Saginaw River dredge material from 1973 until 1984. Dredged sediment from the CDF was used as daily cover material at the adjacent Bay City Middleground Landfill. Reportedly, the dredged sediment was also available for use as fill material in island yards.

Dioxins and furans are listed as hazardous constituents in Appendix VIII to Part 261 of Title 40 of the Code of Federal Regulations, 40 C.F.R. Part 261 app. VIII, and Part 111 of Natural Resources and Environmental Protection Act (NREPA), Mich. Comp. Laws §§ 324.11101-324.11153, and as hazardous substances in Part 201 of NREPA, Mich. Comp. Laws §§ 324.20101-324.20142.

The former MDEQ, now EGLE, reissued to Dow its current RCRA Hazardous Waste Management Facility Operating License for the Midland Plant, with an effective date of September 25, 2015 (License). Under its License, and the previous licenses, Dow has been conducting corrective action work including characterization of the Tittabawassee River. Dow continues to conduct corrective action work under the License on the plant site and off-site in the City of Midland. Corrective action work also is identified in the January 19, 2005, Framework for an Agreement between the State of Michigan and the Dow Chemical Company. Under work previously conducted under the RCRA License, primary source control has been completed.

U.S. EPA's and EGLE's understanding of potential hazardous substances in MGI soil is based on various sampling, analysis, and studies regarding dioxin/furans and other contaminants in the Tittabawassee River, the Saginaw River, and the Saginaw Bay. The sampling, analysis, studies, and orders relied on by U.S. EPA and EGLE include, but are not limited to, those listed in the Administrative Record index found in Attachment C.

In December 2008, negotiations with Dow began for a comprehensive approach to addressing contamination related to Dow in the rivers and Bay. On January 14, 2010, using CERCLA authority, U.S. EPA signed the 2010 AOC with the MDEQ and Dow, requiring Dow to perform investigations, and develop and design cleanup options selected by U.S. EPA for areas such as MGI, and other areas. The 2010 AOC became effective on January 21, 2010, and work under the 2010 AOC is ongoing.

The 2010 AOC established a comprehensive site-wide management approach for the Site. This approach includes developing a set of prioritized actions (including this MGI NTCRA) intended to reduce exposure to and transport of contaminated sediment, riverbanks and floodplain soil to reduce risks to human health and ecological receptors. Work under the 2010 AOC has generally been upstream-to-downstream, segment-by-segment, starting adjacent to Dow's Midland Plant to control potential secondary sources in sediment and bank deposits.

Mitigation of potential human exposure to Site contaminants is a key element of the site-wide management approach because completion of all assessment and remediation is expected to take several years. Interim exposure controls (including at MGI) have been provided ahead of cleanups. Cleanup of the Tittabawassee River floodplain is being addressed separately and in parallel with the Tittabawassee River segments, pursuant to a 2015 floodplain NTCRA. This MGI Action Memorandum will control potential unacceptable human exposures to dioxin contamination in MGI soil.

C. Environmental Justice Analysis

An Environmental Justice (EJ) analysis for MGI of the Site is contained in Attachment D. Screening of the surrounding area used U.S. EPA's EJSCREEN Tool (see <https://www.epa.gov/ejscreen>). Region 5 reviewed environmental and demographic data for the residential area on MGI and determined there is a potential for EJ concerns at this location.

D. Risk Assessments, Cleanup Numbers, Health Consultations, and Advisories

1. Risk Assessments

The 2010 AOC and associated Statement of Work (2010 SOW) set forth requirements that Dow conduct human health and ecological risk assessments. Dow has not yet completed those risk assessments but will conduct them in accordance with the requirements of the 2010 SOW. Specifically, the 2010 SOW directs Dow to conduct residual risk assessments after substantial implementation of response actions. U.S. EPA, EGLE, and Dow initiated a Human Health Risk Assessment (HHRA) in 2018 that will assess residual dioxin/furan risk in all seven of the Tittabawassee River segments and the adjacent floodplains. Based on the results of that HHRA and ongoing monitoring, U.S. EPA, in consultation with EGLE, will assess whether additional response actions may be needed under CERCLA. Subsequently, a final Record of Decision(s) will be issued.

The MGI EE/CA presented detailed information obtained during a series of site investigations conducted by Dow and others. A brief summary of the findings is included in Section II.E, below. These investigations largely focused on dioxins and furans. The MGI EE/CA summarizes the nature and extent of TEQ in soil and evaluates the bases for response actions resulting from potential human direct contact exposure to MGI soil. A risk assessment was not conducted as part of the MGI EE/CA. Rather, MGI soil results were compared to U.S. EPA's site-specific health-based Cleanup Numbers discussed below. Seventeen of the 45 residential

sampling units (SUs) had dioxin levels exceeding 250 ppt TEQ, with a maximum of 1,290 ppt TEQ. This represents about 15 acres of the 175-acre island.

2. Site-Specific Dioxin TEQ Cleanup Numbers

In 2014, U.S. EPA, working with EGLE, established site-specific human direct contact dioxin criteria for floodplain soil (Cleanup Numbers). The Cleanup Number for maintained residential properties is 250 ppt TEQ. The Cleanup Number for all other land uses is 2,000 ppt TEQ. The Cleanup Numbers are based on site-specific data on climate, exposure to house dust vs. soil, and bioavailability. The numbers are based on potential non-cancer effects for the most sensitive receptor – the young child resident (i.e., a Hazard Index of approximately 1). The Cleanup Numbers also fall within acceptable cancer risk ranges.

Information regarding prenatal and postnatal health effects attributed to dioxin exposure and changes in risk assessment practices resulted in the necessity to more closely consider the potential for non-cancer adverse effects in developing dioxin Preliminary Remediation Goals (PRGs). Based on this information, U.S. EPA developed a dioxin oral Reference Dose (RfD) of $7.0E-10$ mg/kg-day that was finalized in February 2012. This RfD and U.S. EPA non-adjusted (default) exposure factors were used to calculate screening values that can be found in U.S. EPA's Regional Screening Levels – Generic Tables. U.S. EPA has an expectation that the Regions often will prefer site-specific data that can be used to adjust these values using site-specific exposure factors instead of the default exposure factors.

Because site-specific exposure data was available, U.S. EPA and EGLE calculated site-specific dioxin PRGs for a variety of human direct contact floodplain soil exposure scenarios. The calculations followed standard U.S. EPA and EGLE algorithms and used a combination of both standard default and site-specific input parameters. Potential PRGs were calculated to assess both non-cancer risks to meet a Hazard Quotient of 1 and cancer risks to meet U.S. EPA and EGLE risk ranges. Based on these calculations, U.S. EPA and EGLE proposed two site-specific human direct contact PRGs for floodplain soil: 250 ppt TEQ for maintained residential areas; and 2,000 ppt TEQ for other land use areas. The site-specific PRGs are based on the most sensitive receptor and direct contact exposure scenario within each land use, in both cases the young child resident. Thus, the PRGs are protective for all other human direct contact receptors and exposure scenarios. The PRG development, including a detailed discussion of site-specific exposure factors, is presented in U.S. EPA's technical document Site-Specific Preliminary Remediation Goals (Cleanup Goals) For Tittabawassee River Floodplain Soil.

U.S. EPA took public comment on a proposed cleanup plan for the Tittabawassee Floodplain, including the site-specific PRGs. U.S. EPA responded to comments on the PRGs in the Responsiveness Summary of the Tittabawassee River Floodplain Action Memorandum, dated January 8, 2015. In that Action Memorandum, U.S. EPA, in consultation with EGLE, finalized the PRGs of 250 ppt TEQ for maintained residential areas and 2,000 ppt TEQ for other land use areas as the site-specific numeric TEQ Cleanup Numbers for human direct contact with floodplain soil.

3. Health Consultations

EPA and EGLE work with health agencies such as the Agency for Toxic Substances and Disease Registry (ATSDR) and the Michigan Department of Health and Human Services (MDHHS, formerly Michigan Department of Community Health) to understand potential health effects to people from environmental contamination. ATSDR and MDHHS completed a number of health consultations for the Tittabawassee River, Saginaw River & Bay Site (found at <http://www.atsdr.cdc.gov/HAC/PHA/HCPHA.asp?State=MI>), including:

- 8/12/04 Health Consultation, Tittabawassee River Floodplain Dioxin Contamination, Tittabawassee River, Midland, Midland County, Michigan
- 4/29/05 Petitioned Health Consultation, Dioxins in Wild Game Taken from the Tittabawassee River Floodplain South of Midland, Midland and Saginaw Counties, Michigan
- 7/27/05 Tittabawassee River Fish Consumption Health Consultation, Tittabawassee River, Midland, Midland County, Michigan
- 11/1/07 A Pilot Exposure Investigation Report: Dioxin Exposure in Adults Living in the Tittabawassee River Floodplain
- 2/4/08 Health Consultation, Evaluation of Saginaw River Dioxin Exposures and Health Risks, Saginaw River, City of Saginaw, Saginaw County, Michigan
- 8/19/09 Health Consultation, Dioxin Contamination on Residential Property in the Tittabawassee River Floodplain, Saginaw County, Michigan

4. Advisories

The State of Michigan has issued fish consumption advisories for dioxins, PCBs, and mercury for the Tittabawassee and Saginaw Rivers and Saginaw Bay. Mercury is not Site related. These advisories are posted at multiple locations throughout the watershed. The advisories can be found online at

https://www.michigan.gov/documents/mdch/EAT_SAFE_FISH_IN_THE_SAGINAW_BAY_AREA_WEB_35692_9_7.pdf

The State of Michigan has issued the advisory “Eat Safe Wild Game from the Saginaw Bay Area” for the Saginaw and Tittabawassee River floodplains due to dioxin contamination. The wild game advisory can be found online at

http://www.michigan.gov/documents/mdch/Eat_Safe_Wild_Game_277942_7.pdf

The State of Michigan’s latest advisories are summarized in *Dioxins and Furans and Your Health along the Tittabawassee and Saginaw Rivers*. This brochure is found at

http://www.michigan.gov/documents/mdch/Dioxin_Exposure_and_Health_Final_420292_7.pdf

E. Site Assessments

The Administrative Records for the Site contains numerous reports which summarize the investigations conducted at the Tittabawassee River, Saginaw River & Bay Site to date. The Administrative Record Index for MGI is provided in Attachment C.

The lower Saginaw River floodplain characteristics, commercialization, topography, and flooding patterns and frequency are significantly different than those of the Tittabawassee River. The Current Conditions Report for the Saginaw River, Floodplain, and Bay, June 2008 (CCR), summarized existing floodplain sampling that had been conducted in the Lower Saginaw River by the State, the U.S. Army Corps of Engineers, and Dow between 1998 and 2008. The results reported in the CCR provided an overall representation of the dioxin and furan concentration range within the Saginaw River floodplain, which were substantially lower than levels in the Tittabawassee River floodplain.

Supplemental focused sampling and analysis has been performed under the 2010 SOW to characterize soil on MGI. In particular, the MGI EE/CA summarizes conditions. To provide an up-to-date screening of Saginaw River floodplain conditions Dow took incremental composite samples from soil in several areas along the Saginaw River in November 2018, including three samples from the residential (south) end of MGI. All three of the MGI samples had dioxin levels higher than U.S. EPA's residential Cleanup Number of 250 ppt TEQ.

In 2019 Dow took soil samples from many sampling units (SUs) on MGI. Most of the SUs were at residences or properties that are not currently residential but could be in the future. Seventeen of the 45 residential SUs had dioxin levels exceeding 250 ppt, with the maximum of 1,290 ppt TEQ. Property owners eligible for cleanup have been contacted by EPA. Interim exposure controls were offered and implemented at some residential properties in 2019. Dow also sampled the recreational areas at the north end of the island and some commercial properties in the center of the island. None of the other land use SUs exceeded U.S. EPA's other land use Cleanup Number of 2,000 ppt TEQ. Therefore, EPA's cleanup plan is focused on the residential areas. The 2018 and 2019 soil sampling documents that soil in some residential areas on MGI exceeds U.S. EPA's residential Cleanup Number. In total, about 15 acres are expected to be cleaned up. This amounts to about 35,000 in-place cubic yards or about 46,000 cubic yards of contaminated soil to truck off-site.

F. NPL Listing Status

Neither the Tittabawassee River, Saginaw River & Bay Site nor MGI are listed on the NPL. U.S. EPA is addressing the Tittabawassee River, Saginaw River & Bay Site under the Superfund Alternative (SA) approach, which uses the same investigation and cleanup process and standards for sites listed on the NPL. The SA approach is an alternative to listing a site on the NPL; it is not an alternative to Superfund or the Superfund process. Threshold eligibility criteria for using the SA approach are: site contaminants are significant enough that the site would be eligible for listing on the NPL (*i.e.*, the site would have a Hazard Ranking Score ≥ 28.5); a long-term response (*i.e.*, a remedial action) is anticipated at the site; and there is a willing, capable PRP who will negotiate and sign an agreement with EPA to perform the investigation and cleanup.

G. Maps, Pictures and Other Graphic Representations

A figure showing the general location of MGI is included as Attachment A to this Action Memorandum. A figure showing the current land use on MGI is included in Attachment B.

H. Other Actions to Date

1. Previous CERCLA Actions at Tittabawassee River, Saginaw River & Bay Site

In order to implement response actions at the Tittabawassee River, Saginaw River & Bay Site, U.S. EPA and Dow have entered into numerous separate AOCs under the authority of Sections 104, 106(a), 107, and 122 of CERCLA.

- a. On July 12, 2007, U.S. EPA and Dow entered into an AOC for a CERCLA time critical removal to dredge and dispose of a sediment deposit at Reach D adjacent to Dow's Midland plant. U.S. EPA provided Dow with notification of the completion of this AOC on October 15, 2008.
- b. On July 12, 2007, U.S. EPA and Dow entered into an AOC for a CERCLA time critical removal at Reaches J/K to remove and dispose of contaminated riverbank soil, cap a contaminated upland area, and fence off a contaminated wetland area. U.S. EPA provided Dow with notification of the completion of this AOC on May 2, 2008.
- c. On July 12, 2007, U.S. EPA and Dow entered into an AOC for a CERCLA time critical removal to dredge and dispose of a sediment deposit at Reach O. U.S. EPA provided Dow with notification of the completion of this AOC on April 10, 2008.
- d. On November 15, 2007, U.S. EPA and Dow entered into an AOC for a CERCLA time critical removal to dredge and dispose of a sediment deposit near Wickes Park in the Saginaw River. U.S. EPA provided Dow with notification of the completion of this AOC on August 4, 2008.
- e. On July 15, 2008, U.S. EPA and Dow entered into an AOC for a CERCLA time critical removal to remove and dispose of floodplain soil around residential properties at Riverside Boulevard and clean the inside of occupied homes. U.S. EPA provided Dow with notification of the completion of this AOC on February 1, 2010.
- f. On February 27, 2009, U.S. EPA and Dow entered into an AOC for a CERCLA time critical removal to remove and dispose of floodplain soil at West Michigan Park and conduct soil removal and/or barrier controls at adjacent residential properties. U.S. EPA provided Dow with notification of the completion of this AOC on September 11, 2012.

- g. On May 26, 2011, U.S. EPA and Dow entered into an AOC for a CERCLA non-time critical removal action to provide interim exposure controls at eligible floodplain properties. The work under this AOC is ongoing.
- h. On July 8, 2011, U.S. EPA and Dow entered into an AOC for a CERCLA non-time critical removal action to remove a small eroding island and cap adjacent sediment in Reach MM. U.S. EPA provided Dow with notification of the completion of this AOC on July 12, 2012.
- i. On November 1, 2011, U.S. EPA and Dow entered into an AOC for a CERCLA non-time critical removal action to remove and destroy dense non-aqueous phase liquids from the Tittabawassee River and install hydraulic control barriers and caps at SMAs in Segment 1. U.S. EPA provided Dow with notification of the completion of this AOC on September 27, 2017.
- j. On November 21, 2013, U.S. EPA and Dow entered into an AOC for a CERCLA non-time critical removal action to address SMAs and BMAs within Segment 2. U.S. EPA provided Dow with notification of the completion of this AOC on September 6, 2019.
- k. On January 8, 2015, U.S. EPA and Dow entered into an AOC for a CERCLA non-time critical removal action to address soil contaminated with dioxins and furans within the Tittabawassee River 8-year floodplain of the Tittabawassee River, Saginaw River & Bay site. The work under this AOC is ongoing.
- l. On February 25, 2016, U.S. EPA and Dow entered into an AOC for a CERCLA non-time critical removal action to address SMAs and BMAs within Segment 3. U.S. EPA provided Dow with notification of the completion of this AOC on October 3, 2019.
- m. On February 8, 2017, U.S. EPA and Dow entered into an AOC for a CERCLA non-time critical removal action to address SMAs and BMAs within Segments 4 & 5. The work under this AOC is ongoing.
- n. On May 21, 2019, U.S. EPA and Dow entered into an AOC for a CERCLA non-time critical removal action to address SMAs and BMAs within Segments 6 & 7. The work under this AOC is ongoing.

The AOCs listed above in g, k, m, and n are current actions and are further described in Section II.H.3 below.

2. Previous Actions at Middleground Island

There have been no previous CERCLA response actions at the residential area on MGI. U.S. EPA proposed the Bay City Middleground Landfill to the NPL in 1995 but site was not finalized on the NPL and the landfill is being addressed under the State's remediation program.

3. Current Actions

Dow, under U.S. EPA and MDEQ oversight, is addressing potential acute or near-term exposure risks at eligible properties in the floodplain through interim exposure controls pursuant to the May 26, 2011, AOC. Dow placed interim exposure controls at many floodplain properties, primarily in 2011 and 2012. As the floodplain work discussed below (January 8, 2015, AOC) is being implemented, the need for interim exposure controls at eligible properties is being superseded. However, this AOC remains open until floodplain obligations are met.

Response options are generally developed and implemented in an upstream-to-downstream, segment-by-segment fashion for in-channel sediment and riverbanks. Pursuant to the February 8, 2017 AOC, Dow started cleanup of SMAs and BMAs in Segments 4 & 5 in 2017, with construction largely complete in 2019. Pursuant to the May 21, 2019 AOC, Dow started cleanup of SMAs and BMAs in Segments 6 & 7 in 2019 and work is expected to be largely complete in 2021. The work required by these NTCRAs is ongoing, ensuring the native vegetation planted on the BMAs is well established, and post-removal site controls are developed and implemented.

Dow, with oversight by U.S. EPA and MDEQ, is cleaning up dioxin-contaminated soil in frequently flooded areas along the Tittabawassee River pursuant to the January 8, 2015, AOC. The eight-year floodplain includes about 4,500 acres and extends along 21 miles of the river below Dow's Midland plant. Not all areas in the floodplain will need a cleanup. U.S. EPA is assessing more than 700 properties to determine if a cleanup is needed and the most appropriate approach at eligible properties. Dow began cleanup of the first floodplain properties in the summer of 2015, and floodplain cleanup is an ongoing, multi-year project.

I. State and Local Authorities' Role

1. State and Local Actions to Date

Dow's current License for the Midland Plant was reissued by EGLE with an effective date of September 25, 2015. Under its License and the January 19, 2005, Framework for an Agreement between the State of Michigan and The Dow Chemical Company, Dow conducted corrective action work including limited characterization of the Saginaw River and Bay. U.S. EPA has partnered with EGLE, as described under the 2010 AOC, to continue to undertake CERCLA activities at the Tittabawassee River, Saginaw River & Bay Site. The CERCLA actions are intended to also meet Dow's RCRA corrective action requirements for the Tittabawassee River, Saginaw River & Bay Site.

For MGI U.S. EPA and EGLE have consulted extensively with MDHHS and local health departments. The health departments have participated in U.S. EPA meetings and provide advice to the public. The residential area on MGI is generally within Frankenlust Township jurisdiction. The remainder of MGI, including most of Evergreen Drive, is within the City of Bay City. Before the public comment period started, U.S. EPA, EGLE, and/or Dow communicated to these entities about the proposed response actions, the potential impacts to

MGI properties, and their right to provide public comment. The City of Bay City, Frankenlust Township, and the Bay County Road Commission provided comments that are summarized and responded to in the Responsiveness Summary found at Attachment E. U.S. EPA, EGLE, and Dow will continue to work with these local entities as the cleanup progresses.

2. Potential for Continued State/Local Response

U.S. EPA anticipates a continuing partnership with EGLE as outlined in the 2010 AOC. U.S. EPA, EGLE, and Dow will continue to work closely with the health departments and local entities as the response actions are designed and implemented.

III. THREATS TO PUBLIC HEALTH OR WELFARE OR THE ENVIRONMENT, AND STATUTORY AND REGULATORY AUTHORITIES

The conditions present at Middleground Island constitute a threat to public health, welfare, or the environment based upon the factors set forth in the NCP, 40 C.F.R. § 300.415(b)(2). These factors include, but are not limited to, the following:

A. Actual or potential exposure to nearby human populations, animals, or the food chain from hazardous substances, pollutants or contaminants.

This factor is present at the Site due to the existence of MGI surface soil contaminated with dioxins/furans at levels that may contribute to unacceptable risks in humans from direct contact exposure (i.e., inadvertent ingestion and dermal absorption).

B. High levels of hazardous substances or pollutants or contaminants in MGI floodplain soil largely at or near the surface that may migrate.

This factor is present at the Site due to the existence of elevated TEQ in some surface soil samples taken from 0 – 6 inches below ground surface. The Site is subject to periodic flooding.

IV. ENDANGERMENT DETERMINATION

Given the conditions at Middleground Island, the nature of the hazardous substance there, and the potential exposure pathways described above, the actual or threatened release of contaminants from Middleground Island, if not addressed by implementing the response actions selected in this Action Memorandum, may present an imminent and substantial endangerment to public health, or welfare, or the environment.

V. PROPOSED REMOVAL ACTION ACTIVITIES AND ESTIMATED COSTS

A. Proposed Removal Action Activities

1. Proposed Removal Action Description

The required response actions at MGI will, at a minimum, include the following tasks (collectively, the Work):

- Develop and implement a Work Plan. The actions described in the approved Work Plan and all approved designs shall include, but are not limited to, the following:
 - Conduct pre-removal field investigations to document pre-construction conditions on Evergreen Drive, each property that will undergo cleanup, temporary staging areas, and access and traffic routes. This documentation will be used to compare pre- and post-construction conditions.
 - Develop temporary staging areas and access to the Site to meet project requirements. Such areas may include, but are not limited to, soil staging, equipment storage and decontamination, mobilization/demobilization, worker access, and exclusion zones.
 - Attempt to gain access to sample properties MG_45-46 and MG_56. If access is provided, provide an addendum to the MGI sampling plan. Once approved, sample in accordance with the MGI sampling plan addendum. If soil exceeds 250 ppt TEQ the property will be eligible for cleanup.
 - For each eligible property, develop a property-specific design, after an opportunity for input from each property owner. The removal action activities developed in each property-specific design shall consist of: document pre-construction conditions; clear and prepare the area; excavate soil to the design depth; place a marker layer (if needed); backfill excavated areas with clean fill and/or topsoil to the design grade (generally the original grade, with topsoil as the surface lift); and restore the property per the property-specific design. Eligible properties currently include: MG_12-13; MG_14-15; MG_16-17; MG_18; MG_20-22; MG_29; MG_31; MG_32; MG_33; MG_38; MG_39; MG_41-42; MG_44; MG_50; and MG_52-55.
 - Obtain access agreements and implement the Work at each property parcel in accordance with the approved property-specific design and approved schedule.
 - Develop and implement a Traffic Management Plan.
 - Conduct monitoring during the construction phase of the Work in accordance with the Work Plan.
 - Transport and dispose of all soil, waste, and materials removed from the Site as a result of implementing the Work at approved locations in accordance with the Work Plan
 - Remove and restore the temporary access, mobilization, and staging areas.

- Develop a Restoration Plan and implement it for a minimum of two years, or as otherwise approved by the U.S. EPA RPM/OSC.
- Document completion of the Work at each property in accordance with the Work Plan.
- Develop and implement a Site Health and Safety Plan.
- Submit Progress Reports and a Final Report.

2. Contribution to Remedial Performance

The removal action implemented at MGI will address actual or potential short-term and/or long-term risks by reducing exposure to and/or transport of contaminated soil. In accordance with Section 300.415(d) of the NCP, U.S. EPA expects that this removal action shall, to the extent practicable, contribute to the efficient performance of any anticipated long-term remedial action with respect to the release concerned.

3. Analysis of Selected Response Actions

U.S. EPA selected the proposed response actions in this NTCRA based on careful consideration of information in the Administrative Record, including the EE/CA Approval Memorandum, the MGI EE/CA, public comments as evaluated in the Responsiveness Summary found at Attachment E, and other information in the Administrative Record.

U.S. EPA guidance establishes criteria for the evaluation of removal responses. Therefore, U.S. EPA evaluated the response actions in this NTCRA relative to effectiveness, implementability, and cost. Additionally, as required by the 2010 AOC, the MGI EE/CA further evaluated the potential response alternatives against the nine evaluation criteria established for remedial responses in Section 300.430(e)(9)(iii) of the NCP. The discussion below highlights the most relevant criteria in distinguishing between alternatives. U.S. EPA evaluated two technologies to clean up MGI yards: clean cover and removal and backfill. U.S. EPA, in consultation with EGLE, has selected the removal responses discussed above because this option provides the best balance of the evaluation criteria.

Effectiveness: The selected alternative, removal and backfill, is expected to help protect human health and the environment, meet the Cleanup Numbers, and comply with laws and regulations. The property-specific design of each eligible property will consider unique conditions, if any. The response actions contribute to effectiveness because:

- Both alternatives can be effective in the short term. Clean covers provide an immediate benefit by safely isolating the contamination. Once the soil is dug up and replaced, removal also provides an immediate benefit.

- Both alternatives would have short-term impacts such as limitations on property use, heavy equipment around properties, and noise that may be disruptive during the cleanup. If possible, these effects would be managed by construction practices and working with property owners. It's usually faster to install clean covers than to dig up and replace soil.
- Both alternatives would require most existing vegetation to be cleared away. Although yards will be replanted, mature trees and landscaped areas may need to be removed. Grassy areas will be easier to restore.
- Both alternatives are expected to result in truck traffic through the communities and potential traffic safety issues. There would also be air emissions from the transport.
 - Clean covers could require about 750 truckloads to deliver the cover materials.
 - Removal could require more than 1100 truckloads to haul away the contaminated soil and about 1100 truckloads to bring in clean replacement soil.
 - Trucks will travel more than 20 miles one-way to haul removed contaminated soil to an off-island location.
- Worker safety concerns involve working around and operating construction equipment, managing large amounts of contaminated soil and possible exposure to extreme weather conditions. These concerns would be managed by appropriate health and safety plans.
- Clean covers may be less reliable in the long-term because integrity of the cover relies on compliance of individual property owners with long-term land use restrictions. Covers must be monitored and may need maintenance to make sure they continue to be reliable. Removal would be effective in the long term because it permanently removes contaminated soil from yards.

Implementability: Either alternative can be carried out. Dow has successfully implemented similar actions at other areas in the Tittabawassee River floodplain. All equipment, personnel and material necessary to implement the alternatives should be locally available. The affected property owners generally seem to accept the proposal but are interested in potential impacts to the community (see Responsiveness Summary at Attachment E). EGLE supports U.S. EPA's recommended alternative. Some implementability concerns are:

- Traffic management will be one of the biggest implementation challenges. The only vehicle access to the island is via a busy two-lane road with two bridges. There are currently no traffic controls to turn on or off the island. On the island there is only one narrow, two-lane road (Evergreen Drive). Remedy-related construction traffic on the island will need to be carefully planned and managed.

- Agreements from owners must be obtained before conducting work on their property. Long-term agreements and institutional controls would be requested of property owners if a clean cover is placed and some owners may be reluctant to allow ongoing access or to place institutional controls.
- In order to approve the final location for long-term management of removed soils, U.S. EPA and EGLE need to ensure that the site meets all technical and legal requirements and that the owners and operators can provide the necessary long-term assurances.

Cost: The total estimated cost for the selected alternative, removal and backfill is estimated to be between \$1,700,000 and \$2,000,000. The cost range reflects different costs primarily related to transportation. Project costs will be refined as property-specific cleanup plans are developed.

4. Engineering Evaluation/Cost Analysis (EE/CA) and Public Comment

After U.S. EPA received the 2018 screening level results for the three MGI composite samples a communication strategy was developed and implemented. U.S. EPA, EGLE, and Dow communicated to all MGI property owners and other interested stakeholders. On or before May 3, 2020, U.S. EPA sent letters to MGI property owners and released a fact sheet titled “EPA’s Plans for Middleground Island in the Saginaw River.” This Fact Sheet described the initial results and U.S. EPA’s proposed next steps. U.S. EPA, with the assistance of EGLE, Dow, and State and local health departments, held availability sessions on May 15 and 21, 2020. These sessions provided information to MGI property owners and allowed owners to sign access agreements for additional soil sampling.

The 2010 SOW sets forth requirements to develop and submit response proposals. As it deems appropriate, U.S. EPA, in consultation with EGLE, may direct the use of U.S. EPA’s removal and/or remedial program authorities under CERCLA, and Dow shall submit either a Feasibility Study or an EE/CA consistent with the 2010 SOW requirements.

Based on a review of U.S. EPA’s guidance, the NCP, and conditions in MGI, U.S. EPA, in consultation with EGLE, determined that Dow should submit an EE/CA for Middleground Island. U.S. EPA documented this in an EE/CA Approval Memorandum dated August 12, 2019. Dow submitted the MGI EE/CA dated January 17, 2020. The MGI EE/CA included proposed alternatives to address contaminated soil at certain residential properties on MGI. On or before February 7, 2020, U.S. EPA released a fact sheet titled “EPA Proposes Cleanup Plan for Middleground Island.” This Fact Sheet described the MGI EE/CA and U.S. EPA’s recommended response actions and sought public comment on the Segments MGI EE/CA, pursuant to the NCP requirements.

U.S. EPA expected that the public would want more than the normal 30-day public comment period and therefore provided in advance an extension to the public comment period. The public comment period ran from February 12 through March 30, 2020. U.S. EPA held a public meeting regarding the proposed response actions on March 10, 2020, at the Boys and Girls Club on

Middleground Island, Bay City, MI. At the end of the meeting EGLE and the health departments helped answer questions. U.S. EPA also presented the proposed options to the Saginaw Tittabawassee Rivers Contamination Community Advisory Group (CAG) and a few public attendees on March 10, 2020.

U.S. EPA received written comments during the public comment period from 13 different individuals and organizations, including: the City of Bay City, Frankenlust Township, Bay County Road Commission, the CAG, and private individuals, including residents. There was also an opportunity to make verbal comments at the public meeting, and one person made verbal comments at that meeting. U.S. EPA carefully evaluated the comments and developed a Responsiveness Summary, found herein as Attachment E. Copies of all the comments received (including the transcript of the public meeting) are included in the administrative record for MGI. The public comments did not result in changes to U.S. EPA's evaluation of the options. Therefore, the selected response actions are those that were originally proposed U.S. EPA.

5. Applicable or Relevant and Appropriate Requirements (ARARs)

In accordance with 40 C.F.R. § 300.415(j), all on-site actions required pursuant to this Action Memorandum shall, to the extent practicable, as determined by U.S. EPA, considering the exigencies of the situation, attain ARARs under federal environmental or state environmental or facility siting laws. In accordance with Section 121(e) of CERCLA, 42 U.S.C. § 6921(e), and 40 C.F.R. § 300.400(e), no federal, state or local permits will be required for on-site response actions conducted as part of this removal action. U.S. EPA, in consultation with EGLE, reviewed the list of potential ARARs in the MGI EE/CA. Following is a summary of potential ARARs and to be considered guidance (TBCs) that were identified in the MGI EE/CA:

a. Federal

Potential Federal Chemical-Specific Requirements or TBCs

Clean Water Act – Federal Surface Water Quality Standards
Clean Water Act – Federal Ambient Water Quality Criteria

Potential Federal Action-Specific Requirements or TBCs

Clean Water Act – Section 402
Resource Conservation and Recovery Act – Subtitles C and D and Land Disposal Restrictions
Endangered Species Act
Bald and Golden Eagle Protection Act

Potential Federal Location-Specific Requirements or TBCs

Floodplain and Wetland Regulations and Executive Orders 11988 and 11990
Clean Water Act – Section 404
National Historic Preservation Act
Migratory Bird Treaty Act
Archeological and Historic Preservation Act

American Indian Religious Freedom Act
Archeological Resources Protection Act
Native American Graves Protection and Repatriation Act

b. State

Potential State Chemical-Specific Requirements or TBCs

Michigan Natural Resources and Environmental Protection Act (NREPA) – Part 201
Michigan Water Quality Standards

Potential State Action-Specific Requirements or TBCs

Michigan NREPA – Part 31
Michigan NREPA – Part 91
Michigan NREPA – Part 111
Michigan NREPA – Part 115
Michigan NREPA – Part 121
Michigan NREPA – Part 201 (Relocation of Contaminated Soil; 324.20120c et seq.)
Michigan NREPA – Part 365
Michigan NREPA – Part 413
Michigan Administrative Code Rule R 336.1901(a), Michigan NREPA Part 55

Potential State Location-Specific Requirements or TBCs

Michigan NREPA – Part 31
Michigan NREPA – Part 303

B. Project Schedule

Upon the effective date of the MGI AOC, Dow will start to develop a Work Plan. The Work Plan will contain a specific schedule for implementation of the Work. U.S. EPA anticipates that Work will begin in 2021. This action is anticipated to require one construction season to implement (2021).

C. Estimated Costs

The estimated cost for the required work at MGI is \$1.7 to 2.0 million. These estimated costs include labor, equipment, and materials. There is no expected long-term monitoring and maintenance, although short-term yard re-establishment maintenance costs are included. The cost estimates were developed based on a review of previous Dow project data, similar projects completed at other sites, and initial input from prospective Dow contractors. Consistent with U.S. EPA guidance, the cost estimates for each alternative are anticipated to be accurate within the range of -30 to +50 percent.

U.S. EPA guidance issued in January 2017, requested that Action Memoranda discuss potential uncertainties related to the cost estimate. The response actions selected herein will not be funded

by U.S. EPA, they will be undertaken and funded by Dow pursuant to the MGI AOC. The major uncertainty in the cost is associated with the selection of the disposal location for the excavated soil. This is reflected in the cost range, as documented in the EE/CA. Because Dow has conducted soil removal and replacement along the Tittabawassee River since 2015, there are few other cost uncertainties. There are two properties that have not yet been sampled, but if they need cleanup the scope of work is unlikely to change in a way that substantially increases costs.

VI. EXPECTED CHANGE IN THE SITUATION SHOULD ACTION BE DELAYED OR NOT TAKEN

Continued risk to public health or the environment will result if this response action is delayed or not taken. Delayed or no action increases the chance that people may have unacceptable exposures to contaminated soil at MGI residential properties

VII. OUTSTANDING POLICY ISSUES

According to Directive 9360.0-19, from the Office of Solid Waste and Emergency Response (OSWER), March 3, 1989, U.S. EPA Headquarters consultation must occur prior to conducting removal actions at sites that are not listed on the NPL where taking that removal action may be nationally significant or precedent-setting. That Directive at Section I.3 identifies as nationally significant or precedent-setting “[r]emoval actions at sites involving any form of dioxin when it is one of the principal contaminants of concern.” Further, the OSWER memorandum dated December 13, 1996, titled “Headquarters Consultation for Dioxin Sites,” requests that Regions consult with Headquarters where remediation goals are to be developed for dioxin in soil.

The MGI EE/CA and this NTCRA use the site-specific soil Cleanup Numbers developed by Region 5 in 2014, with Headquarters consultation. Also, this is a removal action at a non-NPL site where dioxins are the principal contaminants of concern. Therefore, Region 5 did additional consultation with Headquarters for this NTCRA at MGI. Region 5, among other activities: provided the initial screening results and advance notice of the May 2019 availability sessions; included Headquarters in the proposed plan briefing on December 19, 2019; provided to Headquarters an opportunity to review and comment on the MGI EE/CA before it was finalized, and made available to the public; and provided to Headquarters an opportunity to review and comment on the draft MGI Action Memorandum.

VIII. ENFORCEMENT

This action is being undertaken pursuant to the MGI AOC between U.S. EPA and Dow. An enforcement addendum to this Action Memorandum details the enforcement strategy at the Site.


IX. RECOMMENDATION

This decision document represents the selected NTCRA for MGI located within the Tittabawassee River, Saginaw River & Bay Site, Michigan. It was developed in accordance with

CERCLA, as amended, and is not inconsistent with the NCP. This decision is based upon the Administrative Record for MGI, an index of which is Attachment C.

Conditions at MGI meet the criteria of Section 300.415(b) of the NCP for a removal action, and we recommend your approval of the proposed removal action. Region 5 expects that Dow, the potentially responsible party, will perform the removal action under the oversight of the RPM/OSC. You may indicate your decision by signing below.

9/3/2020

APPROVE: 

Douglas Ballotti, Director
Superfund & Emergency Management Division
Signed by: DOUGLAS BALLOTTI

DISAPPROVE:

Douglas Ballotti, Director
Superfund & Emergency Management Division

Enforcement Addendum

Attachments:

- A. General MGI Location Map
- B. MGI Current Land Use
- C. Administrative Record Index
- D. EJ Screening
- E. Responsiveness Summary

cc: J. Tanaka, J. El-Zein, N. DiCosmo, M. Logan, D. Russell, J. Cahn, C. Garypie – U.S. EPA Region 5
S. Yi, U.S. EPA Headquarters, w/o Enf. Addendum
J. Victory, EGLE, w/o Enf. Addendum
P. Synk, Michigan Department of Attorney General, w/o Enf. Addendum
L. Williams, FWS, w/o Enf. Addendum

**ENFORCEMENT ADDENDUM
HAS BEEN REDACTED – FIVE PAGES**

**ENFORCEMENT CONFIDENTIAL
NOT SUBJECT TO DISCOVERY
FOIA EXEMPT**

**NOT RELEVANT TO SELECTION
OF REMOVAL ACTION**

ATTACHMENT A

General Middleground Island Location Map

**Tittabawassee River, Saginaw River & Bay Site
Midland, Saginaw, and Bay Counties in Michigan**

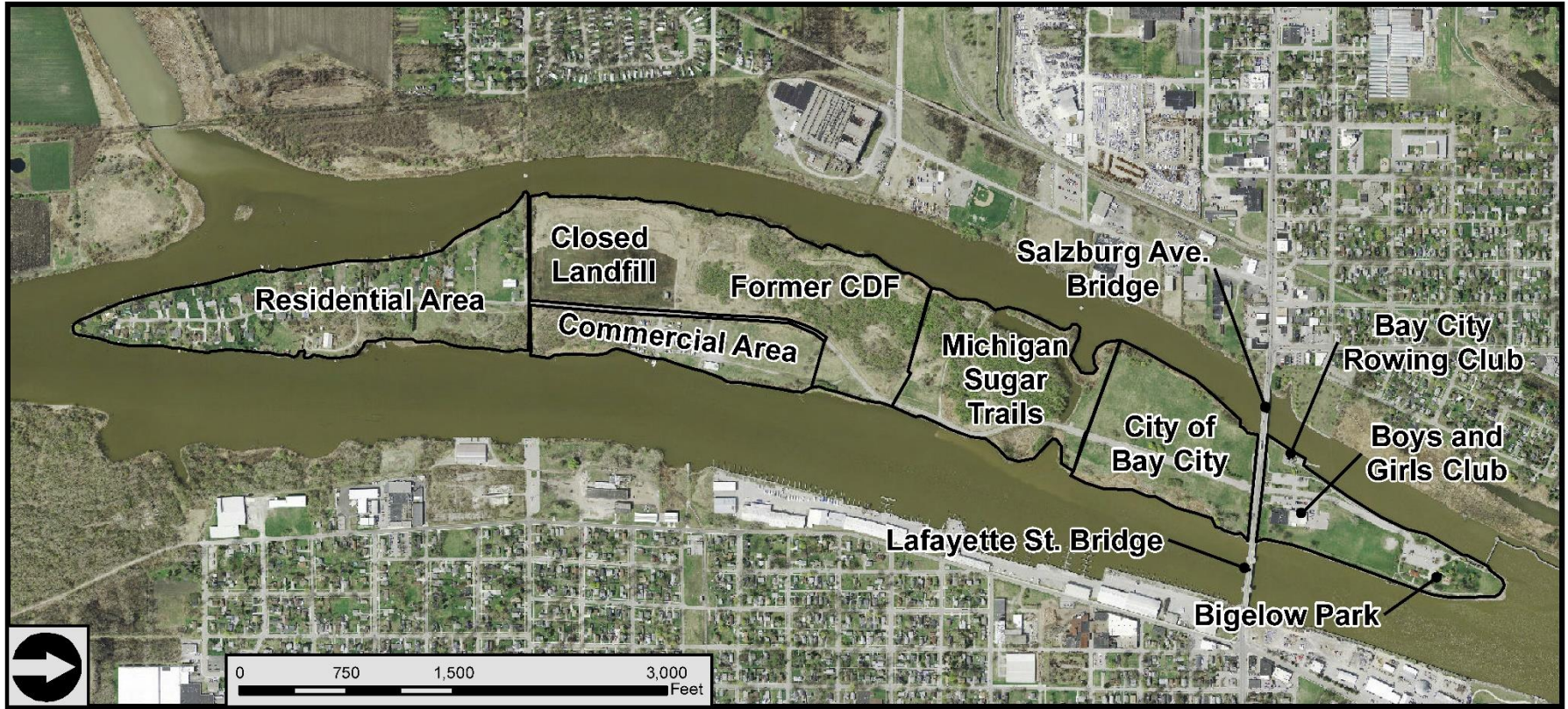


Attachment A: Middleground Island General Location

ATTACHMENT B

Middleground Island Current Land Use

**Tittabawassee River, Saginaw River & Bay Site
Midland, Saginaw, and Bay Counties in Michigan**



Attachment B: Middleground Island Current Land Use

ATTACHMENT C

Administrative Record Index

**Middleground Island of the
Tittabawassee River, Saginaw River & Bay Site
Midland, Saginaw, and Bay Counties in Michigan**

**ATTACHMENT C
U.S. ENVIRONMENTAL PROTECTION AGENCY
REMOVAL ACTION**

**ADMINISTRATIVE RECORD
FOR THE
TITTABAWASSEE RIVER, SAGINAW RIVER AND BAY SITE
OPERABLE UNIT 15: MIDDLEGROUND ISLAND
MIDLAND, SAGINAW AND BAY COUNTIES, MICHIGAN**

**ORIGINAL
APRIL, 2020
SEMS ID:**

<u>NO.</u>	<u>SEMS ID</u>	<u>DATE</u>	<u>AUTHOR</u>	<u>RECIPIENT</u>	<u>TITLE/DESCRIPTION</u>	<u>PAGES</u>
1	954750	Undated	-----	-----	Recreation Sampling Grids	13
2	954751	Undated	-----	-----	Recreation Incremental Sampling Coordinate Tables	22
3	954756	Undated	Tittabawassee River & Saginaw River Team	Dow Chemical Co.	Addendum to Middleground Island Core Sampling Plan	8
4	914887	8/6/14	U.S EPA	General Public	Administrative Record Site Index - Tittabawassee River, Saginaw River & Bay - Removal Action - OU11: Tittabawassee River Floodplain - Original (<i>Documents on this Index are included by reference in this Administrative Record.</i>)	6
5	953248	5/1/19	U.S EPA	General Public	Fact Sheet - EPA's Plans for Middleground Island in the Saginaw River	2
6	954752	5/1/19	Tittabawassee River & Saginaw River Team	Dow Chemical Co.	Middleground Island Incremental Composite Sampling Plan	156
7	953247	5/3/19	Logan, M., U.S. EPA	Property Owners	U.S. EPA Cleanup Letter	1

<u>NO.</u>	<u>SEMS ID</u>	<u>DATE</u>	<u>AUTHOR</u>	<u>RECIPIENT</u>	<u>TITLE/DESCRIPTION</u>	<u>PAGES</u>
8	954754	5/29/19	Konechne, T., Dow Chemical Co.	Logan, M., U.S. EPA	Dow Chemical Co. Cover Letter - Addendum to Middleground Island Incremental Composite Sampling Plan	1
9	953244	8/12/19	Logan, M., U.S. EPA	Ballotti, D. and Frey, R., U.S. EPA	U.S. EPA Memorandum re: Request for Approval of Engineering Evaluation /Cost Analysis for a Proposed Non-Time-Critical Removal Action	9
10	953246	8/19/19	Logan, M., U.S. EPA	Konechne, T., Dow Chemical Co.	U.S. EPA Letter - Engineering Evaluation/Cost Analysis	1
11	954755	9/10/19	Tittabawassee River & Saginaw River Team	Dow Chemical Co.	Middleground Island Core Sampling Plan	58
12	954753	11/18/19	Konechne, T., Dow Chemical Co.	Logan, M., U.S. EPA	Dow Chemical Co. Cover Letter - Draft Engineering Evaluation/Cost Analysis	1
13	953245	12/17/19	Logan, M., U.S. EPA	Konechne, T., Dow Chemical Co.	U.S. EPA Letter - Engineering Evaluation/Cost Analysis Comments	4
14	953243	1/17/20	Tittabawassee River & Saginaw River Team	Dow Chemical Co.	Middleground Island Engineering Evaluation/Cost Analysis (EECA)	52
15	953249	2/1/20	U.S EPA	General Public	Fact Sheet - EPA Proposes Cleanup Plan for Middleground Island	8
16	953141	2/5/20	McCreery, C.	-----	Private Citizen Comment - PowerPoint Presentation - Ocean Dumping of Chlorinated Hydrocarbons	42
17	953148	3/10/20	-----	-----	Proposed Cleanup Plan Public Meeting Transcript	50
18	953140	3/28/20	Private Citizens	U.S. EPA	Public Commentary (Redacted)	28
19	-----	-----	U.S. EPA	-----	Action Memorandum (Pending)	-----

ATTACHMENT D

EJ Screening

**Middleground Island of the
Tittabawassee River, Saginaw River & Bay Site
Midland, Saginaw, and Bay Counties in Michigan**

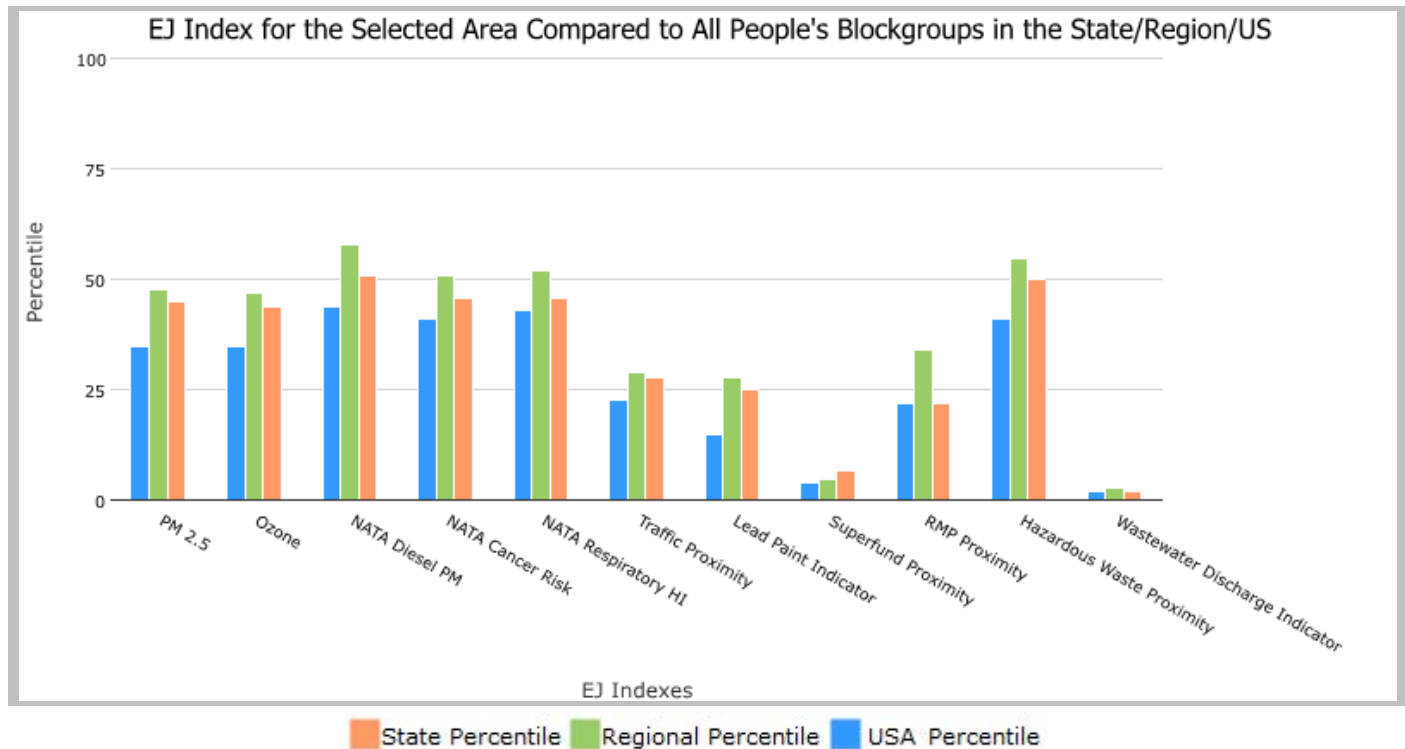
the User Specified Area, MICHIGAN, EPA Region 5

Approximate Population: 74

Input Area (sq. miles): 0.07

MGI

Selected Variables	State Percentile	EPA Region Percentile	USA Percentile
EJ Indexes			
EJ Index for PM2.5	45	48	35
EJ Index for Ozone	44	47	35
EJ Index for NATA* Diesel PM	51	58	44
EJ Index for NATA* Air Toxics Cancer Risk	46	51	41
EJ Index for NATA* Respiratory Hazard Index	46	52	43
EJ Index for Traffic Proximity and Volume	28	29	23
EJ Index for Lead Paint Indicator	25	28	15
EJ Index for Superfund Proximity	7	5	4
EJ Index for RMP Proximity	22	34	22
EJ Index for Hazardous Waste Proximity	50	55	41
EJ Index for Wastewater Discharge Indicator	2	3	2



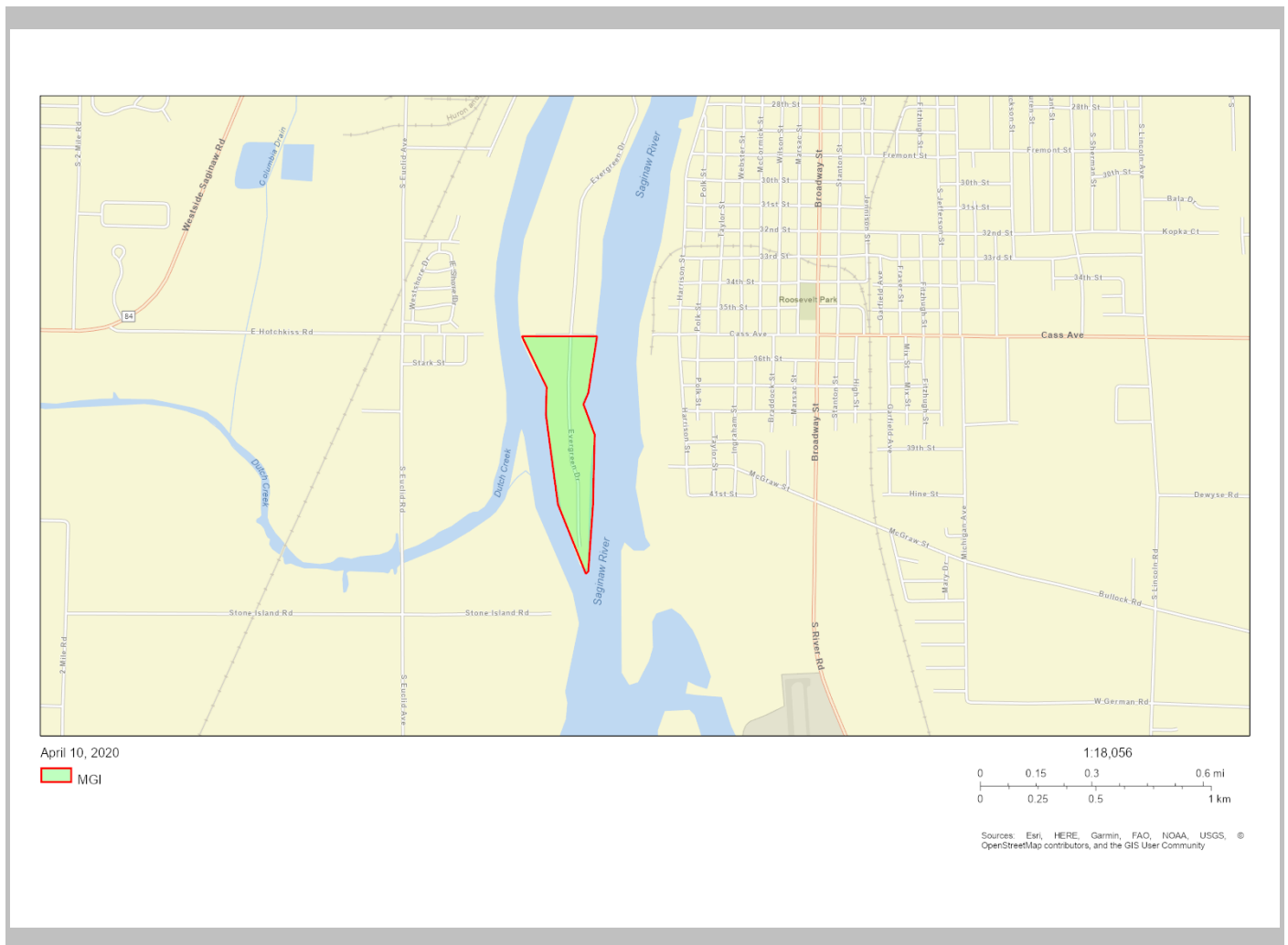
This report shows the values for environmental and demographic indicators and EJSCREEN indexes. It shows environmental and demographic raw data (e.g., the estimated concentration of ozone in the air), and also shows what percentile each raw data value represents. These percentiles provide perspective on how the selected block group or buffer area compares to the entire state, EPA region, or nation. For example, if a given location is at the 95th percentile nationwide, this means that only 5 percent of the US population has a higher block group value than the average person in the location being analyzed. The years for which the data are available, and the methods used, vary across these indicators. Important caveats and uncertainties apply to this screening-level information, so it is essential to understand the limitations on appropriate interpretations and applications of these indicators. Please see EJSCREEN documentation for discussion of these issues before using reports.

the User Specified Area, MICHIGAN, EPA Region 5

Approximate Population: 74

Input Area (sq. miles): 0.07

MGI



Sites reporting to EPA	
Superfund NPL	0
Hazardous Waste Treatment, Storage, and Disposal Facilities (TSDF)	0

EJSCREEN Report (Version 2019)

the User Specified Area, MICHIGAN, EPA Region 5

Approximate Population: 74

Input Area (sq. miles): 0.07

MGI

Selected Variables	Value	State Avg.	%ile in State	EPA Region Avg.	%ile in EPA Region	USA Avg.	%ile in USA
Environmental Indicators							
Particulate Matter (PM 2.5 in $\mu\text{g}/\text{m}^3$)	7.94	8.56	17	8.63	18	8.3	37
Ozone (ppb)	43.1	44	15	43.4	28	43	45
NATA* Diesel PM ($\mu\text{g}/\text{m}^3$)	0.167	0.338	19	0.446	<50th	0.479	<50th
NATA* Cancer Risk (lifetime risk per million)	21	24	24	26	<50th	32	<50th
NATA* Respiratory Hazard Index	0.24	0.29	26	0.34	<50th	0.44	<50th
Traffic Proximity and Volume (daily traffic count/distance to road)	290	660	54	530	61	750	56
Lead Paint Indicator (% Pre-1960 Housing)	0.41	0.38	62	0.38	60	0.28	71
Superfund Proximity (site count/km distance)	0.51	0.15	93	0.13	95	0.13	95
RMP Proximity (facility count/km distance)	0.48	0.53	69	0.82	55	0.74	59
Hazardous Waste Proximity (facility count/km distance)	0.15	1	28	1.5	23	4	26
Wastewater Discharge Indicator (toxicity-weighted concentration/m distance)	1	0.23	96	0.82	94	14	95
Demographic Indicators							
Demographic Index	8%	29%	7	28%	9	36%	5
Minority Population	1%	25%	3	25%	5	39%	2
Low Income Population	16%	33%	23	31%	26	33%	24
Linguistically Isolated Population	0%	2%	63	2%	58	4%	45
Population With Less Than High School Education	3%	10%	17	10%	19	13%	16
Population Under 5 years of age	10%	6%	88	6%	86	6%	84
Population over 64 years of age	22%	16%	80	15%	82	15%	83

* The National-Scale Air Toxics Assessment (NATA) is EPA's ongoing, comprehensive evaluation of air toxics in the United States. EPA developed the NATA to prioritize air toxics, emission sources, and locations of interest for further study. It is important to remember that NATA provides broad estimates of health risks over geographic areas of the country, not definitive risks to specific individuals or locations. More information on the NATA analysis can be found at: <https://www.epa.gov/national-air-toxics-assessment>.

For additional information, see: www.epa.gov/environmentaljustice

EJSCREEN is a screening tool for pre-decisional use only. It can help identify areas that may warrant additional consideration, analysis, or outreach. It does not provide a basis for decision-making, but it may help identify potential areas of EJ concern. Users should keep in mind that screening tools are subject to substantial uncertainty in their demographic and environmental data, particularly when looking at small geographic areas. Important caveats and uncertainties apply to this screening-level information, so it is essential to understand the limitations on appropriate interpretations and applications of these indicators. Please see EJSCREEN documentation for discussion of these issues before using reports. This screening tool does not provide data on every environmental impact and demographic factor that may be relevant to a particular location. EJSCREEN outputs should be supplemented with additional information and local knowledge before taking any action to address potential EJ concerns.

ATTACHMENT E

Responsiveness Summary

**Middleground Island of the Tittabawassee River, Saginaw River & Bay Site
Midland, Saginaw, and Bay Counties in Michigan**

RESPONSIVENESS SUMMARY

Non-Time Critical Removal Action for Middleground Island of the Tittabawassee River/Saginaw River & Bay Site

This Responsiveness Summary provides a summary of the public comments that the United States Environmental Protection Agency (EPA) received regarding a proposed non-time critical removal action (NTCRA) at Middleground Island (MGI) and comments on the *Middleground Island Engineering Evaluation/Cost Analysis*, dated January 17, 2020 (MGI EE/CA) at the Tittabawassee River/Saginaw River & Bay Site (Site). This Responsiveness Summary also provides EPA's responses to those comments, developed in consultation with the Michigan Department of Environment, Great Lakes, and Energy (EGLE).

I. Outcome of Review of Public Comments and State Consultation

After carefully reviewing and considering all public comments submitted during the public comment period, EPA, in consultation with EGLE, is issuing an Action Memorandum selecting response actions for MGI. This Responsiveness Summary is an attachment to the Action Memorandum. The public comments did not result in changes to EPA's comparative evaluation of the options. Therefore, the selected response actions are those that were identified by EPA as the recommended alternatives.

EPA, after consultation with EGLE, negotiated an Administrative Settlement Agreement and Order on Consent (MGI AOC) with The Dow Chemical Company (Dow), requiring Dow to implement the selected work. A copy of the MGI AOC, Action Memorandum, and this Responsiveness Summary (which is Attachment E to the Action Memorandum) will be available through <http://www.epa.gov/superfund/tittabawassee-river>.

II. Background and Community Involvement

Dioxins (primarily furans) are found in the Tittabawassee and Saginaw Rivers and their floodplains, and in Saginaw Bay. The dioxins came from past waste disposal practices at Dow's plant in Midland, Michigan. EPA began negotiations with Dow in December 2008 for a comprehensive approach to address contamination related to Dow in the rivers and Bay. Effective January 21, 2010, EPA signed an Administrative Settlement Agreement and Order on Consent No. V-W-10-C-942 (2010 AOC) with EGLE and Dow, requiring Dow to perform Site investigations, and develop and design cleanup options selected by EPA, in consultation with EGLE, using Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) authority. Work under the 2010 AOC is ongoing.

The 2010 AOC requires Dow, with EPA and EGLE oversight, to conduct evaluations of current conditions and assessments of response options to protect human health and the environment at the Site. EPA, in consultation with EGLE, determined that Dow should submit an Engineering Evaluation/Cost Analysis (EE/CA) for MGI based on a review of EPA's guidance, the National Contingency Plan (NCP), and conditions on MGI, and documented this in an EE/CA Approval

Memorandum dated August 12, 2019. Dow submitted the final MGI EE/CA dated January 17, 2020, that includes proposed response alternatives to address soil contamination at residential properties on MGI.

On or before February 7, 2020, EPA established the administrative record for MGI. EPA published the administrative record on the Site website at www.epa.gov/superfund/tittabawassee-river and sent copies to three local repositories (public libraries in Midland, Saginaw and Bay City). On or before February 7, 2020, EPA posted and mailed a fact sheet titled “EPA Proposes Cleanup Plan for Middleground Island.” This Fact Sheet described the MGI EE/CA and U.S. EPA’s recommended response actions and sought public comment on the Segments MGI EE/CA and the administrative record, pursuant to the requirements of NCP § 300.415(n). The fact sheet was mailed to a list of about 950 recipients. EPA took ads in two local papers to announce the proposed cleanup plan and the opportunities for public comment.

EPA expected that the public would want more than the normal 30-day public comment period and therefore provided in advance a 15-day extension to the public comment period. The public comment period ran from February 12 through March 30, 2020. EPA held a public meeting regarding the proposed response actions on March 10, 2020, at the Boys and Girls Club on Middleground Island, Bay City, MI. At the end of the meeting EGLE and the health departments helped answer questions. EPA also presented the proposed options to the Saginaw Tittabawassee Rivers Contamination Community Advisory Group (CAG) and a few public attendees on March 10, 2020.

III. Comments and Responses

EPA received written comments during the public comment period from 13 different individuals and organizations, including: City of Bay City, Frankenlust Township, Bay County Road Commission (BCRC), the CAG, and private individuals, including residents. There was also an opportunity to make verbal comments at the public meeting, and one person made verbal comments at that meeting. Copies of all the comments received (including the verbal comments reflected in the transcript of the public meeting) are included in the administrative record for MGI. EPA carefully considered each comment while developing this Responsiveness Summary.

This Responsiveness Summary does not repeat verbatim each individual comment. Rather, the relevant comments are summarized and grouped by category with respect to the type of issue raised. The comments fell within a few different categories: remedy options; remedy implementation; and information requests, questions, and recommendations. The remainder of this Responsiveness Summary contains a summary of the comments received (grouped by category) and EPA’s responses to those comments, in consultation with EGLE.

A. REMEDY OPTIONS

1. The CAG and two other commenters supported EPA’s proposed cleanup plan.

EPA and EGLE acknowledge these comments.

- 2. One commenter proposed jacking up houses by two feet and bringing in clean dirt to fill yards.*

A cleanup option considered by EPA, but not selected, was placement of a clean cover. This would not involve jacking up houses but would have put a layer of clean soil over the existing contaminated soil. EPA did not select the clean cover option because of concerns with long-term effectiveness and implementability. Clean covers may be less reliable in the long-term because integrity of the cover relies on compliance of individual property owners with long-term land use restrictions. Covers must be monitored and may need maintenance to make sure they continue to be reliable. EPA's selected response action, removal, would be more effective in the long term because it permanently removes contaminated soil from yards. Long-term agreements and institutional controls would be requested of property owners if a clean cover is placed and some owners may be reluctant to allow ongoing access or to place institutional controls. Additionally, jacking up houses would pose technical implementation challenges and would not be needed as part of the cleanup plan.

- 3. The CAG asked whether using the composite sampling method could result in "hot spots" that exceed the cleanup level on some properties while the overall composite does not. The CAG "would like to see borderline contamination properties be cleaned up if the evidence suggests higher levels could exist."*

In 2015, EPA and EGLE established a site-specific dioxin/furan cleanup number of 250 parts per trillion (ppt) for residential properties. Exceedance of EPA's cleanup number based on composite sampling identifies properties eligible for cleanup. The sampling approach involved collection of 60 sub-samples that were composited. Therefore, mathematically there could be some sub-samples that, if sampled alone, could exceed 250 ppt while the overall composite result is below the cleanup number. However, EPA does not believe this is a concern. First and foremost, the site-specific cleanup number was based on conservative exposure assumptions and is protective for all ages and users. Second, the composite sampling units on each property were established to reflect likely use and exposure; where appropriate properties were sub-divided for sampling. EPA expects that exposure can take place in many areas of a yard and the sampling units reflect this.

- 4. The CAG requested that EPA and Dow to explore opportunities for non-eligible properties to have access to yard cleanup at a reasonable cost while the project is under mobilization, especially those whose contamination levels approaching 250 ppt.*

EPA has communicated to all the residential property owners informing them of their analytical results and whether their property is eligible for cleanup. Neither EPA nor Dow have been approached to request cleanup by an owner of property below EPA's cleanup number. EPA intends to work closely with the community as we plan the cleanup. If a non-eligible owner is interested in work, EPA cannot mandate that a cleanup is needed but we will try to work with them on a case by case basis to see what options may be available.

B. REMEDY IMPLEMENTATION

- 5. The vast majority of comments received expressed concerns with the potential effects that construction traffic could have on Evergreen Drive, the only road running the length of*

Middleground Island. Comments on this topic were received from the City of Bay City, the BCRC, Frankenlust Township, the CAG, and an individual commenter.

a. The City of Bay City, the BCRC, and Frankenlust Township each explained its jurisdiction and role regarding Evergreen Drive

EPA appreciates the clarification on roles and responsibilities. EPA and Dow will work with these entities as work progresses.

*b. **Safety Concerns:** Commenters pointed out that there are traffic safety concerns with Evergreen Drive's intersection with M-13/M-84 between the bridges. There are many times during the day when it is difficult to make a turn, right or left, from Evergreen Drive. A temporary signal has been utilized in the past and may be warranted again. Evergreen Drive is very narrow with limited room for larger vehicles increasing congestion and the potential for adverse impacts. On Evergreen Drive, slow speed limits, clear lane management, and/or flagging may be warranted to protect people and to limit the potential for deer strikes.*

EPA, EGLE, and Dow all acknowledge that project safety is of paramount importance and realize that traffic safety is a major concern. Dow will develop and implement a traffic management plan and a health and safety plan with EPA and EGLE oversight. Among other elements, rigorous safety measures will be developed and implemented throughout the project. The traffic safety measure will be reviewed with interested entities ahead of time.

c. The commenters recognized that either cleanup alternative could result in a significant amount of truck traffic. They expressed concern with potential damage to Evergreen Drive, shoulders, driveways, lawn areas, road right-of-way, drainage facilities, or any other items in the road right-of-way. If damaged these will need to be restored. One commenter asked who would fix the road if damaged?

Dow will be conducting the cleanup with EPA and EGLE oversight. The traffic management plan will require Dow to restore any damage to conditions as good as those before work begins.

d. Both the City of Bay City and the BCRC offered to complete a pre-construction video of the roadway and adjacent right-of-way, to document the conditions before the project begins. This video is anticipated to be used/reviewed to resolve issues or questions regarding what was in place prior to construction.

EPA agrees that a pre-construction video is essential. Dow would need to complete a video as part of the traffic management plan. Therefore, EPA will coordinate with Dow, the City and BCRC to see if all parties can develop a consensus-based video.

e. The commenters stated that depending on the time of year, dust or mud on the road could become an issue that should be addressed, as the need arises.

EPA agrees. The traffic management plan will ensure that dust and/or mud on the roadway will be managed.

- f. *Commenters stated that access to residents and businesses on Evergreen Drive must always be maintained during construction, especially for emergency responders. This includes proper construction signage prior to and within, the construction zone.*

EPA agrees. The traffic management plan will ensure access and signage.

- g. *Commenters asked that communication occur to alert 911, schools (project date dependent), the BCRC, Frankenlust Township, the City of Bay City and any others prior to starting any construction. Good communication between all parties involved is key, especially due to the project's close working quarters.*

EPA agrees. EPA and Dow will communicate with interested entities prior to and during construction.

6. *The CAG commented about individual property landscaping: "The CAG feels strongly that every effort should be made to preserve mature and healthy trees, and that landscaped areas be restored in keeping with the care and effort that property owners put into them." "We recognize that this cleanup requires a lot of property-specific planning and strongly encourage that Dow work closely with property owners and that their concerns about their property be used to guide cleanup to the extent reasonable."*

Each eligible property will have a property-specific design plan that reflects input from the owner. Like the ongoing Tittabawassee River floodplain cleanup, mature healthy trees will be preserved to the extent possible, if that is the homeowner's wish. Dow will work closely with each owner to develop an acceptable plan.

7. *The CAG commented that contingency plans might be necessary if lake levels remain high. "The CAG understands that river levels have historically fluctuated over time and could be assumed to drop significantly in the near future in keeping with the historical record. However, we also recognize that the Corps of Engineers does not think this will happen again, and that continuing water level rise in the Great Lakes is a considerable risk moving forward. As such, the CAG believes that it is important for EPA and EGLE to not simply assume that the lake level will drop, but to recognize that we might be in a new normal, and plan accordingly by making appropriate contingency plans for river levels to stay at the current heights and even higher."*

EPA, EGLE, and Dow are tracking lake levels and will continue to do that. If it appears that lake levels may continue to be high, we will consider contingency plans, as needed.

8. *The CAG commented on potential erosion and would like Dow to undertake regular monitoring of shoreline areas and take immediate interim control measures at signs of erosion*

Erosion control is part of each construction project along the rivers and will be conducted throughout the MGI cleanup. The project will need to meet the requirements of Part 91 of Michigan's Natural Resources and Environmental Protection Act (NREPA) that addresses Soil Erosion and Sedimentation Control (MCL 324.9101 et seq.).

9. *One commenter asked whether property adjacent to those cleaned up be repaired if needed?*

If a property adjacent to one cleaned up is damaged it will be restored by Dow's contractors.

10. *One commenter asked why not bring in material and equipment by barge?*

The final design plan will identify how materials are to be transported to and from MGI. Barging is not out of the question, but unlikely. Many of the materials and much of the equipment are expected to originate near Midland or Freeland. Trucking to a location to load a barge would be just as long or longer than trucking directly to MGI. Barging would require docking and handling infrastructure on the island that does not currently exist. Barging would also result in double handling of the materials and equipment.

11. *One commenter expressed concerns with the disposal location of the excavated contaminated soil. He strongly opposed ocean dumping. He requested documentation of the disposal location in the final project documents.*

Ocean disposal has never been considered or used for any materials generated from CERCLA cleanups at the Site. Ocean disposal will not be considered or used for materials from the MGI cleanup. The location of soils and other materials from the MGI cleanup will be documented in the final report.

C. INFORMATION REQUESTS, QUESTIONS, AND RECOMMENDATIONS

12. *One owner's property had not yet been tested and he requested sampling.*

The sampling has been arranged and results will be conveyed to the owner, when available.

13. *The CAG stated, "The CAG feels strongly that all results be shared with and explained to all property owners, not just those whose properties exceed the limits."*

EPA and/or Dow have provided their sampling results and additional information to all MGI property owners where samples have been taken.

14. *The CAG requested information about the results for residential properties that did not exceed the cleanup level of 250 ppt; how many properties had results between 200 and 250 ppt?*

Table 4-1 of the MGI EE/CA reports analytical results for residential properties. There were six residential sampling units out of 45 that had results between 200 and 250 ppt TEQ.

15. *The CAG recommended that additional testing be considered for properties that "have significant contamination but do not exceed 250," for sub-areas close to the homes, children's play areas, etc.*

No details or sampling plans have been developed, but EPA expects that additional sampling may occur on MGI properties before the cleanup is complete.

16. *The CAG would like to understand the risks of erosion prior to and during the cleanup efforts and the mitigation efforts that will be used to ensure erosion is kept to a minimum.*

EPA will make a presentation at one of the CAG meetings to address these questions.

17. *One commenter asked if the current high water levels in the Saginaw River and Bay have any effect on the samples results.*

No, the current high water levels in the Saginaw River and Bay would not be expected to influence soil sample results. Dioxins are hydrophobic and will not readily desorb from soil into water. Additionally, most of the soil sub-samples were not saturated.

18. *One commenter asked whether crawl spaces were part of the testing. The commenter expressed concerns with exposure in the crawl space because the floor is dirt.*

Crawl spaces were not included in the composite samples. EPA's cleanup number is based on potential exposure of a small child to yard soil every day except when the soil is frozen, or snow covered. The expected exposure to soil in a crawl space would be much less frequent and typically not small children. Information about limiting exposure has been provided to every residential property owner on MGI, including this owner. Additionally, this owner has been provided contacts at the State and County health departments.

19. *The same commenter expressed concern with potential exposure while working in her yard.*

In 2019 this property was assessed, and interim exposure controls were placed including mulching in garden beds and covering bare soil. The property will be reevaluated later this year to see if additional short-term measures should be considered. Information about limiting exposure and contacts at the health departments have been provided to this resident.

ATTACHMENT B

MGI Location and Land Use Figures

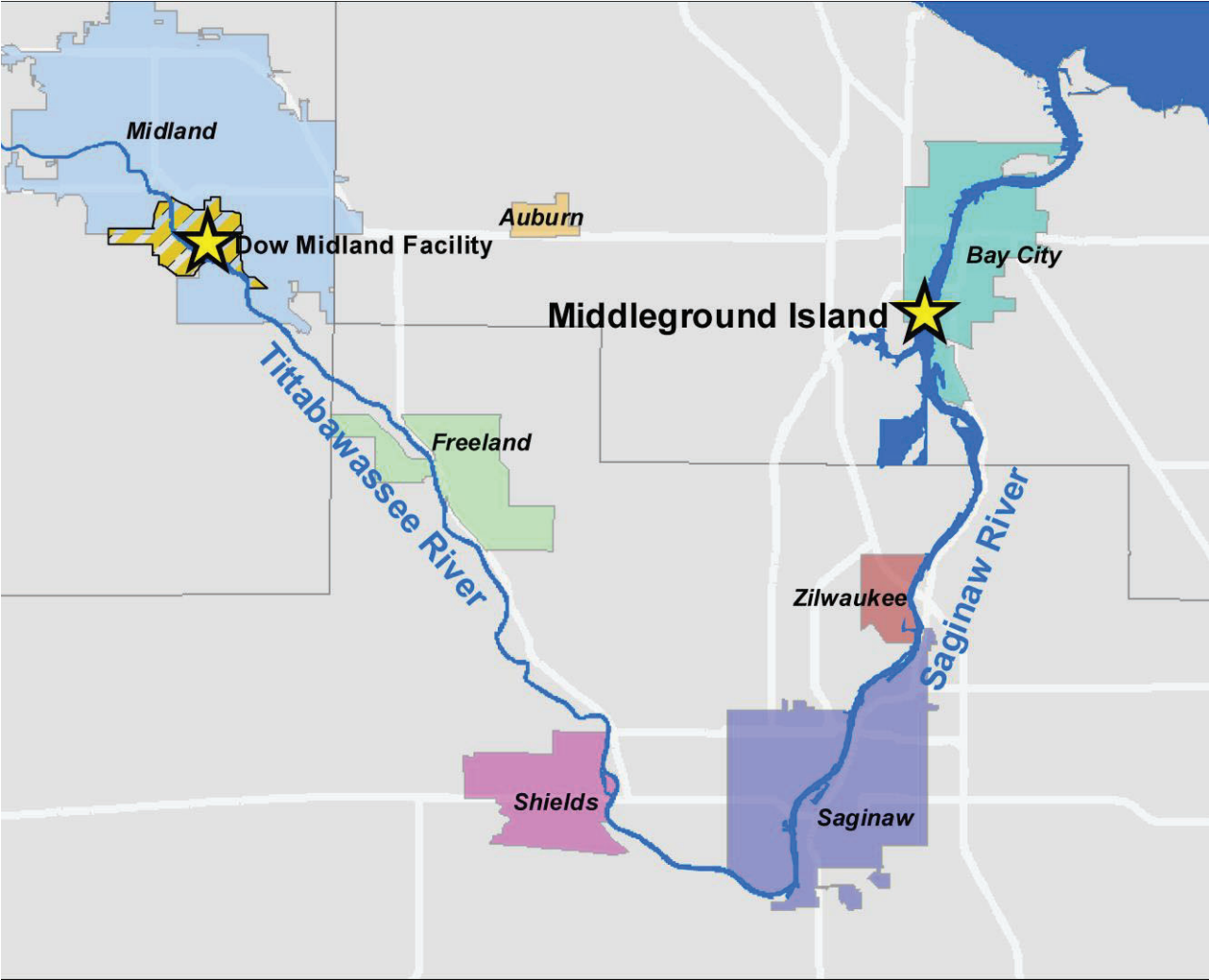


Figure 1: Middleground Island General Location

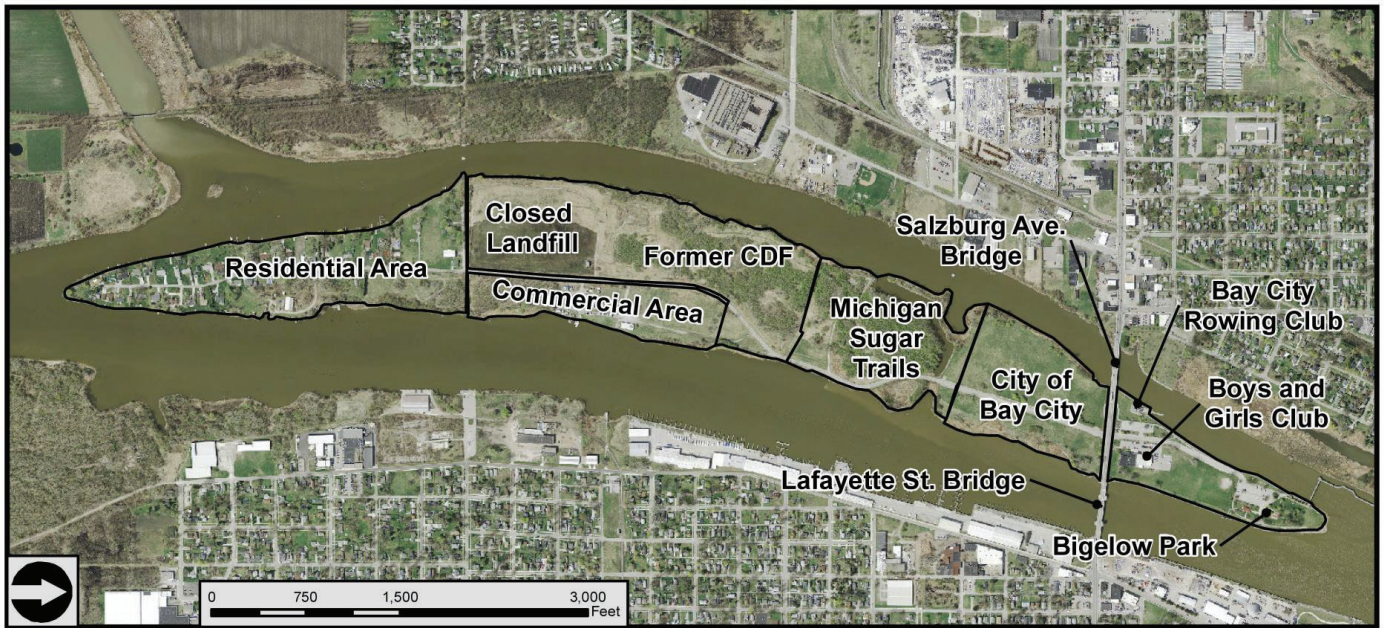


Figure 2: Middleground Island Current Land Use