PUBLIC HEARING

The Dow Chemical Company
Hazardous Waste Management Facility
Draft Operating License and
Revised Site-Specific Land Disposal Restrictions
Treatability Petition

Michigan Operations, Midland Plant
and Salzburg Landfill

Office of Waste Management and Radiological Protection
July 29, 2015
7:00 p.m.
Bullock Creek High School Auditorium

DEQ Staff Introductions

Liz Browne, Executive Division – Hearing Officer

- Office of Hazardous Waste Management and Radiological Protection Staff:
  - Ginny Himich – Chief of Permit and Corrective Action Unit
  - Cheryl Howe – Current Permit Engineer/Project Manager
  - Dan Dailey – New Permit Engineer/Project Manager
  - Al Taylor – Geologist/Corrective Action for Midland Plant and Offsite Releases
  - Joe Rogers – Geologist for Salzburg Landfill
  - Trisha Confer – Inspector, Saginaw Bay District Office
- Some project team members not here tonight

Agenda

- Purpose and Process for Tonight – *Liz Browne*
- Overview of Midland Plant Facility and Draft Operating License – *Cheryl Howe and Dan Dailey*
- Midland Plant Environmental Monitoring/Onsite and Offsite Corrective Action – *Al Taylor*
- Overview of Salzburg Landfill and Environmental Monitoring - *Joe Rogers*
- BREAK/Staff Available to Answer Informal Questions
- Accept Formal Public Comments on the Record – *Liz Browne*
  - Please check box on attendance card and turn it in if you'd like to make formal public comments
  - Tonight's public hearing is being video recorded

Purpose of Meeting

- Provide overview of, and receive public input on, the proposed renewal of Dow's Operating License for:
  - ✓ Michigan Operations, Midland Plant
  - ✓ Salzburg Landfill
- Describe the proposed combined License
- Describe the proposed revision/extension of Dow's Site-Specific Land Disposal Restrictions (LDR) Treatability Variance and incorporation into the License

Licensing Process

- Operating License is required under Part 111 Administrative Rules, Hazardous Waste Management, of the Michigan Natural Resources and Environmental Protection Act (1994 PA 451), as amended
- DEQ-OWMRP reviews the company's License renewal application received April 2013
- Company must address administrative and technical deficiencies; this was about a two year process for Dow's License renewal
- When technically adequate, OWMRP drafts proposed License and initiates the public participation process

Public Review

- Notice of intent to issue draft operating license was public noticed in the Midland Daily News on 6/29/15 and radio announcements broadcast on WSGW on 7/24/15
- Documents available for public review at:
  - Grace A. Dow Memorial Library Reference Desk
  - DEQ Saginaw Bay District Office in Bay City (Contact Trisha Confer at 989-225-7968)
  - DEQ Lansing Office (contact Cheryl Howe at 517-284-6561 or howec@michigan.gov)
- Public comment period runs 60 days until 8/28/15

Public Review, Cont'd.

Documents also available for review on the DEQ Web site at http://www.michigan.gov/deq

- Click on WASTE > Hazardous & Liquid Industrial Waste > Hazardous and Liquid Industrial Waste Management;
- Under Information, click on "Dow Midland Plant and Salzburg Landfill Hazardous Waste Management Facility Operating License Information"

- Public Notice
- Fact Sheet
- Draft Operating License and Attachments
- Draft Site-Specific LDR Treatability Variance Petition Approval Document

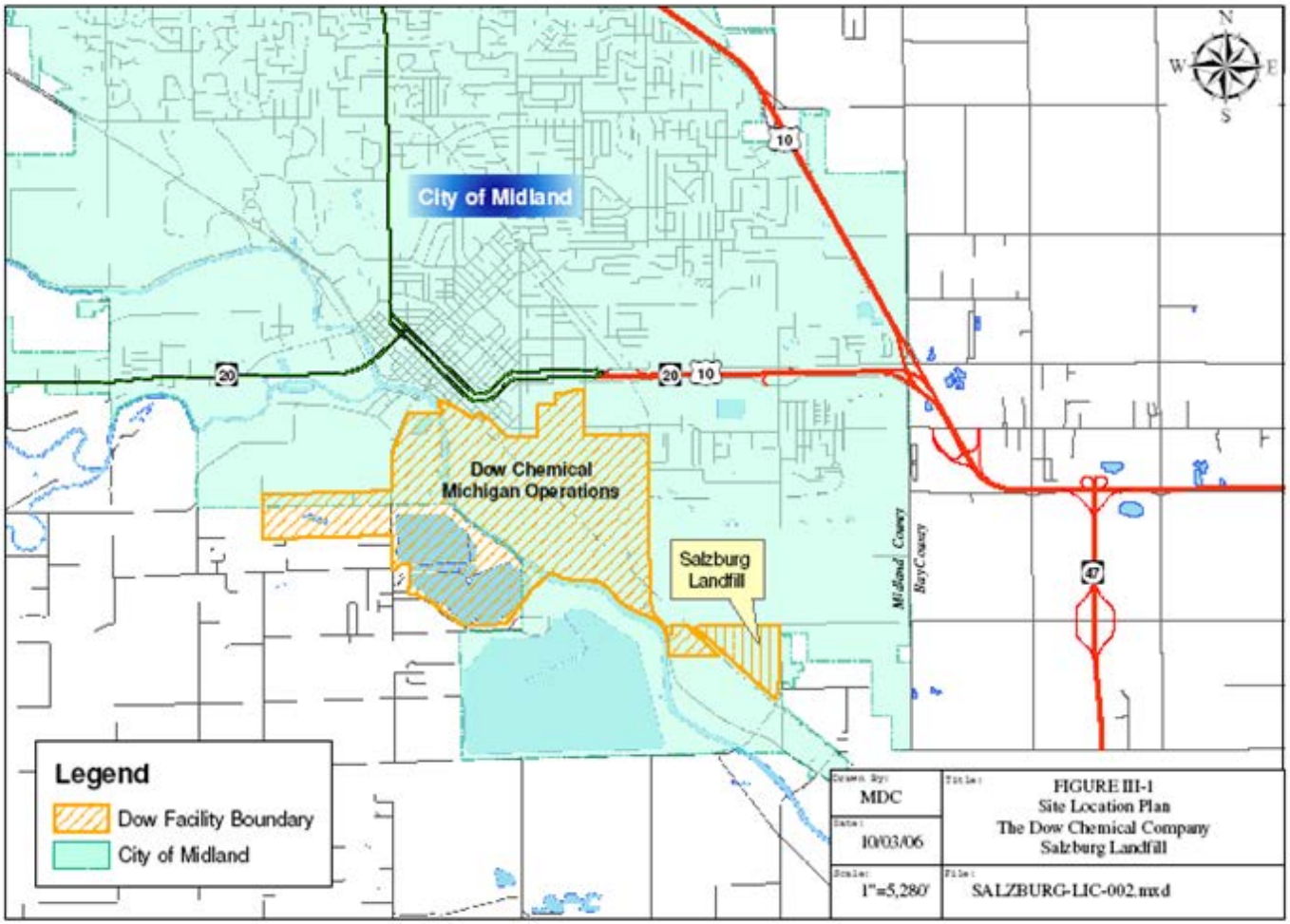
OVERVIEW OF DOW MIDLAND PLANT AND DRAFT LICENSE

Cheryl Howe and Dan Dailey
Permit Engineers/
Project Managers

Site Background

- Dow Plant Site is about 1,900 acres in size
  - Wide variety of hazardous wastes generated from the manufacturing of:
    - Plastics;
    - Agricultural chemicals;
    - Organic chemicals;
    - Inorganic chemicals; and
    - Research and development activities
  - Dow treats much of the hazardous waste it generates on-site
- Dow Salzburg Landfill site is 152 acres in size

Dow Midland Plant and Salzburg Landfill Locations



Relicensing Process

- **Propose to issue a combined License for Dow's Midland Plant and Salzburg Landfill**
  - Salzburg Landfill License is being renewed early
  - Some License conditions and Attachments are being merged
    - Since the Salzburg Landfill License was issued fairly recently, little technical review or changes were needed
    - Compliance Schedule for conversion of remaining portions of the Salzburg Landfill License to a standardized "Template" format
    - Plan to merge both facilities' Environmental Monitoring Conditions and Sampling & Analysis Plans over the next couple years
  - This helps streamline future relicensing
  - 10-year license term, with 5-year reopener, as in past

Dow Midland Plant and Salzburg Landfill Joint License Structure

Cover Pages and Tables of Amendments

Table of Contents and List of Attachments

Part I: Standard Conditions for MP and SLF

Part II: General Operating Conditions for MP and SLF

Part III: Container Storage Conditions for MP

Part IV: Tank System Storage and Treatment Conditions for MP

Part V: Incinerator Treatment Conditions for MP

Part VI: Surface Impoundments (Tertiary Pond) Storage and Treatment Conditions for MP

Part VII: Post-Closure Care Conditions for Closed Units for MP

Part VIII: Landfill Disposal Conditions for SLF

Part IX: Environmental Monitoring Conditions for MP

Part X: Environmental Monitoring Conditions for SLF

Part XI: Corrective Action Conditions for MP and SLF

Part XII: Schedule of Compliance for MP and SLF

Dow Midland Plant and Salzburg Landfill License Attachments

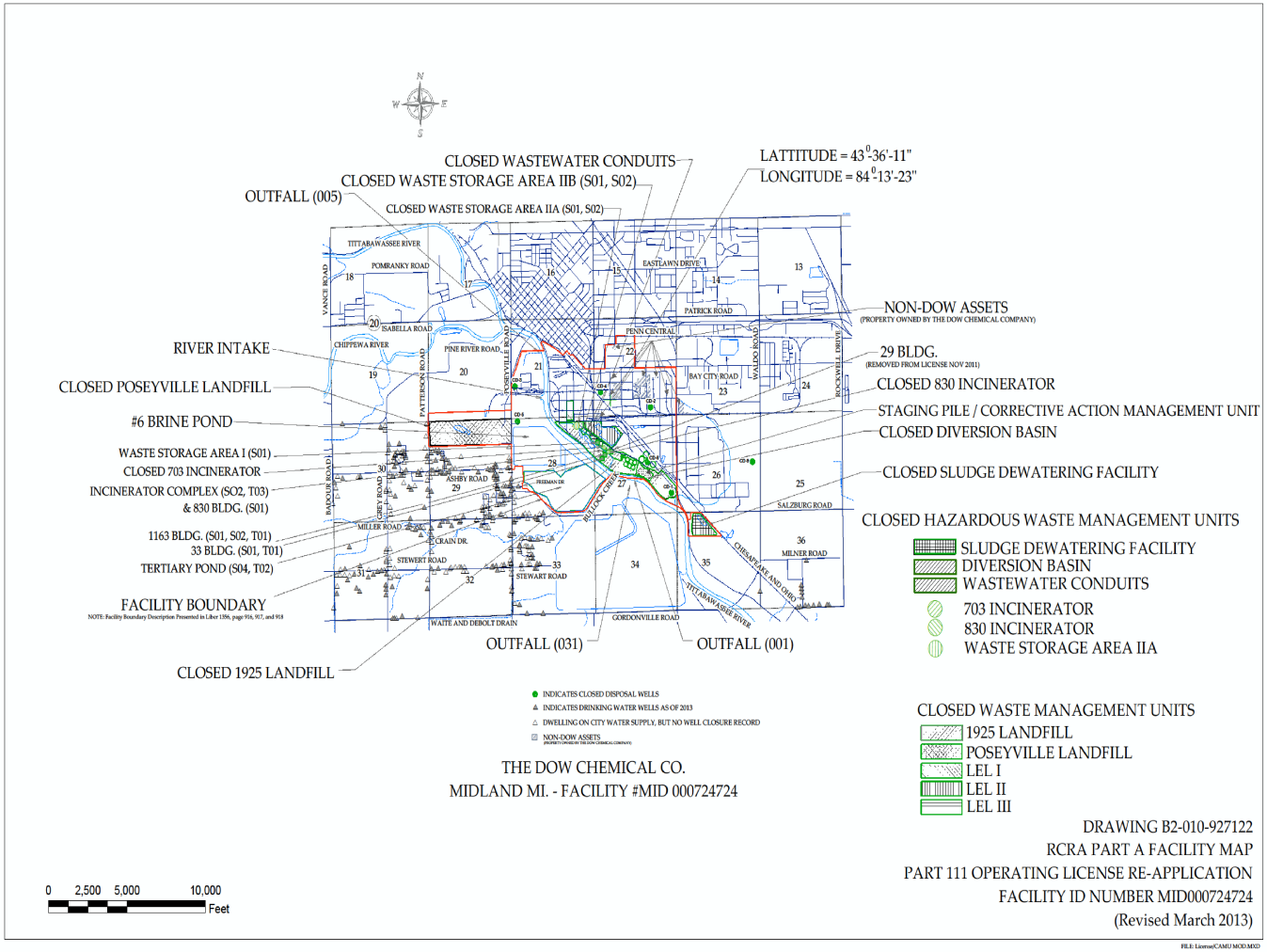
Attachment 1	**Waste Analysis Plan***
Attachment 2	**Inspection Schedule**
Attachment 3 MP	Personnel Training Program Midland Plant*
Attachment 3 SLF	Personnel Training Program Salzburg Landfill
Attachment 4	**Contingency Plan**
Attachment 5	Closure and Post Closure Care Plans Midland Plant
Attachment 6	Closure and Post Closure Care Plans Salzburg Landfill
Attachment 7	**Subpart BB Air Emissions from Equipment Leaks and Subpart CC Air Emissions from Tanks, Containers, and Surface Impoundments**
Attachment 8	Use and Management of Containers*
Attachment 9	Midland Plant Facility Boundary Topographic and Part A Maps
Attachment 10	**List of Acceptable Waste Types for Management at the Dow Michigan Operations, Midland Plant & Salzburg Landfill Facilities**
Attachment 11	Tank Systems
Attachment 12	Incineration or Thermal Treatment
Attachment 13	Surface Impoundments
Attachment 14	Salzburg Landfill Drawings and Topographic Maps
Attachment 15	Midland Plant Environmental Monitoring Program Sampling and Analysis Plan
Attachment 16	Midland Plant Ambient Air Monitoring Program
Attachment 17	Salzburg Landfill Environmental Monitoring Program Sampling and Analysis Plan
Attachment 18	Reserved – Midland Area Soils Remedial Action Plan/Corrective Measures Implementation Report
Attachment 19	**Corrective Action Information**

*** Common License Attachments** *** Attachments to be Combined** *** Separate Attachments**

Proposed Revision and Extension of Dow's Land Disposal Restrictions (LDR) Treatability Variance

- Approved 2008 LDR Variance remains effective until 2018 for RGIS soils and other corrective action-related contaminated soils
- Dow submitted Variance revision/extension request as part of the Waste Analysis Plan for inclusion of "T-Pond Solids" as a waste stream to be covered by the Variance
- Dow has demonstrated that levels of dioxins and other contaminants are comparable/less than those in RGIS soils
- Conducted public participation concurrent with draft License
- Propose to synchronize the effective date and term of revised Variance with the License

Dow Midland Plant Map Showing Regulated Units



Container Storage – Waste Storage Area I/1143 Building

Container Storage Buildings at Incineration Complex

STORAGE DESIGN CAPACITY
133,250 gallons

STORAGE DESIGN CAPACITY
125,000 gallons

Rail Car Unloading (Container Storage) at Incineration Complex

Tank Storage – 1163 and 33 Buildings for Bulk Solids

STORAGE DESIGN CAPACITY
1,800 cubic yards or 360,000 gallons

TREATMENT DESIGN CAPACITY
1,950 cubic yards/day or 400,000 gallons/day

STORAGE DESIGN CAPACITY
900 cubic yards or 181,800 gallons

TREATMENT DESIGN CAPACITY
1,950 cubic yards/day or 400,000 gallons/day

Incinerator Tank Storage
(Liquid Feed and Precipitation Containment)

Incineration Complex – 32 Building Rotary Kiln Incinerator

Unloading Spots = Container Storage Areas

INCINERATOR DESIGN CAPACITY
130 million BTUs/hour

Lead regulatory responsibility for Incinerator is DEQ, Air Quality Division

STORAGE DESIGN CAPACITY
For 19 Unloading Spots
98,750 gallons

Surface Impoundment Storage/Treatment

STORAGE DESIGN CAPACITIES

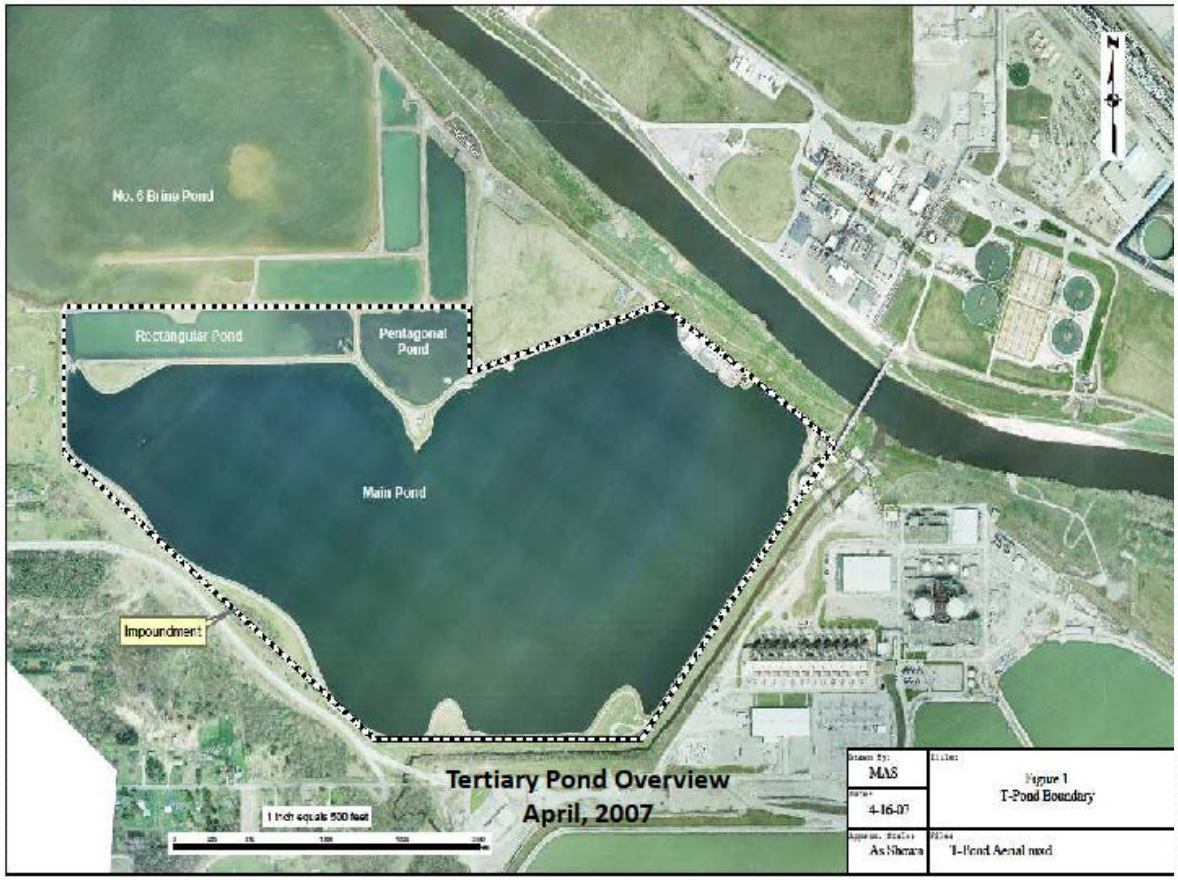
Pentagonal Pond
33,000,000 gallons

Rectangular Pond
50,000,000 gallons

Main Pond
700,000,000 gallons
783,000,000 gallons Total

TREATMENT DESIGN CAPACITY

50,000,000 gallons/day



Closed Surface Impoundment – Sludge Dewatering Facility

Will continue to be managed as post closure unit under reissued License

Closed Surface Impoundment – Diversion Basin

Site of Future Staging Pile/Corrective Action Management Unit
Will be managed as corrective action unit instead of post closure unit under reissued License

Closed Surface Impoundments (Ditches)
Wastewater Conduits

Will be managed as corrective action units instead of post closure units under reissued License

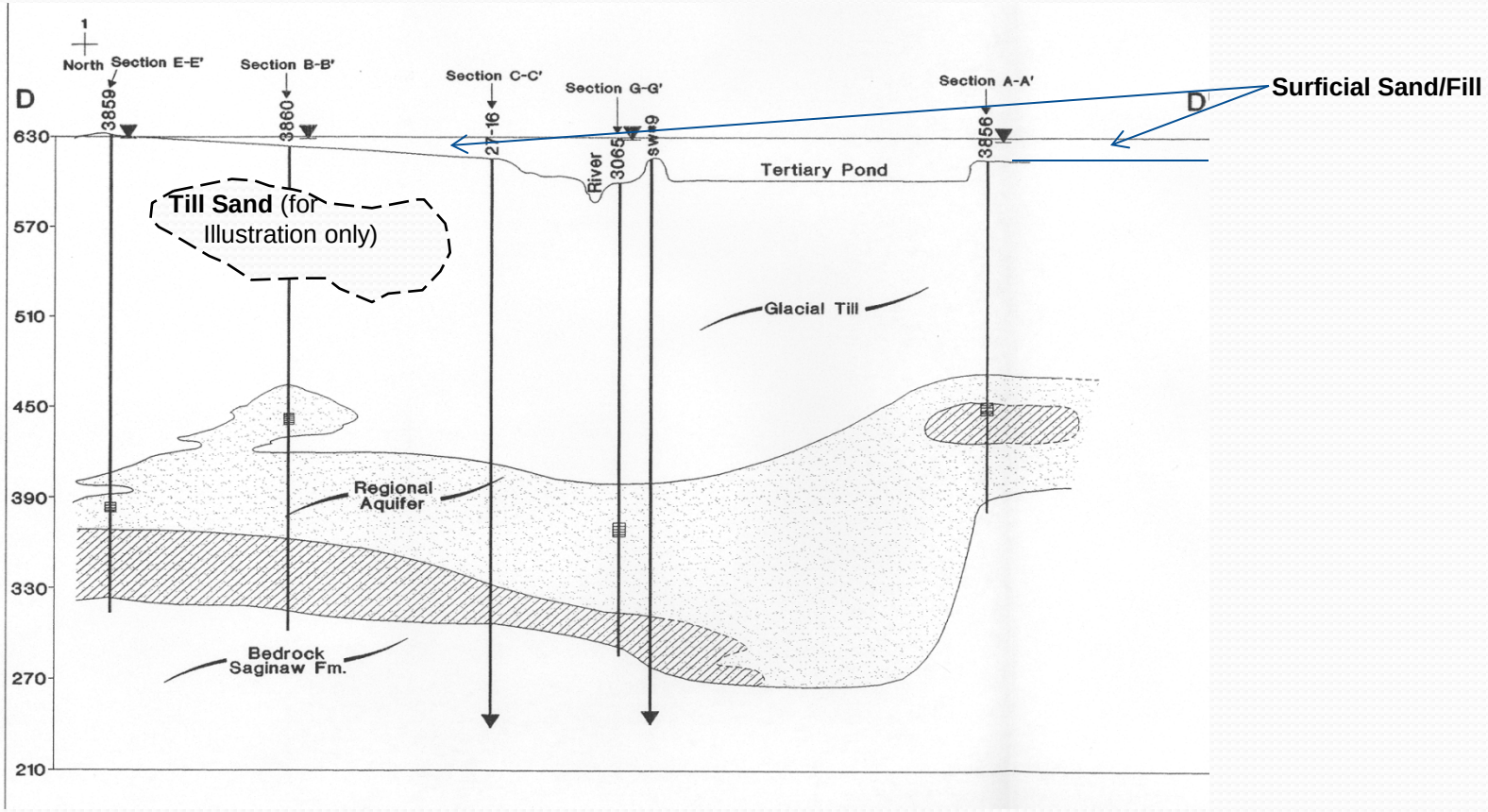
Compliance Inspection Summary for Dow Midland Plant and Salzburg Landfill

- Compliance histories for the facilities since issuance of the 2003 and 2009 Licenses are summarized in Attachment 1 to the Fact Sheet
- Dow has not been found to be significantly out of compliance during inspections by the DEQ and has quickly returned to compliance when violations were cited

MIDLAND PLANT ENVIRONMENTAL MONITORING AND CORRECTIVE ACTION

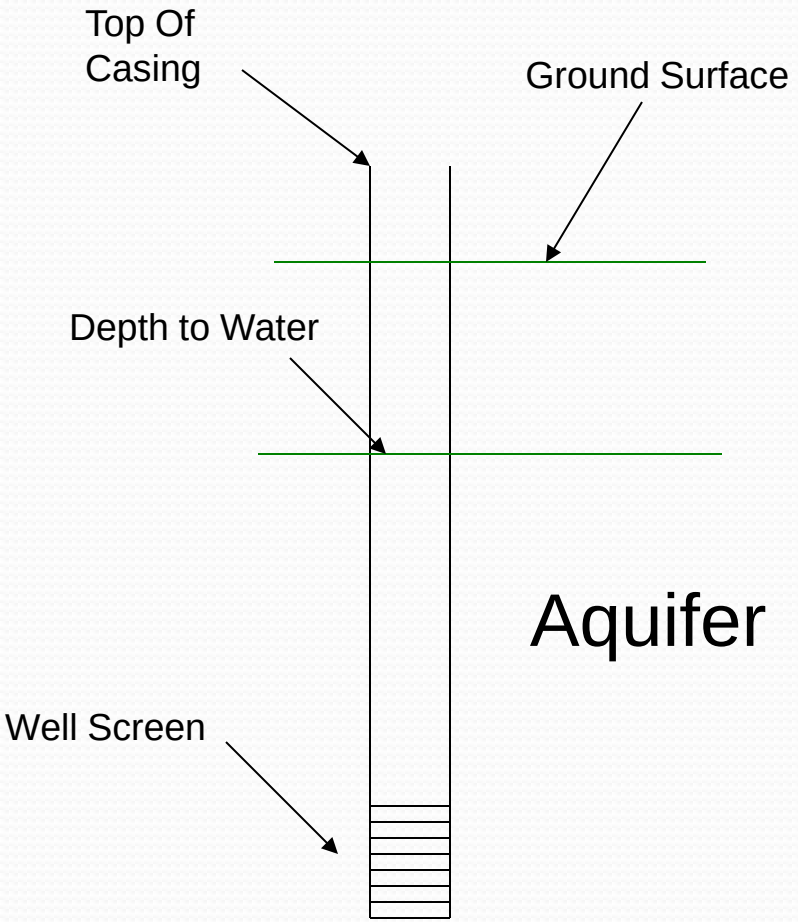
Al Taylor
Geologist

Cross Section - Major Geologic Units



- Surficial Sand and Fill
- Lakebed Clay and Glacial Till
  - Till Sands
- Regional Aquifer
- Bedrock

Monitoring Well/Piezometer



Environmental Monitoring Programs

- Detection Monitoring Programs
  - Groundwater - Chemical/Hydraulic
  - Soil – Chemical
  - Ambient Air – Chemical, Particulate
- Corrective Action – Perimeter Groundwater Control
  - Hydraulic/Chemical
- Corrective Action – Unit-Specific
  - Hydraulic/Chemical

Midland Plant Environmental Monitoring Detection Monitoring Programs

License Condition and Program Type	Environmental Monitoring Program	Comment
IX.C.1. Detection	Glacial Till and Regional Aquifer Detection Groundwater Monitoring Program	Chemical and hydraulic monitoring program to monitor deep groundwater.
IX.F.1. Detection	Sludge Dewatering Facility Monitoring Program	Chemical leak dectection and groundwater monitoring program. Hydraulic monitoring program. Periodic leachate characterization.
IX.J. Detection	Ambient Air Monitoring Program	Monitoring of ambient air at the perimeter of the facility to monitor emissions as described in Attachment 16 of the draft License.
IX.K. Detection	Soil Monitoring Program	Monitoring program to verify dioxins in Midland Plant soils are being managed effectively to prevent off-site migration via dust/vehicle trackout.

Glacial Till/Regional Aquifer (GTRA) Detection Monitoring Program

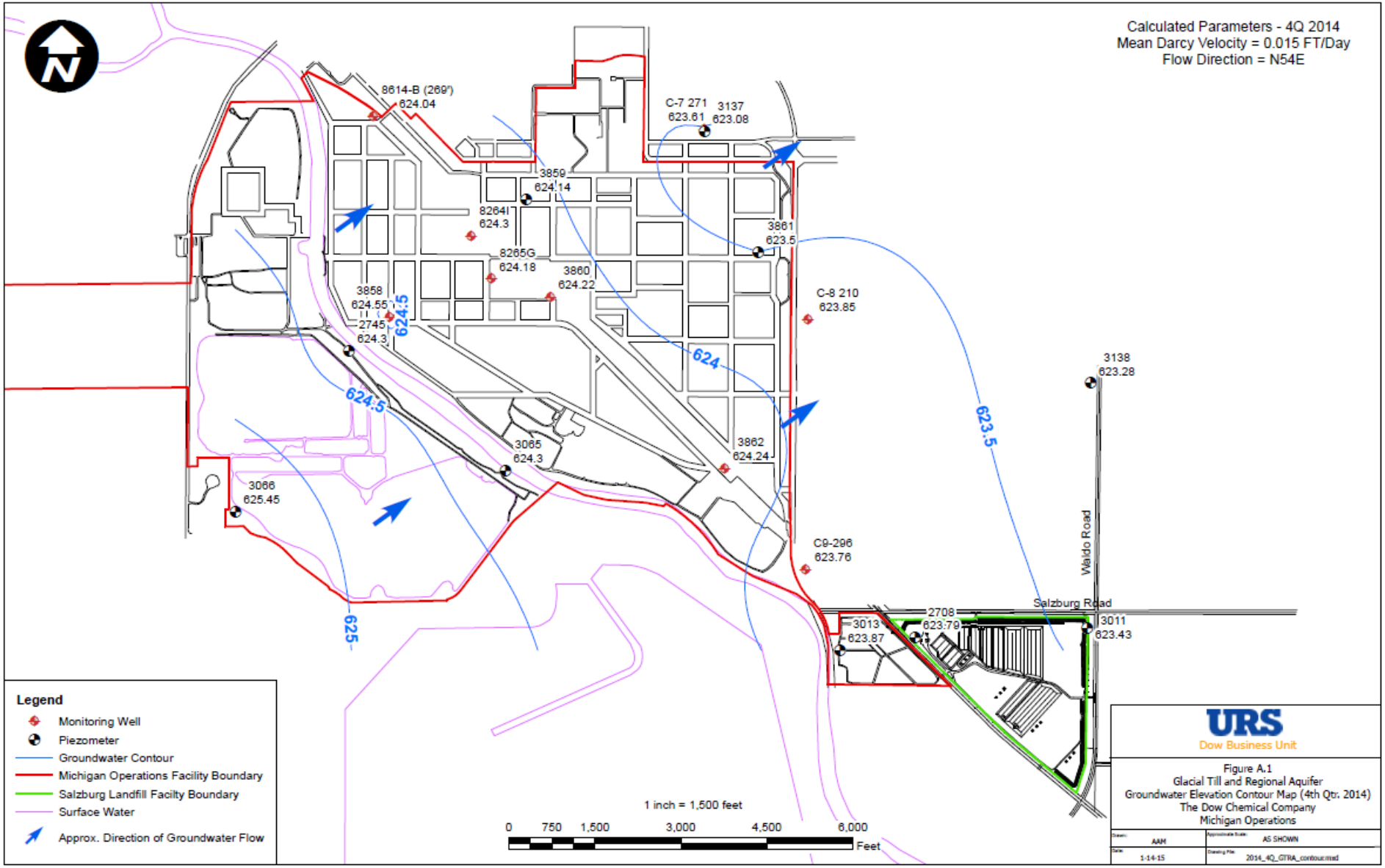
- Purpose
  - To detect potential contaminant migration from Hazardous Waste Management Units to the GTRA
  - To evaluate migration from Waste Management Units subject to Corrective Action
- Chemical Monitoring
- Hydraulic Monitoring
- Vertical Gradient Monitoring

Glacial Till/Regional Aquifer Monitoring Plan

Table 2-A. Sample Collection Chart

Identifier	Site Info.	Frequency	SWL?	Field Parameters	Analysis Parameters	Specific Constituents	Data Evaluation/Response
Glacial Till and Regional Aquifer Detection Monitoring							
3794	Well	Quarterly	Yes	Temp, pH, Conductivity, REDOX, DO, Turbidity	VOA, EOA, METALS (filtered), SULFATE, CHLORIDE, CARBS	Primary Constituents: benzene, chlorobenzene, 1,2-dichlorobenzene, 1,4-dichlorobenzene, 1,2,4-trichlorobenzene, 1,1-dichloroethane, 1,2-dichloroethane, methylene chloride, o-chlorophenol, 2,4-D, 2,4-dichlorophenol, pentachlorophenol, phenol, silvex, 2,4,5-T, 2,4,5-trichlorophenol, bromoform, 1,2-dibromoethane, dibromomethane, 1,2-dibromo-3-chloropropane Tracking Parameters: chloride, carbonate alkalinity(CO3), bicarbonate alkalinity, sulfate (SO4), calcium, magnesium, potassium, sodium, iron additional compounds for Cluster C-7: dichlorodiflouromethane, trichoroflouromethane	(See Figure 1) QUARTERLY EVALUATIONS: Detection Monitoring Performance Criteria for Primary Constituents Concentrations of Primary Constituents in each well will be compared to the approved reporting limits specified in Appendix B of the SAP. -Performance criteria have been met if measured concentrations of all constituents in all wells are **less than** their respective reporting limit. -Performance criteria are not being met if the measured concentration of a constituent in any well is **equal to or greater than** the respective reporting limit. Resample the well for the Primary Constituent in question, as soon as practicable. The well will be resampled 4 times, repurging between each sampling. Confirmation that Performance Criteria are not met for Primary Constituents It is confirmed that performance criteria are not met for a Primary Constituent if 2 or more of the 4 replicates are detected at or above the reporting limit, or at least 1 of the 4 replicates is detected at 5x the reporting limit. Determine Statistically Significant Increase for a Tracking Parameter Temporal Stiff diagrams will evaluate relative percent difference for each of the compounds on the chart from previous monitoroing period to current. Statistically significant increases will be recognized by at least three consecutive quarterly temporal plots showing the same sequential pattern, or a long term change in concentration that is defined by a consistent 50% or more increase per year in annual average concentration over a period of two years for any individual Tracking Parameter. Note: for temporal Stiff diagram evaluations, non-detect values will be considered at the reporting limit. See Appendix H for description of using Stiff diagrams for chemical evaluation. Statistically Significant Increase Confirmation for Tracking Parameter The Tracking Parameter is confirmed if 2 or more of the 4 replicates result in the same temporal stiff plot sequenstial pattern or result in a 50% or more increase per year in annual average concentration over time over a period of two years. ANNUAL EVALUATIONS: - A narrative summary of groundwater Primary Constituent and Tracking Parameter results, including Tracking Parameter trends. *Note: SWLs measured as part of the chemical monitoring shall be used for quality control purposes only and not as part of the hydraulic monitoring program.
3796A	Well						
3856	Well						
3858	Well						
3860	Well						
3862	Well						
C7-231	Well						
C7-241	Well						
C7-251	Well						
C7-261	Well						
C7-271	Well						
C8-210	Well						
C9-239	Well						
C9-251	Well						
C9-278	Well						
C9-296	Well						
8614B	Well						

Glacial Till/Regional Aquifer Monitoring Plan



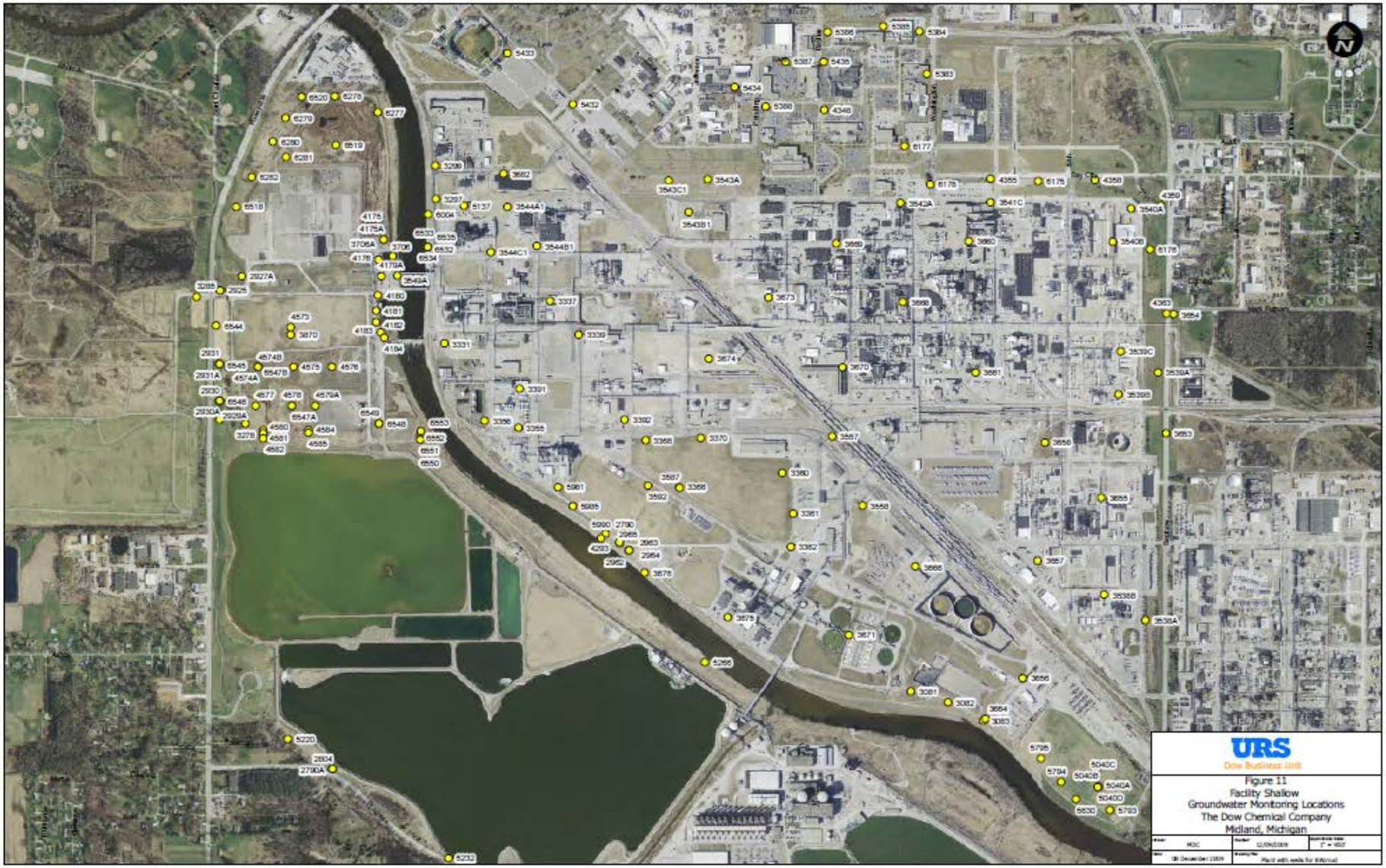
Midland Plant Environmental Monitoring
Corrective Action – Perimeter Groundwater Control

License Condition and Program Type	Environmental Monitoring Program	Comment
IX.D.2. Corrective Action	East-Side Main Plant RGIS Monitoring Program	Real-time/continuous hydraulic monitoring to ensure performance of groundwater collection system to protect Tittabawassee River. Periodic chemical monitoring.
IX.D.3. Corrective Action	West-Side and Tertiary Pond RGIS Monitoring Program	Hydraulic monitoring to ensure performance of groundwater collection system to protect shallow groundwater/Bullock Creek. Periodic chemical monitoring.
IX.D.4. Corrective Action	6Pond Collection Tile Monitoring Program	Hydraulic monitoring to ensure performance of groundwater collection system to protect shallow groundwater. Periodic chemical monitoring.
IX.D.5. Corrective Action	River Corrective Action Management Program	Real-time/continuous hydraulic monitoring to ensure performance of groundwater collection system to protect Tittabawassee River. Periodic chemical monitoring.
IX.D.6. Corrective Action	Seventh Street Purge Well Area Groundwater Monitoring Program	Formerly known as Six Purge Wells Program. Hydraulic monitoring to ensure performance of groundwater collection system to protect Tittabawassee River. Periodic chemical monitoring.
IX.D.7. Corrective Action	Ash Pond Area Groundwater Monitoring Program	Groundwater chemical detection monitoring program along Tittabawassee River bank to determine need for corrective action.
IX.D.8. Corrective Action	Former 47 Building Surface Water Protection Monitoring Program	Hydraulic and chemical monitoring programs to determine need for additional corrective action.
IX.E.1. Corrective Action	Northeast Perimeter Groundwater Monitoring Program	Groundwater corrective action (detection, compliance, and plume sentinel) monitoring programs.
IX.E.2. Corrective Action	West-Side Shallow Groundwater Monitoring Program	Groundwater corrective action (compliance) monitoring program to determine need for additional corrective action.
IX.E.3. Corrective Action	Facility Shallow Groundwater Monitoring Program	Hydraulic monitoring program to verify shallow groundwater is being maintained on-site. Chemical monitoring if offsite flow is identified.
IX.E.4. Corrective Action	South Saginaw Road Tile Performance Monitoring Program	Hydraulic monitoring program to verify shallow groundwater is being maintained on-site.

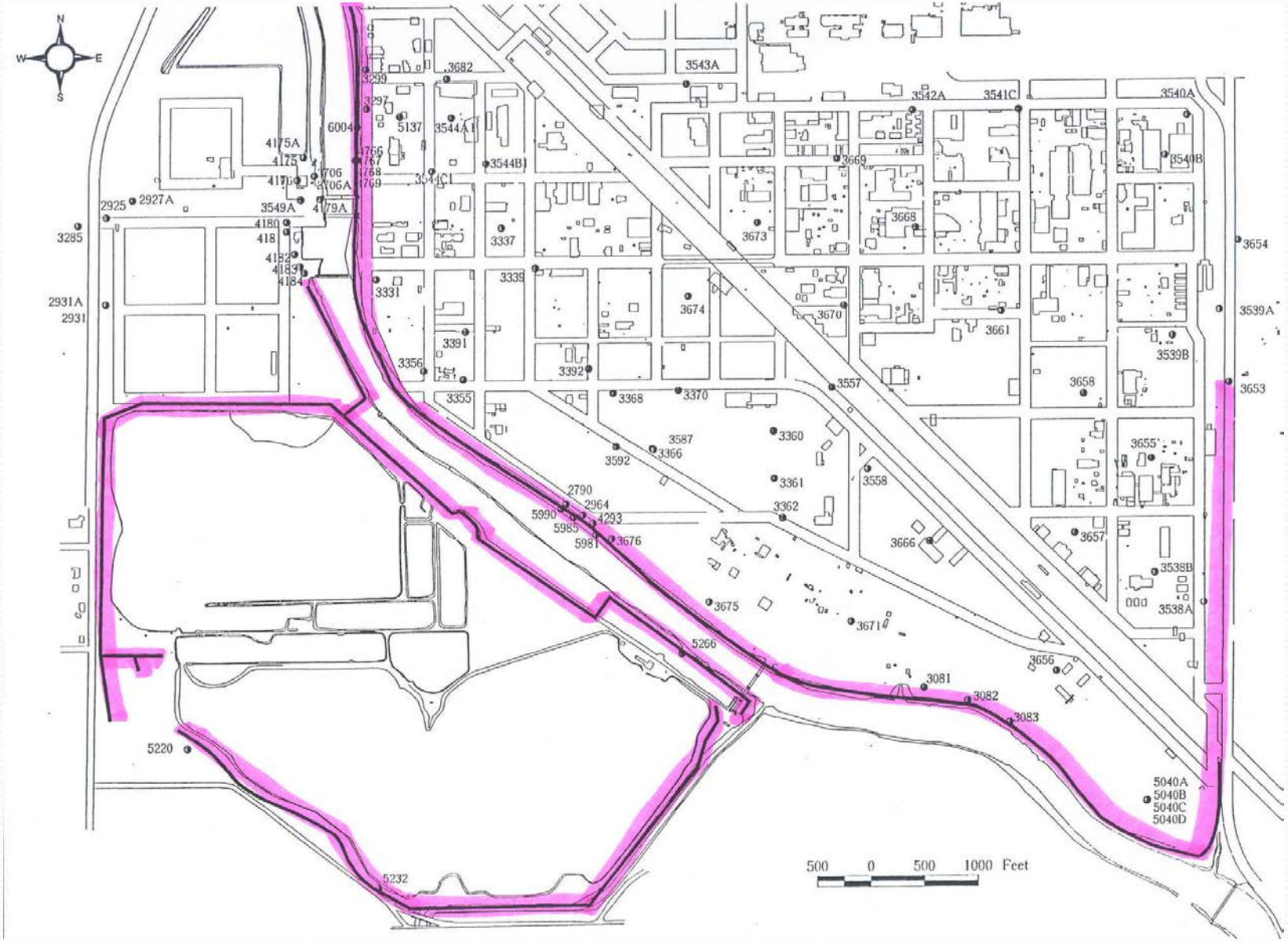
Shallow Groundwater

- Major focus of corrective action at Dow is to prevent off-site migration of contaminated shallow groundwater
- Groundwater Control Systems
  - RGIS – East Side
  - T-Pond RGIS
  - Perimeter Tile Systems
- Monitoring – Hydraulic and Chemical

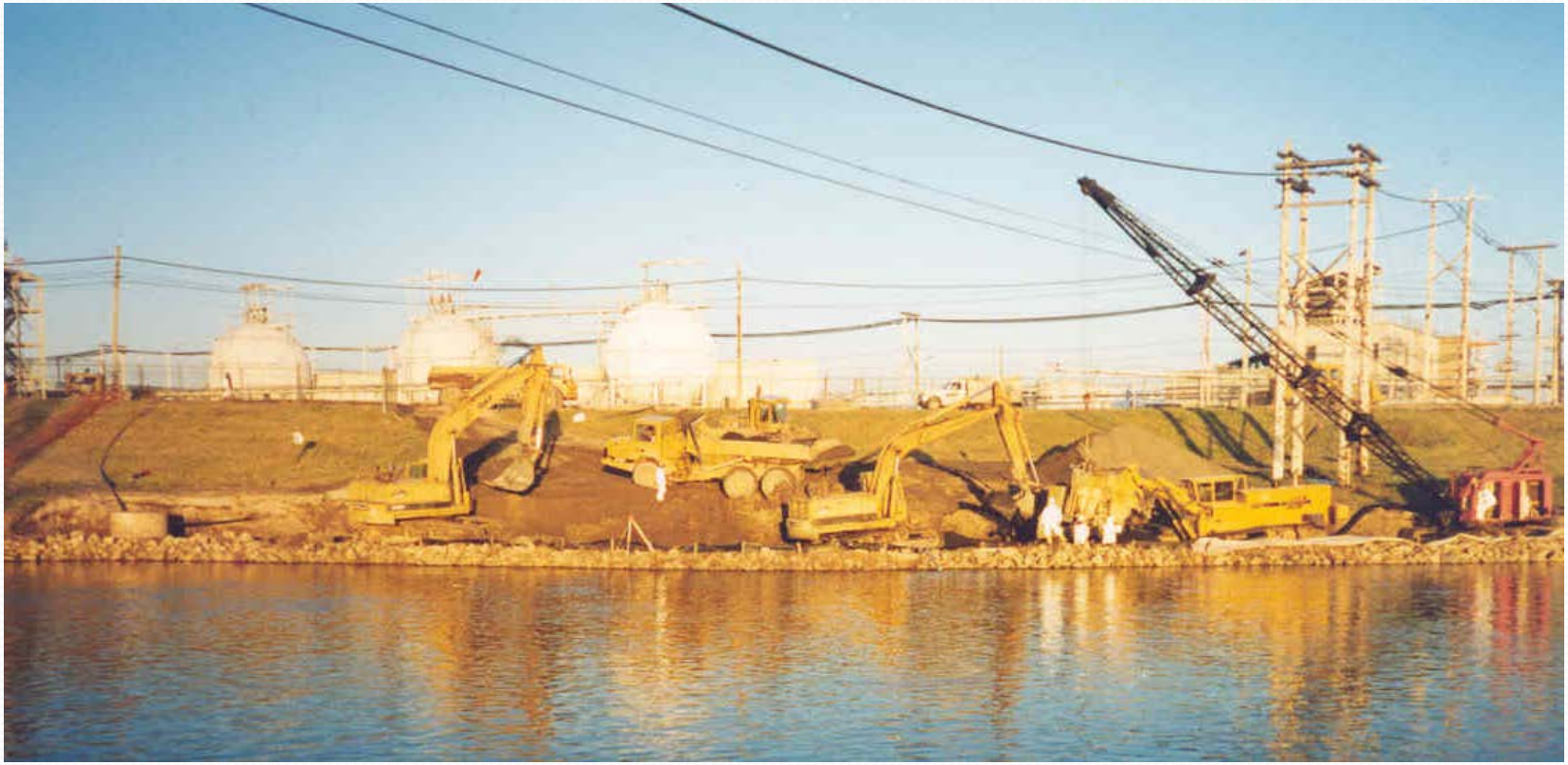
Shallow Groundwater Monitoring Network



Perimeter Groundwater Control Structures



RGIS Upgrade Construction



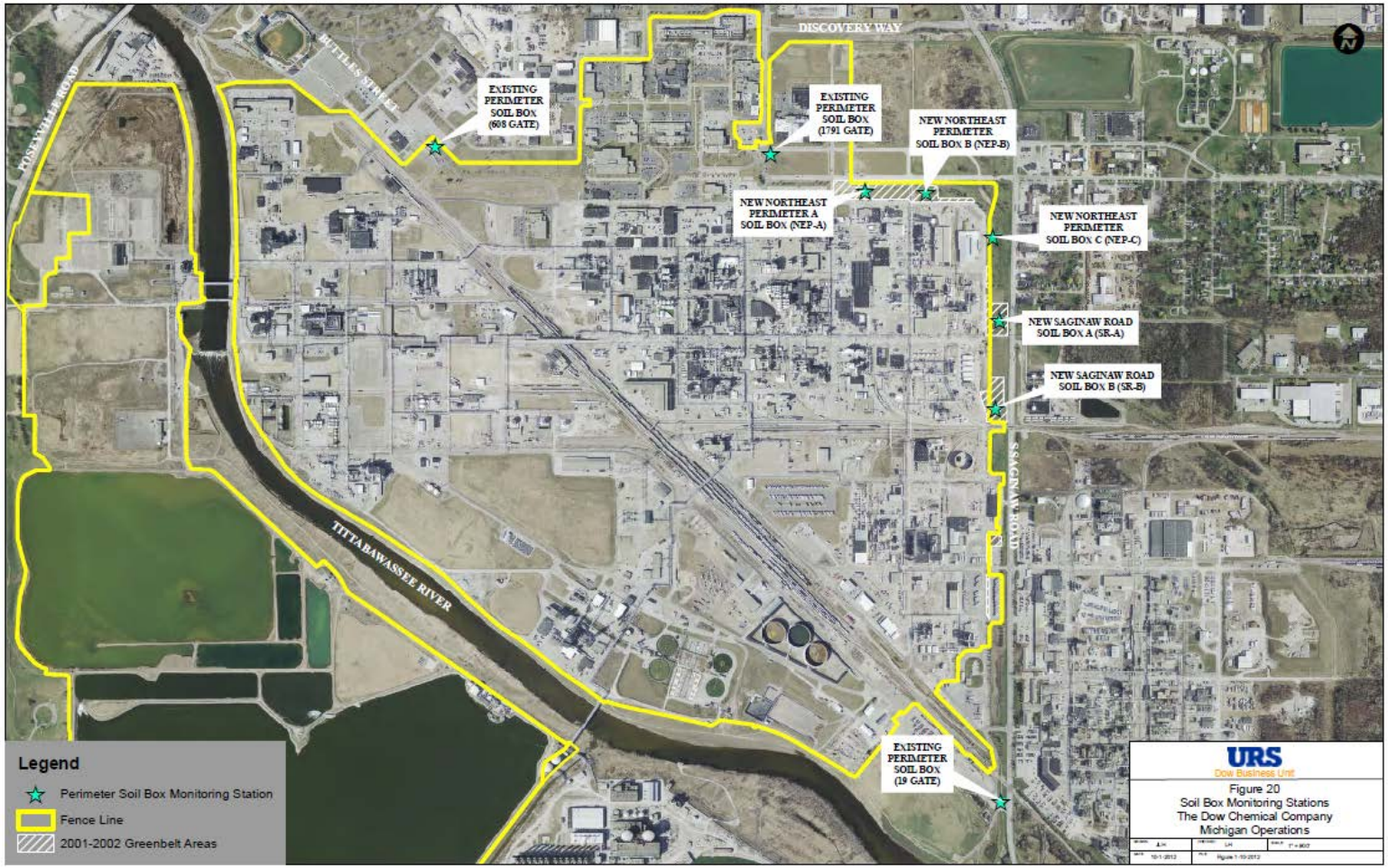
RGIS

Midland Plant Environmental Monitoring Corrective Action – Unit-Specific

License Condition and Program Type	Environmental Monitoring Program	Comment
IX.G.1. Corrective Action	Poseyville Landfill Monitoring Program	Groundwater corrective action (detection, compliance, and plume sentinel) monitoring programs. Hydraulic monitoring programs. Purge well chemical monitoring.
IX.G.2. Corrective Action	LEL I Site Monitoring Program	Hydraulic monitoring program.
IX.G.3. Corrective Action	LEL II Site Monitoring Program	Hydraulic monitoring program.
IX.G.4. Corrective Action	LEL III Site Monitoring Program	Hydraulic monitoring program.
IX.G.5. Corrective Action	1925 Landfill Monitoring Program	Hydraulic monitoring program.
IX.H.1. Corrective Action	Tertiary Pond Groundwater Recovery Monitoring Program	Chemical and hydraulic monitoring to track groundwater quality to determine if additional corrective action is necessary.
IX.H.2. Corrective Action	Tertiary Pond Slurry Wall Hydraulic Monitoring Program	Hydraulic monitoring to verify integrity of T-Pond Slurry Wall.
IX.I.1. Corrective Action	Overlook Park Groundwater Monitoring Program	Chemical and hydraulic monitoring program to track recovery of offsite groundwater.
IX.I.2. Corrective Action	US-10 Tank Farm Monitoring Program	Chemical monitoring program to track corrective action progress.

Poseyville Landfill SWMU

Perimeter Soil Monitoring
Dioxins and Furans

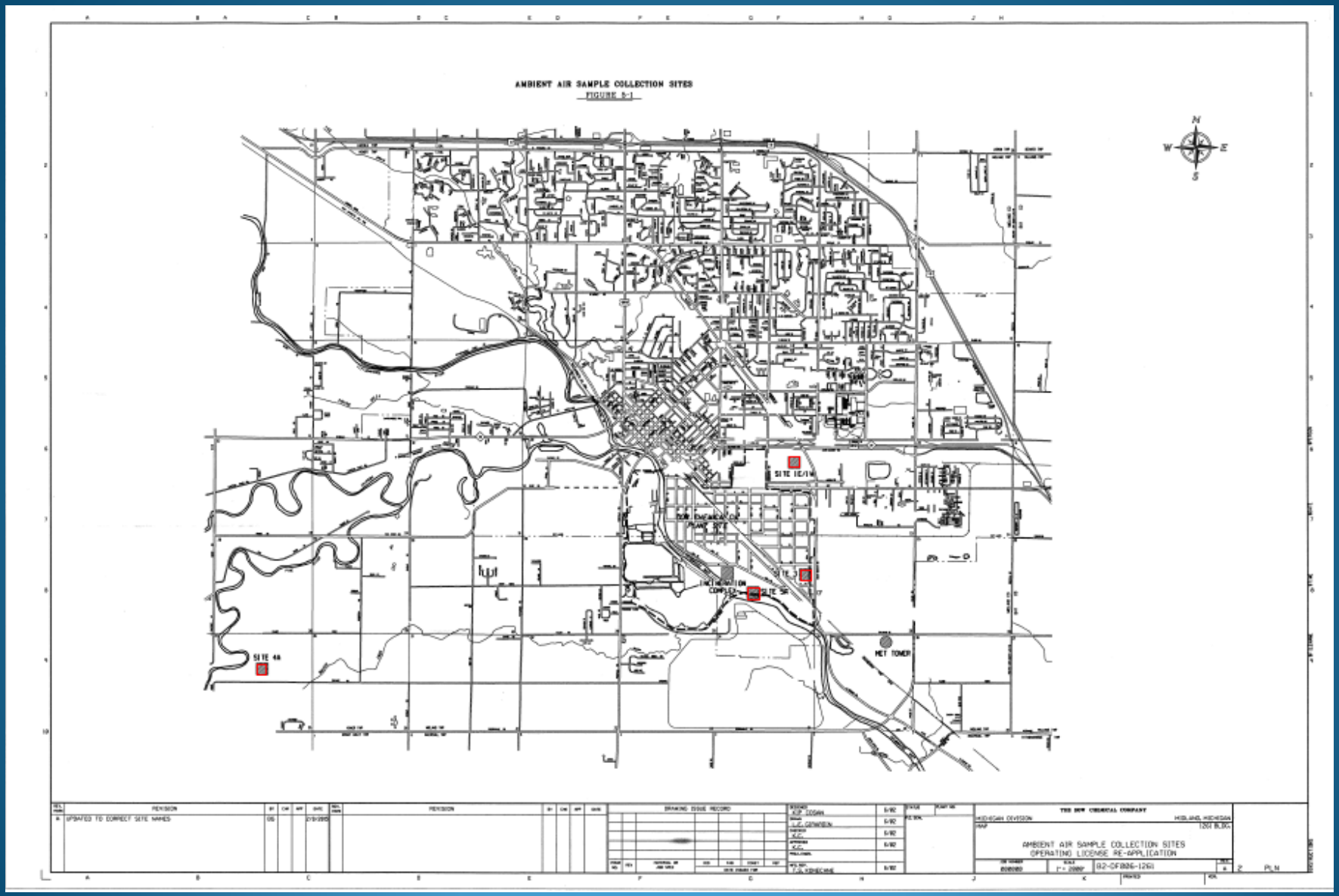


- **Trackout/Dust Monitoring**
- **Soil Box Monitoring System**

Ambient Air Monitoring Program

- Ambient air monitoring conducted since 1992 to track air emissions at the Dow facility
- Four Monitoring Stations
  - 2 on Dow plant site downwind (NE and S) of WWTP
  - 1 on off-site Dow property (N) at modeled point of annual maximum incinerator emissions
  - 1 upwind/background monitor (SW) on off-site Dow property
- Select VOCs monitored every 6 days
- Total Suspended Particulate monitored every 12 days
- Monitoring is overseen by DEQ, Air Quality Division

Dow Ambient Air Sample Collection Sites



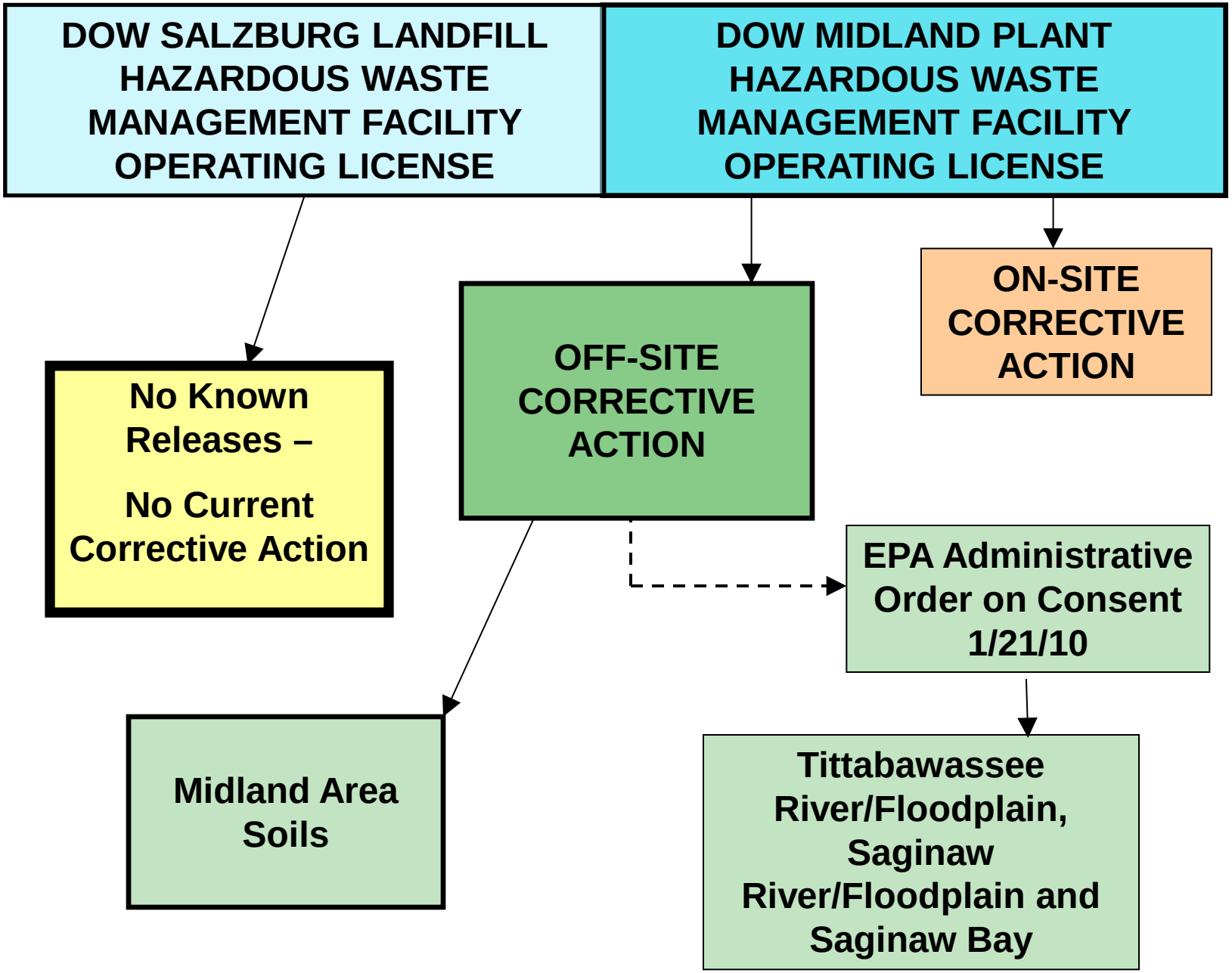
Corrective Action

- What is Corrective Action?
  - Process to address historic, current, and future releases from a facility that handles hazardous waste
  - Facility is subject to corrective action regardless of when the release occurred
  - Corrective action addresses
    - Releases within the facility boundary
    - Releases beyond the facility boundary

Corrective Action, Cont'd.

Corrective action is a phased process:

- Potential releases are identified
- Investigation is done to determine the extent of contamination
  - Interim measures are performed as necessary to provide more immediate response
- Risk assessment and remediation is done as necessary to evaluate and eliminate risks to human health and the environment


DOW SALZBURG LANDFILL HAZARDOUS WASTE MANAGEMENT FACILITY OPERATING LICENSE
DOW MIDLAND PLANT HAZARDOUS WASTE MANAGEMENT FACILITY OPERATING LICENSE
No Known Releases –
No Current Corrective Action
OFF-SITE CORRECTIVE ACTION
ON-SITE CORRECTIVE ACTION
EPA Administrative Order on Consent 1/21/10
Midland Area Soils
Tittabawassee River/Floodplain, Saginaw River/Floodplain and Saginaw Bay

Corrective Action, Cont'd.

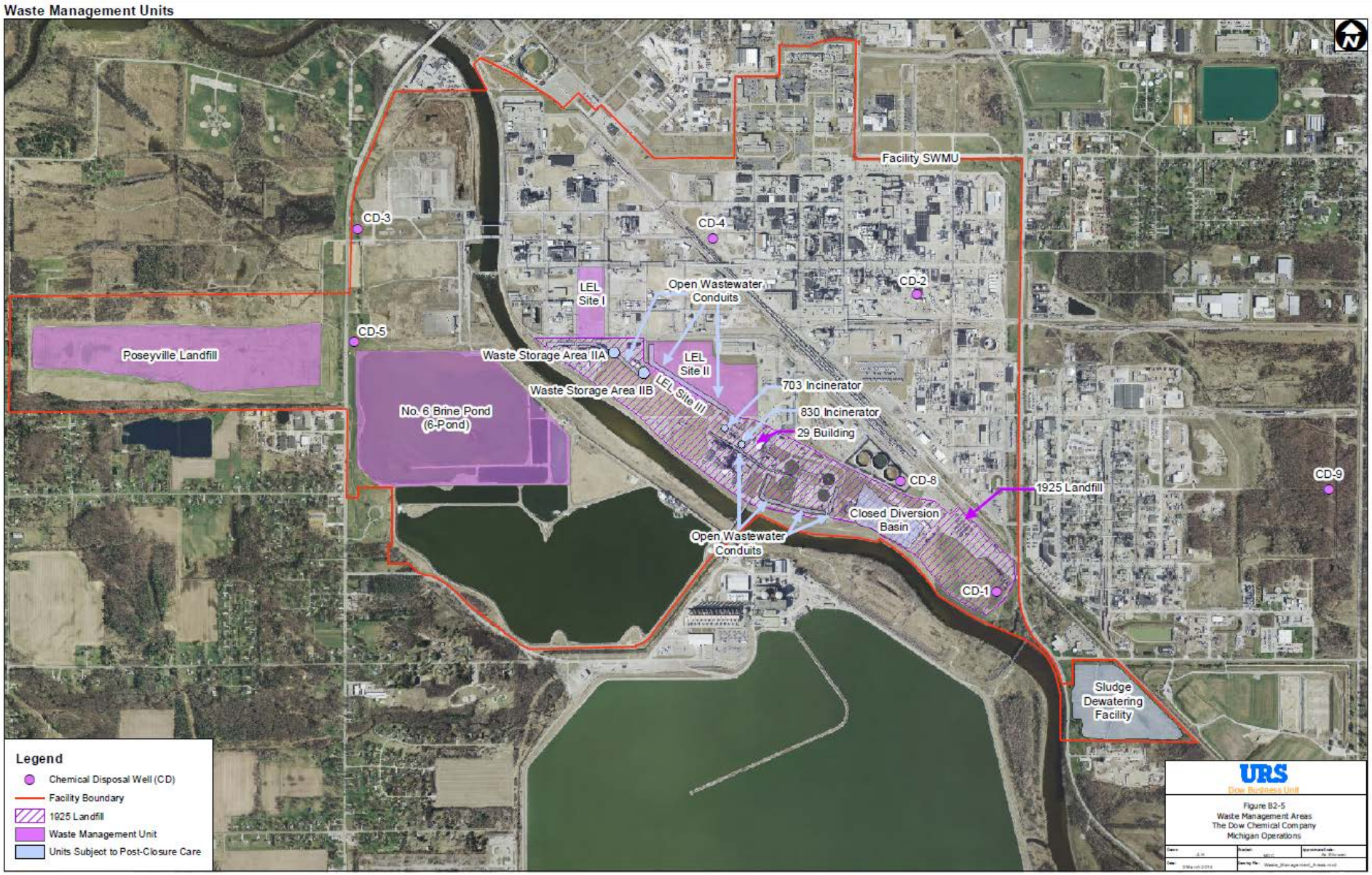
A lot has been accomplished since the 2003 license was issued, including, but not limited to:

- Existing groundwater control maintained and improved
- On-site exposure control – soil direct contact
- NAPL recovery
- Midland Area Soils
  - Nearly complete
- Tittabawassee River/Saginaw River and Bay – ongoing:
  - River sediments
  - Banks
  - Floodplain Soils

Significant Issues to be Addressed Under Relicensing

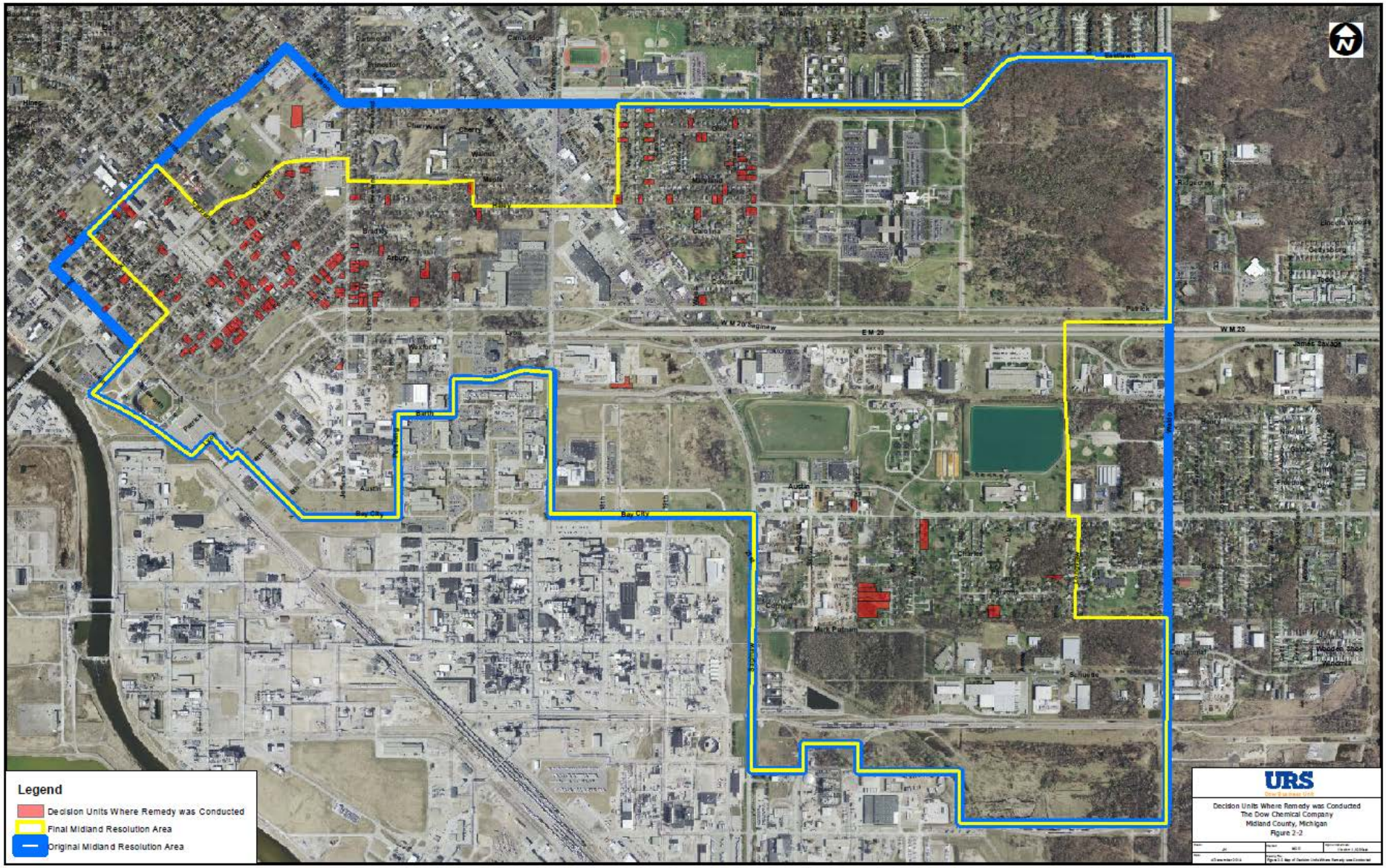
- Corrective Action Implementation Plan Process
  - Modeled on Midland Area Soils adaptive management plan
- Midland Area Soils Remedial Action Plan
  - Once approved the MAS RAP becomes a part of and enforceable in accordance with the conditions of the renewal license
- Tittabawassee River/Saginaw River and Saginaw Bay and Floodplains Superfund Alternative Process
  - Corrective action will continue to be performed in accordance with the Settlement Agreement between Dow, EPA and MDEQ
- Financial Assurance for Corrective Action
  - First time required under License - $160,560,000

On-Site Corrective Action

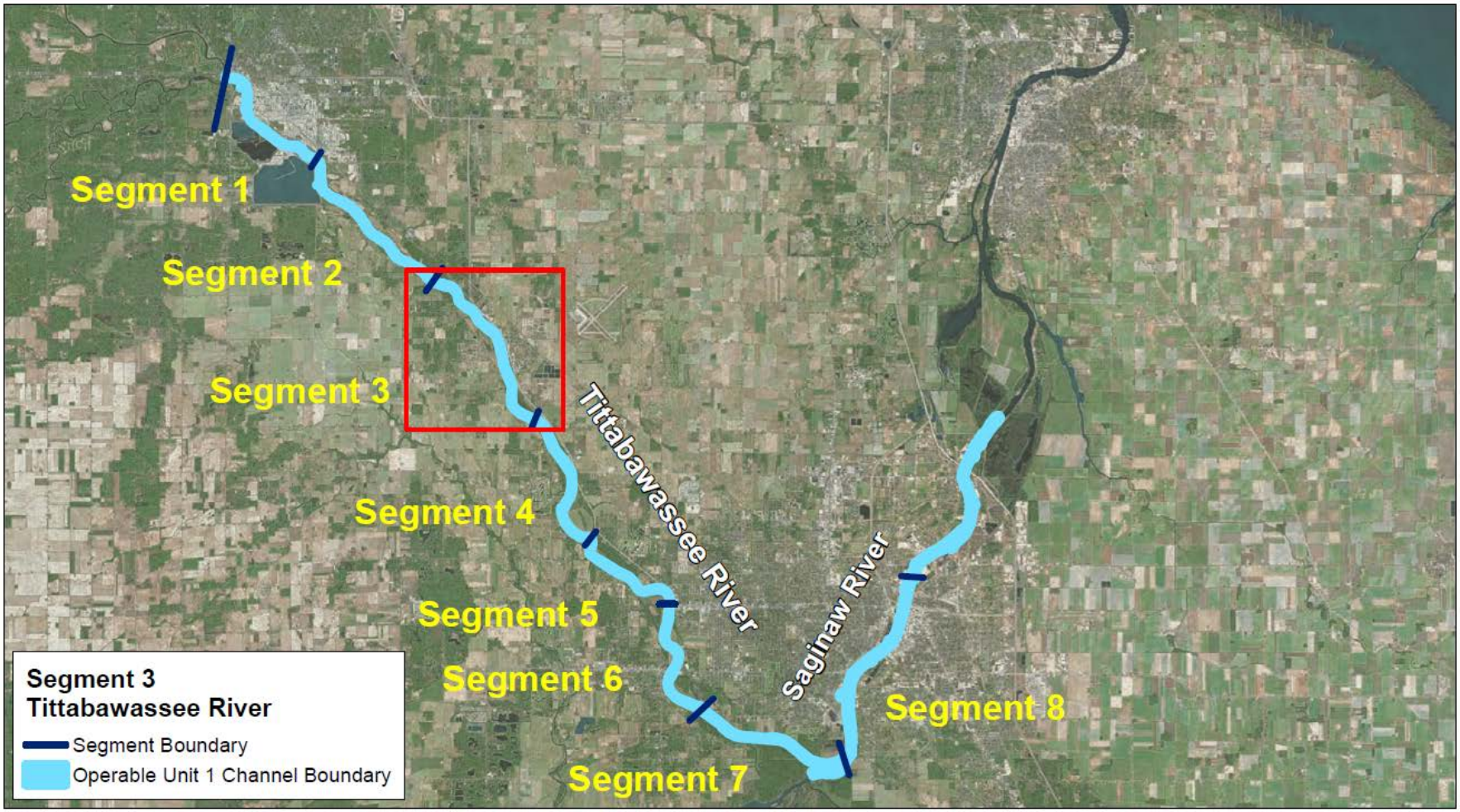


On-site Corrective Action, Cont'd.

Off-Site Corrective Action
Midland Area Soils



Off-Site Corrective Action – Rivers/Floodplains and Saginaw Bay



Corrective Action Implementation Plan (CAIP)

- A prioritized inventory of the corrective action work that needs to be completed;
- A schedule that prioritizes and results in substantial completion of the on-site corrective action work by 2020;
- Yearly work plans that are developed and submitted by Dow to the DEQ in December of each calendar year for DEQ review and approval. The approved work plans are enforceable in accordance with the conditions of the license;

Corrective Action, CAIP (Cont'd.)

- Implementation of the yearly work plans with frequent working meetings between Dow and the DEQ;
- Annual updating of the work plans based on progress and overall schedule; and
- Provisions to use the standard corrective action process as provided in the License if the CAIP process is not working as planned.

Corrective Action, Cont'd.

Where is Dow in the corrective action process?

- Varies
- In some cases, investigation is just beginning (e.g., Soil Vapor Intrusion evaluations)
- For many WMUs, significant corrective action has been completed and Dow is in a monitoring and maintenance mode (e.g., RGIS, Poseyville Landfill)
- Continue progress toward controlling human and environmental exposures
- Status is summarized in Table B2-1 of Attachment 19 (also included as an attachment to the Fact Sheet)

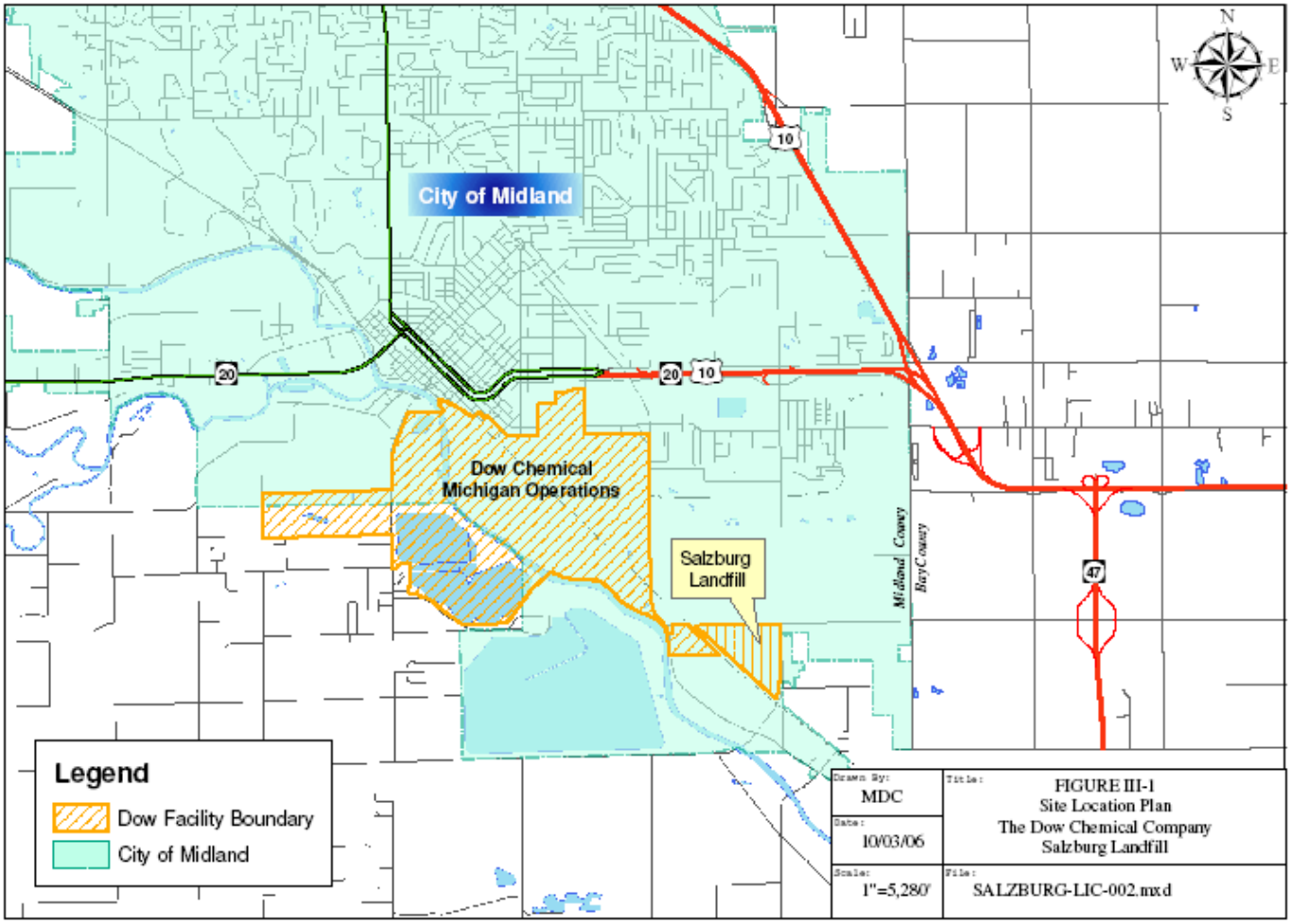
DOW SALZBURG LANDFILL OVERVIEW AND ENVIRONMENTAL MONITORING

Joe Rogers
Geologist

Presentation Overview

- Landfill Overview
- Site Geology
- Groundwater Monitoring
- Leachate Monitoring
- Leak Detection System Monitoring
- Surface Water Monitoring
- Soil Monitoring
- Ambient Air Monitoring
- Compliance Summary/History

Dow Salzburg Landfill Location



Dow Salzburg Landfill Overview

- Disposal of hazardous and nonhazardous waste from Dow's Midland Plant and other Dow plants and subsidiaries
  - Primarily incinerator ash and remediation waste
- Licensed for 3,090,000 cubic yards of waste
  - About half of capacity still available
- Wastes transported to landfill mainly in covered trucks for disposal
- No treatment of waste at landfill

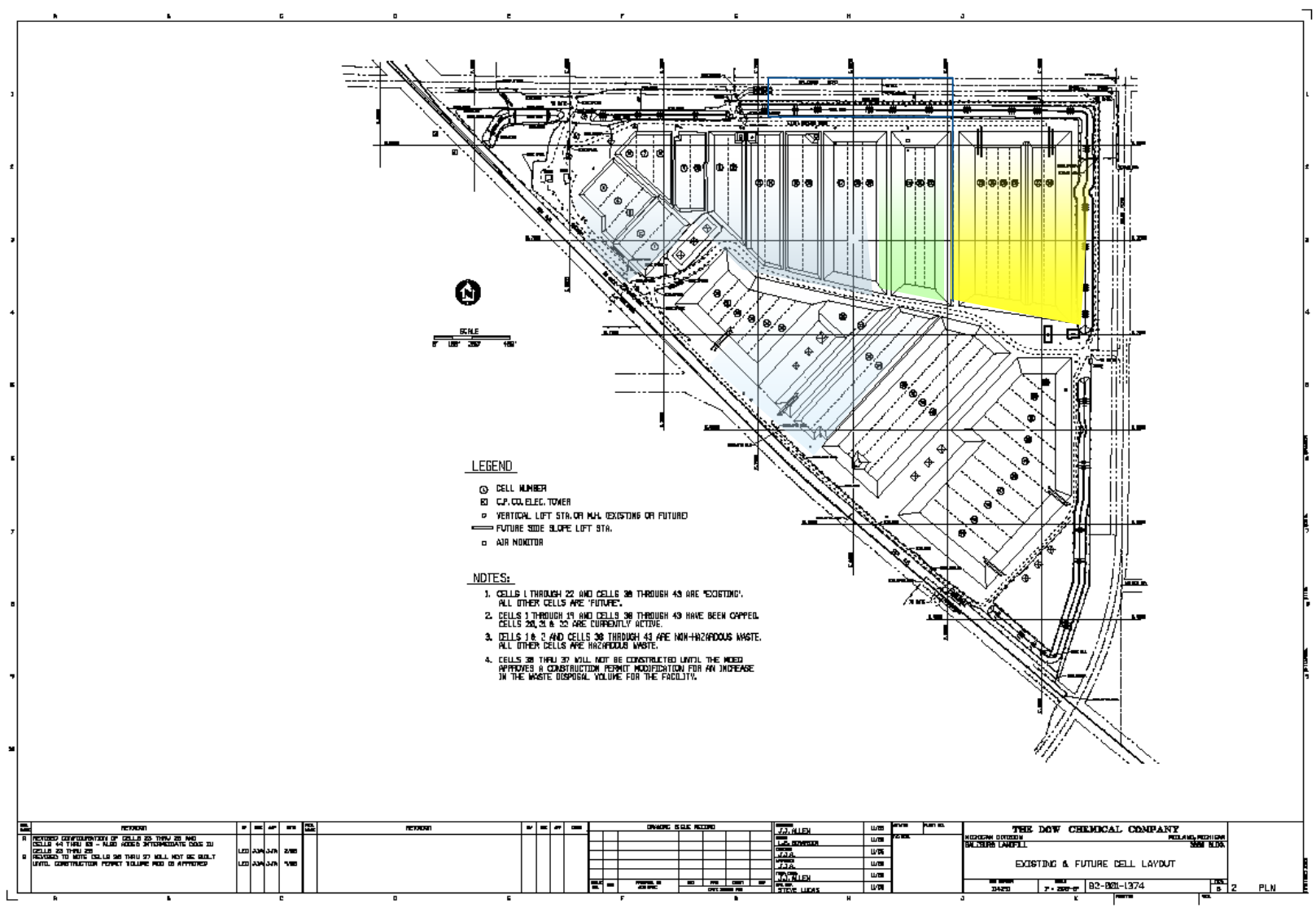
Dow Salzburg Landfill Entrance

Dow Salzburg Landfill Truck Wash

ENTRANCE

EXIT

Existing and Future Cell Layout



Summary of Landfill Cells

Cell Designation	Description (Year Closed)	Approximate Cap Acreage
Cells 1-2	Closed hazardous/solid waste cells (1984)	1.9
Cells 3-5	Closed hazardous waste cells (1984)	2.2
Cells 6-8	Closed hazardous waste cells (1986)	1.7
Cells 9-10	Closed hazardous waste cells (1986)	1.7
Cells 11-12	Closed hazardous waste cells (1986)	2.5
Cells 13-14	Closed hazardous waste cells (1988)	3.2
Cells 15-16	Closed hazardous waste cells (1991)	3.5
Cells 17-19	Closed hazardous waste cells (2005)	6.1
Cells 38-39	Closed solid waste cells (1988)	4
Cells 40-43	Closed solid waste cells (2005)	9.4
Cells 20-22	Active hazardous/solid waste cells; closing soon	7.2
Cells 23-28	New hazardous/solid waste cells; Cells 23-26 have been constructed and filling will begin soon; Cells 27-28 will be constructed in the future	13.6

Landfill Development Plan

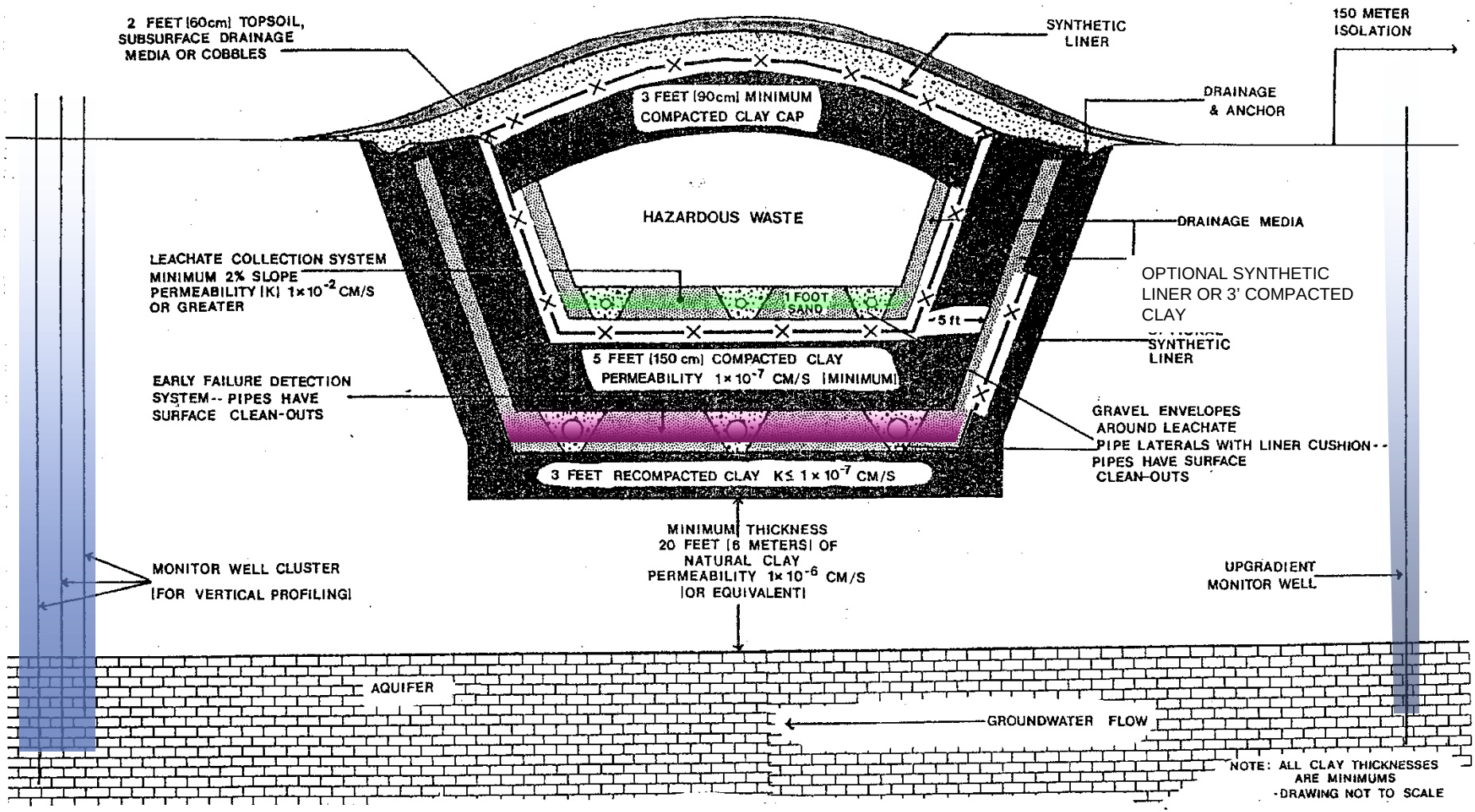
- Development plan for the landfill will be dependent upon waste generation rates

- Dow must obtain formal approval from the DEQ for detailed engineering design plans before constructing each set of cells

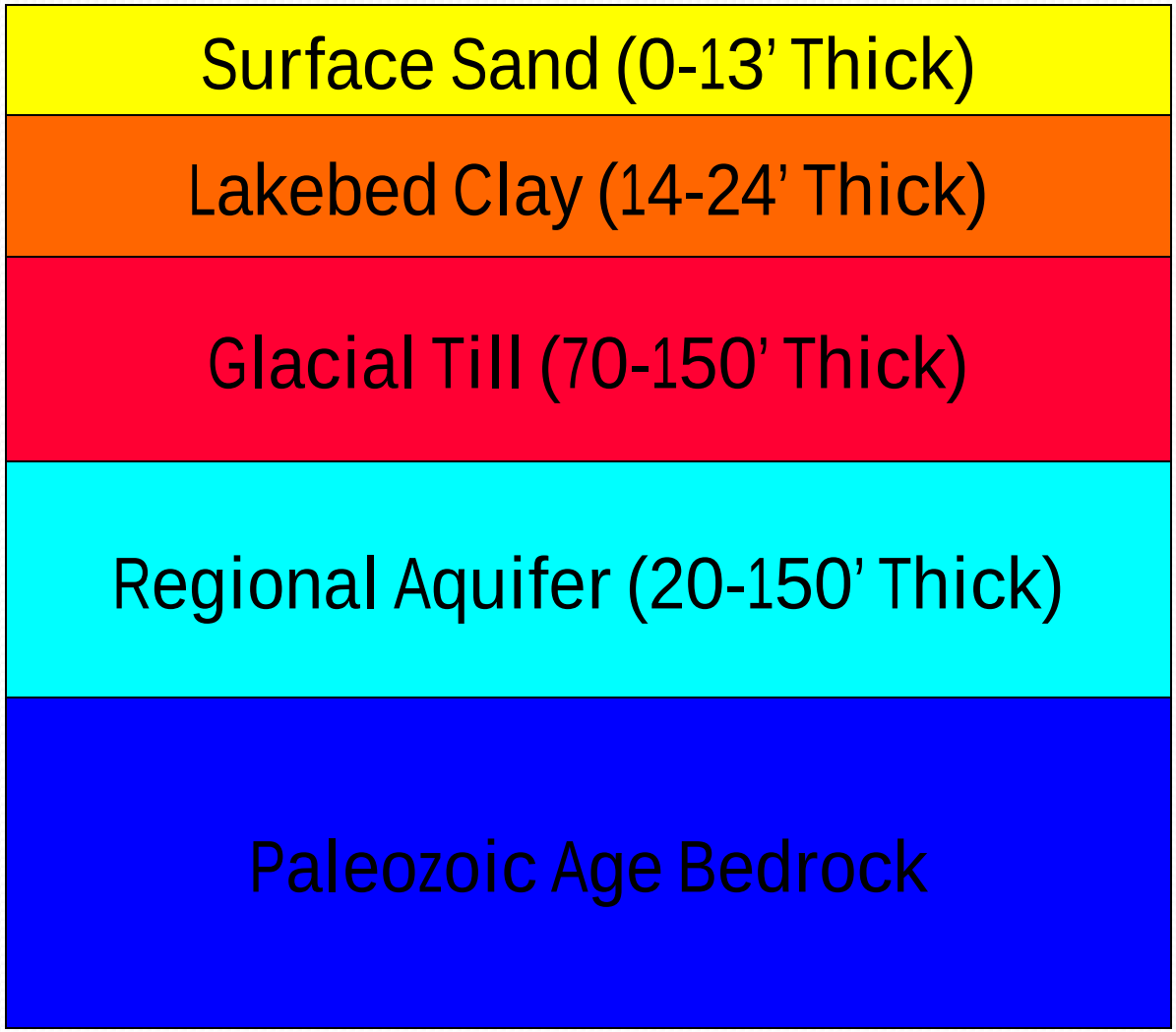
Cells 23-26 Under Construction 11/6/14

Closed Landfill Cell

Part 111 Hazardous Waste Landfill
Typical Trench Cross Section



Generalized Stratigraphy



Groundwater Flow Direction

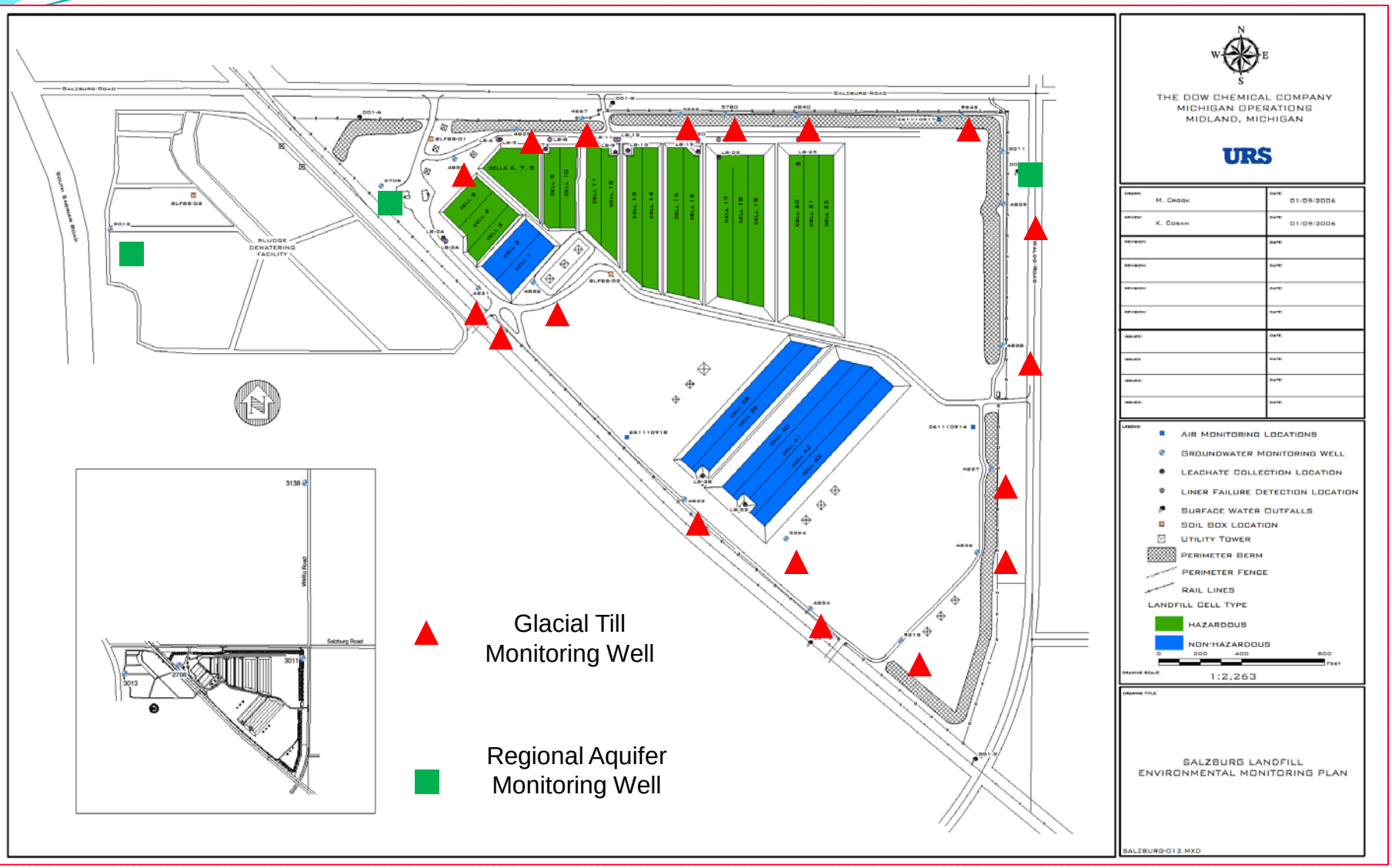
- **Glacial Till**
  - Isolated and discontinuous
  - No continuous flow system or direction

- **Regional Aquifer**
  - Confined aquifer - upward gradient
  - Horizontal flow to northeast

Groundwater Monitoring

- Groundwater Detection Monitoring Program
  - 17 glacial till monitoring wells (defined as uppermost aquifer)
  - 3 regional aquifer monitoring wells
- Semi-annual monitoring
  - Primary Parameters: VOCs, SVOCs, TOC, metals, Cyanide
  - Tracking Parameters: dissolved metals, general chemistry anions, pH, specific conductivity, temperature

Monitoring Well Locations



Typical Monitoring Well

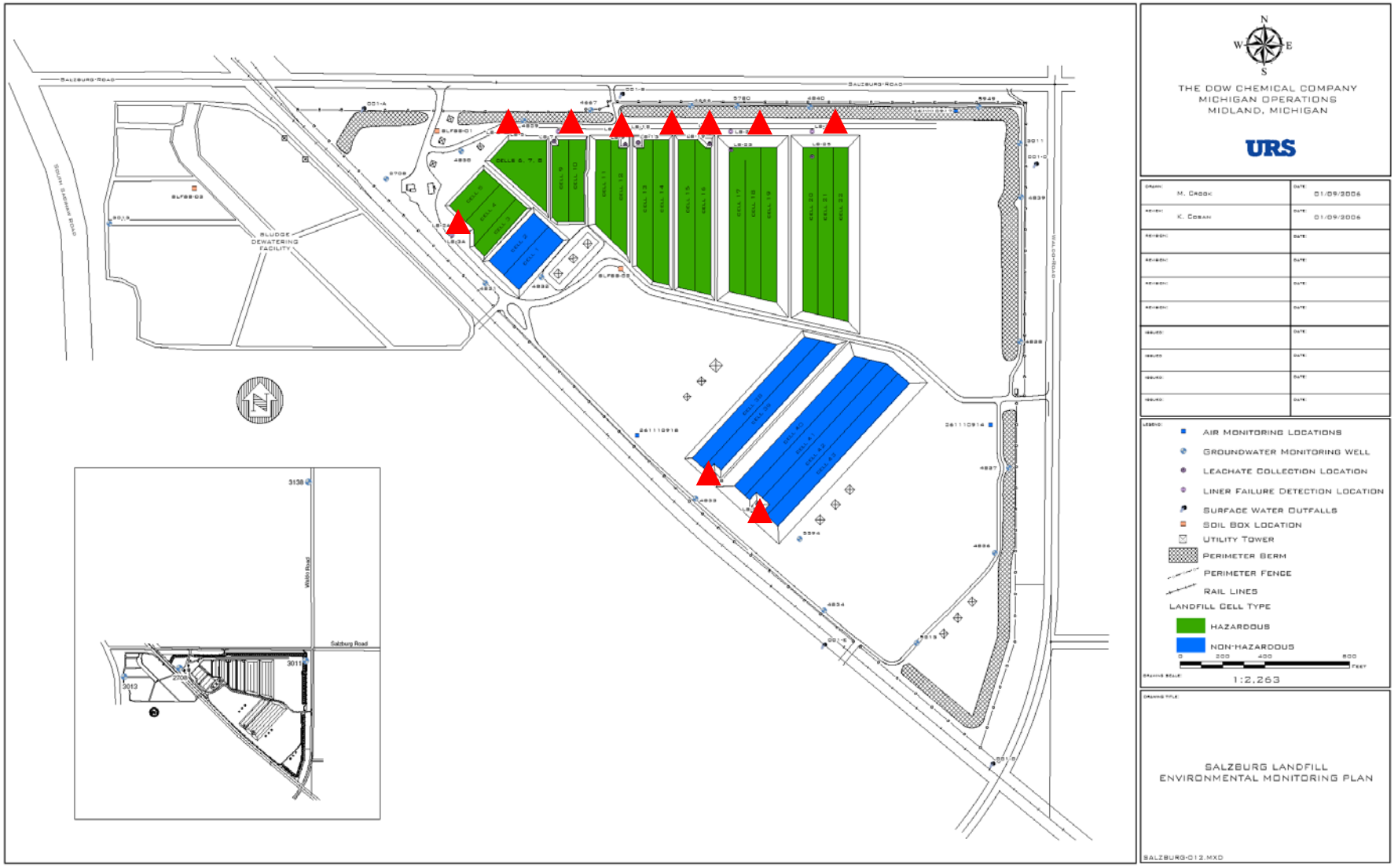
Groundwater Monitoring (Cont'd.)
Data Evaluation and Reporting

- If statistically significant exceedance is detected, confirmation of the exceedance is required
  - If not confirmed, regular detection monitoring program continues
  - If confirmed, investigation/corrective action required
- Reporting required within 60 days of end of quarter in which samples were collected
- More detailed Annual Report required
- Similar evaluation/reporting processes for other landfill monitoring programs

Leachate Monitoring

- Monitoring of liquid collected from the landfill cell above the primary liner (i.e., leachate)
  - 10 monitoring locations at Lift Stations
    - Chemical monitoring - results used to update groundwater, surface water and leak detection monitoring parameter lists
      - Active cells – annually
      - Closed cells - every five years
    - Flow volume monitoring
      - Active cells – monthly
      - Closed cells – annually

Leachate Monitoring Locations



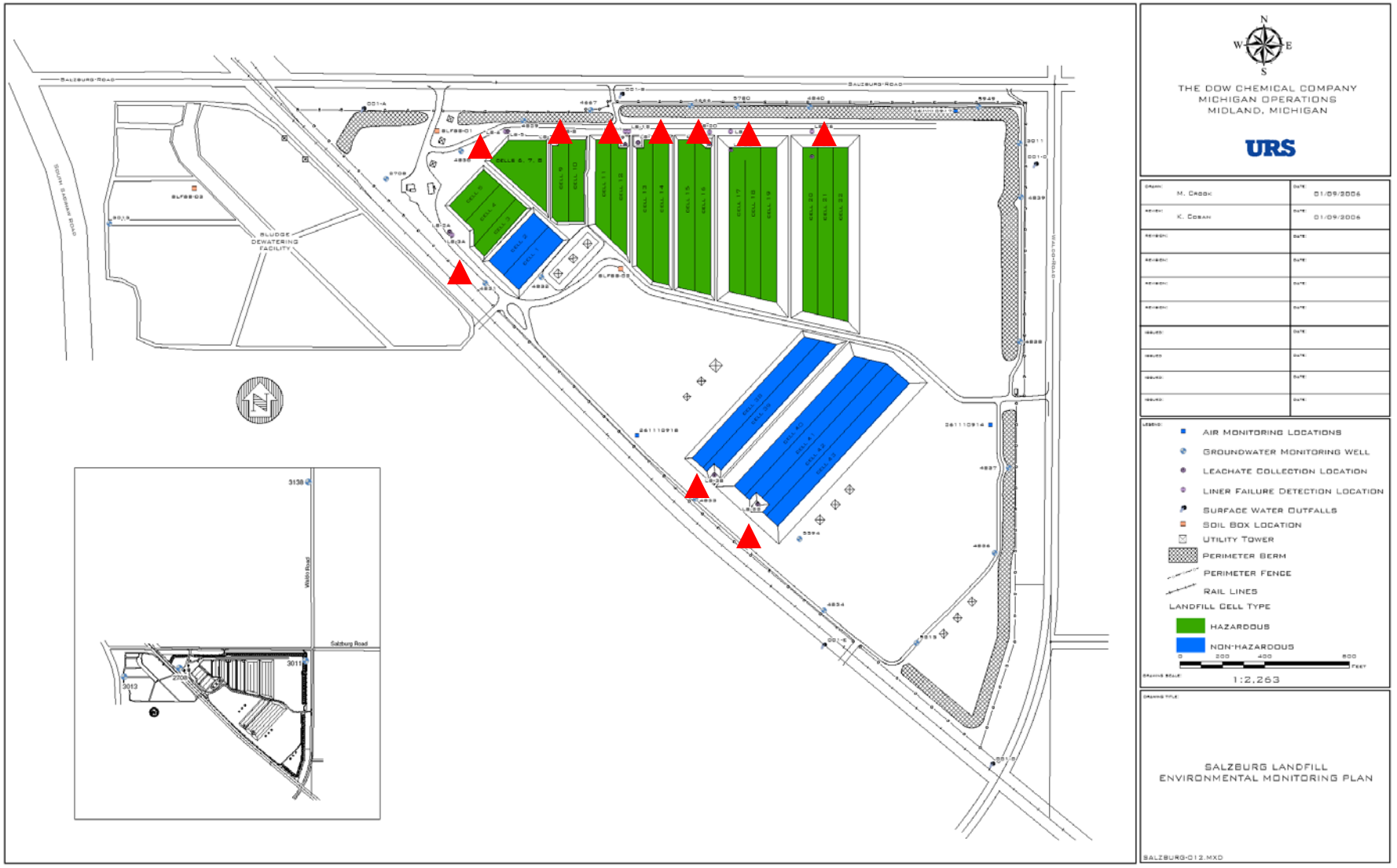
Leachate Monitoring (Cont'd.)

Lift Station Monitoring Location for Active Cells 20-22

Leak Detection Monitoring

- Monitoring of liquid from below the primary liner and above the secondary liner
  - Early warning leak detection system
  - 10 monitoring locations at Lift Stations
  - Quarterly chemical/field monitoring for primary and tracking parameters
  - Monthly flow monitoring

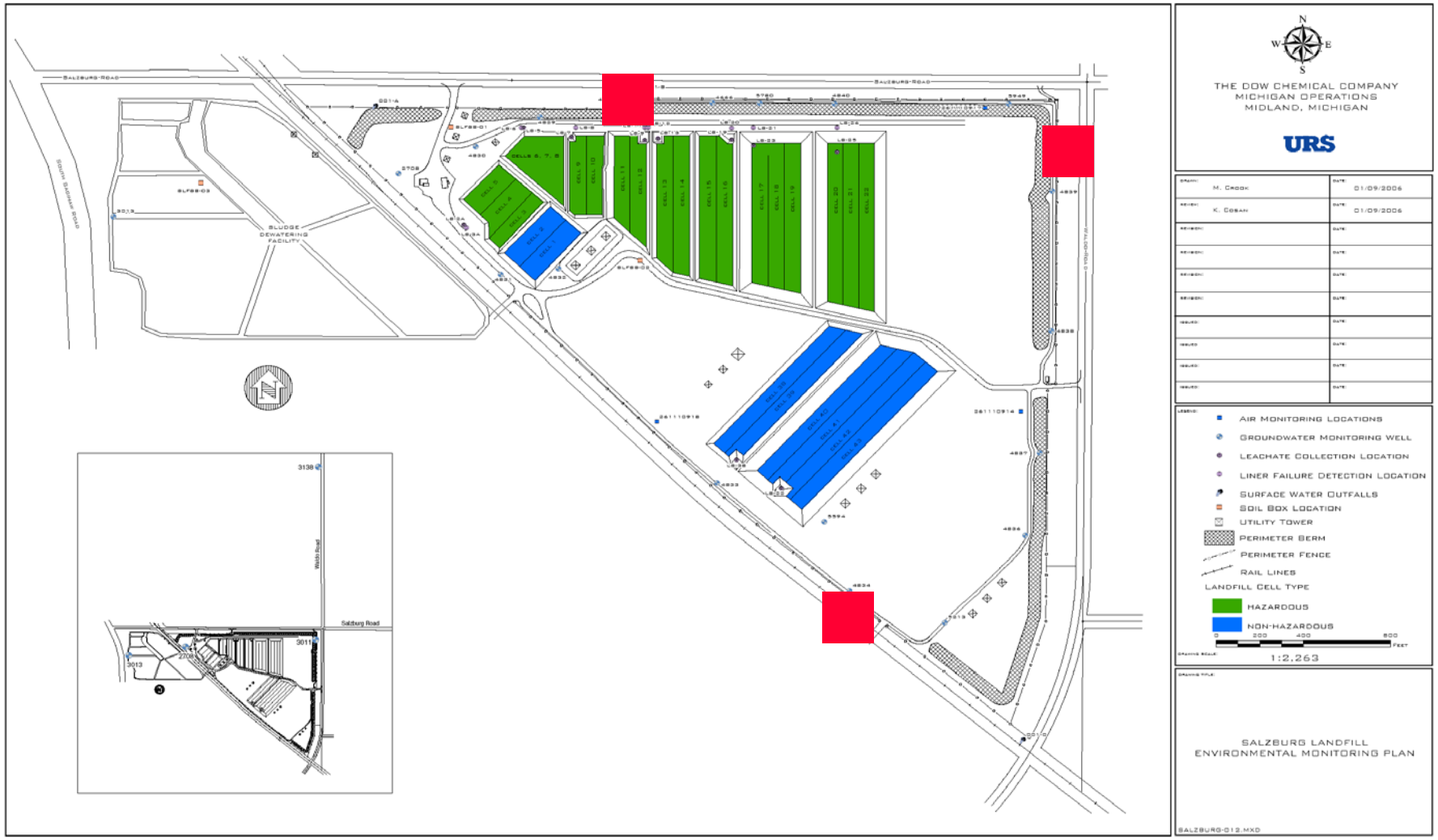
Leak Detection Monitoring Locations



Surface Water Monitoring

- Monitoring of stormwater from ditches adjacent to the landfill to detect potential contaminated stormwater runoff
  - Quarterly chemical/field monitoring at three locations
  - Samples collected within 24 hours of a rain event of at least ½ inch

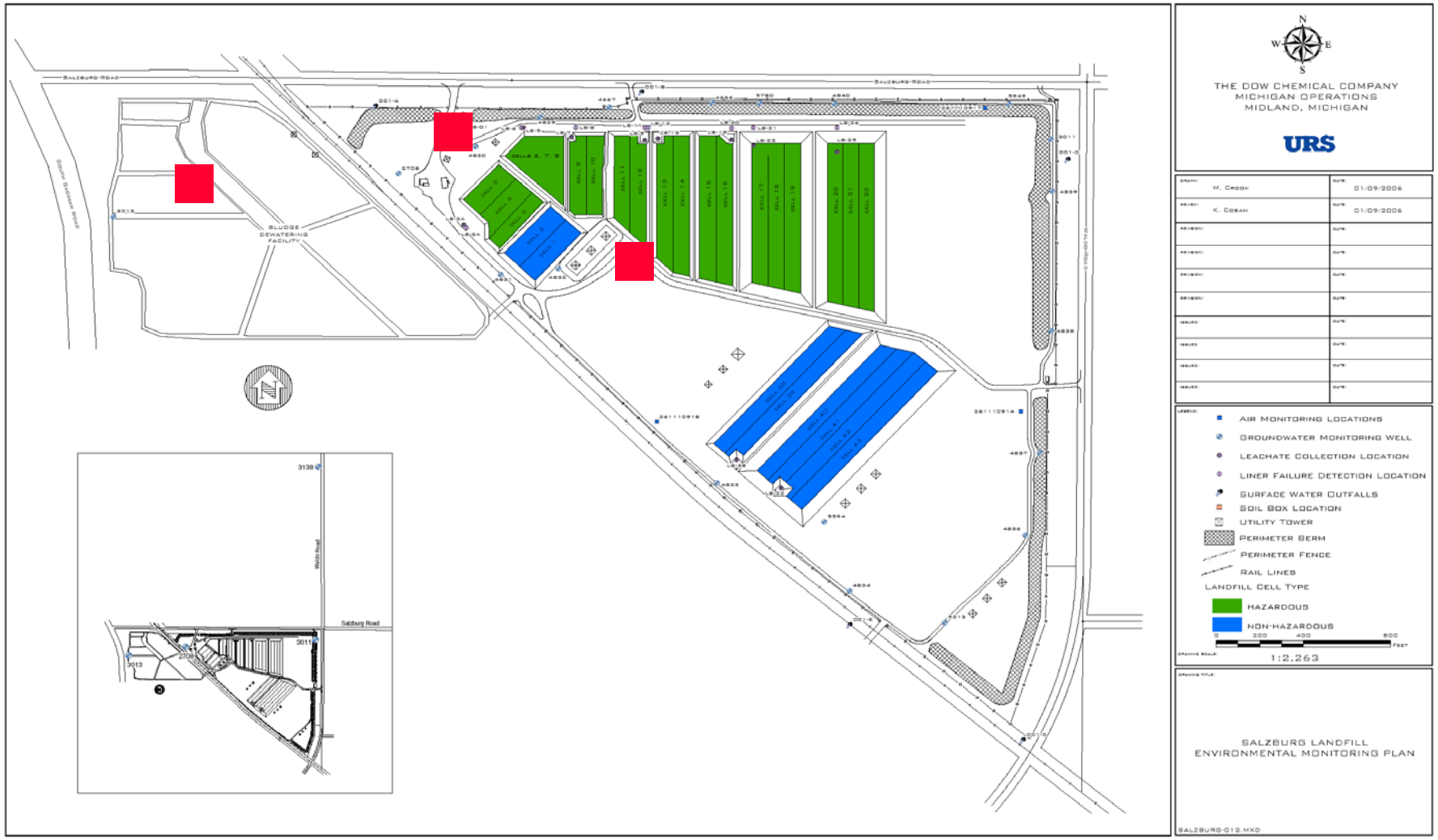
Surface Water Monitoring Locations



Soil Monitoring

- Monitoring of samples from three soil boxes adjacent to the landfill to detect a potential release to surface soils
  - Soil boxes are specially designed boxes constructed at dedicated locations and filled with clean soil
  - Annual sampling
  - Dioxins and furans

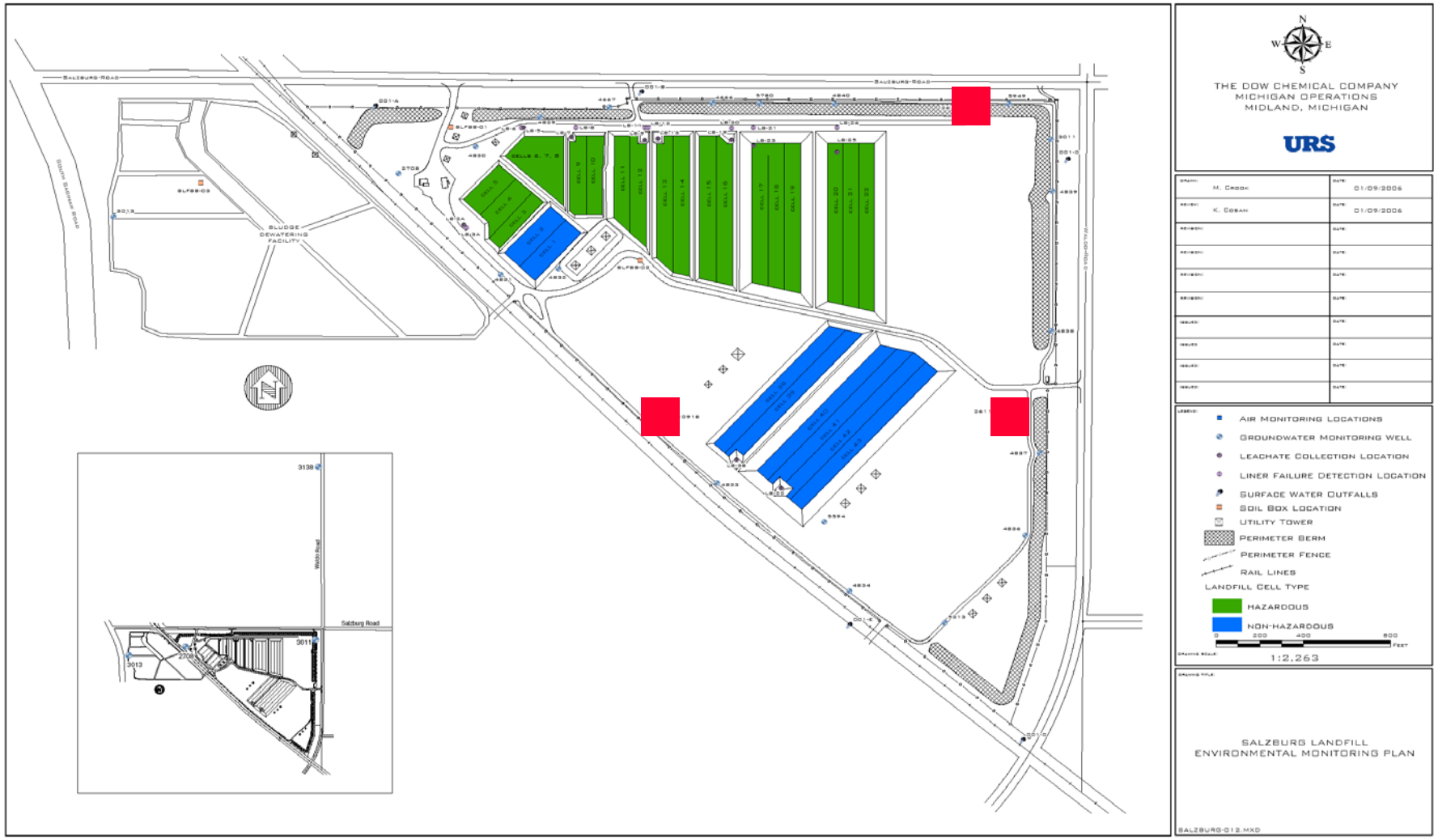
Soil Monitoring Locations



Ambient Air Monitoring

- Sampling of ambient air at three monitoring stations adjacent to the landfill to detect a potential release to ambient air
  - Every six days
  - Total Suspended Particulates
  - Data is compared to National Ambient Air Quality Standard Limits
  - Monitoring is overseen by DEQ, Air Quality Division

Ambient Air Monitoring Locations



Ambient Air Monitoring Station

Compliance Summary/History of Monitoring Programs

- No known releases from the landfill to groundwater, surface water, or soil

Landfill Issue to be Addressed Under Relicensing

- **Proposed Removal of Site Review Board Construction Permit Limitation on Waste Acceptance at Salzburg Landfill**
  - Current License language:
    - The licensee shall not accept hazardous waste at the facility between the hours of 3:00 p.m. and 5:00 p.m. on days when Midland Public Schools are in session or during times when hazardous driving conditions exist. Hazardous driving conditions will be considered to exist when a hazard warning for the county of Midland has been issued by the Midland County Sheriff's Office.

Landfill Issue to be Addressed Under Relicensing

- DEQ proposes to eliminate the waste acceptance limitation
  - Midland Public Schools' school bus route has been changed so it does not overlap with Dow's hazardous waste hauling route on Saginaw Road; License condition will require Dow to verify this every five years under the License
  - Dow typically only transports about 12 truckloads of wastes to Salzburg Landfill one day a week, except during times when remediation projects are being conducted
  - Personnel Training Program under License has been revised to require drivers to receive training that transport to the landfill is not allowed during hazardous driving conditions caused by severe weather (e.g., heavy snow, ice, lightning, etc.), consistent with the current License requirement

Procedure for Making Public Comments

- Please fill out and turn in an attendance card and check the box if you'd like to make a public comment tonight
  - Name will be added to DEQ's Dow Mailing List
- Any elected officials who are present will be invited to speak first
- Public will speak in order of registration
- Please use the microphone
- Please state and spell your name

FORMAL PUBLIC COMMENTS

Public Comments

Send Written Comments by August 28, 2015 to:

Cheryl Howe
Department of Environmental Quality
Office of Waste Management and Radiological Protection
PO Box 30241
Lansing, MI 48909
OR
howec@michigan.gov
517-284-6561

Responsiveness Summary and Notice of Final Decision will be available after the licensing decision has been made

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