

**FORM EQP 5111 ATTACHMENT TEMPLATE B5  
ENVIRONMENTAL MONITORING PROGRAMS**

This document is an attachment to the Michigan Department of Environment, Great Lakes, and Energy's (EGLE) *Form EQP 5111, Operating License Application Form for Hazardous Waste Treatment, Storage, and Disposal Facilities*. See the instructions for Form EQP 5111 for details on how to use this attachment. All references to Title 40 of the Code of Federal Regulations (40 CFR) citations specified herein are adopted by reference in R 299.11003.

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 299.9611 establishes requirements for the environmental monitoring programs for hazardous waste management facilities. Owners and operators of hazardous waste treatment, storage, or disposal facilities must develop an environmental monitoring program capable of detecting a release of hazardous waste or hazardous waste constituents from the facility to groundwater, air, or soil.

This license application template addresses requirements for an environmental monitoring program for hazardous waste management units and the hazardous waste management facility for the Dow Silicones Corporation (Dow Silicones) facility. The template includes either a monitoring program description or a demonstration for a waiver from the monitoring requirements in accordance with R 299.9611(3)(a) and (b) and R 299.9611(4) as indicated below:

Groundwater Monitoring Program (*Check as appropriate*)

- R 299.9612 detection monitoring program and sampling and analysis plan for one or more units
- Waiver for one or more units

*If appropriate, both boxes may be checked if different monitoring programs and waivers apply to the units at the facility.*

Ambient Air Monitoring Program (Check as appropriate)

- Monitoring program and sampling and analysis plan
- Waiver

Annual Soil Monitoring Program (Check as appropriate)

- Monitoring program and sampling and analysis plan
- Waiver

- B5.A GROUNDWATER MONITORING PROGRAM
  - B5.A.1 Unit-Specific Groundwater Monitoring Program
    - Table B5.A.1 Groundwater Monitoring Program
  - B5.A.2 Groundwater Monitoring Program Waiver
  - B5.A.3 General Groundwater Monitoring Requirements
    - B5.A.3(a) Groundwater Sampling and Analysis Plan
    - B5.A.3(b) Description of Wells
    - B5.A.3(c) Procedure for Establishing Background Quality
    - B5.A.3(d) Statistical Procedures
  - B5.A.4 Detection Monitoring Program – Deep Monitoring Wells
    - B5.A.4(a) Indicator Parameters, Waste Constituents, and Reaction Products
    - B5.A.4(b) Groundwater Monitoring System
    - B5.A.4(c) Background Concentration Values for Proposed Parameters
    - B5.A.4(d) Proposed Sampling and Analysis Procedures
  - B5.A.5 Supplemental Groundwater Monitoring Program – Shallow Monitoring Wells
    - B5.A.5(b) Hazardous Constituents to be Monitored in Supplemental Groundwater Monitoring Program
    - B5.A.5(b) Concentration Limits
    - B5.A.5(c) Concentration Limit Other than Background
    - B5.A.5(d) Sampling and Analysis Procedures
  - B5.A.6 Corrective Action Groundwater Monitoring Program – Site Interceptor System (SIS)
    - B5.A.6(a) Hazardous Constituents to be Monitored in Corrective Action Groundwater Monitoring Program
    - B5.A.6(b) Concentration Limits
    - B5.A.6(c) Concentration Limit Other than Background
    - B5.A.6(d) Sampling and Analysis Procedures
    - B5.A.6(e) Hydraulic Gradient Monitoring
  - B5.A.7 Corrective Action Groundwater Monitoring Program – 604 Area Vaults
    - B5.A.7(a) Hazardous Constituents to be Monitored in Corrective Action Groundwater Monitoring Program – 604 Vaults
    - B5.A.7(b) Concentration Limits
    - B5.A.7(c) Concentration Limit Other than Background
    - B5.A.7(d) Sampling and Analysis Procedures
  - B5.A.8 Corrective Action Groundwater Monitoring Program – Quench Ponds
    - B5.A.8(a) Hazardous Constituents to be Monitored in Corrective Action Groundwater Monitoring Program – 604 Vaults
    - B5.A.8(b) Concentration Limits
    - B5.A.8(c) Concentration Limit Other than Background
    - B5.A.8(d) Sampling and Analysis Procedures
- B5.B AMBIENT AIR MONITORING PROGRAM
- B5.C ANNUAL SOIL MONITORING PROGRAM
- B5.D Surface Water Monitoring Plan
  - B5.D.1 Surface Water Sampling Plan
    - B5.D.1(a) Surface Water Locations

- B5.D.1(b) Surface Water Sample Frequency
- B5.D.1(c) Static Water Measure Measurement and Purging
- B5.D.1(d) Sample Parameters and Basis
- B5.D.1(e) Sample Collection Procedure Surface Water Sample Collection
- B5.D.1(f) Field Measurements
- B5.D.1(g) Analytical Procedures and Quality Control
- B5.D.1(h) Sample Preservation, Shipment, and Chain of Custody
- B5.D.1(i) Data Evaluation and Statistical Procedures
- B5.D.1(j) Reporting
- B5.E Landfill Leachate Monitoring Program
  - B5.E.1 Leachate Sampling Plan
    - B5.E.1(a) Leachate Sampling Location
    - B5.E.1(b) Leachate Sampling Frequency
    - B5.E.1(c) Static Water Level Measurements and Purging
    - B5.E.1(d) Sample Parameters and Basis
    - B5.E.1(e) Sample Collection Procedure
    - B5.E.1(f) Field Measurements
    - B5.E.1(g) Analytical Procedures and Quality Control
    - B5.E.1(h) Sample Preservation, Shipment, and Chain of Custody
    - B5.E.1(i) Data Evaluation and Statistical Procedures
    - B5.E.1(j) Reporting

## Tables

- Table B5-1 Unit-specific Groundwater Monitoring Programs
- Table B5-2 Monitoring Parameters and Sampling Frequency
- Table B5-2b Site Interceptor System Manholes and Corresponding Staff Gauges or Piezometers
- Table B5-3 Summary of Analytical Methods, Detection Limits, Sample Preservation and Bottle Types
- Table B5-4 Summary of Monitoring Well Construction
- Table B5-5 Summary of Intra-Well Statistical Distributions with Upper Tolerance Limits for Deep Monitoring Wells
- Table B5-6 Mobility, Stability and Persistence of Waste Constituents in the Unsaturated Zone
- Table B5-7 Summary Statistics for Historical and Spatial Background Data for Lingle Drain and Deep Monitoring Wells

## Figures

- Figure B5-1 Sampling Locations

## Appendices

Appendix B5-1	Field Forms
Appendix B5-2	Example Chain-of-Custody Form
Appendix B5-3	Environmental Monitoring Report Contents
Appendix B5-4	Shewhart CUSUM Control Charts, 4 <sup>th</sup> Quarter
Appendix B5-5	Summary of Deep Monitoring Well Data Through 2021
Appendix B5-6	Summary of Surface Water Monitoring Data Through 2021

## **B5 ENVIRONMENTAL MONITORING PROGRAMS**

The Dow Silicones facility will comply with the requirements for a groundwater monitoring program by implementing the program described in this section. This program was developed to satisfy the requirements of R 299.9612 and R 299.9629 and 40 CFR §§264, except 40 CFR §§264.94(a)(2) and (3) and 264.94(b) and (c).

This module presents the environmental monitoring programs that will be implemented following license renewal in 2022. The monitoring programs include:

- Groundwater monitoring
  - Detection monitoring (deep monitor wells)
  - Supplemental monitoring (shallow monitor wells)
  - Corrective action monitoring (site interceptor system (SIS), 604 area vaults, and quench pond)
- Surface water monitoring
- Landfill leachate monitoring

Dow Silicones requests a continuation of the waivers for air and soil monitoring; see Sections B5.B and B5.C.

### **Reporting**

Quarterly Environmental Monitoring: The licensee shall provide the results of all environmental monitoring required by this license to the Division in accordance with Condition II.1.3. of this license. The results shall be provided as follows:

The licensee shall submit Quarterly Environmental Monitoring Reports to the Division. At a minimum, the report shall include the following information:

- (1) A narrative summary of the quarter's sampling events.
- (2) Data tables with the monitoring data obtained during the quarter.
- (3) Indication of any increased frequency beyond what is required by the license.
- (4) Program specific quarterly evaluations listed in Module B5 of this license.

Beginning in 2022 the licensee shall provide the results of environmental monitoring required by this license to the Division either by a Report as specified in Appendix B5-3 of this license or by updating an Environmental Monitoring Information System (EMIS) if approved by the Division.

Annual Environmental Monitoring Report: The licensee shall submit an Annual Environmental Monitoring Report to the Division no later than March 1 for the previous calendar year's activities. At a minimum, the report shall include the following information:

- (i) A narrative summary of the previous calendar year's sampling events, including the dates of the sampling events, and the identification of any significant problems with respect to sampling and analysis plan (SAP) defined procedures.
- (ii) Data tables with the monitoring data obtained during the calendar year that has not been previously provided in a Quarterly Environmental Monitoring Report.
- (iii) Program specific quarterly and annual evaluations listed in Module B5 of this license.

#### **B5.A GROUNDWATER MONITORING PROGRAM**

[R 299.9611(2)(b) and (3), R 299.9612, and R 299.9629 and 40 CFR, Part 264, Subpart F, except 40 CFR §§264.94(a)(2) and (3), (b), and (c), 264.100, and 264.101]

The groundwater monitoring program includes detection monitoring (deep monitor wells); supplemental monitoring (shallow monitor wells); and corrective action monitoring (site interceptor system (SIS), 604 area vaults and quench pond). The SIS is an interim response activity that encompasses the regulated units (800/1000 Block Landfill, 806 Tank Farm, 801 Building and 809 Container Storage Building) listed in **Table B5-1**, as well as most other areas of the Dow Silicones facility.

##### **B5.A.1 Unit-Specific Groundwater Monitoring Program**

###### **Table B5.A.1 Groundwater Monitoring Program**

Dow Silicones will conduct monitoring of groundwater associated with specific units listed in **Table B5-1**. The hydrogeological basis for determining the groundwater monitoring program is provided in Module B3, Hydrogeologic Report.

##### **B5.A.2 Groundwater Monitoring Program Waiver** [R 299.9611(3)]

Dow Silicones does not request a waiver of the groundwater detection, corrective action, or supplemental monitoring programs.

##### **B5.A.3 General Groundwater Monitoring Requirements** [R 299.9612 and 40 CFR §§264.97 and 264.91(b)]

The **Dow Silicones** facility will comply with the requirements for a groundwater monitoring program by implementing the program described in this section. This program was developed to satisfy the requirements of R 299.9612 and R 299.9629 and 40 CFR §§264.98 and 264.99, except 40 CFR §§264.94(a)(2) and (3) and 264.94(b) and (c). The basis for determining the groundwater monitoring program for each unit is provided in Template B3, Hydrogeologic Report, of this application that was prepared in accordance with R 299.9506.

**B5.A.3(a) Groundwater Monitoring Sampling and Analysis Plan**  
[R 299.9611(2)(a)]

A sampling and analysis plan for groundwater monitoring at **Dow Silicones facility** is included in this section. The SAP was prepared in accordance with the requirements specified in R 299.9611(2)(a). All sampling and analyses performed pursuant to this application will be consistent with the SAP. All samples for the purpose of environmental monitoring will be collected, transported, stored, and disposed by trained and qualified individuals in accordance with the QA/QC procedures and processes outline in this module.

**Table B5-2** presents the sampling frequencies for this groundwater monitoring program, including:

- Deep monitoring wells
- Shallow monitoring wells and manholes
- Site Interceptor System
- 604 Vaults
- Quench Ponds

Surface Water and Landfill Leachate Sampling Frequency is discussed in Sections B5.D and B5.E, respectively.

**Deep Monitoring Wells**

Groundwater in the Regional Aquifer has been sampled semi-annually from the deep monitoring wells listed in **Table B5-2** since 1994. Dow Silicones will continue to sample these wells semi-annually, as required in 40 CFR 264.98(d). Water levels are measured in each well at each sampling event, prior to sampling.

**Shallow Monitoring Wells**

Ground water in the shallow saturated zones is sampled semi-annually from the five shallow monitoring wells and three manholes listed in **Table B5-2**. Water levels are measured in each well at each sampling event, prior to sampling.

**Site Interceptor System (SIS)**

The (SIS is sampled quarterly for pH, certain metals, certain VOCs and fluoride, as well as biennially for a RCRA Appendix IX scan (excluding PCBs, dioxins and furans). Sampling details for the SIS are shown in **Table B5-2**.

**604 Vaults**

The 604 area vaults are sampled semi-annually as shown in **Table B5-2**.

## **Quench Ponds**

The quench pond wells are sampled semi-annually as shown in **Table B5-2**.

## **Static Water Level and Purging**

Each monitoring well has a permanent, top-of-casing reference mark on the rim of the well casing. The elevations of these marks relative to USGS benchmark at the Midland plant were determined by survey. The elevations of the deep and shallow monitoring wells are re-surveyed every three years and any corrections determined and recorded. The elevations of the manholes, staff gauges and piezometers used to monitor hydraulic gradients in the SIS are surveyed annually.

Water levels are measured prior to purging to ensure the levels are not affected by the purging. The device used to measure the water levels is rinsed with distilled water between well locations.

Static water levels are measured in a well each time the well is sampled. In wells where the static water level is below the top of the casing, the distance from a permanent, top-of-casing reference mark on the rim of the well casing to the static water level is measured to within 0.01 foot with a conductivity sensor well probe or with a chalked steel tape. To ensure accurate measurement, the well probe or steel tape is lowered into the well alongside the reference mark. The elevation of the static water level is calculated by subtracting the distance from the fixed datum to the static water level from the elevation of the fixed datum. This will determine the elevation of the static water level to an accuracy of 0.01 foot.

DMW-9 is the only well in this monitoring program in which the static water level is above the top of the casing. During spring, summer, and fall DMW-9 is equipped with a pressure gauge which reads pressures from 0 to 100 inches of water. During the winter the gauge on DMW-9 is removed and the well is plugged so the gauge is not damaged by ice. The elevation of the static water level is measured by closing all of the valves at the well head, attaching a pressure gauge, allowing the pressure to stabilize, and then measuring the artesian pressure and the distance from the center line on the pressure gauge to a fixed datum, typically the top of the casing. The water level is calculated by first converting the units of the pressure measurement to feet of water.

## **Sampling Equipment**

The deep monitoring wells have dedicated sampling equipment to reduce the possibility of cross contamination of a well. The dedicated sampling equipment is used to purge and sample the wells. Sampling equipment may be repaired or replaced with equivalent equipment as necessary.

Deep monitoring wells DMW-4A and DMW-6A have permanent electric submersible pumps. All of the piping is 1-inch diameter stainless steel, and only Teflon® tape was used on the joints.

Monitoring wells DMW-10, DMW-11 and DMW-12 have dedicated Well Wizards from QED Environmental Systems, Inc. These pumps are positive displacement bladder pumps with Teflon® bladders and Teflon® lined tubing. The pumps are equipped with a fill and discharge cycle control mechanism to vary the flow rate and bladder cycling time. The intakes are at the bottom of the pumps, which two feet above the top of the well screen. Inflatable packers are placed 5 feet above the bottom of the pumps to reduce the required purge volumes.

Monitoring well DMW-9 is a flowing well and does not have any sampling equipment. Instead, the natural artesian head is used to purge and sample the well. The well head device at DMW-9 is shown with the well log in the Hydrogeologic Report.

The shallow monitoring wells (listed in **Table B5-2**) have dedicated PVC bailers with polypropylene rope. The manholes included in the shallow monitoring well program are sampled using a disposable bailer or sampled using a peristaltic pump and disposable tubing.

- The SIS is sampled using a disposable bailer.
- The 604 Vaults are sampled using disposable bailers at each vault.
- The Quench Pond wells are sampled using dedicated bailers at each well.

### **Purging**

The volume of water purged prior to sampling equals 3 times the submerged casing volume plus the porous portion of the filter pack (except at DMW-9, which is a flowing well).

Monitoring wells DMW-10, DMW-11, and DMW-12 all contain inflatable packers that are inflated to the proper pounds per square inch (PSI) as documented on the field forms and confirmed to hold that pressure for five minutes prior to purging the well. The packers are all located 12 feet above the bottom of the well. Therefore, the length of the casing to be purged is 12 feet, and the required purge volume is 6 gallons. DMW-4 and DMW-6A do not have packers and the total purge volume necessary is removed using the dedicated permanent submersible pumps. The volume of water purged prior to sampling equals three times the submerged casing volume plus the porous portion of the filter pack.

DMW-4A requires a second sample to be collected after an additional hour of purging. This second sample is analyzed only for dissolved lead and zinc.

For DMW-9, the depth to the water is zero feet, and the purge volume is only dependent on the well depth. The length from the top of the casing to the bottom of the screen is approximately 235 feet and the casing is 2 inches in diameter, so the required purge volume for DMW-9 is set at 123.5 gallons ( $235 \times 0.49$ ). This well is normally capped.

Samples are collected directly into the sample bottles. The transfer to the sample bottles is performed as gently as possible to reduce the exposure of the sample to the air. Samples from the Well Wizard bladder pumps are collected with the flow pressure throttled back, allowing a gentle discharge of the sample into the sample bottle.

Deep monitoring wells are purged as described above. The volume purged is either directly measured with a graduated container or calculated by using a flow rate over time calculation. When the actual purge volume is calculated by the pumping rate, the pumping rate is checked periodically throughout the purge time.

Ground water purged from the deep monitoring wells is not hazardous (see Module B3, Hydrogeologic Report) and the available data in the Hydrogeologic Report) and is disposed of on the ground, away from the well casing. If a deep monitoring well does pump dry before purging

three casing volumes, the well is allowed to stabilize and sampled within 24 hours. Purge water is discharged to the ground away from the well location.

Shallow monitoring wells are low yielding wells that typically do not produce three casing volumes plus the filter pack volume of water when bailed. The shallow monitoring wells are bailed dry with dedicated bailers and sampled within 24 hours and typically allowed to stabilize overnight. The bailer is pulled in and out of the water gently to minimize the aeration of the groundwater in the well. Purge water withdrawn from the shallow monitoring wells is placed in a container and disposed of in the Dow Silicones chemical sewers.

During purging of the well, the first two bailers are slowly lowered into the well. The first bailer is lowered until approximately one half of the bailer is submerged and then the bailer is withdrawn from the well. The water removed from the first bailer is visually checked for the presence of light non-aqueous phase liquids (LNAPL), and the presence or absence of visible LNAPL is noted on the field form (Appendix B5-1). The second bailer is slowly lowered all of the way to the bottom of the well and then slowly withdrawn from the well. The water removed from the second bailer is visibly checked for dense non-aqueous phase liquids (DNAPL), and the presence or absence of visible DNAPL is also noted on the field form (Appendix B501).

### **Sample Parameters and Basis**

**Table B5-2** presents the sampling parameters for this groundwater monitoring program, including:

- Deep monitoring wells
- Shallow monitoring wells
- Site Interceptor System
- 604 Vaults
- Quench Ponds

Dow Silicones may request additions or deletions to the sampling parameters in order to improve the effectiveness of the program or to delete parameters that are no longer necessary. Such requests will be supported by data and are subject to approval by the EGLE.

### **Deep Monitoring Wells**

Deep monitoring wells are analyzed for primary monitoring parameters, secondary monitoring parameters, and tracking monitoring parameters (cations/anions). The primary monitoring parameters are chemicals found in the landfill leachate with concentrations greater than 0.5 mg/L. Lead is also a primary monitoring parameter because the landfill is licensed for lead containing wastes, although lead is generally not detected or has low concentrations in the landfill leachate. The secondary monitoring parameters, other than tracking parameters, are chemicals sometimes detected in landfill leachate. The cations and anions are tracking parameters used to develop Stiff diagrams.

### **Shallow Monitoring Wells**

Shallow monitoring wells are analyzed for secondary monitoring parameters and tracking monitoring parameters (major cations/anions). The secondary monitoring parameters are

chemicals found in the landfill leachate with concentrations greater than 0.5 mg/L. Lead is also a secondary monitoring parameter because the landfill is licensed for lead containing wastes. The cations and anions are tracking parameters used to develop Stiff diagrams.

### **Site Interceptor System (SIS)**

The SIS is analyzed biennially for the Appendix IX list (excepting PCBs dioxins and furans) at the request of the EGLE. The SIS is analyzed quarterly for parameters listed in **Table B5-2**, which are based on the previous monitoring program.

### **604 Vaults**

The 604 vaults drains are analyzed for chemicals associated with the processes formerly used at the vaults.

### **Quench Ponds**

The quench pond wells are analyzed for chloride, which was produced by the quenching process.

### **Sample Collection Procedure**

[40 CFR 264.97(d)(1)]

The sample collection procedures described in this section are designed to generate samples and data that are representative of conditions at the site at the time of the sampling. These procedures document sample collection so that future users can re-evaluate the data, if necessary.

### **Sample Withdrawal**

Sampling with a bailer from DMW-4 and DMW-6A is not feasible as the submersible pumps cannot be temporarily removed. Inflatable packers are used while purging deep monitoring wells DMW-10, DMW-11, and DMW-12, therefore, bailers cannot be used for sampling these wells. The natural artesian head is used to collect the sample from DMW-9, eliminating contact of the sample with extra sampling equipment.

In the shallow monitoring wells, the dedicated bailers are gently lowered into the water in the well, and samples are collected by gently pouring the water into the sample bottles. The manholes included in the shallow monitoring well program are sampled using a peristaltic pump or disposable bailer that is lowered into the manhole to collect water.

All samples for dissolved metals are filtered at the time of sampling, before contacting the nitric acid preservative. Metals filtration is done in the field using a peristaltic pump, silicon tubing, and a 0.45 micron in-line filter. New tubing and a new inline filter are used for each sample location, and the groundwater is allowed to pass through the filter for approximately 10 seconds prior to sample collection. These items are single-use and are then properly disposed of. (**Table B5-2** identifies which samples are filtered.)

Sample bottles are filled for volatiles first, then other required constituents. Samples for volatile organics are collected in glass vials, filled just to overflowing, ensuring that no air bubbles pass through the sample as the vial is being filled. Each vial is sealed with a clean Teflon® lined septum and caps such that no headspace or entrapped air bubbles are present in the sample.

Separate portions of the sample are drawn off for the analysis of unstable parameters such as pH. These portions are drawn off and analyzed after the samples for laboratory analyses have been collected and preserved. None of the probes used for in-field analyses will come in contact with the water samples collected for laboratory analyses.

### **Sample Blanks – Quality Control**

Refer to Quality Control Table in **Table B5-2**.

When the sample bottles are prepared prior to shipment to the field, one complete set of sample bottles is selected, filled with de-ionized water, and labeled "trip blank". The trip blanks are transported to the field and sent to the laboratory for analyses along with the other sample bottles.

### **Documentation of Sample Collection**

The procedures used in the field to collect the samples are documented so that future users of the data can review and re-evaluate any possible bias introduced by these procedures. Customized field data entry forms are used for each well/location to assure that the sampling procedures are thoroughly documented. Customized forms are in **Appendix B5-1**. These forms provide thorough documentation and aid in efficient sample collection.

No monitoring program design can foresee all of the modifications that are required by changing field conditions, and field samplers may be confronted with field conditions that make it impossible to follow the designated sample collection procedures. If this occurs, the field sampler will note these changes on the field data entry form to document the actual procedures used during the sample collection. The field sampler completing a sampling event fills in all of the information on the field data entry forms and notes any deviations from the sample procedures. The field sampler then signs the forms, and the forms are retained to document the actual sampling procedures used.

### **Field Measurements**

The pH and specific conductivity of the groundwater samples are measured in the field immediately after collecting the groundwater samples. A separate portion of the sample is drawn off for these analyses to avoid any contamination of the laboratory samples by the probes. The multi-parameter sonde is calibrated once a day prior to sampling. Calibration records are available upon request.

### **Analytical Procedures and Quality Control [40 CFR 264.97(d)(3)]**

The analytical procedures are listed in Table B5-3. These analytical procedures include the target method detection limits used in reporting the data. Analytical methods may be revised in accordance with applicable future federal or state guidelines. Detection limits may vary based on the presence of interference in a sample, required dilutions or other analytical limitations.



## **Sample Preservation, Shipment and Chain of Custody [40 CFR 264.97(d)(2)] & [40 CFR 264.97(d)(4)]**

Preservation techniques are used to retard the chemical and biological changes that may take place after a sample is collected. Samples collected in this monitoring program are placed in coolers with ice or cold packs immediately upon collection and then transported to the appropriate analytical laboratory where they are stored at 4.0° C until analysis. Samples are preserved as specified by the analytical method. Preservation techniques are summarized in **Table B5-3**. Sample preservation may be revised in accordance with applicable future federal or state guidelines or changes in analytical methods. Samples are shipped and delivered to the laboratory.

The chain of custody program documents the possession and handling of individual samples from the field collection through laboratory analysis. This program includes sample labels which identify the sample, the field data entry forms that record data about the collection of each sample, a chain-of-custody record to document the possession of all samples after collection, and laboratory logbooks that contain information about the analyses of the sample in the laboratory. An example chain of custody form is in **Appendix B5-2**. An equivalent form may be used.

### **B5.A.3(b) Description of Wells** [R 299.9612 and 40 CFR §264.97(a), (b), and (c)]

#### **Deep Monitoring Wells (Detection Monitoring)**

The wells that are used to monitor the Regional Aquifer are DMW-4A, DMW-6A, DMW-9, DMW-10, DMW-11, and DMW-12. The locations of these wells are shown on **Figure B5-1** and the monitoring well construction summary is included in **Table B5-4**.

Monitoring wells DMW-9 and DMW-11 are located up-gradient from the regulated unit and are used to collect samples that are representative of the ground water in the Regional Aquifer before it flows under the regulated unit. Monitoring wells DMW-4A, DMW-6A, DMW-10 and DMW-12 are screened in the Regional Aquifer at the point of compliance, just down-gradient of the regulated units, and are used to collect samples representative of the ground water passing the point of compliance.

The deep monitoring wells were designed for groundwater monitoring, and all of these wells are capable of yielding groundwater samples that are representative of the saturated zone in which they are screened.

#### **Shallow Monitoring Wells and Manholes (Supplemental Monitoring)**

The five shallow wells plus three manholes surrounding the landfill that are used for monitoring are SMW6-1, SMW6-2, SMW7-1, SMW7-2, SMW28-1, MH28-11, MH28-12, and MH10-15. These manholes are part of the SIS that collects shallow groundwater. The manholes are used to replace some shallow monitoring wells that became mostly dry after the SIS was installed. These wells are screened in the shallow surface sand that veneers the Lakebed Clay.

The locations of the shallow wells are shown on **Figure B5-1** and the monitoring well construction summary is included in **Table B5-4**.

The shallow monitoring wells were designed for groundwater monitoring, and all of these wells are capable of yielding groundwater samples representative of the saturated zone in which they are screened. The SIS collects shallow groundwater and the SIS manholes provide samples representative of shallow groundwater collected upstream of the manhole.

### **Site Interceptor System (SIS) (Corrective Action Monitoring)**

The SIS is an interim response measure comprised of a system of drainage tiles surrounding the Midland plant site. See **Appendix B2-1** (Drawing Y1-86188) for details on SIS location. The samples are collected from a lift station at the lowest point of the SIS (southwest part of the site near Building 121) before the SIS flow mixes with other flows. Samples from this location are representative of the SIS water at the downstream end of the SIS.

Water levels are monitored at manholes along the SIS, staff gauges in Lingle Drain, and piezometers located in pairs on either side of the SIS. The locations are identified in **Table B5-2**. Drawing Y186188 in Appendix B2-1 illustrates the SIS and the monitoring locations.

### **604 Area Vaults (Corrective Action Monitoring)**

Samples are collected from perimeter French drains installed around three former process vaults located near the 604 Building. The locations are identified as 7710, 7800, and 8015, corresponding to the names of the vaults (see **Figure B5-1** for locations). The drains remove shallow groundwater to the wastewater sewer for treatment. The water in these drains is representative of groundwater impacted by former processes at these vaults. The vault drains are an interim response measure, and well construction does not apply.

### **Quench Ponds (Corrective Action Monitoring)**

Three shallow monitoring wells, designated as 25n-1, 25n-2 and 25n-3, have been installed in the 2500 Block in the area formerly occupied by the quench ponds. The Quench Pond wells have stainless steel screens and PVC risers and compatible with the groundwater conditions.

The locations of the quench pond shallow wells are shown on **Figure B5-1**.

### **B5.A.3(c) Procedure for Establishing Background Quality** [R 299.9612 and 40 CFR §264.97(a)(1) and (g)]

Background values for the volatile organic primary parameters listed in **Table B5-2** are the laboratory detection limits for each parameter. The background data for the inorganic primary and secondary monitoring parameters in DMW-9 and DMW-11, the up-gradient background wells, are summarized (range, mean, standard deviation and mean plus three standard deviations) in **Table B5-7**. Historical intra-well background data for down-gradient deep monitoring wells are summarized in **Table B5-7**. These summaries are based on the groundwater quality data through 2021, excluding statistical outliers.

**B5.A.3(d) Statistical Procedures**

[R 299.9612 and 40 CFR §§264.97(h) and 264.97(i)(1), (5), and (6)]

This section presents the statistical methods used to evaluate deep monitoring well data. Statistical evaluations are completed for the deep monitoring wells screened at the point of compliance, which is the Regional Aquifer down-gradient of the regulated unit. Separate statistical tests are conducted for each primary and secondary monitoring parameter in each well.

Data from the supplemental and corrective action ground water monitoring programs are evaluated graphically, with Stiff diagrams, or qualitatively.

**Statistical Procedures for Primary Monitoring Parameters**

Dow Silicones will determine if a statistically significant increase has occurred compared to background concentrations for each deep monitoring well primary parameter listed in **Table B5-2**. A concentration above the primary parameter's laboratory detection limit is considered potentially statistically significant. If none of the primary monitoring parameters are present at or above their detection limits, then the groundwater has not been affected by the regulated unit and the sampling event is over. If a primary monitoring parameter is present at or above its detection limit in a sample from a deep monitoring well, then that well is re-sampled in quadruplicate, and each of the four samples are analyzed for the detected primary monitoring parameter.

If the primary monitoring parameter is detected in none or only one of the four new samples, then the detection of the primary monitoring parameter during the initial sampling event will be attributed to sample contamination and the sampling event will be over. If the primary monitoring parameter is detected with at least two of the four re-samples above the detection limit, or if at in at least one of the four samples at a concentration more than five times the detection limit for that parameter, then the detection will be considered statistically significant.

In the event of a potentially significant detection, Dow Silicones will proceed with the requirements of 40 CFR 264.98(g) as required by R 299.9612.

Dow Silicones may also resample the well; evaluate laboratory methods; evaluate sampling equipment, well or method; evaluate statistical methods, evaluate data from the up-gradient deep monitoring wells, evaluate sources other than the licensed facility; or otherwise demonstrate that the potentially significant difference in the concentration of the primary parameter was not related to the regulated unit. Dow Silicones also may compare the data to the lowest applicable groundwater criterion developed by EGLE, pursuant to Parts 31 and 201 of PA 451, as amended. Such evaluations will be subject to review by the EGLE.

**Statistical Procedures for Secondary Monitoring Parameters**

The overall purpose of these intra-well statistical analyses is to evaluate changes in concentrations of secondary monitoring parameters (except for tracking parameters) in groundwater at the compliance wells down-gradient of the regulated unit. The statistical tests include the Shewhart-CUSUM control chart procedure for parameters with normal or normally transformed distributions and non-parametric tests for parameters without a statistical distribution.

The following sections describe updating of the background data and evaluation of the distribution of the intra-well background data; the outlier analysis; and the statistical tests and criteria that will be used.

### **Intra-Well Background Data Set and Distribution Analyses**

The historic background data were initially updated to include secondary parameter data through 2020. The next step in establishing the updated intra-well background data was to identify, if possible, the distribution of the updated data. This evaluation was completed on a parameter by parameter basis for compliance wells DMW-4A, DMW-6A, DMW-10 and DMW-12 for all the available data through December 2020. These intra-well background data are in **Appendix B5-5**.

The historic intra-well background data include multiple samples collected from the same well on the same day. The data from these samples are dependent on each other since they were collected on the same day, and this violates an assumption of the *Shewhart CUSUM Control Chart* method. The second daily measurement was selected and the other daily measurements were not used as intra-well background data so the assumption of independent data was not violated. The initial updated background data in **Appendix B5-5** include all the historic inter-well data and all the subsequent data through 2020, but only the second daily measurement was used for subsequent analyses.

The Chemstat statistical program was used to evaluate the distribution of the updated background data in **Appendix B5-5**. The software uses the Shapiro-Wilk or Shapiro-Francia test (dependent on sample size) to determine, if possible, if the background data are normally distributed or if normality can be achieved with a transformation. If a dataset failed the normality test, a series of transformations was undertaken until a dataset was produced that could pass the normality test. The series of transformations followed the "Ladder of Powers" (Box and Cox 1964). The order of the transformations was to use original data, square-root transformed data, cube-root transformed data, and logarithmically transformed data. If the data were negatively skewed, the Ladder of Powers could be applied in the opposite direction, and the order of transformations would be  $x^2$ ,  $x^3$ ,  $x^4$ ,  $x^5$ , and  $x^6$ . Non-parametric methods will be used if a statistical distribution could not be identified for a given parameter if  $p < 0.05$ , or if a parameter was detected in less than 50% of background samples.

**Table B5-5** provides a summary of the distributional analysis for the secondary tracking parameters in the compliance monitoring wells.

The background data for the deep monitoring wells are updated every event. The other groundwater monitoring programs do not have specific background data sets. The distribution, outlier tests and upper tolerance limits (UTLs) for the deep monitoring well data will be updated annually in the annual report. The annual reports are subject to written approval by the MDEQ. Approval will be assumed if not received within 30 days of submission of the report to the MDEQ and revised UTLs will be used to evaluate subsequent data.

### **Screening for Statistical Outliers**

Statistical outliers are concentrations that do not conform to the pattern established by the remaining concentrations. The intra-well background data with normal or normalized distributions were evaluated for the presence of potential statistical outliers using a formal test for outliers

(U.S. EPA, 1989; Section 8.2) at a 95% level of confidence. If the background data for a parameter were normalized by transformation, the outlier test was completed on the transformed data. For normally distributed background data, the outlier test was completed on the raw data. If no distribution was confirmed, a formal outlier test was not completed and potential outliers were identified based on a qualitative review of the data.

Once identified, a potential outlier was further evaluated to determine if it was due to a laboratory, sampling/handling error, transcription error, a problem with the well, or to actual groundwater conditions. A potential outlier was removed from the background data set if a valid reason could be determined in accordance with Section 6.2 of U.S. EPA's *Statistical Analysis of Ground-Water Monitoring Data at RCRA Facilities, Addendum to Interim Final Guidance*, July 1992 (U.S. EPA, 1992). A few potential outliers were removed from the background data based on a qualitative review. The potential outliers removed from the background data are identified in footnotes to Appendix B5-5.

### **Statistical Tests for Intra-Well Comparisons**

The statistical methods described below are based on the distribution of the data for each secondary monitoring parameter in each compliance well (except DMW-6A). The parametric statistical method for comparing current monitoring data to intra-well background data will be the *Shewhart-CUSUM Control Chart* method for intra-well evaluations. If the distribution of the intra-well background data cannot be established or more than 50% of the data are below detection limits, a non-parametric statistical method will be used. The non-parametric method will compare current monitoring data to non-parametric upper tolerance limits (UTLs) based on intra-well background data. These statistical methods are described in more detail in the following sections. If no statistical test is appropriate because all the intra-well background concentrations are less than detection limits, the current monitoring data will be compared to the respective current detection limits.

### **Parametric Statistical Method – Shewhart CUSUM Control Charts**

Parametric monitoring data from DMW-4A, DMW-6A (when sufficient data are available), DMW-10 and DMW-12 will be compared to intra-well background data using *Shewhart Cumulative Sum (CUSUM) Control Charts* (U.S. EPA, February 1989; Section 7). One of the basic assumptions underlying the use of control charts is that the data being evaluated are normally distributed. Therefore, if the background data then transformed data will be used to construct the control charts. For example, if the background data are log-normally distributed, then the natural logs of the data will be used, if the data are not normally distributed and a transformation cannot be found (see **Table B5-5**), or more than 50% of the data are less than detection limits, then the non-parametric (distribution free) statistical test will be used to evaluate the data for that parameter, as described in the following section.

Data reported as less than a detection limit will be represented as one half of the detection limit for purposes of constructing the control charts.

The standardized Shewhart value,  $Z_i$ , represents the distance an individual concentration falls from its background mean in units of standard deviations. This value can be positive or negative,

depending on whether the individual concentration falls above or below the background mean.  $Z_i$  values are sensitive to rapid changes in parameter concentrations or decreases pH.

The CUSUM values ( $S_i$ ) are dependent on the Shewhart values. They are cumulative in that they accumulate positive differences which are greater than one standard deviation from the background mean. As a result, the CUSUM value ( $S_i$ ) is sensitive to gradual increases or decreases in concentrations over a long span of time. For example, if several positive  $Z_i$  values larger than one occur consecutively, the CUSUM value will continue to grow unless concentrations decrease and offset the accumulated value.

Control Charts graph values of  $Z_i$  and  $S_i$  over time for all the available data and compare them to standard values.  $Z_i$  is compared to the Shewhart Control Limit (SCL).  $S_i$  is compared to the decision interval,  $h$ . The values of SCL and  $h$  are included as constants on the charts to facilitate visual evaluation of the data. The control charts will be evaluated for evidence of a statistically significant increase using control limits recommended by the U.S. Environmental Protection Agency (*Statistical Analysis of Ground Water Monitoring Data at RCRA Facilities, Addendum to Interim Final Guidance*. US EPA, July 1992; page 78):

SCL = 4.5, the Shewhart control limit, in units of standard deviations; and  
 $h$  = 5, the decision interval value for the CUSUM

$Z_i$  values which exceed the SCL of 4.5 will indicate a statistically significant increase.

Values of  $S_i$  which exceed the  $h$ , CUSUM decision interval, indicates a potentially statistically significant increase in concentrations. One possible exception will be events in which an extreme  $Z_i$  value is obtained, causing the corresponding  $S_i$  value to exceed the decision interval value in a single event. The CUSUM portion of the Shewhart-CUSUM control chart is designed to identify gradual increases in concentrations over longer periods of time and is not intended to identify extreme changes. Therefore, if an extreme Shewhart value causes a CUSUM value to exceed the decision interval value, the results will be evaluated in light of the specific circumstances and the interpretation of the Shewhart values.

The Shewhart-CUSUM control charts for secondary monitoring parameters with normal or log-normal distributions are in Appendix B5-4. These charts include the available data from the beginning of the monitoring program through 2010. The time covered by the charts varies with parameter, depending on when the parameter was added to the monitoring program.

A potentially statistically significant increase in the current concentration of a secondary parameter shall be identified if the  $Z_i$  value exceeds the SCL of 4.5 or a value of  $S_i$  exceeds  $h$ , CUSUM decision interval.

### **Non-Parametric Statistical Method**

A non-parametric statistical method will be used to evaluate a given parameter when the updated intra-well background data are not normally distributed, cannot be normalized by a transformation, or have more than 50% of the intra-well data less than detection limits. A non-parametric upper tolerance limit will be used to compare the current concentration for a given parameter to the intra-well background data for the corresponding well. Non-parametric upper tolerance limits were

established as the maximum observed concentration (U.S. EPA, 1992; pages 55 to 56), excluding outliers and detection limits that are elevated relative to current detection limits.

The upper tolerance limits for the updated intra-well background data are in **Table B5-5**. The concentration is potentially significant if it exceeded the non-parametric upper tolerance limit.

### **Re-Sampling and Re-Evaluation**

If the concentration of a secondary monitoring parameter in a well is potentially statistically significant, then that well will be re-sampled in quadruplicate and each of the four samples will be analyzed for the same secondary monitoring parameter. The significance of the results of the quadruplicate samples will be evaluated using either the Shewhart CUSUM charts or the upper tolerance limit, as appropriate to the distribution of the data for the well and parameter being evaluated.

The results of the quadruplicate samples for wells/parameters with parametric distribution will be considered significant if more than half of the  $Z_i$  values exceed the SCL (4.5) and the average  $Z_i$  in the quadruplicates exceeds the SCL.

The results of the quadruplicate samples for wells/parameters with non-parametric distributions will be considered significant if more than half of the concentrations exceed the tolerance limit and the average concentration of the four samples exceeds the tolerance limit.

If the concentrations of the secondary monitoring parameter in the quadruplicate samples are not potentially statistically significant, then the concentration of the secondary monitoring parameter in the initial sampling event will be attributed to sample contamination or some other cause and the sampling event will be over.

If the concentrations of the secondary monitoring parameter in the quadruplicate samples are significant, Dow Silicones will proceed with the requirements of 40 CFR 264.98(h) as required by R 299.9612. Dow Silicones may also resample the well; evaluate laboratory methods; evaluate sampling equipment, well or method; evaluate statistical methods, evaluate data from the up-gradient deep monitoring wells, evaluate sources other than the licensed facility; or otherwise demonstrate that the potentially significant difference in the concentration of parameter was not related to the regulated unit. Dow Silicones also may compare the data to the lowest applicable groundwater criterion developed by the EGLE pursuant to Parts 31 and 201 of Public Act 451, as amended. These evaluations will be subject to review by the EGLE.

Box, G.E.P. and D.R. Cox. 1964. An analysis of transformations (with discussion). *Journal of Royal Statistical Society Series B*, 26, 211-252.

### **Reporting**

See **Appendix B5-3**, Environmental Monitoring Report Contents, for detailed reporting contents for each groundwater monitoring program.

## Stiff Diagrams

Stiff diagrams are useful for visually describing differences in major ion chemistry in ground water. Stiff diagrams are prepared semi-annually for the shallow and deep monitoring wells and Lingle Drain.

## Trend Charts

Dow Silicones will include graphs of the concentrations of selected secondary monitoring parameters in shallow monitoring wells over time in the annual report. The selected parameters are chloride, total phenol, benzene, toluene, ethylbenzene and chlorobenzene. The trend graphs will be prepared for Quench Ponds, 604 Vaults, Shallow and Deep Monitoring Wells and SIS data. Trend charts will be prepared for chemicals with over 50% of reported concentrations above detection limits.

### **B5.A.4 Detection Monitoring Program – Deep Monitoring Wells** [R 299.9612 and 40 CFR §§264.91(a)(4) and 264.98]

Dow Silicones' groundwater monitoring program satisfies the requirements of R 299.9612 and 40 CFR 264 Subpart F. The purposes of the detection monitoring program are to provide a thorough understanding of the groundwater under the regulated unit and to provide a basis for evaluating changes in the groundwater in the Regional Aquifer over time. The basis for determining the detection monitoring program is provided in Module B3, Hydrogeologic Report prepared in accordance with R 299.9506.

This detection monitoring program evaluates whether hazardous constituents from the regulated units (800/1000 Block landfill, 806 tank farm, 801 Building, and 809 container storage building) have entered the Regional Aquifer under the waste management area. The evaluation is done by comparing measured concentrations of each primary monitoring parameter at the point of compliance wells with detection limits for the organic primary monitoring parameters or background concentrations for inorganic primary monitoring parameters.

The point of compliance is defined as “a vertical surface located at the hydraulically down-gradient limit of the waste management area that extends down into the uppermost aquifer underlying the regulated units” (40CFR264.95). The point of compliance at Dow Silicones is the upper surface of Regional Aquifer down-gradient of the regulated unit. The deep monitoring wells down-gradient of the regulated (DMW-4A DMW-6A, DMW-10 and DMW-12) units represent the points of compliance. Hazardous waste constituents have not been detected at the point of compliance at the Dow Silicones facility in over 25 years of monitoring.

In addition, this groundwater monitoring program continues to build a database of the chemistry of the groundwater under the Dow Silicones facility. The database may be used to evaluate any future changes in the groundwater. This is accomplished by measuring the concentrations of the secondary parameters in the deep monitoring wells. The concentrations of the secondary monitoring parameters in the deep monitoring wells are compared historical concentrations in the same well (i.e., intra-well comparisons).

Section B5.A.8 presents the Sampling and Analysis Plan for the groundwater monitoring program. **Table B5-2** presents the monitoring schedule and monitoring parameters for each monitoring location.

**B5.A.4(a) Indicator Parameters, Waste Constituents, and Reaction Products**  
[R 299.9506(3)(a) and (f), R 299.9506(4)(a), and R 299.9612 and  
40 CFR §264.98(a)]

The deep monitoring wells in the Regional Aquifer have both primary and secondary monitoring parameters. The primary (including indicator parameters) and secondary monitoring parameters (including tracking parameters) are identified in **Table B5-2**.

Primary monitoring parameters are defined as “indicator parameters, for example specific conductance, total organic carbon, total organic halogen; hazardous waste constituents; or reaction products which provide reliable indication of presence of hazardous constituents in groundwater and which, when specified in the facility operating license, are subject to all of the requirements of 40 CFR 264 Subpart F” (R299.9106(s)). The primary parameters are listed in **Table B5-2**.

The primary monitoring parameters are the hazardous wastes constituents that have the greatest potential to impact the Regional Aquifer at the point of compliance. The primary monitoring parameters are organic hazardous waste constituents detected in landfill leachate since monitoring began and with concentrations greater than 0.5 mg/L. Lead is also a primary monitoring parameter because it is a hazardous constituent in the landfill. The primary monitoring parameters will be modified biennially to include all organic chemicals detected in the biennial monitoring of landfill leachate for the 40 CFR 264 Appendix IX parameters. Lead will be retained as a primary monitoring parameter regardless of the results of the Appendix IX analyses of landfill leachate.

Secondary monitoring parameters are defined in Part 111 regulations as “ions such as calcium, sodium, magnesium, iron, chloride, sulfate, bicarbonate, and carbonate, waste constituents; reaction products; or other parameters which provide an indication of the presence of hazardous constituents in groundwater and which are not subject to requirements of 40 CFR 264, Subpart F” (R299.9107(r)). The secondary monitoring parameters are listed in **Table B5-2**. The ions are not waste constituents, reaction products and do not indicate the presence of hazardous constituents and are therefore identified as tracking monitoring parameters.

Tracking monitoring parameters are secondary monitoring parameters that are general inorganic constituents present in groundwater (calcium, sodium, magnesium, potassium, chloride, sulfate, bicarbonate alkalinity and carbonate alkalinity). Concentrations of the tracking parameters are not waste constituents or other parameters that provide an indication of presence of hazardous constituent in groundwater. Concentrations of tracking parameters are not evaluated statistically, but may provide information on the condition of a well or changes in groundwater quality that are not related to the regulated unit. (This definition of tracking parameters is from Comment 10 in MDNRE’s Technical Notice of Deficiency dated March 7, 2011.)

## Type, Quantity, and Concentrations of Constituents

Only one type of hazardous waste has been placed in the landfill: lead-containing materials. The lead containing wastes exhibit the characteristic of extraction procedure toxicity (D008) due to the presence of lead in the EP toxicity extraction in a concentration in excess of the 5 mg/L limit (R 299.9212(4)).

Leachate from the leachate collection system at the landfill has been analyzed for priority pollutants annually since 1982 in accordance with Dow Silicones facility operating license. Benzene, ethyl benzene, chlorobenzene, 2,4-dimethylphenol, phenol, toluene, and copper have been detected in the leachate at concentrations greater than 0.5 ppm since leachate monitoring began. Although lead-containing wastes have been placed in the landfill, concentrations of lead are generally below or slightly above detection limits in the leachate. The pH of the leachate is typically around 6 to 6.5. Section B5.E describes the monitoring program for landfill leachate.

The materials stored in the container storage area are summarized in Module A2 (Chemical and Physical Analyses). These materials are predominantly silicones and silanes, both containing solvents.

Mobility, stability, persistence of waste constituents, or their reaction products, expected in the unsaturated zone

**Table B5-6** summarizes the mobility, stability and persistence of constituents detected in landfill leachate since leachate monitoring began. The tank farm and container storage facilities are equipped with adequate secondary containment and constituents are not expected to be released to or found in the unsaturated zone. Waste constituents in landfill leachate could be released to the unsaturated zone although the landfill is designed to prevent such releases.

Detectability of indicator parameters, waste constituents, or their reaction products in the groundwater

Analytical methods are available for all of the primary parameters, secondary parameters and waste constituents (leachate). **Table B5-3** summarizes normal detection limits.

Concentrations or values and coefficients of variation of proposed parameters in the background groundwater

**Table B5-5** summarizes statistics for background (upgradient and historical) groundwater from Deep Monitoring Wells. The data are presented in Appendix B5-5.

Evidence the sampling equipment and well construction materials are compatible with the monitoring parameters

**Table B5-4** summarizes monitoring well construction materials. Section B5.A.8(e) summarizes sampling procedures.

The U.S. Environmental Protection Agency (*Nonaqueous Phase Liquids Compatibility with Materials Used in Well Construction, Sampling and Remediation* (Ground Water Issue, July 1995 (EPA/540/S-95/503)) reviewed compatibility of several common well construction materials with

various organic chemicals. The stainless steel wells at Dow Silicones are considered to be compatible with the organic chemicals found in the landfill leachate.

The Illinois State Water Survey (*A Guide to the Selection of Materials for Monitoring Well Construction and Ground-Water Sampling*. 1983. ISWS Contract Report 327 by Michael J. Barcelona, James P. Gibb and Robin A. Miller) evaluated compatibility of well construction materials for monitoring metals in groundwater. The stainless steel wells at Dow Silicones are expected to be compatible with the relatively non-corrosive groundwater conditions present at the site.

The dedicated sampling equipment, described in Section B5.A.8(e), is primarily made of stainless steel or polyvinyl chloride (PVC), and is also compatible with the monitoring parameters.

**B5.A.4(b) Groundwater Monitoring System**  
[R 299.9612 and 40 CFR §§264.97(a)(2), (b), and (c) and 264.98(b)]

See Section B5.A.3(a)

**B5.A.4(c) Background Concentration Values for Proposed Parameters**  
[R 299.9612 and 40 CFR §§264.98(c) and 264.97(g)(1) and (2)]

See Section B5.A.3(c) and (d) of this Module. **Table B5-5** presents summary statistics for the deep monitoring wells that are used and background concentrations.

**B5.A.4(d) Proposed Sampling and Analysis Procedures**  
[R 299.9506(3)(e) and R 299.9612 and 40 CFR §§264.97(d), (e), and (f) and 264.98(d), (e), and (f)]

See Section B5.A.3(a) and (b) of this Module.

**B5.A.5 Supplemental Groundwater Monitoring Program – Shallow Monitoring Wells**

The Supplemental Groundwater Monitoring Program includes groundwater from shallow monitoring wells. The purpose of the supplemental monitoring program is to evaluate historic impacts to shallow groundwater from unknown locations, potential releases from active units and to track trends in quality of shallow groundwater. The Supplemental Groundwater Monitoring program is not a detection monitoring program, but does supplement the detection monitoring program. The shallow monitoring wells have been sampled since 1983.

The shallow saturated zone in the Surface Sand has a thin saturated thickness and is not capable of acting as a source of water supply and is not an aquifer. As discussed in the Hydrogeological Report, some of the shallow ground water has been affected by historical practices, and the chemistry of the shallow ground water quality does not represent impacts from the operation of the regulated units. Therefore, the shallow ground water samples are analyzed for the shallow monitoring well secondary and tracking parameters to establish a data base on the ground water chemistry in the shallow saturated zone and to evaluate site-wide groundwater conditions.

**B5.A.5(a) Hazardous Constituents to be Monitored in Supplemental Groundwater Monitoring Program**

The hazardous constituents included in the supplemental Groundwater Monitoring Program are listed in **Table B5-2**. These are the same as the Detection Monitoring Program parameters (with exception that 2,4-dimethylphenol, arsenic, mercury, and copper are not included). These are all secondary and tracking monitoring parameters. The secondary parameters are based on the results of landfill leachate monitoring since monitoring began and lead-containing wastes disposed of in the landfill or are general groundwater quality tracking parameters.

**B5.A.5(b) Concentration Limits**

Concentration limits are not used in the supplemental groundwater monitoring program.

**B5.A.5(c) Concentration Limit Other than Background**  
[R 299.9612(d)]

Concentration limits other than background are not used in the supplemental groundwater monitoring program.

**B5.A.5(d) Sampling and Analysis Procedures**

See Section B5.A.3(a) and (b) of this Module.

**B5.A.6 Corrective Action Groundwater Monitoring Program – Site Interceptor System (SIS)**

The Site Interceptor System (SIS) is a site-wide interim corrective response measure. The SIS is a subsurface drain that completely circles the Midland Site and intercepts shallow groundwater before the ground water leaves the site. The SIS consists of a trench, backfilled with gravel and drainage media that acts as a collection trough. A perforated collection tile is placed in the bottom of the trench. The outside face of the trench consists of a geosynthetic liner to prevent movement of shallow groundwater past the plant boundary. The collected groundwater is pumped to Dow Chemical's Wastewater Treatment Plant where it is treated prior to discharge to the Tittabawassee River under an NPDES permit. The SIS was completed in 1998. The SIS is described in detail in Section B2.D.1.

The purposes of the SIS Corrective Action Groundwater Monitoring Program are to monitor water quality in the SIS and to monitor the hydraulic effectiveness of the SIS. Water quality is monitored at a lift station at the lowest point of the SIS (southwest part of the site near Building 121; see **Figure B2-1**) before the SIS flow mixes with other flows. Water levels are monitored at manholes along the SIS, staff gauges in Lingle Drain, and piezometers located in pairs on either side of the SIS. Drawing YI86188 in Appendix B2-1 illustrates the SIS and the monitoring locations. The SIS potentially could be impacted by any accidental release from anywhere within the site.

SIS monitoring includes sampling and analyses (Section B5.A.6(a)) and monitoring hydraulic gradients near the SIS (Section B5.A.6(e)). Hydraulic gradients are monitored and evaluated to determine if the SIS is effectively capturing the shallow groundwater.

**B5.A.6(a) Hazardous Constituents to be Monitored in Corrective Action Groundwater Monitoring Program**

**Table B5-2** identifies the constituents included in SIS monitoring. The SIS is monitored quarterly for most of the detection monitoring primary parameters and chemicals detected (1982 – 2021) in the leachate with concentrations above 0.5 mg/L. The SIS is monitored biennially for Appendix IX parameters (except PCBs, dioxins and furans) to detect potential releases from the regulated units and most of the site. Concentrations historically have been below criteria (the former Act 307 Type B criteria) with some minor exceptions.

**B5.A.6(b) Concentration Limits**

The SIS monitoring is an ongoing corrective response program with no specified concentration limits. The concentrations from biennial samples are compared to criteria developed pursuant to Part 201 – Environmental Remediation of Public Act 451 of 1994, as amended.

**B5.A.6(c) Concentration Limit Other than Background**

The SIS is an interim response measure with no established background data.

**B5.A.6(d) Sampling and Analysis Procedures**

See Section B5.A.3(a) and (b) of this Module.

**B5.A.6(e) Hydraulic Gradient Monitoring**

Hydraulic gradients in shallow groundwater are monitored quarterly to evaluate if the SIS is collecting shallow groundwater before the groundwater discharges from the site. Hydraulic gradients along the west branch of the SIS are monitored by measuring water levels in manholes along the SIS and in paired piezometers located near the manholes and on either side of the SIS. The east branch of the SIS is on both the south and east sides of the site and the upgradient side of Lingle Drain. Hydraulic gradients along the east branch of the SIS are monitored by measuring water levels at manholes along the SIS and staff gauges in Lingle Drain located near the manholes.

The hydraulic gradients at each SIS manhole where water levels are monitored are evaluated to determine if the groundwater gradient is toward the SIS or toward off-site areas or Lingle Drain. If the water elevation in the SIS is less than the water elevation of Lingle Drain or the piezometers, it is concluded that the SIS is functioning properly, and no further action is needed. If the water elevation in the SIS is higher than in Lingle Drain or the piezometers, actions are required. The initial action will include checking the operating components of the SIS to determine the cause. Dow Silicones will develop a specific plan to fix or modify the SIS based on the cause identified in the initial action.

A map of the SIS and monitoring locations is in Appendix B2-1. The sample locations are identified in **Table B5-2**.

**B5.A.7 Corrective Action Groundwater Monitoring Program – 604 Area Vaults**

The 604 Vaults are below grade concrete vaults ranging in depth from 13.1 to 15.5 feet that were formerly used to house process equipment (see **Figure B5-1**). The 604 Vault area is the site of chlorinated hydrocarbon releases from former processes. Compounds released were carbon tetrachloride, chloroform, 1,2-dichloroethane, 1,4-dichlorobenzene, 1,3-dichloropropane, and toluene. Each vault has a perimeter French drainage system installed in the native clay and flowing to a catch basin that is connected to the wastewater sewer. These drains were installed in 1995-1997. Each catch basin is sampled to monitor for contaminants associated with the manufacturing processes that were used at the vaults.

The purpose of the 604 Area Vault Corrective Action Groundwater Monitoring Program is to monitor groundwater quality in French drains installed as corrective actions for impacts to shallow groundwater associated with former operations at the vaults.

**B5.A.7(a) Hazardous Constituents to be Monitored in Corrective Action Groundwater Monitoring Program – 604 Vaults**

The vault samples are collected from a system that collects shallow groundwater associated with the former vaults. The constituents are those associated with former use of the vaults. The ranges of most recent data (October 2021) from the three vaults are summarized below:

Carbon tetrachloride .....	110-32,000 ug/L
Chloroform .....	290-12,000ug/L
1,4-Dichlobenzene .....	<5-<250 ug/L
1,2-Dichloroethane.....	<20-3,100 ug/L
1,3-Dichloropropane .....	<5-<500 ug/L
1,1-Dichloropropylene.....	<5-22 ug/L
Toluene.....	<5-<500 ug/L

**B5.A.7(b) Concentration Limits**

The 604 Area Vault Corrective Action Groundwater Monitoring Program has no specified concentration limits.

**B5.A.7(c) Concentration Limit Other than Background**

This is an ongoing corrective action program with no specific concentration limits.

**B5.A.7(d) Sampling and Analysis Procedures**

See Section B5.A.3(a) and (b) of this Module.

**B5.A.8 Corrective Action Groundwater Monitoring Program – Quench Ponds**

The 2500 Block Quench Ponds (see **Figure B5-1** for location) were formerly used to neutralize corrosive chlorosilanes using lime. The major waste byproducts of the quenching operation were neutralized gels, which were disposed of as solid wastes, and brine that was disposed of in the wastewater sewer. Chloride is the major component of the waste brine generated by the

neutralization process formerly used at the Quench Ponds. The purpose of the Corrective Action Groundwater Monitoring Program at the Quench Ponds is to monitor the concentrations of chloride in the shallow groundwater near the former ponds.

**B5.A.8(a) Hazardous Constituents to be Monitored in Corrective Action Groundwater Monitoring Program – Quench Ponds**

The quench ponds samples are collected from shallow groundwater monitoring wells associated with the former quench ponds. The constituent is chloride, which was produced by the quenching process. The concentrations of chloride in the most recent samples (November 2021) ranged from 130 – 14,000 mg/L.

**B5.A.8(b) Concentration Limits**

There are no background data associated with the shallow groundwater collected at the former quench ponds.

**B5.A.8(c) Concentration Limit Other than Background**

This is an ongoing corrective action program with no specific concentration limits.

**B5.A.7(d) Sampling and Analysis Procedures**

See Section B5.A.3(a) and (b) of this Module.

**B5.B AMBIENT AIR MONITORING PROGRAM**

[R 299.9611(2)(c) and (4)]

Dow Silicones requests a continuation of the waiver for ambient air monitoring. 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 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.

**B5.C ANNUAL SOIL MONITORING PROGRAM**

[R 299.9611(2)(d) and (4)]

Dow Silicones requests a continuation of the waiver of the annual soil monitoring program.

Lead containing (D008) hazardous waste has not been disposed of in the Licensed Facility landfill since 1984. For this reason, the Director has previously granted a waiver of the requirement for soil monitoring.

If lead containing hazardous waste is disposed of in the landfill at this facility at a future date, Dow Silicones will:

1. Provide prior notification to EGLE of the lead disposal;
2. Obtain prior approval from EGLE for such disposal; and
3. Submit a soil sampling plan for approval by EGLE and resume annual sampling.

See Module B3 for a discussion of the geology beneath the site and potential contaminant fate and transport conditions related to soil.

## **B5.D SURFACE WATER MONITORING PROGRAM**

The purpose of the Surface Water Monitoring Program is to monitoring water quality in Lingle Drain. Lingle Drain flows past the regulated units and potentially could be impacted by shallow groundwater. No concentrations significantly above background concentrations have been observed since monitoring of the drain began in 1989.

### **B5.D.1 Surface Water Sampling Plan**

The location of Lingle Drain is shown on **Figure B5-1**. Lingle drain originates at the outfall from the City of Midland Wastewater Treatment Plant, flows past the Dow Silicones facility and discharges off-site to the Tittabawassee River. Much of the drain is enclosed in an underground pipe.

#### **B5.D.1(a) Surface Water Sampling Locations**

Samples are collected from the drain at the outfall of the Midland County Wastewater treatment Plant (MCOF, which is also the origin of the drain and upstream of the regulated unit); upstream of the regulated unit (UPDL) and downstream from the regulated unit (LD1). These locations are identified on **Figure B5-1**. Lingle drain is enclosed in an underground pipe at MCOF and UPDL, and samples are collected from manholes. LD1 is collected from an open channel.

#### **B5.D.1(b) Surface Water Sample Frequency**

Samples are collected semiannually. **Table B5-2** presents sampling frequency.

#### **B5.D.1(c) Static Water Level Measurements and Purging**

This section is not applicable for Surface Water locations. (Surface water elevations are measured and used to evaluate the SIS, see section B5.A.5.)

#### **B5.D.1(d) Sample Parameters and Basis**

The monitoring parameters in Lingle Drain are identified in **Table B5-2**. The monitoring parameters in Lingle Drain are the same as the primary monitoring parameters in the deep monitoring wells plus a scan for volatile organic compounds (VOCs). Data from the shallow groundwater monitoring program are evaluated to determine if parameters present in the shallow groundwater should be added to the surface water monitoring parameter list.

Dow Silicones may request additions or deletions to the sampling parameters in order to improve the effectiveness of the program or to delete parameters that are no longer necessary. Such requests will be supported by data and are subject to approval by the MDNRE

**B5.D.1(e) Sample Collection Procedure Surface Water Sample Collection**  
[40 CFR 264.97(d)(1)]

Lingle Drain flows past the landfill. The part of the drain nearest the landfill is in a pipe. Grab samples of the surface water are collected at the sampling locations listed in **Table B5-2** and shown on **Figure B5-1**. Samples from these locations are representative of the surface water just upstream and just downstream from the regulated unit. In addition, the outfall for the City of Midland Waste Water Treatment Plant, which is upstream of the regulated unit, is also sampled.

Surface water samples are collected using disposable bailer. MCOF and UPDL surface water samples are collected from manholes and LD1 is collected from the open channel. The container is lowered down the center of the manhole or to the center of the drain to collect a representative sample. The surface water sample from LD1 is collected off a dock from the Lingle Drain using disposable sampling device.

Duplicate samples are collected from each surface water sampling location. The duplicate samples are shipped to the laboratory with the initial samples and held pending sample results from the initial samples. The laboratory will analyze the duplicate samples if concentrations of any primary monitoring parameter in the initial samples are detected. Both the initial and duplicate results will be reported if duplicate samples are analyzed.

During each sampling event, one trip blank is analyzed for each volatile parameter to evaluate possible sample contamination from the sample bottles, shipping methods, and laboratory analyses. When the sample bottles are prepared prior to shipment to the field, one complete set of sample bottles is selected, filled with de-ionized water, and labeled "trip blank." The trip blank is transported to the field and sent to the laboratory for analyses along with the other sample bottles. In the laboratory, the trip blank is analyzed for the same volatile organic chemicals as the samples. The presence of any contaminant in the trip blank is noted and attributed to sample contamination. These data are not used to correct the concentration in other samples.

One equipment blank is collected during each sampling event. The equipment blank is collected after standard decontamination procedures are followed to clean the stainless steel sampling container. To collect the equipment blank, the stainless steel sampling container is filled with de-ionized water which is then used to fill the laboratory sampling containers. The equipment blanks are sent to the laboratory for analysis to detect the presence of any contaminant that may be the result of cross-contamination in the sampling container.

The sample collection is documented using customized field data entry forms **Appendix B5-1**.

**B5.D.1(f) Field Measurements**  
[40 CFR 264.97(d)(3)]

The pH of the surface water is measured in the field immediately after collecting the sample. The pH measurement procedure is discussed in Section B5.A.3(a).

**B5.D.1(g) Analytical Procedures and Quality Control**  
[40 CFR 264.97(d)(3)]

The analytical methods and quality control procedures are discussed in Section B5.A.3(a). The method and detection limits are listed in **Table B5-3**.

**B5.D.1(h) Sample Preservation, Shipment, and Chain of Custody**

The procedures used for sample preservation and shipment are described in Sections B5.A.3a). The chain of custody in **Appendix B5-2** or an equivalent form will be used.

**B5.D.1(i) Data Evaluation and Statistical Procedures**

To determine if the regulated unit has affected the surface water quality in Lingle Drain a statistical test has been developed to determine if there has been a significant increase in the levels of the monitoring parameters. The background data set consists of the upstream surface water data from the Upstream Lingle Drain (UPDL) and Midland County Outfall (MCOF) for benzene, toluene, ethylbenzene, chlorobenzene, and 2,4-dimethylphenol. These data are used to calculate the background +/- three times one standard deviation. The surface water background data are summarized in **Table B5-7**. The current analytical results from the Lingle Drain downstream of the regulated unit (LD1) are compared with the background value to determine if a significant increase may have occurred due to a release from the regulated unit.

Stiff diagrams of ion concentrations in samples from Lingle Drain are also prepared and evaluated qualitatively.

The historical background data are updated each sampling event. Anomalous data are evaluated qualitatively and are not included if a reason for the anomaly is identified.

**Re-sampling and Re-Evaluation**

A duplicate sample is collected from each sampling location. The duplicate sample will be held pending receipt of sampling results. If a statistically significant increase is detected in a monitoring parameter(s), the duplicate sample will be analyzed for confirmation purposes. If a statistically significant increase(s) of a parameter(s) is confirmed following the duplicate sample analysis, Dow Silicones will assess whether a discharge to surface waters is occurring, determine the source, and take immediate steps to eliminate a prevent any such discharge.

**B5.D.1(j) Reporting**

See **Appendix B5-3**, Environmental Monitoring Report Contents, for detailed reporting requirements for each monitoring program.

**B5.E LANDFILL LEACHATE MONITORING PROGRAM**

**B5.E.1 Leachate Sampling Plan**

The purpose of leachate monitoring is to identify parameters that should be included in the Detection Monitoring Program, the Supplemental Groundwater Monitoring Program and the Surface Water Monitoring Program. The leachate flowing into the landfill leachate collection

system is monitored before the leachate mixes with other waste streams. The leachate is collected and treated.

**B5.E.1(a) Leachate Sampling Location**

The leachate is sampled quarterly from the metering manhole, LL, shown in **Figure B5-1** southwest of the landfill.

Leachate flow is presently monitored in three manholes, MH7-11, MH6-30 and MH 28-6. MH7-11 handles most of the flow, and higher flows are directed to the other two manholes.

**B5.E.1(b) Leachate Sampling Frequency**

The leachate from the landfill is sampled quarterly. Once every two years, the leachate is also sampled and analyzed for a RCRA 40 CFR 264 Appendix IX scan, excluding PCBs, dioxins and furans.

Leachate flow is documented and monthly totals will included in the quarterly report.

**B5.E.1(c) Static Water Level Measurements and Purging**

This section is not applicable for Leachate Monitoring.

**B5.E.1(d) Sample Parameters and Basis**

The quarterly leachate monitoring parameters consist of two groups of parameters: fixed parameters (Lead, Mercury, PCBs, pH) and additional organic parameters (Benzene, Ethyl Benzene, Chlorobenzene, Toluene, 2,4-Dimethylphenol, total Phenols). The leachate is analyzed for the fixed parameters regardless of their concentration in previous samples. The additional organic parameters are organic parameters which are present in the leachate and which have been measured at concentrations greater than 0.5 mg/l in the leachate. If an organic parameter is measured at a concentration greater than 0.5 mg/l in the Appendix IX scan, which is run every two years, then that organic parameter is added to the list of additional quarterly organic parameters. If an additional quarterly organic parameter is not detected over two consecutive quarterly samples, then that parameter may be removed from the list of additional quarterly organic parameters.

The Appendix IX list is summarized in **Table B5-3**. Appendix IX list (excluding PCBs, dioxins and furans) is included at the request of the EGLE and replaces the priority pollutant scan used formerly. PCBs, dioxins and furans, have never placed in the land fill. PCBs are included in the quarterly sample analyses.

Dow Silicones may request additions or deletions to the sampling parameters in order to improve the effectiveness of the program or to delete parameters that are no longer necessary. Such requests will be supported by data and are subject to approval by the EGLE.

**B5.E.1(e) Sample Collection Procedure**  
[40 CFR 264.97(d)(1)]

Leachate samples are collected using a peristaltic pump and tubing if the water is too shallow to allow use of bailers. In order to collect a representative sample of the Landfill Leachate, the sample is collected prior to 8 AM, before any landfill truck washing is started for the day., . Since the Leachate sample is analyzed for total metals, the sample is not filtered. The data generated during the sample collection are recorded on the Field Data Entry Form. This form is attached in **Appendix B5-1**.

**B5.E.1(f) Field Measurements**  
[40 CFR 264.97(d)(3)]

The pH of the leachate is analyzed in the field immediately after collecting the leachate sample and recorded on the field form. A separate portion of the sample is drawn off for these analyses to avoid any contamination of the laboratory samples by the pH probe.

**B5.E.1(g) Analytical Procedures and Quality Control**  
[40 CFR 264.97(d)(3)]

The analytical methods and quality control procedures are discussed in Section B5.A.3(a). The method and detection limits for quarterly and biennial leachate monitoring are listed in **Table B5-3**.

**B5.E.1(h) Sample Preservation, Shipment, and Chain of Custody**

The methods for sample preservation and shipment are described in Sections B5.A.3(a) and **Table B5-3**. The chain of custody form in **Appendix B5-2** or an equivalent form will be used.

**B5.E.1(i) Data Evaluation and Statistical Procedures**

The Appendix IX leachate data are evaluated to identify analytical parameters for detection monitoring program, supplemental monitoring program and surface water monitoring program. Chemicals that occur with concentration greater than 0.5 mg/L in the Appendix IX landfill leachate samples are added to these other monitoring programs and to subsequent quarterly landfill leach samples.

**B5.E.1(j) Reporting**

See **Appendix B5-3**, Environmental Monitoring Report Contents for detailed reporting requirements for leachate monitoring program.

**Table B5-1  
Unit-Specific Groundwater Monitoring Programs  
Dow Silicones Corporation  
Midland, Michigan**

<b>Name of Unit Subject To Monitoring</b>	<b>Conditional non-LDF Waiver</b>	<b>No Migration Waiver</b>	<b>Detection Monitoring</b>	<b>Compliance Monitoring</b>	<b>Corrective Action Monitoring</b>	<b>Supplemental Monitoring</b>
800/1000 Block Landfill	Not requested	Not requested	Yes	No	No	Yes
806 Tank Farm	Not requested	Not requested	Yes	No	No	Yes
801, 809 Container Storage Buildings	Not requested	Not requested	Yes	No	No	Yes
Site Interceptor System – Site Wide Interim Response	Not requested	Not requested	No	No	Yes	No
604 Area Vaults	Not requested	Not requested	No	No	Yes	No
Former Quench Pond	Not requested	Not requested	No	No	Yes	No
Lingle Drain Surface Water	Not requested	Not requested	No	No	No	No
Landfill Leachate	Not requested	Not requested	No	No	No	No

**Table B5-2  
Detection Monitoring - Deep Monitoring Wells**

Identifier	Frequency	SWL?	Field Parameters	Analysis Parameters	Specific Constituents	Data Evaluation/Response
<b>Detection Monitoring Program - Deep Monitoring Wells</b>						
DMW-4A	Semiannual	Yes	Temp, pH, Conductivity	VOC, SVOC, METALS (filtered), SULFATE, CHLORIDE, CARBS	<p><b>Primary Monitoring Constituents:</b> Benzene Chlorobenzene Ethylbenzene Toluene 1,4-dioxane 2,4-dimethylphenol Acetone 2-butanone (MEK) 2-picoline Lead, dissolved</p> <p><b>Secondary Monitoring Constituents:</b> Arsenic, dissolved Barium, dissolved Cadmium, dissolved Mercury, dissolved Copper, dissolved Zinc, dissolved Phenols, total pH Conductivity</p> <p><b>Secondary Monitoring/Tracking Parameters:</b> Chloride Sulfate Bicarbonate Carbonate Calcium, dissolved Sodium, dissolved Magnesium, dissolved Potassium, dissolved</p>	<p><b>* DMW-4A requires a second sample to be collected after an additional hour of purging. This second sample is analyzed only for dissolved lead and zinc.</b></p> <p><b>Sampling Equipment:</b> 1. DMW-4A and DMW-6A have permanent electric submersible pump. 2. DMW-10, DMW-11, and DMW-12 have dedicated Well Wizards from QED Environmental Systems, Inc. 3. DMW-9 is a flowing well and does not have any sampling equipment. Instead, the natural artesian head is used to purge and sample the well.</p> <p><b>Purging:</b> 1. DMW-4A and DMW-6A - The volume of water purged prior to sampling equals 3 times the submerged casing volume plus the porous portion of the filter pack 2. DMW-10, DMW-11, and DMW-12 contain inflatable packers located 12 feet above the bottom of the well. The calculated purge volume for these wells is 6 gallons plus the volume of the filter pack. 3. DMW-9 is a flowing well and the calculated purge volume is set at 123.5 gallons; directly measured with a graduated cylinder holding container or calculated by measuring the flow rate for the pumping.</p> <p>Note: If a deep monitoring well does pump dry before purging three casing volumes, the well is allowed to stabilize and sampled within 24 hours.</p> <p><b>Data Evaluation:</b> Determine if a statistically significant increase (or change in pH) has occurred compared to background levels for each primary and secondary parameter. For any non-naturally occurring primary parameters, any occurrence above the laboratory detection limit(s) for the parameter(s) shall be considered statistically significant. Refer to Section B5.A.3(d).</p>
DMW-6A						
DMW-9						
DMW-10						
DMW-11						
DMW-12						
<b>Deep Monitoring Wells - Top of Casing Survey</b>						
DMW-4A	Every 5 Years (Beginning in 2022)	N/A	None	None	None	Last measured in 2022
DMW-6A						
DMW-9						
DMW-10						
DMW-11						
DMW-12						

**Table B5-2  
Corrective Action Monitoring - Quench Ponds**

Identifier	Frequency	SWL?	Field Parameters	Analysis Parameters	Specific Constituents	Data Evaluation/Response
<b>Corrective Action Monitoring Program - Quench Ponds</b>						
25n-1	Annually	Yes	pH, Temp, Conductivity	VOC, SVOC, METALS (filtered), SULFATE, CHLORIDE, CARBS	Chloride	<p>The quench pond samples are collected from shallow groundwater monitoring wells associated with the former quench ponds. Chloride was produced by the quenching process. There are no specific concentration limits for chloride.</p> <p><b>Sampling Equipment</b> 1. Dedicated PVC bailers with propylene rope are at each shallow monitoring well.</p> <p><b>Purging</b> 1. The shallow monitoring wells are bailed dry with dedicated bailers and allowed to recover overnight before sampling. The bailer is pulled in and out of the water gently to minimize the aeration of the groundwater in the well.</p>
25n-3						
<b>Corrective Action Monitoring - Quench Ponds - Top of Casing Survey</b>						
25n-1	Every Five Years (Beginning in 2022)	N/A	None	None	None	Last measured in 2022.
25n-3						

**Table B5-2  
Landfill Leachate Monitoring**

Identifier	Frequency	SWL?	Field Parameters	Analysis Parameters	Specific Constituents	Data Evaluation/Response
<b>Landfill Leachate Monitoring</b>						
MH7-11	Quarterly (Appendix IX biennial)	N/A	pH, Temp	VOC, METALS (total), PCBs	<u><b>Primary Monitoring Constituents:</b></u> acetone benzene chlorobenzene ethylbenzene 2-butanone (MEK) toluene 1,4-Dioxane xylene total 2,4-Dimethylphenol phenols total mercury (total) lead (total) 2-picoline PCBs <sup>1</sup> USEPA Appendix IX (biennial)	<p>Record volume of flow on a monthly basis and provide to Environmental Great Lakes and Energy (EGLE).</p> <p><u><b>Sampling and Flow Monitoring:</b></u>            The leachate is sampled quarterly using peristaltic pumps and tubing from the metering manhole, LL, southwest of the landfill. Sample collection shall occur before 8 am. Leachate flow is monitored from the three manholes, MH7-11, MH6-30 and MH 28-6.</p> <p><u><b>Appendix IX Sampling and Evaluation:</b></u>            The Appendix IX leachate data are evaluated to identify analytical parameters for detection monitoring program, supplemental monitoring program and surface water monitoring program. Chemicals that occur with concentration greater than 0.5 mg/L in the Appendix IX landfill leachate samples are added to these other monitoring programs and to subsequent quarterly landfill leach samples.</p>

**Notes:**

1. PCB parameters listed in Table B5-3.

**Table B5-2  
Supplemental Monitoring - Shallow Monitoring Wells and Manholes**

Identifier	Site Info.	Frequency	SWL?	Field Parameters	Analysis Parameters	Specific Constituents	Data Evaluation/Response
<b>Supplemental Monitoring - Shallow Monitoring Wells and Manholes</b>							
SMW6-1	Well	Semiannual	Yes	Temp, pH, Conductivity	VOC, SVOC, METALS, SULFATE, CHLORIDE, CARBS	<u>Secondary Monitoring Constituents:</u> Benzene Chlorobenzene Ethylbenzene Toluene 1,4-Dioxane 2,4-dimethylphenol Phenols, total Acetone 2-Butanone (MEK) 2-Picoline Lead, total <u>Secondary Monitoring/Tracking Parameters:</u> Calcium, total Sodium, total Magnesium, total Potassium, total Chloride Sulfate Bicarbonate Carbonate	*3-well volume purge to purge the well dry 24 hours prior to sampling the well.  <u>Sampling Equipment</u> Dedicated PVC bailers are used at each shallow monitoring well or sampled using peristaltic pump and disposable tubing.  <u>Purging</u> The shallow monitoring wells are bailed dry with dedicated bailers and allowed to recover overnight before sampling.  <u>Data Evaluation:</u> Concentration limits are not used in the supplemental groundwater monitoring program. Concentration limits other than background are not used in the supplemental groundwater monitoring program. Data from the supplemental are evaluated graphically, with Stiff diagrams, or qualitatively.
SMW6-2	Well						
SMW7-1	Well						
SMW7-2	Well						
SMW28-1	Well						
MH28-11	Well						
MH28-12	Well						
MH10-15	Well						
<b>Shallow Monitoring Wells - Top of Casing Survey</b>							
SMW6-1	Well	Every Five Years	Yes	None	None	None	Last measured in 2022.
SMW7-1	Well						
SMW7-2	Well						
SMW28-1	Well						
MH28-11	Well						
MH10-15	Well						

**Table B5-2  
Corrective Action Monitoring - Site Interceptor System (SIS)**

Identifier	Site Info.	Frequency	SWL?	Field Parameters	Analysis Parameters	Specific Constituents	Data Evaluation/Response
<b>Corrective Action Monitoring - Site Interceptor System (SIS) Chemical Monitoring</b>							
SIS	Lift Station	Quarterly (Appendix IX - Biennial)	N/A	temperature, pH	VOC, SVOC, METALS, SULFATE, CHLORIDE, USEPA Appendix IX (biennial)	Benzene Chlorobenzene Ethylbenzene Toluene Xylene, total Fluoride Acetone Acetonitrile Allyl chloride 2-Butanone (MEK) Carbon Tetrachloride Chloromethane 1,2-Dichloroethane 1,1,1-Trichloroethane Copper, Total Lead, Total Tin, Total	<p><b>Sampling Equipment</b> 1. The SIS is sampled using disposable bailer.</p> <p><b>Appendix IX Sampling</b> Samples are collected for Appendix IX samples on a biennial basis.</p> <p><b>Data Evaluation:</b> Concentration limits are not used in the corrective action monitoring program.</p>
<b>Corrective Action Monitoring -SIS Hydraulic Monitoring</b>							
M-1	Well	Quarterly	Yes	None	None	None	<p>Water levels are monitored at manholes along the SIS, staff gauges in Lingle Drain, and piezometers located in pairs on either side of the SIS. The SIS potentially could be impacted by any accidental release from anywhere within the site.</p> <p><b>Quarterly Hydraulic Evaluation:</b> The licensee shall conduct a hydraulic monitoring program for the SIS to demonstrate that an inward hydraulic gradient is being maintained through operation of the SIS. Based on the results of the quarterly hydraulic monitoring of the licensee shall: 1.) If the results of the quarterly hydraulic monitoring of the SIS determine that the inward hydraulic gradient is not being maintained at any location, then the licensee shall within 24 hours resample the hydraulic monitoring points in question to confirm the apparent outward hydraulic gradient.</p>
M-2	Well						
M-3	Well						
M-4	Well						
M-5	Well						
M-6	Well						
M-7	Well						
M-8	Well						
M-9	Well						
M-10	Well						
M-11	Well						
S-1	Well						
S-2	Well						
S-3	Well						
S-4	Well						
S-6	Well						
S-7	Well						
P-8A	Well						
P-8B	Well						
P-9A	Well						
P-9B	Well						
P-10A	Well						
P-10B	Well						
P-11A	Well						
P-11B	Well						

**Table B5-2  
Corrective Action Monitoring - Site Interceptor System (SIS)**

Identifier	Site Info.	Frequency	SWL?	Field Parameters	Analysis Parameters	Specific Constituents	Data Evaluation/Response
<b>Site Interceptor System (SIS) - Top of Casing Survey</b>							
M-1	Well	<b>Annual</b>	Yes	None	None	None	
M-2	Well						
M-3	Well						
M-4	Well						
M-5	Well						
M-6	Well						
M-7	Well						
M-8	Well						
M-9	Well						
M-10	Well						
M-11	Well						
S-1	Well						
S-2	Well						
S-3	Well						
S-4	Well						
S-6	Well						
S-7	Well						
P-8A	Well						
P-8B	Well						
P-9A	Well						
P-9B	Well						
P-10A	Well						
P-10B	Well						
P-11A	Well						
P-11B	Well						

**Table B5-2  
Corrective Action Monitoring - 604 Vaults**

Identifier	Site Info.	Frequency	SWL?	Field Parameters	Analysis Parameters	Specific Constituents	Data Evaluation/Response
<b>Corrective Action Monitoring - 604 Vaults</b>							
7710	Vault	Semiannual	No	None	VOCs	Toluene Chloroform Carbon Tetrachloride 1,2-Dichloroethane 1,4-Dichlorobenzene 1,3-Dichloropropane 1,1-Dichloropropylene Naphthalene	<u><b>Sampling Equipment</b></u> The vaults are sampled using disposable bailers at each vault.  <u><b>Data Evaluation:</b></u> Concentration limits are not used in the corrective action monitoring program.
7800	Vault						
8015	Vault						

**Table B5-2  
Surface Water Monitoring - Lingle Drain**

Identifier	Frequency	SWL?	Field Parameters	Analysis Parameters	Specific Constituents	Data Evaluation/Response
<b>Surface Water Monitoring - Lingle Drain</b>						
MCOF	Semiannually	N/A	pH, Temp, Conductivity	VOC, SVOC, SULFATE, CHLORIDE, CARBS	<u><b>Primary Monitoring Constituents:</b></u> benzene chlorobenzene ethylbenzene toluene 1,4-dioxane 2,4-dimethylphenol acetone 2-butanone (MEK) 2-picoline  <u><b>Secondary Monitoring/Tracking Parameters:</b></u> Calcium, total Sodium, total Magnesium, total Potassium, total Chloride Sulfate Bicarbonate Carbonate  <u><b>Other Constituents:</b></u> Lead, total Phenols, totals VOC Scan <sup>1</sup>	<u><b>Sampling Equipment</b></u>  Surface water samples are collected using disposable bailer or disposable sampling device.  Samples are collected from the drain at the outfall of the Midland County Wastewater treatment plant (MCOF, which is also the origin of the drain and upstream of the regulated unit); upstream of the regulated unit (UPDL) and downstream from the regulated unit (LD1).  <u><b>Duplicate samples are collected from each surface water sampling location. If a statistically significant increase is detected in a monitoring parameter(s), the duplicate sample will be released and analyzed. Request 5-Day Turnaround Time for laboratory analysis.</b></u>  <u><b>Statistical Evaluation</b></u> To determine if the regulated unit has affected the surface water quality in Lingle Drain a statistical test has been developed to determine if there has been a significant increase in the levels of the monitoring parameters. The background data set consists of the upstream surface water data from the Upstream Lingle Drain (UPDL) and Midland County Outfall (MCOF) for benzene, toluene, ethylbenzene, chlorobenzene, and 2,4-dimethylphenol. These data are used to calculate the background +/- three times one standard deviation. The surface water background data are summarized in Table 85-7. The current analytical results from the Lingle Drain downstream of the regulated unit (LD1) are compared with the background value to determine if a significant increase may have occurred due to a release from the regulated unit.  Historical background data are updated each sampling event. Anomalous data are evaluated qualitatively and are not included if a reason for the anomaly is identified.
UPDL						
LD1						

**Notes:**

1. Full scan VOCs, however, only specified VOCs are primary monitoring parameters. VOC scan parameters listed in Table B5-3.

**Table B5-2  
Quality Control**

<b>Media</b>	<b>Parameter</b>	<b>Field Duplicate</b>	<b>Trip Blank</b>	<b>Equipment Blank</b>	<b>Lab Blank</b>
Groundwater	VOC	One per event	One per cooler	Not required (Optional)	One for each 12-hour analytical batch
	SVOC	One per event	N/A		
	Inorganics	One per event	N/A		
Surface Water	VOC	One per event	One per cooler	Required	One for each 12-hour analytical batch
	SVOC	One per event	N/A		
	Inorganics	One per event	N/A		
Leachate	VOC	One per event	One per cooler	Not required (Optional)	One for each 12-hour analytical batch
	SVOC	One per event	N/A		
(Also applies to SIS chemical monitoring)	Inorganics	One per event	N/A		

**Table B5-2b**  
**Site Interceptor System Manholes and Corresponding Staff Gauges or Piezometers**  
**Dow Silicones Corporation**  
**Midland Michigan**

<b>EAST BRANCH</b>	
<b>Manhole</b>	<b>Lingle Drain Staff Gauge</b>
M-1	SG-1
M-2	SG-2
M-3	SG-3
M-4	SG-4
M-5	SG-6
M-6	SG-6
M-7	SG-7

<b>WEST BRANCH</b>		
<b>Manhole</b>	<b>West Side Piezometer</b>	<b>Plant Side Piezometer</b>
M-8	P8A	P8b
M-9	P9A	P9B
M-10	P10A	P10B
M-11	P11A	P11B

See Drawing YI-86188 in Module B2 for a map of locations

**Table B5-3**  
**Summary of Analytical Methods, Detection Limits, Sample Preservation, and Bottle Types**  
**Dow Silicones Corporation**  
**Midland, Michigan**

Parameter	Laboratory Analysis				Bottle Type
	Technique	Method	Detection Limit	Preservation	
<b>Miscellaneous Parameters</b>					
Calcium (Ca <sup>+2</sup> )	ICP	US EPA 6010B	1.0 mg/L	HNO <sub>3</sub> , pH <2	250ml plastic
Sodium (Na <sup>+</sup> )	ICP	US EPA 6010B	1.0 mg/L	HNO <sub>3</sub> , pH <2	250ml plastic
Magnesium (Mg <sup>+2</sup> )	ICP	US EPA 6010B	1.0 mg/L	HNO <sub>3</sub> , pH <2	250ml plastic
Potassium (K <sup>+</sup> )	ICP	US EPA 6010B	0.1 mg/L	HNO <sub>3</sub> , pH <2	250ml plastic
Chloride (Cl <sup>-</sup> )	AUTO ANALYZER	US EPA 4500 Cl E	1.0 mg/L	none	250ml plastic
Sulfate (SO <sub>4</sub> <sup>-2</sup> )	TURBIDIMETRIC	US EPA 9038	2.0 mg/L	cool to 4C	500ml plastic
Bicarbonate (HCO <sub>3</sub> <sup>-</sup> )	TITRIMETRIC	US EPA 2320B	10.0 mg/L	cool to 4C	500ml plastic
Carbonate (CO <sub>3</sub> <sup>-2</sup> )	TITRIMETRIC	US EPA 2320B	10.0 mg/L	cool to 4C	500ml plastic
Fluoride		US EPA SM 4500-F C 20th	0.1 mg/L	cool to 4C	250 ml plastic
Xylene, total	GC/MS	US EPA 8260B	3.0 ug/L	HCl, pH <2, Cool to 4C	40ml glass vial
Phenols, total	COLOROMETRIC (AUTO.)	US EPA 420.4	0.01 mg/L	H <sub>2</sub> SO <sub>4</sub> , pH <2, Cool to 4C	250ml amber glass
1,3-Dichloropropane	GC/MS	US EPA 8260B	1.0 ug/L	HCl, pH <2, Cool to 4C	40ml glass vial
1,1-Dichloropropylene	GC/MS	US EPA 8260B	1.0 ug/L	HCl, pH <2, Cool to 4C	40ml glass vial
<b>Polychlorinated biphenyls (PCBs)</b>					
PCB-1016	GC	US EPA 8082	0.1 ug/L	cool to 4C	250ml amber glass
PCB-1221	GC	US EPA 8082	0.1 ug/L	cool to 4C	250ml amber glass
PCB-1232	GC	US EPA 8082	0.1 ug/L	cool to 4C	250ml amber glass
PCB-1242	GC	US EPA 8082	0.1 ug/L	cool to 4C	250ml amber glass
PCB-1248	GC	US EPA 8082	0.1 ug/L	cool to 4C	250ml amber glass
PCB-1254	GC	US EPA 8082	0.1 ug/L	cool to 4C	250ml amber glass
PCB-1260	GC	US EPA 8082	0.1 ug/L	cool to 4C	250ml amber glass
<b>Metals and cyanide</b>					
Arsenic, total	ICPMS	US EPA 6020	1.0 ug/L	HNO <sub>3</sub> , pH <2	500ml plastic
Barium, total	ICPMS	US EPA 6020	5 ug/L	HNO <sub>3</sub> , pH <2	500ml plastic
Copper, total	ICPMS	US EPA 6020	2 ug/L	HNO <sub>3</sub> , pH <2	250ml plastic
Lead, total	ICPMS	US EPA 6020	1.0 ug/L	HNO <sub>3</sub> , pH <2	250ml plastic
Mercury, total	COLD VAPOR	US EPA 7470A	0.2 ug/L	HNO <sub>3</sub> , pH <2	500ml plastic
Thallium, total	ICPMS	US EPA 6020	2 ug/L	HNO <sub>3</sub> , pH <2	500ml plastic
Tin, total	ICPMS	US EPA 6020	1000 ug/L	HNO <sub>3</sub> , pH <3	250ml plastic
Zinc, total	ICPMS	US EPA 6020	50 ug/L	HNO <sub>3</sub> , pH <2	500ml plastic

**Table B5-3**  
**Summary of Analytical Methods, Detection Limits, Sample Preservation, and Bottle Types**  
**Dow Silicones Corporation**  
**Midland, Michigan**

Parameter	Laboratory Analysis				Bottle Type
	Technique	Method	Detection Limit	Preservation	
<b>Volatile Organic Compounds</b>					
Acetone	GC/MS	US EPA 8260B	20 ug/L	HCl, pH <2, Cool to 4C	40ml glass vial
Acrolein	GC/MS	US EPA 8260B	5 ug/L	HCl, pH <2, Cool to 4C	40ml glass vial
Acrylonitrile	GC/MS	US EPA 8260B	5 ug/L	HCl, pH <2, Cool to 4C	40ml glass vial
Benzene	GC/MS	US EPA 8260B	1.0 ug/L	HCl, pH <2, Cool to 4C	40ml glass vial
Bromoform	GC/MS	US EPA 8260B	1.0 ug/L	HCl, pH <2, Cool to 4C	40ml glass vial
Bromomethane	GC/MS	US EPA 8260B	1.0 ug/L	HCl, pH <2, Cool to 4C	40ml glass vial
Carbon tetrachloride	GC/MS	US EPA 8260B	1.0 ug/L	HCl, pH <2, Cool to 4C	40ml glass vial
Chlorobenzene	GC/MS	US EPA 8260B	1.0 ug/L	HCl, pH <2, Cool to 4C	40ml glass vial
Chloroethane	GC/MS	US EPA 8260B	5.0 ug/L	HCl, pH <2, Cool to 4C	40ml glass vial
Chloroform	GC/MS	US EPA 8260B	1.0 ug/L	HCl, pH <2, Cool to 4C	40ml glass vial
2-Chloroethylvinyl ether	GC/MS	US EPA 8260B	10 ug/L	HCl, pH <2, Cool to 4C	40ml glass vial
Chloroform	GC/MS	US EPA 8260B	1.0 ug/L	HCl, pH <2, Cool to 4C	40ml glass vial
Chloromethane	GC/MS	US EPA 8260B	1.0 ug/L	HCl, pH <2, Cool to 4C	40ml glass vial
Dibromochloromethane	GC/MS	US EPA 8260B	1.0 ug/L	HCl, pH <2, Cool to 4C	40ml glass vial
Bromodichlorobromomethane	GC/MS	US EPA 8260B	1.0 ug/L	HCl, pH <2, Cool to 4C	40ml glass vial
1,2-Dichlorobenzene	GC/MS	US EPA 8260B	1.0 ug/L	HCl, pH <2, Cool to 4C	40ml glass vial
1,3-Dichlorobenzene	GC/MS	US EPA 8260B	1.0 ug/L	HCl, pH <2, Cool to 4C	40ml glass vial
1,4-Dichlorobenzene	GC/MS	US EPA 8260B	1.0 ug/L	HCl, pH <2, Cool to 4C	40ml glass vial
1,1-Dichloroethane	GC/MS	US EPA 8260B	1.0 ug/L	HCl, pH <2, Cool to 4C	40ml glass vial
1,2-Dichloroethane	GC/MS	US EPA 8260B	1.0 ug/L	HCl, pH <2, Cool to 4C	40ml glass vial
1,1-Dichloroethylene	GC/MS	US EPA 8260B	1.0 ug/L	HCl, pH <2, Cool to 4C	40ml glass vial
1,2-Dichloroethylene (total)	GC/MS	US EPA 8260B	2.0 ug/L	HCl, pH <2, Cool to 4C	40ml glass vial
1,2-Dichloropropane	GC/MS	US EPA 8260B	1.0 ug/L	HCl, pH <2, Cool to 4C	40ml glass vial
1,3-Dichloropropane	GC/MS	US EPA 8260B	1.0 ug/L	HCl, pH <2, Cool to 4C	40ml glass vial
1,1-Dichloropropylene	GC/MS	US EPA 8260B	1.0 ug/L	HCl, pH <2, Cool to 4C	40ml glass vial
cis-1,3-Dichloropropene	GC/MS	US EPA 8260B	1.0 ug/L	HCl, pH <2, Cool to 4C	40ml glass vial
trans-1,3-Dichloropropene	GC/MS	US EPA 8260B	1.0 ug/L	HCl, pH <2, Cool to 4C	40ml glass vial
Ethylbenzene	GC/MS	US EPA 8260B	1.0 ug/L	HCl, pH <2, Cool to 4C	40ml glass vial
Methylene chloride	GC/MS	US EPA 8260B	5.0 ug/L	HCl, pH <2, Cool to 4C	40ml glass vial
1,1,2,2-Tetrachloroethane	GC/MS	US EPA 8260B	1.0 ug/L	HCl, pH <2, Cool to 4C	40ml glass vial
Tetrachloroethylene	GC/MS	US EPA 8260B	1.0 ug/L	HCl, pH <2, Cool to 4C	40ml glass vial
Toluene	GC/MS	US EPA 8260B	1.0 ug/L	HCl, pH <2, Cool to 4C	40ml glass vial
1,1,1-Trichloroethane	GC/MS	US EPA 8260B	1.0 ug/L	HCl, pH <2, Cool to 4C	40ml glass vial
1,1,2-Trichloroethane	GC/MS	US EPA 8260B	1.0 ug/L	HCl, pH <2, Cool to 4C	40ml glass vial
Trichloroethylene	GC/MS	US EPA 8260B	1.0 ug/L	HCl, pH <2, Cool to 4C	40ml glass vial
Vinyl chloride	GC/MS	US EPA 8260B	1.0 ug/L	HCl, pH <2, Cool to 4C	40ml glass vial

**Table B5-3**  
**Summary of Analytical Methods, Detection Limits, Sample Preservation, and Bottle Types**  
**Dow Silicones Corporation**  
**Midland, Michigan**

Parameter	Laboratory Analysis				Bottle Type
	Technique	Method	Detection Limit	Preservation	
<b>Semi-volatile Organic Compounds</b>					
Naphthalene	GC/MS	US EPA 8270C	1 ug/L	cool to 4C	250ml amber glass
Phenol	GC/MS	US EPA 8270C	5 ug/L	cool to 4C	250ml amber glass
<b>RCRA Appendix IX - for biennial SIS and Landfill Leachate Monitoring</b>					
<b>Polychlorinated Biphenyls (PCBs) by EPA Method 8082</b>					
PCB-1016	GC	US EPA 8082	0.1 ug/L	cool to 4C	1000ml amber glass
PCB-1221	GC	US EPA 8082	0.1 ug/L	cool to 4C	1000ml amber glass
PCB-1232	GC	US EPA 8082	0.1 ug/L	cool to 4C	1000ml amber glass
PCB-1242	GC	US EPA 8082	0.1 ug/L	cool to 4C	1000ml amber glass
PCB-1248	GC	US EPA 8082	0.1 ug/L	cool to 4C	1000ml amber glass
PCB-1254	GC	US EPA 8082	0.1 ug/L	cool to 4C	1000ml amber glass
PCB-1260	GC	US EPA 8082	0.1 ug/L	cool to 4C	1000ml amber glass
<b>Organochlorine Pesticides by EPA Method 8081A</b>					
alpha-BHC	GC	US EPA 8081A	0.02 ug/L	cool to 4C	1000ml amber glass
beta-BHC	GC	US EPA 8081A	0.02 ug/L	cool to 4C	1000ml amber glass
gamma-BHC (Lindane)	GC	US EPA 8081A	0.02 ug/L	cool to 4C	1000ml amber glass
delta-BHC	GC	US EPA 8081A	0.02 ug/L	cool to 4C	1000ml amber glass
4,4'-DDD	GC	US EPA 8081A	0.02 ug/L	cool to 4C	1000ml amber glass
4,4'-DDE	GC	US EPA 8081A	0.02 ug/L	cool to 4C	1000ml amber glass
4,4'-DDT	GC	US EPA 8081A	0.02 ug/L	cool to 4C	1000ml amber glass
Aldrin	GC	US EPA 8081A	0.01 ug/L	cool to 4C	1000ml amber glass
Dieldrin	GC	US EPA 8081A	0.02 ug/L	cool to 4C	1000ml amber glass
Endosulfan I	GC	US EPA 8081A	0.02 ug/L	cool to 4C	1000ml amber glass
Endosulfan II	GC	US EPA 8081A	0.03 ug/L	cool to 4C	1000ml amber glass
Endosulfan Sulfate	GC	US EPA 8081A	0.05 ug/L	cool to 4C	1000ml amber glass
Endrin	GC	US EPA 8081A	0.02 ug/L	cool to 4C	1000ml amber glass
Endrin Aldehyde	GC	US EPA 8081A	0.02 ug/L	cool to 4C	1000ml amber glass
Heptachlor	GC	US EPA 8081A	0.01 ug/L	cool to 4C	1000ml amber glass
Heptachlor Epoxide	GC	US EPA 8081A	0.01 ug/L	cool to 4C	1000ml amber glass
Methoxychlor	GC	US EPA 8081A	0.05 ug/L	cool to 4C	1000ml amber glass
Technical Chlordane	GC	US EPA 8081A	0.025 ug/L	cool to 4C	1000ml amber glass
Toxaphene	GC	US EPA 8081A	0.10 ug/L	cool to 4C	1000ml amber glass
Chlorobenzilate	GC/MS	US EPA 8270C	10 ug/L	cool to 4C	1000ml amber glass
Diallate	GC/MS	US EPA 8270C	50 ug/L	cool to 4C	1000ml amber glass
Isodrin	GC/MS	US EPA 8270C	5.0 ug/L	cool to 4C	1000ml amber glass
Kepone	GC/MS	US EPA 8270C	5.0 ug/L	cool to 4C	1000ml amber glass

**Table B5-3**  
**Summary of Analytical Methods, Detection Limits, Sample Preservation, and Bottle Types**  
**Dow Silicones Corporation**  
**Midland, Michigan**

Parameter	Laboratory Analysis				Bottle Type
	Technique	Method	Detection Limit	Preservation	
<b>Chlorinated Herbicides by EPA Method 8151A</b>					
2,4-D		US EPA 8151A	5 ug/L	cool to 4C	1000ml amber glass
2,4,5-T		US EPA 8151A	5 ug/L	cool to 4C	1000ml amber glass
2,4,5-TP (Silvex)		US EPA 8151A	5 ug/L	cool to 4C	1000ml amber glass
<b>Volatile Organic Compounds by EPA Method 8260B</b>					
Acetone	GC/MS	US EPA 8260B	20 ug/L	HCl, pH<2, Cool to 4C	40ml glass vial
Acetonitrile	GC/MS	US EPA 8260B	10 ug/L	HCl, pH<2, Cool to 4C	40ml glass vial
Acrolein	GC/MS	US EPA 8260B	5 ug/L	HCl, pH<2, Cool to 4C	40ml glass vial
Acrylonitrile	GC/MS	US EPA 8260B	5 ug/L	HCl, pH<2, Cool to 4C	40ml glass vial
Allyl Chloride	GC/MS	US EPA 8260B	10 ug/L	HCl, pH<2, Cool to 4C	40ml glass vial
Benzene	GC/MS	US EPA 8260B	1 ug/L	HCl, pH<2, Cool to 4C	40ml glass vial
Bromodichloromethane	GC/MS	US EPA 8260B	1 ug/L	HCl, pH<2, Cool to 4C	40ml glass vial
Bromoform	GC/MS	US EPA 8260B	1 ug/L	HCl, pH<2, Cool to 4C	40ml glass vial
Bromomethane	GC/MS	US EPA 8260B	5 ug/L	HCl, pH<2, Cool to 4C	40ml glass vial
Carbon Disulfide	GC/MS	US EPA 8260B	1 ug/L	HCl, pH<2, Cool to 4C	40ml glass vial
Carbon Tetrachloride	GC/MS	US EPA 8260B	1 ug/L	HCl, pH<2, Cool to 4C	40ml glass vial
2-Chloro-1,3-butadiene	GC/MS	US EPA 8260B	5 ug/L	HCl, pH<2, Cool to 4C	40ml glass vial
Chlorobenzene	GC/MS	US EPA 8260B	1 ug/L	HCl, pH<2, Cool to 4C	40ml glass vial
Chloroethane	GC/MS	US EPA 8260B	5 ug/L	HCl, pH<2, Cool to 4C	40ml glass vial
Chloroform	GC/MS	US EPA 8260B	1 ug/L	HCl, pH<2, Cool to 4C	40ml glass vial
Chloromethane	GC/MS	US EPA 8260B	5 ug/L	HCl, pH<2, Cool to 4C	40ml glass vial
1,2-Dibromo-3-chloropropane	GC/MS	US EPA 8260B	5 ug/L	HCl, pH<2, Cool to 4C	40ml glass vial
Dibromochloromethane	GC/MS	US EPA 8260B	1 ug/L	HCl, pH<2, Cool to 4C	40ml glass vial
1,2-Dibromoethane	GC/MS	US EPA 8260B	1 ug/L	HCl, pH<2, Cool to 4C	40ml glass vial
Dibromomethane	GC/MS	US EPA 8260B	1 ug/L	HCl, pH<2, Cool to 4C	40ml glass vial
trans-1,4-Dichloro-2-butene	GC/MS	US EPA 8260B	5 ug/L	HCl, pH<2, Cool to 4C	40ml glass vial
Dichlorodifluoromethane	GC/MS	US EPA 8260B	5 ug/L	HCl, pH<2, Cool to 4C	40ml glass vial
1,1-Dichloroethane	GC/MS	US EPA 8260B	1 ug/L	HCl, pH<2, Cool to 4C	40ml glass vial
1,2-Dichloroethane	GC/MS	US EPA 8260B	1 ug/L	HCl, pH<2, Cool to 4C	40ml glass vial
1,1-Dichloroethene	GC/MS	US EPA 8260B	1 ug/L	HCl, pH<2, Cool to 4C	40ml glass vial
trans-1,2-Dichloroethene	GC/MS	US EPA 8260B	1 ug/L	HCl, pH<2, Cool to 4C	40ml glass vial
1,2-Dichloropropane	GC/MS	US EPA 8260B	1 ug/L	HCl, pH<2, Cool to 4C	40ml glass vial
cis-1,3-Dichloropropene	GC/MS	US EPA 8260B	1 ug/L	HCl, pH<2, Cool to 4C	40ml glass vial
trans-1,3-Dichloropropene	GC/MS	US EPA 8260B	1 ug/L	HCl, pH<2, Cool to 4C	40ml glass vial
1,4-Dioxane	GC/MS	US EPA 8260SIM	20 ug/L	HCl, pH<2, Cool to 4C	40ml glass vial
Ethylbenzene	GC/MS	US EPA 8260B	1 ug/L	HCl, pH<2, Cool to 4C	40ml glass vial
2-Hexanone	GC/MS	US EPA 8260B	5 ug/L	HCl, pH<2, Cool to 4C	40ml glass vial
Iodomethane	GC/MS	US EPA 8260B	1 ug/L	HCl, pH<2, Cool to 4C	40ml glass vial

**Table B5-3**  
**Summary of Analytical Methods, Detection Limits, Sample Preservation, and Bottle Types**  
**Dow Silicones Corporation**  
**Midland, Michigan**

Parameter	Laboratory Analysis				Bottle Type
	Technique	Method	Detection Limit	Preservation	
Isobutanol	GC/MS	US EPA 8260B	25 ug/L	HCl, pH<2, Cool to 4C	40ml glass vial
Methacrylonitrile	GC/MS	US EPA 8260B	50 ug/L	HCl, pH<2, Cool to 4C	40ml glass vial
Methylene Chloride	GC/MS	US EPA 8260B	5 ug/L	HCl, pH<2, Cool to 4C	40ml glass vial
2-Butanone (MEK)	GC/MS	US EPA 8260B	5 ug/L	HCl, pH<2, Cool to 4C	40ml glass vial
4-Methyl-2-pentanone (MIBK)	GC/MS	US EPA 8260B	5 ug/L	HCl, pH<2, Cool to 4C	40ml glass vial
Propionitrile	GC/MS	US EPA 8260B	5 ug/L	HCl, pH<2, Cool to 4C	40ml glass vial
Styrene	GC/MS	US EPA 8260B	1 ug/L	HCl, pH<2, Cool to 4C	40ml glass vial
1,1,1,2-Tetrachloroethane	GC/MS	US EPA 8260B	1 ug/L	HCl, pH<2, Cool to 4C	40ml glass vial
1,1,2,2-Tetrachloroethane	GC/MS	US EPA 8260B	1 ug/L	HCl, pH<2, Cool to 4C	40ml glass vial
Tetrachloroethene	GC/MS	US EPA 8260B	1 ug/L	HCl, pH<2, Cool to 4C	40ml glass vial
Toluene	GC/MS	US EPA 8260B	1 ug/L	HCl, pH<2, Cool to 4C	40ml glass vial
1,1,1-Trichloroethane	GC/MS	US EPA 8260B	1 ug/L	HCl, pH<2, Cool to 4C	40ml glass vial
1,1,2-Trichloroethane	GC/MS	US EPA 8260B	1 ug/L	HCl, pH<2, Cool to 4C	40ml glass vial
Trichloroethene	GC/MS	US EPA 8260B	1 ug/L	HCl, pH<2, Cool to 4C	40ml glass vial
Trichlorofluoromethane	GC/MS	US EPA 8260B	1 ug/L	HCl, pH<2, Cool to 4C	40ml glass vial
1,2,3-Trichloropropane	GC/MS	US EPA 8260B	1 ug/L	HCl, pH<2, Cool to 4C	40ml glass vial
Vinyl Acetate	GC/MS	US EPA 8260B	5 ug/L	HCl, pH<2, Cool to 4C	40ml glass vial
Vinyl Chloride	GC/MS	US EPA 8260B	1 ug/L	HCl, pH<2, Cool to 4C	40ml glass vial
Xylene (Total)	GC/MS	US EPA 8260B	3 ug/L	HCl, pH<2, Cool to 4C	40ml glass vial
<b>Semivolatile Organic Compounds + Organophosphorous Pesticides by EPA Method 8270C</b>					
Acenaphthene	GC/MS	US EPA 8270C	1 ug/L	cool to 4C	250ml amber glass
Acenaphthylene	GC/MS	US EPA 8270C	1 ug/L	cool to 4C	250ml amber glass
Acetophenone	GC/MS	US EPA 8270C	1 ug/L	cool to 4C	250ml amber glass
2-Acetylaminofluorene	GC/MS	US EPA 8270C	2 ug/L	cool to 4C	250ml amber glass
4-Aminobiphenyl	GC/MS	US EPA 8270C	5 ug/L	cool to 4C	250ml amber glass
Aniline	GC/MS	US EPA 8270C	4 ug/L	cool to 4C	250ml amber glass
Anthracene	GC/MS	US EPA 8270C	1 ug/L	cool to 4C	250ml amber glass
Aramite	GC/MS	US EPA 8270C	1 ug/L	cool to 4C	250ml amber glass
Benzo(a)anthracene	GC/MS	US EPA 8270C	1 ug/L	cool to 4C	250ml amber glass
Benzo(a)pyrene	GC/MS	US EPA 8270C	1 ug/L	cool to 4C	250ml amber glass
Benzo(b)fluoranthene	GC/MS	US EPA 8270C	1 ug/L	cool to 4C	250ml amber glass
Benzo(k)fluoranthene	GC/MS	US EPA 8270C	1 ug/L	cool to 4C	250ml amber glass
Benzo(g,h,i)perylene	GC/MS	US EPA 8270C	1 ug/L	cool to 4C	250ml amber glass
Benzyl Alcohol	GC/MS	US EPA 8270C	50 ug/L	cool to 4C	250ml amber glass
4-Bromophenyl Phenyl Ether	GC/MS	US EPA 8270C	2 ug/L	cool to 4C	250ml amber glass
Butyl Benzyl Phthalate	GC/MS	US EPA 8270C	5 ug/L	cool to 4C	250ml amber glass
4-Chloro-3-methylphenol	GC/MS	US EPA 8270C	5 ug/L	cool to 4C	250ml amber glass
4-Chloroaniline	GC/MS	US EPA 8270C	1 ug/L	cool to 4C	250ml amber glass

**Table B5-3**  
**Summary of Analytical Methods, Detection Limits, Sample Preservation, and Bottle Types**  
**Dow Silicones Corporation**  
**Midland, Michigan**

Parameter	Laboratory Analysis				Bottle Type
	Technique	Method	Detection Limit	Preservation	
Bis(2-chloroethoxy)methane	GC/MS	US EPA 8270C	2 ug/L	cool to 4C	250ml amber glass
Bis(2-chloroethyl) Ether	GC/MS	US EPA 8270C	1 ug/L	cool to 4C	250ml amber glass
Bis(2-chloroisopropyl) Ether	GC/MS	US EPA 8270C	1 ug/L	cool to 4C	250ml amber glass
2-Chloronaphthalene	GC/MS	US EPA 8270C	2 ug/L	cool to 4C	250ml amber glass
2-Chlorophenol	GC/MS	US EPA 8270C	10 ug/L	cool to 4C	250ml amber glass
4-Chlorophenyl Phenyl Ether	GC/MS	US EPA 8270C	1 ug/L	cool to 4C	250ml amber glass
Chrysene	GC/MS	US EPA 8270C	1 ug/L	cool to 4C	250ml amber glass
Dibenz(a,h)anthracene	GC/MS	US EPA 8270C	2 ug/L	cool to 4C	250ml amber glass
Dibenzofuran	GC/MS	US EPA 8270C	4 ug/L	cool to 4C	250ml amber glass
Di-n-butyl Phthalate	GC/MS	US EPA 8270C	5 ug/L	cool to 4C	250ml amber glass
1,2-Dichlorobenzene	GC/MS	US EPA 8270C	1 ug/L	cool to 4C	250ml amber glass
1,3-Dichlorobenzene	GC/MS	US EPA 8270C	1 ug/L	cool to 4C	250ml amber glass
1,4-Dichlorobenzene	GC/MS	US EPA 8270C	1 ug/L	cool to 4C	250ml amber glass
3,3'-Dichlorobenzidine	GC/MS	US EPA 8270C	10 ug/L	cool to 4C	250ml amber glass
2,4-Dichlorophenol	GC/MS	US EPA 8270C	10 ug/L	cool to 4C	250ml amber glass
2,6-Dichlorophenol	GC/MS	US EPA 8270C	10 ug/L	cool to 4C	250ml amber glass
Diethyl Phthalate	GC/MS	US EPA 8270C	5 ug/L	cool to 4C	250ml amber glass
Dimethoate	GC/MS	US EPA 8270C	2 ug/L	cool to 4C	250ml amber glass
p-Dimethylaminoazobenzene	GC/MS	US EPA 8270C	5 ug/L	cool to 4C	250ml amber glass
7,12-Dimethylbenz(a)anthracene	GC/MS	US EPA 8270C	2 ug/L	cool to 4C	250ml amber glass
3,3'-Dimethylbenzidine	GC/MS	US EPA 8270C	10 ug/L	cool to 4C	250ml amber glass
a,a-Dimethylphenethylamine	GC/MS	US EPA 8270C	10 ug/L	cool to 4C	250ml amber glass
2,4-Dimethylphenol	GC/MS	US EPA 8270C	5 ug/L	cool to 4C	250ml amber glass
Dimethyl Phthalate	GC/MS	US EPA 8270C	5 ug/L	cool to 4C	250ml amber glass
4,6-Dinitro-2-methylphenol	GC/MS	US EPA 8270C	20 ug/L	cool to 4C	250ml amber glass
1,3-Dinitrobenzene	GC/MS	US EPA 8270C	2 ug/L	cool to 4C	250ml amber glass
2,4-Dinitrophenol	GC/MS	US EPA 8270C	25 ug/L	cool to 4C	250ml amber glass
2,4-Dinitrotoluene	GC/MS	US EPA 8270C	5 ug/L	cool to 4C	250ml amber glass
2,6-Dinitrotoluene	GC/MS	US EPA 8270C	5 ug/L	cool to 4C	250ml amber glass
Di-n-octyl Phthalate	GC/MS	US EPA 8270C	5 ug/L	cool to 4C	250ml amber glass
Dinoseb	GC/MS	US EPA 8270C	5 ug/L	cool to 4C	250ml amber glass
Diphenylamine	GC/MS	US EPA 8270C	10 ug/L	cool to 4C	250ml amber glass
Disulfoton	GC/MS	US EPA 8270C	2 ug/L	cool to 4C	250ml amber glass
Bis(2-ethylhexyl) Phthalate	GC/MS	US EPA 8270C	5 ug/L	cool to 4C	250ml amber glass
Ethyl Methacrylate	GC/MS	US EPA 8270C	10 ug/L	cool to 4C	250ml amber glass
Ethyl Methanesulfonate	GC/MS	US EPA 8270C	2 ug/L	cool to 4C	250ml amber glass
Famphur	GC/MS	US EPA 8270C	5 ug/L	cool to 4C	250ml amber glass
Fluoranthene	GC/MS	US EPA 8270C	1 ug/L	cool to 4C	250ml amber glass
Fluorene	GC/MS	US EPA 8270C	1 ug/L	cool to 4C	250ml amber glass

**Table B5-3**  
**Summary of Analytical Methods, Detection Limits, Sample Preservation, and Bottle Types**  
**Dow Silicones Corporation**  
**Midland, Michigan**

Parameter	Laboratory Analysis				Bottle Type
	Technique	Method	Detection Limit	Preservation	
Hexachlorobenzene	GC/MS	US EPA 8270C	1 ug/L	cool to 4C	250ml amber glass
Hexachlorobutadiene	GC/MS	US EPA 8270C	1 ug/L	cool to 4C	250ml amber glass
Hexachlorocyclopentadiene	GC/MS	US EPA 8270C	5 ug/L	cool to 4C	250ml amber glass
Hexachloroethane	GC/MS	US EPA 8270C	1 ug/L	cool to 4C	250ml amber glass
Hexachloropropene	GC/MS	US EPA 8270C	2 ug/L	cool to 4C	250ml amber glass
Indeno(1,2,3-cd)pyrene	GC/MS	US EPA 8270C	2 ug/L	cool to 4C	250ml amber glass
Isophorone	GC/MS	US EPA 8270C	1 ug/L	cool to 4C	250ml amber glass
Isosafrole	GC/MS	US EPA 8270C	2 ug/L	cool to 4C	250ml amber glass
Methapyrilene	GC/MS	US EPA 8270C	10 ug/L	cool to 4C	250ml amber glass
3-Methylcholanthrene	GC/MS	US EPA 8270C	2 ug/L	cool to 4C	250ml amber glass
Methyl Methacrylate	GC/MS	US EPA 8270C	10 ug/L	cool to 4C	250ml amber glass
Methyl Methanesulfonate	GC/MS	US EPA 8270C	2 ug/L	cool to 4C	250ml amber glass
2-Methylnaphthalene	GC/MS	US EPA 8270C	1 ug/L	cool to 4C	250ml amber glass
Methyl Parathion	GC/MS	US EPA 8270C	2 ug/L	cool to 4C	250ml amber glass
2-Methylphenol	GC/MS	US EPA 8270C	10 ug/L	cool to 4C	250ml amber glass
3-Methylphenol	GC/MS	US EPA 8270C	10 ug/L	cool to 4C	250ml amber glass
4-Methylphenol	GC/MS	US EPA 8270C	10 ug/L	cool to 4C	250ml amber glass
Naphthalene	GC/MS	US EPA 8270C	1 ug/L	cool to 4C	250ml amber glass
1,4-Naphthoquinone	GC/MS	US EPA 8270C	2 ug/L	cool to 4C	250ml amber glass
1-Naphthylamine	GC/MS	US EPA 8270C	2 ug/L	cool to 4C	250ml amber glass
2-Naphthylamine	GC/MS	US EPA 8270C	2 ug/L	cool to 4C	250ml amber glass
2-Nitroaniline	GC/MS	US EPA 8270C	20 ug/L	cool to 4C	250ml amber glass
3-Nitroaniline	GC/MS	US EPA 8270C	20 ug/L	cool to 4C	250ml amber glass
4-Nitroaniline	GC/MS	US EPA 8270C	20 ug/L	cool to 4C	250ml amber glass
Nitrobenzene	GC/MS	US EPA 8270C	2 ug/L	cool to 4C	250ml amber glass
4-Nitrophenol	GC/MS	US EPA 8270C	25 ug/L	cool to 4C	250ml amber glass
2-Nitrophenol	GC/MS	US EPA 8270C	5 ug/L	cool to 4C	250ml amber glass
4-Nitroquinoline-1-oxide	GC/MS	US EPA 8270C	10 ug/L	cool to 4C	250ml amber glass
N-Nitroso-di-n-butylamine	GC/MS	US EPA 8270C	2 ug/L	cool to 4C	250ml amber glass
N-Nitroso-diethylamine	GC/MS	US EPA 8270C	2 ug/L	cool to 4C	250ml amber glass
N-Nitroso-dimethylamine	GC/MS	US EPA 8270C	5 ug/L	cool to 4C	250ml amber glass
N-Nitroso-diphenylamine	GC/MS	US EPA 8270C	2 ug/L	cool to 4C	250ml amber glass
N-Nitroso-di-n-propylamine	GC/MS	US EPA 8270C	2 ug/L	cool to 4C	250ml amber glass
N-Nitrosomethylethylamine	GC/MS	US EPA 8270C	10 ug/L	cool to 4C	250ml amber glass
N-Nitrosomorpholine	GC/MS	US EPA 8270C	10 ug/L	cool to 4C	250ml amber glass
N-Nitrosopiperidine	GC/MS	US EPA 8270C	10 ug/L	cool to 4C	250ml amber glass
N-Nitrosopyrrolidine	GC/MS	US EPA 8270C	10 ug/L	cool to 4C	250ml amber glass
5-Nitro-o-toluidine	GC/MS	US EPA 8270C	2 ug/L	cool to 4C	250ml amber glass
Parathion	GC/MS	US EPA 8270C	2 ug/L	cool to 4C	250ml amber glass

**Table B5-3**  
**Summary of Analytical Methods, Detection Limits, Sample Preservation, and Bottle Types**  
**Dow Silicones Corporation**  
**Midland, Michigan**

Parameter	Laboratory Analysis				Bottle Type
	Technique	Method	Detection Limit	Preservation	
Pentachlorobenzene	GC/MS	US EPA 8270C	2 ug/L	cool to 4C	250ml amber glass
Pentachloroethane	GC/MS	US EPA 8270C	2 ug/L	cool to 4C	250ml amber glass
Pentachloronitrobenzene	GC/MS	US EPA 8270C	2 ug/L	cool to 4C	250ml amber glass
Pentachlorophenol	GC/MS	US EPA 8270C	1 ug/L	cool to 4C	250ml amber glass
Phenacetin	GC/MS	US EPA 8270C	2 ug/L	cool to 4C	250ml amber glass
Phenanthrene	GC/MS	US EPA 8270C	1 ug/L	cool to 4C	250ml amber glass
Phenol	GC/MS	US EPA 8270C	5 ug/L	cool to 4C	250ml amber glass
1,4-Phenylenediamine	GC/MS	US EPA 8270C	5 ug/L	cool to 4C	250ml amber glass
Phorate	GC/MS	US EPA 8270C	2 ug/L	cool to 4C	250ml amber glass
2-Picoline	GC/MS	US EPA 8270C	2 ug/L	cool to 4C	250ml amber glass
Pronamide	GC/MS	US EPA 8270C	2 ug/L	cool to 4C	250ml amber glass
Pyrene	GC/MS	US EPA 8270C	1 ug/L	cool to 4C	250ml amber glass
Pyridine	GC/MS	US EPA 8270C	20 ug/L	cool to 4C	250ml amber glass
Safrole	GC/MS	US EPA 8270C	2 ug/L	cool to 4C	250ml amber glass
Sulfotep	GC/MS	US EPA 8270C	2 ug/L	cool to 4C	250ml amber glass
1,2,4,5-Tetrachlorobenzene	GC/MS	US EPA 8270C	2 ug/L	cool to 4C	250ml amber glass
2,3,4,6-Tetrachlorophenol	GC/MS	US EPA 8270C	5 ug/L	cool to 4C	250ml amber glass
Thionazin	GC/MS	US EPA 8270C	2 ug/L	cool to 4C	250ml amber glass
o-Toluidine	GC/MS	US EPA 8270C	2 ug/L	cool to 4C	250ml amber glass
1,2,4-Trichlorobenzene	GC/MS	US EPA 8270C	2 ug/L	cool to 4C	250ml amber glass
2,4,6-Trichlorophenol	GC/MS	US EPA 8270C	4 ug/L	cool to 4C	250ml amber glass
2,4,5-Trichlorophenol	GC/MS	US EPA 8270C	5 ug/L	cool to 4C	250ml amber glass
o-o-o-Triethyl-phosphorothioate	GC/MS	US EPA 8270C	5 ug/L	cool to 4C	250ml amber glass
1,3,5-Trinitrobenzene	GC/MS	US EPA 8270C	2 ug/L	cool to 4C	250ml amber glass
<b>Total Metals by EPA 6000/7000 Series Methods</b>					
Barium	ICPMS	US EPA 6020	5 ug/L	HNO3, pH <2	500ml plastic
Antimony	ICPMS	US EPA 6020	1 ug/L	HNO3, pH <2	500ml plastic
Arsenic	ICPMS	US EPA 6020	1 ug/L	HNO3, pH <2	500ml plastic
Beryllium	ICPMS	US EPA 6020	1 ug/L	HNO3, pH <2	500ml plastic
Cadmium	ICPMS	US EPA 6020	0.2 ug/L	HNO3, pH <2	500ml plastic
Chromium	ICPMS	US EPA 6020	5 ug/L	HNO3, pH <2	500ml plastic
Cobalt	ICPMS	US EPA 6020	15 ug/L	HNO3, pH <2	500ml plastic
Copper	ICPMS	US EPA 6020	2 ug/L	HNO3, pH <2	500ml plastic
Lead	ICPMS	US EPA 6020	1 ug/L	HNO3, pH <2	500ml plastic
Nickel	ICPMS	US EPA 6020	2 ug/L	HNO3, pH <2	500ml plastic
Selenium	ICPMS	US EPA 6020	2 ug/L	HNO3, pH <2	500ml plastic
Silver	ICPMS	US EPA 6020	0.2 ug/L	HNO3, pH <2	500ml plastic
Thallium	ICPMS	US EPA 6020	2 ug/L	HNO3, pH <2	500ml plastic

**Table B5-3**  
**Summary of Analytical Methods, Detection Limits, Sample Preservation, and Bottle Types**  
**Dow Silicones Corporation**  
**Midland, Michigan**

Parameter	Laboratory Analysis				Bottle Type
	Technique	Method	Detection Limit	Preservation	
Tin	ICPMS	US EPA 6020	1000 ug/L	HNO <sub>3</sub> , pH <2	500ml plastic
Vanadium	ICPMS	US EPA 6020	2 ug/L	HNO <sub>3</sub> , pH <2	500ml plastic
Zinc	ICPMS	US EPA 6020	50 ug/L	HNO <sub>3</sub> , pH <2	500ml plastic
Mercury	COLD VAPOR	US EPA 7470A	0.2 ug/L	HNO <sub>3</sub> , pH <2	500ml plastic
<b>Physical/Chemical Parameters by EPA/APHA/ASTM Methods</b>					
Cyanide, Total	CN DISTILLATION	US EPA SM 4500-CN E 20th	5 ug/L	NaOH, pH <12, cool to 4C	250ml brown plastic
<b>Physical/Chemical Parameters by EPA/APHA/ASTM Methods</b>					
Sulfide, Total		US EPA SM 4500-S2 D 20th	20 ug/L	Zn-Acetate/NaOH, pH>9, cool to 4C	500ml amber glass

**Table B5-4  
Summary of Monitoring Well Construction  
Dow Corning Corporation  
Midland, Michigan**

	Construction Date	Construction Material	Well Depth bgs (ft.)	Screen Interval bgs (ft.)	Static Water level below ground surface (ft.) at time of construction
<b>Deep Monitoring Wells</b>					
DMW-4A	5/8/1984	Stainless Steel	82	77-82	5.75
DMW-6A	5/8/1984	Stainless Steel	75	70-75	7.58
DMW-9	10/10/1986	Stainless Steel	235	228-235	--artesian well--
DMW-10	10/16/1986	Stainless Steel	62.7	57.7-62.7	N/A
DMW-11	10/27/1986	Stainless Steel	121	116-121	N/A
DMW-12	10/30/1986	Stainless Steel	49.8	44.8-49.8	N/A
<b>Shallow Monitoring Wells</b>					
SMW 6-1	4/28/1983	Stainless Steel	12.3	11.7-12.3	4.42
SMW 6-2	1/7/1983	Stainless Steel	12	6-12	3.42
SMW 7-1	1/7/1983	Stainless Steel	12.5	11-12.5	4.75
SMW 7-2	3/1/1983	Stainless Steel	12.3	9-12.3	5.33
SMW 28-1	1/7/1983	Stainless Steel	12.9	9-12.9	7.75
<b>Quench Pond Wells</b>					
25n-1	10/29/1982	Stainless steel screen with PVC riser	17	not recorded	None encountered
25n-2	11/2/1982	Stainless steel screen with PVC riser	19.6	not recorded	None encountered
25n-3	11/2/1982	Stainless steel screen with PVC riser	17	not recorded	None encountered

**Table B5-5**  
**Summary of Intra-Well Statistical Distributions and Prediction Limits for Deep Monitoring Wells<sup>(5)</sup>**  
**Based on Data Through 2021**  
**Dow Silicones Site**  
**Midland Michigan**

Well	Parameter	Units	Intra-well Criteria and Upper Tolerance Limits (1)(2)	Statistical Distribution	Basis for Intra-well Tolerance Limit
DMW-4A	Arsenic (3)	mg/L	0.0033	non-parametric	Maximum detected concentration observed on 10/26/98
DMW-4A	Barium (3)	mg/L	0.06	non-parametric	Maximum detected concentration observed in multiple samples
DMW-4A	Calcium	mg/L	(6)	-	Stiff diagram
DMW-4A	Cadmium	mg/L	0.01	non-parametric	Maximum detected concentration observed on 10/23/03, excluding outlier
DMW-4A	Chloride	mg/L	(6)	-	Stiff diagram
DMW-4A	Carbonate Alkalinity	mg/L	(6)	-	Stiff diagram
DMW-4A	Copper	mg/L	0.011	non-parametric	Maximum detected concentration observed on 1/21/14
DMW-4A	Bicarbonate Alkalinity	mg/L	(6)	-	Stiff diagram
DMW-4A	Mercury (3)	mg/L	0.0003	non-parametric	Maximum detected concentration observed on 4/18/01
DMW-4A	Potassium	mg/L	(6)	-	Stiff diagram
DMW-4A	Magnesium	mg/L	(6)	-	Stiff diagram
DMW-4A	Sodium	mg/L	(6)	-	Stiff diagram
DMW-4A	Lead (3)	mg/L	0.008	non-parametric	Maximum detected concentration observed on 1/15/15
DMW-4A	pH	st. units	(4)	normal	Shewhart Control Limit
DMW-4A	Total Phenol	mg/L	0.05	non-parametric	Maximum detected concentration observed on 8/18/1988
DMW-4A	Sulfate	mg/L	(6)	-	Stiff diagram
DMW-4A	Specific Conductivity	mmhos/cm	1.91	non-parametric	Maximum detected concentration observed on 4/25/2011
DMW-4A	Total Organic Carbon	mg/L	-	-	(5)
DMW-4A	Zinc	mg/L	4.2 0.14	non-parametric	<del>Maximum detected concentration observed on 1/21/14</del> Maximum detected concentration was observed on 2/11/14
DMW-10 (7)	Arsenic	mg/L	(4)	lognormal	Shewhart Control Limit
DMW-10 (7)	Barium	mg/L	0.14	non-parametric	Maximum detected concentration observed on 12/14/88
DMW-10 (7)	Calcium	mg/L	(6)	-	Stiff diagram
DMW-10 (7)	Cadmium	mg/L	0.01	non-parametric	Detection limit
DMW-10 (7)	Chloride	mg/L	(6)	-	Stiff diagram
DMW-10 (7)	Carbonate Alkalinity	mg/L	(6)	-	Stiff diagram
DMW-10 (7)	Copper	mg/L	0.02	non-parametric	Maximum detected concentration observed on 5/1/2014
DMW-10 (7)	Bicarbonate Alkalinity	mg/L	(6)	-	Stiff diagram
DMW-10 (7)	Mercury	mg/L	0.0004	non-parametric	Maximum detected concentration observed in multiple samples
DMW-10 (7)	Potassium	mg/L	(6)	-	Stiff diagram
DMW-10 (7)	Magnesium	mg/L	(6)	-	Stiff diagram
DMW-10 (7)	Sodium	mg/L	(6)	-	Stiff diagram
DMW-10 (7)	Lead	mg/L	0.0017	non-parametric	Maximum detected concentration observed on 10/4/11
DMW-10 (7)	pH	st. units	6.37 to 8.88	non-parametric	Minimum detected value observed on 4/23/07; maximum detected value observed on 6/9/88
DMW-10 (7)	Total Phenol	mg/L	0.02	non-parametric	Maximum detected concentration observed on 4/26/04 and 4/27/05
DMW-10 (7)	Sulfate	mg/L	(6)	-	Stiff diagram
DMW-10 (7)	Specific Conductivity	mmhos/cm	1.33	non-parametric	Maximum detected value observed on 4/25/11
DMW-10 (7)	Total Organic Carbon	mg/L	-	-	(5)
DMW-10 (7)	Zinc	mg/L	0.025	non-parametric	Maximum detected concentration observed on 10/23/13

**Notes:**

Text in orange represents a change from the 2020 Annual Report

- (1) The intra-well upper tolerance limit does not apply to parameters with normal or lognormal distribution.
- (2) The limit is the maximum (and minimum for pH) value of the concentration of a particular parameter (through year 2019 2020).
- (3) For Arsenic, Barium, Mercury and Lead at DMW-4A, the highest detected concentration is taken as UTL after the lower detection limit was implemented for these parameters.
- (4) The parameters with either normal or lognormal distribution do not have an intra-well prediction limit as the calculated standardized Shewhart value, Zi, is compared to Shewhart Control Limit of 4.5 in units of standard deviations.
- (5) Total organic carbon is no longer included in analyses (Approval of Hazardous Waste Management Facility Operating License (License) Minor Modification, September 13, 2013).
- (6) Tracking parameters are evaluated using Stiff diagrams (Module B5.A.8(j)).
- (7) Sample results from 4th quarter 2018 through 4th quarter 2019 are not included in the evaluation.
- (8) Sample results from 4th quarter 2019 are not included in the evaluation.

**Table B5-5**  
**Summary of Intra-Well Statistical Distributions and Prediction Limits for Deep Monitoring Wells<sup>(5)</sup>**  
**Based on Data Through 2021**  
**Dow Silicones Site**  
**Midland Michigan**

Well	Parameter	Units	Intra-well Criteria and Upper Tolerance Limits (1)(2)	Statistical Distribution	Basis for Intra-well Tolerance Limit
DMW-12 (7)	Arsenic	mg/L	0.0065	non-parametric	Maximum detection concentration observed on 10/31/89
DMW-12 (7)	Barium	mg/L	0.1	non-parametric	Maximum detected concentration observed on 10/31/89
DMW-12 (7)	Calcium	mg/L	(6)	-	Stiff diagram
DMW-12 (7)	Cadmium	mg/L	0.01	non-parametric	Detection limit
DMW-12 (7)	Chloride	mg/L	(6)	-	Stiff diagram
DMW-12 (7)	Carbonate Alkalinity	mg/L	(6)	-	Stiff diagram
DMW-12 (7)	Copper	mg/L	0.01	non-parametric	Detection Limit
DMW-12 (7)	Bicarbonate Alkalinity	mg/L	(6)	-	Stiff diagram
DMW-12 (7)	Mercury	mg/L	0.0003	non-parametric	Maximum detected concentration observed on 10/30/01, 4/2/2002, and 10/1/2002
DMW-12 (7)	Potassium	mg/L	(6)	-	Stiff diagram
DMW-12 (7)	Magnesium	mg/L	(6)	-	Stiff diagram
DMW-12 (7)	Sodium	mg/L	(6)	-	Stiff diagram
DMW-12 (7)	Lead	mg/L	0.001	non-parametric	Maximum detected concentration observed on 4/26/04, excluding outliers
DMW-12 (7)	pH	st. units	(4)	normal lognormal	Shewhart Control Limit
DMW-12 (7)	Total Phenol	mg/L	0.125	non-parametric	Maximum detected concentration observed on 10/4/11
DMW-12 (7)	Sulfate	mg/L	(6)	-	Stiff diagram
DMW-12 (7)	Specific Conductivity	mmhos/cm	1.31	non-parametric	Maximum detected value observed on 4/25/11
DMW-12 (7)	Total Organic Carbon	mg/L	-	-	(5)
DMW-12 (7)	Zinc	mg/L	0.02	non-parametric	Detection limit
DMW-6A (8)	Arsenic	mg/L	(4)	lognormal	Shewhart Control Limit
DMW-6A (8)	Barium	mg/L	(4)	normal lognormal	Shewhart Control Limit
DMW-6A (8)	Calcium	mg/L	(6)	-	Stiff diagram
DMW-6A (8)	Cadmium	mg/L	0.001	non-parametric	Detection limit
DMW-6A (8)	Chloride	mg/L	(6)	-	Stiff diagram
DMW-6A (8)	Carbonate Alkalinity	mg/L	(6)	-	Stiff diagram
DMW-6A (8)	Copper	mg/L	0.0063	non-parametric	Maximum detected value observed on 4/20/15
DMW-6A (8)	Bicarbonate Alkalinity	mg/L	(6)	-	Stiff diagram
DMW-6A (8)	Mercury	mg/L	0.0002	non-parametric	Detection limit
DMW-6A (8)	Potassium	mg/L	(6)	-	Stiff diagram
DMW-6A (8)	Magnesium	mg/L	(6)	-	Stiff diagram
DMW-6A (8)	Sodium	mg/L	(6)	-	Stiff diagram
DMW-6A (8)	Lead	mg/L	0.0014	non-parametric	Maximum detected value observed on 4/20/15
DMW-6A (8)	pH	st. units	(4)	normal	Shewhart Control Limit
DMW-6A (8)	Total Phenol	mg/L	0.02	non-parametric	Detection limit
DMW-6A (8)	Sulfate	mg/L	(6)	-	Stiff diagram
DMW-6A (8)	Specific Conductivity	mmhos/cm	4.03 1.5425	non-parametric	Maximum detected value observed on 10/24/13 Maximum detected value observed on 6/23/20
DMW-6A (8)	Zinc	mg/L	0.028	non-parametric	Maximum detected value observed on 4/10/14

**Notes:**

Text in orange represents a change from the 2020 Annual Report

- (1) The intra-well upper tolerance limit does not apply to parameters with normal or lognormal distribution.
- (2) The limit is the maximum (and minimum for pH) value of the concentration of a particular parameter (through year 2019 2020).
- (3) For Arsenic, Barium, Mercury and Lead at DMW-4A, the highest detected concentration is taken as UTL after the lower detection limit was implemented for these parameters.
- (4) The parameters with either normal or lognormal distribution do not have an intra-well prediction limit as the calculated standardized Shewhart value, Zi, is compared to Shewhart Control Limit of 4.5 in units of standard deviations.
- (5) Total organic carbon is no longer included in analyses (Approval of Hazardous Waste Management Facility Operating License (License) Minor Modification, September 13, 2013).
- (6) Tracking parameters are evaluated using Stiff diagrams (Module B5.A.8(j)).
- (7) Sample results from 4th quarter 2018 through 4th quarter 2019 are not included in the evaluation.
- (8) Sample results from 4th quarter 2019 are not included in the evaluation.

**Table B5-6  
Mobility, Stability and Persistence of Waste Constituents<sup>3</sup>  
Dow Silicones Corporation  
Midland, Michigan**

<b>Constituent</b>	<b>Mobility (1)</b>	<b>Stability (2)</b>	<b>Persistence (2)</b>
Acetone	Low	Stable	Not persistent
Acetonitrile	Medium	Stable	Not persistent
Allyl chloride	Not available	Stable	Not persistent
Benzene	High	Stable	Not persistent
2-Butanone (MEK)	Low	Stable	Not persistent
Carbon tetrachloride	High	Stable	Not persistent
Chlorobenzene	High	Stable	Not persistent
Chloroethane	Medium	Stable	Not persistent
Chloroform	Medium	Stable	Not persistent
Chloromethane	Medium	Stable	Not persistent
1,4-Dichlorobenzene	High	Stable	Not persistent
1,2-Dichloroethane	Medium	Stable	Not persistent
1,3-Dichloropropane	Not available	Stable	Not persistent
1,1-Dichloropropylene	Not available	Stable	Not persistent
Ethylbenzene	High	Stable	Not persistent
Naphthalene	High	Stable	Not persistent
Xylene	High	Stable	Not persistent
Toluene	Medium	Stable	Not persistent
2,4-dimethylphenol	Medium	Stable	Not persistent
Phenol	Medium	Stable	Not persistent
1,1,1-Trichloroethane	Medium	Stable	Not persistent
Arsenic	Medium	Stable	Persistent
Barium	Low	Stable	Persistent
Cadmium	Medium	Stable	Persistent
Chloride	High	Stable	Persistent
Chromium	Low	Stable	Persistent
Copper	Low	Stable	Persistent
Fluoride	Low	Stable	Persistent
Lead	Low	Stable	Persistent
Mercury	High	Stable	Persistent
Nickel	Low	Stable	Persistent
Selenium	High	Stable	Persistent
Tin	Not available	Stable	Persistent
Zinc	Low	Stable	Persistent

(1) Based on generic groundwater protection criteria from: *DNRE Remediation and Redevelopment Division Operational Memorandum No. 1. Part 201 Risk Based Cleanup Criteria. Table 2. Soil: Residential and Commercial 1 Part 201 Generic Cleanup Criteria and Screening Levels* (January 23, 2006). High = <1,000 ug/kg; medium = 1,000 – 10,000 ug/kg; low = > 10,000 ug/kg.

(2) None of these organic chemicals are identified as persistent in the U.S. Environmental Protection Agency's priority persistent, bio-accumulative and toxic chemicals program. Inorganic chemicals assumed to be persistent and stable.

(3) List includes monitoring parameters. Not all are waste constituents.

**Table B5-7**  
**Summary of Historical and Spatial Background Data for Lingle Drain<sup>3</sup> and Deep Monitoring Wells<sup>2</sup>**  
**Dow Silicones Corporation**  
**Midland, Michigan**

Monitoring Location	Lingle Drain <sup>(2)</sup>				Deep Monitoring Wells <sup>(1)</sup>												Deep Monitoring Wells (Con't) <sup>(1)</sup>												
					DMW-4A				DMW-6A				DMW-9				DMW-10				DMW-11				DMW-12				
	Parameter	Mean	Standard Deviation	Mean + 3SD	Range	Mean	Standard Deviation	Mean + 3SD	Range	Mean	Standard Deviation	Mean + 3SD	Range	Mean	Standard Deviation	Mean + 3SD	Range	Mean	Standard Deviation	Mean + 3SD	Range	Mean	Standard Deviation	Mean + 3SD	Range	Mean	Standard Deviation	Mean + 3SD	Range
Benzene	0.0010	0.0006	0.0028	0.0050	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Chlorobenzene	0.0010	0.0002	0.0016	0.0000	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Ethylbenzene	0.0010	0.0003	0.0019	0.0000	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Toluene	0.0039	0.0103	0.0348	0.0770	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
2,4-Dimethylphenol	0.0032	0.0008	0.0056	0.0000	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Ca <sup>+2</sup>	na	na	na	na	69	7.5	92	35	40	2.8	49	10	29	2.4	37	14	49	8.8	76	65	68	3.8	79	16	51	2.9	60	16	
Na <sup>+</sup>	na	na	na	na	208	15	254	122	118	7.7	141	20	164	16	211	87	145	34	246	224	215	27	295	43	135	11	169	82	
Mg <sup>+2</sup>	na	na	na	na	20	1.3	24	10	13	1.0	16	4.0	11	1.0	14	4.4	14	4.0	26	17	31	25	105	3.0	15	1.0	18	6.0	
K <sup>+</sup>	na	na	na	na	3.1	0.48	4.5	4.9	1.9	0.15	2.4	0.60	2.0	0.42	3.2	3.4	2.9	1.3	6.8	5.7	2.2	0.16	2.7	0.80	2.4	0.38	3.5	3.1	
Cl <sup>-</sup>	na	na	na	na	377	23	445	190	169	4.8	183	20	176	32	272	216	222	33	320	238	410	17	460	83	217	12	254	80	
SO <sub>4</sub> <sup>-2</sup>	na	na	na	na	61	5.7	78	34	48	2.4	55	8	41	6.5	60	37	66	15	110	95	58	3.9	70	25	62	9.1	89	74	
HCO <sub>3</sub> <sup>-</sup>	na	na	na	na	149	13	189	69	135	4.9	149	10	210	7.9	234	47	133	26	212	140	157	10	186	74	137	7.7	160	53	
CO <sub>3</sub> <sup>-2 (3)</sup>	na	na	na	na	4.5	17	57	148	1.9	1.3	5.9	4.0	5.2	24	76	198	1.2	0.76	3.5	4.0	1.2	0.78	3.6	0	1.2	0.73	3.4	4.0	
Arsenic	na	na	na	na	0.0012	0.00063	0.0031	0.0040	0.0013	0.00018	0.0018	0.00070	0.0014	0.00093	0.0042	0.0061	0.0021	0.0010	0.0053	0.0074	0.0013	0.00090	0.0040	0.0070	0.0031	0.00076	0.0054	0.0048	
Lead <sup>(4)</sup>	na	na	na	na	0.0087	0.018	0.062	0.049	0.0010	0.000094	0.0013	0.00040	0.0088	0.018	0.063	0.049	0.0084	0.018	0.062	0.049	0.0051	0.014	0.046	0.025	0.0081	0.017	0.0599	0.049	
Copper <sup>(5)</sup>	na	na	na	na	0.0080	0.0033	0.018	0.0090	0.0035	0.0043	0.016	0.018	0.0040	0.0018	0.0093	0.0040	0.0084	0.0037	0.019	0.018	0.0081	0.0034	0.018	0.0050	0.0041	0.0017	0.0091	0.0040	
Phenols, total	na	na	na	na	0.028	0.022	0.093	0.098	0.0067	0.0024	0.014	0.0050	0.023	0.017	0.076	0.040	0.023	0.018	0.076	0.040	0.022	0.018	0.074	0.065	0.025	0.022	0.090	0.12	

**Footnotes:**

All Units are in milligrams per liter (mg/L).

<sup>1</sup> - Background data for Deep Monitoring Wells are data from beginning of monitoring through 2021.

<sup>2</sup> - Background data for Lingle Drain are data from upstream of the Landfill through 2010, excluding elevated detection limits.

<sup>3</sup> - All CO<sub>3</sub><sup>-2</sup> concentrations were less than the detection limit of 2 mg/L at DMW-6A, DMW-10, DMW-11, and DMW-12. Half the detection limit used to calculate of Mean and Standard Deviation.

<sup>4</sup> - Outlier concentrations of lead in DMW-12 from 7/26/93 not included in calucalations.

<sup>5</sup> - All copper analytical results were less than the detection of 0.01 mg/L at DMW-9 and DMW-12. Half of the detection limit used for calculation of Mean and Standard Deviation.

na - Background data are not required for the parameters and sample location.

SD - standard deviation

**LEGEND**

- ▲ SHALLOW MONITORING WELL
- DEEP MONITORING WELL
- LINGLE DRAIN SAMPLE LOCATION
- ▲ (in circle) SITE INTERCEPTOR SYSTEM SAMPLE LOCATION
- (with LL) LANDFILL LEACHATE SAMPLE LOCATION
- (in circle) 604 VAULT SAMPLE LOCATION
- ▨ BUILDING
- (shaded) LANDFILL
- LINGLE DRAIN—DASHED WHERE UNDERGROUND

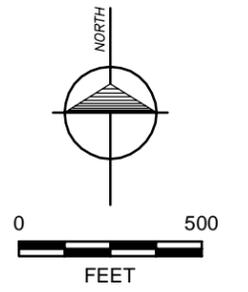
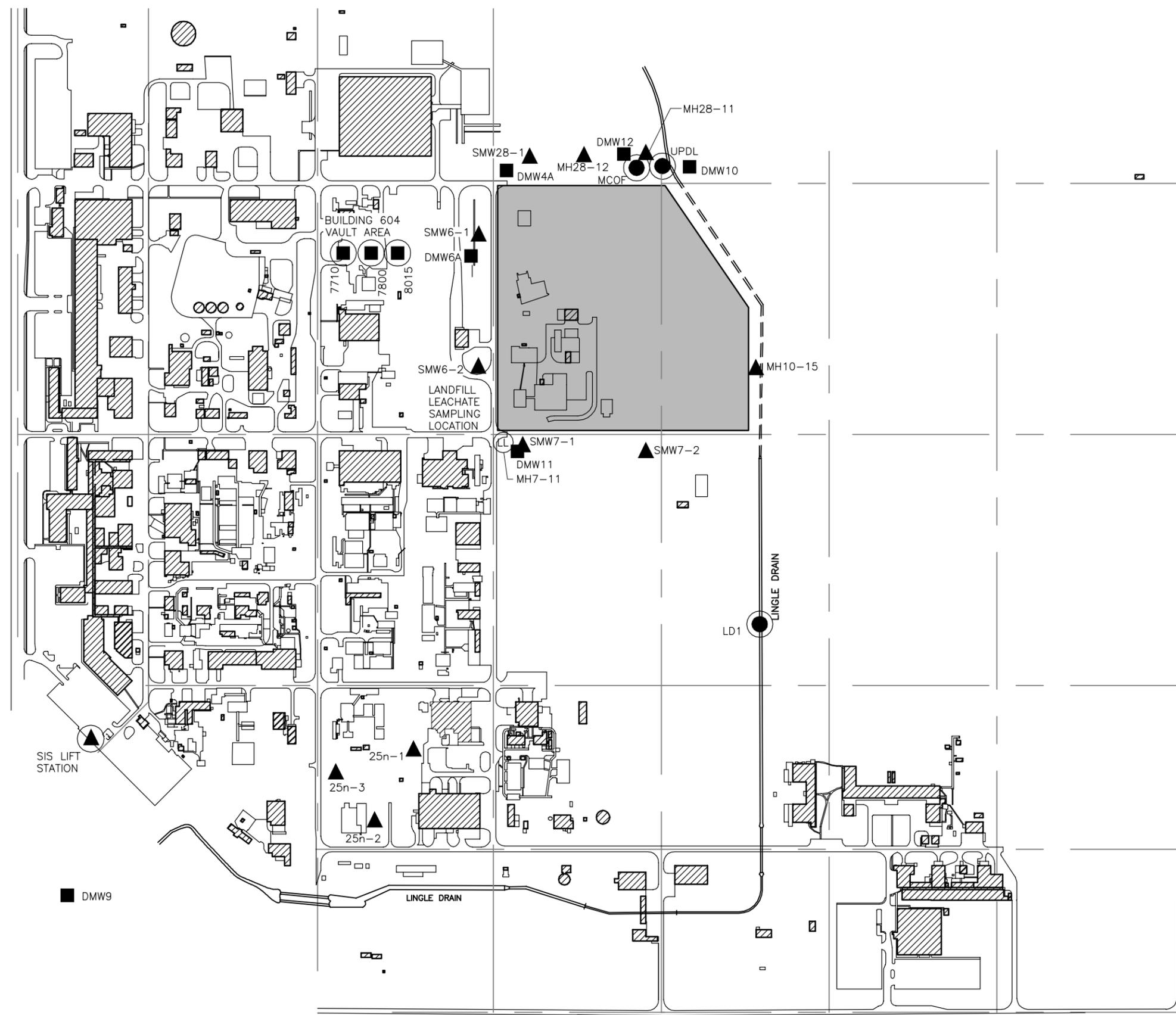


FIGURE B5-1

**SAMPLING LOCATIONS**

DOW CORNING CORPORATION  
MIDLAND, MICHIGAN

FILE NAME:	DRN	PROJECT NO.	DATE	FIGURE NO.
60134827-Fig B5-1.dwg	RAR	60134827	05/11	B5-1

Plotted By: eggerding  
 Layout-Sheet Name: B5-1  
 Plot File Date Created: Jun/20/2011 3:59 PM

# Appendix B5-1

## Field Form Examples

Information pertinent to field sampling will be documented in the field records. Field records may be captured electronically in the field using a tablet or field computer, or they may be captured in hardcopy, using a field data sheets or well inspection sheets (hardcopy example included in this Appendix). Field parameters shall be taken immediately prior to collecting the sample and documented in the field records. It is essential that all samples be collected properly and that actual conditions during each sample collection are completely documented. At a minimum, entries on the field records will include the following:

- Location of sampling point;
- Sample Location ID;
- Name or initials of the sampler;
- Date/time of purging and/or sampling;
- Number and container volume of sample taken;
- Analyses to be performed on samples;
- Static Water Level (SWL) reading (for groundwater samples);
- Purge volume (for groundwater samples);
- Field parameters (such as temperature, pH, specific conductivity); and
- Additional field information determined by the sampler to be important (i.e. abnormal conditions, well damage, weather conditions, nearby construction/traffic).





**DOW SILICONES CORPORATION**  
**Quarterly Shallow Groundwater Gradient Monitoring Log**  
**Site Interceptor System (SIS), East Branch**

Date: \_\_\_\_\_ Time: \_\_\_\_\_ AM PM

Manhole Number	Manhole Elevation (Plant Datum) (feet)	SIS Static Water Level	SIS Water Elevation	Staff Gauge #	Staff Gauge Elev.	Lingle Drain Static Water Level	Lingle Drain Water Elevation
M-1	88.57			SG-1	-.02'		
M-2	92			SG-2	+.01'		
M-3	94.39			SG-3	-.07'		
M-4	94.38			SG-4	-.11'		
M-5	95.46			SG-6**	-.05'		
M-6	95.96			SG-6**	-.05'		
M-7	98.97			SG-7	+.01'		

\*\*SG-6 is a common staff gauge for monitoring M-5 and M-6.

Top of manhole elevation (USGS) to nearest hundredth of a foot. Elevations are from December 2022 survey.

SIS static water level to nearest hundredth of a foot.

Water elevation in SIS to nearest hundredth of a foot.

Water elevation at Lingle Drain from staff gauge.

Is the water elevation in SIS less than the water elevation of Lingle Drain? yes or no

If yes, no further action needed.

If no, initiate action plan to determine why a gradient to SIS does not exist by checking the operating components.

**DOW SILICONES CORPORATION**  
**Quarterly Shallow Groundwater Gradient Monitoring Log**  
**Site Interceptor System (SIS), West Branch**

Date: \_\_\_\_\_ Time: \_\_\_\_\_ AM PM

Manhole Number	Manhole Elev. (feet)	SIS Static Water Level	SIS Water Elev.	Piezo #	Piezo Elev. (feet)	Static Water Level	Piezo Water Elev.
M-8	92.72			P8A	92.56		
				P8B	94.85		
M-9	92.22			P9A	92.06		
				P9B	93.92		
M-10	93.61			P10A	92.60		
				P10B	95.76		
M-11	99.00			P11A	98.80		
				P11B	102.11		

Top of manhole elevation (USGS) to nearest hundredth of a foot. Elevations from December 2022 survey.

SIS static water level to nearest hundredth of a foot.

Water elevation in SIS to nearest hundredth of a foot.

Piezo Elevation to nearest hundredth of a foot. (Top of casing)

Water elevation in Piezo to nearest hundredth of a foot.

Is the water elevation in SIS less than the water elevation of the piezometers? Yes or No

If yes, no further action needed.

**DOW CORNING CORPORATION  
AT DEEP MONITORING WELLS**

<b>MONITORING WELL*</b>	<b>TOP OF CASING (feet)</b>	<b>DEPTH TO WATER (FT)</b>	<b>GROUNDWATER ELEVATION (FT)</b>	<b>TIME MEASURED</b>
DMW-4A	629.11			
DMW-6A	628.06			
DMW-10**	629.93			
DMW-11	626.73			
DMW-12	634.43			
		<b>Pressure Head (inH2O)</b>	<b>Groundwater Elevation (Pressure Head + TOC)</b>	
DMW-9	619.75			
DATE MEASURED: _____ SIGNATURE: _____				

New TOC elevations based on Dow Silicones' survey done in December 2022.

\*Measure water levels from top of well wizard housing for wells having well wizards.

\*\*New flush mount installed June 2008. TOC elevations based on 2017 survey

TOC elevations re-surveyed every 3 years. Most recent survey completed in December 2022.

**DOW SILICONES CORPORATION  
AT SHALLOW MONITORING WELLS**

<b>MONITORING WELL*</b>	<b>TOP OF CASING (feet)</b>	<b>DEPTH TO WATER (FT)</b>	<b>GROUNDWATER ELEVATION (FT)</b>	<b>TIME MEASURED</b>
SMW6-1	104.90			
SMW6-2	103.06			
SMW7-1	102.23			
SMW7-2	105.29			
SMW28-1	107.70			

DATE MEASURED: \_\_\_\_\_

SIGNATURE: \_\_\_\_\_

New TOC elevations based on Dow Silicones' survey done in December 2022.

\*Measure water levels from top of well wizard housing for wells having well wizards.

\*\*New flush mount installed June 2008. TOC elevations based on October 2011 survey

TOC elevations re-surveyed every 3 years. Most recent survey completed in December 2022.























































## Appendix B5-3

### Environmental Monitoring Report Contents

Four types of reports will be provided:

- Quarterly groundwater monitoring reports;
- Annual groundwater monitoring reports
- Annual Site Interceptor System (SIS) Evaluation
- Biennial Site Interceptor System (SIS) Report
- Annual Landfill Leachate (LL) Volume Monitoring Report

Contents of each of these reports are summarized below.

#### Quarterly Groundwater Monitoring Reports

Quarterly reports will include the following according to the monitoring frequencies specified in Table B5-2.

- 1.0 Introduction
  - 1.1 Descriptions of event
  - 1.2 Problems encountered
  - 1.3 Recommendations and Program Modifications
  - 1.4 Schedule (next four events)
- 2.0 Detection Groundwater Monitoring -Deep Monitoring Wells
  - 2.1 Results and Statistical Evaluation
  - 2.2 Quality Assurance and Quality Control Results
  - 2.3 Attachments
    - Data Summary Table
    - Stiff Diagrams and Anion/Cation Balance
    - Shewhart-CUSUM Control and Trend Charts
    - Field and Instrument Calibration Forms
    - Analytical Reports
- 3.0 Supplemental Groundwater Monitoring - Shallow Monitoring Wells
  - 3.1 Results
  - 3.2 Quality Assurance and Quality Control Results
  - 3.3 Attachments
    - Data Summary Table
    - Trend Charts
    - Field and Instrument Calibration Forms
    - Analytical Reports
    - Groundwater flow direction figure
- 4.0 Corrective Action Monitoring – Site Interceptor System

- 4.1 Results
- 4.2 Quality Assurance and Quality Control Results
- 4.3 Flow and Hydraulic Effectiveness Monitoring
- 4.4 Attachments
  - Data Summary Table with Comparison to Part 201 Criteria
  - Piezometer Data
  - Flow Data
  - Field and Instrument Calibration Forms
  - Analytical Reports
- 5.0 Corrective Action Monitoring – 604 Area Vaults
  - 5.1 Results
  - 5.2 Quality Assurance and Quality Control Results
  - 5.3 Attachments
    - Data Summary Table
    - Trend Charts
    - Field and Instrument Calibration Forms
    - Analytical Reports
- 6.0 Corrective Action Monitoring - Quench Ponds
  - 6.1 Results
  - 6.2 Quality Assurance and Quality Control Results
  - 6.3 Attachments
    - Data Summary Table
    - Trend Charts
    - Field and Instrument Calibration Forms
    - Analytical Reports
- 7.0 Surface Water Monitoring Program
  - 7.1 Results and Statistical Evaluation
  - 7.2 Quality Assurance and Quality Control Results
  - 7.3 Attachments
    - Data Summary Table
    - Stiff Diagrams and Anion/Cation Balance
    - Field and Instrument Calibration Forms
    - Analytical Reports
- 8.0 Leachate Monitoring Program
  - 8.1 Results
  - 8.2 Revisions to Analytical Parameters for Other Monitoring Programs
  - 8.3 Quality Assurance and Quality Control Results
  - 8.4 Attachments
    - Data Summary Table
    - Monthly Flow Data
    - Field and Instrument Calibration Forms

- Analytical Reports

## **Annual Groundwater Monitoring Reports**

Annual reports Contents are listed below.

- 1.0 Introduction and Summaries
  - 1.1 Detection Groundwater Monitoring Program – Deep Monitoring Wells
  - 1.2 Supplemental Groundwater Monitoring Program – Shallow Monitoring Wells
  - 1.3 Corrective Action Monitoring – Site Interceptor System
    - 1.3.1 Hydraulic Monitoring
    - 1.3.2 Biennial Appendix IX Analyses
  - 1.4 Corrective Active Action Monitoring – 604 Area Vaults
  - 1.5 Corrective Action Monitoring – Quench Ponds
  - 1.6 Surface Water Monitoring
  - 1.7 Leachate Monitoring
    - 1.7.1 Quarterly Monitoring
    - 1.7.2 Biennial Appendix IX Analyses
- 2.0 Result Summaries (Summary Tables for year)
  - 2.1 Detection Groundwater Monitoring Program – Deep Monitoring Wells
  - 2.2 Supplemental Groundwater Monitoring Program – Shallow Monitoring Wells
  - 2.3 Corrective Action Monitoring – Site Interceptor System
    - 2.3.1 Flow and Hydraulic Monitoring
    - 2.3.2 Biennial Appendix IX Analyses
  - 2.4 Corrective Active Action Monitoring – 604 Area Vaults
  - 2.5 Corrective Action Monitoring – Quench Ponds
  - 2.6 Surface Water Monitoring
  - 2.7 Leachate Monitoring
    - 2.7.1 Quarterly Monitoring
    - 2.7.2 Flow Monitoring
    - 2.7.3 Biennial Appendix IX Analyses
- 3.0 Statistics and Data Evaluation
  - 3.1 Detection Groundwater Monitoring Program – Deep Monitoring Wells
    - 3.1.1 Data Evaluation
    - 3.1.2 Background Data Update
    - 3.1.3 Groundwater flow rate and contour figure
  - 3.2 Supplemental Groundwater Monitoring Program – Shallow Monitoring Wells
  - 3.3 Corrective Action Monitoring – Site Interceptor System
    - 3.3.1 Hydraulic Monitoring
    - 3.3.2 Biennial Appendix IX Analyses
  - 3.4 Corrective Active Action Monitoring – 604 Area Vaults
  - 3.5 Corrective Action Monitoring – Quench Ponds

- 3.6 Surface Water Monitoring
  - 3.6.1 Data Evaluation
  - 3.6.2 Background Data Update
- 3.7 Leachate Monitoring
  - 3.7.1 Quarterly Monitoring
  - 3.7.2 Biennial Appendix IX Analyses
- 4.0 Site-Wide Water Elevation Data
- 5.0 Top of Casing Survey Elevations (every five years beginning in 2020)

#### **Site Interceptor System (SIS) Annual Evaluation**

- 1.0 Water Level Measurements (Quarterly shallow groundwater gradient monitoring logs)
- 2.0 Chemical Analyses (results of quarterly chemical analyses of samples from the SIS)
- 3.0 Contaminant Concentrations (Analytical data from the beginning of SIS monitoring in 1993 to current date)

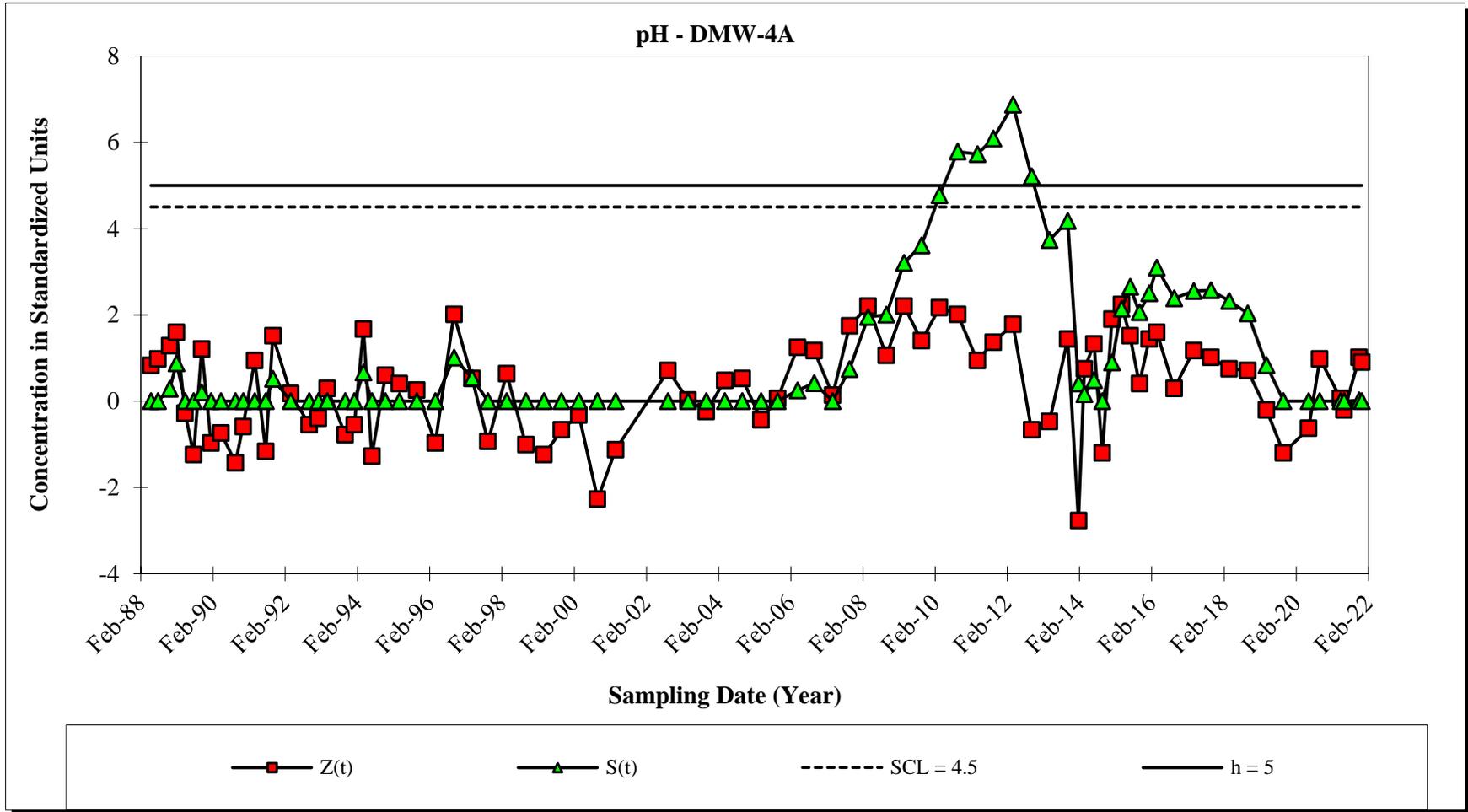
#### **Site Interceptor System (SIS) Biennial Report**

- 1.0 Analytical Reports (Appendix IX)
- 2.0 Summary Table and comparison to applicable Michigan Act 451, Part 201 Residential Drinking Water Criteria
- 3.0 Written summary of results in relation to criteria

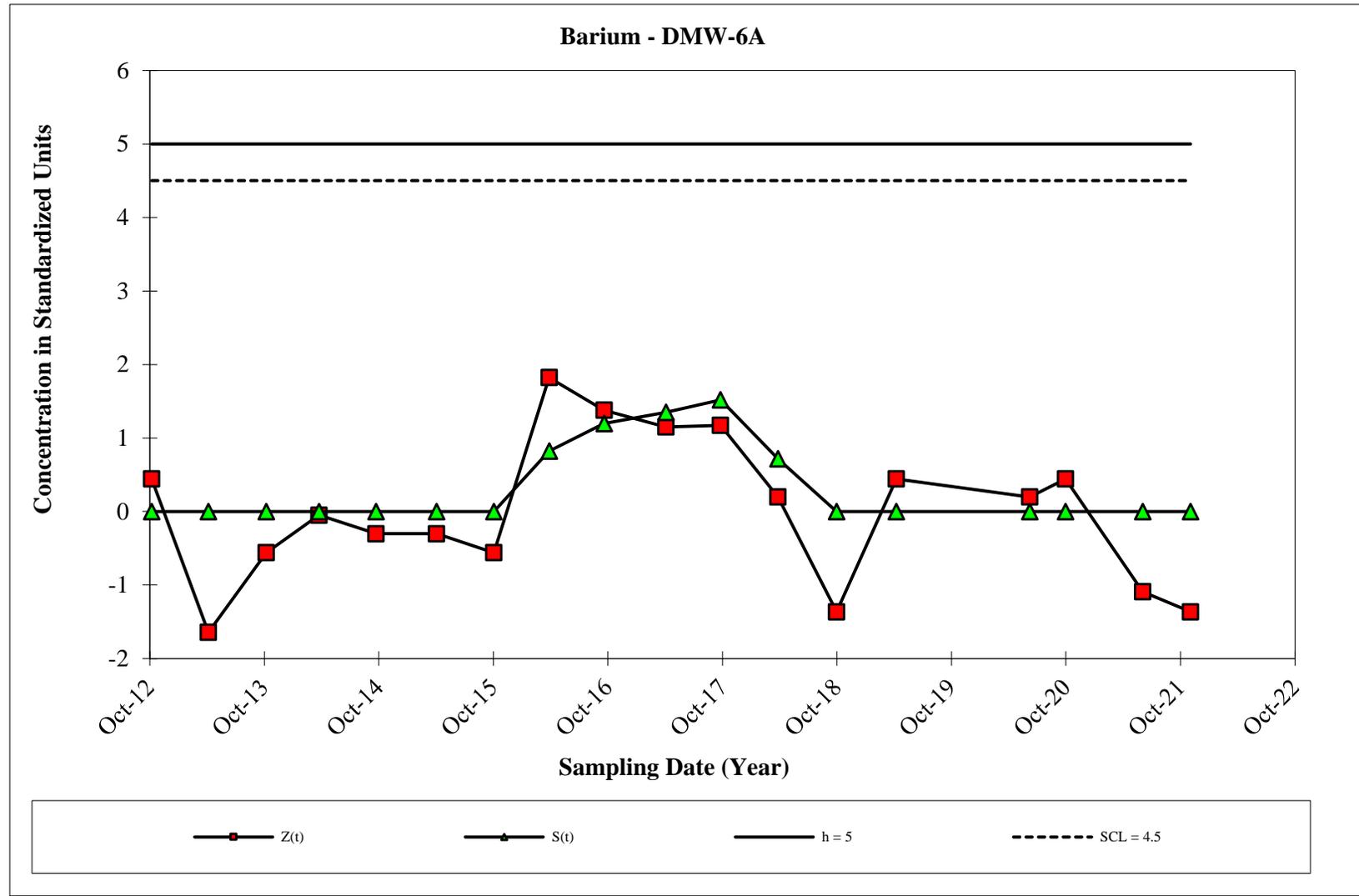
#### **Annual (August – July) Landfill Leachate (LL) Volume Monitoring Report**

- 1.0 Leachate volume (Table of monthly and annual landfill leachate flows (gallons) and monthly and annual rainfall totals (inches) from August 1994 to present).
- 2.0 Graphs of monthly and yearly leachate volumes generated and pumped from the landfill
- 3.0 Graph of leachate volumes from current and previous years
- 4.0 Reasons for increases /decreases in leachate quantities.
- 5.0 Graphs of monthly and annual rainfall data
- 6.0 Changes in chemicals included in quarterly landfill leachate monitoring

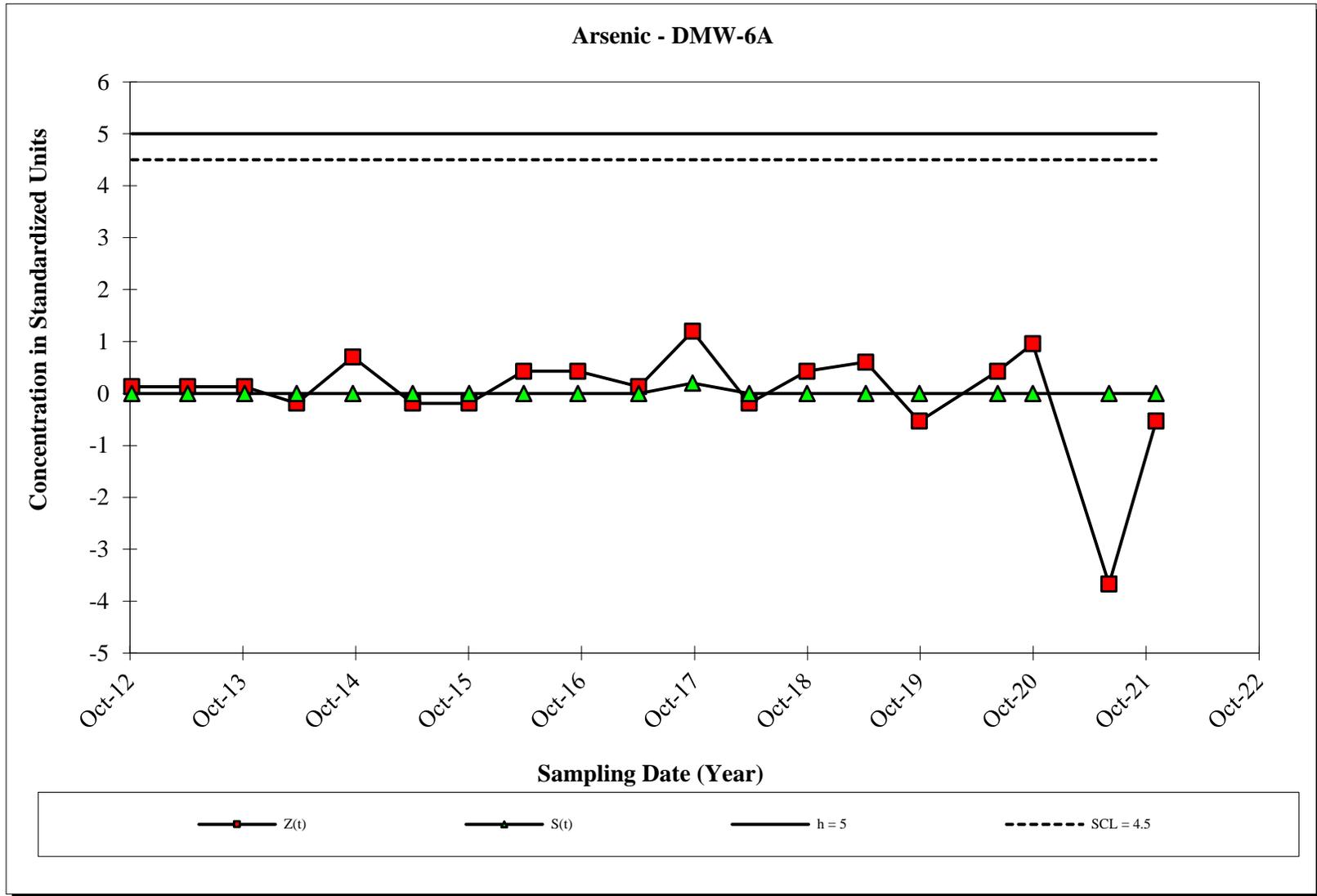
Shewhart-CUSUM Control Charts  
Dow Silicones Site  
Fourth Quarter 2021



Shewhart-CUSUM Control Charts  
Dow Silicones Site  
Fourth Quarter 2021

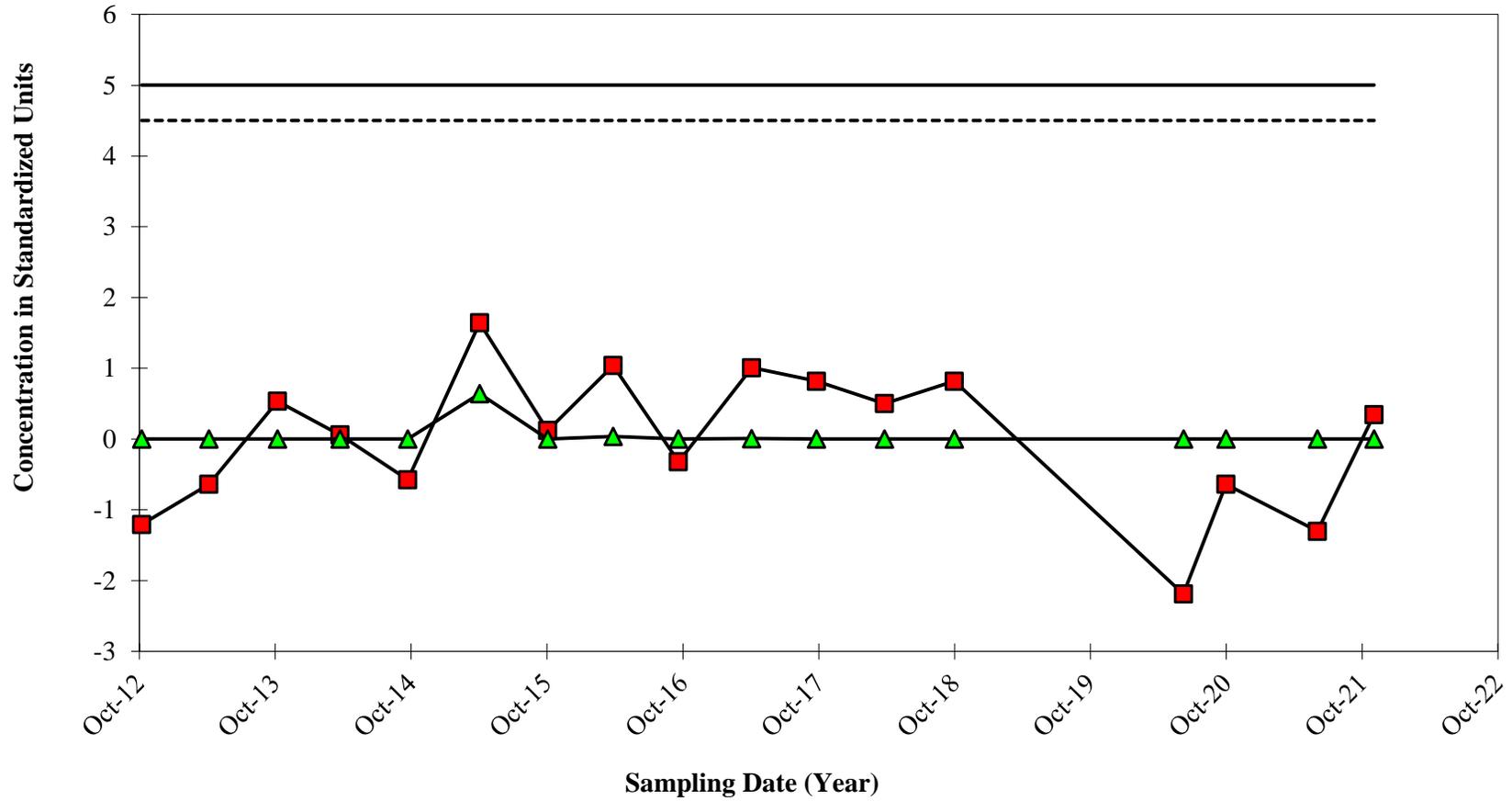


Shewhart-CUSUM Control Charts  
Dow Silicones Site  
Fourth Quarter 2021

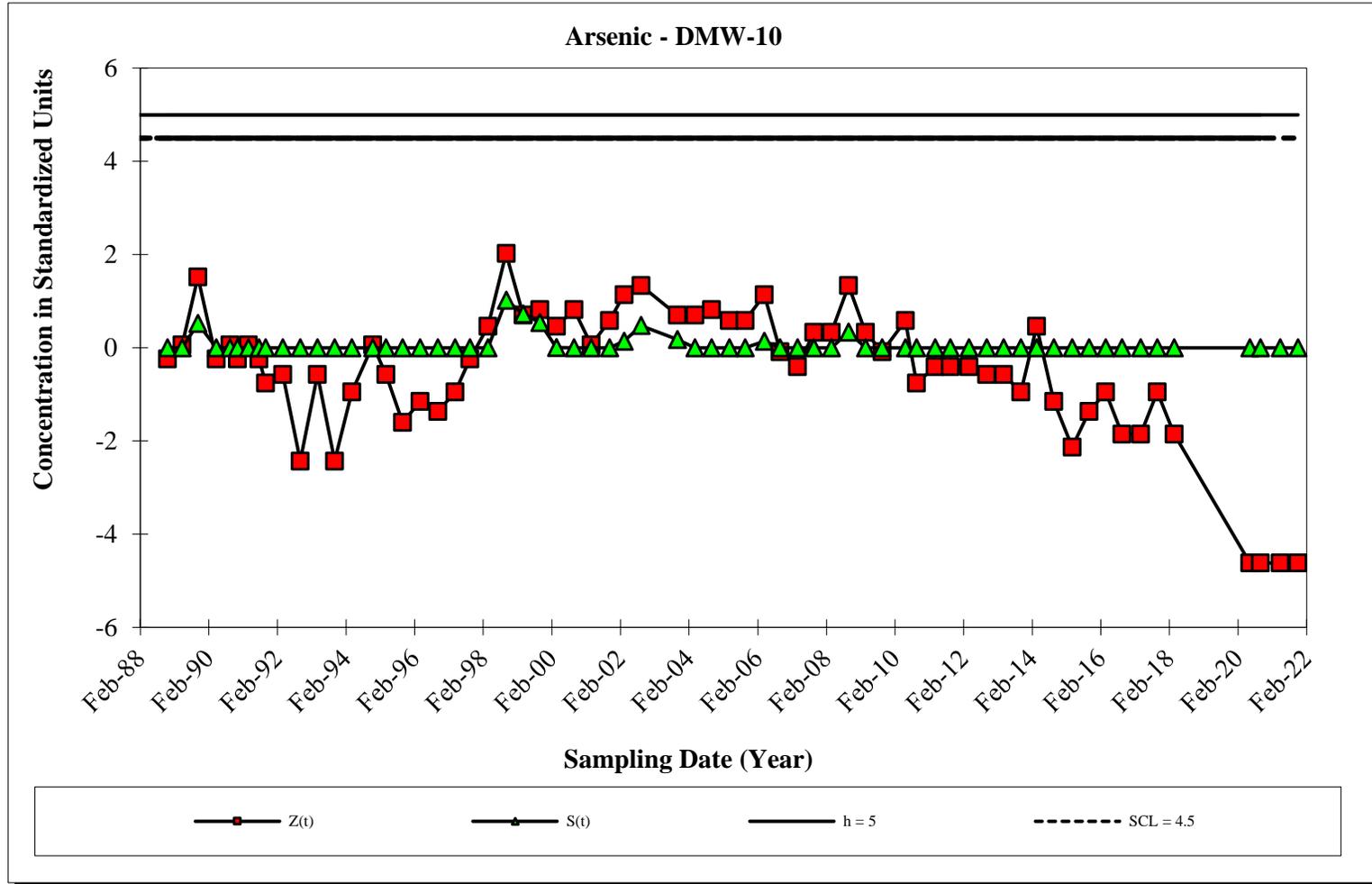


Shewhart-CUSUM Control Charts  
Dow Silicones Site  
Fourth Quarter 2021

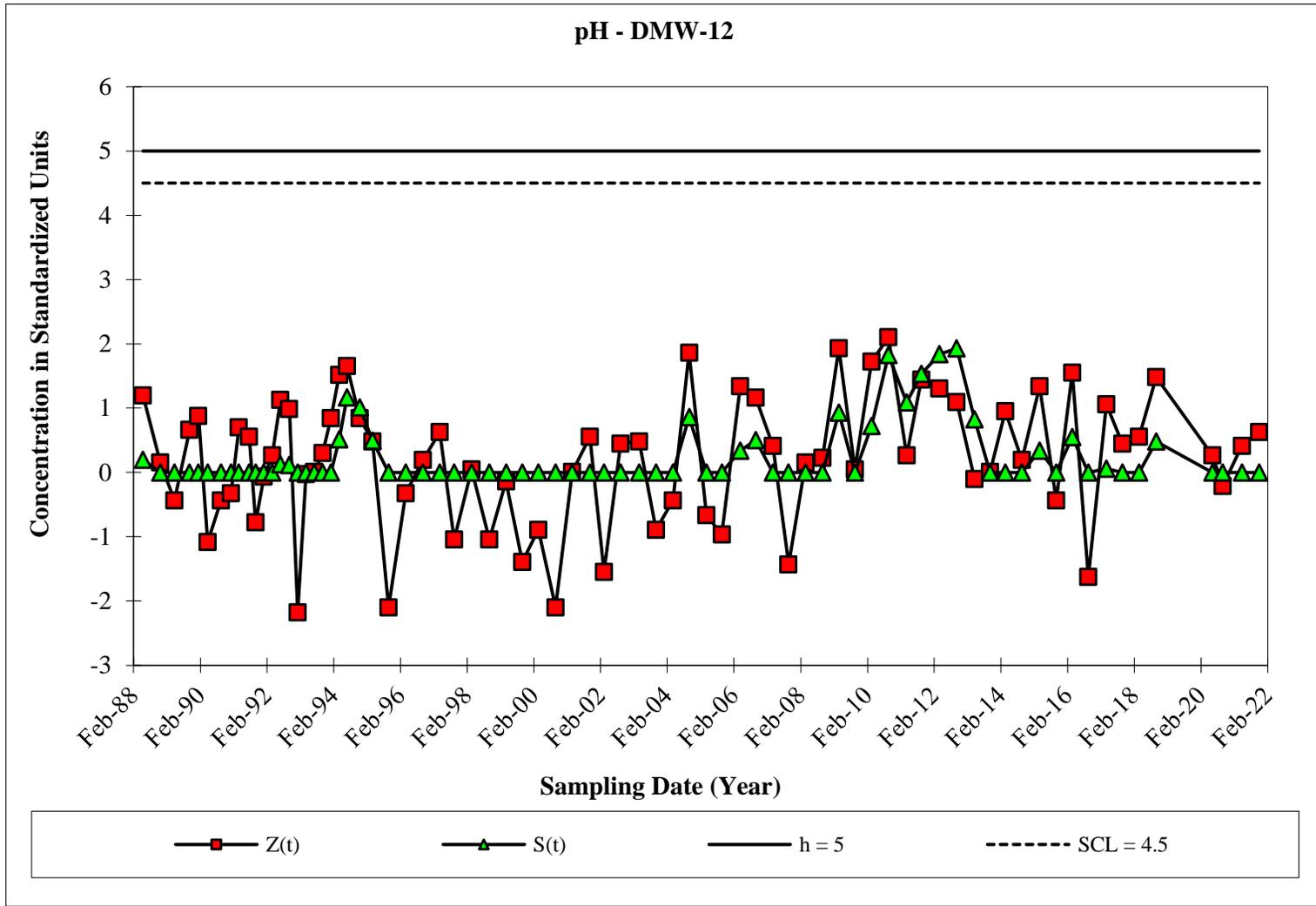
pH - DMW-6A



Shewhart-CUSUM Control Charts  
Dow Silicones Site  
Fourth Quarter 2021



Shewhart-CUSUM Control Charts  
Dow Silicones Site  
Fourth Quarter 2021



Appendix B5-4  
 Summary of Deep Monitoring Well Data Through 2021 - DMW-4A  
 Dow Silicones Corporation  
 Midland Michigan

Site ID	Date Sampled	pH, field S.U.	Specific conductance, field mmhos/cm	Calcium, dissolved ug/L	Sodium, dissolved ug/L	Magnesium, dissolved ug/L	Potassium, dissolved <sup>6</sup> ug/L	Chloride ug/L	Sulfate ug/L	Bicarbonate, alkalinity ug/L	Carbonate, alkalinity <sup>6</sup> ug/L	Arsenic, dissolved ug/L	Barium, dissolved ug/L	Cadmium, dissolved ug/L	Lead, dissolved <sup>6</sup> ug/L	Mercury, dissolved <sup>6</sup> ug/L	Copper, dissolved ug/L	Zinc, dissolved ug/L	Phenol, total <sup>6</sup> ug/L
DMW4A	7/24/1984	-	-	-	-	-	-	380,000	93,000	160,000	-	-	-	-	-	-	-	-	IS
DMW4A	7/24/1984	-	-	-	-	-	-	420,000	70,000	160,000	-	-	-	-	-	-	-	-	IS
DMW4A	7/24/1984	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DMW4A	7/24/1984	-	-	-	-	-	-	440,000	95,000	150,000	-	-	-	-	-	-	-	-	IS
DMW4A	10/24/1984	-	-	-	-	-	-	370,000	60,000	160,000	-	-	-	-	-	-	-	-	< 100
DMW4A	10/24/1984	-	-	-	-	-	-	380,000	65,000	140,000	-	-	-	-	-	-	-	-	-
DMW4A	10/24/1984	-	-	-	-	-	-	370,000	62,000	150,000	-	-	-	-	-	-	-	-	< 100
DMW4A	10/24/1984	-	-	-	-	-	-	370,000	65,000	150,000	-	-	-	-	-	-	-	-	< 100
DMW4A	1/30/1985	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DMW4A	1/30/1985	-	-	-	-	-	-	350,000	61,000	150,000	-	-	-	-	-	-	-	-	< 100
DMW4A	1/30/1985	-	-	-	-	-	-	370,000	60,000	160,000	-	-	-	-	-	-	-	-	< 100
DMW4A	1/30/1985	-	-	-	-	-	-	370,000	60,000	150,000	-	-	-	-	-	-	-	-	< 100
DMW4A	5/14/1985	-	-	-	-	-	-	380,000	59,000	180,000	-	-	-	-	-	-	-	-	16
DMW4A	5/14/1985	-	-	-	-	-	-	380,000	62,000	180,000	-	-	-	-	-	-	-	-	9
DMW4A	5/14/1985	-	-	-	-	-	-	380,000	61,000	180,000	-	-	-	-	-	-	-	-	10
DMW4A	5/14/1985	-	-	-	-	-	-	380,000	62,000	180,000	-	-	-	-	-	-	-	-	-
DMW4A	7/16/1985	-	-	-	-	-	-	380,000	90,000	170,000	-	-	-	-	-	-	-	-	3
DMW4A	7/16/1985	-	-	-	-	-	-	380,000	75,000	180,000	-	-	-	-	-	-	-	-	2
DMW4A	7/16/1985	-	-	-	-	-	-	410,000	75,000	180,000	-	-	-	-	-	-	-	-	4
DMW4A	7/16/1985	-	-	-	-	-	-	410,000	75,000	180,000	-	-	-	-	-	-	-	-	< 2
DMW4A	7/16/1985	-	-	-	-	-	-	369,000	64,100	146,000	< 5,000	-	-	-	-	-	-	-	< 1
DMW4A	10/10/1985	-	-	-	-	-	-	400,000	73,000	160,000	-	-	-	-	-	-	-	-	-
DMW4A	10/10/1985	-	-	-	-	-	-	390,000	41,000	160,000	-	-	-	-	-	-	-	-	5
DMW4A	10/10/1985	-	-	-	-	-	-	390,000	54,000	160,000	-	-	-	-	-	-	-	-	4
DMW4A	10/10/1985	-	-	-	-	-	-	380,000	43,000	170,000	-	-	-	-	-	-	-	-	2
DMW4A	12/26/1985	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DMW4A	1/29/1986	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DMW4A	2/6/1986	-	-	-	-	-	-	400,000	64,000	150,000	-	-	-	-	-	-	-	-	-
DMW4A	2/6/1986	-	-	-	-	-	-	390,000	67,000	150,000	-	-	-	-	-	-	-	-	-
DMW4A	2/6/1986	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DMW4A	2/6/1986	-	-	-	-	-	-	400,000	67,000	150,000	-	-	-	-	-	-	-	-	-
DMW4A	2/25/1986	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DMW4A	2/25/1986	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DMW4A	4/15/1986	-	-	-	-	-	-	500,000	49,000	140,000	-	-	-	-	-	-	-	-	< 50
DMW4A	4/15/1986	-	-	-	-	-	-	-	61,000	-	-	-	-	-	-	-	-	-	-
DMW4A	4/15/1986	-	-	-	-	-	-	510,000	51,000	140,000	-	-	-	-	-	-	-	-	< 50
DMW4A	4/15/1986	-	-	-	-	-	-	500,000	58,000	140,000	-	-	-	-	-	-	-	-	< 50
DMW4A	9/30/1986	-	-	-	-	-	-	368,000	62,000	133,000	-	-	-	-	-	-	-	-	< 50
DMW4A	9/30/1986	-	-	-	-	-	-	376,000	54,000	133,000	-	-	-	-	-	-	-	-	< 50
DMW4A	9/30/1986	-	-	-	-	-	-	372,000	60,000	130,000	-	-	-	-	-	-	-	-	< 50
DMW4A	9/30/1986	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DMW4A	11/6/1986	-	-	-	-	-	-	360,000	52,000	155,000	-	-	-	-	-	-	-	-	< 50
DMW4A	11/6/1986	-	-	-	-	-	-	360,000	55,000	152,000	-	-	-	-	-	-	-	-	< 50
DMW4A	11/6/1986	-	-	-	-	-	-	360,000	56,000	160,000	-	-	-	-	-	-	-	-	< 50
DMW4A	11/6/1986	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DMW4A	4/8/1987	-	-	-	-	-	-	390,000	54,000	120,000	-	-	-	-	-	-	-	-	< 50
DMW4A	4/8/1987	-	-	-	-	-	-	390,000	63,000	120,000	-	-	-	-	-	-	-	-	< 50
DMW4A	4/8/1987	-	-	-	-	-	-	410,000	61,000	120,000	-	-	-	-	-	-	-	-	< 50
DMW4A	4/8/1987	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DMW4A	6/24/1987	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DMW4A	6/24/1987	-	-	-	-	-	-	440,000	66,000	140,000	-	-	-	-	-	-	-	-	< 50
DMW4A	6/24/1987	-	-	-	-	-	-	380,000	64,000	140,000	-	-	-	-	-	-	-	-	< 50
DMW4A	6/24/1987	-	-	-	-	-	-	340,000	70,000	140,000	-	-	-	-	-	-	-	-	< 50
DMW4A	8/17/1987	-	-	-	-	-	-	660,000	80,000	164,000	-	-	-	-	-	-	-	-	< 50
DMW4A	8/17/1987	-	-	-	-	-	-	400,000	74,000	164,000	-	-	-	-	-	-	-	-	< 50

Appendix B5-4  
 Summary of Deep Monitoring Well Data Through 2021 - DMW-4A  
 Dow Silicones Corporation  
 Midland Michigan

Site ID	Date Sampled	pH, field S.U.	Specific conductance, field mmhos/cm	Calcium, dissolved ug/L	Sodium, dissolved ug/L	Magnesium, dissolved ug/L	Potassium, dissolved <sup>6</sup> ug/L	Chloride ug/L	Sulfate ug/L	Bicarbonate, alkalinity ug/L	Carbonate, alkalinity <sup>6</sup> ug/L	Arsenic, dissolved ug/L	Barium, dissolved ug/L	Cadmium, dissolved ug/L	Lead, dissolved <sup>6</sup> ug/L	Mercury, dissolved <sup>6</sup> ug/L	Copper, dissolved ug/L	Zinc, dissolved ug/L	Phenol, total <sup>6</sup> ug/L
DMW4A	8/17/1987	-	-	-	-	-	-	370,000	89,000	160,000	-	-	-	-	-	-	-	-	< 50
DMW4A	8/17/1987	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DMW4A	11/10/1987	-	-	-	-	-	-	385,000	56,000	180,000	-	-	-	-	-	-	-	-	< 50
DMW4A	11/10/1987	-	-	-	-	-	-	400,000	53,000	175,000	-	-	-	-	-	-	-	-	< 50
DMW4A	11/10/1987	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DMW4A	11/10/1987	-	-	-	-	-	-	400,000	52,000	160,000	-	-	-	-	-	-	-	-	< 50
DMW4A	3/2/1988	-	-	-	-	-	-	380,000	57,000	140,000	-	-	-	-	-	-	-	-	< 50
DMW4A	3/2/1988	-	-	-	-	-	-	330,000	57,000	140,000	-	-	-	-	-	-	-	-	< 50
DMW4A	3/2/1988	-	-	-	-	-	-	350,000	58,000	150,000	-	-	-	-	-	-	-	-	< 50
DMW4A	3/2/1988	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DMW4A	6/7/1988	7.47	1.245	-	-	-	-	400,000	68,000	-	-	-	-	-	-	-	-	-	< 50
DMW4A	6/7/1988	7.62	1.457	-	-	-	-	380,000	68,000	-	-	-	-	-	-	-	-	-	< 50
DMW4A	6/7/1988	7.66	1.365	-	-	-	-	390,000	67,000	-	-	-	-	-	-	-	-	-	< 50
DMW4A	6/7/1988	7.71	1.418	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DMW4A	6/22/1988	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DMW4A	6/22/1988	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DMW4A	6/22/1988	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DMW4A	6/22/1988	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DMW4A	8/18/1988	-	1.241	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DMW4A	8/18/1988	-	1.183	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DMW4A	8/18/1988	-	1.214	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DMW4A	8/18/1988	-	1.19	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DMW4A	8/18/1988	7.6	1.236	-	-	-	-	368,000	67,000	-	-	-	-	-	-	-	-	-	< 50
DMW4A	8/18/1988	7.66	1.227	-	-	-	-	427,000	66,000	-	-	-	-	-	-	-	-	-	50
DMW4A	8/18/1988	7.74	1.306	-	-	-	-	404,000	66,000	-	-	-	-	-	-	-	-	-	< 50
DMW4A	8/18/1988	7.71	1.22	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DMW4A	12/15/1988	7.57	1.43	65,000	240,000	24,000	3,500	350,000	60,000	136,000	< 2,000	< 2	< 100	< 10	< 50	< 0.5	< 10	< 20	< 50
DMW4A	12/15/1988	7.74	1.48	72,000	230,000	24,000	3,500	366,000	61,000	131,000	< 2,000	< 2	< 100	< 10	< 50	< 0.5	< 10	< 20	< 50
DMW4A	12/15/1988	7.78	1.49	72,000	230,000	23,000	3,400	353,000	63,000	136,000	< 2,000	< 2	< 100	< 10	< 50	< 0.5	< 10	< 20	< 50
DMW4A	2/22/1989	7.57	1.43	76,000	240,000	23,000	3,100	401,000	63,000	134,000	< 2,000	< 2	60	< 10	< 50	< 0.5	< 10	< 30	< 50
DMW4A	2/22/1989	7.82	1.47	78,000	240,000	23,000	3,100	400,000	62,000	149,000	< 2,000	< 2	60	< 10	< 50	< 0.5	< 10	< 20	< 50
DMW4A	2/22/1989	7.93	1.47	76,000	230,000	22,000	3,200	404,000	63,000	152,000	< 2,000	< 2	60	< 10	< 50	< 0.5	< 10	< 20	< 50
DMW4A	2/22/1989	7.91	1.46	79,000	240,000	23,000	3,200	404,000	64,000	153,000	< 2,000	< 2	60	< 10	< 50	< 0.5	< 10	< 20	< 50
DMW4A	5/18/1989	7.09	-	92,000	250,000	22,000	3,200	417,000	67,000	150,000	< 2,000	< 2	60	< 10	< 50	< 0.2	< 10	< 20	< 50
DMW4A	5/18/1989	7.33	-	84,000	250,000	23,000	3,200	416,000	67,000	150,000	< 2,000	< 2	60	< 10	< 50	< 0.2	< 10	< 20	< 50
DMW4A	5/18/1989	7.38	-	82,000	250,000	22,000	3,100	418,000	66,000	150,000	< 2,000	< 2	60	< 10	< 50	< 0.2	< 10	< 20	< 50
DMW4A	8/14/1989	7.12	-	71,000	220,000	20,000	2,600	385,000	62,000	157,000	< 2,000	< 2	60	< 10	< 50	< 0.2	< 10	< 20	< 50
DMW4A	8/14/1989	7.08	-	76,000	230,000	20,000	2,700	373,000	65,000	153,000	< 2,000	< 2	60	< 10	< 50	< 0.2	< 10	< 20	< 50
DMW4A	8/14/1989	7.1	-	79,000	240,000	20,000	2,500	384,000	64,000	154,000	< 2,000	< 2	60	< 10	< 50	< 0.2	< 10	< 20	< 50
DMW4A	8/14/1989	7.07	-	75,000	230,000	20,000	2,500	378,000	63,000	154,000	< 2,000	< 2	60	< 10	< 50	< 0.2	< 10	< 20	< 50
DMW4A	11/2/1989	7.88	-	73,000	210,000	23,000	4,500	380,000	63,000	160,000	< 2,000	< 2	60	< 10	< 50	< 0.2	< 10	< 20	< 50
DMW4A	11/2/1989	7.72	-	75,000	210,000	20,000	3,900	393,000	65,000	154,000	< 2,000	< 2	60	< 10	< 50	< 0.2	< 10	< 20	< 50
DMW4A	11/2/1989	7.85	-	76,000	210,000	16,000	4,100	376,000	65,000	153,000	< 2,000	< 2	60	< 10	< 50	< 0.2	< 10	< 20	< 50
DMW4A	2/6/1990	7.12	1.54	72,000	200,000	21,000	< 5,000	387,000	62,000	155,000	< 2,000	-	-	-	-	-	-	-	-
DMW4A	2/6/1990	7.15	1.51	72,000	200,000	21,000	< 5,000	382,000	61,000	158,000	< 2,000	-	-	-	-	-	-	-	-
DMW4A	2/6/1990	7.5	1.51	73,000	200,000	21,000	< 5,000	382,000	62,000	158,000	< 2,000	-	-	-	-	-	-	-	-
DMW4A	5/17/1990	7.33	1.578	74,000	220,000	21,000	3,200	360,000	63,000	156,000	< 2,000	< 2	60	< 10	< 50	< 0.2	< 10	< 20	< 50
DMW4A	5/17/1990	7.21	1.577	75,000	220,000	21,000	3,100	403,000	65,000	153,000	< 2,000	< 2	50	< 10	< 50	< 0.2	< 10	< 20	< 50
DMW4A	5/17/1990	7.17	1.588	76,000	210,000	21,000	3,300	408,000	66,000	160,000	< 2,000	< 2	60	< 10	< 50	< 0.2	< 10	< 20	< 50
DMW4A	10/10/1990	7.13	1.488	75,000	207,000	20,000	3,200	387,000	62,000	151,000	< 2,000	< 2	50	< 10	< 50	< 0.2	< 10	< 20	< 50
DMW4A	10/10/1990	7.03	1.471	76,000	206,000	21,000	3,200	372,000	62,000	154,000	< 2,000	< 2	50	< 10	< 50	< 0.2	< 10	< 20	< 50
DMW4A	10/10/1990	7.08	1.454	76,000	210,000	21,000	3,200	373,000	48,000	150,000	< 2,000	< 2	50	< 10	< 50	< 0.2	< 10	< 20	< 50
DMW4A	12/27/1990	7.16	1.4	68,000	252,000	19,000	3,000	377,000	40,000	151,000	< 2,000	< 2	60	< 10	< 50	< 0.2	< 10	< 20	< 50
DMW4A	12/27/1990	7.25	1.404	68,000	210,000	19,000	3,000	382,000	48,000	152,000	< 2,000	< 2	60	< 10	< 50	< 0.2	< 10	< 20	< 50

Appendix B5-4  
Summary of Deep Monitoring Well Data Through 2021 - DMW-4A  
Dow Silicones Corporation  
Midland Michigan

Site ID	Date Sampled	pH, field S.U.	Specific conductance, field mmhos/cm	Calcium, dissolved ug/L	Sodium, dissolved ug/L	Magnesium, dissolved ug/L	Potassium, dissolved <sup>6</sup> ug/L	Chloride ug/L	Sulfate ug/L	Bicarbonate, alkalinity ug/L	Carbonate, alkalinity <sup>6</sup> ug/L	Arsenic, dissolved ug/L	Barium, dissolved ug/L	Cadmium, dissolved ug/L	Lead, dissolved <sup>6</sup> ug/L	Mercury, dissolved <sup>6</sup> ug/L	Copper, dissolved ug/L	Zinc, dissolved ug/L	Phenol, total <sup>6</sup> ug/L
DMW4A	12/27/1990	7.26	1.484	69,000	212,000	20,000	3,000	382,000	40,000	154,000	< 2,000	< 2	50	< 10	< 50	< 0.2	< 10	< 20	< 50
DMW4A	12/27/1990	-	-	69,000	211,000	20,000	3,100	372,000	46,000	152,000	< 2,000	< 2	40	< 10	< 50	< 0.2	< 10	< 20	< 50
DMW4A	4/23/1991	7.56	1.358	71,000	216,000	20,000	3,200	372,000	58,000	151,000	< 2,000	< 1	40	< 10	< 50	< 0.2	< 10	< 20	< 50
DMW4A	4/23/1991	7.65	1.408	71,000	217,000	20,000	3,200	376,000	58,000	153,000	< 2,000	< 1	40	< 10	< 50	< 0.2	< 10	< 20	< 50
DMW4A	4/23/1991	7.6	1.408	69,000	217,000	20,000	3,200	374,000	57,000	151,000	< 2,000	< 1	60	< 10	< 50	< 0.2	< 10	< 20	< 50
DMW4A	8/13/1991	7.23	1.54	73,000	212,000	20,000	3,400	398,000	65,000	152,000	< 2,000	< 1	50	< 10	< 50	< 0.2	< 10	< 20	< 50
DMW4A	8/13/1991	7.1	1.543	73,000	215,000	20,000	3,600	358,000	66,000	150,000	< 2,000	< 1	50	< 10	< 50	< 0.2	< 10	< 20	< 50
DMW4A	8/13/1991	7.16	1.523	73,000	213,000	20,000	3,500	363,000	66,000	152,000	< 2,000	< 1	50	< 10	< 50	< 0.2	< 10	< 20	< 50
DMW4A	8/13/1991	-	-	72,000	214,000	20,000	3,500	364,000	62,000	152,000	< 2,000	< 1	50	< 10	< 50	< 0.2	< 10	< 20	< 50
DMW4A	10/24/1991	7.7	1.516	70,000	220,000	20,000	2,900	378,000	67,000	153,000	< 2,000	< 1	50	< 10	< 50	< 0.2	< 10	30	< 10
DMW4A	10/24/1991	7.8	1.515	70,000	224,000	20,000	2,900	374,000	61,000	154,000	< 2,000	< 1	50	< 10	< 50	< 0.2	< 10	20	< 10
DMW4A	10/24/1991	7.67	1.542	80,000	219,000	19,000	2,900	366,000	68,000	156,000	< 2,000	< 1	50	< 10	< 50	< 0.2	< 10	< 20	< 10
DMW4A	4/21/1992	7.8	1.672	71,000	214,000	20,000	3,200	371,000	67,000	158,000	< 2,000	< 1	60	< 10	< 50	< 0.2	< 10	< 20	< 10
DMW4A	4/21/1992	7.45	1.638	71,000	218,000	20,000	3,200	368,000	68,000	156,000	< 2,000	< 1	60	< 10	< 50	< 0.2	< 10	< 20	< 10
DMW4A	4/21/1992	7.47	1.74	69,000	215,000	19,000	3,000	368,000	69,000	155,000	< 2,000	< 1	60	< 10	< 50	< 0.2	< 10	< 20	< 10
DMW4A	10/26/1992	7.21	1.613	72,000	203,000	19,000	3,300	371,000	62,000	159,000	< 2,000	< 1	60	< 10	< 1	< 0.2	< 10	< 20	< 10
DMW4A	10/26/1992	7.26	1.604	72,000	204,000	19,000	3,400	379,000	62,000	162,000	< 2,000	< 1	50	< 10	< 1	< 0.2	< 10	< 20	< 10
DMW4A	10/26/1992	7.29	1.602	74,000	199,000	20,000	3,400	375,000	62,000	162,000	< 2,000	< 1	50	< 10	< 1	< 0.2	< 10	< 20	< 10
DMW4A	1/25/1993	6.9	1.644	72,000	210,000	19,000	3,500	385,000	63,000	157,000	< 2,000	< 1	40	< 10	< 1	< 0.2	< 10	< 20	< 10
DMW4A	1/25/1993	7.3	1.644	72,000	211,000	19,000	3,400	386,000	63,000	152,000	< 2,000	< 1	40	< 10	< 1	< 0.2	< 10	20	< 10
DMW4A	1/25/1993	7.4	1.58	73,000	206,000	20,000	3,300	385,000	63,000	149,000	< 2,000	< 1	60	< 10	< 1	< 0.2	< 10	< 20	< 10
DMW4A	1/25/1993	-	-	75,000	203,000	20,000	3,300	383,000	63,000	155,000	< 2,000	< 1	50	< 10	< 1	< 0.2	< 10	20	< 10
DMW4A	4/26/1993	7.45	1.578	74,000	208,000	20,000	2,900	388,000	60,000	157,000	< 2,000	< 1	50	< 10	< 1	< 0.2	< 10	< 20	< 10
DMW4A	4/26/1993	7.48	1.58	75,000	204,000	20,000	2,900	395,000	60,000	154,000	< 2,000	< 1	60	< 10	< 1	< 0.2	< 10	< 20	< 10
DMW4A	4/26/1993	7.52	1.586	74,000	203,000	20,000	3,000	389,000	60,000	150,000	< 2,000	< 1	50	< 10	< 1	< 0.2	< 10	< 20	< 10
DMW4A	4/26/1993	7.15	1.499	71,000	210,000	20,000	3,100	383,000	67,000	164,000	< 2,000	< 1	50	< 10	< 1	< 0.2	< 10	< 20	< 10
DMW4A	The statistical distribution was determined using MDEQ's "STATSOFT" program.																		
DMW4A	7.2	1.519	71,000	213,000	19,000	3,000	379,000	65,000	160,000	< 2,000	< 1	50	< 10	< 1	< 0.2	< 10	< 20	< 10	
DMW4A	To complete the distribution and outlier analysis of the dataset for each parameter, only the second daily measurement was selected out of the four measurements done on the same day to stay in compliance with Shewart-CUSUM method.																		
DMW4A	10/25/1993	7.61	1.52	73,000	226,000	20,000	3,100	382,000	66,000	163,000	< 2,000	< 1	52	< 10	< 1	< 0.2	< 10	< 20	< 10
DMW4A	7.22	1.61	73,000	190,000	20,000	2,800	384,000	69,000	161,000	< 2,000	< 1	47	< 10	< 1	< 0.2	< 10	< 20	< 10	
DMW4A	The potassium concentration of 4,200 ug/L was after the well was re-developed when the original concentration was found to be 33,000 ug/L.																		
DMW4A	1/24/1994	7.26	1.617	73,000	190,000	20,000	2,800	392,000	69,000	161,000	< 2,000	< 1	47	< 10	< 1	< 0.2	< 10	< 20	< 10
DMW4A	1/24/1994	7.32	1.616	72,000	187,000	20,000	2,700	375,000	68,000	157,000	< 2,000	< 1	46	< 10	< 1	< 0.2	< 10	< 20	< 10
DMW4A	1/24/1994	-	-	74,000	192,000	21,000	2,800	374,000	68,000	159,000	< 2,000	< 1	47	< 10	< 1	< 0.2	< 10	< 20	< 10
DMW4A	4/27/1994	7.81	1.586	76,000	211,000	20,000	3,100	373,000	68,000	164,000	< 2,000	< 1	53	< 10	< 1	< 0.2	< 10	< 20	< 10
DMW4A	4/27/1994	7.84	1.581	76,000	207,000	20,000	3,100	372,000	67,000	168,000	< 2,000	< 1	53	< 10	< 1	< 0.2	< 10	< 20	< 10
DMW4A	4/27/1994	7.85	1.588	76,000	207,000	20,000	3,100	374,000	67,000	161,000	< 2,000	< 1	53	< 10	< 1	< 0.2	< 10	< 20	< 10
DMW4A	7/21/1994	6.66	1.453	69,000	194,000	18,000	2,800	378,000	70,000	149,000	< 2,000	< 1	50	< 10	< 1	< 0.2	< 10	< 20	< 10
DMW4A	7/21/1994	7.07	1.477	69,000	195,000	18,000	2,800	375,000	71,000	154,000	< 2,000	< 1	50	< 10	< 1	< 0.2	< 10	< 20	< 10
DMW4A	7/21/1994	7.06	1.48	70,000	193,000	18,000	2,800	374,000	71,000	148,000	< 2,000	< 1	50	< 10	< 1	< 0.2	< 10	< 20	10
DMW4A	7/21/1994	-	-	69,000	193,000	18,000	2,800	376,000	70,000	151,000	< 2,000	< 1	50	< 10	< 1	< 0.2	< 10	< 20	< 10
DMW4A	12/5/1994	7.56	1.209	75,000	211,000	20,000	3,100	392,000	65,000	153,000	< 2,000	< 1	53	< 10	< 1	< 0.2	< 10	< 20	< 10
DMW4A	4/22/1996	7.15	1.416	72,000	211,000	20,000	3,100	401,000	71,000	153,000	< 2,000	< 1	53	< 10	< 1	< 0.2	< 10	< 20	< 10
DMW4A	10/28/1996	7.93	1.378	79,000	200,000	20,000	3,100	386,000	71,000	157,000	< 2,000	< 1	51	< 10	< 1	< 0.2	< 10	< 20	10
DMW4A	4/29/1997	7.54	1.264	77,000	206,000	20,000	3,100	373,000	59,000	158,000	< 2,000	< 1	54	< 10	1.3	< 0.2	< 10	26	< 10
DMW4A	10/6/1997	7.16	0.962	81,000	213,000	20,000	3,100	391,000	62,000	154,000	< 2,000	< 1	54	< 10	< 1	< 0.2	< 10	< 20	< 10
DMW4A	4/15/1998	7.57	1.604	77,000	201,000	20,000	3,100	382,000	59,000	157,000	< 2,000	< 1	53	< 10	1.2	< 0.2	< 10	22	< 10
DMW4A	10/26/1998	7.14	1.445	71,000	207,000	20,000	3,000	380,000	58,000	156,000	< 2,000	< 1	53	< 10	< 1	< 0.2	< 10	< 20	< 10
DMW4A	4/26/1999	7.08	1.334	80,000	202,000	21,000	3,200	374,000	60,000	167,000	< 2,000	< 1	55	< 10	< 1	< 0.2	< 10	23	< 10
DMW4A	10/20/1999	7.23	1.526	74,000	212,000	19,000	3,100	384,000	60,000	133,000	< 2,000	1.3	53	< 10	< 1	< 0.2	< 10	22	< 10
DMW4A	4/12/2000	7.32	1.284	81,000	206,000	21,000	3,000	380,000	62,000	153,000	< 2,000	1	51	< 10	< 1	< 0.2	< 10	< 20	< 10
DMW4A	10/17/2000	6.81	1.45	70,000	223,000	19,000	2,900	355,000	62,000	156,000	< 2,000	1.4	54	< 10	< 1	< 0.2	< 10	< 20	< 10
DMW4A	4/18/2001	7.11	1.545	75,000	200,000	20,000	3,000	376,000	56,000	151,000	< 2,000	1	49	< 10	< 1	0.3	< 10	22	< 10

Appendix B5-4  
 Summary of Deep Monitoring Well Data Through 2021 - DMW-4A  
 Dow Silicones Corporation  
 Midland Michigan

Site ID	Date Sampled	pH, field S.U.	Specific conductance, field mmhos/cm	Calcium, dissolved ug/L	Sodium, dissolved ug/L	Magnesium, dissolved ug/L	Potassium, dissolved <sup>6</sup> ug/L	Chloride ug/L	Sulfate ug/L	Bicarbonate, alkalinity ug/L	Carbonate, alkalinity <sup>6</sup> ug/L	Arsenic, dissolved ug/L	Barium, dissolved ug/L	Cadmium, dissolved ug/L	Lead, dissolved <sup>6</sup> ug/L	Mercury, dissolved <sup>6</sup> ug/L	Copper, dissolved ug/L	Zinc, dissolved ug/L	Phenol, total <sup>6</sup> ug/L
DMW4A	10/1/2002	7.59	1.571	56,000	217,000	19,000	< 100	376,000	56,000	142,000	< 2,000	2.3	44	< 10	< 1	< 0.2	< 10	< 20	< 10
DMW4A	4/21/2003 <sup>5)</sup>	7.41	1.339	65,000	214,000	20,000	2,900	369,000	61,000	141,000	< 2,000		47	< 10	< 1	< 0.2	< 10	< 20	10
DMW4A	10/23/2003	7.34	1.56	57,000	215,000	20,000	3,100	374,000	52,000	111,000	< 2,000	< 1	48	10	< 1	< 0.2	< 10	< 20	< 10
DMW4A	4/26/2004	7.53	1.64	55,000	215,000	20,000	3,300	350,000	56,000	118,000	< 2,000	< 1	50	< 10	< 1	< 0.2	< 10	< 20	30
DMW4A	10/19/2004	7.54	1.54	62,000	217,000	20,000	3,100	369,000	53,000	146,000	< 2,000	1.6	52	< 10	< 1	< 0.2	< 10	< 20	< 10
DMW4A	4/27/2005	7.29	1.659	55,000	196,000	19,000	3,100	352,000	56,000	113,000	< 2,000	1	53	23	< 1	< 0.2	< 10	< 20	20
DMW4A	10/12/2005	7.42	1.376	49,000	128,000	14,000	2,300	343,000	53,000	140,000	< 2,000	1.3	58	< 10	< 1	< 0.2	< 10	< 20	< 10
DMW4A	5/2/2006	7.73	1.587	59,000	190,000	19,000	3,000	360,000	55,000	130,000	< 2,000	< 1	50	< 10	< 1	< 0.2	< 10	< 20	< 50
DMW4A	10/18/2006	7.71	1.58	58,000	200,000	20,000	3,100	360,000	55,000	120,000	< 2,000	< 1	50	< 10	< 1	< 0.2	< 10	29	< 50
DMW4A	4/23/2007	7.44	1.679	50,000	190,000	18,000	2,800	360,000	57,000	120,000	< 2,000	< 1	48	< 10	< 1	< 0.2	< 10	< 20	< 50
DMW4A	10/11/2007	7.86	1.654	56,000	210,000	19,000	3,100	360,000	54,000	130,000	< 2,000	1.1	55	< 10	< 1	< 0.2	< 10	< 20	< 50
DMW4A	4/15/2008	7.98	1.685	70,000	210,000	20,000	3,500	360,000	59,000	150,000	< 2,000	< 1	56	< 10	< 1	< 0.2	< 10	< 20	< 50
DMW4A	10/16/2008	7.68	1.626	57,000	190,000	18,000	2,800	360,000	54,000	140,000	< 2,000	< 1	51	< 10	< 1	< 0.2	< 10	< 20	< 50
DMW4A	4/13/2009	7.98	1.596	64,000	200,000	18,000	2,900	370,000	59,000	150,000	< 2,000	< 1	53	< 10	< 1	< 0.2	< 10	< 20	< 50
DMW4A	10/6/2009	7.77	1.669	69,000	200,000	19,000	2,900	380,000	60,000	150,000	< 2,000	1.1	51	< 10	< 1	< 0.2	< 10	< 20	< 50
DMW4A	4/7/2010	7.97	1.65	68,000	210,000	20,000	3,000	390,000	63,000	150,000	< 2,000	< 1	53	< 10	< 1	< 0.2	< 10	< 20	< 50
DMW4A	10/7/2010	7.93	1.66	63,000	200,000	19,000	2,700	370,000	59,000	150,000	< 2,000	< 1	53	< 10	< 1	< 0.2	< 10	< 20	< 50
DMW4A	4/25/2011	7.65	1.91	60,000	190,000	18,000	2,900	380,000	60,000	140,000	< 2,000	< 1	53	< 10	1	< 0.2	< 10	< 20	< 50
DMW4A	10/4/2011	7.76	1.62	63,000	200,000	19,000	3,000	380,000	57,000	150,000	< 2,000	< 1	54	< 10	< 1	< 0.2	< 10	< 20	< 20
DMW4A	4/19/2012	7.87	1.55	63,000	210,000	19,000	3,000	380,000	58,000	130,000	< 2,000	< 1	52	< 10	1	< 0.2	< 10	< 20	< 20
DMW4A	10/24/2012	7.23	1.59	64,000	220,000	20,000	3,200	360,000	59,000	140,000	< 10,000	< 1	58	< 0.2	1.4	< 0.2	< 2	< 50	< 10
DMW4A-1	2/26/2013	7.15	1.81	-	-	-	-	-	-	-	-	-	-	-	1.7	-	-	-	-
DMW4A-2	2/26/2013	-	-	-	-	-	-	-	-	-	-	-	-	-	1.0	-	-	-	-
DMW4A-3	2/26/2013	-	-	-	-	-	-	-	-	-	-	-	-	-	< 1	-	-	-	-
DMW4A-4	2/26/2013	-	-	-	-	-	-	-	-	-	-	-	-	-	< 1	-	-	-	-
DMW4A	4/23/2013	7.28	1.74	59,000	200,000	18,000	2,900	360,000	58,000	150,000	< 10,000	< 1	51	< 0.2	1.2	< 0.2	2.4	< 50	< 10
DMW4A	10/23/2013	7.78	1.72	69,000	220,000	21,000	3,200	360,000	58,000	150,000	< 2,000	< 1	53	< 0.2	1.6	< 0.2	2.1	29	< 10
DMW4A #1	11/21/2013	7.33	1.56	-	-	-	-	-	-	-	-	-	-	-	6.3	-	-	-	-
DMW4A #2	11/21/2013	-	-	-	-	-	-	-	-	-	-	-	-	-	6.0	-	-	-	-
DMW4A #3	11/21/2013	-	-	-	-	-	-	-	-	-	-	-	-	-	5.9	-	-	-	-
DMW4A #4	11/21/2013	-	-	-	-	-	-	-	-	-	-	-	-	-	6.0	-	-	-	-
DMW4A	1/21/2014	7.91	1.63	-	-	-	-	370,000	62,000	150,000	< 2,000	< 1	56	< 0.2	2.0	< 0.2	11	1200	-
DMW4A Quad A	2/11/2014	6.68	1.60	-	-	-	-	-	-	-	-	-	-	-	-	-	5	140	-
DMW4A Quad B	2/11/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2.2	130	-
DMW4A Quad C	2/11/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	< 2	140	-
DMW4A Quad D	2/11/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	< 2	140	-
DMW4A	4/10/2014	7.6	1.44	69,000	200,000	19,000	3,000	360,000	64,000	160,000	< 2,000	< 1	54	< 0.2	< 1.0	< 0.2	2.3	79	< 10
DMW4A#1	4/10/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	< 1.0	-	-	21	-
DMW4A#1	7/16/2014	7.75	1.61	-	-	-	-	-	-	-	-	-	-	-	< 1.0	-	-	62	-
DMW4A#2	7/16/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	< 1.0	-	-	18	-
DMW4A	10/9/2014	7.09	1.55	74,000	220,000	21,000	3,200	370,000	61,000	160,000	< 2,000	< 1	57	< 0.2	< 1.0	< 0.2	4.6	55	< 10
DMW4A#2	10/9/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	28	-
DMW4A#1	1/15/2015	7.90	1.66	-	-	-	-	-	-	-	-	-	-	-	8.0	-	-	110	-
DMW4A#2	1/15/2015	-	-	-	-	-	-	-	-	-	-	-	-	-	< 1.0	-	-	11	-
DMW4A#1	4/21/2015	7.99	1.57	76,000	230,000	21,000	3,400	360,000	59,000	150,000	< 2,000	< 1	50	< 0.2	1.1	< 0.2	3.5	42	< 10
DMW4A#2	4/21/2015	-	-	-	-	-	-	-	-	-	-	-	-	-	< 1.0	-	-	15	-
DMW4A	7/16/2015	7.80	1.37	-	-	-	-	-	-	-	-	-	-	-	< 1.0	-	-	38	-
DMW4A#2	7/16/2015	-	-	-	-	-	-	-	-	-	-	-	-	-	< 1.0	-	-	17	-
DMW4A	10/20/2015	7.51	1.52	69,000	210,000	19,000	3,000	370,000	61,000	150,000	< 2,000	< 1	51	< 0.2	< 1.0	< 0.2	2.6	39	< 10
DMW4A#2	10/20/2015	-	-	-	-	-	-	-	-	-	-	-	-	-	< 1.0	-	-	26	-
DMW4A	1/26/2016	7.78	1.54	-	-	-	-	-	-	-	-	-	-	-	< 1.0	-	-	29	-
DMW4A#2	1/26/2016	-	-	-	-	-	-	-	-	-	-	-	-	-	< 1.0	-	-	< 10	-
DMW4A	4/12/2016	7.82	1.46	69,000	200,000	18,000	3,000	370,000	61,000	150,000	< 2,000	< 1	56	< 0.2	< 1.0	< 0.2	3.7	31	< 10
DMW4A#2	4/12/2016	-	-	-	-	-	-	-	-	-	-	-	-	-	< 1.0	-	-	12	-

Appendix B5-4  
Summary of Deep Monitoring Well Data Through 2021 - DMW-4A  
Dow Silicones Corporation  
Midland Michigan

Site ID	Date Sampled	pH, field S.U.	Specific conductance, field mmhos/cm	Calcium, dissolved ug/L	Sodium, dissolved ug/L	Magnesium, dissolved ug/L	Potassium, dissolved <sup>6</sup> ug/L	Chloride ug/L	Sulfate ug/L	Bicarbonate, alkalinity ug/L	Carbonate, alkalinity <sup>6</sup> ug/L	Arsenic, dissolved ug/L	Barium, dissolved ug/L	Cadmium, dissolved ug/L	Lead, dissolved <sup>6</sup> ug/L	Mercury, dissolved <sup>6</sup> ug/L	Copper, dissolved ug/L	Zinc, dissolved ug/L	Phenol, total <sup>6</sup> ug/L
DMW4A	10/5/2016	7.48	1.43	72,000	210,000	20,000	3,000	360,000	60,000	160,000	< 2,000	< 1	50	< 0.2	< 1.0	< 0.2	5.0	31	< 10
DMW4A#2	10/5/2016	-	-	-	-	-	-	-	-	-	-	-	-	-	< 1.0	-	-	12	-
DMW4A	4/19/2017	7.71	1.43	71,000	210,000	20,000	3,100	360,000	61,000	150,000	< 2,000	< 1	55	< 0.2	< 1.0	< 0.2	4.0	30	< 10
DMW4A#2	4/19/2017	-	-	-	-	-	-	-	-	-	-	-	-	-	< 1.0	-	-	16	-
DMW4A	10/11/2017	7.67	1.52	62,100	189,000	17,600	2,700	366,000	59,500	149,000	< 2,000	< 1	54.9	< 0.2	< 1.0	< 0.2	3.3	14.7	< 10
DMW4A#2	10/11/2017	-	-	-	-	-	-	-	-	-	-	-	-	-	< 1.0	-	-	17.9	-
DMW4A	4/12/2018	7.60	1.44	68,300	224,000	19,700	3,300	361,000	60,200	152,000	< 2,000	< 1	50.9	< 0.2	< 1.0	< 0.2	2.8	26.9	< 10
DMW4A#2	4/12/2018	-	-	-	-	-	-	-	-	-	-	-	-	-	< 1.0	-	-	12.3	-
DMW4A	10/16/2018	7.59	1.49	72,000	210,000	20,000	3,000	380,000	68,000	150,000	< 5,000	< 5	54	< 1	< 1.0	< 0.2	< 2.0	< 20	< 20
DMW4A	4/24/2019	7.35	1.58	73,000	210,000	21,000	3,200	380,000	71,000	150,000	< 5,000	< 1	54	< 1	< 1.0	< 0.2	6.2	28	< 20
DMW4A	10/14/2019	7.09	1.44	73,000	200,000	20,000	2,900	430,000	62,000	150,000	< 5,000	< 1	56	< 1	< 1.0	< 0.2	< 2.0	< 20	< 20
DMW4A	10/14/2019	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	79	-
DMW4A_1	12/2/2019	7.45	1.595	-	-	-	-	-	-	-	-	-	-	-	-	-	-	< 20	-
DMW4A_2	12/2/2019	7.45	1.595	-	-	-	-	-	-	-	-	-	-	-	-	-	-	< 20	-
DMW4A_3	12/2/2019	7.45	1.595	-	-	-	-	-	-	-	-	-	-	-	-	-	-	< 20	-
DMW4A_4	12/2/2019	7.45	1.595	-	-	-	-	-	-	-	-	-	-	-	-	-	-	21	-
DMW4A_1_2	12/2/2019	7.45	1.595	-	-	-	-	-	-	-	-	-	-	-	-	-	-	< 20	-
DMW4A_2_2	12/2/2019	7.45	1.595	-	-	-	-	-	-	-	-	-	-	-	-	-	-	< 20	-
DMW4A_3_2	12/2/2019	7.45	1.595	-	-	-	-	-	-	-	-	-	-	-	-	-	-	< 20	-
DMW4A_4_2	12/2/2019	7.45	1.595	-	-	-	-	-	-	-	-	-	-	-	-	-	-	< 20	-
DMW4A	6/23/2020	7.24	1.468	72,000	210,000	20,000	3,100	370,000	65,000	150,000	< 5,000	< 1	54	< 1	< 1.0	< 0.2	< 2.0	< 20	< 20
DMW4A	10/14/2020	7.66	0.288	74,000	210,000	20,000	3,300	320,000	57,000	150,000	< 5,000	< 1	56	< 0.2	< 1.0	< 0.2	< 2.0	30	< 20
DMW4A	5/12/2021	7.42	2.014	67,000	190,000	19,000	2,900	390,000	68,000	170,000	< 5,000	1.1	53	< 0.2	< 1.0	< 0.2	< 2.0	< 20	< 20
DMW4A	6/18/2021	7.35	1.703	67,000	200,000	18,000	2,900	370,000	63,000	160,000	< 5,000	< 1	51	< 0.2	< 1.0	< 0.2	< 1.0	< 20	< 20
DMW4A	6/18/2021	-	-	-	-	-	-	-	-	-	-	-	-	-	< 1.0	-	-	68	-
DMW4A	11/17/2021	7.67	1.59	73,000	210,000	21,000	3,200	390,000	68,000	150,000	< 5,000	< 1	52	< 0.2	< 1.0	< 0.2	< 2.0	< 20	< 20
DMW4A_2	11/17/2021	7.72	1.555	-	-	-	-	-	-	-	-	-	-	-	-	-	-	47	-
DMW4A_1	12/13/2021	7.64	1.568	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	< 20
DMW4A_2	12/13/2021	7.64	1.568	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	< 20
DMW4A_3	12/13/2021	7.64	1.568	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	< 20
DMW4A_4	12/13/2021	7.64	1.568	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	< 20
Distribution		N	NP	Approx. N	NP	NP	NP	NP	Sqr N	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP
Shewhart Control Limit (SCL)		4.5	-	4.5	-	-	-	-	4.5	-	-	-	-	-	-	-	-	-	-
Decision Interval Value (h)		5	-	5	-	-	-	-	5	-	-	-	-	-	-	-	-	-	-
Upper Tolerance Limit (ug/L except Sp. Cond)		6.68 to 7.99	2.014	81,000	230,000	21,000	3,500	430,000	71,000	170,000	< 5,000	3.3	100	10	1.4	0.3	11	130	30

**Legend:** L = lognormal, N = normal, NP = non-parametric, Sqr N = square root normal

**Notes:**

1. The upper tolerance limit is the maximum detected value of the reported concentration of a particular parameter.
2. SCL & h values are assigned to parameters that are either normally or lognormally distributed. Parameters that are distribution free (non-parametric) have been assigned a upper tolerance limit (max value).
3. The statistical distribution was determined using Chemstat and the most recent 59 data points.
4. To complete the distribution and outlier analysis of the dataset for each parameter, only the second daily measurement was selected out of the four measurements done on the same day to stay in compliance with Shewart-CUSUM method.
5. The concentration of Arsenic dated 4/21/03 (7.3 ug/l) is not taken into the computation of upper tolerance limit as it is believed to be an outlier on the basis of suspected laboratory error.
6. For potassium, mercury, lead, carbonate alkalinity & total phenol the highest detected concentration is taken as UTL after the lower detection limit was implemented for these parameters.
7. The concentration of cadmium in DMW-4 on 4/27/2005 is not included in calculation of the UTL.
8. The four concentrations of lead in DMW-12 on 7/26/93 are not included in calculation of the UTL.

Appendix B5-4  
Background Data Table  
Summary of Deep Monitoring Well Data Through 2021 - DMW-6A  
Dow Silicones Corporation  
Midland Michigan

Site ID	Date Sampled	pH, field S.U.	Specific conductance, field mmhos/cm	Calcium, dissolved ug/L	Sodium, dissolved ug/L	Magnesium, dissolved ug/L	Potassium, dissolved ug/L	Chloride ug/L	Sulfate ug/L	Bicarbonate, alkalinity ug/L	Carbonate, alkalinity ug/L	Arsenic, dissolved ug/L	Barium, dissolved ug/L	Cadmium, dissolved ug/L	Lead, dissolved ug/L	Mercury, dissolved ug/L	Copper, dissolved ug/L	Zinc, dissolved ug/L	Phenol, total ug/L
DMW6A	10/24/12	7.35	0.912	42,000	130,000	14,000	2,100	160,000	46,000	130,000	< 10,000	1.3	57	< 0.2	< 1	< 0.2	< 2	< 50	< 10
DMW6A	04/23/13	7.53	0.989	37,000	110,000	12,000	1,800	170,000	46,000	140,000	< 10,000	1.3	49	< 0.2	< 1	< 0.2	< 2	< 50	< 10
DMW6A	10/24/13	7.90	1.030	40,000	120,000	13,000	1,900	160,000	45,000	130,000	< 2,000	1.3	53	< 0.2	< 1	< 0.2	< 2	19	< 10
DMW6A	04/10/14	7.75	0.855	39,000	110,000	12,000	1,800	170,000	48,000	140,000	< 2,000	1.2	55	< 0.2	< 1	< 0.2	3.6	28	< 10
DMW6A	10/9/2014	7.55	0.799	45,000	130,000	14,000	2,100	170,000	47,000	140,000	< 2,000	1.5	54	< 0.2	< 1	< 0.2	< 2	< 10	< 10
DMW6A	4/20/2015	8.25	0.887	47,000	130,000	15,000	2,300	170,000	46,000	140,000	< 2,000	1.2	54	< 0.2	1.4	< 0.2	6.3	< 10	< 10
DMW6A	10/20/2015	7.77	0.877	38,000	120,000	12,000	1,900	170,000	46,000	130,000	< 2,000	1.2	53	< 0.2	< 1	< 0.2	< 2	< 10	< 10
DMW6A	4/13/2016	8.06	0.838	37,000	110,000	11,000	1,800	170,000	46,000	130,000	< 2,000	1.4	63	< 0.2	< 1	< 0.2	< 2	< 10	< 10
DMW6A	10/5/2016	7.63	0.814	40,000	120,000	14,000	2,000	160,000	44,000	130,000	< 2,000	1.4	61	< 0.2	< 1	< 0.2	2.2	< 10	< 10
DMW6A	4/20/2017	8.05	0.847	37,000	110,000	12,000	1,800	170,000	48,000	130,000	< 2,000	1.3	60	< 0.2	< 1	< 0.2	2.1	< 10	< 10
DMW6A	10/11/2017	7.99	0.811	36,900	111,000	12,200	1,800	165,000	47,900	133,000	< 2,000	1.7	60.1	< 0.2	< 1	< 0.2	< 2	< 10	< 10
DMW6A	4/12/2018	7.89	0.774	39,200	126,000	12,700	2,100	168,000	45,900	138,000	< 2,000	1.2	56.0	< 0.2	< 1	< 0.2	< 2	< 10	< 10
DMW6A	10/16/2018	7.99	0.824	41,000	120,000	13,000	1,900	170,000	52,000	140,000	< 5,000	1.4	50.0	< 1	< 1	< 0.2	< 2	< 20	< 20
DMW6A#2	10/16/2018	7.99	0.824	42,000	120,000	13,000	1,900	170,000	52,000	140,000	< 5,000	1.1	51.0	< 1	< 1	< 0.2	M 2	< 20	< 20
DMW6A	4/24/2019	7.46	0.953	40,000	120,000	13,000	2,000	170,000	51,000	130,000	< 5,000	1.4	57.0	< 1	< 1	< 0.2	< 2	< 20	< 20
DMW6A	10/14/2019	7.7	0.866	38,000	110,000	13,000	1,800	190,000	47,000	130,000	< 5,000	1.1	61.0	< 1	< 1	< 0.2	2	< 20	< 20
DMW6A	6/23/2020	7.04	1.542	38,000	110,000	12,000	1,700	170,000	50,000	140,000	< 5,000	1.4	56.0	< 1	2.8	< 0.2	5.4	< 20	< 20
DMW6A	10/14/2020	7.53	0.961	42,000	110,000	13,000	2,000	170,000	50,000	130,000	< 5,000	1.6	57.0	< 0.2	< 1	< 0.2	< 2	< 20	< 20
DMW6A	5/12/2021	7.22	1.254	37,000	100,000	12,000	1,700	180,000	52,000	140,000	< 5,000	1.4	53.0	< 0.2	7.6	0.2	5.4	< 20	< 20
DMW6A-FD	5/12/2021	-	-	38,000	100,000	12,000	1,800	180,000	53,000	140,000	< 5,000	1.4	54.0	< 0.2	< 1	< 0.2	3.6	< 20	< 20
DMW6A_2	5/12/2021	-	-	-	-	-	-	-	-	-	-	-	-	-	< 1	-	-	-	-
DMW6A	6/21/2021	7.32	1.14	42,000	110,000	13,000	1,900	140,000	47,000	140,000	< 5,000	< 1	51.0	< 0.2	< 1	< 0.2	< 2	< 20	< 20
DMW6A	11/17/2021	7.84	0.913	40,000	120,000	13,000	1,900	180,000	52,000	130,000	< 5,000	1.1	50.0	< 0.2	< 1	< 0.2	< 2	< 20	< 20
Distribution		N	NP	N	NP	N	N	NP	N	NP	Unknown	NP	N	Unknown	NP	Unknown	NP	NP	Unknown
Shewhart Control Limit (SCL)		4.5	-	4.5	-	4.5	4.5	-	4.5	-	-	-	4.5	-	-	-	-	-	-
Decision Interval Value (h)		5	-	5	-	5	5	-	5	-	-	-	5	-	-	-	-	-	-
Upper Tolerance Limit (ug/L except Sp. Cond & pH)		7.04 to 8.25	1.543	47,000	130,000	15,000	2,300	180,000	52,000	140,000	< 5,000	1.7	63	< 0.2	1.4	< 0.2	6.3	28	< 20

**Legend:** L = lognormal, N = normal, NP = non-parametric, Unknown = 100% non-detects

**Notes:**

1. The upper tolerance limit is the maximum detected value of the reported concentration of a particular parameter.
2. SCL & h values are assigned to parameters that are either normally or lognormally distributed. Parameters that are distribution free (non-parametric) have been assigned a upper tolerance limit (max value).
3. The statistical distribution was determined using Chemstat

Appendix B5-4  
 Summary of Deep Monitoring Well Data Through 2021 - DMW-9 (upgradient of Landfill)  
 Dow Silicones Corporation  
 Midland, Michigan

Site ID	Date Sampled	pH, field S.U.	Specific conductance, field mmhos/cm	Calcium, dissolved ug/L	Sodium, dissolved ug/L	Magnesium, dissolved ug/L	Potassium, dissolved ug/L	Chloride ug/L	Sulfate ug/L	Bicarbonate, alkalinity ug/L	Carbonate, alkalinity ug/L	Arsenic, dissolved ug/L	Barium, dissolved ug/L	Cadmium, dissolved ug/L	Lead, dissolved ug/L	Mercury, dissolved ug/L	Copper, dissolved ug/L	Zinc, dissolved ug/L	Phenol, total ug/L	
DMW9	4/8/1987	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DMW9	4/8/1987	-	-	-	-	-	-	220,000	42,000	-	-	-	-	-	-	-	-	-	-	-
DMW9	4/8/1987	-	-	-	-	-	-	210,000	44,000	-	-	-	-	-	-	-	-	-	-	-
DMW9	4/8/1987	-	-	-	-	-	-	210,000	41,000	-	-	-	-	-	-	-	-	-	-	-
DMW9	6/17/1987	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DMW9	6/17/1987	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DMW9	6/17/1987	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DMW9	6/23/1987	-	-	-	-	-	-	-	38,000	208,000	-	-	-	-	-	-	-	-	-	-
DMW9	6/23/1987	-	-	-	-	-	-	-	38,000	212,000	-	-	-	-	-	-	-	-	-	-
DMW9	6/23/1987	-	-	-	-	-	-	-	46,000	208,000	-	-	-	-	-	-	-	-	-	-
DMW9	6/23/1987	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DMW9	8/12/1987	-	-	-	-	-	-	-	66,000	216,000	-	-	-	-	-	-	-	-	-	-
DMW9	8/12/1987	-	-	-	-	-	-	-	69,000	224,000	-	-	-	-	-	-	-	-	-	-
DMW9	8/12/1987	-	-	-	-	-	-	-	-	224,000	-	-	-	-	-	-	-	-	-	-
DMW9	8/12/1987	-	-	-	-	-	-	-	64,000	220,000	-	-	-	-	-	-	-	-	-	-
DMW9	11/5/1987	-	-	-	-	-	-	-	39,000	210,000	-	-	-	-	-	-	-	-	-	-
DMW9	11/5/1987	-	-	-	-	-	-	-	39,000	210,000	-	-	-	-	-	-	-	-	-	-
DMW9	11/5/1987	-	-	-	-	-	-	-	-	210,000	-	-	-	-	-	-	-	-	-	-
DMW9	11/5/1987	-	-	-	-	-	-	-	38,000	180,000	-	-	-	-	-	-	-	-	-	-
DMW9	6/8/1988	7.88	0.995	-	-	-	-	180,000	44,000	-	-	-	-	-	-	-	-	-	-	< 50
DMW9	6/8/1988	7.9	1.004	-	-	-	-	190,000	48,000	-	-	-	-	-	-	-	-	-	-	< 50
DMW9	6/8/1988	7.94	0.981	-	-	-	-	190,000	46,000	-	-	-	-	-	-	-	-	-	-	< 50
DMW9	6/8/1988	7.93	0.967	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DMW9	12/14/1988	7.7	1.14	33,000	180,000	15,000	2,400	163,000	42,000	220,000	< 2,000	< 2.0	< 100	< 10	< 50	< 0.5	< 10	< 20	< 50	< 50
DMW9	12/14/1988	7.81	0.97	32,000	180,000	14,000	2,000	164,000	41,000	220,000	< 2,000	< 2.0	< 100	< 10	< 50	< 0.5	< 10	< 20	< 50	< 50
DMW9	12/14/1988	8.01	0.98	34,000	180,000	13,000	2,300	166,000	44,000	204,000	< 2,000	< 2.0	< 100	< 10	< 50	< 0.5	< 10	< 20	< 50	< 50
DMW9	12/14/1988	-	-	32,000	180,000	14,000	1,900	180,000	-	-	< 2,000	< 2.0	< 100	< 10	< 50	< 0.5	< 10	< 20	-	-
DMW9	2/23/1989	-	-	34,000	180,000	13,000	1,900	-	-	-	< 2,000	< 2.0	50	< 10	< 50	< 0.5	< 10	< 20	-	-
DMW9	2/23/1989	-	-	30,000	170,000	11,000	2,000	-	-	-	< 2,000	< 2.0	50	< 10	< 50	< 0.5	< 10	< 20	-	-
DMW9	2/23/1989	-	-	36,000	150,000	14,000	2,000	-	-	-	< 2,000	< 2.0	50	< 10	< 50	< 0.5	< 10	< 20	-	-
DMW9	2/23/1989	-	-	31,000	170,000	12,000	2,000	-	-	-	< 2,000	< 2.0	60	< 10	< 50	< 0.5	< 10	< 20	-	-
DMW9	5/18/1989	7.71	-	34,000	200,000	12,000	2,000	200,000	46,000	200,000	< 2,000	< 2.0	50	< 10	< 50	< 0.2	< 10	< 20	< 50	< 50
DMW9	5/18/1989	7.44	-	35,000	220,000	13,000	2,200	230,000	47,000	200,000	< 2,000	3.5	50	< 10	< 50	< 0.2	< 10	< 20	< 50	< 50
DMW9	5/18/1989	7.61	-	40,000	230,000	16,000	2,200	216,000	46,000	200,000	< 2,000	2.6	50	< 10	< 50	< 0.2	< 10	< 20	< 50	< 50
DMW9	5/18/1989	7.68	-	35,000	210,000	13,000	2,100	-	-	-	< 2,000	< 2.0	50	< 10	< 50	< 0.2	< 10	< 20	-	-
DMW9	8/15/1989	7.51	-	30,000	160,000	12,000	1,900	-	-	-	< 2,000	< 2.0	50	< 10	< 50	< 0.2	< 10	< 20	-	-
DMW9	8/15/1989	7.63	-	33,000	180,000	12,000	1,800	-	-	-	< 2,000	< 2.0	50	< 10	< 50	< 0.2	< 10	< 20	-	-
DMW9	8/15/1989	7.74	-	34,000	190,000	9,100	2,100	-	-	-	< 2,000	< 2.0	40	< 10	< 50	< 0.2	< 10	< 20	-	-
DMW9	8/15/1989	7.74	-	32,000	180,000	11,000	2,000	-	-	-	< 2,000	< 2.0	50	< 10	< 50	< 0.2	< 10	< 20	-	-
DMW9	11/2/1989	7.03	-	37,000	160,000	13,000	2,700	173,000	41,000	216,000	< 2,000	< 2.0	50	< 10	< 50	< 0.2	< 10	< 20	< 50	< 50
DMW9	11/2/1989	7.18	-	34,000	150,000	14,000	2,800	168,000	42,000	210,000	< 2,000	2.1	50	< 10	< 50	< 0.2	< 10	< 20	< 50	< 50
DMW9	11/2/1989	7.1	-	34,000	150,000	13,000	2,200	169,000	41,000	216,000	< 2,000	< 2.0	50	< 10	< 50	< 0.2	< 10	< 20	< 50	< 50
DMW9	11/2/1989	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DMW9	2/6/1990	7.45	0.91	31,000	140,000	12,000	< 5,000	169,000	36,000	214,000	< 2,000	-	-	-	-	-	-	-	-	-
DMW9	2/6/1990	7.58	0.95	30,000	150,000	12,000	< 5,000	169,000	37,000	216,000	< 2,000	-	-	-	-	-	-	-	-	-
DMW9	2/6/1990	7.59	0.95	30,000	150,000	12,000	< 5,000	165,000	37,000	212,000	< 2,000	-	-	-	-	-	-	-	-	-
DMW9	5/16/1990	7.2	1.012	33,000	160,000	12,000	2,100	158,000	42,000	216,000	< 2,000	< 2.0	50	< 10	< 50	< 0.2	< 10	< 20	< 50	< 50
DMW9	5/16/1990	7.51	0.999	32,000	150,000	12,000	2,100	165,000	42,000	216,000	< 2,000	< 2.0	50	< 10	< 50	< 0.2	< 10	< 20	< 50	< 50
DMW9	5/16/1990	7.16	0.957	32,000	160,000	12,000	2,100	164,000	43,000	220,000	< 2,000	< 2.0	60	< 10	< 50	< 0.2	< 10	< 20	< 50	< 50
DMW9	5/16/1990	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DMW9	10/9/1990	7.31	0.986	32,000	155,000	12,000	2,100	192,000	28,000	208,000	< 2,000	< 2.0	60	< 10	< 50	< 0.2	< 10	< 20	< 50	< 50
DMW9	10/9/1990	7.79	0.989	30,000	159,000	11,000	2,100	182,000	32,000	207,000	< 2,000	< 2.0	60	< 10	< 50	< 0.2	< 10	< 20	< 50	< 50
DMW9	10/9/1990	7.53	1.01	31,000	146,000	12,000	2,100	178,000	34,000	208,000	< 2,000	< 2.0	60	< 10	< 50	< 0.2	< 10	< 20	< 50	< 50
DMW9	10/9/1990	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DMW9	4/23/1991	7.77	0.913	29,000	175,000	11,000	2,600	159,000	44,000	207,000	< 2,000	< 1.0	60	< 10	< 50	< 0.2	< 10	< 20	< 50	< 50

Appendix B5-4  
Summary of Deep Monitoring Well Data Through 2021 - DMW-9 (upgradient of Landfill)  
Dow Silicones Corporation  
Midland, Michigan

Site ID	Date Sampled	pH, field S.U.	Specific conductance, field mmhos/cm	Calcium, dissolved ug/L	Sodium, dissolved ug/L	Magnesium, dissolved ug/L	Potassium, dissolved ug/L	Chloride ug/L	Sulfate ug/L	Bicarbonate, alkalinity ug/L	Carbonate, alkalinity ug/L	Arsenic, dissolved ug/L	Barium, dissolved ug/L	Cadmium, dissolved ug/L	Lead, dissolved ug/L	Mercury, dissolved ug/L	Copper, dissolved ug/L	Zinc, dissolved ug/L	Phenol, total ug/L
DMW9	4/23/1991	7.83	0.916	29,000	177,000	11,000	2,600	162,000	41,000	208,000	< 2,000	1.4	60	< 10	< 50	< 0.2	< 10	< 20	< 50
DMW9	4/23/1991	7.81	0.901	32,000	173,000	12,000	2,000	161,000	41,000	205,000	< 2,000	1.2	50	< 10	< 50	< 0.2	< 10	< 20	< 50
DMW9	4/23/1991	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DMW9	8/13/1991	6.92	0.978	31,000	166,000	11,000	2,600	161,000	44,000	209,000	< 2,000	< 1.0	50	< 10	< 50	< 0.2	< 10	< 20	< 50
DMW9	8/13/1991	7.39	0.972	31,000	166,000	12,000	2,500	161,000	42,000	209,000	< 2,000	< 1.0	50	< 10	< 50	< 0.2	< 10	< 20	< 50
DMW9	8/13/1991	7.32	0.958	30,000	165,000	11,000	2,400	162,000	46,000	209,000	< 2,000	< 1.0	60	< 10	< 50	< 0.2	< 10	< 20	< 50
DMW9	8/13/1991	-	-	30,000	167,000	11,000	2,400	159,000	46,000	209,000	< 2,000	< 1.0	60	< 10	< 50	< 0.2	< 10	< 20	< 50
DMW9	10/22/1991	7.48	0.953	27,000	168,000	10,000	1,800	161,000	42,000	211,000	< 2,000	< 1.0	50	< 10	< 50	< 0.2	< 10	< 20	< 10
DMW9	10/22/1991	7.56	0.988	31,000	172,000	12,000	1,800	161,000	45,000	209,000	< 2,000	1.8	50	< 10	< 50	< 0.2	< 10	< 20	< 10
DMW9	10/22/1991	7.39	0.973	26,000	145,000	10,000	1,800	159,000	41,000	215,000	< 2,000	< 1.0	50	< 10	< 50	< 0.2	< 10	< 20	< 10
DMW9	10/22/1991	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DMW9	4/22/1992	7.76	1.104	29,000	166,000	12,000	1,900	171,000	23,000	217,000	< 2,000	< 1.0	50	< 10	< 50	< 0.2	< 10	< 20	< 10
DMW9	4/22/1992	7.72	1.119	31,000	169,000	12,000	1,900	170,000	48,000	215,000	< 2,000	< 1.0	50	< 10	< 50	< 0.2	< 10	< 20	< 10
DMW9	4/22/1992	7.8	1.093	30,000	165,000	11,000	1,900	165,000	49,000	216,000	< 2,000	< 1.0	50	< 10	< 50	< 0.2	< 10	< 20	< 10
DMW9	4/22/1992	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DMW9	10/27/1992	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DMW9	10/27/1992	7.69	1.06	30,000	161,000	11,000	2,100	166,000	44,000	211,000	< 2,000	< 1.0	50	< 10	< 1.0	< 0.2	< 10	< 20	< 10
DMW9	10/27/1992	7.8	1.061	30,000	167,000	11,000	2,100	159,000	43,000	218,000	< 2,000	< 1.0	50	< 10	< 1.0	< 0.2	< 10	< 20	< 10
DMW9	10/27/1992	7.84	1.029	30,000	162,000	11,000	2,100	163,000	42,000	215,000	< 2,000	< 1.0	50	< 10	< 1.0	< 0.2	< 10	< 20	< 10
DMW9	4/26/1993	7.54	1.015	31,000	170,000	11,000	1,600	186,000	40,000	212,000	< 2,000	< 1.0	50	< 10	< 1.0	< 0.2	< 10	< 20	< 10
DMW9	4/26/1993	7.45	1.025	31,000	165,000	11,000	1,600	194,000	40,000	205,000	< 2,000	< 1.0	50	< 10	< 1.0	< 0.2	< 10	< 20	< 10
DMW9	4/26/1993	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DMW9	4/26/1993	7.44	1.018	32,000	169,000	11,000	1,600	190,000	40,000	213,000	< 2,000	< 1.0	50	< 10	< 1.0	< 0.2	< 10	< 20	< 10
DMW9	10/25/1993	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DMW9	10/25/1993	7.8	0.964	30,000	159,000	11,000	1,900	188,000	38,000	230,000	< 2,000	< 1.0	51	< 10	< 1.0	< 0.2	< 10	< 20	< 10
DMW9	10/25/1993	7.86	1	29,000	156,000	11,000	1,900	188,000	38,000	224,000	< 2,000	< 1.0	50	< 10	< 1.0	< 0.2	< 10	< 20	< 10
DMW9	10/25/1993	7.84	1.002	29,000	154,000	10,000	1,800	188,000	38,000	230,000	< 2,000	< 1.0	48	< 10	< 1.0	< 0.2	< 10	< 20	< 10
DMW9	4/27/1994	7.92	0.985	30,000	155,000	11,000	1,900	183,000	54,000	225,000	< 2,000	< 1.0	51	< 10	< 1.0	< 0.2	< 10	< 20	< 10
DMW9	4/27/1994	7.96	1	30,000	155,000	11,000	1,900	181,000	54,000	224,000	< 2,000	< 1.0	52	< 10	< 1.0	< 0.2	< 10	< 20	< 10
DMW9	4/27/1994	8.01	0.99	30,000	154,000	11,000	1,900	181,000	54,000	223,000	< 2,000	< 1.0	52	< 10	< 1.0	< 0.2	< 10	< 20	< 10
DMW9	4/27/1994	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DMW9	12/5/1994	7.77	0.867	30,000	158,000	11,000	2,000	180,000	44,000	211,000	< 2,000	< 1.0	51	< 10	< 1.0	< 0.2	< 10	< 20	< 10
DMW9	4/27/1995	8.06	1.02	30,000	160,000	11,000	2,000	173,000	45,000	211,000	< 2,000	< 1.0	52	< 10	< 1.0	< 0.2	< 10	< 20	< 10
DMW9	10/18/1995	7.79	0.819	31,000	159,000	11,000	1,900	167,000	40,000	211,000	< 2,000	1.1	52	< 10	< 1.0	< 0.2	< 10	< 20	< 10
DMW9	4/22/1996	7.5	0.889	28,000	160,000	11,000	1,900	184,000	41,000	210,000	< 2,000	< 1.0	49	< 10	< 1.0	< 0.2	< 10	< 20	< 10
DMW9	10/28/1996	7.55	0.835	29,000	150,000	11,000	1,900	175,000	49,000	215,000	< 2,000	1.0	44	< 10	< 1.0	< 0.2	< 10	< 20	10
DMW9	4/29/1997	7.96	0.97	30,000	159,000	11,000	1,900	177,000	39,000	213,000	< 2,000	< 1.0	51	< 10	1.3	< 0.2	< 10	< 20	< 10
DMW9	10/6/1997	7.37	0.696	31,000	155,000	11,000	1,900	177,000	40,000	211,000	< 2,000	< 1.0	50	< 10	< 1.0	< 0.2	< 10	< 20	< 10
DMW9	4/15/1998	7.76	1.236	30,000	157,000	11,000	1,900	178,000	40,000	214,000	< 2,000	1.2	49	< 10	< 1.0	< 0.2	< 10	< 20	< 10
DMW9	10/27/1998	7.26	1.237	28,000	157,000	11,000	1,900	177,000	36,000	212,000	< 2,000	2.4	48	< 10	< 1.0	< 0.2	< 10	< 20	< 10
DMW9	4/26/1999	7.41	0.853	30,000	152,000	11,000	1,900	169,000	38,000	208,000	< 2,000	1.7	49	< 10	< 1.0	< 0.2	< 10	< 20	< 10
DMW9	10/20/1999	7.36	0.803	29,000	158,000	11,000	1,900	179,000	38,000	183,000	< 2,000	1.4	50	< 10	< 1.0	< 0.2	< 10	< 20	< 10
DMW9	4/12/2000	7.51	0.749	33,000	166,000	11,000	1,800	167,000	40,000	205,000	< 2,000	1.2	49	< 10	< 1.0	< 0.2	< 10	< 20	< 10
DMW9	10/17/2000	7.07	0.927	28,000	171,000	11,000	1,800	165,000	42,000	213,000	< 2,000	1.6	50	< 10	< 1.0	< 0.2	< 10	< 20	< 10
DMW9	4/18/2001	7.39	1.01	30,000	156,000	11,000	1,800	167,000	38,000	202,000	< 2,000	< 1.0	45	< 10	< 1.0	< 0.2	< 10	< 20	< 10
DMW9	10/30/2001	7.69	0.981	29,000	160,000	11,000	1,900	175,000	42,000	215,000	< 2,000	1.3	46	< 10	< 1.0	< 0.2	< 10	< 20	< 10
DMW9	4/2/2002	7.13	0.988	28,000	160,000	11,000	1,900	181,000	41,000	206,000	< 2,000	1.7	47	< 10	< 1.0	< 0.2	< 10	< 20	10
DMW9	10/1/2002	7.61	1.012	28,000	161,000	11,000	1,600	168,000	40,000	206,000	< 2,000	1.7	44	< 10	< 1.0	< 0.2	< 10	< 20	< 10
DMW9	4/21/2003	7.6	0.833	30,000	158,000	11,000	1,700	166,000	41,000	213,000	< 2,000	7.1	46	< 10	< 1.0	< 0.2	< 10	< 20	< 10
DMW9	10/23/2003	6.76	0.996	28,000	160,000	11,000	1,900	166,000	36,000	189,000	< 2,000	1.3	47	< 10	< 1.0	< 0.2	< 10	< 20	< 10
DMW9	4/26/2004	7.39	1.09	29,000	178,000	11,000	2,000	175,000	37,000	212,000	< 2,000	1.4	52	< 10	< 1.0	< 0.2	< 10	< 20	20
DMW9	10/19/2004	8.05	0.958	30,000	162,000	11,000	1,900	161,000	34,000	213,000	< 2,000	1.6	46	< 10	< 1.0	< 0.2	< 10	< 20	< 10
DMW9	4/27/2005	6.85	1.098	28,000	158,000	10,000	1,800	114,000	37,000	215,000	< 2,000	1.4	48	< 10	< 1.0	< 0.2	< 10	< 20	30
DMW9	10/12/2005	7.49	0.942	27,000	151,000	10,000	1,800	119,000	33,000	210,000	< 2,000	1.3	45	< 10	< 1.0	< 0.2	< 10	< 20	< 10
DMW9	5/2/2006	7.87	1.082	31,000	170,000	11,000	1,900	170,000	38,000	210,000	< 2,000	1.6	50	< 10	< 1.0	< 0.2	< 10	< 20	< 50

Appendix B5-4  
 Summary of Deep Monitoring Well Data Through 2021 - DMW-9 (upgradient of Landfill)  
 Dow Silicones Corporation  
 Midland, Michigan

Site ID	Date Sampled	pH, field S.U.	Specific conductance, field mmhos/cm	Calcium, dissolved ug/L	Sodium, dissolved ug/L	Magnesium, dissolved ug/L	Potassium, dissolved ug/L	Chloride ug/L	Sulfate ug/L	Bicarbonate, alkalinity ug/L	Carbonate, alkalinity ug/L	Arsenic, dissolved ug/L	Barium, dissolved ug/L	Cadmium, dissolved ug/L	Lead, dissolved ug/L	Mercury, dissolved ug/L	Copper, dissolved ug/L	Zinc, dissolved ug/L	Phenol, total ug/L
DMW9	10/18/2006	7.6	1.039	28,000	150,000	10,000	1,800	170,000	37,000	200,000	< 2,000	< 1.0	47	< 10	< 1.0	< 0.2	< 10	< 20	< 50
DMW9	4/23/2007	7.79	1.103	28,000	150,000	11,000	1,700	160,000	38,000	210,000	< 2,000	< 1.0	48	< 10	< 1.0	< 0.2	< 10	< 20	< 50
DMW9	10/11/2007	8.16	1.03	26,000	170,000	9,800	1,900	160,000	37,000	210,000	< 2,000	1.2	52	< 10	< 1.0	< 0.2	< 10	< 20	< 50
DMW9	4/15/2008	7.66	1.189	30,000	170,000	11,000	2,100	160,000	37,000	230,000	< 2,000	< 1.0	49	< 10	< 1.0	< 0.2	< 10	< 20	< 50
DMW9	10/16/2008	8.26	1.095	27,000	150,000	9,800	1,700	160,000	35,000	210,000	< 2,000	< 1.0	46	< 10	< 1.0	< 0.2	< 10	< 20	< 50
DMW9	4/13/2009	8.2	1.148	27,000	150,000	9,900	1,700	160,000	34,000	200,000	< 2,000	< 1.1	46	< 10	< 1.0	< 0.2	< 10	< 20	< 50
DMW9	10/6/2009	7.75	1.037	28,000	150,000	10,000	1,700	160,000	38,000	220,000	< 2,000	1.2	44	< 10	< 1.0	< 0.2	< 10	< 20	< 50
DMW9	4/7/2010	8.06	1.214	31,000	180,000	12,000	1,900	210,000	45,000	220,000	< 2,000	1.5	54	< 10	< 1.0	< 0.2	< 10	< 20	< 50
DMW9	10/7/2010	7.71	0.985	26,000	150,000	9,800	1,600	160,000	39,000	220,000	< 2,000	< 1.0	48	< 10	< 1.0	< 0.2	< 10	< 20	< 50
DMW9	4/25/2011	7.87	1.62	33,000	200,000	12,000	2,000	290,000	53,000	210,000	< 2,000	1.0	64	< 10	< 1.0	< 0.2	< 10	< 20	< 50
DMW9	10/4/2011	8.13	1.08	27,000	170,000	10,000	1,900	170,000	39,000	200,000	< 2,000	< 1.0	52	< 10	< 1.0	< 0.2	< 10	< 20	< 20
DMW9	4/19/2012	7.73	1.43	26,000	160,000	10,000	1,700	170,000	37,000	210,000	< 2,000	1.3	47	< 10	< 1.0	< 0.2	< 10	< 20	< 20
DMW9	4/23/2013	7.55	1.12	26,000	150,000	9,800	1,700	160,000	37,000	210,000	< 10,000	< 1.0	45	< 0.2	< 1.0	< 0.2	< 2	< 50	< 10
DMW9	11/21/2013	6.79	0.996	29,000	160,000	11,000	1,900	160,000	36,000	210,000	< 2,000	< 1.0	46	< 0.2	< 1.0	< 0.2	< 2	59	< 10
DMW9	4/10/2014	7.73	0.884	28,000	160,000	11,000	1,800	160,000	37,000	210,000	< 2,000	< 1.0	49	< 0.2	< 1.0	< 0.2	< 2	46	< 10
DMW9 (DUP)	4/10/2014	-	-	27,000	150,000	10,000	1,800	160,000	36,000	210,000	< 2,000	1.1	49	< 0.2	< 1.0	< 0.2	< 2	43	< 10
DMW9	10/8/2014	7.61	1.01	29,000	170,000	11,000	1,900	160,000	37,000	210,000	< 2,000	1.0	47	< 0.2	< 1.0	< 0.2	< 2	130	< 10
DMW9	4/20/2015	7.5	0.998	31,000	170,000	12,000	2,100	160,000	35,000	210,000	< 2,000	< 1.0	44	< 0.2	< 1.0	< 0.2	< 2	65	< 10
DMW9	10/19/2015	7.7	0.939	27,000	160,000	10,000	2,000	160,000	37,000	210,000	< 2,000	< 1.0	44	< 0.2	< 1.0	< 0.2	< 2	67	< 10
DMW9	4/12/2016	8.08	0.884	27,000	150,000	9,800	1,800	160,000	36,000	220,000	< 2,000	1.2	51	< 0.2	< 1.0	< 0.2	< 2	61	< 10
DMW9	10/5/2016	7.89	0.822	28,000	170,000	11,000	1,800	150,000	34,000	210,000	< 2,000	1.0	45	< 0.2	< 1.0	< 0.2	< 2	76	< 10
DMW9	4/18/2017	8.05	0.864	27,000	160,000	11,000	1,800	160,000	37,000	210,000	< 2,000	< 1.0	48	< 0.2	< 1.0	< 0.2	< 2	47	< 10
DMW9	10/11/2017	7.98	0.885	24,100	143,000	9,600	1,800	156,000	37,000	204,000	< 2,000	1.0	48.8	< 0.2	< 1.0	< 0.2	< 2	47.2	< 10
DMW9	4/11/2018	7.85	0.864	26,500	171,000	10,600	2,100	154,000	36,100	211,000	< 2,000	< 1.0	44.9	< 0.2	< 1.0	< 0.2	< 2	57.3	< 10
DMW9	10/16/2018	8.05	0.917	29,000	160,000	11,000	1,900	160,000	41,000	230,000	< 5,000	< 5.0	48	< 1	< 1.0	< 0.2	< 2	< 20	< 20
DMW9	4/25/2019	7.14	1.387	36,000	210,000	14,000	2,200	260,000	59,000	200,000	< 5,000	1.3	64	< 1	< 1.0	< 0.2	< 2	23	< 20
DMW9 (DUP)	4/25/2019	-	-	36,000	210,000	14,000	2,200	270,000	60,000	210,000	< 5,000	1.2	65	< 1	< 1.0	< 0.2	< 2	28	< 20
DMW9	10/14/2019	7.06	0.952	29,000	150,000	11,000	1,800	190,000	37,000	200,000	< 5,000	1.1	49	< 1	< 1.0	< 0.2	< 2	< 20	30
DMW9	6/24/2020	7.28	1.383	30,000	180,000	11,000	2,100	240,000	51,000	210,000	< 5,000	< 1.0	55	< 1	< 1.0	< 0.2	< 2	21	< 20
DMW9 (DUP)	6/24/2020	-	-	31,000	190,000	11,000	2,100	230,000	49,000	210,000	< 5,000	< 1.0	57	< 1	< 1.0	< 0.2	< 2	< 20	150
DMW9	10/14/2020	7.06	1.157	28,000	160,000	11,000	1,900	180,000	42,000	200,000	< 5,000	1.4	51	< 0.2	< 1.0	< 0.2	< 2	26	< 20
DMW9 (DUP)	10/14/2020	-	-	28,000	160,000	11,000	1,900	180,000	42,000	200,000	< 5,000	1.3	51	< 0.2	< 1.0	< 0.2	< 2	26	< 20
DMW9	5/11/2021	7.31	1.734	38,000	230,000	14,000	2,300	330,000	62,000	210,000	< 5,000	1.5	75	< 0.2	< 1.0	< 0.2	< 2	< 20	< 20
DMW9	11/17/2021	7.39	1.221	29,000	170,000	11,000	1,900	190,000	41,000	200,000	< 5,000	< 1.0	49	< 0.2	< 1.0	< 0.2	< 2	< 20	< 20
Distribution		N	Quasi-LN	NP	NP	NP	NP	NP	NP	NP	Unknown	NP	NP	Unknown	NP	NP	Unknown	NP	NP
Shewhart Control Limit (SCL)		4.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Decision Interval Value (h)		5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Upper Tolerance Limit (ug/L except Sp. Cond & pH)		6.76 to 8.26	1.734	38,000	230,000	14,000	2,300	330,000	62,000	230,000	< 10,000	7.1	75	< 10	1.3	0.2	< 10	130	30
Mean		7.6549206	1.002	29,248	162,476	11,017	1,962	170,698	40,108	210,857	N/A	1.4	49.0443	N/A	N/A	N/A	N/A	27.959	N/A
SD		0.3267132	0.1508253	2,123	12,571	885	442	22,789	5,694	7,515	N/A	0.9	3.78094	N/A	N/A	N/A	N/A	21.2242	N/A
Mean + 4.5 SD		9.1251301																	
Mean - 4.5 SD		6.1847112																	
3*SD		0.9801396	0.452475901	6368.49	37712.7	2653.66	1325.78	68367.3	17082.2	22545.8		2.6042	11.3428						

To complete the distribution and outlier analysis of the dataset for each parameter, only the second daily measurement was selected out of the four measurements done on the same day to stay in compliance with Shewart-CUSUM method.

Appendix B5-4  
Summary of Deep Monitoring Well Data Through 2021 - DMW-10  
Dow Silicones Corporation  
Midland Michigan

Site ID	Date Sampled	pH, field S.U.	Specific conductance, field mmhos/cm	Calcium, dissolved ug/L	Sodium, dissolved ug/L	Magnesium, dissolved ug/L	Potassium, dissolved ug/L <sup>5</sup>	Chloride ug/L	Sulfate ug/L	Bicarbonate, alkalinity ug/L	Carbonate, alkalinity ug/L	Arsenic, dissolved ug/L	Barium, dissolved ug/L	Cadmium, dissolved ug/L	Lead, dissolved ug/L <sup>5</sup>	Mercury, dissolved ug/L <sup>5</sup>	Copper, dissolved ug/L	Zinc, dissolved ug/L	Phenol, total ug/L
DMW10	4/7/1987	-	-	-	-	-	-	210,000	75,000	-	-	-	-	-	-	-	-	-	-
DMW10	4/7/1987	-	-	-	-	-	-	210,000	82,000	-	-	-	-	-	-	-	-	-	-
DMW10	4/7/1987	-	-	-	-	-	-	210,000	85,000	-	-	-	-	-	-	-	-	-	-
DMW10	4/7/1987	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DMW10	6/17/1987	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DMW10	6/17/1987	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DMW10	6/17/1987	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DMW10	6/22/1987	-	-	-	-	-	-	290,000	120,000	20,000	-	-	-	-	-	-	-	-	-
DMW10	6/22/1987	-	-	-	-	-	-	200,000	94,000	48,000	-	-	-	-	-	-	-	-	-
DMW10	6/22/1987	-	-	-	-	-	-	190,000	96,000	40,000	-	-	-	-	-	-	-	-	-
DMW10	6/22/1987	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DMW10	8/11/1987	-	-	-	-	-	-	200,000	120,000	20,000	-	-	-	-	-	-	-	-	-
DMW10	8/11/1987	-	-	-	-	-	-	220,000	120,000	20,000	-	-	-	-	-	-	-	-	-
DMW10	8/11/1987	-	-	-	-	-	-	-	-	20,000	-	-	-	-	-	-	-	-	-
DMW10	8/11/1987	-	-	-	-	-	-	220,000	76,000	24,000	-	-	-	-	-	-	-	-	-
DMW10	11/5/1987	-	-	-	-	-	-	-	-	12,000	-	-	-	-	-	-	-	-	-
DMW10	11/5/1987	-	-	-	-	-	-	210,000	109,000	28,000	-	-	-	-	-	-	-	-	-
DMW10	11/5/1987	-	-	-	-	-	-	200,000	111,000	23,000	-	-	-	-	-	-	-	-	-
DMW10	11/5/1987	-	-	-	-	-	-	205,000	117,000	8,000	-	-	-	-	-	-	-	-	-
DMW10	6/9/1988	8.90	1.046	-	-	-	-	200,000	88,000	-	-	-	-	-	-	-	-	-	< 50
DMW10	6/9/1988	8.88	0.971	-	-	-	-	200,000	84,000	-	-	-	-	-	-	-	-	-	< 50
DMW10	6/9/1988	8.84	0.938	-	-	-	-	200,000	80,000	-	-	-	-	-	-	-	-	-	< 50
DMW10	6/9/1988	8.86	0.978	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DMW10	8/18/1988	8.59	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DMW10	8/18/1988	8.47	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DMW10	8/18/1988	8.49	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DMW10	8/18/1988	8.50	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DMW10	8/18/1988	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DMW10	8/18/1988	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DMW10	8/18/1988	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DMW10	12/14/1988	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DMW10	12/14/1988	8.29	0.99	50,000	160,000	14,000	3,300	195,000	75,000	136,000	< 2,000	2.8	100	< 10	< 50	< 0.5	< 10	< 20	< 50
DMW10	12/14/1988	8.18	0.99	49,000	160,000	14,000	2,800	200,000	73,000	132,000	< 2,000	< 2.0	140	< 10	< 50	< 0.5	< 10	< 20	< 50
DMW10	12/14/1988	8.19	1	49,000	160,000	15,000	3,100	199,000	78,000	124,000	< 2,000	2.1	140	< 10	< 50	< 0.5	< 10	< 20	< 50
DMW10	5/18/1989	8.06	-	54,000	170,000	16,000	2,400	223,000	74,000	130,000	< 2,000	2.5	120	< 10	< 50	< 0.2	< 10	< 20	< 50
DMW10	5/18/1989	8.09	-	53,000	170,000	15,000	2,300	222,000	75,000	130,000	< 2,000	2.2	120	< 10	< 50	< 0.2	< 10	< 20	< 50
DMW10	5/18/1989	8.11	-	52,000	160,000	15,000	2,500	223,000	72,000	130,000	< 2,000	4.3	120	< 10	< 50	< 0.2	< 10	< 20	< 50
DMW10	5/18/1989	8.07	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DMW10	11/1/1989	8.42	-	49,000	140,000	15,000	3,200	208,000	77,000	137,000	< 2,000	3.7	110	< 10	< 50	< 0.2	< 10	< 20	< 50
DMW10	11/1/1989	8.28	-	48,000	140,000	13,000	3,500	212,000	75,000	136,000	< 2,000	3.5	120	< 10	< 50	< 0.2	< 10	< 20	< 50
DMW10	11/1/1989	8.30	-	47,000	140,000	15,000	3,600	210,000	75,000	134,000	< 2,000	3.5	120	< 10	< 50	< 0.2	< 10	< 20	< 50
DMW10	11/1/1989	8.37	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DMW10	2/6/1990	7.29	1.02	46,000	150,000	14,000	< 5,000	218,000	76,000	136,000	< 2,000	-	-	-	-	-	-	-	-
DMW10	2/6/1990	7.31	1.03	48,000	150,000	14,000	< 5,000	223,000	73,000	136,000	< 2,000	-	-	-	-	-	-	-	-
DMW10	2/6/1990	7.93	1.03	46,000	150,000	14,000	< 5,000	223,000	74,000	136,000	< 2,000	-	-	-	-	-	-	-	-
DMW10	5/15/1990	7.53	1.081	51,000	150,000	16,000	2,600	221,000	73,000	132,000	< 2,000	2.0	100	< 10	< 50	< 0.2	< 10	< 20	< 50
DMW10	5/15/1990	7.37	1.07	48,000	150,000	14,000	2,600	207,000	76,000	132,000	< 2,000	< 2.0	100	< 10	< 50	< 0.2	< 10	< 20	< 50
DMW10	5/15/1990	7.48	1.066	50,000	150,000	15,000	2,500	233,000	73,000	136,000	< 2,000	< 2.0	110	< 10	< 50	< 0.2	< 10	< 20	< 50
DMW10	5/15/1990	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DMW10	10/9/1990	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DMW10	10/9/1990	7.88	1.006	50,000	143,000	15,000	2,300	208,000	55,000	136,000	< 2,000	2.4	100	< 10	< 50	< 0.2	< 10	< 20	< 50
DMW10	10/9/1990	8.02	0.981	50,000	143,000	15,000	2,200	200,000	60,000	133,000	< 2,000	2.2	100	< 10	< 50	< 0.2	< 10	< 20	< 50

Appendix B5-4  
Summary of Deep Monitoring Well Data Through 2021 - DMW-10  
Dow Silicones Corporation  
Midland Michigan

Site ID	Date Sampled	pH, field S.U.	Specific conductance, field mmhos/cm	Calcium, dissolved ug/L	Sodium, dissolved ug/L	Magnesium, dissolved ug/L	Potassium, dissolved ug/L <sup>5</sup>	Chloride ug/L	Sulfate ug/L	Bicarbonate, alkalinity ug/L	Carbonate, alkalinity ug/L	Arsenic, dissolved ug/L	Barium, dissolved ug/L	Cadmium, dissolved ug/L	Lead, dissolved ug/L <sup>5</sup>	Mercury, dissolved ug/L <sup>5</sup>	Copper, dissolved ug/L	Zinc, dissolved ug/L	Phenol, total ug/L
DMW10	10/9/1990	7.76	1.007	52,000	146,000	15,000	2,200	209,000	50,000	134,000	< 2,000	2.5	100	< 10	< 50	< 0.2	< 10	< 20	< 50
DMW10	12/27/1990	7.91	0.971	45,000	143,000	14,000	2,200	225,000	38,000	131,000	< 2,000	< 2.0	80	< 10	< 50	< 0.2	< 10	< 20	< 50
DMW10	12/27/1990	7.72	1.044	45,000	148,000	14,000	2,200	215,000	38,000	132,000	< 2,000	< 2.0	80	< 10	< 50	< 0.2	< 10	< 20	< 50
DMW10	12/27/1990	7.53	0.915	44,000	145,000	14,000	2,100	220,000	46,000	130,000	< 2,000	< 2.0	80	< 10	< 50	< 0.2	< 10	< 20	< 50
DMW10	12/27/1990	-	-	44,000	147,000	14,000	2,100	218,000	58,000	132,000	< 2,000	< 2.0	80	< 10	< 50	< 0.2	< 10	< 20	< 50
DMW10	4/24/1991	8.05	1.065	47,000	151,000	14,000	2,500	205,000	65,000	134,000	< 2,000	2.1	90	< 10	< 50	< 0.2	< 10	< 20	< 50
DMW10	4/24/1991	7.92	1.09	46,000	151,000	14,000	2,400	203,000	68,000	134,000	< 2,000	2.2	100	< 10	< 50	< 0.2	< 10	< 20	< 50
DMW10	4/24/1991	7.87	1.066	46,000	152,000	14,000	2,300	205,000	68,000	136,000	< 2,000	1.8	100	< 10	< 50	< 0.2	< 10	< 20	< 50
DMW10	4/24/1991	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DMW10	8/14/1991	7.63	1.098	48,000	155,000	15,000	2,600	204,000	71,000	135,000	< 2,000	1.4	90	< 10	< 50	< 0.2	< 10	< 20	< 50
DMW10	8/14/1991	7.57	1.056	48,000	154,000	15,000	2,600	201,000	71,000	136,000	< 2,000	2.0	100	< 10	< 50	< 0.2	< 10	< 20	< 50
DMW10	8/14/1991	7.75	1.02	48,000	149,000	15,000	3,400	203,000	70,000	136,000	< 2,000	1.7	90	< 10	< 50	< 0.2	< 10	< 20	< 50
DMW10	8/14/1991	-	-	49,000	149,000	15,000	2,600	203,000	71,000	138,000	< 2,000	1.8	100	< 10	< 50	< 0.2	< 10	< 20	< 50
DMW10	10/22/1991	7.51	1.044	50,000	142,000	16,000	3,000	207,000	69,000	138,000	< 2,000	2.1	90	< 10	< 50	< 0.2	< 10	< 20	< 10
DMW10	10/22/1991	7.42	1.063	43,000	134,000	14,000	2,300	212,000	68,000	141,000	< 2,000	1.7	90	< 10	< 50	< 0.2	< 10	< 20	< 10
DMW10	10/22/1991	7.56	1.059	42,000	137,000	14,000	2,300	206,000	64,000	137,000	< 2,000	1.9	90	< 10	< 50	< 0.2	< 10	< 20	< 10
DMW10	10/22/1991	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DMW10	4/22/1992	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DMW10	4/22/1992	7.49	1.167	47,000	149,000	15,000	2,100	210,000	78,000	145,000	< 2,000	1.8	90	< 10	< 50	< 0.2	< 10	< 20	< 10
DMW10	4/22/1992	7.64	1.16	46,000	147,000	14,000	2,100	208,000	76,000	144,000	< 2,000	1.9	90	< 10	< 50	< 0.2	< 10	< 20	< 10
DMW10	4/22/1992	7.65	1.151	48,000	147,000	15,000	2,200	210,000	77,000	145,000	< 2,000	2.2	90	< 10	< 50	< 0.2	< 10	< 20	< 10
DMW10	10/27/1992	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DMW10	10/27/1992	8.02	1.163	47,000	152,000	15,000	2,300	211,000	66,000	138,000	< 2,000	2.3	80	< 10	< 1	< 0.2	< 10	< 20	< 10
DMW10	10/27/1992	8.03	1.163	49,000	148,000	16,000	2,300	216,000	67,000	142,000	< 2,000	1.0	90	< 10	< 1	< 0.2	< 10	< 20	< 10
DMW10	10/27/1992	8.03	1.148	48,000	149,000	15,000	2,300	213,000	65,000	139,000	< 2,000	1.9	80	< 10	1.4	< 0.2	< 10	< 20	< 10
DMW10	4/27/1993	7.75	1.108	50,000	148,000	16,000	1,700	231,000	67,000	142,000	< 2,000	1.7	90	< 10	< 1	< 0.2	< 10	< 20	< 10
DMW10	4/27/1993	7.75	1.118	48,000	147,000	15,000	1,700	232,000	65,000	142,000	< 2,000	1.8	90	< 10	< 1	< 0.2	< 10	< 20	< 10
DMW10	4/27/1993	7.84	1.112	50,000	185,000	16,000	1,700	228,000	65,000	142,000	< 2,000	1.9	90	< 10	< 1	< 0.2	< 10	< 20	< 10
DMW10	4/27/1993	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DMW10	10/26/1993	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DMW10	10/26/1993	7.91	1.071	47,000	145,000	15,000	2,000	234,000	71,000	149,000	< 2,000	1.3	84	< 10	< 1	< 0.2	< 10	< 20	< 10
DMW10	10/26/1993	7.90	1.104	48,000	142,000	15,000	2,000	235,000	70,000	142,000	< 2,000	1.0	85	< 10	< 1	< 0.2	< 10	< 20	< 10
DMW10	10/26/1993	7.94	1.088	47,000	140,000	15,000	2,000	235,000	70,000	155,000	< 2,000	< 1.0	83	< 10	< 1	< 0.2	< 10	< 20	< 10
DMW10	4/27/1994	8.07	1.102	49,000	143,000	16,000	2,100	228,000	72,000	145,000	< 2,000	1.4	84	< 10	< 1	< 0.2	< 10	< 20	< 10
DMW10	4/27/1994	8.09	1.106	49,000	143,000	16,000	2,100	226,000	72,000	151,000	< 2,000	1.6	85	< 10	< 1	< 0.2	< 10	< 20	< 10
DMW10	4/27/1994	8.09	1.108	49,000	143,000	16,000	2,100	230,000	74,000	145,000	< 2,000	1.6	84	< 10	< 1	< 0.2	< 10	< 20	< 10
DMW10	4/27/1994	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DMW10	12/6/1994	8.08	0.96	47,000	144,000	15,000	2,100	241,000	71,000	141,000	< 2,000	2.2	82	< 10	< 1	< 0.2	< 10	< 20	< 10
DMW10	4/26/1995	7.99	0.957	47,000	145,000	16,000	2,100	231,000	72,000	139,000	< 2,000	1.8	84	< 10	< 1	< 0.2	< 10	< 20	< 10
DMW10	10/19/1995	8.21	0.845	47,000	149,000	16,000	2,100	225,000	74,000	133,000	< 2,000	1.3	88	< 10	< 1	< 0.2	< 10	< 20	< 10
DMW10	4/22/1996	8.12	0.933	44,000	154,000	17,000	2,100	249,000	71,000	131,000	< 2,000	1.5	87	< 10	< 1	< 0.2	< 10	< 20	< 10
DMW10	10/28/1996	8.30	0.833	46,000	145,000	17,000	2,100	246,000	75,000	129,000	< 2,000	1.4	85	< 10	< 1	< 0.2	< 10	< 20	< 10
DMW10	4/29/1997	8.26	0.93	44,000	142,000	16,000	2,100	239,000	66,000	134,000	< 2,000	D1 1.6	87	< 10	< 1	< 0.2	< 10	< 20	< 10
DMW10	10/6/1997	7.96	0.72	47,000	145,000	17,000	2,000	247,000	70,000	132,000	< 2,000	2.0	88	< 10	< 1	< 0.2	< 10	< 20	< 10
DMW10	4/15/1998	8.15	1.235	47,000	148,000	18,000	2,200	239,000	68,000	135,000	< 2,000	2.5	92	< 10	< 1	< 0.2	< 10	< 20	< 10
DMW10	10/26/1998	8.05	1.055	44,000	152,000	17,000	2,100	244,000	65,000	131,000	< 2,000	4.1	92	< 10	< 1	< 0.2	< 10	< 20	10
DMW10	4/26/1999	8.07	0.86	47,000	147,000	18,000	2,100	233,000	69,000	131,000	< 2,000	2.7	94	< 10	< 1	< 0.2	< 10	< 20	< 10
DMW10	10/20/1999	8.07	0.828	45,000	152,000	17,000	2,000	250,000	69,000	121,000	< 2,000	2.8	92	< 10	< 1	< 0.2	< 10	< 20	< 10
DMW10	4/12/2000	8.29	0.905	50,000	156,000	18,000	2,000	239,000	70,000	133,000	< 2,000	2.5	92	< 10	< 1	< 0.2	< 10	< 20	< 10
DMW10	10/17/2000	7.20	1.012	45,000	160,000	18,000	2,100	235,000	71,000	138,000	< 2,000	2.8	96	< 10	< 1	< 0.2	< 10	< 20	< 10
DMW10	4/18/2001	8.16	1.074	47,000	146,000	18,000	2,100	234,000	69,000	133,000	< 2,000	2.2	90	< 10	< 1	< 0.2	< 10	< 20	< 10
DMW10	10/30/2001	7.80	1.072	45,000	150,000	17,000	2,000	243,000	71,000	140,000	< 2,000	2.6	89	< 10	< 1	0.4	< 10	< 20	< 10
DMW10	4/2/2002	7.60	1.041	45,000	144,000	17,000	2,100	244,000	71,000	139,000	< 2,000	3.1	92	< 10	< 1	0.4	< 10	< 20	< 10

Appendix B5-4  
Summary of Deep Monitoring Well Data Through 2021 - DMW-10  
Dow Silicones Corporation  
Midland Michigan

Site ID	Date Sampled	pH, field S.U.	Specific conductance, field mmhos/cm	Calcium, dissolved ug/L	Sodium, dissolved ug/L	Magnesium, dissolved ug/L	Potassium, dissolved ug/L <sup>5</sup>	Chloride ug/L	Sulfate ug/L	Bicarbonate, alkalinity ug/L	Carbonate, alkalinity ug/L	Arsenic, dissolved ug/L	Barium, dissolved ug/L	Cadmium, dissolved ug/L	Lead, dissolved ug/L <sup>5</sup>	Mercury, dissolved ug/L <sup>5</sup>	Copper, dissolved ug/L	Zinc, dissolved ug/L	Phenol, total ug/L
DMW10	10/1/2002	8.16	1.121	45,000	150,000	18,000	1,800	238,000	66,000	142,000	< 2,000	3.3	89	< 10	< 1	< 0.2	< 10	< 20	< 10
DMW10	4/21/2003	8.13	0.838	47,000	153,000	18,000	2,000	231,000	71,000	144,000	< 2,000	8.4	91	< 10	< 1	< 0.2	< 10	< 20	10
DMW10	10/23/2003	7.40	1.145	45,000	148,000	18,000	2,000	233,000	63,000	131,000	< 2,000	2.7	92	< 10	< 1	< 0.2	< 10	< 20	< 10
DMW10	4/26/2004	7.52	1.24	47,000	164,000	18,000	2,100	235,000	69,000	147,000	< 2,000	2.7	110	< 10	< 1	< 0.2	< 10	< 20	20
DMW10	10/19/2004	7.99	1.11	48,000	153,000	18,000	2,100	224,000	63,000	143,000	< 2,000	2.8	97	< 10	< 1	< 0.2	< 10	< 20	< 10
DMW10	4/27/2005	7.69	1.149	46,000	151,000	17,000	2,000	200,000	67,000	149,000	< 2,000	2.6	96	< 10	< 1	< 0.2	< 10	< 20	20
DMW10	10/12/2005	8.15	1.042	45,000	143,000	17,000	2,100	137,000	54,000	142,000	< 2,000	2.6	91	< 10	< 1	< 0.2	< 10	< 20	< 10
DMW10	5/2/2006	8.30	1.165	49,000	150,000	18,000	2,100	230,000	63,000	140,000	< 2,000	3.1	93	< 10	< 1	< 0.2	< 10	< 20	< 50
DMW10	10/18/2006	8.14	1.233	47,000	150,000	18,000	2,000	230,000	66,000	140,000	< 2,000	2.1	94	< 10	< 1	< 0.2	< 10	< 20	< 50
DMW10	4/23/2007	6.37	1.178	45,000	150,000	17,000	2,000	230,000	65,000	160,000	< 2,000	1.9	93	< 10	< 1	< 0.2	< 10	< 20	< 50
DMW10	10/11/2007	8.04	1.139	46,000	150,000	16,000	2,100	230,000	64,000	150,000	< 2,000	2.4	96	< 10	< 1	< 0.2	< 10	< 20	< 50
DMW10	4/15/2008	8.17	1.231	51,000	150,000	18,000	2,100	240,000	67,000	150,000	< 2,000	2.4	100	< 10	< 1	< 0.2	< 10	< 20	< 50
DMW10	10/16/2008	8.17	1.189	40,000	140,000	15,000	2,000	230,000	64,000	150,000	< 2,000	3.3	87	< 10	< 1	< 0.2	< 10	< 20	< 50
DMW10	4/13/2009	8.25	0.715	64,000	58,000	6,900	4,200	220,000	25,000	86,000	< 2,000	2.4	120	< 10	< 1	< 0.2	< 10	< 20	< 50
DMW10	10/6/2009	8.04	1.097	53,000	140,000	14,000	7,300	240,000	66,000	140,000	< 2,000	2.1	100	< 10	< 1	< 0.2	< 10	< 20	< 50
DMW10	6/11/2010	7.67	1.13	57,000	130,000	15,000	7,400	220,000	60,000	130,000	< 2,000	2.6	110	< 10	< 1	< 0.2	< 10	< 20	12.9
DMW10	10/7/2010	8.23	1.186	51,000	130,000	14,000	5,400	230,000	64,000	150,000	< 2,000	1.7	97	< 10	< 1	< 0.2	< 10	< 20	< 50
DMW10	4/25/2011	7.32	1.33	49,000	130,000	13,000	4,800	220,000	60,000	150,000	< 2,000	1.9	91	< 10	< 1	< 0.2	< 10	< 20	< 50
DMW10	10/4/2011	7.85	1.16	53,000	140,000	14,000	5,400	230,000	64,000	140,000	< 2,000	1.9	98	< 10	1.7	< 0.2	< 10	< 20	< 20
DMW10	4/19/2012	6.55	1.2	56,000	150,000	15,000	4,800	240,000	63,000	150,000	< 2,000	1.9	100	< 10	< 1	< 0.2	< 10	< 20	< 20
DMW10	10/24/2012	7.05	1.140	59,000	150,000	15,000	4,400	220,000	62,000	140,000	< 10,000	1.8	110	< 0.2	1.4	< 0.2	< 10	< 50	< 10
DMW10	4/23/2013	7.71	1.180	29,000	180,000	4,500	4,100	250,000	37,000	130,000	< 10,000	1.8	35	< 0.2	< 1	< 0.2	8.2	< 50	< 10
DMW10	10/23/2013	7.54	1.070	50,000	130,000	7,500	6,100	180,000	54,000	140,000	< 2,000	1.6	57	< 0.2	< 1	< 0.2	8.9	25	< 10
DMW10	4/9/2014	8.17	1.270	20,000	230,000	1,300	2,200	320,000	47,000	93,000	< 2,000	2.5	16	< 0.2	< 1	< 0.2	15	< 10	< 10
DMW10 #1	5/1/2014	8.09	1.310	-	-	-	-	-	-	-	-	-	-	-	-	-	20	-	-
DMW10 #2	5/1/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	20	-	-
DMW10 #3	5/1/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	20	-	-
DMW10 #4	5/1/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	20	-	-
DMW10	6/19/2014	8.00	1.270	-	-	-	-	-	-	-	-	-	-	-	-	-	< 2	-	-
DMW10	7/16/2014	8.15	1.250	-	-	-	-	-	-	-	-	-	-	-	-	-	< 2	-	-
DMW10	10/8/2014	7.59	1.230	52,000	200,000	11,000	3,500	240,000	66,000	160,000	< 2,000	1.5	53	< 0.2	1.2	< 0.2	2.0	11	< 10
DMW10 #1	1/15/2015	8.21	1.200	-	-	-	-	-	-	-	-	-	-	-	-	-	< 2	-	-
DMW10	4/20/2015	8.12	1.150	55,000	200,000	12,000	3,500	230,000	65,000	160,000	< 2,000	1.1	50	< 0.2	< 1	< 0.2	2.2	< 10	< 10
DMW10	10/19/2015	7.84	1.120	48,000	160,000	12,000	3,000	240,000	68,000	150,000	< 2,000	1.4	57	< 0.2	< 1	< 0.2	< 2	< 10	< 10
DMW10	4/12/2016	8.14	1.060	52,000	160,000	12,000	2,900	240,000	67,000	150,000	< 2,000	1.6	70	< 0.2	< 1	< 0.2	< 2	< 10	< 10
DMW10	10/4/2016	7.26	1.210	53,000	170,000	14,000	2,900	230,000	64,000	160,000	< 2,000	1.2	69	< 0.2	< 1	< 0.2	< 2	< 10	< 10
DMW10	4/19/2017	8.00	1.050	52,000	160,000	14,000	2,600	230,000	66,000	150,000	< 2,000	1.2	76	< 0.2	< 1	< 0.2	< 2	< 10	< 10
DMW10	10/12/2017	7.92	1.060	50,600	154,000	14,400	2,600	232,000	69,000	150,000	< 2,000	1.6	81.5	< 0.2	< 1	< 0.2	< 2	< 10	< 10
DMW10	4/12/2018	7.87	1.020	51,300	166,000	14,600	2,600	228,000	71,500	146,000	< 2,000	1.2	71.9	< 0.2	< 1	< 0.2	< 2	< 10	< 10
DMW10	10/16/2018	8.09	1.003	54,000	150,000	15,000	2,900	240,000	71,000	150,000	< 5,000	1.4	71	< 1	< 1	< 0.2	< 2	< 20	< 20
DMW10	4/24/2019	--	--	61,000	310,000	3,400	5,300	530,000	48,000	99,000	< 5,000	1.3	52	< 1	< 1	< 0.2	13	< 20	37
DMW10	10/16/2019	7.06	1.268	48,000	190,000	5,000	3,500	280,000	63,000	140,000	< 5,000	1.5	41	< 1	< 1	< 0.2	< 2	< 20	26
DMW10	6/23/2020	7.25	1.170	62,000	160,000	6,300	3,900	230,000	67,000	140,000	< 5,000	1.0	54	< 1	< 1	< 0.2	< 2	< 20	< 20
DMW10	10/14/2020	6.77	0.772	85,000	19,000	4,800	4,000	110,000	31,000	95,000	< 5,000	< 1.0	57	< 0.2	< 1	< 0.2	2.2	< 20	< 20
DMW10	5/12/2021	4.00	0.792	76,000	34,000	3,800	3,800	120,000	34,000	110,000	< 5,000	< 1.0	60	< 0.2	< 1	< 0.2	4.2	< 20	< 20
DMW10	11/17/2021	8.06	0.542	76,000	5,800	3,700	3,200	82,000	27,000	91,000	< 5,000	< 1.0	60	< 0.2	< 1	< 0.2	< 2	< 20	< 20

**Appendix B5-4**  
**Summary of Deep Monitoring Well Data Through 2021 - DMW-10**  
**Dow Silicones Corporation**  
**Midland Michigan**

Site ID	Date Sampled	pH, field S.U.	Specific conductance, field mmhos/cm	Calcium, dissolved ug/L	Sodium, dissolved ug/L	Magnesium, dissolved ug/L	Potassium, dissolved <sup>5</sup> ug/L	Chloride ug/L	Sulfate ug/L	Bicarbonate, alkalinity ug/L	Carbonate, alkalinity ug/L	Arsenic, dissolved ug/L	Barium, dissolved ug/L	Cadmium, dissolved ug/L	Lead, dissolved <sup>5</sup> ug/L	Mercury, dissolved <sup>5</sup> ug/L	Copper, dissolved ug/L	Zinc, dissolved ug/L	Phenol, total ug/L
Distribution		NP	NP	NP	NP	NP	NP	NP	NP	NP	Unknown	NP	NP	Unknown	NP	NP	NP	NP	NP
Shewhart Control Limit (SCL)		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Decision Interval Value (h)		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Upper Tolerance Limit (ug/L except Sp. Cond and pH)		6.37 to 8.30	1.330	85,000	230,000	18,000	7,400	320,000	76,000	160,000	< 10,000	8.4	120	< 10	1.7	0.4	20	25	20

**Legend:** L = lognormal, N = normal, NP = non-parametric, Unknown = 100% non-detects

**Notes:**

1. The upper tolerance limit is the maximum detected value of the reported concentration of a particular parameter.
2. SCL & h values are assigned to parameters that are either normally or lognormally distributed. Parameters that are distribution free (non-parametric) have been assigned a upper tolerance limit (max value).
3. The statistical distribution was determined using Chemstat and the most recent 59 data points.
4. To complete the distribution and outlier analysis of the dataset for each parameter, only the second daily measurement was selected out of the four measurements done on the same day to stay in compliance with Shewart-CUSUM method.
5. For potassium, mercury & lead the highest detected concentration is taken as UTL after the lower detection limit was implemented for these parameters.
6. The potassium concentration of 4,200 ug/L was after the well was re-developed when the orginial concentration was found to be 33,000 ug/L.
7. The concentration of cadmium in DMW-4 on 4/27/2005 is not included in calculation of the UTL.
8. The four concentrations of lead in DMW-12 on 7/26/93 are not included in calculation of the UTL.

Appendix B5-4  
 Summary of Deep Monitoring Well Data Through 2021 - DMW-11 (upgradient of Landfill)  
 Dow Silicones Corporation  
 Midland, Michigan

Site ID	Date Sampled	pH, field S.U.	Specific conductance, field mmhos/cm	Calcium, dissolved ug/L	Sodium, dissolved ug/L	Magnesium, dissolved ug/L	Potassium, dissolved ug/L	Chloride ug/L	Sulfate ug/L	Bicarbonate, alkalinity ug/L	Carbonate, alkalinity ug/L	Arsenic, dissolved ug/L	Barium, dissolved ug/L	Cadmium, dissolved ug/L	Lead, dissolved ug/L	Mercury, dissolved ug/L	Copper, dissolved ug/L	Zinc, dissolved ug/L	Phenol, total ug/L
DMW11	6/9/1988	8.06	1.44	-	-	-	-	410,000	67,000	-	-	-	-	-	-	-	-	-	50
DMW11	6/9/1988	8.04	1.47	-	-	-	-	350,000	68,000	-	-	-	-	-	-	-	-	-	50
DMW11	6/9/1988	8.05	1.306	-	-	-	-	380,000	67,000	-	-	-	-	-	-	-	-	-	50
DMW11	6/9/1988	8.05	1.506	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DMW11	8/18/1988	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DMW11	10/31/1989	-	-	-	-	-	-	408,000	-	-	-	-	-	-	-	-	-	-	-
DMW11	10/31/1989	-	-	-	-	-	-	414,000	-	-	-	-	-	-	-	-	-	-	-
DMW11	10/31/1989	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DMW11	2/7/1990	7.57	1.59	62,000	210,000	-	-	-	61,000	152,000	< 2,000	-	-	-	-	-	-	-	-
DMW11	2/7/1990	7.35	1.61	63,000	220,000	-	-	-	60,000	150,000	< 2,000	-	-	-	-	-	-	-	-
DMW11	2/7/1990	7.4	1.61	64,000	220,000	-	-	-	59,000	152,000	< 2,000	-	-	-	-	-	-	-	-
DMW11	5/15/1990	7.37	1.622	59,000	220,000	-	-	-	61,000	153,000	< 2,000	< 2.0	230	< 10	< 50	< 0.2	< 10	< 20	< 50
DMW11	5/15/1990	7.24	1.593	60,000	220,000	-	-	-	58,000	152,000	< 2,000	< 2.0	240	< 10	< 50	< 0.2	< 10	< 20	< 50
DMW11	5/15/1990	7.21	1.647	60,000	220,000	-	-	-	57,000	152,000	< 2,000	< 2.0	240	< 10	< 50	< 0.2	< 10	< 20	< 50
DMW11	5/15/1990	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DMW11	10/10/1990	7.34	1.516	68,000	215,000	-	-	-	56,000	150,000	< 2,000	< 2.0	220	< 10	< 50	< 0.2	< 10	< 20	< 50
DMW11	10/10/1990	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DMW11	10/10/1990	7.44	1.534	68,000	210,000	-	-	-	50,000	150,000	< 2,000	< 2.0	220	< 10	< 50	< 0.2	< 10	50	< 50
DMW11	10/10/1990	7.33	1.521	67,000	212,000	-	-	-	60,000	151,000	< 2,000	< 2.0	220	< 10	< 50	< 0.2	< 10	< 20	< 50
DMW11	4/23/1991	7.38	1.467	64,000	224,000	27,000	2,700	396,000	56,000	148,000	< 2,000	< 1.0	220	< 10	< 50	< 0.2	< 10	< 20	< 50
DMW11	4/23/1991	7.24	1.441	62,000	226,000	27,000	2,600	395,000	48,000	148,000	< 2,000	< 1.0	220	< 10	< 50	< 0.2	< 10	< 20	< 50
DMW11	4/23/1991	7.08	1.476	64,000	228,000	27,000	2,600	393,000	54,000	148,000	< 2,000	< 1.0	220	< 10	< 50	< 0.2	< 10	< 20	< 50
DMW11	4/23/1991	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DMW11	10/23/1991	7.29	1.603	61,000	201,000	26,000	2,600	396,000	58,000	151,000	< 2,000	< 1.0	220	< 10	< 50	< 0.2	< 10	< 20	< 10
DMW11	10/23/1991	7.39	1.604	60,000	213,000	27,000	2,500	386,000	57,000	155,000	< 2,000	< 1.0	230	< 10	< 50	< 0.2	< 10	< 20	< 10
DMW11	10/23/1991	7.36	1.602	59,000	205,000	26,000	2,500	396,000	56,000	151,000	< 2,000	< 1.0	230	< 10	< 50	< 0.2	< 10	< 20	< 10
DMW11	10/23/1991	7.25	1.592	59,000	211,000	26,000	2,500	390,000	58,000	151,000	< 2,000	< 1.0	230	< 10	< 50	< 0.2	< 10	< 20	< 10
DMW11	4/21/1992	-	-	66,000	225,000	28,000	2,500	389,000	64,000	157,000	< 2,000	< 1.0	230	< 10	< 50	< 0.2	< 10	< 20	< 10
DMW11	4/21/1992	-	-	65,000	224,000	27,000	2,400	392,000	63,000	156,000	< 2,000	< 1.0	230	< 10	< 50	< 0.2	< 10	< 20	< 10
DMW11	4/21/1992	-	-	66,000	228,000	28,000	2,400	397,000	64,000	158,000	< 2,000	< 1.0	240	< 10	< 50	< 0.2	< 10	< 20	< 10
DMW11	4/21/1992	-	-	67,000	223,000	28,000	2,400	404,000	63,000	158,000	< 2,000	< 1.0	230	< 10	< 50	< 0.2	< 10	< 20	< 10
DMW11	7/22/1992	7.81	1.642	69,000	219,000	27,000	2,100	409,000	73,000	156,000	< 2,000	< 1.0	220	< 10	< 1.0	< 0.2	< 10	< 20	< 10
DMW11	7/22/1992	7.88	1.646	69,000	220,000	28,000	2,200	404,000	61,000	159,000	< 2,000	< 1.0	220	< 10	< 1.0	< 0.2	< 10	< 20	< 10
DMW11	7/22/1992	7.89	1.655	72,000	218,000	29,000	2,000	404,000	69,000	158,000	< 2,000	< 1.0	220	< 10	< 1.0	< 0.2	< 10	< 20	< 10
DMW11	7/22/1992	7.87	1.661	71,000	220,000	29,000	2,000	402,000	60,000	159,000	< 2,000	< 1.0	220	< 10	< 1.0	< 0.2	< 10	< 20	< 10
DMW11	10/27/1992	7.69	1.746	68,000	221,000	28,000	2,600	403,000	56,000	162,000	< 2,000	< 1.0	220	< 10	1.8	< 0.2	< 10	< 20	< 10
DMW11	10/27/1992	7.61	1.691	68,000	215,000	29,000	2,600	390,000	56,000	151,000	< 2,000	< 1.0	210	< 10	2.0	< 0.2	< 10	< 20	< 10
DMW11	10/27/1992	7.74	1.701	68,000	215,000	28,000	2,600	408,000	56,000	154,000	< 2,000	< 1.0	210	< 10	< 1.0	< 0.2	< 10	< 20	< 10
DMW11	10/27/1992	7.68	1.703	68,000	216,000	29,000	2,600	400,000	56,000	161,000	< 2,000	< 1.0	220	< 10	1.0	< 0.2	< 10	< 20	< 10
DMW11	4/26/1993	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DMW11	4/26/1993	7.3	1.639	71,000	213,000	28,000	2,000	415,000	56,000	164,000	< 2,000	< 1.0	230	< 10	< 1.0	< 0.2	< 10	< 20	< 10
DMW11	4/26/1993	7.35	1.632	72,000	213,000	29,000	2,100	415,000	56,000	157,000	< 2,000	< 1.0	230	< 10	< 1.0	< 0.2	< 10	< 20	< 10
DMW11	4/26/1993	7.35	1.635	72,000	211,000	29,000	2,100	418,000	56,000	157,000	< 2,000	< 1.0	230	< 10	< 1.0	< 0.2	< 10	< 20	< 10
DMW11	10/26/1993	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DMW11	10/26/1993	7.26	1.599	66,000	226,000	27,000	2,200	413,000	60,000	168,000	2,000	< 1.0	220	< 10	< 1.0	< 0.2	< 10	< 20	< 10
DMW11	10/26/1993	7.34	1.641	66,000	222,000	27,000	2,200	411,000	59,000	175,000	< 2,000	< 1.0	220	< 10	< 1.0	< 0.2	< 10	< 20	< 10
DMW11	10/26/1993	7.58	1.604	66,000	224,000	27,000	2,200	410,000	59,000	164,000	< 2,000	< 1.0	220	< 10	< 1.0	< 0.2	< 10	< 20	< 10
DMW11	4/27/1994	7.9	1.621	71,000	215,000	28,000	2,400	407,000	65,000	164,000	< 2,000	< 1.0	224	< 10	< 1.0	< 0.2	< 10	< 20	< 10
DMW11	4/27/1994	7.93	1.64	71,000	212,000	28,000	2,400	406,000	63,000	160,000	< 2,000	< 1.0	224	< 10	< 1.0	< 0.2	< 10	< 20	< 10
DMW11	4/27/1994	7.94	1.638	71,000	214,000	28,000	2,400	406,000	63,000	160,000	< 2,000	< 1.0	223	< 10	< 1.0	< 0.2	< 10	< 20	< 10
DMW11	4/27/1994	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DMW11	12/5/1994	7.76	1.347	69,000	216,000	27,000	2,400	426,000	60,000	157,000	< 2,000	< 1.0	220	< 10	< 1.0	< 0.2	< 10	< 20	< 10
DMW11	4/26/1995	7.56	1.337	70,000	219,000	28,000	2,400	406,000	63,000	154,000	< 2,000	< 1.0	220	< 10	< 1.0	< 0.2	< 10	< 20	70

Appendix B5-4  
 Summary of Deep Monitoring Well Data Through 2021 - DMW-11 (upgradient of Landfill)  
 Dow Silicones Corporation  
 Midland, Michigan

Site ID	Date Sampled	pH, field S.U.	Specific conductance, field mmhos/cm	Calcium, dissolved ug/L	Sodium, dissolved ug/L	Magnesium, dissolved ug/L	Potassium, dissolved ug/L	Chloride ug/L	Sulfate ug/L	Bicarbonate, alkalinity ug/L	Carbonate, alkalinity ug/L	Arsenic, dissolved ug/L	Barium, dissolved ug/L	Cadmium, dissolved ug/L	Lead, dissolved ug/L	Mercury, dissolved ug/L	Copper, dissolved ug/L	Zinc, dissolved ug/L	Phenol, total ug/L
DMW11	7/20/1995	7.81	1.634	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	< 10
DMW11	7/20/1995	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	< 10
DMW11	7/20/1995	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	< 10
DMW11	7/20/1995	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	< 10
DMW11	10/18/1995	7.5	1.157	69,000	217,000	28,000	2,300	387,000	64,000	155,000	< 2,000	< 1.0	220	< 10	< 1.0	0.2	< 10	< 20	< 10
DMW11	4/22/1996	7.27	1.422	67,000	215,000	28,000	2,300	431,000	62,000	153,000	< 2,000	< 1.0	210	< 10	< 1.0	< 0.2	< 10	< 20	< 10
DMW11	10/28/1996	7.47	1.209	67,000	200,000	26,000	2,200	419,000	65,000	156,000	< 2,000	< 1.0	190	< 10	< 1.0	< 0.2	< 10	< 20	10
DMW11	4/29/1997	7.71	1.313	73,000	209,000	27,000	2,300	410,000	53,000	156,000	< 2,000	< 1.0	223	< 10	< 1.0	< 0.2	< 10	< 20	< 10
DMW11	10/6/1997	7.4	0.978	73,000	203,000	27,000	2,200	418,000	60,000	153,000	< 2,000	< 1.0	210	< 10	< 1.0	< 0.2	< 10	< 20	< 10
DMW11	4/15/1998	7.84	1.612	72,000	216,000	28,000	2,300	433,000	56,000	156,000	< 2,000	1.0	220	< 10	< 1.0	< 0.2	< 10	< 20	< 10
DMW11	10/26/1998	7.21	1.713	67,000	214,000	28,000	2,300	413,000	54,000	153,000	< 2,000	3.3	210	< 10	< 1.0	< 0.2	< 10	< 20	< 10
DMW11	4/26/1999	6.55	1.286	74,000	207,000	28,000	2,300	392,000	56,000	157,000	< 2,000	1.8	220	< 10	< 1.0	< 0.2	< 10	< 20	< 10
DMW11	10/20/1999	7.18	1.152	70,000	221,000	28,000	2,200	430,000	56,000	136,000	< 2,000	1.5	220	< 10	2.9	< 0.2	10	< 20	< 10
DMW11	4/12/2000	7.32	1.703	75,000	210,000	29,000	2,000	414,000	58,000	154,000	< 2,000	1.2	210	< 10	< 1.0	< 0.2	10	< 20	< 10
DMW11	10/17/2000	6.76	1.529	69,000	224,000	29,000	2,200	410,000	58,000	158,000	< 2,000	1.6	220	< 10	< 1.0	< 0.2	< 10	< 20	< 10
DMW11	4/18/2001	7.22	2.05	71,000	208,000	28,000	2,100	410,000	57,000	151,000	< 2,000	1.5	220	< 10	< 1.0	< 0.2	< 10	< 20	< 10
DMW11	10/30/2001	7.74	1.65	67,000	207,000	27,000	2,200	425,000	59,000	154,000	< 2,000	1.3	200	< 10	< 1.0	< 0.2	< 10	< 20	< 10
DMW11	4/2/2002	6.98	1.597	68,000	216,000	27,000	2,300	424,000	58,000	157,000	< 2,000	1.6	210	< 10	< 1.0	< 0.2	< 10	< 20	< 10
DMW11	10/1/2002	7.36	1.7	67,000	210,000	28,000	2,000	419,000	55,000	161,000	< 2,000	2.3	200	< 10	< 1.0	< 0.2	< 10	< 20	< 10
DMW11	4/21/2003	7.75	1.544	71,000	213,000	28,000	2,100	403,000	59,000	164,000	< 2,000	7.5	200	< 10	< 1.0	< 0.2	< 10	< 20	20
DMW11	10/23/2003	7.11	1.558	68,000	216,000	28,000	2,100	420,000	51,000	147,000	< 2,000	1.6	200	12	< 1.0	< 0.2	< 10	< 20	10
DMW11	4/26/2004	7.2	1.88	71,000	243,000	28,000	2,200	389,000	55,000	155,000	< 2,000	1.4	230	< 10	< 1.0	< 0.2	< 10	< 20	20
DMW11	10/19/2004	7.64	1.64	71,000	202,000	28,000	2,200	405,000	50,000	165,000	< 2,000	1.8	220	12	< 1.0	< 0.2	< 10	< 20	< 10
DMW11	4/27/2005	7.23	2.03	69,000	230,000	26,000	2,100	378,000	58,000	158,000	< 2,000	1.5	210	< 10	< 1.0	< 0.2	< 10	< 20	10
DMW11	10/12/2005	7.23	1.663	66,000	212,000	27,000	2,300	389,000	52,000	154,000	< 2,000	1.3	200	< 10	< 1.0	< 0.2	< 10	< 20	< 10
DMW11	5/2/2006	8	1.66	69,000	220,000	28,000	2,200	400,000	53,000	210,000	< 2,000	1.7	200	< 10	< 1.0	< 0.2	< 10	< 20	< 50
DMW11	10/18/2006	7.54	1.481	69,000	220,000	28,000	2,200	380,000	57,000	160,000	< 2,000	< 1.0	210	< 10	< 1.0	< 0.2	< 10	< 20	< 50
DMW11	4/23/2007	7.62	1.612	65,000	200,000	26,000	2,000	400,000	56,000	160,000	< 2,000	< 1.0	200	< 10	< 1.0	< 0.2	< 10	< 20	< 50
DMW11	10/11/2007	7.59	1.653	67,000	220,000	26,000	2,200	400,000	56,000	160,000	< 2,000	1.1	210	< 10	< 1.0	< 0.2	< 10	< 20	< 50
DMW11	4/15/2008	7.25	1.516	73,000	230,000	29,000	2,500	420,000	55,000	170,000	< 2,000	< 1.0	220	< 10	< 1.0	< 0.2	< 10	< 20	< 50
DMW11	10/16/2008	7.59	1.653	65,000	210,000	26,000	2,000	410,000	55,000	160,000	< 2,000	< 1.0	200	< 10	< 1.0	< 0.2	< 10	< 20	< 50
DMW11	4/13/2009	8.17	1.711	66,000	220,000	27,000	2,100	420,000	56,000	140,000	< 2,000	< 1.0	210	< 10	< 1.0	< 0.2	< 10	< 20	< 50
DMW11	10/6/2009	7.71	1.757	67,000	210,000	26,000	2,100	430,000	58,000	150,000	< 2,000	< 1.0	210	< 10	< 1.0	< 0.2	< 10	< 20	< 50
DMW11	4/7/2010	7.76	1.733	62,000	200,000	27,000	2,500	430,000	59,000	170,000	< 2,000	1.4	200	< 10	< 1.0	< 0.2	< 10	< 20	< 50
DMW11	10/7/2010	7.32	1.745	63,000	210,000	26,000	1,900	420,000	58,000	160,000	< 2,000	< 1.0	200	< 10	< 1.0	< 0.2	< 10	< 20	< 50
DMW11	4/25/2011	7.75	2.02	64,000	210,000	26,000	2,000	410,000	56,000	160,000	< 2,000	< 1.0	200	< 10	< 1.0	< 0.2	< 10	< 20	< 50
DMW11	10/4/2011	7.72	1.76	65,000	210,000	26,000	2,100	420,000	57,000	160,000	< 2,000	< 1.0	200	< 10	< 1.0	< 0.2	< 10	< 20	< 20
DMW11	4/19/2012	7.67	1.74	68,000	230,000	28,000	2,100	420,000	56,000	160,000	< 2,000	< 1.0	210	< 10	< 1.0	< 0.2	< 10	< 20	< 20
DMW11	10/24/2012	7.29	1.750	71,000	250,000	30,000	2,400	390,000	57,000	150,000	< 10,000	< 1.0	210	< 0.2	-	< 0.2	5.3	< 50	< 10
DMW11	4/23/2013	7.5	2.030	63,000	210,000	26,000	2,100	400,000	57,000	160,000	< 10,000	< 1.0	190	< 0.2	< 1.0	< 0.2	< 2	< 50	< 10
DMW11	10/23/2013	7.75	1.770	71,000	220,000	29,000	2,300	400,000	57,000	160,000	< 2,000	< 1.0	210	< 0.2	< 1.0	< 0.2	6.6	< 10	< 10
DMW11	4/9/2014	7.7	1.6	67,000	220,000	27,000	2,100	410,000	60,000	160,000	< 2,000	< 1.0	200	< 0.2	< 1.0	< 0.2	< 2	< 10	< 10
DMW11	10/8/2014	7.7	1.75	79,000	260,000	32,000	2,600	410,000	58,000	160,000	< 2,000	< 1.0	220	< 0.2	< 1.0	< 0.2	2.7	< 10	< 10
DMW11	4/20/2015	8.01	1.72	77,000	250,000	31,000	2,500	410,000	57,000	150,000	< 2,000	< 1.0	200	< 0.2	< 1.0	< 0.2	< 2	< 10	< 10
DMW11	10/19/2015	7.58	1.65	65,000	220,000	27,000	2,200	410,000	59,000	150,000	< 2,000	< 1.0	210	< 0.2	< 1.0	< 0.2	< 2	< 10	< 10
DMW11	4/12/2016	7.88	1.59	67,000	220,000	26,000	2,200	400,000	58,000	160,000	< 2,000	< 1.0	220	< 0.2	< 1.0	< 0.2	< 2	< 10	< 10
DMW11	10/4/2016	7.00	1.82	66,000	220,000	28,000	2,100	410,000	55,000	160,000	< 2,000	< 1.0	180	< 0.2	< 1.0	< 0.2	< 2	< 10	< 10
DMW11	4/18/2017	7.83	1.5	67,000	230,000	29,000	2,300	410,000	59,000	160,000	< 2,000	< 1.0	200	< 0.2	< 1.0	< 0.2	< 2	< 10	< 10
DMW11	10/12/2017	7.68	1.66	62,900	216,000	27,100	2,200	415,000	58,100	131,000	< 2,000	< 1.0	212	< 0.2	< 1.0	< 0.2	< 2	< 10	< 10
DMW11	4/12/2018	7.35	1.58	64,700	244,000	28,200	2,500	411,000	57,600	157,000	< 2,000	< 1.0	198	< 0.2	< 1.0	< 0.2	< 2	< 10	< 10
DMW11	10/16/2018	7.71	1.69	69,000	220,000	29,000	2,200	420,000	64,000	160,000	< 5,000	2.5	55	< 1	< 1.0	0.2	< 2	< 20	< 20
DMW11	4/25/2019	7.14	1.387	69,000	220,000	29,000	2,300	430,000	68,000	160,000	< 5,000	< 1.0	210	< 1	< 1.0	< 0.2	2.3	< 20	< 20
DMW11	10/19/2019	6.82	1.908	73,000	210,000	30,000	2,200	480,000	58,000	150,000	< 5,000	< 1.0	220	< 1	< 1.0	< 0.2	< 2	< 20	30

**Appendix B5-4**  
**Summary of Deep Monitoring Well Data Through 2021 - DMW-11 (upgradient of Landfill)**  
**Dow Silicones Corporation**  
**Midland, Michigan**

Site ID	Date Sampled	pH, field S.U.	Specific conductance, field mmhos/cm	Calcium, dissolved ug/L	Sodium, dissolved ug/L	Magnesium, dissolved ug/L	Potassium, dissolved ug/L	Chloride ug/L	Sulfate ug/L	Bicarbonate, alkalinity ug/L	Carbonate, alkalinity ug/L	Arsenic, dissolved ug/L	Barium, dissolved ug/L	Cadmium, dissolved ug/L	Lead, dissolved ug/L	Mercury, dissolved ug/L	Copper, dissolved ug/L	Zinc, dissolved ug/L	Phenol, total ug/L
DMW11	6/24/2020	6.98	2.054	68,000	220,000	28,000	2,400	420,000	64,000	160,000	< 5,000	< 1.0	200	< 1	< 1.0	< 0.2	< 2	< 20	< 20
DMW11	10/14/2020	6.57	1.767	70,000	220,000	29,000	2,300	430,000	63,000	150,000	< 5,000	< 1.0	210	< 0.2	< 1.0	< 0.2	< 2	< 20	< 20
DMW11	5/12/2020	7.66	1.77	67,000	220,000	28,000	2,200	450,000	66,000	160,000	< 5,000	< 1.0	200	< 0.2	< 1.0	< 0.2	< 2	< 20	< 20
DMW11	11/18/2021	7.57	1.791	69,000	230,000	29,000	2,300	450,000	66,000	150,000	< 5,000	< 1.0	190	< 0.2	< 1.0	< 0.2	< 2	< 20	25
DMW11_1	12/13/2021	7.51	1.73	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	< 20
DMW11_2	12/13/2021	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	< 20
DMW11_3	12/13/2021	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	< 20
DMW11_4	12/13/2021	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	< 20
Distribution	Quasi-N	NP	NP	N	NP	NP	Quasi-N	N	Quasi-N	NP	Unknown	NP	NP	NP	NP	NP	NP	Unknown	NP
Shewhart Control Limit (SCL)	4.5	-	4.5	-	-	4.5	4.5	4.5	4.5	-	-	-	-	-	-	-	-	-	-
Decision Interval Value (h)	5	-	5	-	-	5	5	5	5	-	-	-	-	-	-	-	-	-	-
Upper Tolerance Limit (ug/L except Sp. Cond & pH)	6.55 to 8.17	2.054	79,000	260,000	32,000	2,600	450,000	66,000	210,000	< 10,000	7.5	230	12	2.9	0.2	10	< 50	70	

Mean	7.506	1.6094	68,222	217,463	27,627	2,239	407,759	57,378	156,864	N/A	1.3	211.155
SD	0.31443	0.213487323	3,946	12,058	1,280	168	15,333	3,580	10,023	N/A	0.9	11.6496
Mean + 4.5 SD	8.92095											
Mean - 4.5 SD	6.24826											
3*SD	0.9433	0.640461969	11838.5	36172.8	3840.04	504.203	45998.8	10738.7	30069.5		2.77842	34.9487

To complete the distribution and outlier analysis of the dataset for each parameter, only the second daily measurement was selected out of the four measurements done on the same day to stay in compliance with Shewart-CUSUM method.

Appendix B5-4  
 Summary of Deep Monitoring Well Data Through 2021 - DMW-12  
 Dow Silicones Corporation  
 Midland Michigan

Site ID	Date Sampled	pH, field S.U.	Specific conductance, field mmhos/cm	Calcium, dissolved ug/L	Sodium, dissolved ug/L	Magnesium, dissolved ug/L	Potassium, dissolved ug/L	Chloride ug/L	Sulfate ug/L	Bicarbonate, alkalinity ug/L	Carbonate, alkalinity ug/L	Arsenic, dissolved ug/L	Barium, dissolved ug/L	Cadmium, dissolved ug/L	Lead, dissolved ug/L	Mercury, dissolved ug/L	Copper, dissolved ug/L	Zinc, dissolved ug/L	Phenol, total ug/L
DMW12	4/7/1987	-	-	-	-	-	-	230,000	65,000	-	-	-	-	-	-	-	-	-	-
DMW12	4/7/1987	-	-	-	-	-	-	230,000	65,000	-	-	-	-	-	-	-	-	-	-
DMW12	4/7/1987	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DMW12	4/7/1987	-	-	-	-	-	-	230,000	71,000	-	-	-	-	-	-	-	-	-	-
DMW12	6/17/1987	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DMW12	6/17/1987	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DMW12	6/17/1987	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DMW12	6/22/1987	-	-	-	-	-	-	290,000	23,000	136,000	-	-	-	-	-	-	-	-	-
DMW12	6/22/1987	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DMW12	6/22/1987	-	-	-	-	-	-	190,000	53,000	136,000	-	-	-	-	-	-	-	-	-
DMW12	6/22/1987	-	-	-	-	-	-	200,000	66,000	140,000	-	-	-	-	-	-	-	-	-
DMW12	8/12/1987	-	-	-	-	-	-	290,000	80,000	148,000	-	-	-	-	-	-	-	-	-
DMW12	8/12/1987	-	-	-	-	-	-	260,000	88,000	140,000	-	-	-	-	-	-	-	-	-
DMW12	8/12/1987	-	-	-	-	-	-	200,000	87,000	140,000	-	-	-	-	-	-	-	-	-
DMW12	8/12/1987	-	-	-	-	-	-	-	-	140,000	-	-	-	-	-	-	-	-	-
DMW12	11/5/1987	-	-	-	-	-	-	215,000	55,000	120,000	-	-	-	-	-	-	-	-	-
DMW12	11/5/1987	-	-	-	-	-	-	225,000	56,000	120,000	-	-	-	-	-	-	-	-	-
DMW12	11/5/1987	-	-	-	-	-	-	-	-	120,000	-	-	-	-	-	-	-	-	-
DMW12	11/5/1987	-	-	-	-	-	-	210,000	57,000	130,000	-	-	-	-	-	-	-	-	-
DMW12	6/8/1988	7.58	1.004	-	-	-	-	200,000	74,000	-	-	-	-	-	-	-	-	-	< 50
DMW12	6/8/1988	7.78	1.015	-	-	-	-	210,000	73,000	-	-	-	-	-	-	-	-	-	< 50
DMW12	6/8/1988	7.79	1.014	-	-	-	-	210,000	71,000	-	-	-	-	-	-	-	-	-	< 50
DMW12	6/8/1988	7.79	0.991	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DMW12	12/15/1988	7.23	0.96	52,000	140,000	18,000	2,400	195,000	64,000	140,000	< 2,000	< 2.0	< 100	< 10	< 10.0	< 0.5	< 10	< 20	< 50
DMW12	12/15/1988	7.49	0.97	53,000	150,000	17,000	2,300	196,000	63,000	137,000	< 2,000	< 2.1	< 100	< 10	< 10.0	< 0.5	< 10	< 20	< 50
DMW12	12/15/1988	7.58	1.01	53,000	150,000	18,000	2,300	198,000	63,000	136,000	< 2,000	< 2.0	< 100	< 10	< 10.0	< 0.5	< 10	< 20	< 50
DMW12	12/15/1988	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DMW12	5/18/1989	-	-	60,000	160,000	17,000	2,500	247,000	66,000	130,000	< 2,000	< 2.0	90	< 10	< 50.0	< 0.2	< 10	< 20	< 50
DMW12	5/18/1989	-	-	60,000	160,000	17,000	2,500	242,000	67,000	130,000	< 2,000	< 2.0	90	< 10	< 50.0	< 0.2	< 10	< 20	< 50
DMW12	5/18/1989	-	-	65,000	160,000	17,000	2,500	237,000	67,000	130,000	< 2,000	< 2.0	90	< 10	< 50.0	< 0.2	< 10	< 20	< 50
DMW12	5/18/1989	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DMW12	10/31/1989	7.56	-	52,000	130,000	17,000	3,700	212,000	14,000	136,000	< 2,000	5.2	100	< 10	< 50.0	< 0.2	< 10	< 20	< 50
DMW12	10/31/1989	7.63	-	51,000	140,000	16,000	3,100	212,000	14,000	136,000	< 2,000	6.5	100	< 10	< 50.0	< 0.2	< 10	< 20	< 50
DMW12	10/31/1989	7.66	-	55,000	130,000	18,000	3,700	198,000	69,000	138,000	< 2,000	< 2.0	100	< 10	< 50.0	< 0.2	< 10	< 20	< 50
DMW12	10/31/1989	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DMW12	2/5/1990	7.67	1.04	50,000	140,000	16,000	< 5,000	228,000	68,000	136,000	< 2,000	-	-	-	-	-	-	-	-
DMW12	2/5/1990	7.69	1.04	50,000	140,000	16,000	< 5,000	228,000	68,000	136,000	< 2,000	-	-	-	-	-	-	-	-
DMW12	2/5/1990	7.61	1.02	52,000	140,000	16,000	< 5,000	223,000	67,000	138,000	< 2,000	-	-	-	-	-	-	-	-
DMW12	5/17/1990	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DMW12	5/17/1990	7.12	1.042	54,000	140,000	16,000	2,400	212,000	65,000	140,000	< 2,000	< 2.0	90	< 10	< 50.0	< 0.2	< 10	< 20	< 50
DMW12	5/17/1990	7.16	1.05	53,000	140,000	16,000	2,400	222,000	65,000	140,000	< 2,000	< 2.0	90	< 10	< 50.0	< 0.2	< 10	< 20	< 50
DMW12	5/17/1990	7.12	1.039	55,000	140,000	16,000	2,500	195,000	65,000	132,000	< 2,000	< 2.0	80	< 10	< 50.0	< 0.2	< 10	< 20	< 50
DMW12	10/10/1990	7.17	1.117	51,000	133,000	15,000	2,500	209,000	62,000	133,000	< 2,000	2.8	80	< 10	< 50.0	< 0.2	< 10	< 20	< 50
DMW12	10/10/1990	7.33	1.107	57,000	134,000	16,000	2,500	202,000	60,000	134,000	< 2,000	3.1	80	< 10	< 50.0	< 0.2	< 10	< 20	< 50
DMW12	10/10/1990	7.24	0.996	56,000	134,000	16,000	2,600	206,000	56,000	134,000	< 2,000	3.1	80	< 10	< 50.0	< 0.2	< 10	< 20	< 50
DMW12	10/10/1990	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DMW12	1/26/1991	7.45	0.996	50,000	142,000	16,000	2,300	216,000	72,000	132,000	< 2,000	3.8	80	< 10	< 50.0	< 0.2	< 10	< 20	< 50
DMW12	1/26/1991	7.36	1.015	50,000	142,000	16,000	2,300	242,000	62,000	131,000	< 2,000	3.8	80	< 10	< 50.0	< 0.2	< 10	< 20	< 50
DMW12	1/26/1991	-	-	51,000	140,000	16,000	2,300	236,000	72,000	133,000	< 2,000	3.4	80	< 10	< 50.0	< 0.2	< 10	< 20	< 50
DMW12	1/26/1991	7.23	1.002	53,000	133,000	16,000	2,200	223,000	60,000	133,000	< 2,000	3.8	80	< 10	< 50.0	< 0.2	< 10	< 20	< 50
DMW12	4/23/1991	7.67	0.912	51,000	139,000	15,000	2,600	204,000	63,000	131,000	< 2,000	2.6	80	< 10	< 50.0	< 0.2	< 10	< 20	< 50
DMW12	4/23/1991	7.64	0.932	50,000	138,000	15,000	2,600	205,000	61,000	132,000	< 2,000	2.6	80	< 10	< 50.0	< 0.2	< 10	< 20	< 50
DMW12	4/23/1991	7.61	0.954	51,000	151,000	15,000	2,600	204,000	62,000	133,000	< 2,000	2.5	80	< 10	< 50.0	< 0.2	< 10	< 20	< 50

Appendix B5-4  
Summary of Deep Monitoring Well Data Through 2021 - DMW-12  
Dow Silicones Corporation  
Midland Michigan

Site ID	Date Sampled	pH, field S.U.	Specific conductance, field mmhos/cm	Calcium, dissolved ug/L	Sodium, dissolved ug/L	Magnesium, dissolved ug/L	Potassium, dissolved ug/L	Chloride ug/L	Sulfate ug/L	Bicarbonate, alkalinity ug/L	Carbonate, alkalinity ug/L	Arsenic, dissolved ug/L	Barium, dissolved ug/L	Cadmium, dissolved ug/L	Lead, dissolved ug/L	Mercury, dissolved ug/L	Copper, dissolved ug/L	Zinc, dissolved ug/L	Phenol, total ug/L
DMW12	4/23/1991	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DMW12	8/13/1991	7.32	1.089	51,000	143,000	15,000	2,700	203,000	66,000	134,000	< 2,000	2.4	80	< 10	< 50.0	< 0.2	< 10	< 20	< 50
DMW12	8/13/1991	7.6	1.061	51,000	142,000	15,000	2,700	204,000	63,000	133,000	< 2,000	2.3	80	< 10	< 50.0	< 0.2	< 10	< 20	< 50
DMW12	8/13/1991	7.29	1.068	51,000	140,000	15,000	2,700	201,000	63,000	133,000	< 2,000	2.8	80	< 10	< 50.0	< 0.2	< 10	< 20	< 50
DMW12	8/13/1991	-	-	51,000	138,000	15,000	2,700	201,000	63,000	133,000	< 2,000	2.6	80	< 10	< 50.0	< 0.2	< 10	< 20	< 50
DMW12	10/23/1991	7.32	1.047	48,000	132,000	14,000	3,300	206,000	66,000	132,000	< 2,000	2.7	70	< 10	< 50.0	< 0.2	10	< 20	< 10
DMW12	10/23/1991	7.24	1.044	48,000	129,000	14,000	2,400	203,000	64,000	136,000	< 2,000	3.0	80	< 10	< 50.0	< 0.2	< 10	< 20	< 10
DMW12	10/23/1991	7.28	1.049	48,000	132,000	14,000	2,400	206,000	62,000	136,000	< 2,000	2.6	80	< 10	< 50.0	< 0.2	< 10	< 20	< 10
DMW12	10/23/1991	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DMW12	1/21/1992	7.74	1.076	53,000	143,000	15,000	4,100	208,000	59,000	134,000	< 2,000	3.4	80	< 10	< 50.0	< 0.2	< 10	< 20	< 10
DMW12	1/21/1992	7.43	1.062	53,000	136,000	16,000	2,600	199,000	60,000	135,000	< 2,000	2.8	80	< 10	< 50.0	< 0.2	< 10	< 20	< 10
DMW12	1/21/1992	7.73	1.065	53,000	135,000	16,000	2,500	199,000	60,000	132,000	< 2,000	2.9	80	< 10	< 50.0	0.2	< 10	< 20	< 10
DMW12	1/21/1992	7.73	1.074	52,000	135,000	15,000	2,500	200,000	58,000	134,000	< 2,000	3.1	80	< 10	< 50.0	< 0.2	< 10	< 20	< 10
DMW12	4/23/1992	7.6	1.137	51,000	128,000	15,000	2,400	206,000	70,000	139,000	< 2,000	2.2	80	< 10	< 50.0	< 0.2	< 10	< 20	< 10
DMW12	4/23/1992	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DMW12	4/23/1992	7.52	1.126	51,000	143,000	15,000	2,400	208,000	70,000	139,000	< 2,000	2.5	90	< 10	< 50.0	< 0.2	< 10	< 20	< 10
DMW12	4/23/1992	7.39	1.15	52,000	141,000	15,000	2,400	204,000	70,000	139,000	< 2,000	2.6	80	< 10	< 50.0	< 0.2	< 10	< 20	< 10
DMW12	7/21/1992	7.79	1.055	53,000	139,000	15,000	2,200	222,000	77,000	140,000	< 2,000	2.8	80	< 10	< 1.0	< 0.2	< 10	< 20	< 10
DMW12	7/21/1992	7.76	1.062	52,000	133,000	15,000	2,200	220,000	70,000	140,000	< 2,000	2.1	70	< 10	< 1.0	< 0.2	< 10	< 20	< 10
DMW12	7/21/1992	7.82	1.065	54,000	140,000	15,000	2,200	213,000	67,000	142,000	< 2,000	2.5	80	< 10	< 1.0	< 0.2	< 10	< 20	< 10
DMW12	7/21/1992	7.78	1.058	53,000	138,000	15,000	2,300	210,000	64,000	141,000	< 2,000	2.6	70	< 10	< 1.0	< 0.2	< 10	< 20	< 10
DMW12	10/26/1992	7.57	1.171	53,000	126,000	15,000	2,600	212,000	60,000	136,000	< 2,000	3.6	70	< 10	< 1.0	< 0.2	< 10	< 20	< 10
DMW12	10/26/1992	7.72	1.124	52,000	127,000	15,000	2,600	209,000	60,000	138,000	< 2,000	3.8	80	< 10	< 1.0	< 0.2	< 10	< 20	< 10
DMW12	10/26/1992	7.72	1.148	52,000	128,000	15,000	2,600	212,000	60,000	139,000	< 2,000	3.7	70	< 10	< 1.0	0.2	< 10	< 20	< 10
DMW12	10/27/1992	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DMW12	1/25/1993	6.84	1.06	51,000	135,000	14,000	2,500	222,000	63,000	138,000	< 2,000	3.1	70	< 10	< 1.0	< 0.2	< 10	< 20	< 10
DMW12	1/25/1993	6.88	1.057	53,000	138,000	15,000	2,500	223,000	63,000	140,000	< 2,000	2.9	70	< 10	< 1.0	< 0.2	< 10	< 20	< 10
DMW12	1/25/1993	7	1.02	52,000	133,000	15,000	2,500	223,000	63,000	141,000	< 2,000	3.2	70	< 10	< 1.0	< 0.2	< 10	< 20	< 10
DMW12	1/25/1993	7.04	1.155	52,000	136,000	15,000	2,500	224,000	64,000	137,000	< 2,000	3.4	60	< 10	< 1.0	< 0.2	< 10	< 20	< 10
DMW12	4/26/1993	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DMW12	4/26/1993	7.2	1.085	53,000	129,000	15,000	2,000	230,000	61,000	142,000	< 2,000	2.8	70	< 10	< 1.0	< 0.2	< 10	< 20	< 10
DMW12	4/26/1993	7.44	1.069	52,000	125,000	15,000	2,100	227,000	60,000	139,000	< 2,000	2.5	80	< 10	< 1.0	< 0.2	< 10	< 20	< 10
DMW12	4/26/1993	7.42	1.051	52,000	127,000	15,000	2,100	218,000	60,000	137,000	< 2,000	2.4	80	< 10	< 1.0	0.5	< 10	< 20	< 10
DMW12	7/26/1993	7.44	1.082	51,000	141,000	15,000	2,400	234,000	67,000	141,000	< 2,000	2.2	69	< 10	3.7	< 0.2	< 10	< 20	< 10
DMW12	7/26/1993	7.45	1.044	50,000	141,000	15,000	2,400	226,000	63,000	145,000	< 2,000	2.2	66	< 10	5.0	< 0.2	< 10	< 20	< 10
DMW12	7/26/1993	7.65	1.071	49,000	129,000	15,000	2,400	243,000	64,000	142,000	< 2,000	2.2	67	< 10	1.4	< 0.2	< 10	< 20	< 10
DMW12	7/26/1993	-	-	50,000	138,000	15,000	2,300	224,000	64,000	143,000	< 2,000	2.1	69	< 10	10.0	< 0.2	< 10	< 20	< 10
DMW12	10/26/1993	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DMW12	10/26/1993	7.33	1.027	51,000	133,000	15,000	2,300	228,000	65,000	140,000	< 2,000	2.0	71	< 10	< 1.0	< 0.2	< 10	< 20	< 10
DMW12	10/26/1993	7.53	1.031	52,000	133,000	15,000	2,300	227,000	64,000	146,000	< 2,000	2.8	72	< 10	< 1.0	< 0.2	< 10	< 20	< 10
DMW12	10/26/1993	7.54	1.061	50,000	132,000	15,000	2,300	228,000	64,000	148,000	< 2,000	3.3	70	< 10	< 1.0	< 0.2	< 10	< 20	< 10
DMW12	1/24/1994	7.66	1.04	51,000	126,000	14,000	2,100	230,000	67,000	146,000	< 2,000	3.1	64	< 10	< 1.0	< 0.2	< 10	< 20	< 10
DMW12	1/24/1994	7.68	1.088	50,000	123,000	15,000	2,100	229,000	67,000	142,000	< 2,000	3.4	64	< 10	< 1.0	< 0.2	< 10	< 20	< 10
DMW12	1/24/1994	7.7	1.075	51,000	125,000	15,000	2,100	229,000	67,000	142,000	< 2,000	3.3	64	< 10	< 1.0	< 0.2	< 10	< 20	< 10
DMW12	1/24/1994	-	-	51,000	126,000	15,000	2,100	230,000	67,000	141,000	< 2,000	3.3	65	< 10	< 1.0	< 0.2	< 10	< 20	< 10
DMW12	4/27/1994	7.72	1.056	52,000	132,000	15,000	2,400	223,000	68,000	146,000	< 2,000	3.1	73	< 10	< 1.0	< 0.2	< 10	< 20	< 10
DMW12	4/27/1994	7.87	1.082	52,000	131,000	15,000	2,400	224,000	68,000	140,000	< 2,000	3.3	73	< 10	< 1.0	< 0.2	< 10	< 20	< 10
DMW12	4/27/1994	7.84	1.073	52,000	132,000	15,000	2,400	222,000	68,000	143,000	< 2,000	3.3	73	< 10	< 1.0	< 0.2	< 10	< 20	< 10
DMW12	4/27/1994	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DMW12	7/21/1994	7.81	1.001	48,000	124,000	14,000	2,200	226,000	71,000	129,000	< 2,000	3.6	68	< 10	< 1.0	< 0.2	< 10	< 20	< 10
DMW12	7/21/1994	7.91	1.007	47,000	124,000	14,000	2,200	227,000	70,000	132,000	< 2,000	2.6	68	< 10	< 1.0	< 0.2	< 10	< 20	< 10
DMW12	7/21/1994	7.8	1.022	47,000	123,000	14,000	2,200	225,000	69,000	137,000	< 2,000	3.7	68	< 10	< 1.0	< 0.2	< 10	< 20	< 10
DMW12	7/21/1994	-	-	48,000	123,000	14,000	2,200	225,000	68,000	135,000	< 2,000	4.5	69	< 10	< 1.0	< 0.2	< 10	< 20	< 10

Appendix B5-4  
Summary of Deep Monitoring Well Data Through 2021 - DMW-12  
Dow Silicones Corporation  
Midland Michigan

Site ID	Date Sampled	pH, field S.U.	Specific conductance, field mmhos/cm	Calcium, dissolved ug/L	Sodium, dissolved ug/L	Magnesium, dissolved ug/L	Potassium, dissolved <sup>6</sup> ug/L	Chloride ug/L	Sulfate ug/L	Bicarbonate, alkalinity ug/L	Carbonate, alkalinity ug/L	Arsenic, dissolved ug/L	Barium, dissolved ug/L	Cadmium, dissolved ug/L	Lead, dissolved <sup>6</sup> ug/L	Mercury, dissolved <sup>6</sup> ug/L	Copper, dissolved ug/L	Zinc, dissolved ug/L	Phenol, total ug/L
DMW12	12/5/1994	7.68	0.858	51,000	135,000	15,000	2,400	231,000	64,000	136,000	< 2,000	2.1	69	< 10	< 1.0	< 0.2	< 10	< 20	< 10
DMW12	4/26/1995	7.58	0.943	51,000	135,000	15,000	2,400	224,000	67,000	136,000	< 2,000	3.1	71	< 10	< 1.0	< 0.2	< 10	< 20	60
DMW12	10/18/1995	6.9	0.887	52,000	134,000	15,000	2,300	216,000	15,000	137,000	< 2,000	1.7	69	< 10	< 1.0	0.2	< 10	< 20	< 10
DMW12	4/22/1996	7.36	0.978	51,000	136,000	15,000	2,300	237,000	66,000	135,000	< 2,000	2.3	68	< 10	< 1.0	< 0.2	< 10	< 20	< 10
DMW12	10/28/1996	7.5	0.837	53,000	130,000	15,000	2,400	228,000	70,000	136,000	< 2,000	2.4	64	< 10	< 1.0	< 0.2	< 10	< 20	10
DMW12	4/29/1997	7.62	0.928	52,000	136,000	15,000	2,300	221,000	63,000	136,000	< 2,000	1.8	68	< 10	< 1.0	< 0.2	< 10	< 20	< 10
DMW12	10/6/1997	7.17	0.726	52,000	126,000	15,000	2,200	238,000	64,000	134,000	< 2,000	2.0	64	< 10	< 1.0	< 0.2	< 10	< 20	< 10
DMW12	4/15/1998	7.46	1.153	53,000	133,000	15,000	2,500	227,000	61,000	136,000	< 2,000	3.0	68	< 10	< 1.0	< 0.2	< 10	< 20	20
DMW12	10/26/1998	7.17	0.854	50,000	134,000	15,000	2,400	227,000	59,000	137,000	< 2,000	5.2	66	< 10	< 1.0	< 0.2	< 10	< 20	< 10
DMW12	4/26/1999	7.41	0.917	54,000	130,000	15,000	2,400	221,000	62,000	135,000	< 2,000	3.3	67	< 10	< 1.0	< 0.2	< 10	< 20	< 10
DMW12	10/20/1999	7.08	0.753	51,000	136,000	15,000	2,300	228,000	62,000	117,000	< 2,000	2.9	67	< 10	< 1.0	< 0.2	< 10	< 20	< 10
DMW12	4/12/2000	7.21	0.888	57,000	139,000	16,000	2,300	220,000	64,000	134,000	< 2,000	3.0	68	< 10	< 1.0	< 0.2	< 10	< 20	< 10
DMW12	10/17/2000	6.9	1.011	51,000	141,000	15,000	2,300	216,000	65,000	143,000	< 2,000	3.5	66	< 10	< 1.0	< 0.2	< 10	< 20	< 10
DMW12	4/18/2001	7.45	1.082	54,000	131,000	15,000	2,200	221,000	63,000	134,000	< 2,000	2.9	62	< 10	< 1.0	< 0.2	< 10	< 20	< 10
DMW12	10/30/2001	7.6	1.029	51,000	135,000	15,000	2,300	228,000	65,000	137,000	< 2,000	3.5	60	< 10	< 1.0	0.3	< 10	< 20	< 10
DMW12	4/2/2002	7.04	1.044	50,000	130,000	14,000	2,300	220,000	65,000	137,000	< 2,000	3.7	61	< 10	< 1.0	0.3	< 10	< 20	< 10
DMW12	10/1/2002	7.57	1.051	50,000	136,000	15,000	2,000	218,000	61,000	136,000	< 2,000	3.9	58	< 10	< 1.0	0.3	< 10	< 20	< 10
DMW12	04/21/03 <sup>5)</sup>	7.58	1.052	52,000	136,000	15,000	2,200	216,000	65,000	138,000	< 2,000		60	< 10	< 1.0	< 0.2	< 10	< 20	< 10
DMW12	10/23/2003	7.21	1.06	50,000	134,000	16,000	2,200	211,000	58,000	129,000	< 2,000	3.3	61	< 10	< 1.0	< 0.2	< 10	< 20	< 10
DMW12	4/26/2004	7.33	1.17	52,000	149,000	15,000	2,400	219,000	60,000	137,000	< 2,000	3.5	70	< 10	1.0	< 0.2	< 10	< 20	30
DMW12	10/19/2004	7.97	1.02	53,000	136,000	15,000	2,200	204,000	57,000	154,000	< 2,000	3.5	61	< 10	< 1.0	< 0.2	< 10	< 20	< 10
DMW12	4/27/2005	7.27	1.153	51,000	127,000	15,000	2,300	195,000	66,000	139,000	< 2,000	3.6	66	< 10	< 1.0	< 0.2	< 10	< 20	20
DMW12	10/12/2005	7.19	1.01	54,000	202,000	19,000	3,200	180,000	54,000	134,000	< 2,000	3.4	50	< 10	< 1.0	< 0.2	< 10	< 20	< 10
DMW12	5/2/2006	7.82	1.083	53,000	130,000	15,000	2,300	200,000	58,000	130,000	< 2,000	3.7	61	< 10	< 1.0	< 0.2	< 10	< 20	< 50
DMW12	10/18/2006	7.77	1.055	51,000	130,000	15,000	2,200	210,000	60,000	160,000	< 2,000	3.5	61	< 10	< 1.0	< 0.2	< 10	< 20	< 50
DMW12	4/23/2007	7.56	1.121	48,000	120,000	14,000	2,100	210,000	61,000	140,000	< 2,000	2.9	59	< 10	< 1.0	< 0.2	< 10	< 20	< 50
DMW12	10/11/2007	7.07	1.132	48,000	130,000	14,000	2,300	210,000	60,000	140,000	< 2,000	3.4	63	< 10	< 1.0	< 0.2	< 10	< 20	< 50
DMW12	4/15/2008	7.49	1.126	55,000	150,000	16,000	2,600	210,000	60,000	140,000	< 2,000	3.0	67	< 10	< 1.0	< 0.2	< 10	< 20	< 50
DMW12	10/16/2008	7.51	1.127	46,000	120,000	13,000	2,000	210,000	56,000	140,000	< 2,000	2.4	56	< 10	< 1.0	< 0.2	< 10	< 20	63.9
DMW12	4/13/2009	7.99	1.134	48,000	130,000	14,000	2,200	220,000	61,000	130,000	< 2,000	3.4	62	< 10	< 1.0	< 0.2	< 10	< 20	< 50
DMW12	10/6/2009	7.46	1.099	50,000	130,000	14,000	2,100	230,000	62,000	130,000	< 2,000	3.0	58	< 10	< 1.0	< 0.2	< 10	< 20	< 50
DMW12	6/11/2010	7.93	1.115	49,000	130,000	14,000	2,100	220,000	66,000	170,000	< 2,000	4.3	58	< 10	< 1.0	< 0.2	< 10	< 20	< 50
DMW12	10/7/2010	8.04	1.126	47,000	130,000	14,000	1,900	210,000	61,000	140,000	< 2,000	2.9	60	< 10	< 1.0	< 0.2	< 10	< 20	< 50
DMW12	4/25/2011	7.52	1.31	48,000	130,000	14,000	2,200	220,000	62,000	140,000	< 2,000	4.0	61	< 10	< 1.0	< 0.2	< 10	< 20	< 50
DMW12	10/4/2011	7.85	1.13	47,000	130,000	14,000	2,200	220,000	61,000	140,000	< 2,000	2.7	59	< 10	< 1.0	< 0.2	< 10	< 20	125
DMW12	4/19/2012	7.81	1.09	48,000	130,000	14,000	2,200	210,000	62,000	140,000	< 2,000	3.3	60	< 10	< 1.0	< 0.2	< 10	< 20	< 20
DMW12	10/24/2012	7.75	1.07	55,000	150,000	17,000	2,600	210,000	59,000	130,000	< 10,000	4.1	71	< 0.2	-	< 0.2	< 2	< 50	< 10
DMW12	4/23/2013	7.42	1.19	49,000	130,000	14,000	2,300	210,000	62,000	140,000	< 10,000	2.5	58	< 0.2	< 1.0	< 0.2	< 2	< 50	< 10
DMW12	10/23/2013	7.45	1.12	49,000	130,000	15,000	2,200	210,000	61,000	130,000	< 2,000	3.3	59	< 0.2	< 1.0	< 0.2	< 2	< 10	< 10
DMW12	4/9/2014	7.71	1.02	50,000	130,000	15,000	2,300	210,000	62,000	130,000	< 2,000	3.4	66	< 0.2	< 1.0	< 0.2	< 2	< 10	< 10
DMW12	10/8/2014	7.50	1.10	57,000	150,000	17,000	2,600	210,000	61,000	140,000	< 2,000	3.3	62	< 0.2	< 1.0	< 0.2	< 2	< 10	< 10
DMW12	4/20/2015	7.82	1.06	58,000	150,000	17,000	2,600	210,000	60,000	130,000	< 2,000	3.1	57	< 0.2	< 1.0	< 0.2	< 2	< 10	< 10
DMW12	10/19/2015	7.33	1.03	49,000	130,000	14,000	2,300	210,000	63,000	140,000	< 2,000	3.2	58	< 0.2	< 1.0	< 0.2	< 2	< 10	< 10
DMW12	4/12/2016	7.88	0.978	51,000	130,000	14,000	2,300	210,000	61,000	140,000	< 2,000	3.2	62	< 0.2	< 1.0	< 0.2	< 2	< 10	< 10
DMW12	10/4/2016	7.02	1.110	48,000	140,000	15,000	2,200	210,000	59,000	130,000	< 2,000	3.2	59	< 0.2	< 1.0	< 0.2	< 2	< 10	< 10
DMW12	4/19/2017	7.74	0.964	50,000	140,000	15,000	2,300	210,000	63,000	130,000	< 2,000	3.3	59	< 0.2	< 1.0	< 0.2	< 2	< 10	< 10
DMW12	10/12/2017	7.57	0.965	43,800	121,000	13,600	2,000	212,000	60,500	161,000	< 2,000	4.1	64.3	< 0.2	< 1.0	< 0.2	< 2	< 10	< 10
DMW12	4/12/2018	7.60	0.922	46,100	137,000	14,300	2,400	208,000	59,300	130,000	< 2,000	3.4	58.9	< 0.2	< 1.0	< 0.2	< 2	< 10	< 10
DMW12	10/16/2018	7.86	0.875	52,000	130,000	16,000	2,300	220,000	67,000	140,000	< 5,000	2.5	55	< 1	< 1.0	< 0.2	< 2	< 20	< 20
DMW12	4/24/2019	--	--	51,000	130,000	16,000	2,300	220,000	72,000	130,000	< 5,000	2.6	61	< 1	< 1.0	< 0.2	< 2	< 20	< 20
DMW12	10/16/2019	7.26	1.186	54,000	130,000	16,000	2,300	230,000	62,000	130,000	< 5,000	3.2	60	< 1	< 1.0	< 0.2	< 2	< 20	21
DMW12	6/23/2020	7.52	1.051	47,000	120,000	14,000	2,600	230,000	67,000	140,000	< 5,000	< 1.0	54	< 1	< 1.0	< 0.2	< 2	< 20	< 20
DMW12	10/14/2020	7.39	3.320	52,000	130,000	15,000	2,300	210,000	66,000	130,000	< 5,000	3.3	61	< 0.2	< 1.0	< 0.2	< 2	< 20	< 20

**Appendix B5-4**  
**Summary of Deep Monitoring Well Data Through 2021 - DMW-12**  
**Dow Silicones Corporation**  
**Midland Michigan**

Site ID	Date Sampled	pH, field S.U.	Specific conductance, field mmhos/cm	Calcium, dissolved ug/L	Sodium, dissolved ug/L	Magnesium, dissolved ug/L	Potassium, dissolved <sup>6</sup> ug/L	Chloride ug/L	Sulfate ug/L	Bicarbonate, alkalinity ug/L	Carbonate, alkalinity ug/L	Arsenic, dissolved ug/L	Barium, dissolved ug/L	Cadmium, dissolved ug/L	Lead, dissolved <sup>6</sup> ug/L	Mercury, dissolved <sup>6</sup> ug/L	Copper, dissolved ug/L	Zinc, dissolved ug/L	Phenol, total ug/L
DMW12	5/12/2021	7.56	1.113	49,000	130,000	14,000	2,200	220,000	66,000	140,000	< 5,000	3.8	59	< 0.2	< 1.0	< 0.2	< 2	< 20	< 20
DMW12	11/17/2021	7.62	1.117	54,000	140,000	16,000	2,400	220,000	69,000	130,000	< 5,000	3.3	60	< 0.2	< 1.0	< 0.2	< 2	< 20	< 20
DMW12-FD	11/17/2021	-	-	51,000	140,000	15,000	2,300	220,000	69,000	130,000	< 5,000	3.0	55	< 0.2	< 1.0	< 0.2	< 2	< 20	< 20
Distribution		N	NP	N	NP	NP	NP	NP	NP	NP	Unknown	Approx. N	Approx. N	Unknown	NP	NP	Unknown	Unknown	NP
Shewhart Control Limit (SCL)		4.5	-	4.5	-	-	-	-	-	-	-	4.5	4.5	-	-	-	-	-	-
Decision Interval Value (h)		5	-	5	-	-	-	-	-	-	-	5	5	-	-	-	-	-	-
Upper Tolerance Limit (ug/L except Sp. Cond)		6.88 to 8.04	1.31	58,000	202,000	19,000	3,200	238,000	70,000	170,000	< 10,000	5.2	80	< 10	1	0.3	< 10	< 20	125

**Legend:** L = lognormal, N = normal, NP = non-parametric, Unknown = 100% non-detects

**Notes:**

1. The upper tolerance limit is the maximum value of the concentration of a particular parameter.
2. SCL & h values are assigned to parameters that are either normally or lognormally distributed. Parameters that are distribution free (non-parametric) have been assigned a upper tolerance limit (max value).
3. The statistical distribution was determined using Chemstat and the most recent 59 data points.
4. To complete the distribution and outlier analysis of the dataset for each parameter, only the second daily measurement was selected out of the four measurements done on the same day to stay in compliance with Shewart-CUSUM method.
5. The concentration of Arsenic dated 4/21/03 (9.0 ug/l) is not taken into the computation of upper tolerance limit as it is believed to be an outlier on the basis of suspected laboratory error.
6. For potassium, mercury & lead the highest detected concentration is taken as UTL after the lower detection limit was implemented for these parameters.
7. The concentration of cadmium in DMW-4 on 4/27/2005 is not included in calculation of the UTL.
8. The four concentrations of lead in DMW-12 on 7/26/93 are not included in calculation of the UTL.

**Appendix B5-6**  
**Summary of Surface Water Monitoring Data through 2021 - Benzene**  
**Dow Silicones Corporation**  
**Midland, Michigan**

Benzene (mg/L)				
Sample Date		MCOF	UPDL	LD1
2/22/1989	split 1	< 0.001	< 0.001	< 0.001
	split 2	< 0.001	< 0.001	< 0.001
	split 3	< 0.001	< 0.001	< 0.001
5/18/1989	split 1	< 0.001	< 0.001	< 0.001
	split 2	< 0.001	< 0.001	< 0.001
	split 3	< 0.001	< 0.001	< 0.001
8/15/1989	split 1	< 0.001	< 0.001	< 0.001
	split 2	< 0.001	< 0.001	< 0.001
	split 3	< 0.001	< 0.001	< 0.001
11/1/1989	split 1	< 0.001	< 0.001	< 0.001
	split 2	< 0.001	< 0.001	< 0.001
	split 3	< 0.001	< 0.001	< 0.001
2/6/1990	split 1	< 0.001	< 0.001	< 0.001
	split 2	< 0.001	< 0.001	< 0.001
	split 3	< 0.001	< 0.001	< 0.001
5/17/1990	split 1	< 0.001	< 0.001	< 0.001
	split 2	< 0.001	< 0.001	< 0.001
	split 3	< 0.001	< 0.001	< 0.001
7/24/1990	split 1	< 0.001	< 0.001	< 0.001
	split 2	< 0.001	< 0.001	< 0.001
	split 3	< 0.001	< 0.001	< 0.001
10/10/1990	split 1	< 0.001	< 0.001	< 0.001
	split 2	<b>0.001</b>	< 0.001	0.001
	split 3	< 0.001	< 0.001	< 0.001
1/25/1991	split 1	< 0.001	< 0.001	< 0.001
	split 2	< 0.001	< 0.001	< 0.001
	split 3	< 0.001	< 0.001	< 0.001
4/24/1991	split 1	< 0.001	< 0.001	< 0.001
	split 2	< 0.001	< 0.001	< 0.001
	split 3	< 0.001	< 0.001	< 0.001
8/14/1991	split 1	< 0.001	< 0.001	< 0.001
	split 2	<b>0.002</b>	<b>0.006</b>	0.001
	split 3	< 0.001	< 0.001	< 0.001
10/23/1991	split 1	< 0.001	< 0.001	< 0.001
	split 2	< 0.001	< 0.001	< 0.001
	split 3	< 0.001	< 0.001	< 0.001
1/22/1992	split 1	< 0.001	< 0.001	< 0.001
	split 2	< 0.001	< 0.001	< 0.001
	split 3	< 0.001	< 0.001	< 0.001
4/22/1992	split 1	< 0.001	< 0.001	< 0.001
	split 2	< 0.001	< 0.001	< 0.001
	split 3	< 0.001	< 0.001	< 0.001
7/22/1992	split 1	< 0.001	< 0.001	< 0.001
	split 2	< 0.001	< 0.001	< 0.001
	split 3	< 0.001	< 0.001	< 0.001

**Appendix B5-6**  
**Summary of Surface Water Monitoring Data through 2021 - Benzene**  
**Dow Silicones Corporation**  
**Midland, Michigan**

Benzene (mg/L)				
Sample Date		MCOF	UPDL	LD1
10/27/1992	split 1	< 0.001	< 0.001	< 0.001
	split 2	< 0.001	< 0.001	< 0.001
	split 3	< 0.001	< 0.001	< 0.001
1/25/1993	split 1	< 0.001	< 0.001	< 0.001
	split 2	< 0.001	< 0.001	< 0.001
	split 3	< 0.001	< 0.001	< 0.001
4/27/1993	split 1	< 0.001	< 0.001	< 0.001
	split 2	< 0.001	< 0.001	< 0.001
	split 3	< 0.001	< 0.001	< 0.001
7/26/1993	split 1	< 0.001	< 0.001	< 0.001
	split 2	<b>0.001</b>	< 0.001	0.001
	split 3	<b>0.001</b>	< 0.001	0.001
10/26/1993	split 1	< 0.001	< 0.001	< 0.001
	split 2	< 0.001	< 0.001	< 0.001
	split 3	< 0.001	< 0.001	< 0.001
1/24/1994	split 1	< 0.001	< 0.001	< 0.001
	split 2	< 0.001	< 0.001	< 0.001
	split 3	< 0.001	< 0.001	< 0.001
4/28/1994	split 1	< 0.001	< 0.001	< 0.001
	split 2	< 0.001	< 0.001	< 0.001
	split 3	< 0.001	< 0.001	< 0.001
7/21/1994	split 1	< 0.001	< 0.001	< 0.001
	split 2	< 0.001	< 0.001	< 0.001
	split 3	< 0.001	< 0.001	< 0.001
12/6/1994	split 1	< 0.001	< 0.001	< 0.001
2/7/1995	split 1	< 0.001	< 0.001	< 0.001
4/27/1995	split 1	< 0.001	< 0.001	< 0.001
7/20/1995	split 1	< 0.001	< 0.001	< 0.001
10/18/1995	split 1	< 0.001	< 0.001	< 0.001
1/25/1996	split 1	< 0.001	< 0.001	< 0.001
4/23/1996	split 1	< 0.001	< 0.001	< 0.001
7/24/1996	split 1	< 0.001	< 0.001	< 0.001
10/28/1996	split 1	< 0.001	< 0.001	< 0.001
1/30/1997	split 1	< 0.001	< 0.001	< 0.001
4/29/1997	split 1	< 0.001	< 0.001	< 0.001
7/28/1997	split 1	< 0.001	< 0.001	< 0.001
10/6/1997	split 1	< 0.001	< 0.001	< 0.001
1/22/1998	split 1	< 0.001	< 0.001	< 0.001
4/15/1998	split 1	< 0.001	< 0.001	< 0.001
7/27/1998	split 1	< 0.001	< 0.001	< 0.001
10/26/1998	split 1	< 0.001	< 0.001	< 0.001
1/25/1999	split 1	< 0.001	< 0.001	< 0.001
4/27/1999	split 1	< 0.001	< 0.001	< 0.001
7/22/1999	split 1	< 0.001	< 0.001	< 0.001
10/20/1999	split 1	< 0.001	< 0.001	< 0.001

**Appendix B5-6**  
**Summary of Surface Water Monitoring Data through 2021 - Benzene**  
**Dow Silicones Corporation**  
**Midland, Michigan**

<b>Benzene (mg/L)</b>				
<b>Sample Date</b>		<b>MCOF</b>	<b>UPDL</b>	<b>LD1</b>
1/24/2000	split 1	< 0.001	< 0.001	< 0.001
4/12/2000	split 1	< 0.001	< 0.001	< 0.001
7/12/2000	split 1	< 0.001	< 0.001	< 0.001
10/18/2000	split 1	< 0.001	< 0.001	< 0.001
3/30/2001	split 1	< 0.001	< 0.001	< 0.001
4/18/2001	split 1	< 0.001	< 0.001	< 0.001
7/5/2001	split 1	< 0.001	< 0.001	< 0.001
10/30/2001	split 1	< 0.001	< 0.001	< 0.001
1/24/2002	split 1	< 0.001	< 0.001	< 0.001
4/2/2002	split 1	< 0.001	< 0.001	< 0.001
7/31/2002	split 1	< 0.001	< 0.001	< 0.001
10/2/2002	split 1	< 0.001	< 0.001	< 0.001
1/29/2003	split 1	< 0.001	< 0.001	< 0.001
4/21/2003	split 1	< 0.001	< 0.001	< 0.001
7/22/2003	split 1	< 0.001	< 0.001	< 0.001
10/23/2003	split 1	< 0.001	< 0.001	< 0.001
1/21/2004	split 1	< 0.001	< 0.001	< 0.001
4/26/2004	split 1	< 0.001	< 0.001	< 0.001
7/19/2004	split 1	< 0.001	< 0.001	< 0.001
10/19/2004	split 1	< 0.001	< 0.001	< 0.001
1/5/2005	split 1	< 0.001	< 0.001	< 0.001
4/12/2005	split 1	< 0.001	< 0.001	< 0.001
7/21/2005	split 1	< 0.001	< 0.001	< 0.001
10/13/2005	split 1	< 0.001	< 0.001	< 0.001
1/19/2006	split 1	< 0.001	< 0.001	< 0.001
5/2/2006	split 1	< 0.001	< 0.001	< 0.001
7/28/2006	split 1	< 0.001	< 0.001	< 0.001
10/18/2006	split 1	< 0.001	< 0.001	< 0.001
1/26/2007	split 1	< 0.001	< 0.001	< 0.001
4/23/2007	split 1	< 0.001	< 0.001	< 0.001
7/25/2007	split 1	< 0.001	< 0.001	< 0.001
10/11/2007	split 1	< 0.001	< 0.001	< 0.001
1/24/2008	split 1	< 0.001	< 0.001	< 0.001
4/15/2008	split 1	< 0.001	< 0.001	< 0.001
7/7/2008	split 1	< 0.001	< 0.001	< 0.001
10/16/2008	split 1	< 0.001	< 0.001	< 0.001
1/7/2009	split 1	< 0.001	< 0.001	< 0.001
4/13/2009	split 1	< 0.001	< 0.001	< 0.001
7/13/2009	split 1	< 0.001	< 0.001	< 0.001
10/6/2009	split 1	< 0.001	< 0.001	< 0.001
1/6/2010	split 1	< 0.001	< 0.001	< 0.001
4/7/2010	split 1	< 0.001	< 0.001	< 0.001
7/8/2010	split 1	< 0.001	< 0.001	< 0.001
10/7/2010	split 1	< 0.001	< 0.001	< 0.001
1/20/2011	split 1	< 0.001	< 0.001	< 0.001

**Appendix B5-6**  
**Summary of Surface Water Monitoring Data through 2021 - Benzene**  
**Dow Silicones Corporation**  
**Midland, Michigan**

<b>Benzene (mg/L)</b>				
<b>Sample Date</b>		<b>MCOF</b>	<b>UPDL</b>	<b>LD1</b>
4/25/2011	split 1	< 0.001	< 0.001	< 0.001
7/7/2011	split 1	< 0.001	< 0.001	< 0.001
10/4/2011	split 1	< 0.001	< 0.001	< 0.001
1/30/2012	split 1	< 0.001	< 0.001	< 0.001
4/19/2012	split 1	< 0.001	< 0.001	< 0.001
7/24/2012	split 1	< 0.001	< 0.001	< 0.001
10/24/2012	split 1	< 0.001	< 0.001	< 0.001
4/24/2013	split 1	< 0.001	< 0.001	< 0.001
10/24/2013	split 1	< 0.001	< 0.001	< 0.001
4/9/2014	split 1	< 0.001	< 0.001	< 0.001
10/9/2014	split 1	< 0.001	< 0.001	< 0.001
4/20/2015	split 1	< 0.001	< 0.001	< 0.001
10/19/2015	split 1	< 0.001	< 0.001	< 0.001
4/13/2016	split 1	< 0.001	< 0.001	< 0.001
10/5/2016	split 1	< 0.001	< 0.001	< 0.001
4/20/2017	split 1	< 0.001	< 0.001	< 0.001
10/11/2017	split 1	< 0.001	< 0.001	< 0.001
4/11/2018	split 1	< 0.001	< 0.001	< 0.001
10/10/2018	split 1	< 0.001	< 0.001	< 0.001
4/25/2019	split 1	< 0.001	< 0.001	< 0.001
10/14/2019	split 1	< 0.001	< 0.001	< 0.001
6/9/2020	split 1	< 0.001	< 0.001	< 0.001
10/13/2020	split 1	< 0.001	< 0.001	< 0.001
5/10/2021	split 1	< 0.001	< 0.001	< 0.001
11/9/2021	split 1	< 0.001	< 0.001	< 0.001

Historical background mean +3S=.001mg/L at UPDL from Table RT-11 of the license

MSD Matrix spike duplicate outside of laboratory control limits, result must be considered estimated.

<b>max</b>	<b>0.006</b>
<b>min</b>	<b>0.001</b>
<b>range</b>	<b>0.005</b>
<b>average</b>	<b>0.001</b>
<b>std dev</b>	<b>0.0005344</b>
<b>av + 3stds</b>	<b>0.0026219</b>

**Appendix B5-6**  
**Summary of Surface Water Monitoring Data Through 2021 - Toluene**  
**Dow Silicones Corporation**  
**Midland, Michigan**

Toluene (mg/L)				
Sample Date		MCOF	UPDL	LD1
2/22/1989	split 1	0.001	0.001	0.001
	split 2	0.001	< 0.001	0.001
	split 3	0.002	0.001	0.001
5/18/1989	split 1	0.013	0.011	0.008
	split 2	0.012	0.012	0.011
	split 3	0.013	0.013	0.012
8/15/1989	split 1	< 0.001	< 0.001	< 0.001
	split 2	< 0.001	< 0.001	< 0.001
	split 3	< 0.001	< 0.001	< 0.001
11/1/1989	split 1	< 0.001	< 0.001	< 0.001
	split 2	< 0.001	0.001	< 0.001
	split 3	< 0.001	< 0.001	< 0.001
2/6/1990	split 1	0.002	0.002	0.002
	split 2	0.002	0.002	0.001
	split 3	0.002	0.002	0.002
5/17/1990	split 1	0.042	0.045	0.036
	split 2	0.043	0.034	0.036
	split 3	0.045	0.039	0.036
7/24/1990	split 1	0.001	< 0.001	0.001
	split 2	0.001	< 0.001	0.001
	split 3	0.001	< 0.001	0.001
10/10/1990	split 1	0.010	0.010	0.005
	split 2	0.009	0.009	0.005
	split 3	< 0.001	0.010	0.005
1/24/1991	split 1	0.013	0.004	0.003
	split 2	0.014	0.004	0.003
	split 3	0.010	0.004	0.003
4/24/1991	split 1	0.054	0.049	0.047
	split 2	0.050	0.053	0.053
	split 3	0.053	0.001	0.052
8/14/1991	split 1	< 0.001	0.003	< 0.001
	split 2	0.001	0.078	< 0.001
	split 3	< 0.001	< 0.001	0.001
10/23/1991	split 1	< 0.002	< 0.002	< 0.001
	split 2	< 0.002	< 0.002	< 0.001
	split 3	< 0.002	< 0.002	< 0.001
1/22/1992	split 1	0.002	0.002	0.005
	split 2	0.002	0.002	0.004
	split 3	0.002	0.002	0.004
4/22/1992	split 1	0.002	0.002	< 0.001
	split 2	0.002	0.002	< 0.001
	split 3	0.003	0.002	< 0.001
7/22/1992	split 1	0.001	0.001	0.001
	split 2	0.001	0.002	0.001
	split 3	0.001	0.002	0.001

**Appendix B5-6**  
**Summary of Surface Water Monitoring Data Through 2021 - Toluene**  
**Dow Silicones Corporation**  
**Midland, Michigan**

Toluene (mg/L)				
Sample Date		MCOF	UPDL	LD1
10/27/1992	split 1	< 0.001	< 0.001	< 0.001
	split 2	< 0.001	< 0.001	< 0.001
	split 3	< 0.001	< 0.001	< 0.001
1/25/1993	split 1	< 0.001	< 0.001	< 0.001
	split 2	< 0.001	< 0.001	< 0.001
	split 3	< 0.001	< 0.001	< 0.001
4/27/1993	split 1	0.001	0.001	0.001
	split 2	0.003	0.001	0.001
	split 3	0.001	0.001	0.001
7/26/1993	split 1	< 0.001	< 0.001	< 0.001
	split 2	0.001	< 0.001	< 0.001
	split 3	0.002	< 0.001	< 0.001
10/26/1993	split 1	< 0.001	< 0.001	< 0.001
	split 2	< 0.001	< 0.001	< 0.001
	split 3	< 0.001	< 0.001	< 0.001
1/24/1994	split 1	< 0.001	< 0.001	< 0.001
	split 2	< 0.001	< 0.001	< 0.001
	split 3	< 0.001	< 0.001	< 0.001
4/28/1994	split 1	0.0015	0.0011	< 0.001
	split 2	0.0016	0.001	< 0.001
	split 3	0.0011	0.001	< 0.001
7/21/1994	split 1	< 0.001	0.0011	< 0.001
	split 2	0.0012	0.0014	< 0.001
	split 3	< 0.001	< 0.001	< 0.001
12/6/1994	split 1	< 0.001	< 0.001	< 0.001
2/7/1995	split 1	0.0019	0.0017	< 0.001
4/27/1995	split 1	0.0034	0.0019	< 0.001
7/20/1995	split 1	< 0.001	< 0.001	< 0.001
10/18/1995	split 1	< 0.001	< 0.001	< 0.001
1/25/1996	split 1	< 0.001	< 0.001	< 0.001
4/23/1996	split 1	0.0019	0.0014	< 0.001
7/24/1996	split 1	< 0.001	< 0.001	< 0.001
10/28/1996	split 1	< 0.001	< 0.001	< 0.001
1/30/1997	split 1	< 0.001	< 0.001	< 0.001
4/29/1997	split 1	< 0.001	< 0.001	< 0.001
7/28/1997	split 1	< 0.001	< 0.001	< 0.001
10/6/1997	split 1	< 0.001	< 0.001	< 0.001
1/22/1998	split 1	< 0.001	< 0.001	< 0.001
4/15/1998	split 1	0.0010	0.001	< 0.001
7/27/1998	split 1	< 0.001	< 0.001	< 0.001
10/26/1998	split 1	< 0.001	0.001	< 0.001
1/25/1999	split 1	< 0.001	< 0.001	< 0.001
4/27/1999	split 1	< 0.001	< 0.001	0.001
7/22/1999	split 1	< 0.001	< 0.001	< 0.001
10/20/1999	split 1	< 0.001	< 0.001	< 0.001

**Appendix B5-6**  
**Summary of Surface Water Monitoring Data Through 2021 - Toluene**  
**Dow Silicones Corporation**  
**Midland, Michigan**

Toluene (mg/L)				
Sample Date		MCOF	UPDL	LD1
1/24/2000	split 1	0.0015	0.0014	< 0.001
4/12/2000	split 1	0.0012	< 0.001	0.001
7/12/2000	split 1	< 0.001	< 0.001	< 0.001
10/18/2000	split 1	< 0.001	< 0.001	< 0.001
3/30/2001	split 1	< 0.001	< 0.001	< 0.001
4/18/2001	split 1	< 0.001	< 0.001	< 0.001
7/5/2001	split 1	< 0.001	< 0.001	< 0.001
10/30/2001	split 1	< 0.001	< 0.001	< 0.001
1/24/2002	split 1	< 0.001	< 0.001	< 0.001
4/2/2002	split 1	< 0.001	< 0.001	< 0.001
7/31/2002	split 1	< 0.001	< 0.001	< 0.001
10/2/2002	split 1	< 0.001	< 0.001	< 0.001
1/29/2003	split 1	< 0.001	< 0.001	< 0.001
4/21/2003	split 1	< 0.001	< 0.001	< 0.001
7/22/2003	split 1	< 0.001	< 0.001	< 0.001
10/23/2003	split 1	< 0.001	< 0.001	< 0.001
1/21/2004	split 1	< 0.001	< 0.001	< 0.001
4/26/2004	split 1	< 0.001	< 0.001	< 0.001
7/19/2004	split 1	0.0017	0.0026	< 0.001
10/19/2004	split 1	< 0.001	< 0.001	< 0.001
1/5/2005	split 1	< 0.001	< 0.001	< 0.001
4/12/2005	split 1	< 0.001	< 0.001	< 0.001
7/21/2005	split 1	< 0.001	< 0.001	< 0.001
10/13/2005	split 1	< 0.001	< 0.001	< 0.001
1/19/2006	split 1	< 0.001	< 0.001	< 0.001
5/2/2006	split 1	< 0.001	< 0.001	< 0.001
7/28/2006	split 1	< 0.001	< 0.001	< 0.001
10/18/2006	split 1	< 0.001	< 0.001	< 0.001
1/26/2007	split 1	< 0.001	< 0.001	< 0.001
4/23/2007	split 1	< 0.001	< 0.001	< 0.001
7/25/2007	split 1	0.0012	0.0012	0.001
10/11/2007	split 1	< 0.001	< 0.001	< 0.001
1/24/2008	split 1	< 0.001	< 0.001	< 0.001
4/15/2008	split 1	< 0.001	< 0.001	< 0.001
7/7/2008	split 1	0.0012	0.0012	0.001
10/16/2008	split 1	< 0.001	< 0.001	< 0.001
1/7/2009	split 1	< 0.001	< 0.001	< 0.001
4/13/2009	split 1	< 0.001	< 0.001	< 0.001
7/13/2009	split 1	< 0.001	< 0.001	< 0.001
10/6/2009	split 1	< 0.001	< 0.001	< 0.001
1/6/2010	split 1	< 0.001	< 0.001	< 0.001
4/7/2010	split 1	< 0.001	< 0.001	< 0.001
7/8/2010	split 1	< 0.001	< 0.001	< 0.001
10/7/2010	split 1	< 0.001	< 0.001	< 0.001
1/20/2011	split 1	< 0.001	< 0.001	< 0.001

**Appendix B5-6**  
**Summary of Surface Water Monitoring Data Through 2021 - Toluene**  
**Dow Silicones Corporation**  
**Midland, Michigan**

Toluene (mg/L)				
Sample Date		MCOF	UPDL	LD1
4/25/2011	split 1	0.0011	< 0.001	< 0.001
7/7/2011	split 1	< 0.001	< 0.001	< 0.001
10/4/2011	split 1	< 0.001	< 0.001	< 0.001
1/30/2012	split 1	< 0.001	< 0.001	< 0.001
4/19/2012	split 1	< 0.001	< 0.001	< 0.001
7/24/2012	split 1	< 0.001	< 0.001	< 0.001
10/24/2012	split 1	< 0.001	< 0.001	< 0.001
4/24/2013	split 1	< 0.001	< 0.001	< 0.001
10/24/2013	split 1	< 0.001	< 0.001	< 0.001
4/9/2014	split 1	< 0.001	< 0.001	< 0.001
10/9/2014	split 1	< 0.001	< 0.001	< 0.001
4/20/2015	split 1	< 0.001	< 0.001	< 0.001
10/19/2015	split 1	< 0.001	< 0.001	< 0.001
4/13/2016	split 1	< 0.001	< 0.001	< 0.001
10/5/2016	split 1	< 0.001	< 0.001	< 0.001
4/20/2017	split 1	< 0.001	< 0.001	< 0.001
10/11/2017	split 1	< 0.001	< 0.001	< 0.001
4/11/2018	split 1	< 0.001	< 0.001	< 0.001
10/10/2018	split 1	< 0.001	< 0.001	< 0.001
4/25/2019	split 1	< 0.001	< 0.001	< 0.001
10/14/2019	split 1	< 0.001	< 0.001	< 0.001
6/9/2020	split 1	0.001	0.001	< 0.001
10/13/2020	split 1	< 0.001	< 0.001	< 0.001
5/10/2021	split 1	0.001	< 0.001	< 0.001
	split 2	< 0.001		
11/9/2021	split 1	< 0.001	< 0.001	< 0.001

Historical background mean +3S=.0047mg/L at UPDL from Table RT-11 of the license

MSD Matrix spike duplicate outside of laboratory control limits, result must be considered estimated.

<b>max</b>	<b>0.0780</b>
<b>min</b>	<b>0.0010</b>
<b>range</b>	<b>0.0770</b>
<b>average</b>	<b>0.0034</b>
<b>std dev</b>	<b>0.0094307</b>
<b>av + 3stds</b>	<b>0.0316987</b>

**Appendix B5-6**  
**Summary of Surface Water Monitoring Data through 2021 - Chlorobenzene**  
**Dow Silicones Corporation**  
**Midland, Michigan**

<b>Chlorobenzene (mg/L)</b>				
<b>Sample Date</b>		<b>MCOF</b>	<b>UPDL</b>	<b>LD1</b>
2/22/1989	split 1	< 0.001	< 0.001	< 0.001
	split 2	< 0.001	< 0.001	< 0.001
	split 3	< 0.001	< 0.001	< 0.001
5/18/1989	split 1	< 0.001	< 0.001	< 0.001
	split 2	< 0.001	< 0.001	< 0.001
	split 3	< 0.001	< 0.001	< 0.001
8/15/1989	split 1	< 0.001	< 0.001	< 0.001
	split 2	< 0.001	< 0.001	< 0.001
	split 3	< 0.001	< 0.001	< 0.001
11/1/1989	split 1	< 0.001	< 0.001	< 0.001
	split 2	< 0.001	< 0.001	< 0.001
	split 3	< 0.001	< 0.001	< 0.001
2/6/1990	split 1	< 0.001	< 0.001	< 0.001
	split 2	< 0.001	< 0.001	< 0.001
	split 3	< 0.001	< 0.001	< 0.001
5/17/1990	split 1	< 0.001	< 0.001	< 0.001
	split 2	< 0.001	< 0.001	< 0.001
	split 3	< 0.001	< 0.001	< 0.001
7/24/1990	split 1	< 0.001	< 0.001	< 0.001
	split 2	< 0.001	< 0.001	< 0.001
	split 3	< 0.001	< 0.001	< 0.001
10/10/1990	split 1	< 0.001	< 0.001	< 0.001
	split 2	< 0.001	< 0.001	< 0.001
	split 3	< 0.001	< 0.001	< 0.001
1/24/1991	split 1	< 0.001	< 0.001	< 0.001
	split 2	< 0.001	< 0.001	< 0.001
	split 3	< 0.001	< 0.001	< 0.001
4/24/1991	split 1	< 0.001	< 0.001	< 0.001
	split 2	< 0.001	< 0.001	< 0.001
	split 3	< 0.001	< 0.001	< 0.001
8/14/1991	split 1	< 0.001	< 0.001	< 0.001
	split 2	< 0.001	< 0.001	< 0.001
	split 3	< 0.001	< 0.001	< 0.001
10/23/1991	split 1	< 0.001	< 0.001	< 0.001
	split 2	< 0.001	< 0.001	< 0.001
	split 3	< 0.001	< 0.001	< 0.001
1/22/1992	split 1	< 0.001	< 0.001	< 0.001
	split 2	< 0.001	< 0.001	< 0.001
	split 3	< 0.001	< 0.001	< 0.001
4/22/1992	split 1	< 0.001	< 0.001	< 0.001
	split 2	< 0.001	< 0.001	< 0.001
	split 3	< 0.001	< 0.001	< 0.001
7/22/1992	split 1	< 0.001	< 0.001	< 0.001
	split 2	< 0.001	< 0.001	< 0.001
	split 3	< 0.001	< 0.001	< 0.001

**Appendix B5-6**  
**Summary of Surface Water Monitoring Data through 2021 - Chlorobenzene**  
**Dow Silicones Corporation**  
**Midland, Michigan**

Chlorobenzene (mg/L)				
Sample Date		MCOF	UPDL	LD1
10/27/1992	split 1	< 0.001	< 0.001	< 0.001
	split 2	< 0.001	< 0.001	< 0.001
	split 3	< 0.001	< 0.001	< 0.001
1/25/1993	split 1	< 0.001	< 0.001	< 0.001
	split 2	< 0.001	< 0.001	< 0.001
	split 3	< 0.001	< 0.001	< 0.001
4/27/1993	split 1	< 0.001	< 0.001	< 0.001
	split 2	< 0.001	< 0.001	< 0.001
	split 3	< 0.001	< 0.001	< 0.001
7/26/1993	split 1	< 0.001	< 0.001	< 0.001
	split 2	0.001	< 0.001	< 0.001
	split 3	0.002	< 0.001	< 0.001
10/26/1993	split 1	< 0.001	< 0.001	< 0.001
	split 2	< 0.001	< 0.001	< 0.001
	split 3	< 0.001	< 0.001	< 0.001
1/24/1994	split 1	< 0.001	< 0.001	< 0.001
	split 2	< 0.001	< 0.001	< 0.001
	split 3	< 0.001	< 0.001	< 0.001
4/28/1994	split 1	< 0.001	< 0.001	< 0.001
	split 2	< 0.001	< 0.001	< 0.001
	split 3	< 0.001	< 0.001	< 0.001
7/21/1994	split 1	< 0.001	< 0.001	< 0.001
	split 2	< 0.001	< 0.001	< 0.001
	split 3	< 0.001	< 0.001	< 0.001
12/6/1994	split 1	< 0.001	< 0.001	< 0.001
2/7/1995	split 1	< 0.001	< 0.001	< 0.001
4/27/1995	split 1	< 0.001	< 0.001	< 0.001
7/20/1995	split 1	< 0.001	< 0.001	< 0.001
10/18/1995	split 1	< 0.001	< 0.001	< 0.001
1/25/1996	split 1	< 0.001	< 0.001	< 0.001
4/23/1996	split 1	< 0.001	< 0.001	< 0.001
7/24/1996	split 1	< 0.001	< 0.001	< 0.001
10/28/1996	split 1	< 0.001	< 0.001	< 0.001
1/30/1997	split 1	< 0.001	< 0.001	< 0.001
4/29/1997	split 1	< 0.001	< 0.001	< 0.001
7/28/1997	split 1	< 0.001	< 0.001	< 0.001
10/6/1997	split 1	< 0.001	< 0.001	< 0.001
1/22/1998	split 1	< 0.001	< 0.001	< 0.001
4/15/1998	split 1	< 0.001	< 0.001	< 0.001
7/27/1998	split 1	< 0.001	< 0.001	< 0.001
10/26/1998	split 1	< 0.001	< 0.001	< 0.001
1/25/1999	split 1	< 0.001	< 0.001	< 0.001
4/27/1999	split 1	< 0.001	< 0.001	< 0.001
7/22/1999	split 1	< 0.001	< 0.001	< 0.001
10/20/1999	split 1	< 0.001	< 0.001	< 0.001

**Appendix B5-6**  
**Summary of Surface Water Monitoring Data through 2021 - Chlorobenzene**  
**Dow Silicones Corporation**  
**Midland, Michigan**

Chlorobenzene (mg/L)				
Sample Date		MCOF	UPDL	LD1
1/24/2000	split 1	< 0.001	< 0.001	< 0.001
4/12/2000	split 1	< 0.001	< 0.001	< 0.001
7/12/2000	split 1	< 0.001	< 0.001	< 0.001
10/18/2000	split 1	< 0.001	< 0.001	< 0.001
3/30/2001	split 1	< 0.001	< 0.001	< 0.001
4/18/2001	split 1	< 0.001	< 0.001	< 0.001
7/5/2001	split 1	< 0.001	< 0.001	< 0.001
10/30/2001	split 1	< 0.001	< 0.001	< 0.001
1/24/2002	split 1	< 0.001	< 0.001	< 0.001
4/2/2002	split 1	< 0.001	< 0.001	< 0.001
7/31/2002	split 1	< 0.001	< 0.001	< 0.001
10/2/2002	split 1	< 0.001	< 0.001	< 0.001
1/29/2003	split 1	< 0.001	< 0.001	< 0.001
4/21/2003	split 1	< 0.001	< 0.001	< 0.001
7/22/2003	split 1	< 0.001	< 0.001	< 0.001
10/23/2003	split 1	< 0.001	< 0.001	< 0.001
1/21/2004	split 1	< 0.001	< 0.001	< 0.001
4/26/2004	split 1	< 0.001	< 0.001	< 0.001
7/19/2004	split 1	< 0.001	< 0.001	< 0.001
10/19/2004	split 1	< 0.001	< 0.001	< 0.001
1/5/2005	split 1	< 0.001	< 0.001	< 0.001
4/12/2005	split 1	< 0.001	< 0.001	< 0.001
7/21/2005	split 1	< 0.001	0.0026	< 0.001
10/13/2005	split 1	< 0.001	< 0.001	< 0.001
1/19/2006	split 1	< 0.001	< 0.001	< 0.001
5/2/2006	split 1	< 0.001	< 0.001	< 0.001
7/28/2006	split 1	< 0.001	0.0026	< 0.001
10/18/2006	split 1	< 0.001	< 0.001	< 0.001
1/26/2007	split 1	< 0.001	< 0.001	< 0.001
4/23/2007	split 1	< 0.001	< 0.001	< 0.001
7/25/2007	split 1	< 0.001	< 0.001	< 0.001
10/11/2007	split 1	< 0.001	< 0.001	< 0.001
1/24/2008	split 1	< 0.001	< 0.001	< 0.001
4/15/2008	split 1	< 0.001	< 0.001	< 0.001
7/7/2008	split 1	< 0.001	< 0.001	< 0.001
10/16/2008	split 1	< 0.001	< 0.001	< 0.001
1/7/2009	split 1	< 0.001	< 0.001	< 0.001
4/13/2009	split 1	< 0.001	< 0.001	< 0.001
7/13/2009	split 1	< 0.001	< 0.001	< 0.001
10/6/2009	split 1	< 0.001	< 0.001	< 0.001
1/6/2010	split 1	< 0.001	< 0.001	< 0.001
4/7/2010	split 1	< 0.001	< 0.001	< 0.001
7/8/2010	split 1	< 0.001	< 0.001	< 0.001
10/7/2010	split 1	< 0.001	< 0.001	< 0.001
1/20/2011	split 1	< 0.001	< 0.001	< 0.001

**Appendix B5-6**  
**Summary of Surface Water Monitoring Data through 2021 - Chlorobenzene**  
**Dow Silicones Corporation**  
**Midland, Michigan**

<b>Chlorobenzene (mg/L)</b>				
<b>Sample Date</b>		<b>MCOF</b>	<b>UPDL</b>	<b>LD1</b>
4/25/2011	split 1	< 0.001	< 0.001	< 0.001
7/7/2011	split 1	< 0.001	< 0.001	< 0.001
10/4/2011	split 1	< 0.001	< 0.001	< 0.001
1/30/2012	split 1	< 0.001	< 0.001	< 0.001
4/19/2012	split 1	< 0.001	< 0.001	< 0.001
7/24/2012	split 1	< 0.001	< 0.001	< 0.001
10/24/2012	split 1	< 0.001	< 0.001	< 0.001
4/24/2013	split 1	< 0.001	< 0.001	< 0.001
10/24/2013	split 1	< 0.001	< 0.001	< 0.001
4/9/2014	split 1	< 0.001	< 0.001	< 0.001
10/9/2014	split 1	< 0.001	< 0.001	< 0.001
4/20/2015	split 1	< 0.001	< 0.001	< 0.001
10/19/2015	split 1	< 0.001	< 0.001	< 0.001
4/13/2016	split 1	< 0.001	< 0.001	< 0.001
10/5/2016	split 1	< 0.001	< 0.001	< 0.001
4/20/2017	split 1	< 0.001	< 0.001	< 0.001
10/11/2017	split 1	< 0.001	< 0.001	< 0.001
4/11/2018	split 1	< 0.001	< 0.001	< 0.001
10/10/2018	split 1	< 0.001	< 0.001	< 0.001
4/25/2019	split 1	< 0.001	< 0.001	< 0.001
10/14/2019	split 1	< 0.001	< 0.001	< 0.001
6/9/2020	split 1	< 0.001	< 0.001	< 0.001
10/13/2020	split 1	< 0.001	< 0.001	< 0.001
5/10/2021	split 1	< 0.001	< 0.001	< 0.001
11/9/2021	split 1	< 0.001	< 0.001	< 0.001

Historical background mean +3S=.001 mg/L at UPDL from Table RT-11 of the license

MSD Matrix spike duplicate outside of laboratory control limits, result must be considered estimated.

**max            0.0026**  
**min            0.0010**  
**range          0.0016**  
**average       0.0010**  
**std dev        0.0001**  
**av +3stds     0.0014**

**Appendix B5-6**  
**Summary of Surface Water Monitoring Data through 2021 - Ethylbenzene**  
**Dow Silicones Corporation**  
**Midland, Michigan**

<b>Ethylbenzene (mg/L)</b>				
<b>Sample Date</b>		<b>MCOF</b>	<b>UPDL</b>	<b>LD1</b>
2/22/1989	split 1	< 0.001	< 0.001	< 0.001
	split 2	< 0.001	< 0.001	< 0.001
	split 3	< 0.001	< 0.001	< 0.001
5/18/1989	split 1	< 0.001	< 0.001	0.001
	split 2	< 0.001	< 0.001	< 0.001
	split 3	< 0.001	< 0.001	< 0.001
8/15/1989	split 1	< 0.001	< 0.001	< 0.001
	split 2	< 0.001	< 0.001	< 0.001
	split 3	< 0.001	< 0.001	< 0.001
11/1/1989	split 1	< 0.001	< 0.001	< 0.001
	split 2	< 0.001	< 0.001	< 0.001
	split 3	< 0.001	< 0.001	< 0.001
2/6/1990	split 1	< 0.001	< 0.001	< 0.001
	split 2	< 0.001	< 0.001	< 0.001
	split 3	< 0.001	< 0.001	< 0.001
5/17/1990	split 1	< 0.001	< 0.001	< 0.001
	split 2	< 0.001	< 0.001	< 0.001
	split 3	< 0.001	< 0.001	< 0.001
7/24/1990	split 1	< 0.001	< 0.001	< 0.001
	split 2	< 0.001	< 0.001	< 0.001
	split 3	< 0.001	< 0.001	< 0.001
10/10/1990	split 1	0.001	< 0.001	< 0.001
	split 2	< 0.001	< 0.001	< 0.001
	split 3	< 0.001	< 0.001	< 0.001
1/24/1991	split 1	< 0.001	< 0.001	< 0.001
	split 2	< 0.001	< 0.001	< 0.001
	split 3	< 0.001	< 0.001	< 0.001
4/24/1991	split 1	0.002	0.002	0.005
	split 2	0.004	0.001	0.005
	split 3	0.004	< 0.001	0.005
8/14/1991	split 1	< 0.001	< 0.001	< 0.001
	split 2	< 0.001	< 0.001	< 0.001
	split 3	< 0.001	< 0.001	< 0.001
10/23/1991	split 1	< 0.001	< 0.001	< 0.001
	split 2	< 0.001	< 0.001	< 0.001
	split 3	< 0.001	< 0.001	< 0.001
1/22/1992	split 1	< 0.001	< 0.001	< 0.001
	split 2	< 0.001	< 0.001	< 0.001
	split 3	< 0.001	< 0.001	< 0.001
4/22/1992	split 1	< 0.001	< 0.001	< 0.001
	split 2	< 0.001	< 0.001	< 0.001
	split 3	< 0.001	< 0.001	< 0.001
7/22/1992	split 1	< 0.001	< 0.001	< 0.001
	split 2	< 0.001	< 0.001	< 0.001
	split 3	< 0.001	< 0.001	< 0.001

**Appendix B5-6**  
**Summary of Surface Water Monitoring Data through 2021 - Ethylbenzene**  
**Dow Silicones Corporation**  
**Midland, Michigan**

<b>Ethylbenzene (mg/L)</b>				
<b>Sample Date</b>		<b>MCOF</b>	<b>UPDL</b>	<b>LD1</b>
10/27/1992	split 1	< 0.001	< 0.001	< 0.001
	split 2	< 0.001	< 0.001	< 0.001
	split 3	< 0.001	< 0.001	< 0.001
1/25/1993	split 1	< 0.001	< 0.001	< 0.001
	split 2	< 0.001	< 0.001	< 0.001
	split 3	< 0.001	< 0.001	< 0.001
4/27/1993	split 1	< 0.001	< 0.001	< 0.001
	split 2	< 0.001	< 0.001	< 0.001
	split 3	< 0.001	< 0.001	< 0.001
7/26/1993	split 1	< 0.001	< 0.001	< 0.001
	split 2	< 0.001	< 0.001	< 0.001
	split 3	< 0.001	< 0.001	< 0.001
10/26/1993	split 1	< 0.001	< 0.001	< 0.001
	split 2	< 0.001	< 0.001	< 0.001
	split 3	< 0.001	< 0.001	< 0.001
1/24/1994	split 1	< 0.001	< 0.001	< 0.001
	split 2	< 0.001	< 0.001	< 0.001
	split 3	< 0.001	< 0.001	< 0.001
4/28/1994	split 1	< 0.001	< 0.001	< 0.001
	split 2	< 0.001	< 0.001	< 0.001
	split 3	< 0.001	< 0.001	< 0.001
7/21/1994	split 1	< 0.001	< 0.001	< 0.001
	split 2	< 0.001	< 0.001	< 0.001
	split 3	< 0.001	< 0.001	< 0.001
12/6/1994	split 1	< 0.001	< 0.001	< 0.001
2/7/1995	split 1	< 0.001	< 0.001	< 0.001
4/27/1995	split 1	< 0.001	< 0.001	< 0.001
7/20/1995	split 1	< 0.001	< 0.001	< 0.001
10/18/1995	split 1	< 0.001	< 0.001	< 0.001
1/25/1996	split 1	< 0.001	< 0.001	< 0.001
4/23/1996	split 1	< 0.001	< 0.001	< 0.001
7/24/1996	split 1	< 0.001	< 0.001	< 0.001
10/28/1996	split 1	< 0.001	< 0.001	< 0.001
1/30/1997	split 1	< 0.001	< 0.001	< 0.001
4/29/1997	split 1	< 0.001	< 0.001	< 0.001
7/28/1997	split 1	< 0.001	< 0.001	< 0.001
10/6/1997	split 1	< 0.001	< 0.001	< 0.001
1/22/1998	split 1	< 0.001	< 0.001	< 0.001
4/15/1998	split 1	< 0.001	< 0.001	< 0.001
7/27/1998	split 1	< 0.001	0.001	< 0.001
10/26/1998	split 1	< 0.001	< 0.001	< 0.001
1/25/1999	split 1	< 0.001	< 0.001	< 0.001
4/27/1999	split 1	< 0.001	< 0.001	< 0.001
7/22/1999	split 1	< 0.001	< 0.001	< 0.001
10/20/1999	split 1	< 0.001	< 0.001	< 0.001

**Appendix B5-6**  
**Summary of Surface Water Monitoring Data through 2021 - Ethylbenzene**  
**Dow Silicones Corporation**  
**Midland, Michigan**

<b>Ethylbenzene (mg/L)</b>				
<b>Sample Date</b>		<b>MCOF</b>	<b>UPDL</b>	<b>LD1</b>
1/24/2000	split 1	< 0.001	< 0.001	< 0.001
4/12/2000	split 1	< 0.001	< 0.001	< 0.001
7/12/2000	split 1	< 0.001	< 0.001	< 0.001
10/18/2000	split 1	< 0.001	< 0.001	< 0.001
3/30/2001	split 1	< 0.001	< 0.001	< 0.001
4/18/2001	split 1	< 0.001	< 0.001	< 0.001
7/5/2001	split 1	< 0.001	< 0.001	< 0.001
10/30/2001	split 1	< 0.001	< 0.001	< 0.001
1/24/2002	split 1	< 0.001	< 0.001	< 0.001
4/2/2002	split 1	< 0.001	< 0.001	< 0.001
7/31/2002	split 1	< 0.001	< 0.001	< 0.001
10/2/2002	split 1	< 0.001	< 0.001	< 0.001
1/29/2003	split 1	< 0.001	< 0.001	< 0.001
4/21/2003	split 1	< 0.001	< 0.001	< 0.001
7/22/2003	split 1	< 0.001	< 0.001	< 0.001
10/23/2003	split 1	< 0.001	< 0.001	< 0.001
1/21/2004	split 1	< 0.001	< 0.001	< 0.001
4/26/2004	split 1	< 0.001	< 0.001	< 0.001
7/19/2004	split 1	< 0.001	< 0.001	< 0.001
10/19/2004	split 1	< 0.001	< 0.001	< 0.001
1/5/2005	split 1	< 0.001	< 0.001	< 0.001
4/12/2005	split 1	< 0.001	< 0.001	< 0.001
7/21/2005	split 1	< 0.001	< 0.001	< 0.001
10/13/2005	split 1	< 0.001	< 0.001	< 0.001
1/19/2006	split 1	< 0.001	< 0.001	< 0.001
5/2/2006	split 1	< 0.001	< 0.001	< 0.001
7/28/2006	split 1	< 0.001	< 0.001	< 0.001
10/18/2006	split 1	< 0.001	< 0.001	< 0.001
1/26/2007	split 1	< 0.001	< 0.001	< 0.001
4/23/2007	split 1	< 0.001	< 0.001	< 0.001
7/25/2007	split 1	< 0.001	< 0.001	< 0.001
10/11/2007	split 1	< 0.001	< 0.001	< 0.001
1/24/2008	split 1	< 0.001	< 0.001	< 0.001
4/15/2008	split 1	< 0.001	< 0.001	< 0.001
7/7/2008	split 1	< 0.001	< 0.001	< 0.001
10/16/2008	split 1	< 0.001	< 0.001	< 0.001
1/7/2009	split 1	< 0.001	< 0.001	< 0.001
4/13/2009	split 1	< 0.001	< 0.001	< 0.001
7/13/2009	split 1	< 0.001	< 0.001	< 0.001
10/6/2009	split 1	< 0.001	< 0.001	< 0.001
1/6/2010	split 1	< 0.001	< 0.001	< 0.001
4/7/2010	split 1	< 0.001	< 0.001	< 0.001
7/8/2010	split 1	< 0.001	< 0.001	< 0.001
10/7/2010	split 1	< 0.001	< 0.001	< 0.001
1/20/2011	split 1	< 0.001	< 0.001	< 0.001

**Appendix B5-6**  
**Summary of Surface Water Monitoring Data through 2021 - Ethylbenzene**  
**Dow Silicones Corporation**  
**Midland, Michigan**

<b>Ethylbenzene (mg/L)</b>				
<b>Sample Date</b>		<b>MCOF</b>	<b>UPDL</b>	<b>LD1</b>
4/25/2011	split 1	< 0.001	< 0.001	< 0.001
7/7/2011	split 1	< 0.001	< 0.001	< 0.001
10/4/2011	split 1	< 0.001	< 0.001	< 0.001
1/30/2012	split 1	< 0.001	< 0.001	< 0.001
4/19/2012	split 1	< 0.001	< 0.001	< 0.001
7/24/2012	split 1	< 0.001	< 0.001	< 0.001
10/24/2012	split 1	< 0.001	< 0.001	< 0.001
4/24/2013	split 1	< 0.001	< 0.001	< 0.001
10/24/2013	split 1	< 0.001	< 0.001	< 0.001
4/9/2014	split 1	< 0.001	< 0.001	< 0.001
10/9/2014	split 1	< 0.001	< 0.001	< 0.001
4/20/2015	split 1	< 0.001	< 0.001	< 0.001
10/19/2015	split 1	< 0.001	< 0.001	< 0.001
4/13/2016	split 1	< 0.001	< 0.001	< 0.001
10/5/2016	split 1	< 0.001	< 0.001	< 0.001
4/20/2017	split 1	< 0.001	< 0.001	< 0.001
10/11/2017	split 1	< 0.001	< 0.001	< 0.001
4/11/2018	split 1	< 0.001	< 0.001	< 0.001
10/10/2018	split 1	< 0.001	< 0.001	< 0.001
4/25/2019	split 1	< 0.001	< 0.001	< 0.001
10/14/2019	split 1	< 0.001	< 0.001	< 0.001
6/9/2020	split 1	< 0.001	< 0.001	< 0.001
10/13/2020	split 1	< 0.001	< 0.001	< 0.001
5/10/2021	split 1	< 0.001	< 0.001	< 0.001
11/9/2021	split 1	< 0.001	< 0.001	< 0.001

Historical background mean +3S=.001 mg/L at UPDL from Table RT-11 of the license

MSD Matrix spike duplicate outside of laboratory control limits, result must be considered estimated.

<b>max</b>	<b>0.00400</b>
<b>min</b>	<b>0.00100</b>
<b>range</b>	<b>0.00300</b>
<b>average</b>	<b>0.00103</b>
<b>std dev</b>	<b>0.00025</b>
<b>av + 3stds</b>	<b>0.00178</b>

**Appendix B5-6**  
**Summary of Surface Water Monitoring Data through 2021 - 2,4-Dimethylphenol**  
**Dow Silicones Corporation**  
**Midland, Michigan**

<b>2,4-Dimethylphenol (mg/L)</b>				
<b>Sample Date</b>		<b>MCOF</b>	<b>UPDL</b>	<b>LD1</b>
10/23/1991	split 1	< 0.005	< 0.005	< 0.005
	split 2	< 0.005	< 0.005	< 0.005
	split 3	< 0.005	< 0.005	< 0.005
1/22/1992	split 1	< 0.005	< 0.005	< 0.005
	split 2	< 0.005	< 0.005	< 0.005
	split 3	< 0.005	< 0.005	< 0.005
4/23/1992	split 1	< 0.005	< 0.005	< 0.005
	split 2	< 0.005	< 0.005	< 0.005
	split 3	< 0.005	< 0.005	< 0.005
7/22/1992	split 1	< 0.003	< 0.003	< 0.003
	split 2	< 0.003	< 0.003	< 0.003
	split 3	< 0.003	< 0.003	< 0.003
10/27/1992	split 1	< 0.003	< 0.003	< 0.003
	split 2	< 0.003	< 0.003	< 0.003
	split 3	< 0.003	< 0.003	< 0.003
1/25/1993	split 1	< 0.003	< 0.003	< 0.003
	split 2	< 0.003	< 0.003	< 0.003
	split 3	< 0.003	< 0.003	< 0.003
4/27/1993	split 1	< 0.003	< 0.003	< 0.003
	split 2	< 0.003	< 0.003	< 0.003
	split 3	< 0.003	< 0.003	< 0.003
7/26/1993	split 1	< 0.003	< 0.003	< 0.003
	split 2	< 0.003	< 0.003	< 0.003
	split 3	< 0.003	< 0.003	< 0.003
10/26/1993	split 1	< 0.003	< 0.003	< 0.003
	split 2	< 0.003	< 0.003	< 0.003
	split 3	< 0.003	< 0.003	< 0.003
1/24/1994	split 1	< 0.003	< 0.003	< 0.003
	split 2	< 0.003	< 0.003	< 0.003
	split 3	< 0.003	< 0.003	< 0.003
4/28/1994	split 1	< 0.003	< 0.003	< 0.003
	split 2	< 0.003	< 0.003	< 0.003
	split 3	< 0.003	< 0.003	< 0.003
7/21/1994	split 1	< 0.003	< 0.003	< 0.003
	split 2	< 0.003	< 0.003	< 0.003
	split 3	< 0.003	< 0.003	< 0.003
12/6/1994	split 1	< 0.003	< 0.003	< 0.003
2/7/1995	split 1	< 0.003	< 0.003	< 0.003
4/27/1995	split 1	< 0.003	< 0.003	< 0.003
7/20/1995	split 1	< 0.003	< 0.003	< 0.003
10/18/1995	split 1	< 0.003	< 0.003	< 0.003
1/25/1996	split 1	< 0.003	< 0.003	< 0.003
4/23/1996	split 1	< 0.003	< 0.003	< 0.003
7/24/1996	split 1	< 0.003	< 0.003	< 0.003
10/28/1996	split 1	< 0.003	< 0.003	< 0.003
1/30/1997	split 1	< 0.003	< 0.003	< 0.003
4/29/1997	split 1	< 0.003	< 0.003	< 0.003

**Appendix B5-6**  
**Summary of Surface Water Monitoring Data through 2021 - 2,4-Dimethylphenol**  
**Dow Silicones Corporation**  
**Midland, Michigan**

<b>2,4-Dimethylphenol (mg/L)</b>				
<b>Sample Date</b>		<b>MCOF</b>	<b>UPDL</b>	<b>LD1</b>
7/28/1997	split 1	< 0.003	< 0.003	< 0.003
10/6/1997	split 1	< 0.003	< 0.003	< 0.003
1/22/1998	split 1	< 0.003	MSD < 0.003	< 0.003
4/15/1998	split 1	< 0.003	< 0.003	< 0.003
7/27/1998	split 1	< 0.003	< 0.003	< 0.003
10/26/1998	split 1	< 0.003	< 0.003	< 0.003
1/25/1999	split 1	< 0.003	< 0.003	< 0.003
4/27/1999	split 1	< 0.003	< 0.003	< 0.003
7/22/1999	split 1	< 0.003	< 0.003	< 0.003
10/20/1999	split 1	< 0.003	< 0.003	< 0.003
1/24/2000	split 1	< 0.003	< 0.003	< 0.003
4/12/2000	split 1	< 0.003	< 0.003	< 0.003
7/12/2000	split 1	< 0.003	< 0.003	< 0.003
10/18/2000	split 1	< 0.003	< 0.003	< 0.003
3/30/2001	split 1	< 0.003	< 0.003	< 0.003
4/18/2001	split 1	< 0.003	< 0.003	< 0.003
7/5/2001	split 1	< 0.003	< 0.003	< 0.003
10/30/2001	split 1	< 0.003	< 0.003	< 0.003
1/24/2002	split 1	SS < 0.003	< 0.003	< 0.003
4/2/2002	split 1	< 0.003	< 0.003	< 0.003
7/31/2002	split 1	< 0.003	< 0.003	< 0.003
10/2/2002	split 1	< 0.003	< 0.003	< 0.003
1/29/2003	split 1	< 0.003	< 0.003	< 0.003
4/21/2003	split 1	< 0.003	< 0.003	< 0.003
7/22/2003	split 1	< 0.003	< 0.003	< 0.003
10/23/2003	split 1	< 0.003	< 0.003	< 0.003
1/21/2004	split 1	< 0.003	< 0.003	< 0.003
4/26/2004	split 1	< 0.003	< 0.003	< 0.003
7/19/2004	split 1	< 0.003	< 0.003	< 0.003
10/19/2004	split 1	< 0.003	< 0.003	< 0.003
1/5/2005	split 1	< 0.003	< 0.003	< 0.003
4/12/2005	split 1	< 0.003	< 0.003	< 0.003
7/21/2005	split 1	< 0.003	< 0.003	< 0.003
10/13/2005	split 1	< 0.003	< 0.003	< 0.003
1/19/2006	split 1	< 0.003	< 0.003	< 0.003
5/2/2006	split 1	< 0.003	< 0.003	< 0.003
7/28/2006	split 1	< 0.003	< 0.003	< 0.003
10/18/2006	split 1	< 0.003	< 0.003	< 0.003
1/26/2007	split 1	< 0.003	< 0.003	< 0.003
4/23/2007	split 1	< 0.003	< 0.003	< 0.003
7/25/2007	split 1	< 0.003	< 0.003	< 0.003
10/11/2007	split 1	< 0.003	< 0.003	< 0.003
1/24/2008	split 1	< 0.003	< 0.003	< 0.003
4/15/2008	split 1	< 0.003	< 0.003	< 0.003
7/7/2008	split 1	< 0.003	< 0.003	< 0.003
10/16/2008	split 1	< 0.003	< 0.003	< 0.003
1/7/2009	split 1	< 0.003	< 0.003	< 0.003

**Appendix B5-6**  
**Summary of Surface Water Monitoring Data through 2021 - 2,4-Dimethylphenol**  
**Dow Silicones Corporation**  
**Midland, Michigan**

2,4-Dimethylphenol (mg/L)				
Sample Date		MCOF	UPDL	LD1
4/13/2009	split 1	< 0.003	< 0.003	< 0.003
7/13/2009	split 1	< 0.003	< 0.003	< 0.003
10/6/2009	split 1	< .0031*	< 0.003	< 0.003
1/6/2010	split 1	< 0.003	< 0.0031	< 0.003
4/7/2010	split 1	< 0.003	< 0.003	< 0.003
7/8/2010	split 1	< 0.003**	< 0.0031*	< 0.0031*
10/7/2010	split 1	< 0.003	< 0.003	< 0.003
1/20/2011	split 1	< 0.0003	< 0.0003	< 0.0003
4/25/2011	split 1	< 0.0003	0.00064	< 0.0003
7/7/2011	split 1	< 0.003	< 0.003	< 0.003
10/4/2011	split 1	< 0.003	< 0.003	< 0.003
1/30/2012	split 1	< 0.003	< 0.003	< 0.003
4/19/2012	split 1	< 0.003	< 0.003	< 0.003
7/24/2012	split 1	< 0.003	< 0.003	< 0.003
10/24/2012	split 1	< 0.003	< 0.003	< 0.003
4/24/2013	split 1	< 0.005	< 0.005	< 0.005
10/24/2013	split 1	< 0.001	< 0.001	< 0.001
4/9/2014	split 1	< 0.001	< 0.001	< 0.001
10/9/2014	split 1	< 0.001	< 0.001	< 0.001
4/20/2015	split 1	< 0.001	< 0.001	< 0.001
10/19/2015	split 1	< 0.001	< 0.001	< 0.001
4/13/2016	split 1	< 0.001	< 0.001	< 0.001
10/5/2016	split 1	< 0.001	< 0.001	< 0.001
4/20/2017	split 1	< 0.001	< 0.001	< 0.001
10/11/2017	split 1	< 0.00095	< 0.00095	< 0.00095
4/11/2018	split 1	< 0.001	< 0.001	< 0.001
10/10/2018	split 1	< 0.05	< 0.05	< 0.05
4/25/2019	split 1	< 0.045	< 0.045	< 0.045
10/14/2019	split 1	< 0.0045	< 0.0048	< 0.0048
6/9/2020	split 1	< 0.0048	< 0.005	< 0.0048
10/13/2020	split 1	< 0.0048	< 0.0046	< 0.0046
5/10/2021	split 1	< 0.0048	< 0.0048	< 0.0048
11/9/2021	split 1	< 0.0046	< 0.0046	< 0.0046

Historical background mean + 3S=.003 mg/L at UPDL from Table RT-11 of the license

MSD Matrix spike duplicate outside of laboratory control limits, result must be considered estimated.

SS Surrogate spike result for this sample had a percent recovery outside the upper control limit. Any positive result must be considered estimated.

\* The reporting limit for this analysis was elevated due to insufficient sample volume or weight received.

\*\* The RPD between the MS and MSD results exceed the control limit.

Elevated reporting limits were reported in October 2018 and April 2019. Therefore, concentrations from these events were not used in statistical calculation.

The non-spiked sample result is considered estimated.

**Appendix B5-6**  
**Summary of Surface Water Monitoring Data through 2021 - 2,4-Dimethylphenol**  
**Dow Silicones Corporation**  
**Midland, Michigan**

2,4-Dimethylphenol (mg/L)			
Sample Date	MCOF	UPDL	LD1

<b>max</b>	0.005
<b>min</b>	0.0003
<b>range</b>	0.0047
<b>average</b>	0.003028
<b>std dev</b>	0.0009919
<b>av + 3stds</b>	0.006003