



PUBLIC HEARING

on

The Dow Chemical Company's

Midland Area Soils Cleanup Work Plan

7:00 p.m.

Tuesday, April 17, 2012

Grace A. Dow Memorial Library Auditorium

Introductions

- Department of Environmental Quality
 - Chris Hare: Hearings Officer
 - Al Taylor: Geologist
 - Deborah MacKenzie-Taylor: Toxicologist
 - DEQ Staff in Audience
 - Jim Sygo, Deputy Director
 - Liane Shekter Smith, Resource Management Division Chief
 - De Montgomery, Hazardous Waste Section Chief
 - Trisha Confer, Hazardous Waste Inspector
 - Mary Carnagie, Geologist

Introductions

- The Dow Chemical Company
 - Steve Lucas, Senior Remediation Leader



Meeting Agenda

- Presentation on Midland Area Soils Cleanup Proposal
 - Regulatory Background (DEQ)
 - Overview of Dow's Proposed Work Plan (Dow)
 - Next Steps/Schedule (DEQ)
- Public Comment/Questions/Answers and Discussion
- Informal Questions and Answers in Foyer
- Close of Public Hearing



Purpose of Hearing

Dow has submitted a Work Plan to the DEQ for review and approval for the clean up of soils contaminated with dioxin in certain portions of the City of Midland.

The DEQ is here tonight to:

- Receive public input on the proposed Work Plan
- Answer questions



Midland Area Soils Cleanup

Background

Public Hearing

April 17, 2012

DEQ's Role and Involvement

The DEQ oversees activities that achieve compliance with numerous state and federal environmental laws in Michigan, including:

- Licensing of hazardous waste management facilities (under Part 111 of Act 451 and RCRA); and
- Requiring facilities to conduct corrective action



Why are we here?

Formal hearing to take Public Comment on a proposal from Dow to conduct cleanup of dioxin contaminated soils in the City of Midland

We are nearing the end of a 45 day public comment period (ends April 25, 2012)

We want to hear your questions and concerns and consider them as we review Dow's proposal

We will develop a written response to comments that we have received and post it on the website



Timeline

March 1 – Public Meeting

March 7 – Dow Submits Midland Area Soils
Work Plan

March 11 – Beginning of Formal Public
Comment Period

March 19, 28, and 29 – Public Availability
Sessions

April 17 – Public Hearing

April 25 – Close of Public Comment Period



Information Resources

Website: www.michigan.gov/deqdioxin

- Q and A Documents
- Fact Sheets
- Work Plan
- Health and Exposure Information
- Links



What are dioxins?

- A family of similar chemicals, including:
 - 75 dioxins (7 considered toxic)
 - 135 related furans (10 considered toxic)
- Predominantly formed from:
 - Industrial processes, unintended by-products
 - Burning wastes and other substances



Why are Dioxins in Midland Area Soils?

- Primarily from past burning of wastes at Dow
- Dioxins were released into the air and deposited on soils downwind from the plant

Note: Dow Michigan Operations incinerators no longer release elevated levels of dioxins (99.999% removal)



Dow Hazardous Waste Management Facility Operating License

Hazardous Waste Management Facility Operating License issued by DEQ

License required Dow to conduct corrective action for:

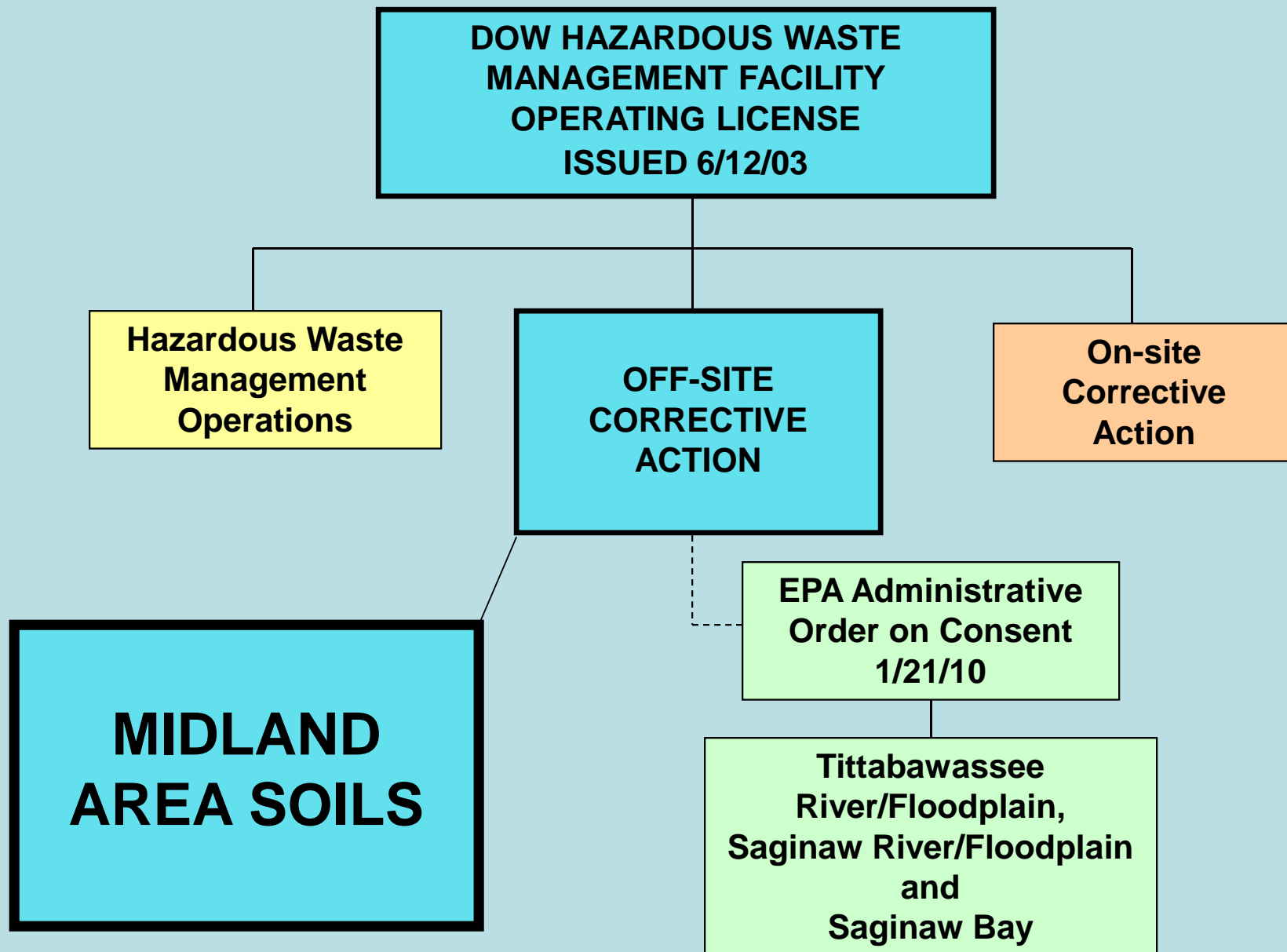
- Dow plant site
- Midland area soils
- Tittabawassee/Saginaw Rivers and floodplains and Saginaw Bay



What is Corrective Action?

- Companies must clean up contamination they released, on-site and off-site
- Phased process to investigate and clean up historic, current, and future releases of contaminants





Current Status

2012

Dow and the DEQ reach conceptual agreement on a proposed plan to resolve dioxin contamination issues in city of Midland soils

Midland site-specific dioxin action level of 250 ppt is proposed in accordance with EPA-approved risk assessment procedures

- Uses Midland area specific data
- Protective of human health

The background of the slide is a photograph of a thick stack of papers, likely a binder or a large report, with a blue color overlay. The papers are stacked on a dark surface, and the top of the stack is slightly blurred. A semi-transparent blue rectangle is positioned over the right side of the stack, containing the title and date.

Resolution of Dioxin Issue in City of Midland

April 17, 2012

Proposed Plan

- Site Specific Action Level of 250 ppt based on Midland specific data
- Midland Specific Soil Sampling Plan
- Properties that test above action level will be offered cleanup under this work plan
- Properties that test less than or equal to the action level and those that have had cleanup under this work plan will not be considered contaminated by releases from Dow.
- All work done only with the expressed consent of the property owner.

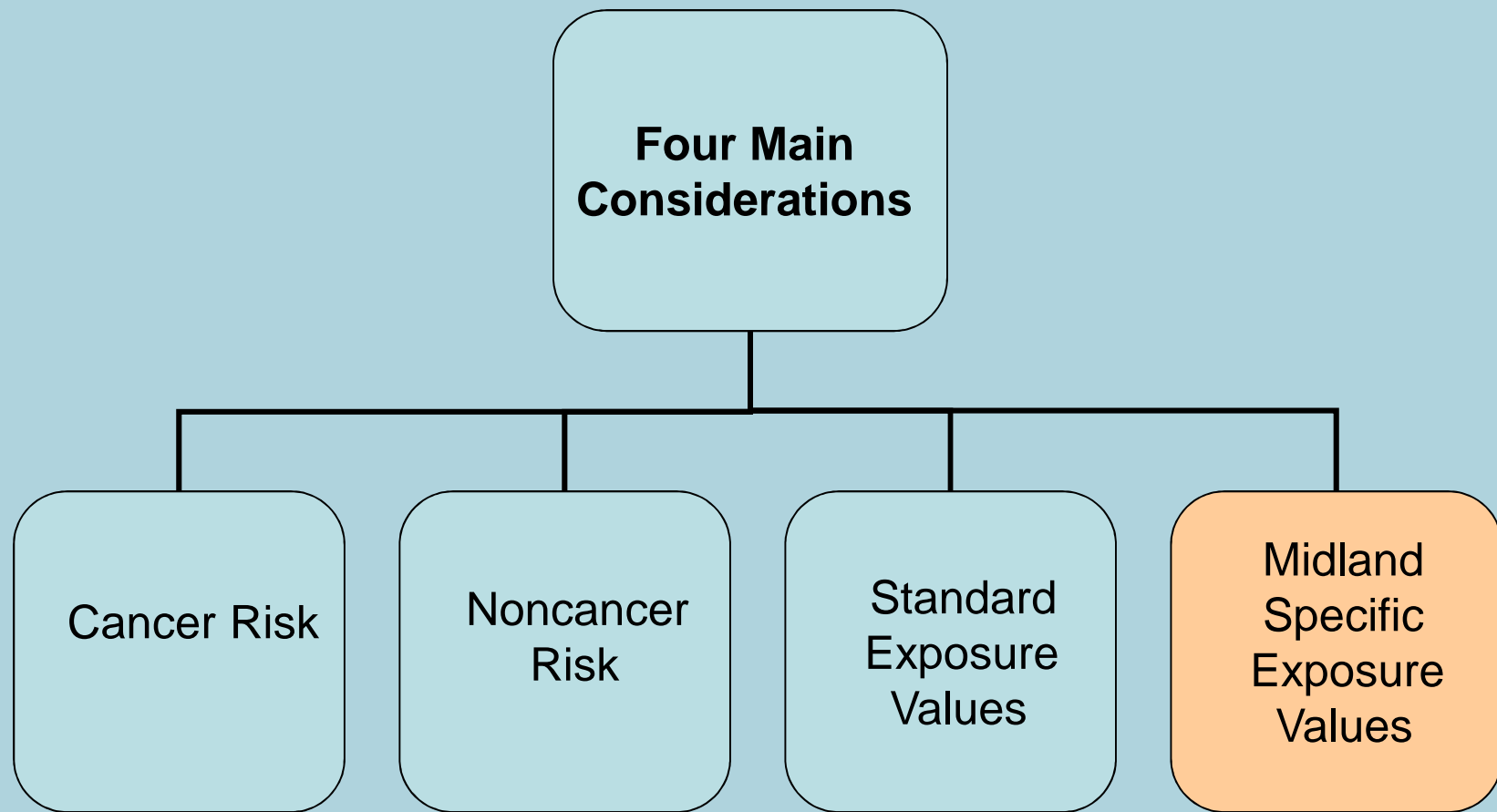
Plan based on Prior Studies

- Bioavailability Studies
- Soil Characterization Study
- Indoor Dust Sampling
- Evaluation of >200 different substances
- Evaluation of depth of dioxin
- Evaluation of spatial variability of dioxin
- Pilot studies of Incremental Composite Sampling
- Development and approval of Midland soils specific dioxin analytical method

Site Specific Action Level

- Site-specific criteria developed according to
 - Michigan's law that establishes cleanup levels Part 201(§ 20120a(2) and 20120b), and
 - Dow's operating license.
- Calculated to be protective based on the most sensitive and most exposed people:
 - Person most likely to be affected by the toxicity of the contaminant, and
 - Person who has most contact with the contamination.

Site Specific Action Level



Site Specific Action Level

Midland-Specific Exposure Values

```
graph TD; A[Midland-Specific Exposure Values] --> B[Bioavailability]; A --> C[Dust/Soil Ratio]; A --> D[Weather/Climate]; B --> B1[• Midland soil]; B --> B2[• Fed to rats and young pigs]; B --> B3[• How much dioxin in animal tissue]; C --> C1[• Midland data]; C --> C2[• Lower levels in dust than soil]; D --> D1[• Midland area data]; D --> D2[• Adjust indoor and outdoor days];
```

Bioavailability

- Midland soil
- Fed to rats and young pigs
- How much dioxin in animal tissue

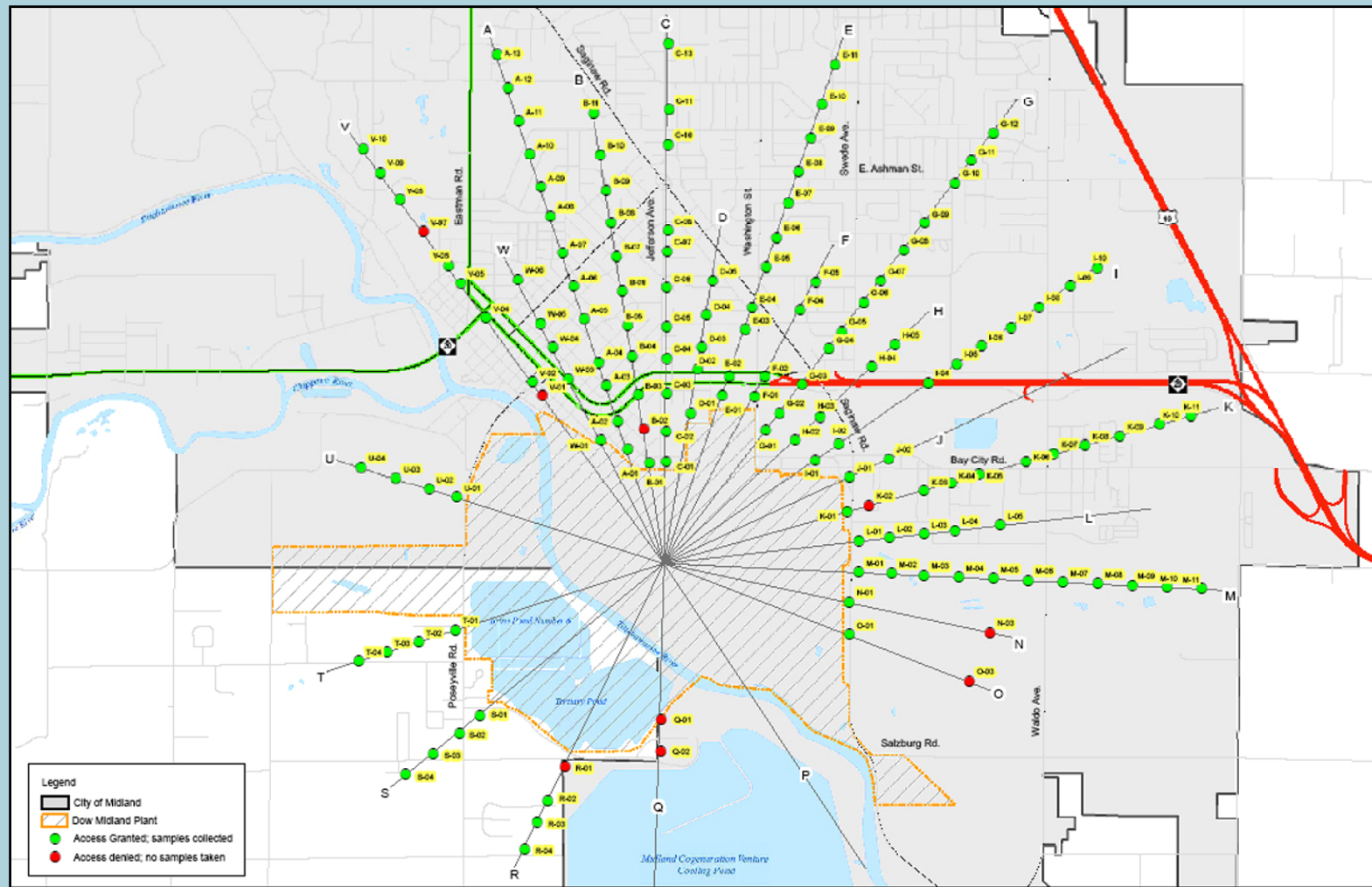
Dust/Soil Ratio

- Midland data
- Lower levels in dust than soil

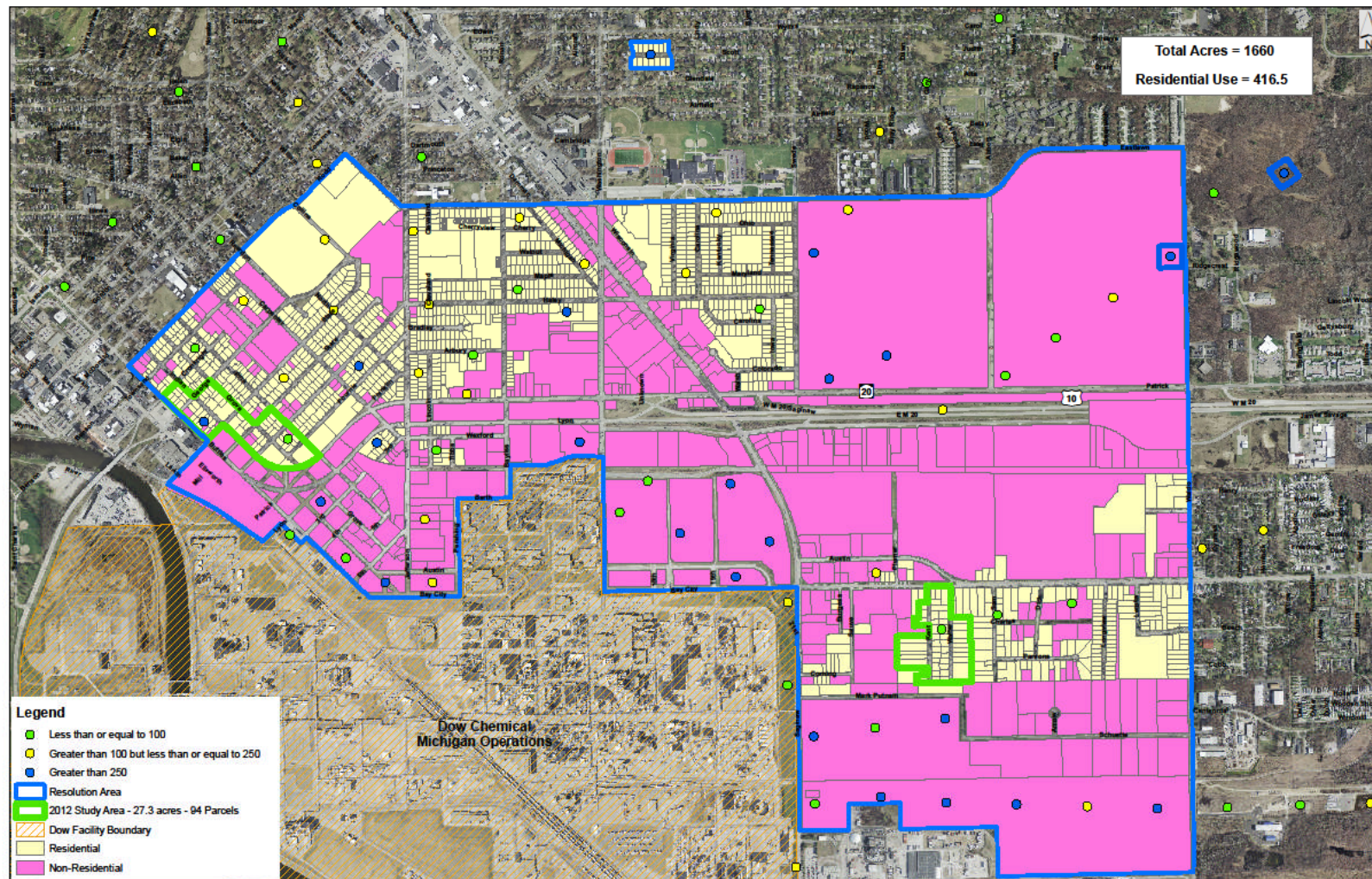
Weather/Climate

- Midland area data
- Adjust indoor and outdoor days

How was the Resolution Area Determined?



Initial Boundary of Resolution Area



Designed Incremental Composite Sampling



Collect 3 Samples

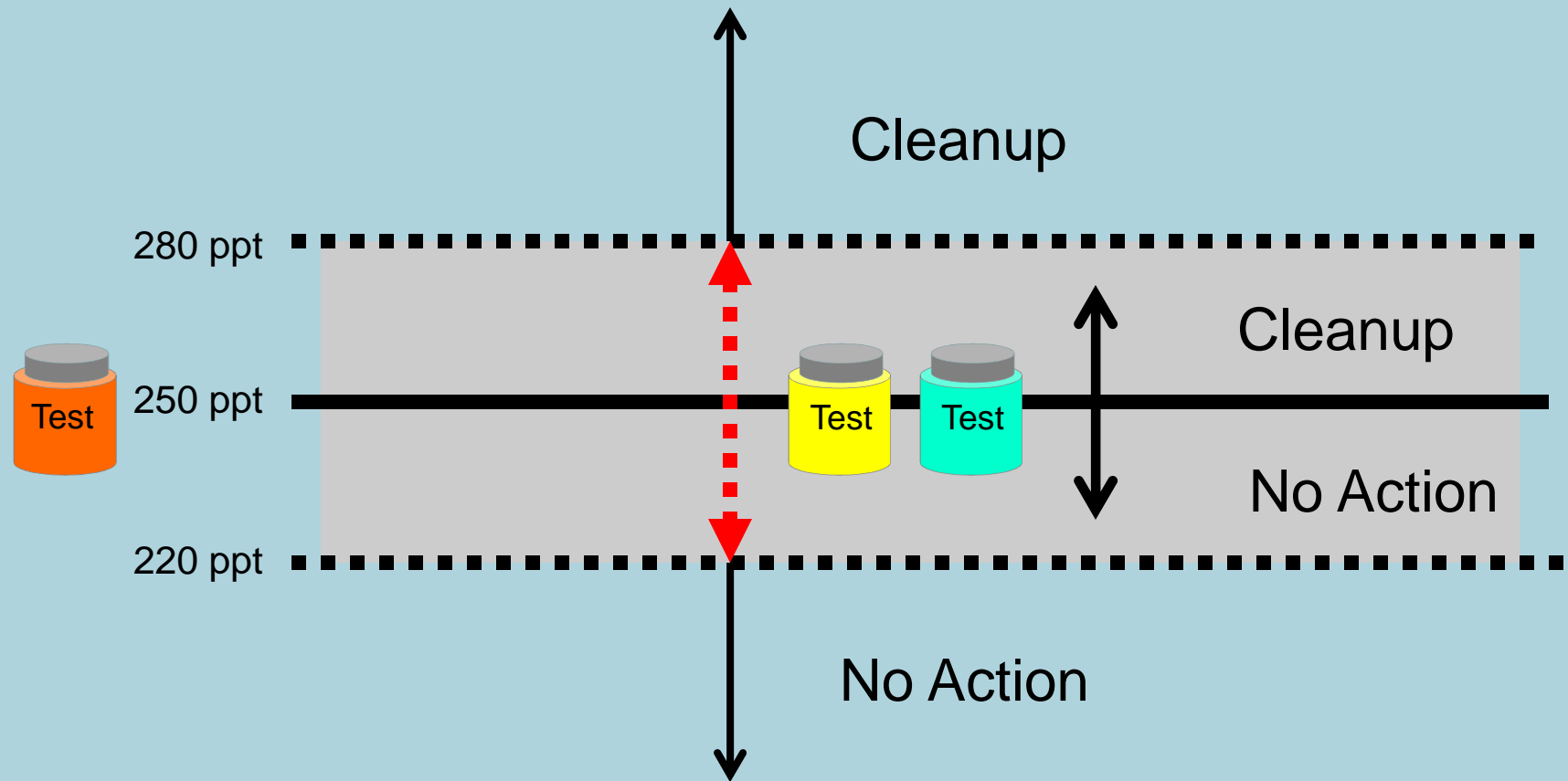


< ¼ ACRE 10 increments
< 1 ACRE 20 increments
> 1 ACRE 30+ increments

Designed Incremental Composite Sampling



Cleanup Decision - How are we certain?



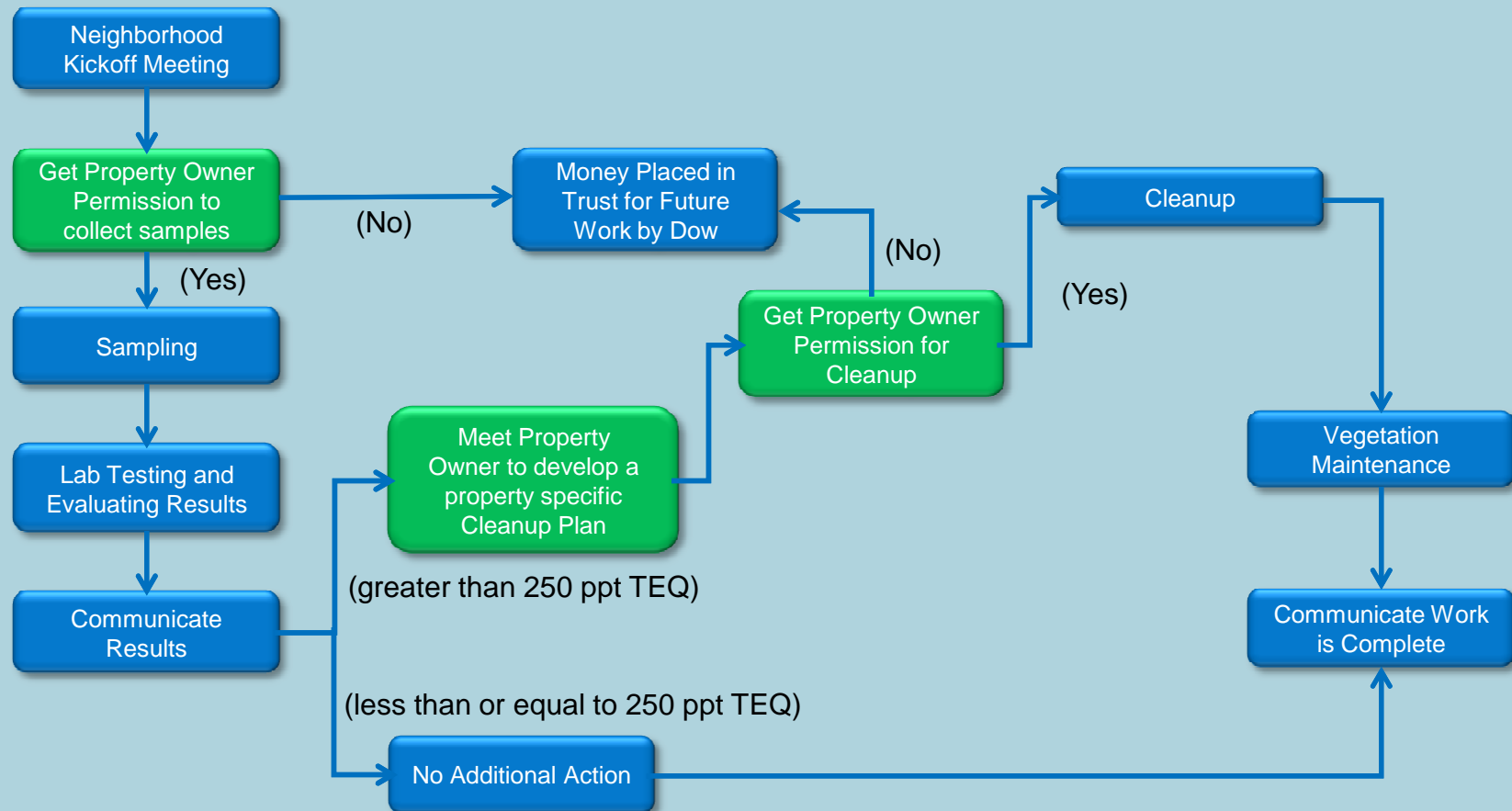
Midland Specific Dioxin Analytical Method

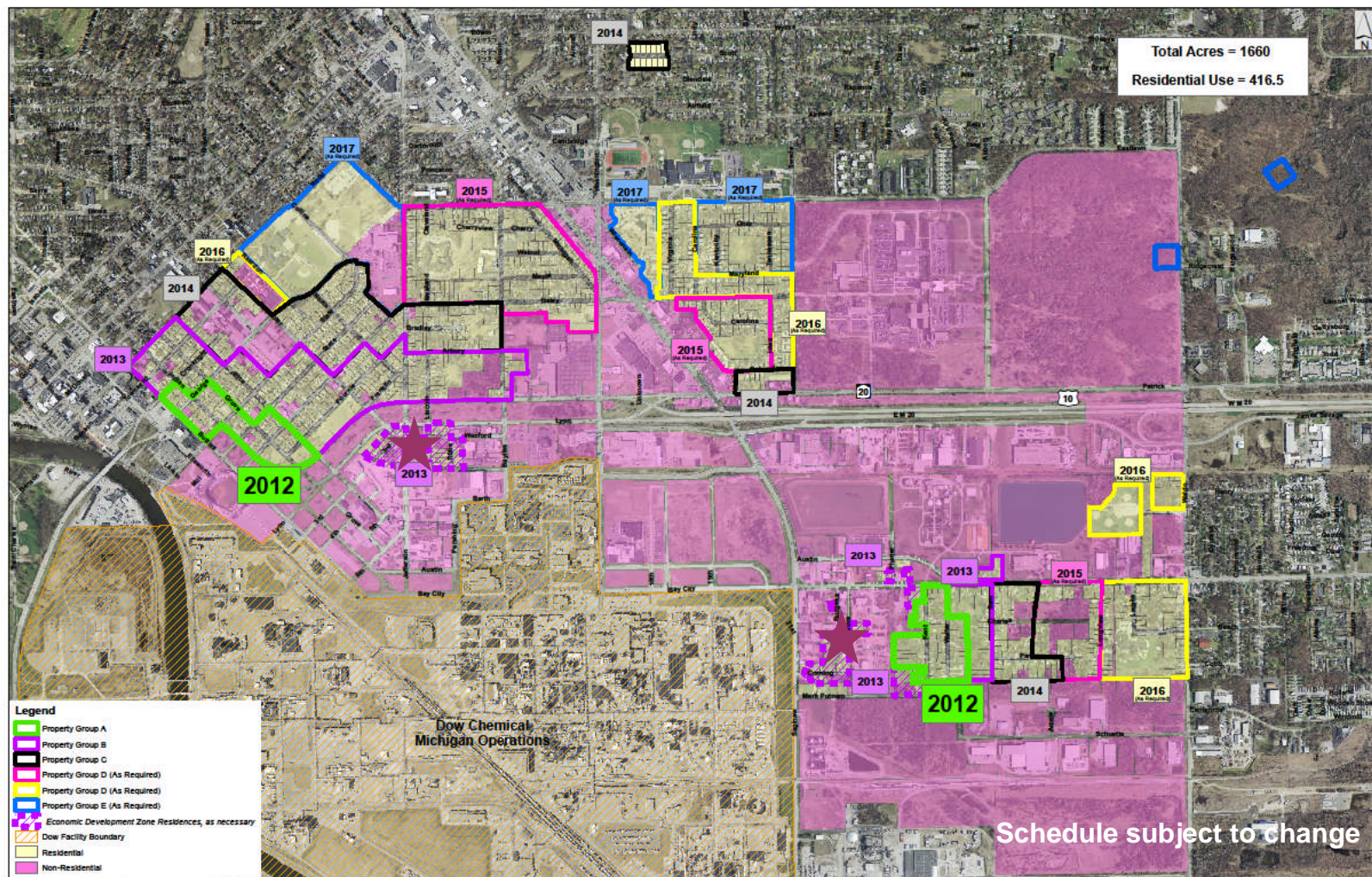
- Midland soils specific dioxin analytical method has been developed, tested and validated. Method approved for use on this project by DEQ and EPA
- Similar concept to an analytical method that has been successfully used by Dow and DEQ on other dioxin evaluations
- Enables rapid and accurate determination of dioxin concentration in Midland soils. Results in a few days rather than a few weeks
- Comparability of Midland Specific method to traditional method will continue to be validated throughout the project

Cleanup

- Communicate results of sampling to the Property Owner
- Meet with Property owner to develop a specific plan for each individual property
 - Remove top 12" inches of soil
 - Preserve to the extent possible all non-replaceable plants and large mature trees
 - Replace with new soil, plant and establish a new lawn, replace landscaping including shrubs, flowers and bulbs
 - Return to conduct follow-up maintenance (e.g. watering) until yard is properly established
- If the current owner declines to have the work performed, funds will be set aside in a trust so that Dow can perform the work in the future

Steps Involved in Cleanup





Denotes Dow Property Purchase Program Areas

Data Driven Implementation

Adaptive Management

- Annual plan will change as required based on sampling results from prior years to ensure focus is placed on residential properties that are most likely to be above 250 ppt
- Final boundary of the Resolution Area may change based on sampling results. The boundary may move further away from the plant site or closer to the plant site based on the data
- Other adjustments to plans and procedures may be made based on experience gained from prior years work
- 250 ppt site specific action level and 12 inch soil removal will not change during the project

Non Residential Property

- Generic criteria of 990 ppt
- Based on evaluation of data collected near Dow Plant non residential property outside the Dow Plant is below this criterion so no physical cleanup of non residential property will be required
- Small area near former rail road track north of Plant Site requires some additional evaluation
- Some actions may be required on non residential property immediately adjacent to residential property to control soil migration where potential for migration exists
- Appropriate institutional controls of some non residential property to prevent future residential use will be required

Next Steps

(Dependent on Approval, or Approval with Modifications, of Work Plan)

May

Dow meets with property owners scheduled for 2012 to obtain property access



June

Remediation design sampling begins in Midland

Next Steps

(Dependent on Approval, or Approval with Modifications, of Work Plan)

July

2012 remedial decisions made for 2012 properties



Late July

Dow sends letters to property owners with sample results/determination of need for cleanup

Next Steps

(Dependent on Approval, or Approval with Modifications, of Work Plan)

August

Dow begins cleanup on properties above 250 ppt where access is granted

Mid-October

End of cleanup work for 2012 season



Next Steps

(Dependent on Approval, or Approval with Modifications, of Work Plan)

Early December

Dow submits Annual
Remedy Report

October-January

DEQ sends letters to
property owners
confirming completion
of work

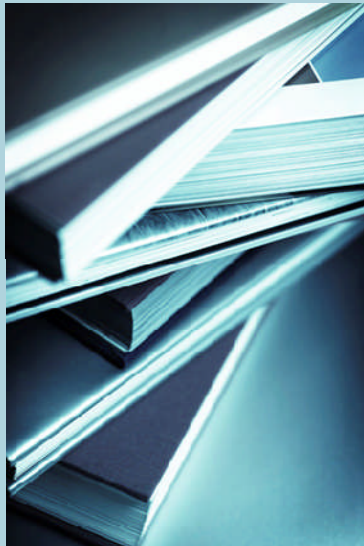


Next Steps

(Dependent on Approval, or Approval with Modifications, of Work Plan)

January

Dow submits Work Plan for 2013



2013 through 2017
(as necessary)

Dow continues work throughout remainder of Resolution Area



Regulatory Process – Next Steps

- Complete Public Comment Period – April 25, 2012
- Finalize Agency Review of Work Plan in consideration of Public Comments
- Develop Written Responsiveness Summary
- Issue Decision with Responsiveness Summary by June 1, 2012
 - Approval
 - Approval with Modifications
 - Revise Work Plan

SUMMARY OF PROPOSED 2012 PROCESS

Date	Event
May	Dow meets with property owners to obtain property access
June	Remediation design sampling begins in Midland
July	2012 remedial decisions made for 2012 properties
Late July	Dow sends letters to property owners with sample results/determination of need for cleanup
Late July/ Early August	Dow meets with property owners to obtain property access and design property-specific cleanup
August	Dow begins cleanup on properties above 250 ppt where access is granted
Mid-October	End of cleanup work for 2012 season
October through January	DEQ sends letters to property owners confirming completion of work



Public Comments/Questions

- Fill out half sheet
- Check box to speak
- Public: speak in order of registration
- Written copy of remarks appreciated
- Please state and spell your names
- The session is being recorded



Public Comments/Questions

- Please limit remarks to 3 minutes
- We are available after close of the formal hearing for an informal session to address questions (time permitting)
- DEQ will respond to your questions tonight to the best of our ability
- Our final response will be in writing and posted on the website: “Responsiveness Summary”

Public Comments

Comment Period Ends April 25, 2012

Send Written Comments to:

Al Taylor

Department of Environmental Quality
Resource Management Division

P.O. Box 30241

Lansing, MI 48909

taylora@michigan.gov



DEQ Public Hearing Survey

We'd really like your input on this hearing so please take time to fill out the survey form.

The forms can be handed to any DEQ employee or left on table by the door.

Thank you.



For More Information/Contacts

www.michigan.gov/deqdioxin

www.midlandresolution.com

www.midlandpropertyprogram.com

Midland Resolution Center (Dow)

1008 Jefferson Ave.

989-631-2270 or 888-778-2306 or

e-mail via www.midlandresolution.com