

**FORM EQP 5111 ATTACHMENT TEMPLATE B2
CORRECTIVE ACTION INFORMATION**

This document is an attachment to the Michigan Department of Environment, Great Lakes, and Energy's (EGLE) *Instructions for Completing Form EQP 5111, Operating License Application Form for Hazardous Waste Treatment, Storage, and Disposal Facilities*. See Form EQP 5111 for details on how to use this attachment.

The administrative rules promulgated pursuant to Part 111, Hazardous Waste Management, of Michigan's Natural Resources and Environmental Protection Act, 1994 PA 451, as amended (Act 451) R 299.9504(1)(c), R 299.9508(1)(b), R 299.9525, R 299.9629, R 299.9635, and R 299.9636; §§324.11115a and 324.11115b of Act 451; and Title 40 of the Code of Federal Regulations (CFR) §270.14(d) and Part 264, Subpart F, establish requirements for submitting corrective action information and implementing a corrective action program for hazardous waste management facilities. All references to 40 CFR citations specified herein are adopted by reference in R 299.11003.

This license application template addresses requirements for corrective action information for the waste management units (WMU) at the Dow Silicones Corporation facility in Midland, Michigan. This template includes facility background information, current conditions, and release assessment requirements for operating license applications. This template supplies information to support the corrective action program specified in R 299.9629. In this template, applicants must include appropriate justification for the proposed elimination of any WMU from the corrective action program under Part 111 of Act 451.

Ensure that all samples collected for waste characterization and environmental monitoring during corrective action are collected, transported, analyzed, stored, and disposed by trained and qualified individuals in accordance with a QA/QC Plan. The QA/QC Plan should at a minimum include the written procedures outlined in "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods," EPA Publication SW-846, Third Edition, Chapter 1 (November 1986), and its Updates.

(Check as appropriate)

Applicant for Operating License for Existing Facility:

- ☒ R 299.9629 Corrective Action
- ☐ Elimination from corrective action requirements proposed for one or more units

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B2.A FACILITY BACKGROUND

B2.A.1 Facility Operations

Dow Silicones Corporation (formerly Dow Corning Corporation) is a wholly owned subsidiary of the

Dow Chemical Company. Dow Silicones is a Michigan corporation with world headquarters in Midland, Michigan. Dow Silicones has manufacturing facilities in Midland, Hemlock and Auburn, Michigan, and elsewhere in the United States and abroad. This facility is located in the City of Midland in Midland County, Michigan, Latitude (North): 43.591667; Longitude (West): 84.191667. The facility location is: 3901 South Saginaw Road, Midland, Michigan 48686 and is owned by Dow Silicones Corporation. Figure B2-1 is a site plan showing permitted facility boundaries, major buildings, and hazardous waste storage areas; Figure B4-3 is a topographic map. Process and design information for the storage units and landfill is provided in Modules C1, C2 and C3.

The Dow Silicones facility occupies approximately 350 acres of land in the southern portion of the City of Midland in Section 26 of Midland Township: Township 14N, Range 2E (Figure B2-1). Only 0.75 acre of the Dow Silicones facility is regulated under RCRA or Part 111 of Act 451. This site is located in a heavy industrial area (Figure B4-4). A more thorough description of the land use in the surrounding area can be found in Module B4, Environmental Assessment.

Dow Silicones, operating then as Dow Silicones, was founded in 1943 to develop and manufacture a newly discovered class of polymeric materials based on silicon chemistry. Today this technology is used to produce thousands of products, used in every major industry including aerospace, medicine, automotive, electronics, paper and textiles.

At the Midland site, Dow Silicones manufactures a variety of silicon-based intermediates for use in industrial processes by other Dow Silicones locations and by industrial customers, as well as finished products for end markets. Hazardous wastes are generated from the manufacturing processes, off-spec products, pollution control devices, cleaning of process equipment, and from pilot plant and laboratory operations. Dow Silicones maintains an active waste minimization program to reduce the quantity and toxicity of hazardous wastes generated, through source reduction and waste recovery, reuse and reclamation.

Dow Silicones actively supports the Responsible Care® program of the American Chemical Council and has integrated its provisions into all phases of company operations. As part of this commitment, Dow Silicones recognizes its responsibility in managing the materials it produces and therefore accepts returned products from its customers. These materials may be received at the licensed facility prior to transfer offsite for proper disposal or recycling.

The licensed hazardous waste facility at the Midland plant is located in the 800 and 1000 blocks, as shown on Figure B2-1. The licensed facility consists of the 801 and 809 container storage buildings, the 806 tank storage with adjacent tanker loading area, along with support structures and other equipment in the 800 block, and a hazardous waste landfill, the active portion of which is in the 1000 block. The licensed facility serves the following functions:

1. Accumulation of wastes generated at the Midland plant prior to shipment to off-site facilities for treatment or disposal;
2. Accumulation of wastes from other Dow Silicones operational locations for transfer to off-site facilities for treatment or disposal; and
3. Accumulation of returned goods from Dow Silicone's distributors and customers for transfer off-site.

No hazardous waste will be disposed of in the landfill. Only the following non-RCRA regulated materials are disposed of in the landfill: RCRA-empty containers; containers of non-regulated gloves, rags, pieces of metal and glass and other debris; column packing; cleaned process equipment; asbestos; construction debris; solidified silicone sealants, rubber and gums; solidified polysiloxane gels; nonhazardous contaminated dirt; and used office furniture.

No wastes containing free liquids are disposed in the landfill and no lead contaminated (D008) hazardous wastes have been placed in the landfill since 1985.

B2.A.2 Regulatory History Regarding Enforcement actions and Environmental Licenses

The site is an existing facility which started operations in 1943. The original operating license permit was issued in September 1985. The original permit was modified and reissued in December 2000 and in September 2012. This permit is a renewal application to the RCRA Part B Permit No. MID 000 809 632.

The NAICS codes for the facility are 325212 (Synthetic Rubber Manufacturing); 325188 (All Other Basic Inorganic Manufacturing); 325211 (Plastics Material and Resin Manufacturing); and 325199 (All Other Basic Organic Manufacturing). The SIC code of the facility is 2869 (Industrial Organic Chemicals, Not Elsewhere Classified). The facility operates under an air permit and a NPDES storm water permit (see Permits Module).

A notice of violation (NOV) was issued to Dow Silicones on August 10, 2018 in response to a release from a Waste Management Unit (WMU) caused by heavy rainfall. In response Dow Silicones was been working to complete actions defined in the EGLE approved Workplan revised April 29, 2019.

B2.A.3 List of Previous Investigations

- RCRA Facility Investigations: Dow Silicones has completed extensive environmental sampling and analyses of groundwater and soils for the purpose of characterizing the nature and extent of any environmental contamination present at this facility. Data collected as part of the RCRA Facility Investigations (RFIs) carried out between 1989 and the present have been submitted previously to Department of Natural Resources and Environment (DNRE) and to U.S. EPA Region 5.

The RCRA Facility Investigation Final Report was submitted to the DNRE on January 29, 2001. This report presented the results of several previous studies, described corrective measures that have been implemented, and reviewed the status of the solid waste management units (SWMU) and areas of concern (AOC). The RCRA Facility Investigation Final Report reviewed agency approvals and concluded that all SWMUs except the landfill and chemical sewer required no further action at that time due to the corrective measures already implemented, including installation of the Site Interceptor System (SIS).

The RCRA Facility Investigation Final Report also identified two AOCs, the 1000 Block Demolition Pile and the 4700 Storm Water Retention Pond, and summarized data from these areas. These AOCs were investigated and the results were reported in the RFI Release Assessment, which was submitted to the DNRE in December, 1995. The RFI Release Assessment report compared analytical data for these AOCs to Michigan's Part 201 cleanup criteria for potentially complete exposure pathways and concluded that the concentrations were less than these criteria.

- Dow Silicones Soil Investigation: This investigation was initiated in response to a release from a Water Management Unit (WMU) on May 26, 2018. EGLE approved the April 29, 2019 revision of the Workplan work is currently being executed.
- Ongoing groundwater and surface water monitoring as required by the facility operating license: See Module B3 (Hydrogeologic Report) for a complete description of the site hydrogeology and well placement. Analytical data developed from the groundwater monitoring and surface water monitoring are presented in Modules B3 and B5.

The results of the groundwater monitoring show no statistically significant effect on groundwater in the regional aquifer attributable to facility activities. Some localized effects on shallow groundwater are evident, due to historical contamination from plant and facility operations. The contamination at these locations is effectively prevented from migrating offsite by the Site Interceptor System. Contaminants are also prevented from entering the regional aquifer by the presence of an aquiclude consisting of an approximately 40-foot thick layer of low permeability natural clay. See Module B3 (Hydrogeologic Report) for complete information on site hydrogeology.

B2.A.2 Environmental Setting

B2.A.2(a) Climate

Summary of meteorological data for the facility is provided in Module B4 (Environmental Assessment), Section B4.A.2(a) (Climate).

B2.A.2(b) Topography

A general description and a topographic map showing land relief and slope, streams, lakes, roads, cities, and other relevant features are included in Module B4 (Environmental Assessment), Section B4.A.2(b) (Topography); Figure B4-3 (Topographic Map).

B2.A.2(c) Hydrogeology

Description of the facility's hydrogeological setting, including regional- and facility-specific geologic and hydrogeologic features is provided in Module B3 (Hydrogeologic Report).

B2.A.2(d) Soil

Common soil series in the area of the facility is provided in Module B4 (Environmental Assessment), Sections B4.A.2(c) (Geology) & B4.A.2(d) (Soils).

B2.A.2(e) Surface Water

Description of surface water on and around the facility is provided in Module B4 (Environmental Assessment), Section B4.A.2(e) (Hydrology).

B2.A.2(f) Surrounding Land Uses

Current and historic land use in and around the facility is provided in Module B4 (Environmental Assessment), Section B4.A.2(f) (Land Use and Zoning).

B2.A.2(g) Critical Habitats and Endangered Species

Critical habitats and endangered species in the area surrounding the facility is provided in Module B4 (Environmental Assessment), Sections B4.A.2(m) & B4.A.2(n) (Terrestrial and Aquatic Ecosystem).

B2.A.3 Characterization of Potential or Actual Sources of Contamination
[R 299.9504(c) and 40 CFR §270.14(d)]

This section describes actual or potential sources of contamination at the Dow Silicones Facility that may be subject to the corrective action requirements of Part 111 of Act 451. These sources

include waste management units that are discernible units at which contaminants have been placed at any time, or at which contaminants have been released, or at which there is a threat of release regardless of the intended use of such unit. These sources also include areas of concern that are those units which do not meet the definition of waste management unit, but which may have released contaminants to the environment on a non-routine basis, or which may present an unacceptable risk to public health, safety, welfare, or the environment.

Data collected as part of the RCRA Facility Investigations (RFIs) carried out between 1989 and 1995 have been submitted previously to DNRE and to U.S. EPA Region 5 (see references in Section B2.A.2). All solid waste management units (SWMUs) except the landfill and chemical sewer have been determined by U.S. EPA to require no further action at this time, as a result of corrective measures already taken, including installation of the Site Interceptor System (SIS).

There are two potential sources of contamination that are subject to the corrective action requirements at site closure. These are 800/1000 block landfill (including the 800 block container storage areas and the 800 block tank farm) and the chemical sewer. The U.S. EPA determined these areas required corrective action at site closure (letter from U.S. EPA to Dow Corning, dated September 30, 1994, see page 11). The locations of these areas are shown on the Figure B2-1. The container storage area is adjacent to the tank farm, and both are located on the landfill; therefore these areas are grouped together for the following discussions.

B2.A.3(a) 800/1000 Block Landfill (including 800 Block Container Storage Areas , 800 Block Tank farm)

B2.A.3(a)(1) Unit Characteristics

Figures A13-1 and B2-2 show the locations of the above-mentioned units on a topographic map. The 800 Block Container Storage buildings are constructed of steel siding on a steel frame, anchored to a concrete slab. The building is not insulated and open on one side, and contains no fixed equipment. The 800 Block Tank farm is provided with a concrete dike and floor, with a containment trench around the inside of the containment area that serves as an external liner. See Module A11 (Closure/Post closure Plan) for more information and details on closure activities of the above mentioned units. See Table B9-1 (Summary of Solid Waste Management Units) for more details on wastes managed and period of operation.

B2.A.3(a)(2) Waste Characteristics and Management

See Table A2-1 (Hazardous Waste Generated and Accepted at the Facility) for a list of all hazardous wastes managed at the facility and see Module A2 (Chemical and Physical Analyses), Section A2.A (Waste Description) for the description of wastes managed at the facility. The quantity of hazardous wastes handled at the facility is provided in Module A11 (Closure/Post-Closure Plan) and Section A11.A.5. See Module A6 (Preparedness/Prevention Plan) on the measures taken to prevent releases and migration of hazardous wastes.

B2.A.3(a)(3) History of Releases or Potential to Release

See Table B9-1 (Summary of SWMUs) and Appendix B9-1 (Location of SWMUs) for a summary and the locations of Solid Waste Management Units. See Table B9-5 (Release Information) for a summary of historical releases at the facility.

B2.B FACILITY'S ASSESSMENT OF KNOWN NATURE AND EXTENT OF CONTAMINATION

Dow Silicones has conducted extensive environmental sampling and analysis of groundwater and soils for the purpose of characterizing the nature and extent of any environmental contamination present at this facility. These data are included in the *RCRA Facility Investigation Final Report*, which was submitted to the DNRE on January 29, 2001.

A leak detection monitoring program is part of the current license. The monitoring program includes (among other things) regional aquifer monitoring, shallow aquifer monitoring and surface water monitoring in Lingle Drain. The results of the groundwater monitoring show no statistically significant effect on groundwater in the regional aquifer attributable to facility activities. Some localized effects on shallow groundwater are evident, due to historical contamination from plant and facility operations. No statistically significant effects on surface water quality in Lingle Drain have been observed.

B2.B.1 Groundwater

B2.B.1(a) Characterization History

The sample locations, analytical parameters, analytical results and maximum concentrations for groundwater monitoring are presented in Module B5, Environmental Monitoring Programs. Figure B5-1 is a map of sample locations. Nonaqueous phase liquids are not known to be present. Current methods are presented in Table B5-3 of Module B5, Environmental Monitoring Programs of this license application.

Groundwater concentration trend analyses are provided in Section 3 of annual monitoring reports. The most recent annual report was submitted in February 28, 2022.

The results of the groundwater monitoring show no statistically significant effect on groundwater in the regional aquifer attributable to the regulated units (800/1000 Block Landfill, 806 Tank Farm and 809 Container Storage Building). Some localized effects on shallow groundwater are evident, due to historical contamination from plant and facility operations. Measures are in place to protect groundwater (see Module A6 (Preparedness/Prevention Plan)).

B2.B.1(b) Description of Horizontal and Vertical Extent of Plume(s)

There are no statistically significant impacts on the regional (deep) aquifer or shallow groundwater attributable to the regulated units. Some localized effects on the shallow groundwater are evident. These impacts are due to historical contamination from plant and facility operations and predate the original licensing of the regulated units. The impacted shallow monitoring wells (SMW6-1, SMW6-2 and SMW7-1, based on fourth quarter 2021 monitoring data) are located to the west and south of the waste management area. Figure B5-1 shows the locations of these wells. The SIS prevents off-site migration of shallow groundwater.

B2.B.1(c) Horizontal and Vertical Direction of Contaminant Movement

This subsection is not applicable for the facility, since there is no groundwater contamination attributable to the regulated units.

B2.B.1(d) Velocity of Groundwater Contaminant Movement

This subsection is not applicable for the facility, since there is no on-site contamination attributable to the regulated units. However, information on groundwater velocity is provided in Section B3.B.1(a) of Module B3 (Hydrogeologic Report).

B2.B.1(e) Factors Influencing Plume Movement

This subsection is not applicable for the facility, since there is no on-site contamination attributable to the regulated units. However, information on factors influencing groundwater movement is provided in Section B3.B.1(a) of Module B3 (Hydrogeologic Report).

The Site Interceptor System (SIS) is designed to capture all shallow groundwater flowing off-site to eliminate the potential for off-site contamination from the Dow Silicones landfill, licensed facility, SWMUs and site operations. The SIS is comprised of a system of drainage tiles surrounding the Midland plant site, placed on the natural layer of low permeability clay that underlies the site and surrounding area. Water removed from the SIS is disposed of by pumping to the wastewater sewer, which flows to Dow Chemical's wastewater treatment plant, where it is treated under NPDES permit prior to discharge to the Tittabawassee River. The SIS has been in operation since its completion in 1997.

B2.B.1(f) Extrapolation of Future Contaminant Movement

This subsection is not applicable for the facility, since there is no on-site contamination attributable to the regulated units and the SIS captures shallow groundwater before it migrates off site. The landfill liner and thick clay layer over the regional aquifer prevents vertical migration of groundwater (see Section B2.B.2). Additional information on future groundwater movement is provided in Sections B3.B.1(a) and B3.B.2 of Module B3 (Hydrogeologic Report).

B2.B.1(g) Recommendations or Established Requirements for Additional Investigations

This subsection is not applicable for the facility, since there is no on-site contamination attributable to the regulated units and the SIS captures shallow groundwater before it migrates off site. The landfill liner and thick clay layer over the regional aquifer prevents vertical migration of groundwater (see Section B2.B.2). Additional information on future groundwater movement is provided in Sections B3.B.1(a) and B3.B.2 of Module B3 (Hydrogeologic Report).

B2.B.2 Soil

Because lead contaminated materials disposed in the landfill were placed in packaged form, the

potential for wind dispersal to the surrounding soil is minimized. Currently no hazardous wastes are disposed in the landfill.

The liner system of the landfill, including the native clay base and the compacted clay curtain walls, is designed to prevent migration of hazardous wastes and hazardous constituents from the landfill contents to the surrounding soil. The curtain walls are constructed of clay with a permeability of 1.8×10^{-8} cm/sec with a minimum thickness of six feet, and were keyed into the native clay base to prevent migration of liquids through this joint. A final cover of compacted clay and geomembrane will be installed upon closure of the landfill to further ensure that the contents remain isolated from surrounding soils. See Module A11 (Closure and Post closure Plans) for information about the final cover system and Module C3 (Landfill Information) for a description and drawings of the design and construction of the landfill liner

B2.B.2(a) Characterization History

The *Dow Corning Corporation Midland Facility RFI Release Assessment Work Plan* (Earth Tech, May 1995) describes soils sampling and analytical methods. *Section 3.4 describes soil sampling methods. Section 3.5 describes analytical methods.*

The *RCRA Facility Investigation Final Report* was submitted to the DNRE on January 29, 2001. This report describes results of soil investigations at the 4705 storm water pond and the former demolition pile. Sample locations and analytical data for the former demolition pile are presented in pages 3.A-354 through 3.A.359 of this report. Sample locations and analytical data for the 4705 storm water pond are presented in pages 3.A-335 through 3.A.3340 of this report.

There is a Soil Investigation currently underway in response to a release from a Water Management Unit (WMU) on May 26, 2018. EGLE approved the April 29, 2019 revision of the Workplan work is currently being executed

B2.B.2(b) Description of Horizontal and Vertical Extent of Contamination

There is no known on-site soil contamination attributed to the regulated units. The *RCRA Facility Investigation Final Report* was submitted to the DNRE on January 29, 2001. This report describes results of soil investigations at the 4705 storm water pond and the former demolition pile. The page numbers are cited in Section B2.B.2(a). There is no evidence that contamination originating from the facility has moved off facility property.

B2.B.2(c) Description of Soil and Contaminant Properties

There is no known on-site soil contamination attributed to the regulated units. See Section B2.B.2(a) for references to additional information.

B2.B.2(d) Velocity and Direction of Contaminant Movement

This subsection is not applicable for the facility since there is no known migration of soil contamination on the site.

B2.B.2(e) Extrapolation of Future Contaminant Movement

This subsection is not applicable for the facility, since there is no known migration of on-site soil contamination.

B2.B.2(f) Recommendations or Established Requirements for Additional Investigations

The U.S. EPA requested investigation of the landfill and chemical sewer at time of site closure. (Letter from U.S. EPA to Dow Corning, dated September 30, 1994, see page 11).

B2.B.3 Surface Water and Sediment

The landfill is located within 50 feet of Lingle Drain, a local drainage channel, and approximately one mile from the discharge of Lingle Drain to the Tittabawassee River. The landfill was constructed with a compacted clay curtain wall and an internal leachate collection system to prevent migration of contaminants to these waters. Additional sewer laterals have been installed outside the landfill directly to the north, west, and south to collect groundwater outside the landfill and thereby prevent the buildup of hydrostatic forces on the curtain wall from outside. This outside groundwater has also shown some signs of localized contamination which predates the installation of the curtain wall, and these sewers collect the contaminated shallow groundwater for disposal to the wastewater sewer. The shallow groundwater occurring between the landfill and Lingle Drain is perched and is seasonally sparse, limiting the potential for it to be an avenue for migration of hazardous constituents to Lingle Drain.

Lingle Drain is monitored and has not shown any evidence of contamination resulting from activities at this facility. See Module B5 (Environmental Monitoring Programs), Section B5.D (Surface Water Monitoring Program) for details on surface water monitoring.

B2.B.3(a) Characterization History

Long-term monitoring of surface water in Lingle Drain, which flows past the landfill, has not identified any impacts related to the site. See Module B5 (Environmental Monitoring Programs), Section B5.D (Surface Water Monitoring Program) for details on surface water monitoring.

B2.B.3(b) Description of Horizontal and Vertical Extent of Any Contamination

This subsection is not applicable for the facility, since there is no known surface water contamination.

B2.B.3(c) Velocity of Contaminant Movement

This subsection is not applicable for the facility, since there is no known surface water contamination.

B2.B.3(d) Description of Sediment Characteristics

Geotechnical data on sediment characteristics and Lingle drain is provided in Appendix B3-4.

B2.B.3(e) Description of Physical, Biological, and Chemical Factors That May Influence Contaminant Movement and Their Effects

This subsection is not applicable for the facility, since there is no known surface water contamination.

B2.B.3(f) Proposed or Final Mixing Zone Determinations for Any On-Site Contamination Venting to a Surface Water Body

This subsection is not applicable for the facility, since there is no known surface water contamination.

B2.B.3(g) Recommendations or Established Requirements for Additional Investigations

This subsection is not applicable for the facility, since there is no known surface water contamination.

B2.B.4 Air

No hazardous wastes have been disposed in the landfill at this facility since 1984, hence ambient air monitoring is not required at this facility. If Dow Silicones wishes to resume land disposal of lead containing wastes at this facility it will first obtain prior approval from EGLE and submit an ambient air monitoring plan.

The tank storage units at the 800 Block facility are equipped with inert nitrogen gas blanket systems including nitrogen relief valves which also function as conservation vents to minimize emissions of volatile organic compounds to the atmosphere. Dow Silicones has received an air emissions permit covering these tanks under Michigan Act 451, a copy of which is included in Section 1 of this license application. These tanks have also been included in Dow Silicones' Clean Air Act (CAA) Title V permit.

B2.B.4(a) Characterization History

This subsection is not applicable for the facility and no air sampling is performed at the facility.

B2.B.4(b) Description of Horizontal and Vertical Direction and Velocity of Contaminant Movement

This subsection is not applicable for the facility and no air sampling is performed at the facility.

B2.B.4(c) Rate and Amount of Release

This subsection is not applicable for the facility and no air sampling is performed at the facility.

B2.B.4(d) Recommendations or Established Requirements for Additional Investigations

The U.S. EPA requested investigation of the landfill and chemical sewer at time of site closure. (Letter from U.S. EPA to Dow Silicones, dated September 30, 1994, see page 11).

B2.B.5 Subsurface Gas Contamination

B2.B.5(a) Characterization History

This subsection is not applicable for the facility since there is no known on-site soil gas contamination.

B2.B.5(b) Description of Horizontal and Vertical Extent of Subsurface Gas Contamination Migration

This subsection is not applicable for the facility since there is no known on-site soil gas contamination.

B2.B.5(c) Rate, Amount, and Density of Gases Being Emitted

This subsection is not applicable for the facility since there is no known on-site soil gas contamination.

B2.B.5(d) Recommendations or Established Requirements for Additional Investigations

This subsection is not applicable for the facility since there is no known on-site soil gas contamination.

B2.C FACILITY'S EXPOSURE ASSESSMENT

There are no environmental impacts attributable to releases from the regulated units at this facility. The Environmental Indicator for Current Human Exposures Under Control (CA725) documents that no pathways were complete for any contaminated media-receptor combination. The soil investigations at the 4705 storm water pond and the former demolition pile determined that concentrations of all parameters in these areas were less than Part 201 direct human contact soil criteria in effect in 1995 (*RCRA Facility Investigation Final Report*, January 29, 2001).

B2.C.1 Human Exposure and Threats

B2.C.1(a) Exposure Pathway

Information on exposure pathway evaluation is provided in Module B4 (Environmental

Assessment), Section B4.C.2 (Potential Exposure Pathways).

B2.C.1(b) Actual or Potential Receptors

Information on exposure pathway evaluation is provided in Module B4 (Environmental Assessment), Section B4.C.2 (Potential Exposure Pathways).

B2.C.1(c) Evidence of Exposure

Information on exposure pathway evaluation is provided in Module B4 (Environmental Assessment), Section B4.C.2 (Potential Exposure Pathways).

B2.C.2 Environmental Exposure and Threats

B2.C.2(a) Exposure Pathway

Information on exposure pathway evaluation is provided in Module B4 (Environmental Assessment), Section B4.C.2 (Potential Exposure Pathways).

B2.C.2(b) Actual or Potential Receptors

Information on exposure pathway evaluation is provided in Module B4 (Environmental Assessment), Section B4.C.2 (Potential Exposure Pathways).

B2.C.2(c) Evidence of Exposure

Information on exposure pathway evaluation is provided in Module B4 (Environmental Assessment), Section B4.C.2 (Potential Exposure Pathways).

B2.D INTERIM MEASURES

B2.D.1 Site Interceptor System (SIS)

B2.D.1(a) Objective of the Measure

The Site Interceptor System (SIS) was completed and began operating in 1997. The SIS is an interim response designed to capture all shallow groundwater flowing off-site to eliminate the potential for off-site contamination from the Dow Silicones landfill, licensed facility, most of the Solid Waste Management Units (SWMUs) and site operations. The SIS addresses the off-site drinking water exposure pathway and the groundwater surface water interface exposure pathway. The SIS is comprised of a system of drainage tiles surrounding the Midland plant site, placed on the natural layer of low permeability clay that underlies the site and surrounding area. Water removed from the SIS is disposed of by pumping to the wastewater sewer, which flows to Dow Chemical's wastewater treatment plant, where it is treated under National Pollutant Discharge Elimination System (NPDES) permit prior to discharge to the Tittabawassee River. See Figure B2-3 (Drawing Y1-86188) for details on the SIS. The 4705 Storm Water Pond and former demolition

pile are located outside of the SIS, so shallow groundwater from these SWMUs is not captured by the SIS.

B2.D.1(b) Design and Construction

Details of SIS design and construction are provided in Section B2.A.3(a)(3)(Solid Waste Management Unit Information).

B2.D.1(c) Operation, Monitoring, and Maintenance

The SIS operates continuously. See Module A5 (Inspection Schedules) for facility inspections and schedules and Module B5 for more detailed information regarding monitoring the SIS.

The groundwater collected by the SIS is monitored every two years for a very long list of parameters and the data have been compared to the former Act 307 Type B criteria. Of all the chemicals included, only concentrations of arsenic, sodium, iron, manganese and chloride exceeded criteria. The SIS is also monitored quarterly for selected parameters. The groundwater gradients along the SIS are monitored to assess if the system is capturing shallow groundwater. SIS monitoring is included in Module B5, Environmental Monitoring.

B2.D.1(d) Evaluation of Measure Effectiveness

The effectiveness of the SIS corrective action measure in preventing contamination of the regional aquifer is evident in the fact that there have been no hazardous constituents detected passing the point of compliance at this facility. Groundwater gradients along the SIS are monitored to evaluate effectiveness of the SIS.

B2.D.1(e) Proposed or Required Schedules for Continued Operation or Future Changes in the Measure

No changes in operation of the SIS are proposed.

B2.E ENVIRONMENTAL INDICATORS

The *Current Human Exposures Under Control* Environmental Indicator concluded that current human exposures are expected to be under control under current and reasonably expected conditions.

The *Migration of Contaminated Groundwater Under Control* Environmental Indicator concluded that contaminated groundwater does not discharge into surface water bodies and groundwater monitoring data will be collected to verify that contaminated groundwater has remained within the horizontal and vertical dimensions of the existing area of contaminated groundwater.

B2.F FACILITY'S ASSESSMENT OF KNOWN OR PROPOSED CONSTITUENTS OF CONCERN

[R 299.9629(3)(a)(i) and (3)(b)(i)]

The known constituents of concern in groundwater are listed below. These are constituents detected in the shallow monitoring wells during the fourth quarter of 2021. The maximum concentrations and range of concentrations are also from the fourth quarter 2021.

Constituent	Range of concentrations (ug/L)
Benzene	<1 – 4.9
Chlorobenzene	<1 – 260
1,4-Dioxane	<20 - 92

(The shallow groundwater is not in an aquifer. These chemicals have not been detected in the regional aquifer.)

Module B5 presents a list of hazardous constituents proposed for the monitoring program. The reasons for including these constituents and excluding others that are in the current program are also presented in Module B5. In summary, the proposed constituents are those organic constituents detected in groundwater, selected metals with concentrations that have exceeded background concentrations, and selected inorganic constituents that have been used to assess the integrity of the monitoring wells.

B2.G ESTABLISHED OR PROPOSED CLEANUP CRITERIA

[R 299.9629(3)(a)(ii) and (iii) and R 299.9629(3)(b)(ii) and (iii)]

EGLE has provided Dow Silicones with site-specific volatilization to indoor air criteria. There are no other established or approved Part 201 cleanup criteria specific to the Dow Silicones Midland facility. The overall cleanup objective and criteria for the facility should be consistent with its industrial use and appropriate engineered or institutional controls that are or that may be implemented.

B2.H ESTABLISHED OR PROPOSED COMPLIANCE POINTS AND PERIODS

[R 299.9629(3)(a)(iv) and (v) and R 299.9629(3)(b)(iv) and (v)]

The compliance “points” are the regional aquifer down gradient of the regulated units and Lingle Drain.

B2.I OFF-SITE ACCESS

This section is not applicable, since there is no need for off-site access.

B2.J PUBLIC INVOLVEMENT PLAN

There are no on-going plans prepared for distributing information to the public regarding corrective actions at the Dow Silicones Midland facility.

B2.K HEALTH AND SAFETY PLAN

All work at the Dow Silicones Midland facility is done according to Internal Health and Safety protocols and procedures. Groundwater and related monitoring work is done according to Site-Specific Health and Safety Plan, Environmental Services, Dow Silicones. This plan is reviewed annually and updated as necessary.

Each department at Dow Silicones Midland follows their own Health and Safety, plans, protocols and procedures. Each department's Health and Safety Plan as well as other Health and Safety resources for the facility are located on the Dow Silicones Midland intranet either at their own department's Page or at the Employee Health Services Page. The Environmental Department's intranet has the Site Safety and Loss Prevention page (which includes safety meeting topics and videos, injury data history, material safety data sheets (MSDS) updates, site safety statistics, site standards, site safety plan, etc.) and the Emergency Plan.

B2.L NOTICE REQUIREMENTS

[R 299.9525]

The specified notice is in Appendix B2-1.

B2.M JUSTIFICATION FOR PROPOSED ELIMINATION OF ANY WASTE MANAGEMENT UNIT FROM THE CORRECTIVE ACTION PROGRAM OR INTENT TO PROCEED WITH CORRECTIVE ACTIONS

This section is not applicable to the facility because no waste management units are being eliminated from the corrective action program.

ATTACHMENT B2.E.1
ENVIRONMENTAL INDICATOR FORMS

DOCUMENTATION OF ENVIRONMENTAL INDICATOR DETERMINATION

EGLE adapted to Word 8/07

RCRA Corrective Action Environmental Indicator (EI) RCRA Info Code (CA725) Current Human Exposures Under Control

Facility Name: Dow Silicones Corporation
Facility Address: 3901 South Saginaw Road
Facility EPA ID #: MID 000 809 632

1. Has **all** available relevant/significant information on known and reasonably suspected releases to soil, groundwater, surface water/sediments, and air, subject to Resource Conservation Recovery Act of 1976 (RCRA) Corrective Action (e.g., waste management unit [WMU], regulated unit [RU], and area of concern [AOC]), been **considered** in this EI determination?

☒ If yes – check here and continue with #2 below.

☐ If no – reevaluate existing data, or

☐ If data are not available, skip to #6 and enter “IN” (more information needed) status code.

BACKGROUND

Definition of Environmental Indicators (for the RCRA Corrective Action)

EIs are measures being used by the RCRA Corrective Action Program to go beyond programmatic activity measures (reports received and approved, etc.) to track changes in the quality of the environment. The two EIs developed to date indicate the quality of the environment in relation to current human exposures to contamination and the migration of contaminated groundwater. An EI for nonhuman (ecological) receptors is intended to be developed in the future.

Definition of “Current Human Exposures Under Control” EI

A positive “Current Human Exposures Under Control” EI determination (“YE” status code) indicates that there are no “unacceptable” human exposures to “contamination” (i.e., contaminants in concentrations in excess of appropriate risk-based levels) that can be reasonably expected under current land- and groundwater-use conditions (for all “contamination” subject to RCRA Corrective Action at or from the identified facility [i.e., site-wide]).

Relationship of EI to Final Remedies

While final remedies remain the long-term objective of the RCRA Corrective Action Program the EIs are near-term objectives that are currently being used as program measures for the Government Performance and Results Act of 1993 (GPRA). The “Current Human Exposures Under Control” EIs are for reasonably expected human exposures under current land- and groundwater-use conditions ONLY and do not consider potential future land- or groundwater-use conditions or ecological receptors. The RCRA Corrective Action Program’s overall mission to protect human health and the environment requires that final remedies address these issues (i.e., potential future human exposure scenarios, future land and groundwater uses, and ecological receptors).

Duration/Applicability of EI Determinations

EI determinations status codes should remain in the RCRAInfo national database ONLY as long as they remain true (i.e., RCRAInfo status codes must be changed when the regulatory authorities become aware of contrary information).

2. Are groundwater, soil, surface water, sediments, or air **media** known or reasonably suspected to be **"contaminated"**¹ above appropriately protective risk-based "levels" (applicable promulgated standards, as well as other appropriate standards, guidelines, guidance, or criteria) from releases subject to RCRA Corrective Action (from WMUs, RUs or AOCs)?

	Yes	No	?	<u>Rationale/Key Contaminants</u>
Groundwater	☒	☐	☐	<u>VOCs>201 Default Cleanup Criteria</u>
Air (indoors) ²	☐	☒	☐	
Surface Soil (e.g., <2ft)	☒	☐	☐	<u>Cu>Background</u>
Surface Water	☐	☒	☐	
Sediment	☐	☒	☐	
Subsurf. Soil (e.g., >2ft)	☒	☐	☐	<u>VOCs & Cu>201 Default Cleanup Criteria</u>
Air (outdoors)	☐	☒	☐	

- ☐ If no (for all media) – skip to #6, and enter "YE", status code after providing or citing appropriate "levels" and referencing sufficient supporting documentation demonstrating that these "levels" are not exceeded.
- ☒ If yes (for any media) – continue after identifying key contaminants in each "contaminated" medium, citing appropriate "levels" (or provide an explanation for the determination that the medium could pose an unacceptable risk), and referencing supporting documentation.
- ☐ If unknown (for any media) – skip to #6 and enter "IN" status code.

Rationale and Reference(s):

Levels exceed Michigan Act 201 Default Cleanup Criteria - *Dow Corning Midland Facility RFI Release Assessment Final Report*.

¹"Contamination" and "contaminated" describes media containing contaminants (in any form, NAPL and/or dissolved, vapors, or solids, that are subject to RCRA) in concentrations in excess of appropriately protective risk-based "levels" (for the media, that identify risks within the acceptable risk range).

²Recent evidence (from the Colorado Department of Public Health and Environment, and others) suggests that unacceptable indoor air concentrations are more common in structures above groundwater with volatile contaminants than previously believed. This is a rapidly developing field and reviewers are encouraged to look to the latest guidance for the appropriate methods and scale of demonstration necessary to be reasonably certain that indoor air (in structures located above [and adjacent to] groundwater with volatile contaminants) does not present unacceptable risks.

3. Are there **complete pathways** between “contamination” and human receptors such that exposures can be reasonably expected under the current (land- and groundwater-use) conditions?

Summary Exposure Pathway Evaluation Table

Potential **Human Receptors** (Under Current Conditions)

<u>Contaminated Media</u>	Residents	Workers	Day-Care	Construction	Trespassers	Recreation	Food3
Groundwater	N	N	N	N			N
Air (indoors)							
Soil (surface, e.g., <2 ft)	N	N	N	N	N	N	N
Surface Water							
Sediment							
Soil (subsurface e.g., >2 ft)				N			N
Air (outdoors)							

Instructions for Summary Exposure Pathway Evaluation Table:

- A. Strike-out specific Media including Human Receptors' spaces for Media which are not “contaminated” as identified in #2 above.
- B. Enter “yes” or “no” for potential “completeness” under each “Contaminated” Media – Human Receptor Combination (Pathway).

Note: In order to focus the evaluation to the most probable combinations some potential “Contaminated” Media – Human Receptor combinations (Pathways) do not have check spaces (“___”). While these combinations may not be probable in most situations they may be possible in some settings and should be added as necessary.

- ☒ If no (Pathways are not complete for any contaminated media-receptor combination) – skip to #6, and enter “YE” status code, after explaining and/or referencing conditions(s) in-place, whether natural or man-made, preventing a complete exposure pathway from each contaminated medium (e.g., use optional Pathway Evaluation Work Sheet to analyze major pathways).
- ☐ If yes (Pathways are complete for any “Contaminated” Media – Human Receptor

3Indirect Pathway/Receptor (vegetables, fruits, crops, meat and dairy products, fish, shellfish, etc.).

combination) – continue after providing supporting explanation.

- ☐ If unknown (for any “Contaminated” Media – Human Receptor combination) – skip to #6 and enter “IN” status code.

Rationale and Reference(s)

All groundwater is collected by a collection tile/barrier wall system – *Midland Facility RFI Release Assessment Final Report*. Security prevents trespassing and recreation. All subsurface construction work must comply with the Midland Plant Excavation Procedure which ensures proper protection equipment is used.

4. Can the **exposures** from any of the complete Pathways identified in #3 be reasonably expected to be “**significant**”⁴ (i.e., potentially “unacceptable” because exposures can be reasonably expected to be: (1) greater in magnitude [intensity, frequency and/or duration] than assumed in the derivation of the acceptable “levels” [used to identify the “contamination”]; or (2) the combination of exposure magnitude [perhaps even though low] and contaminant concentrations [that may be substantially above the acceptable “levels”] could result in greater than acceptable risks)?

- ☐ If no (exposures can not be reasonably expected to be significant [i.e., potentially “unacceptable”] for any complete exposure pathway) – skip to #6 and enter “YE” status code after explaining and/or referencing documentation justifying why the exposures (from each of the complete pathways) to “contamination” (identified in #3) are not expected to be “significant”.
- ☐ If yes (exposures could be reasonably expected to be “significant” [i.e., potentially “unacceptable”] for any complete exposure pathway) – continue after providing a description (of each potentially “unacceptable” exposure pathway) and explaining and/or referencing documentation justifying why the exposures (from each of the remaining complete pathways) to “contamination” (identified in #3) are not expected to be “significant.”
- ☐ If unknown (for any complete pathway) - skip to #6 and enter “IN” status code.

Rationale and Reference(s):

5. Can the “significant” **exposures** (identified in #4) be shown to be within **acceptable** limits?

- ☐ If yes (all “significant” exposures have been shown to be within acceptable limits) – continue and enter “YE” after summarizing and referencing documentation justifying why all

⁴If there is any question on whether the identified exposures are “significant” (i.e., potentially “unacceptable”) consult a human health Risk Assessment specialist with appropriate education, training and experience.

“significant” exposures to “contamination” are within acceptable limits (e.g., a site-specific Human Health Risk Assessment).

- ☐ If no (there are current exposures that can be reasonably expected to be “unacceptable”) – continue and enter “NO” status code after providing a description of each potentially “unacceptable” exposure.
- ☐ If unknown (for any potentially “unacceptable” exposure) – continue and enter “IN” status code.

Rationale and Reference(s):

6. Check the appropriate RCRAInfo status codes for the Current Human Exposures Under Control EI Code (CA725), obtain supervisory signature and date on the EI determination below, and attach appropriate supporting documentation as well as a map of the facility.

- ☒ YE – Yes, “Current Human Exposures Under Control” has been verified. Based on a review of the information contained in this EI Determination, “Current Human Exposures” are expected to be “Under Control” at the _____ facility, EPA ID # _____, located at _____ under current and reasonably expected conditions. This determination will be reevaluated when the agency/state becomes aware of significant changes at the facility.
- ☐ NO – “Current Human Exposures” are NOT “Under Control.”
- ☐ IN – More information is needed to make a determination.

Completed by: _____ Date: (type date)
(type name)
(type title)
Materials Management Division
Michigan Department of Environment, Great Lakes, and Energy
517- -

Supervisor: _____ Date: (type date)
(type name)
(type title)
Materials Management Division
Michigan Department of Environment, Great Lakes, and Energy
517- -

Locations where references may be found:

Hazardous Waste Section facility files at:

Materials Management Division

Michigan Department of Environment, Great Lakes, and Energy

525 West Allegan Street

Lansing, Michigan 48933

Contact e-mail addresses:

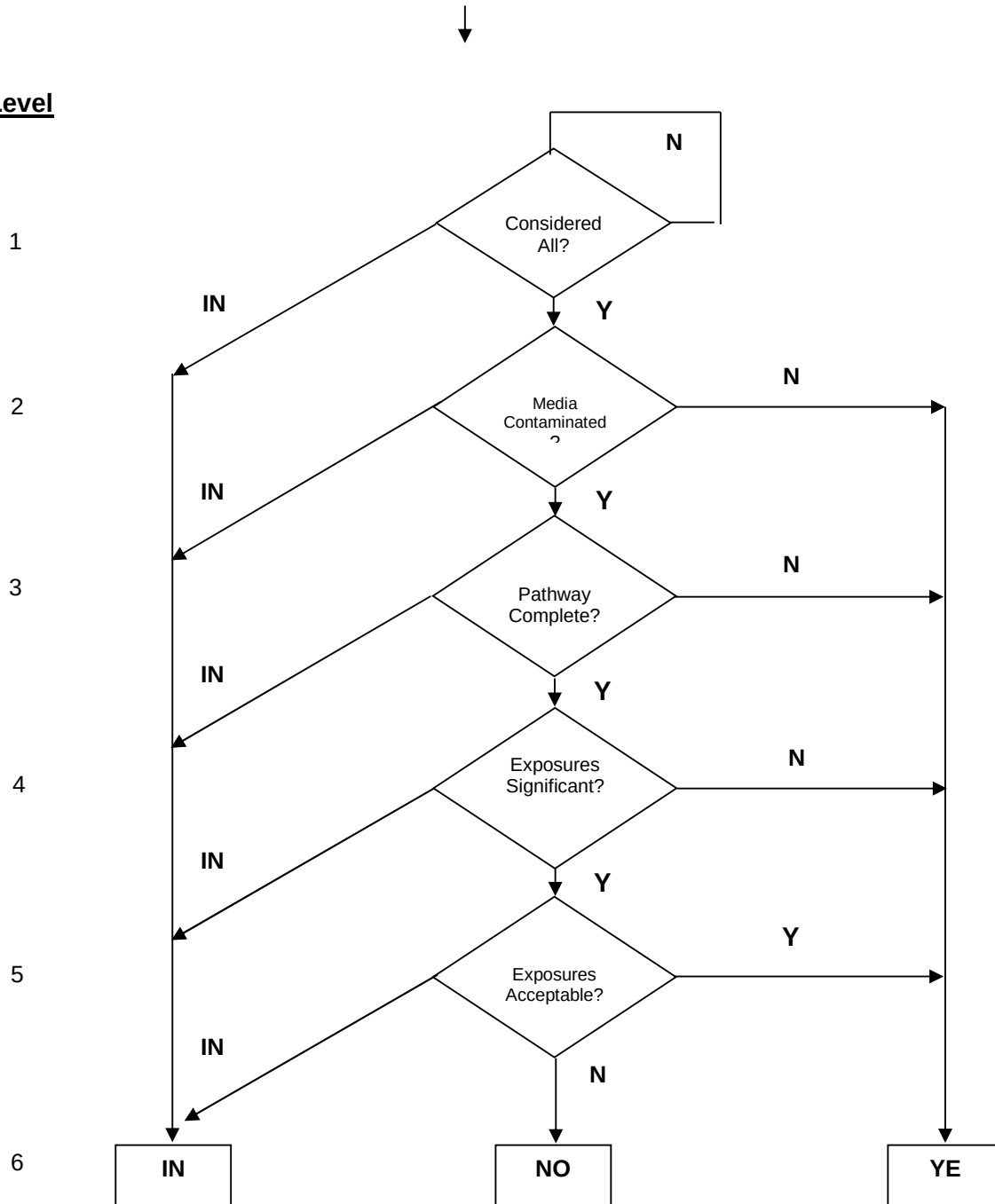
(type name) - (type e-mail)

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Final Note: The human exposures EI is a qualitative screening of exposures and the determinations within this document should not be used as the sole basis for restricting the scope of more detailed (e.g., site-specific) assessments of risk.

Facility Name: Dow Silicones Corporation
EPA ID#: MID 000 809 632
City/State: Midland, MI

Level



DOCUMENTATION OF ENVIRONMENTAL INDICATOR DETERMINATION

EGL E adapted to Word 8/07

RCRA Corrective Action Environmental Indicator (EI) RCRAInfo Code (CA750) Migration of Contaminated Groundwater Under Control

Facility Name: Dow Silicones Corporation
Facility Address: 3901 Saginaw Rd., Midland MI
Facility EPA ID #: MID 000 809 632

1. Has **all** available relevant/significant information on known and reasonably suspected releases to the groundwater media, subject to RCRA Corrective Action (e.g., from waste management units (WMU), regulated units (RU), and areas of concern (AOC)), been **considered** in this EI determination?

☒ If yes - check here and continue with #2 below.

☐ If no - reevaluate existing data, or

☐ If data are not available, skip to #8 and enter "IN" (more information needed) status code.

BACKGROUND

Definition of Environmental Indicators (for the RCRA Corrective Action)

EIs are measures being used by the RCRA Corrective Action Program to go beyond programmatic activity measures (e.g., reports received and approved, etc.) to track changes in the quality of the environment. The two EIs developed to-date indicate the quality of the environment in relation to current human exposures to contamination and the migration of contaminated groundwater. An EI for nonhuman (ecological) receptors is intended to be developed in the future.

Definition of "Migration of Contaminated Groundwater Under Control" EI

A positive "Migration of Contaminated Groundwater Under Control" EI determination ("YE" status code) indicates that the migration of "contaminated" groundwater has stabilized and that monitoring will be conducted to confirm that contaminated groundwater remains within the original "area of contaminated groundwater" (for all groundwater "contamination" subject to RCRA Corrective Action at or from the identified facility [i.e., site-wide]).

Relationship of EI to Final Remedies

While final remedies remain the long-term objective of the RCRA Corrective Action Program the EIs are near-term objectives that are currently being used as program measures for the Government Performance and Results Act of 1993, (GPRA). The "Migration of Contaminated

Groundwater Under Control” EI pertains ONLY to the physical migration (i.e., further spread) of contaminated groundwater and contaminants within groundwater (e.g., nonaqueous phase liquids or NAPLs). Achieving this EI does not substitute for achieving other stabilization or final remedy requirements and expectations associated with sources of contamination and the need to restore, wherever practicable, contaminated groundwater to be suitable for its designated current and future uses.

Duration/Applicability of EI Determinations

EI determinations status codes should remain in the RCRAInfo national database ONLY as long as they remain true (i.e., RCRAInfo status codes must be changed when the regulatory authorities become aware of contrary information).

2. Is **groundwater** known or reasonably suspected to be “**contaminated**”¹ above appropriately protective “levels” (i.e., applicable promulgated standards, as well as other appropriate standards, guidelines, guidance, or criteria) from releases subject to RCRA Corrective Action, anywhere at, or from, the facility?

- ☒ If yes - continue after identifying key contaminants, citing appropriate “levels,” and referencing supporting documentation.
- ☐ If no - skip to #8 and enter “YE” status code, after citing appropriate “levels,” and referencing supporting documentation to demonstrate that groundwater is not “contaminated.”
- ☐ If unknown - skip to #8 and enter “IN” status code.

Rationale and Reference(s):

VOCs exceed Michigan Act 201 Default Cleanup Criteria.

Dow Corning Midland Facility RFI Release Assessment Final Report

3. Has the **migration** of contaminated groundwater **stabilized** (such that contaminated groundwater is expected to remain within “existing area of contaminated groundwater”² as defined by the monitoring locations designated at the time of this determination)?

- ☒ If yes - continue, after presenting or referencing the physical evidence (e.g., groundwater sampling/measurement/migration barrier data) and rationale why contaminated groundwater is expected to remain within the (horizontal or vertical) dimensions of the “existing area of groundwater contamination”².
- ☐ If no (contaminated groundwater is observed or expected to migrate beyond the designated locations defining the “existing area of groundwater contamination”²) – skip to #8 and enter “NO” status code, after providing an explanation.

- ☐ If unknown - skip to #8 and enter "IN" status code.

Rationale and Reference(s):

Contaminated groundwater is not expected to migrate off-site since Dow Silicones has installed a Site Interceptor System (SIS). The SIS is designed to capture all shallow groundwater flowing off-site to eliminate the potential for off-site contamination from the Dow Silicones landfill, licensed facility, SWMUs and site operations. The SIS is comprised of a system of drainage tiles surrounding the Midland plant site, placed on the natural layer of low permeability clay which underlies the site and surrounding area. Water removed from the SIS is disposed of by pumping to the wastewater sewer, which flows to Dow Chemical's wastewater treatment plant, where it is treated under NPDES permit prior to discharge to the Tittabawassee River. The SIS has been in operation since its completion in 1997.

4. Does "contaminated" groundwater **discharge** into **surface water** bodies?

- ☐ If yes - continue after identifying potentially affected surface water bodies.
- ☒ If no - skip to #7 (and enter a "YE" status code in #8, if #7 = yes) after providing an explanation and/or referencing documentation supporting that groundwater "contamination" does not enter surface water bodies.
- ☐ If unknown - skip to #8 and enter "IN" status code.

Rationale and Reference(s):

5. Is the **discharge** of "contaminated" groundwater into surface water likely to be "**insignificant**" (i.e., the maximum concentration³ of each contaminant discharging into surface water is less than 10 times their appropriate groundwater "level," and there are no other conditions [e.g., the nature, and number, of discharging contaminants, or environmental setting], that significantly increase the potential for unacceptable impacts to surface water, sediments, or eco-systems at these concentrations)?

- ☐ If yes - skip to #7 (and enter "YE" status code in #8 if #7 = yes), after documenting: (1) the maximum known or reasonably suspected concentration³ of key contaminants discharged above their groundwater "level," the value of the appropriate "level(s)," and if there is evidence that the concentrations are increasing; and (2) provide a statement of professional judgment/explanation (or reference documentation) supporting that the discharge of groundwater contaminants into the surface water is not anticipated to have unacceptable impacts to the receiving surface water, sediments, or eco-system.
- ☐ If no - (the discharge of "contaminated" groundwater into surface water is potentially significant) - continue after documenting: (1) the maximum known or reasonably suspected concentration³ of each contaminant discharged above its groundwater "level," the value of the appropriate "level(s)," and if there is evidence that the concentrations are increasing; and (2) for any contaminants discharging into surface water in concentrations³ greater than 100 times their appropriate groundwater "levels," the estimated total amount

(mass in kg/yr) of each of these contaminants that are being discharged (loaded) into the surface water body (at the time of the determination), and identify if there is evidence that the amount of discharging contaminants is increasing.

☐ If unknown - enter "IN" status code in #8.

Rationale and Reference(s):

6. Can the **discharge** of "contaminated" groundwater into surface water be shown to be "**currently acceptable**" (i.e., not cause impacts to surface water, sediments or eco-systems that should not be allowed to continue until a final remedy decision can be made and implemented⁴)?

☐ If yes - continue after either: (1) identifying the final remedy decision incorporating these conditions, or other site-specific criteria (developed for the protection of the site's surface water, sediments, and eco-systems), and referencing supporting documentation demonstrating that these criteria are not exceeded by the discharging groundwater; OR (2) providing or referencing an interim-assessment,⁵ appropriate to the potential for impact, that shows the discharge of groundwater contaminants into the surface water is (in the opinion of a trained specialists, including ecologist) adequately protective of receiving surface water, sediments, and eco-systems, until such time when a full assessment and final remedy decision can be made. Factors that should be considered in the interim-assessment (where appropriate to help identify the impact associated with discharging groundwater) include: surface water body size, flow, use/classification/habitats and contaminant loading limits, other sources of surface water/sediment contamination, surface water and sediment sample results and comparisons to available and appropriate surface water and sediment "levels," as well as any other factors, such as effects on ecological receptors (e.g., via bio-assays/benthic surveys or site-specific ecological Risk Assessments), that the overseeing regulatory agency would deem appropriate for making the EI determination.

☐ If no - (the discharge of "contaminated" groundwater can not be shown to be "**currently acceptable**") - skip to #8 and enter "NO" status code, after documenting the currently unacceptable impacts to the surface water body, sediments, and/or eco-systems.

☐ If unknown - skip to 8 and enter "IN" status code.

Rationale and Reference(s):

7. Will groundwater **monitoring**/measurement data (and surface water/sediment/ecological data, as necessary) be collected in the future to verify that contaminated groundwater has remained within the horizontal (or vertical, as necessary) dimensions of the “existing area of contaminated groundwater?”
- ☒ If yes - continue after providing or citing documentation for planned activities or future sampling/measurement events. Specifically identify the well/measurement locations which will be tested in the future to verify the expectation (identified in #3) that groundwater contamination will not be migrating horizontally (or vertically, as necessary) beyond the “existing area of groundwater contamination.”
- ☐ If no - enter “NO” status code in #8.
- ☐ If unknown - enter “IN” status code in #8.

Rationale and Reference(s):

Dow Coming has instituted a detection monitoring program which satisfies the requirements of MAC Rule 299.9612 and 40 C.F.R. 264 Subpart F. This monitoring program has included sampling of seven deep monitoring wells which are terminated in the regional aquifer, and eight shallow monitoring wells. See the Hydrogeological Report of the facility license application for a complete description of the site hydrogeology and well placement.

The results of the groundwater monitoring show no statistically significant effect on groundwater in the regional aquifer attributable to facility activities. Some localized effects on shallow groundwater are evident, due to historical contamination from plant and facility operations. The contamination at these locations is effectively prevented from migrating offsite by the Site Interceptor System, described in Section 3.D, “Summary of Corrective Action”. Contaminants are also prevented from entering the regional aquifer by the presence of an aquiclude consisting of an approximately 40 thick layer of low permeability natural clay. See, “Hydrogeological Report”, for complete information on site hydrogeology.

8. Check the appropriate RCRAInfo status codes for the Migration of Contaminated Groundwater Under Control EI (event code CA750), obtain supervisor signature and date on the EI determination below, and (attach appropriate supporting documentation as well as a map of the facility.
- ☒ YE - Yes, “Migration of Contaminated Groundwater Under Control” has been verified. Based on a review of the information contained in this EI determination, it has been determined that the “Migration of Contaminated Groundwater” is “Under Control” at the Dow Silicones facility, EPA ID # MID 809 632, located at 3901 Saginaw Road, Midland, MI. Specifically, this determination indicates that the migration of “contaminated” groundwater is under control, and that monitoring will be conducted to confirm that contaminated groundwater remains within the “existing area of contaminated groundwater.” This determination will be reevaluated when the agency/state becomes

aware of significant changes at the facility.

- ☐ NO - Unacceptable migration of contaminated groundwater is observed or expected.
- ☐ IN - More information is needed to make a determination.

Completed by: _____ Date (type date)

(type name)

(type title)

Materials Management Division

Michigan Department of Environment, Great Lakes, and Energy

517- -

Supervisor: _____ Date (type date)

(type name)

(type title)

Materials Management Division

Michigan Department of Environment, Great Lakes, and Energy

Locations where references may be found:

Hazardous Waste Section facility files at:

Materials Management Division

Michigan Department of Environment, Great Lakes, and Energy

525 West Allegan Street

Lansing, Michigan 48933

Contact e-mail addresses:

(type name) - (type e-mail)

(type name) - (type e-mail)

Facility Name: Dow Silicones Corporation
EPA ID#: MID 000 809 632
City/State: Midland, MI

**MIGRATION OF CONTAMINATED GROUNDWATER
UNDER CONTROL (CA 750)**

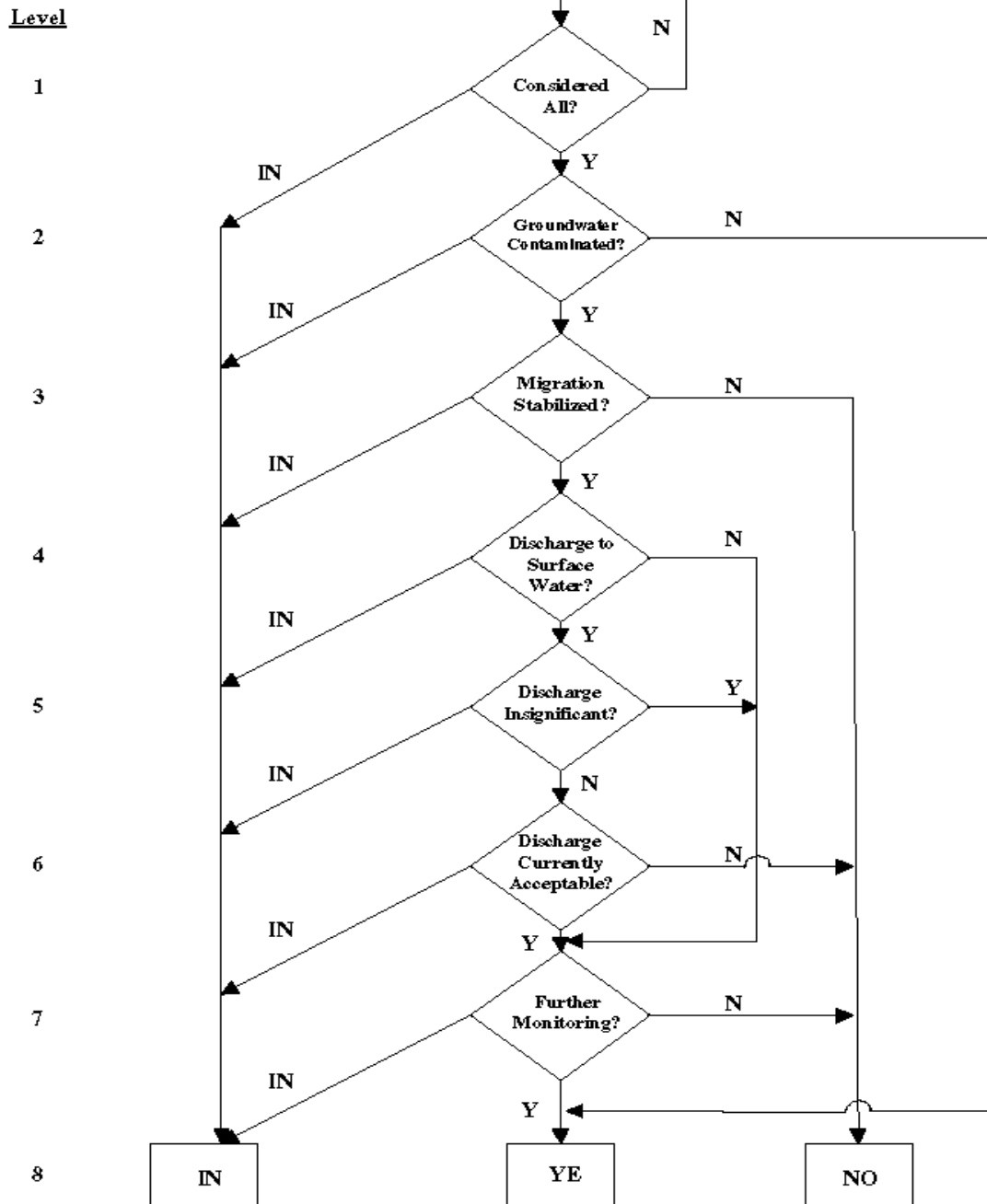


Table B9-1
Summary of SWMUs
Dow Silicones Corporation, Midland, Michigan

(ID#s refer to Drawing Y1-74997, provided in Appendix B9-1)

ID #	Description	Wastes Managed	Period of Operation	Status	Closure File Date/ Agency Submitted
N/A	Surface sands surrounding landfill	Benzene, chlorobenzene, ethylbenzene, toluene, xylene	Historic	NFA ¹	September 30, 1994 / EPA Region V
1	Neutralization Bed: Synthetic membrane with 2 ft. clay cover	Corrosive (acidic) brine wastewater - D002	1975-1989	Closed ²	December 16, 1992 / DNRE
2	Neutralization Tank: Concrete, lined with HDPE; secondary containment consisting of 60 mil polyethylene on clay base, with leak detection	Corrosive (acidic) brine wastewater - D002	1988-present	NFA ¹	September 30, 1994 / EPA Region V
3	304 Vinyl Chloride Vent Incinerator - emissions control device	Vinyl chloride air emissions - not a solid waste	1974-1978	NFA ¹	September 30, 1994 / EPA Region V
4	337 Scrubber Gel Accumulation Pond	Corrosive (D002, acid) brine solutions containing HCl, nonreg. siloxane gels	1971-1988	NFA ^{1, 6}	September 30, 1994 / EPA Region V
4	337 Scrubber Gel Accumulation Tank	Corrosive (D002, acid) brine solutions containing HCl, nonreg. siloxane gels	1987 present	NFA ¹	September 30, 1994 / EPA Region V
5	400 Block Wood Ash Storage Building	Nonregulated wood ash from wood-fire electric power generating process	1982-present	NSC A ⁴	Covered under the existing SIS Corrective Action
6	501 Building North Skimmer	Wastewater with silicones and solvents (D001)	1977-present	NFA ¹	September 30, 1994 / EPA Region V
7	501 Building South Skimmer	Wastewater with silicones and solvents (D001)	1979-2005	NFA ¹	September 30, 1994 / EPA Region V

Table B9-1

Summary of SWMUs
Dow Silicones Corporation, Midland, Michigan

ID#s refer to Drawing Y1-74997, provided in Appendix B9-1

ID #	Description	Wastes Managed	Period of Operation	Status	Closure File Date/ Agency Submitted
8	505 Building East Skimmer	Wastewater with silicones and solvents (D001)	1979-present	NFA ¹	September 30, 1994 / EPA Region V
9	700 Block Waste Pile	Debris, soil, crushed drums	1950's & '60's	NFA ¹	September 30, 1994 / EPA Region V
10	513 Spill Area Pond	Toluene	May, 1987	NFA ¹	September 30, 1994 / EPA Region V
11	800 Block Container Storage facilities, original	Solvents, chlorosilanes, silicone fluids, debris, nonhazardous wastes - primary waste codes D001, D003, F002-F005	801: 1978-present 809: 1988-present	NSC A ⁴	Covered under the existing SIS Corrective Action
12	Landfill: 6-ft. thick compacted clay walls and 25-ft. thick native clay liner, with leachate collection system and external interceptor drainage system.	Nonhazardous wastes since 1984; D008 (lead) prior to that time	1943-Present	existing ⁵	Existing unit, still in operation. Not closed
13	Truck Wash Facility	Dirt tracked from landfill on vehicles - RCRA non-regulated	1986-present	NFA ¹	September 30, 1994 / EPA Region V

Table B9-1
Summary of SWMUs (continued)
Dow Silicones Corporation, Midland, Michigan

ID#s refer to Drawing Y1-74997, provided in Appendix B9-1

ID #	Description	Wastes Managed	Period of Operation	Status	Closure File Date/ Agency Submitted
14	800 Block Tank Farm, original	Solvents, chlorosilanes, silicone fluids - primary waste codes D001, D003, F002-F005	1968-1989	Closed ⁸	May 21, 1990 / DNRE
15	Site Paint Area: 62,500 ft ²	Mineral spirits, toluene, xylene	1972 - present	NFA ¹	September 30, 1994 / EPA Region V
16	Benzene Spill Area	Benzene	January 1989	NFA ¹	September 30, 1994 / EPA Region V
17	Quench Pond: Basins excavated in native clay, with bentonite curtain wall for groundwater protection	Ignitable, corrosive, and reactive chlorosilane wastes - D001, D002, D003	1975-1988	Closed ³	April 5, 1996 / DNRE
18	Aboveground Quencher Tank: Concrete with synthetic liner, on clay base with bentonite curtain wall for groundwater protection	Ignitable, corrosive, and reactive chlorosilane wastes - D001, D002, D003	1987-1994	NFA ¹	September 30, 1994 / EPA Region V
19	Transfer Stations 207 Bldg: Compactor for nonhaz. trash	Nonhazardous trash and scrap metal	207 Bldg: 1974-Present	NFA ¹	September 30, 1994 / EPA Region V
19	800 Block: Compactor for nonhaz. trash and bin for scrap metal	Nonhazardous trash and scrap metal	1979-Present	Existing	Existing unit, still in operation. Not closed
20	207 Spill Area	Toluene, xylene, 1-1-1-trichloroethane	October, 1975	NFA ¹	September 30, 1994 / EPA Region V
21	Dow Injection Well	Nonregulated wastewater	1951-1969	NFA ¹	September 30, 1994 / EPA Region V
22	505 Spill Area	Toluene, benzene	February, 1979	NFA ¹	September 30, 1994 / EPA Region V

Table B9-1
Summary of SWMUs (continued)
Dow Silicones Corporation, Midland, Michigan

ID#s refer to Drawing Y1-74997, provided in Appendix B9-1

ID #	Description	Wastes Managed	Period of Operation	Status	Closure File Date/ Agency Submitted
23	513 (Pinto) Spill Area	Toluene	May, 1987	NFA ¹	September 30, 1994 / EPA Region V
	Chemical Sewer	Various solvents	current	Existing ⁵	Existing unit, still in operation. Not closed
26	New Site Paint Facility	Mineral spirits, toluene, xylene	current	Existing	Existing units, still in operation. Not closed
27	604 Vaults	Carbon tetrachloride, chloroform, toluene, dichloropropane	current	Existing	Existing unit, still in operation. Not closed
28	802 Dewatering area	Mixed solvents	1990-2009	Demolished ⁹	Area will be included in the 800 Block Closure
SWMUs not addressed by SIS					
24	Demolition Pile	Construction debris		NFA ⁷	Not Applicable for Closure
25	4705 Stormwater Retention Pond	Low levels of mixed solvents	current	NFA ⁷	Existing units, still in operation. Not closed

Table B9-1
Summary of SWMUs (continued)
Dow Silicones Corporation, Midland, Michigan

Notes:

1. NFA - No further action. These SWMUs were listed by U.S. EPA as requiring no further action. This determination was contained in Response 2.a. of the document "Response to Comments on the Draft Federal HSWA Permit", transmitted to Dow Corning with a letter from Norman R. Niedergang, Associate Division Director for RCRA, Region 5 U.S. EPA, dated September 30, 1994.
2. Closed. Closure of the Neutralization Bed unit was accepted by DEQ, as documented in letter of December 16, 1992 from Roland Harmes, Michigan DEQ to Wayne Winslow, Dow Corning. Response 2.b. of the document cited in Note 1, above, states this unit is "not subject to corrective action at this time..." because of closure.
3. Closure of the Quench Pond unit was accepted by DEQ, as documented in letter of April 5, 1996 from Jim Sygo, Michigan DEQ to Ron Perry, Dow Corning. Response 2.b. of the document cited in Note 1, above, states this unit is "not subject to corrective action at this time..." because of closure.
4. NSCA - Not subject to corrective action. Response 2.c. in the document cited in Note 1, above, states that these units "are not subject to corrective action at this time since the units have been determined to have adequate secondary containment, lack evidence of any release of hazardous waste or hazardous constituents, and are covered by the SIS corrective measure..."
5. Existing units, still in operation. Response 2.d. of the document cited in Note 1, above, states that the Chemical Sewer and Landfill "will be subject to corrective action when the facility undergoes final closure..." Until such time, any potential releases are adequately addressed by the SIS.
6. When the 337 Scrubber Gel Accumulation Pond was closed a dewatering system of perimeter tiles was installed and accumulated groundwater pumped to the chemical sewer for treatment.
7. Extensive sampling conducted on both AOC's concluded there were no exceedances of USEPA or relevant Michigan Cleanup Criteria, and therefore no further action should be required.
8. Closure of the original 800 Block tank farm was certified and submitted to MDEQ on May 21, 1990.
9. Concrete dewatering area was removed after proper decontamination. Material was placed into the 800 block landfill. Since area is part of the 800 block facility it will be closed as part of the final closure of the facility, and therefore no further action is required.

Table B9-5
Release Information 1999-2021
Dow Silicones Corporation, Midland, Michigan

Date of Release	Amount & Type of Material	Location	Media	Corrective Measures
2-19-99	4000 lbs.mixed Chlorosilanes and Allyl Chloride	2703 tank farm, existing SWMU	Secondary containment	Spilled material absorbed
3-10-99	1.4 lbs. of Benzene	303 Bldg.,	Air – vapor only	n/a
3-20-99	3.6 lbs. of volatile Methyl Siloxane	501 Bldg.	Air – vapor only	n/a
9-7-99	375 lbs. of Sulfuric Acid	311 tank farm, existing SWMU	Secondary containment	Spilled material flushed to chemical sewer for treatment
9-22-99	10 lbs. of HCL	340 Bldg.	Air – vapor only	n/a
9-28-99	Less than 1 lb. of HCL	304 Bldg.	Air – vapor only	n/a
11-17-99	700 lbs. of Isopropyl Alcohol	2901 Bldg.	Air – vapor only	n/a
12-1-99	601 lbs. of Methylsilane/Toluene	3102 Bldg.	Air – vapor only	n/a
6-8-00	8.4 lbs. of Xylene	322 Bldg.	Air, secondary containment	Spilled material absorbed and packaged for disposal
6-17-00	280 lbs. of Xylene	321 tank farm, existing SWMU	Air, secondary containment	Spilled material absorbed and packaged for disposal
6-17-00	1.4 lbs of Toluene/Benzene	25-101 tank, 2502 tank farm, existing SWMU	Air, secondary containment	Spilled material flushed to chemical sewer for treatment
8-2-00	778 lbs. of Propene	2703 tank farm	Air – vapor only	n/a

Table B9-5
Release Information 1999-2021
Dow Silicones Corporation, Midland, Michigan

Date of Release	Amount & Type of Material	Location	Media	Corrective Measures
2-8-01	37 lbs of Benzene	304 Bldg.	Air – vapor only	n/a
2-20-01	1464 lbs. of Isopropyl Alcohol	207 Bldg.	Air – vapor only	n/a
3-2-01	124 lbs. Isopropyl Alcohol and 14 lbs. of Methanol	207 Bldg.	Air – vapor only	n/a
5-22-01	1625 lbs. of Heptane	321 Bldg.	Air – vapor only	n/a
7-2-01	5000 lbs. of Acetylene gas	322 Bldg.	Air – vapor only	n/a
7-10-01	3150 lbs. of Benzene and 1350 lbs. Cyclohexane	306 tank farm, existing SWMU	Air, secondary containment	Spilled material absorbed and packaged for disposal
9-5-01	900 lbs. of Acetylene gas	322 Bldg.	Air – vapor only	n/a
4-17-02	1.0 lb. of Tetramethoxy and Trimethoxysilane	2703 Bldg.	Air, secondary containment	Spilled material absorbed and packaged for disposal
12-13-02	150 lbs. of Methyl Chloride and 500 lbs. of HCL	311 Bldg.	Air – vapor only	n/a
7-8-03	352 Lbs. of Methyl Chloride	2703 Bldg.	Air – vapor only	n/a
8-13-03	100 lbs. Benzene	304 Bldg.	Air – vapor only	n/a
8-18-03	560 lbs. of Trifluoropropene	604 Bldg.	Air – vapor only	n/a
1-14-04	16000 lbs. Calcium Chloride	340 Bldg., existing SWMU	Secondary containment	Spilled material flushed to chemical sewer for treatment
1-25-04	40 lbs. of Volatile Organic compounds.	322 Bldg.	Air – vapor only	n/a

Table B9-5
Release Information 1999-2021
Dow Silicones Corporation, Midland, Michigan

Date of Release	Amount & Type of Material	Location	Media	Corrective Measures
2-25-04	541 lbs. of Benzene	304 Bldg.	Air, secondary containment	Spilled material absorbed and packaged for disposal
3-3-04	300 lbs. of Methyl chloride	2703 Bldg.	Air – vapor only	n/a
5-13-04	830 lbs. of Trifluoropropene	604 Bldg.	Air – vapor only	n/a
9-10-04	317 lbs. of Methyl Chloride	340 Bldg.	Air – vapor only	n/a
2-20-05	395 lbs. of Hexamethyldisiloxane and 9 lbs. of Hexamethylcyclotrisiloxane	501 Bldg.	Air – vapor only	n/a
5-6-05	100 lbs. of Ammonia	322 Bldg.	Air – vapor only	n/a
2-25-06	260 lbs. of Methylhydrogendichlorosilane, 75 lbs. of HCL, 447 lbs. of CO2 and 285 lbs. of CO	322 Bldg.	Air, secondary containment	Spilled material absorbed and packaged for disposal
10-20-06	254 lbs. of HCL	515 Bldg.	Air – vapor only	n/a
5-31-07	442 lbs. of Propylene and 4 lbs. of Allyl Chloride	2703 Bldg.	Air – vapor only	n/a
5-15-08	382 lbs. of Biphenyl and 1413 lbs. of Phenyl Ether	341 Bldg.	Air – vapor only	n/a
6-25-08	1764 lbs. of Heptane	2901 Bldg.	Air – vapor only	n/a
9-3-08	1883 lbs. of Propene, 89 lbs. of Allyl Chloride, 2.5 lbs. of Silicon Tetrachloride and 6.6 lbs. of Trichlorosilane	2703 Bldg.	Air – vapor only	n/a

Table B9-5
Release Information 1999-2021
Dow Silicones Corporation, Midland, Michigan

Date of Release	Amount & Type of Material	Location	Media	Corrective Measures
1-24-09	7 lbs. of HCL	325 Bldg.	Air, secondary containment	Spilled material flushed to chemical sewer for treatment
7-23-09	130 lbs. of Biphenyl	501 Bldg.	Air, secondary containment	Spilled material absorbed and packaged for disposal
8-17-09	3 lbs. of Cyclohexane	322 Bldg.	Air, secondary containment	Spilled material absorbed and packaged for disposal
5-26-18	1,500 gallons of wastewater from on-site sewer system	300 Block area	Soil	Removed all visually impacted soil, gravel and debris
8-21-18	1,500 gallons of wastewater from on-site sewer system	501/505 Bldg. area	Soil	Removed all visually impacted soil, gravel and debris
9-11-19	1,000 gallons of wastewater from on-site sewer system	501/505 Bldg. area	Soil	Removed all visually impacted soil, gravel and debris
5-18-20	500 gallons of wastewater from on-site sewer system	501/2602 Bldg. area	Soil	Removed all visually impacted soil, gravel and debris

Table B9-5
Release Information 1999-2021
Dow Silicones Corporation, Midland, Michigan

Date of Release	Amount & Type of Material	Location	Media	Corrective Measures
7-13-21	150 gallons of wastewater from on-site sewer system	2602 Bldg. area	Soil	Removed all visually impacted soil, gravel and debris
7-24-21	100 gallons of wastewater from on-site sewer system	400 block area	Soil	Removed all visually impacted soil, gravel and debris
8-29-21	450 gallons of wastewater from on-site sewer system	325 Bldg. area	Soil	Removed all visually impacted soil, gravel and debris
11-10-21	10 gallons of wastewater mixed with National Foam Universal Green firefighting foam from on-site sewer system	611 Bldg. area	Soil	Unplugged the sewer and removed all visually impacted soil, gravel and debris



MARK	SOLID WASTE MANAGEMENT UNITS ADDRESSED BY SIS
1	NEUTRALIZATION BED
2	NEUTRALIZATION TANK
3	304 VICI INCINERATOR
4	337 SCRUBBER POND AND SCRUBBER CONCRETE BASIN
5	400 BLOCK ASH STORAGE BLDG.
6	501 NORTH SKIMMER
7	501 SOUTH SKIMMER
8	505 EAST SKIMMER
9	700 BLOCK WASTE PILE
10	513 SPILL POND
11	CONTAINER STORAGE AREA
12	LANDFILL
13	TRUCK WASHING SLAB
14	EXISTING 800 BLOCK TANK FARM & NEW TANK FARM
15	SITE PAINT AREA
16	BENZENE SPILL AREA
17	QUENCH POND
18	ABOVE GROUND QUENCHER FACILITY
19	TRANSFER STATIONS
20	207 SPILL AREA
21	DOW INJECTION WELL
22	505 SPILL AREA
23	PINTO SPILL AREA
26	NEW SITE PAINT FACILITY
27	604 VAULTS
28	802 DEWATERING AREA

MARK	SOLID WASTE MANAGEMENT UNITS NOT ADDRESSED BY SIS
24	DEMOLITION PILE
25	4705 STORMWATER RETENTION POND

LEGEND:

---○--- SIS (SITE INTERCEPTOR SYSTEM) INSTALLED 1993 AND 1994

LAST GENERAL UPDATE: 04JAN2010

MARK	LOC.	REVISIONS	BY	DATE	APP
A	GEN	ADDED FACILITIES 18-21; GENERAL REVISION	RJF	1-18-89	PC
B	GEN	REMOVED FACILITIES 10,15,16 & 20	RJF	20MAR91	WEW
C	GEN	ADDED FACILITIES 10,15,16,20,22,23 & 24	RJF	23JUL91	WEW
D	GEN	ADDED FACILITY 25	RJF	14AUG91	WEW
E	GEN	ADDED SIS LAYOUT & FACILITY 26	MWG	25APR96	PC
F	GEN	ADDED FACILITY 27 & 28	CWR	18MAR99	SFH
G	GEN	UPDATED DRAWING	JAM	04NOV09	SFH
H					
I					
J					

DESIGNED
J.L. VanderMale

DATE
11-08-88

DRAWN
R.J. Fortier

DATE
11-17-88

CHECKED
M.J. Bush

DATE
11-22-88

APPROVED
M.L. Marchione

DATE
11-23-88

DOW CORNING CORPORATION

MIDLAND PLANT

SOLID WASTE MANAGEMENT UNITS

LOCATION PLAN

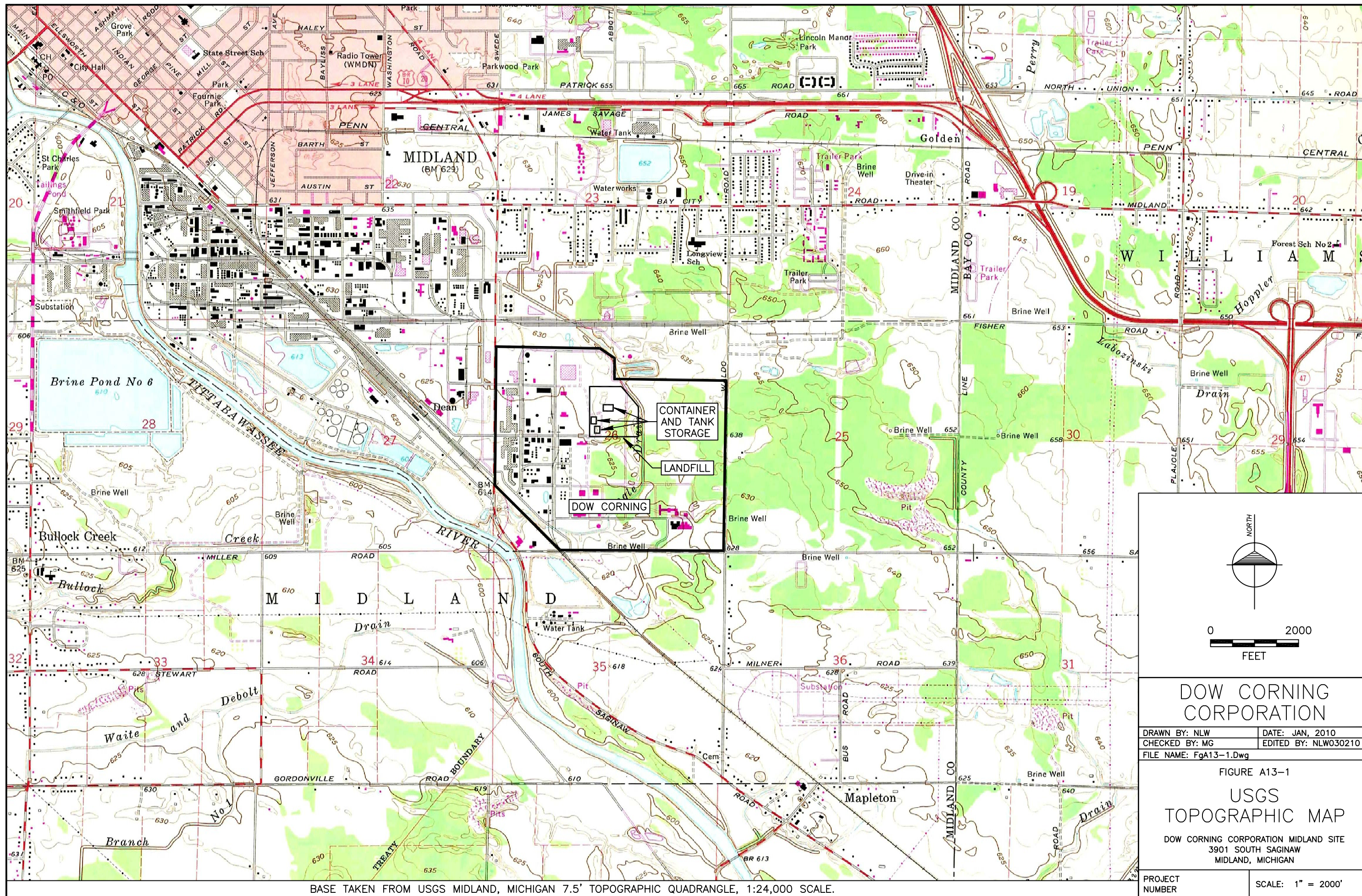
SITE

SCALE	INCH	FOOT	DRAWING NUMBER	REVISION
1" = 200'	1"	200'	Y1-74997	q



LAST GENERAL REVISION DATE: 18JAN10

DESIGNED		DATE	DOW CORNING CORPORATION			
DRAWN		DATE	MIDLAND LOCATION			
R.J. FORTIER		03-11-85	PLOT PLAN			
CHECKED		DATE				
G.A. COFFMAN		03-15-85				
APPROVED		DATE	SCALE	INCH: FOOT	CM: METER	DRAWING NUMBER
D.W. AUTIO		03-18-85		1"=200'	1cm=24m	Y1-30100
						REVISION
						G





SIS LAYOUT

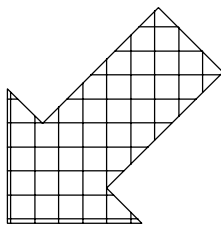
SIS EAST BRANCH4,906'..... CONST.: 1993
SIS WEST BRANCH3,828'..... CONST.: 1994
SIS NORTH BRANCH5,286'..... CONST.: 1997
TOTAL=.....14,020'

NOTE:

1. THE SIS IS DESIGNED AND CONSTRUCTED TO ALLOW FOR FUTURE EXTENSION.
2. DRAWING SHOWS GENERAL CHEMICAL SEWER LAYOUT.
3. NORTH BRANCH IS INDICATED AS

LEGEND:

SIS TRENCH (EAST AND WEST BRANCHES)



GENERALIZED DIRECTION OF SHALLOW GROUND WATER FLOW. LOCAL VARIATIONS OCCUR DUE TO ENGINEERED FEATURES.

LAST GENERAL UPDATE: 04JAN2010

MARK	LOC.	REVISIONS	BY	DATE	TECH	INITIALS
J						
H						
G						
F	GEN	AS BUILT REVISION	JAM	04NOV09	SFH	
E	GEN	AS BUILT REVISION	JAM	03OCT97	PC	
D	GEN	ADDED LAYOUT FOR NORTH BRANCH	DAW	13DEC96	PC	
C	GEN	WEST BRANCH DESIGN	R/JF	21APR94	PC	
B	GEN	AS BUILT REVISIONS	R/JF	15OCT93	PC	
A	GEN	REVISED TO DATE	R/JF	12APR93	PC	

DESIGNED M. Bush/P. Chmela	DATE 01MAY91	SCALE 1"=200'	INCH:FOOT CM:METER 1cm=24m	DRAWING NUMBER Y1-86188	REVISION F
DRAWN R.J. Fortier	DATE 02MAY91				
CHECKED M.J. Bush	DATE 02MAY91				
APPROVED D.A. Sleeper	DATE 02MAY91				

DOE CORNING CORPORATION
MIDLAND PLANT
SITE INTERCEPTOR SYSTEM (SIS)
GENERAL LAYOUT

CADD

RF=Y1-3000(G), RF=Y1-2002(G)
RF=Y1-2001(G), RF=Y1-2400(G)

RESTRICTIVE COVENANTS RUNNING WITH THE LAND

Dow Corning Corporation (Dow Corning), a Michigan Corporation, is located at 3901 South Saginaw Road in Midland, Michigan 48640.

Dow Corning is the record owner of land located in Midland Township, Midland County, Michigan, described in Exhibit A attached ("the land").

Dow Corning applied for and received a license under provisions of 1979 P.A. 64, MCLA 299.503 et seq., as amended ("Act 64") to operate a hazardous waste facility ("Disposal Facility") located at the land. This license authorized disposal of hazardous waste at the Disposal Facility on the land pursuant to all of the terms of that license and Michigan law, including, but not limited to, Act 64. The land and the Disposal Facility are herein referred to as the "Property". The following restrictive covenants are executed by Dow Corning as the sole owner of the Property pursuant to Section 39 of Act 64 to ensure the care, maintenance, monitoring and long term integrity of the Property for the protection of the health, safety and welfare of the people of the State of Michigan and the natural resources and the environment of the State of Michigan.

1. The Property has been used to manage hazardous wastes.
2. The Property has been used as a landfill for hazardous waste disposal.
3. Use of the Property, including use of the land and/or the Disposal Facility, shall not disturb the final cover, liners, components of any containment system, or the function of the monitoring systems on or in the Property.
4. No one, including Dow Corning, any purchaser of the record owner of the land or Disposal Facility, any purchaser of the land or Disposal Facility, or any of their agents, employees, heirs, successors, lessees, or assignees, shall engage in any development, including any filling, grading, excavating, building, drilling or mining on the Property following completion of the landfill closure without obtaining prior written authorization from the Director of the Department of Natural Resources.
5. The survey plat and records of the types, locations, and quantities of hazardous wastes on or in the Property have been filed with the local zoning or land use authority as required by Act 64 and its rules.
6. Ownership of all or a portion of the land or Disposal Facility shall not be conveyed without the owner of the land or Disposal Facility sending prior written notice to the prospective purchaser(s) of the existence of these restrictive covenants. Such notice shall state:
 - (1) that there are restrictive covenants on the Property;

Signed in presence of:

STATE OF MICHIGAN

Margaret J. Curry

By:

David F. Hales

Cheryl L. Howe

Its: Director of the Department of
Natural Resources for the State
of Michigan

STATE OF MICHIGAN)
COUNTY OF INGHAM) SS.

The foregoing instrument was acknowledged before me this 23rd day
of October, 1989, by David F. Hales, Director, of the
Michigan Department of Natural Resources, on behalf of the Department.

John E. Burt
Notary Public

County, Michigan

My commission expires _____.

Notary Public, Ingham County, MI
My Commission Expires April 7, 1991
Acting in Ingham County, MI

EXHIBIT A

LEGAL DESCRIPTION OF HAZARDOUS WASTE LANDFILL
AT DOW CORNING CORPORATION

Commencing west 1945.96 feet of the east quarter corner of Section 26,
Township 14 north, Range 2 east of Midland County, Michigan, thence 1184
feet west, thence 1150 feet north, thence 832.5 feet east, thence 56
degrees south of east 628.58 feet, thence 628.88 feet south to the point
of beginning.

- (2) that development on the Property is prohibited without prior written authorization from the Director of the Department of Natural Resources;
- (3) that the prospective purchaser(s) must comply with the restrictive covenants, Act 64 and rules promulgated under Act 64; and
- (4) that the prospective purchaser(s) cannot interfere with the containment or monitoring systems on or in the Property.

Such notice shall include a copy of these restrictive covenants and shall be sent to the prospective purchaser(s) by certified mail with a copy sent to the Director of the Department of Natural Resources.

These restrictions may be enforced in law or in equity in a court of competent jurisdiction. Such action(s) may be taken against anyone, including any person, corporation, partnership, agent, successor, assignee, heir, employee or lessee, who violates or threatens to violate any of these restrictive covenants.

These restrictive covenants shall run with the land in perpetuity and shall be binding upon Dow Corning, any purchaser of the record owner of the land or Disposal Facility, any purchaser of the land or Disposal Facility, or any of their agents, employees, heirs, successors, lessees, or assignees.

Signed in presence of:

DOW CORNING CORPORATION

Deb Kalinowski

By: C. W. Churchfield

Marvin J. Smith

Its: Vice President
Director of Manufacturing &
Engineering

STATE OF MICHIGAN }
COUNTY OF MIDLAND } SS.

The foregoing instrument was acknowledged before me this 4th day of October, 1989, by C. W. Churchfield, of Dow Corning Corporation, a Michigan corporation, on behalf of the corporation.

Janice M. Churchfield
Notary Public
Midland County, Michigan
My commission expires 1-3-93