

## Chambers, Danielle

---

**From:** Pardys, John-Eric  
**Sent:** Wednesday, August 13, 2014 12:19 PM  
**To:** Brooks, Joy (DEQ); Lesinski, Mark T LRE; SLEIGHTC@michigan.gov; Noble, Keith (DEQ)  
**Cc:** Kaelber-Matlock, Sue (DEQ); Nemani, Nate; Tomka, Mike; Dave Favero; Project Email Filing  
**Subject:** ~COR-058502~pre-application meeting request - Nodular - North Ditch  
**Attachments:** pre-application meeting request-signed-20140813.pdf; pre-application payment receipt.pdf; Site map.pdf; Stabilization Alternative Evaluation.pdf; email - 05-27-14 EPA approval of Alternative 1 - North Ditch.pdf; Photo Log-North Ditch.pdf; Joint Permit MDEQ-USACE.pdf

Further to the voicemail I left with you regarding the proposed work for the North Ditch at the RACER Nodular Facility in Saginaw, Michigan on July 31, 2014, please find attached an electronic copy of the pre-application meeting request and supporting documents for your use and review. Hard copies of the pre-application meeting request and supporting documents will be couriered to:

Cathy Sleight - MDEQ (2 copies) for distribution to MDEQ staff as necessary  
Mark Lesinski - USACE (1 copy)  
Maria – County of Saginaw (1 copy)

The following documents are herein attached:

- Pre-application meeting request form
- Pre-application payment receipt
- Site map
- Stabilization Alternative Evaluation
- EPA approval of Alternative 1 – North Ditch (email)
- Photo-log of the North Ditch
- Joint Permit (Draft for the purpose of Discussion)

Should you have any questions, please do not hesitate to contact myself.

Thanks

---

**John-eric Pardys, P.Eng.**

**Conestoga-Rovers & Associates (CRA)**

651 Colby Drive  
Waterloo, ON N2V 1C2

Phone: 519.884.0510

Fax: 519.884.0525

Email: [jpardys@CRAworld.com](mailto:jpardys@CRAworld.com)

[www.CRAworld.com](http://www.CRAworld.com)

Think before you print **P**

Perform every task the safe way, the right way, every time!

This communication and any accompanying document(s) are confidential and are intended for the sole use of the addressee. If you are not the intended recipient, please notify me at the telephone number shown above or by return e-mail and delete this e-mail and any copies. You are advised that any disclosure, copying, distribution, or the taking of any action in reliance upon the communication without consent is strictly prohibited. Thank you.

---

CRA and GHD have merged! To learn more, visit [www.CRAworld.com/ghd](http://www.CRAworld.com/ghd)

---

**From:** Nemani, Nate [<mailto:nemani.nate@epa.gov>]

**Sent:** Tuesday, May 27, 2014 2:44 PM

**To:** Dave Favero

**Subject:** North Ditch Stabilization Alternatives--Evaluation/Recommendation RACER- SNI site.

I have reviewed the Memorandum dated February 26, 2014 relating to the subject issue, namely, Evaluation and subsequent Recommendation for addressing the North Ditch overflow and flooding issue. Alternative #1 was recommended based on evaluation of Criteria for both Alternatives 1 and 2 and comparing their cost-effectiveness etc.

Based on my review of the Alternatives against the Corrective Measures Evaluation Criteria presented, I hereby concur with the recommendation to select Alternative #1 for addressing the issue.

If there are any questions, please let me know.

N Nemani.

NATE NEMANI, P.E.  
RCRA CORRECTIVE ACTION PROJECT MANAGER  
LAND AND CHEMICALS DIVISION  
REMEDIATION AND REUSE BRANCH,  
U. S.EPA, REGION 5,  
77 W JACKSON Blvd, CHICAGO, ILLINOIS, 60604, Mail Code: LU-9J  
(312) 886-3224 (PHONE)  
(312) 692-2176 (FAX)  
[nemani.nate@epa.gov](mailto:nemani.nate@epa.gov) (e-mail address)



AGENCY USE	Previous USACE File Number	Date Received	DEQ File Number
	USACE File Number		Fee received \$

Validate that all parts of this checklist are submitted with the application package. Fill out application and additional pages as needed.

- All items in Sections 1 through 9 are completed.
- Project-specific Sections 10 through 20 are completed.
- Dimensions, volumes, and calculations are provided for all impact areas.
- All information contained in the headings for the appropriate Sections (1-20) are addressed, and identified attachments (➔) are included.
- Map, site plan(s), cross sections; one set must be black and white on 8 ½ by 11 inch paper; photographs.
- Application fee is attached.

**1 Project Location Information** For Latitude, Longitude, and TRS info anywhere in Michigan see [www.mcgi.state.mi.us/wetlands/](http://www.mcgi.state.mi.us/wetlands/)

Project Address (road, if no street address) <b>2100 Veterans Memorial Parkway</b>	Zip Code <b>48601</b>	Municipality (Township/Village/City) <b>Saginaw</b>	County <b>Saginaw</b>
Property Tax Identification Number(s) <b>21 4333 00000</b>	Latitude <b>43.6214 N</b>	Township/Range/Section (TRS) T <b>12</b> N or S; R <b>5</b> E or W;	
Subdivision/Plat and Lot Number	Longitude <b>- 83 908383 W</b>	Sec <b>8</b> OR Private Claim # _____	

**2 Applicant and Agent Information**

Owner/Applicant (individual or corporate name) <b>RACER Trust, c/o Dave Favero</b>	Agent/Contractor (firm name and contact person) <b>Conestoga-Rovers &amp; Associates, Inc. c/o John-eric Pardys</b>
Mailing Address <b>500 Woodward Avenue, Suite 1500</b>	Mailing Address <b>651 Colby Drive</b>
City <b>Saginaw</b> State <b>MI</b> Zip Code <b>48601</b>	City <b>Waterloo</b> State <b>ON</b> Zip Code <b>N2V 1C2</b>
Contact Phone Number <b>734-879-9525</b> Fax _____	Contact Phone Number <b>519-884-0510</b> Fax <b>519-884-0525</b>
Email <b>dfavero@racertrust.org</b>	E-mail <b>jpardys@croworld.com</b>

No  Yes Is the applicant the sole owner of all property on which this project is to be constructed and all property involved or impacted by this project? ➔ If no, attach letter(s) of authorization from all property owners including the owner of the disposal site.

Property Owner's Name (If different from applicant)	Mailing Address
Contact Phone Number	City State Zip Code

**3 Project Description**

Project Name <b>Nodular Facility - North Ditch Stabilization</b>	Preapplication File Number - - -P
Name of Water body <b>Saginaw River</b>	Date project staked/flagged

<p>The proposed project is on, within, or involves (check all that apply)</p> <ul style="list-style-type: none"> <li><input type="checkbox"/> an inland lake (5 acres or more)</li> <li><input checked="" type="checkbox"/> a pond (less than 5 acres)</li> <li><input checked="" type="checkbox"/> a stream, river, ditch or drain</li> <li><input type="checkbox"/> a legally established County Drain Date Drain was established _____</li> <li><input type="checkbox"/> a channel/canal</li> <li><input checked="" type="checkbox"/> 500 feet of an existing water body</li> <li><input type="checkbox"/> a Great Lake or Section 10 Waters</li> <li><input type="checkbox"/> a wetland</li> <li><input checked="" type="checkbox"/> a 100-year floodplain</li> <li><input type="checkbox"/> a dam</li> <li><input type="checkbox"/> a designated high risk erosion area</li> <li><input type="checkbox"/> a designated critical dune area</li> <li><input type="checkbox"/> a designated environmental area</li> </ul>	<p>Project Use</p> <ul style="list-style-type: none"> <li><input checked="" type="checkbox"/> private</li> <li><input type="checkbox"/> commercial</li> <li><input type="checkbox"/> public/government</li> <li><input type="checkbox"/> project is receiving federal/state transportation funds</li> <li><input type="checkbox"/> Wetland Restoration</li> <li><input checked="" type="checkbox"/> other <b>Industrial</b></li> </ul>
---	--

Indicate the type of permit being applied for:  General Permit  Minor Project  Individual (All other projects.) ➔ See Appendix C.

Written Summary of All Proposed Activities **Clear and grub vegetation surrounding the North Ditch, remove water from the ditch, install catchbasin within ditch approximately 80 feet from existing manholes, install geotextile fabric over sediment, sling pea gravel over the geotextile, then fill ditch with clean backfill, once ditch is backfilled grade swales to direct water along the former ditch to the catch basin, seed**

Construction Sequence and Methods



**4 Project Purpose, Use and Alternatives** *Attach additional sheets as necessary.*

Describe the purpose of the project and its intended use; include any new development or expansion of an existing land use.  
**Purpose of the work is to stabilize minor impacts in sediments in the North Ditch, while improving the stormwater drainage for the area.**

Describe the alternatives considered to avoid or minimize resource impacts. Include factors such as, but not limited to, alternative locations, project layout and design, and construction technologies. For utility crossings include alternative routes and construction methods.  
**Alternatives evaluated included: Alternative 1 - install catchbasin, cover sediment with geotextile, then pea stone, then backfill. Alternative 2 - remove and dispose of sediment off-Site, install catchbasin, then backfill.**

**5 Locating Your Project Site** *Attach a legible black and white map with a North arrow.*

Names of roads of closest intersection **North Washington Road and Veterans Memorial Parkway**

Directions from main intersection to the project site, with distances from the best and nearest visible landmark and water body **Site work is located approximately 0.8 miles north of the closest intersection (third driveway on the right)**

Description of buildings on the site (color; 1 or 2 story, other) <b>None</b>	Description of adjacent landmarks or buildings (address; color; etc) <b>Site is immediately south of the Saginaw Wastewater Treatment Plant (2406 Veterans Memorial Pkwy) Site is immediately north and west of Tri-Cap Building (brown-red brick) Site is north of Manufacturing Building - white metal siding)</b>
--	---

How can your site be identified if there is no visible address? **See figure 1 from memorandum entitled, "Stabilization Alternative Evaluation and Recommendation for the North Ditch"**

**6 Easements and Other Permits**

No  Yes Is there a conservation easement or other easement, deed restriction, lease, or other encumbrance upon the property?  
 If yes, attach a copy. Provide copies of court orders and legal lake levels if applicable.

List all other federal, interstate, state, or local agency authorizations including required assurances for Critical Dune Area projects.

Agency	Type of Approval	Number	Date Applied	Date approved /denied	Reason for denial
<b>MDEQ</b>	<b>NPDES</b>	<b>MI0059042</b>	<b>April 4, 2012</b>	<b>Approved: Aug. 24, 2012</b>	

**7 Compliance**

If a permit is issued, when will the activity begin? (M/D/Y) \_\_\_\_\_ Proposed completion date (M/D/Y) \_\_\_\_\_

No  Yes Has any construction activity commenced or been completed in a regulated area?  
 If Yes, identify the portion(s) underway or completed on drawings or attach project specifications and give completion date(s).  
 No  Yes Were the regulated activities conducted under a DEQ and/or USACE permit?  
 If Yes, list the permit numbers  
 No  Yes Are you aware of any unresolved violations of environmental law or litigation involving the property?  
 If Yes, attach explanation. **See explanation provided at the bottom of the page.**

**8 Adjoining Property Owners** *Provide current mailing addresses. Attach additional sheets/labels for long lists.*

<input type="checkbox"/> Established Lake Board	Contact Person	Mailing Address	City	State and Zip Code
<input type="checkbox"/> Lake Association				

List all adjoining property owners.  
 If you own the adjoining lot, provide the requested information for the first adjoining parcel that is not owned by you.

Property Owner's Name	Mailing Address	City	State and Zip Code
<b>Tri-Cap</b>	<b>2300 Veterans Memorial Parkway</b>	<b>Saginaw</b>	<b>MI, 48601</b>
<b>Saginaw Wastewater Treatment Plant</b>	<b>2406 Veterans Memorial Parkway</b>	<b>Saginaw</b>	<b>MI, 48601</b>
<b>CMI-Schneible Co.</b>	<b>2220 Veterans Memorial Parkway</b>	<b>Saginaw</b>	<b>MI, 48601</b>

**Yes, a violation notice (request for information) dated April 7, 2014 was submitted to RACER regarding floodplain concerns. Additional information was provided to the MDEQ on May 8, 2014. To date RACER has not received a response.**

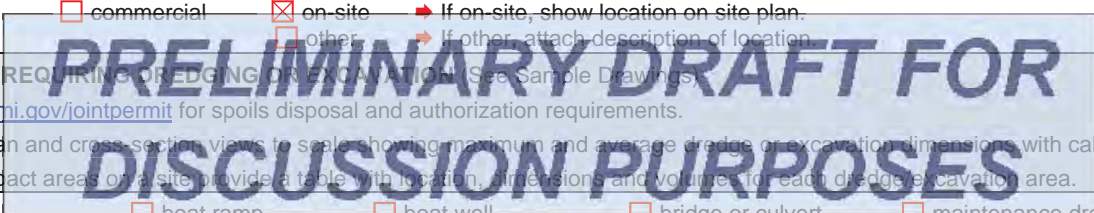


<b>9 Applicant's Certification</b>		<i>Read carefully before signing.</i>	
<p>I am applying for a permit(s) to authorize the activities described herein. I certify that I am familiar with the information contained in this application; that it is true and accurate; and, to the best of my knowledge, that it is in compliance with the State Coastal Zone Management Program. I understand that there are penalties for submitting false information and that any permit issued pursuant to this application may be revoked if information on this application is untrue. I certify that I have the authority to undertake the activities proposed in this application. By signing this application, I agree to allow representatives of the DEQ, USACE, and/or their agents or contractors to enter upon said property in order to inspect the proposed activity site before and during construction and after the completion of the project. I understand that I must obtain all other necessary local, county, state, or federal permits and that the granting of other permits by local, county, state, or federal agencies does not release me from the requirements of obtaining the permit requested herein before commencing the activity. I understand that the payment of the application fee does not guarantee the issuance of a permit.</p>			
<input checked="" type="checkbox"/> Property Owner <input type="checkbox"/> Agent/Contractor <input type="checkbox"/> Corp. or Public Agency / Title	Printed Name <b>Dave Favero</b>	Signature	Date

**PRELIMINARY DRAFT FOR  
DISCUSSION PURPOSES**



<b>10 Projects Impacting Inland Lakes, Streams, Great Lakes, Wetlands or Floodplains</b>			
<ul style="list-style-type: none"> <li>Complete only those sections A through M applicable to your project.</li> <li>If your project impacts wetlands also complete Section 12. If your project impacts regulated floodplains also complete Section 13.</li> <li>To calculate volume in cubic yards (cu yd), multiply the average length in feet (ft) times the average width (ft) times the average depth (ft) and divide by 27. Example: (25 ft long x 10 ft wide x 2 feet deep) / 27 = 18.5 cubic yards</li> <li>Some projects on the Great Lakes require an application for conveyance prior to Joint Permit Application completeness.             <ul style="list-style-type: none"> <li>Provide a black and white overall site plan, with cross-section and profile drawings. Show existing lakes, streams, wetlands, and other water features; existing structures; and the location of all proposed structures, land change activities and soil erosion and sedimentation control measures. Review Appendix B and EZ Guides for aid in providing complete site-specific drawings.</li> <li>Provide tables for multiple impact areas or multiple activities such as multiple fill areas or multiple culverts. Include your calculations.</li> </ul> </li> </ul>			
<b>Water Level Elevation</b>			
On inland waters <input type="checkbox"/> NAVD 88 <input type="checkbox"/> other Observed water elevation (ft) <b>584.68</b> date of observation (M/D/Y) <b>8/7/2014</b>			
On a Great Lake <input type="checkbox"/> IGLD 85 <input type="checkbox"/> surveyed <input type="checkbox"/> converted from observed still water elevation.			
<input checked="" type="checkbox"/> <b>A. PROJECTS REQUIRING FILL</b> (See All Sample Drawings)			
<ul style="list-style-type: none"> <li>Attach a site plan and cross-section views to scale showing maximum and average fill dimensions with calculations.</li> <li>For multiple impact areas on a site provide a table with location, dimensions and volumes for each fill area.</li> </ul>			
Purpose <input type="checkbox"/> bioengineered shore protection <input type="checkbox"/> boat ramp <input type="checkbox"/> boat well <input type="checkbox"/> bridge or culvert <input type="checkbox"/> crib dock <input type="checkbox"/> riprap <input type="checkbox"/> seawall <input type="checkbox"/> swim area <input checked="" type="checkbox"/> other <b>infill ditch</b>			
Dimensions of fill (ft) Length <b>1,300ft</b> Width <b>40ft</b> Maximum Depth <b>6ft</b>		Total volume (cubic yards) <b>8,000</b>	Volume below OHWM (cubic yards) <b>-7,250 (assuming OHWM of 585.64)</b>
Maximum water depth in fill area (ft) <b>6ft</b>		Area filled (sq ft) <b>46,000</b>	Will filter fabric be used under proposed fill? <input type="checkbox"/> No <input checked="" type="checkbox"/> Yes (If Yes, type) <b>geotextile</b>
Fill will extend _____ feet into the water from the shoreline and upland _____ feet out of the water.			
Type of clean fill <input checked="" type="checkbox"/> peastone <b>10%</b> <input type="checkbox"/> sand % <input type="checkbox"/> gravel % <input checked="" type="checkbox"/> other <b>clay 80% and topsoil 10%</b>			
Source of clean fill <input type="checkbox"/> commercial <input checked="" type="checkbox"/> on-site <input type="checkbox"/> other			
<ul style="list-style-type: none"> <li>If on-site, show location on site plan.</li> <li>If other, attach description of location.</li> </ul>			
<input type="checkbox"/> <b>B. PROJECTS REQUIRING DREDGING OR EXCAVATION</b> (See Sample Drawings)			
<ul style="list-style-type: none"> <li>Refer to <a href="http://www.mi.gov/jointpermit">www.mi.gov/jointpermit</a> for spoils disposal and authorization requirements.</li> <li>Attach a site plan and cross-section views to scale showing maximum and average dredge or excavation dimensions with calculations.</li> <li>For multiple impact areas on a site provide a table with location, dimensions and volumes for each dredge/excavation area.</li> </ul>			
Purpose <input type="checkbox"/> boat ramp <input type="checkbox"/> boat well <input type="checkbox"/> bridge or culvert <input type="checkbox"/> maintenance dredge <input type="checkbox"/> navigation <input type="checkbox"/> pond/basin <input type="checkbox"/> other			
Dimensions (ft) Length Width Maximum Depth		Total volume (cu yds)	Volume below OHWM (cu yds)
Has this same area been previously dredged?		<input type="checkbox"/> No <input type="checkbox"/> Yes	If Yes, provide date and permit number:
Will the previously dredged area be enlarged?		<input type="checkbox"/> No <input type="checkbox"/> Yes	If Yes, when and how much?
Is long-term maintenance dredging planned?		<input type="checkbox"/> No <input type="checkbox"/> Yes	If Yes, how often?
Dredge or Excavation Method <input type="checkbox"/> Hydraulic <input type="checkbox"/> Mechanical <input type="checkbox"/> other			
Spoils Disposal	Dredged or excavated spoils will be placed <input type="checkbox"/> on-site <input type="checkbox"/> landfill <input type="checkbox"/> USACE confined disposal facility <input type="checkbox"/> other upland off-site		
	For disposal, provide a <input checked="" type="checkbox"/> Detailed spoils disposal area location map and site plan with property lines. <input checked="" type="checkbox"/> Letter of authorization from property owner of spoils disposal site, if disposed off-site.		
For volumes less than 5,000 cu yards, has proposed dredge material been tested for contaminants within the past 10 years? <input type="checkbox"/> No <input type="checkbox"/> Yes <input checked="" type="checkbox"/> If Yes, provide test results with a map of sampling locations.			
<input type="checkbox"/> <b>C. PROJECTS REQUIRING RIPRAP</b> (See Sample Drawings 2, 3, 8, 12, 14, 22, and 23)			
Riprap water ward of the ordinary high water mark: dimensions (ft) length width depth			Volume(cu yd)
Riprap landward of the ordinary high water mark: dimensions (ft) length width depth			Volume(cu yd)
Type and size of riprap (inches) <input type="checkbox"/> field stone <input type="checkbox"/> angular rock <input type="checkbox"/> other		Will filter fabric or pea stone be used under proposed riprap? <input type="checkbox"/> No <input type="checkbox"/> Yes, Type	





<input type="checkbox"/> <b>D. SHORE PROTECTION PROJECTS</b> (See EZ Guides and Sample Drawings 2, 3, and 17. Complete Sections 10A, B, and/or C.)			
➔ For bioengineering projects include the list of native plants/seeds, if available.			
Type and length (ft)	<input type="checkbox"/> bioengineering (ft)	<input type="checkbox"/> revetment (ft)	<input type="checkbox"/> riprap (ft) <input type="checkbox"/> seawall/bulkhead (ft)
Structure is <input type="checkbox"/> new <input type="checkbox"/> repair <input type="checkbox"/> replacement of an existing structure		Will the existing structure be removed? <input type="checkbox"/> No <input type="checkbox"/> Yes	
Proposed Toe Stone (linear feet)		Distance of project from adjacent property lines (ft)	
Distance of project from an obvious fixed structure (example - 50 ft from SW corner of house)			
For bioengineering projects indicate the structure type <input type="checkbox"/> brush bundles <input type="checkbox"/> coir log <input type="checkbox"/> live stakes <input type="checkbox"/> tree revetment <input type="checkbox"/> other			
<input type="checkbox"/> <b>E. DOCK - PIER – MOORING PILINGS</b> (See Sample Drawing 10)			
➔ Attach a copy of the property legal description, mortgage survey, or a property boundary survey report.			
Dock Type <input type="checkbox"/> open pile <input type="checkbox"/> filled <input type="checkbox"/> crib <input type="checkbox"/> floating <input type="checkbox"/> cantilevered <input type="checkbox"/> spring piles <input type="checkbox"/> piling clusters <input type="checkbox"/> other			
Is the structure within the applicant's riparian area interest area? <input type="checkbox"/> No <input type="checkbox"/> Yes ➔ Show parcel property lines on the site plan.			
Proposed structure dimensions (ft) length width		Use <input type="checkbox"/> private <input type="checkbox"/> public <input type="checkbox"/> commercial	
Dimensions of nearest adjacent structures (ft) length width		Distance of dock from adjacent property lines (ft)	
<input type="checkbox"/> <b>F. BOAT WELL</b> (See EZ Guide. Complete Sections 10A and 10B)			
Dimensions (ft) length width depth		Number of boats	
Type of sidewall stabilization <input type="checkbox"/> concrete <input type="checkbox"/> riprap <input type="checkbox"/> steel <input type="checkbox"/> vinyl <input type="checkbox"/> wood <input type="checkbox"/> other			
Volume of backfill behind sidewall stabilization (cu yd)		Distance of boat well from adjacent property lines (ft)	
<input type="checkbox"/> <b>G. BOAT RAMP</b> (See EZ Guide. Complete sections 10A, 10B, and 10C for mattress and pavement fill, dredge, and riprap)			
Type <input type="checkbox"/> new <input type="checkbox"/> existing <input type="checkbox"/> maintenance/improvement	Use <input type="checkbox"/> private <input type="checkbox"/> public <input type="checkbox"/> commercial		
Existing overall boat ramp dimensions (ft) length width depth		Type of construction material <input type="checkbox"/> concrete <input type="checkbox"/> wood <input type="checkbox"/> stone <input type="checkbox"/> other	
Proposed overall ramp dimensions (ft) length width depth		Proposed ramp dimensions (ft) below ordinary high water mark length width depth	
Number of proposed skid piers	Proposed skid pier dimensions (ft) length width		Distance of ramp from adjacent property lines (ft)
<input type="checkbox"/> <b>H. BOAT HOIST – ROOFS</b> (See EZ Guide)			
Type <input type="checkbox"/> cradle <input type="checkbox"/> side lifter <input type="checkbox"/> other		Located on <input type="checkbox"/> seawall <input type="checkbox"/> dock <input type="checkbox"/> bottomlands	
Hoist dimensions, including catwalks (ft) length width			
Area occupied, including cat walks (sq ft)		Distance of hoist from adjacent property lines (ft)	
Permanent Roof <input type="checkbox"/> No <input type="checkbox"/> Yes ➔ If Yes, how is the roof supported?		Maximum Roof Dimensions (ft): length width height	
<input type="checkbox"/> <b>I. BOARDWALKS and DECKS in WETLANDS or FLOODPLAINS</b> (See Sample Drawings 5 and 6. Complete Sections 12 and/or 13)			
➔ Provide a table for multiple boardwalks and decks proposed in one project; include locations and dimensions.			
<b>Wetlands</b>		<b>Floodplains</b>	
Boardwalk <input type="checkbox"/> on pilings <input type="checkbox"/> on fill	Deck <input type="checkbox"/> on pilings <input type="checkbox"/> on fill	Boardwalk <input type="checkbox"/> on pilings <input type="checkbox"/> on fill	Deck <input type="checkbox"/> on pilings <input type="checkbox"/> on fill
Dimensions (ft) length width	Dimensions (ft) length width	Dimensions (ft) length width	Dimensions (ft) length width
<input checked="" type="checkbox"/> <b>J. INTAKE PIPES</b> (See Sample Drawing 16) or <b>OUTLET PIPES</b> (See Sample Drawing 22)			
If outlet pipe, discharge is to <input type="checkbox"/> inland lake <input type="checkbox"/> stream, drain or river <input type="checkbox"/> overland flow <input type="checkbox"/> Great Lake <input type="checkbox"/> wetland <input checked="" type="checkbox"/> other <b>existing storm sewer</b>			
Number of pipes <b>1</b>	Pipe diameters and invert elevations <b>6" PVC Inv. 582.68 at new CB and Inv. 582.04 at existing CB</b>	Does pipe discharge below the OHWM?	<input type="checkbox"/> No <input checked="" type="checkbox"/> Yes
		Is the water treated before discharge?	<input checked="" type="checkbox"/> No <input type="checkbox"/> Yes
Type <input type="checkbox"/> headwall <input type="checkbox"/> end section <input type="checkbox"/> other		Dimensions of headwall OR end section (ft) length width height	

PRELIMINARY DRAFT FOR DISCUSSION PURPOSES



**K. MOORING and NAVIGATION BUOYS** (See EZ Guide for Sample Drawing)  
 ➔ Provide a site plan showing the distances between each buoy and from the shore to each buoy, and depth (ft) of water at each location.  
 ➔ Provide cross-section drawing(s) showing anchoring system(s) and dimensions.

Purpose of buoy  mooring  navigation  scientific structures  swimming  other

Number of buoys	Dimensions of buoys (ft)				Boat Lengths	Type of anchor system
	width	height	swing radius	chain length		

Buoy Location: Latitude . N Longitude -- . W. ➔ Provide a table for multiple buoys.

Do you own the property along the shoreline?  No  Yes ➔ If No, attach an authorization letter from the property owner(s).

Do you own the bottomlands?  No  Yes ➔ If No, attach an authorization letter from the property owner(s).

**L. FENCES**  
 ➔ Provide an overall site plan showing the proposed fencing through streams, wetlands or floodplains.  
 ➔ Provide a drawing of fence profile showing the design, dimension, post spacing, mesh, and distance from ground to bottom of fence.

Purpose of fence  Airport  Cervidae  Livestock  Residential  Security  Other

Total length (ft) of fence through streams wetlands floodplains	Fence height (ft)	Fence type and material
--	-------------------	-------------------------

**M. OTHER** - e.g., structure removal, maintenance or repair, aerator, dry fire hydrant, gold prospecting, habitat structures, scientific measuring devices, soil borings, or survey activities.

Structure description, dimensions and volumes. Complete Sections 10A-C as applicable.

**11 Expansion of an Existing or Construction of a New Lake or Pond** (See Sample Drawings 4 and 15)  
 ➔ Complete Section 10J for outlets and Section 17 for water control structures.  
 ➔ Provide elevations, cross-sections and profiles of outlets, dams, dikes, water control structures and emergency spillways to nearest water bodies.



Which best describes your proposed water body use (check all that apply)  
 mining  recreation  storm water retention basin  wastewater basin  wildlife  other

Water source for lake/pond  
 groundwater  natural springs  Inland Lake or Stream  storm water runoff  pump  sewage  other

Location of the lake/basin/pond  floodplain  wetland  stream (inline)  upland

Maximum dimensions (ft) length width depth	Maximum Area: <input type="checkbox"/> acres <input type="checkbox"/> sq ft
---	---

Has the there been a hydrologic study performed on the site?  No  Yes ➔ If Yes, provide a copy.

Has the DEQ conducted a wetland assessment for this parcel?  No  Yes ➔ If Yes, provide a copy or WIP number:

Has a professional wetland delineation been conducted for this parcel?  No  Yes ➔ If Yes, provide a copy with data sheets.

Spoils Disposal	Dredged or excavated spoils will be placed <input type="checkbox"/> on-site <input type="checkbox"/> landfill <input type="checkbox"/> USACE confined disposal facility <input type="checkbox"/> other upland off-site For disposal, provide a ➔ Detailed spoils disposal area location map and site plan with property lines. ➔ Letter of authorization from property owner of spoils disposal site, if disposed off-site.
-----------------	---



**12 Activities That May Impact Wetlands** (See Sample Drawings 8 & 9). Complete other Sections as applicable.

- Locate your site and wetland information with the DEQ Wetlands Map Viewer at [www.mcgi.state.mi.us/wetlands/](http://www.mcgi.state.mi.us/wetlands/)
- For information on the DEQ's Wetland Identification Program (WIP) visit [www.mi.gov/wetlands](http://www.mi.gov/wetlands).
  - Provide a detailed site plan with labeled property lines, upland and wetland areas, and dimensions and volumes of wetland impacts.
  - Complete the wetland dredge and wetland fill dimension information below for each impacted wetland area.
  - Attach tables for multiple impact areas or activities.
  - Attach at least one cross-section for each wetland dredge and/or fill area; show wetland and upland boundaries on the cross-section.

Has the DEQ conducted a wetland assessment for this parcel?		<input checked="" type="checkbox"/> No <input type="checkbox"/> Yes	➤ If Yes, provide a copy or WIP number:	
Has a professional wetland delineation been conducted for this parcel?		<input checked="" type="checkbox"/> No <input type="checkbox"/> Yes	➤ If Yes, provide a copy with data sheets	
Is there a recorded DEQ easement on the property?		<input checked="" type="checkbox"/> No <input type="checkbox"/> Yes	➤ If Yes, provide the easement number	
Did the applicant purchase the property before October 1, 1980?		<input checked="" type="checkbox"/> No <input type="checkbox"/> Yes	➤ If Yes, provide documentation.	
Is any grading or mechanized land clearing proposed?		<input type="checkbox"/> No <input checked="" type="checkbox"/> Yes	➤ If Yes, label the locations on the site plan.	
Has any of the proposed grading or mechanized land clearing been completed?		<input checked="" type="checkbox"/> No <input type="checkbox"/> Yes	➤ If Yes, label the locations on the site plan	
Proposed Activity <input type="checkbox"/> boardwalk or deck (Section 10I) <input type="checkbox"/> bridges and culverts (Section 14) <input type="checkbox"/> designated environmental area <input checked="" type="checkbox"/> dewatering <input type="checkbox"/> draining surface water <input type="checkbox"/> driveway / road <input type="checkbox"/> fences (Section 10L) <input checked="" type="checkbox"/> fill or dredge <input checked="" type="checkbox"/> restoration <input type="checkbox"/> septic system <input checked="" type="checkbox"/> stormwater discharge (Section 10J) <input type="checkbox"/> other				
<b>FILL</b>	Dimensions maximum length (ft) <b>1,300</b> maximum width (ft) <b>40</b>	Area <input checked="" type="checkbox"/> acres <input type="checkbox"/> sq ft <b>~3</b>	Average depth (ft) <b>5</b>	Volume (cu yd) <b>8,000</b>
	Dimensions maximum length (ft) maximum width (ft)	Area <input type="checkbox"/> acres <input type="checkbox"/> sq ft	Average depth (ft)	Volume (cu yd)
<b>DREDGE</b>	<b>PRELIMINARY DRAFT FOR DISCUSSION PURPOSES</b>			
<b>Spoils Disposal</b>	Dredged or excavated spoils will be placed: <input type="checkbox"/> on-site <input type="checkbox"/> landfill <input type="checkbox"/> USACE confined disposal facility <input type="checkbox"/> other upland off-site			
	For disposal, provide a    ➤ Detailed spoils disposal area location map and site plan with property lines. ➤ Letter of authorization from property owner of spoils disposal site, if disposed off-site.			
<b>Septic System</b>	The proposed project will be serviced by: <input type="checkbox"/> public sewer <input type="checkbox"/> private septic system ➤ Show system on plans.		If a private septic system is proposed, has an application for a permit been made to the County Health Department? <input type="checkbox"/> No <input type="checkbox"/> Yes If Yes, has a permit been issued? <input type="checkbox"/> No <input type="checkbox"/> Yes ➤ Provide a copy of the permit.	

Describe the wetland impacts, the proposed use or development, and the alternatives considered:

Does the project impact more than 1/3 acre of wetland?  No  Yes  
 ➤ If Yes, submit a Mitigation Plan with the type and amount of mitigation proposed. For more information go to [www.mi.gov/wetlands](http://www.mi.gov/wetlands)

Describe how impacts to waters of the United States will be avoided and minimized:

Describe how the impact to waters of the United States will be compensated. OR Explain why compensatory mitigation should not be required for the proposed impacts.



**13 Floodplain Activities** (See Sample Drawing 5 and others. Complete other applicable sections.)

- For more information go to [www.mi.gov/floodplainmanagement](http://www.mi.gov/floodplainmanagement). This site also lists the projects and requirements for an expedited floodplain review under "Expedited Review Information for Minor Floodplain Projects."
- Examples of projects proposed within the non-floodway portions of the 100-year-floodplain which may qualify for an expedited review: Open pile decks and boardwalks; residences, commercial/industrial facilities, garages and accessory structures; parking lots; pavilions, gazebos, large community playground structures; residential swimming pools
- Examples of projects proposed within the floodway portions of the floodplain which may qualify for an expedited review: Open pile decks and boardwalks, (non-enclosed) that are anchored to prevent floatation and that do not extend over the bed and bank of a watercourse; parking lots constructed at grade or resurfacing that is no more than 4 inches above the existing grade; dry hydrants that do not require fill placement; scientific structure such as staff gauges, water monitoring devices, water quality testing devices, and core sampling devices which meet specific design criteria and fish structures that meet specific design criteria.
- For expedited review include:
  - Photographs of the work site labeled to identify what is being shown and with the direction of the photo clearly indicated. Include photographs of any river or stream adjacent to the project.
  - A letter or statement from the local unit of government acknowledging your proposed application. See the website for sample wording.
- A hydraulic analysis or hydrologic analysis may be required to fully assess floodplain impacts.
- The state building code requires an Elevation Certificate for any building construction or addition in a floodplain. A sample form can be found at [www.fema.gov/nfip/elvinst.shtm](http://www.fema.gov/nfip/elvinst.shtm).
  - Attach additional sheets or tables for multiple proposed floodplain activities and provide hydraulic calculations.
  - Show reference datum used on plans.

Proposed Activity	<input checked="" type="checkbox"/> fill <input type="checkbox"/> excavation or cut	100-year floodplain elevation (ft) (if known) <b>589.3</b>
	<input type="checkbox"/> other	Datum <input checked="" type="checkbox"/> NGVD 29 <input type="checkbox"/> NAVD 88 <input type="checkbox"/> other

Site is 0-5 feet above  ordinary high water mark (OHWM) OR  observed water level. Date of observation (M/D/Y) **8/7/2014 - 584.68**

Fill volume below the 100-year floodplain elevation (cu yds) <b>TBD</b>	Compensating cut volume below the 100-year floodplain elevation (cu yds) <b>TBD</b>
---	---

<b>Buildings and/or Additions</b>	Type of construction is <input type="checkbox"/> residential <input type="checkbox"/> garage/pole barn <input type="checkbox"/> non residential <input type="checkbox"/> other	
	Construction is <input type="checkbox"/> new <input type="checkbox"/> addition    AND    Served by <input type="checkbox"/> public sewer <input type="checkbox"/> private septic <input type="checkbox"/> other	
	Lowest adjacent grade (ft): existing                      proposed datum <input type="checkbox"/> NGVD 29 <input type="checkbox"/> NAVD 88 <input type="checkbox"/> other	
	<b>DISCUSSION PURPOSES</b>	
	<b>Existing Structure Information</b>	
	Foundation type <input type="checkbox"/> basement <input type="checkbox"/> concrete slab on grade <input type="checkbox"/> pilings <input type="checkbox"/> crawl space <input type="checkbox"/> other	
	Foundation floor elevation (ft)	
	Height of crawl space/basement from finished foundation floor to bottom of floor joists (ft)	
	Elevation of 1st floor above basement floor/crawl space (ft)	
	<b>Proposed Structure Information</b>	
Foundation type <input type="checkbox"/> basement <input type="checkbox"/> concrete slab on grade <input type="checkbox"/> pilings <input type="checkbox"/> crawl space <input type="checkbox"/> other		
Foundation floor elevation (ft)		
Height of crawl space/basement from finished foundation floor to bottom of floor joists (ft)		
Elevation of 1st floor above basement floor/crawl space (ft)		
For enclosed areas below the flood elevation, such as a crawl space, garages and accessory structures: Area of proposed foundation (sq ft) Elevation of proposed enclosed area (ft)                      datum <input type="checkbox"/> NGVD 29 <input type="checkbox"/> NAVD 88 <input type="checkbox"/> other		
Number of flood vents	net opening of each vent (sq inches)	lowest elevation of flood vents (ft)



- 14 Bridges and Culverts** Including Foot and Cart Bridges. (See EZ Guides and Sample Drawings 5, 14A, 14B, 14C, 14D.)
- Complete other applicable Sections, including 10A-C.
  - A hydraulic analysis or hydrologic analysis may be required to fully assess impacts. → Attach hydraulic calculations.
  - High Water Elevation - describe reference point and highest known water level above or below reference point and date of observation.
    - Attach additional sheets for multiple bridges and/or culverts.
    - Provide detailed site-specific drawings of existing and proposed Plan and Elevation View at a scale adequate for detailed review.
    - Provide all information in the boxes below; do not write in a reference to plan sheets. Show reference datum used on plans.

<b>Stream Information</b>	The site has a high water elevation (ft) <input type="checkbox"/> above or <input type="checkbox"/> below the Reference Point of _____ Date observed _____	
	Reference datum used <input type="checkbox"/> NGVD 29 <input type="checkbox"/> NAVD 88 <input type="checkbox"/> IGLD 85 (Great Lakes coastal areas) <input type="checkbox"/> other	
	Average stream width (ft) at the ordinary high water mark (OHWM) outside the influence of any ponding or scour holes around the structure	Upstream _____ Downstream _____
	Cross-sectional area of primary channel (sq ft) _____ (See Sample Drawing 14C for more information)	
	The width of the stream where the water begins to overflow its banks. Bankfull width (ft)	
	The invert of the stream 100-feet from structure (ft)	Upstream _____ Downstream _____
	Is the existing culvert perched? <input type="checkbox"/> No <input type="checkbox"/> Yes If Yes, provide a profile of the channel bottom at the high and low points for a distance of 200 feet upstream and downstream of the culvert.	

<b>Complete this form for each bridge / culvert location.</b>		<b>Existing</b>	<b>Proposed</b>
<b>Bridge</b>	Number of bridge spans		
	Bridge type (concrete box beam, concrete I-beam, timber, etc.)		
	Bridge span ( length perpendicular to stream) (ft)		
	Bridge width (parallel to stream) (ft)		
	Bottom of bridge beam (ft)	Upstream _____ Downstream _____	
	Stream invert elevation at bridge (ft)	Upstream _____ Downstream _____	
	Bridge rise from bottom of beam to streambed (ft)		
<b>Culvert</b>	Number of culverts		
	Culvert type (arch, bottomless, box, circular, etc.)		
	Culvert material (concrete, corrugated metal, plastic, etc.)		
	Culvert length (ft)		
	Culvert <input type="checkbox"/> width <input type="checkbox"/> diameter (ft)		
	Culvert height prior to any burying (ft)		
	Depth culvert will be buried (ft)		
	Elevation of culvert crown (ft)	Upstream _____ Downstream _____	
	Higher elevation of <input type="checkbox"/> culvert invert OR <input type="checkbox"/> streambed within culvert (ft)	Upstream _____ Downstream _____	
<b>Complete for both Bridges and Culverts</b>	Entrance design (mitered, projecting, wingwalls, etc.)		
	Total structure waterway opening above streambed (sq ft)		
	Total structure waterway area below the 100-year elevation (sq ft) (if known)		
	Elevation of road grade at structure (ft)		
	Elevation of low point in road (ft)		
	Distance from low point of road to mid-point of bridge crossing (ft)		
	Length of approach fill from edge of bridge/culvert to existing grade (ft)		
	A Licensed Professional Engineer may certify that your project will not cause a harmful interference for a range of flood discharges up to and including the 100-year flood discharge. The "Required Certification Language" is found under "forms" on the "maps, forms and documents" link from the <a href="http://www.mi.gov/jointpermit">www.mi.gov/jointpermit</a> page or a copy may be requested by phone, email, or mail. A hydraulic report supporting this certification may also be required. Is Certification Language attached? <input type="checkbox"/> No <input type="checkbox"/> Yes		

PRELIMINARY DRAFT FOR DISCUSSION PURPOSES



**15 Stream, River, or Drain Construction , Relocation and Enclosure Activities**

- Complete Section 10C for riprap activities.
- If side casting or other proposed activities will impact wetlands or floodplains, complete Sections 12 and 13, respectively.
  - Provide a scaled overall site plan showing existing lakes, streams, wetlands, and other water features; existing structures; and the location of all proposed structures and land change activities.
  - Provide scaled cross-section (elevation) drawings necessary to clearly show existing and proposed conditions.
  - For activities on legally established county drains, provide original design and proposed dimensions and elevations.

Stream Information	Water elevation (ft) datum <input type="checkbox"/> NGVD 29 <input type="checkbox"/> NAVD 88 <input type="checkbox"/> IGLD 85 (Great Lakes coastal areas) <input type="checkbox"/> other	
	➤ Show elevation on plans with description.	
	Dimensions (ft) of existing stream/drain channel (ft)	length width depth
Existing channel average water depth in a normal year (ft)		
Proposed Activity <input type="checkbox"/> enclosure <input type="checkbox"/> improvement <input type="checkbox"/> maintenance <input type="checkbox"/> new drain <input type="checkbox"/> relocation <input type="checkbox"/> wetlands <input type="checkbox"/> other		
If an enclosed structure is proposed, check material type <input type="checkbox"/> concrete <input type="checkbox"/> corrugated metal <input type="checkbox"/> plastic <input type="checkbox"/> other		
Dimensions (ft) of the structure: diameter length		Volume of fill (cu yds)
Will old/enclosed stream channel be backfilled to top of bank grade? <input type="checkbox"/> No <input type="checkbox"/> Yes		
Length of channel to be abandoned (ft)		Volume of fill (cu yds)
Dimensions (ft) of improved, maintained, new, relocated or wetland stream/drain channel. length width depth		Volume of dredge/excavation (cu yds)
How will slopes and bottom be stabilized? Proposed side slopes (vertical / horizontal)		
Spoils Disposal	Dredged or excavated spoils will be placed <input type="checkbox"/> on-site <input type="checkbox"/> landfill <input type="checkbox"/> USACE confined disposal facility <input type="checkbox"/> other upland off-site	
	For disposal, provide a ➤ Detailed spoils disposal area location map and site plan with property lines. ➤ Letter of authorization from property owner of spoils disposal site, if disposed off-site.	



**16 Drawdown of an Impoundment**

- If wetlands will be impacted, complete Section 12.

Type of drawdown <input type="checkbox"/> over winter <input type="checkbox"/> temporary <input type="checkbox"/> one-time event <input type="checkbox"/> annual event <input type="checkbox"/> permanent (dam removal) <input type="checkbox"/> other		
Reason for drawdown		
Has there been a previous drawdown? <input type="checkbox"/> No <input type="checkbox"/> Yes If Yes, provide date (M/D/Y)		Previous DEQ permit number, if known
Does waterbody have established legal lake level? <input type="checkbox"/> No <input type="checkbox"/> Yes <input type="checkbox"/> Not Sure		Dam ID Number, if known
Extent of vertical drawdown (ft)	Impoundment design head (ft)	Number of adjoining or impacted property owners
Date drawdown would start (M/D/Y)	Date drawdown would stop (M/D/Y)	Rate of drawdown ( ft/day)
Date refilling would start (M/D/Y)	Date refill would end (M/D/Y)	Rate of refill (ft/day)
Type of outlet discharge structure to be used <input type="checkbox"/> surface <input type="checkbox"/> bottom <input type="checkbox"/> mid-depth	Impoundment area at normal water level (acres)	Sediment depth behind impoundment discharge structure (ft)



**17 Dam, Embankment, Dike, Spillway, or Control Structure Activities** (See Sample Drawing 15)

- For more information go to [www.mi.gov/damsafety](http://www.mi.gov/damsafety). If wetlands will be impacted, complete Section 12.
- Information on removing a dam is available at [www.mi.gov/damsafety](http://www.mi.gov/damsafety) and following the Related Link –Dam Management.
  - ➔ Attach detailed signed and sealed engineering plans for a Part 315 dam repair, dam alteration, dam abandonment, or dam removal.
  - ➔ Part 315 Dam Safety application fees are added to all other application fees.
  - ➔ Mail applications for dams regulated under Part 315 to DEQ, WRD, P.O. BOX 30458, LANSING, MI 48909-7958, attention Dam Safety.

Proposed Activity	<input type="checkbox"/> abandonment	<input type="checkbox"/> alteration	<input type="checkbox"/> enlargement of an existing dam
	<input type="checkbox"/> removal	<input type="checkbox"/> repair	<input type="checkbox"/> reconstruction of a failed dam
	<input type="checkbox"/> new dam construction	<input type="checkbox"/> other	

Dam ID Number, if known	Type of outlet discharge structure <input type="checkbox"/> surface <input type="checkbox"/> bottom <input type="checkbox"/> mid-depth
-------------------------	--

Will proposed activities require a drawdown of the waterbody to complete the work?  No  Yes ➔ If Yes, complete Section 16.

Structural height (difference between embankment top elevation and streambed elevation at downstream embankment toe) (ft) \_\_\_\_\_

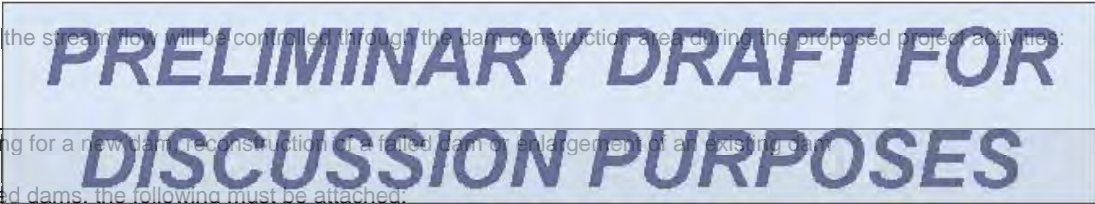
Hydraulic Height (difference between design flood elevation and streambed elevation at downstream embankment toe) (ft) _____	Impoundment size at design flood elevation (acres)
--	--

Does dam meet the criteria for regulation under Part 315? (i.e. hydraulic height of 6 feet or more and an impoundment size at the design flood of 5 surface acres or more)  No  Yes

Dredging/excavation volume (cu yd)	Fill volume (cu yd)	Riprap volume (cu yd)
------------------------------------	---------------------	-----------------------

Will a water diversion during construction be required?  No  Yes

If Yes, describe how the stream flow will be controlled through the dam construction area during the proposed project activities:



Complete the following for a new dam, reconstruction of a failed dam or enlargement of an existing dam:

For Part 315 regulated dams, the following must be attached:

- ➔ Site-specific conceptual plans of the dam for resource impact review (An engineering report and detailed engineering plans are not required until the project has been determined to be permissible).
- ➔ A description and evaluation of the loss of natural resources associated with the project.
- ➔ A description of the natural resources that are associated with or created by the impoundment and how they offset the natural resources lost by the creation of the impoundment.
- ➔ An assessment of all known existing and potential adverse effects within the scope of the project.

Embankment dimensions	length (ft)	top width (ft)	bottom width (ft)	slopes (vertical / horizontal)	Upstream Downstream
-----------------------	-------------	----------------	-------------------	--------------------------------	------------------------

Have soil borings been taken at dam location?  No  Yes ➔ If Yes, attach results.

Do you have flowage rights to all proposed flooded property at the design flood elevation?  No  Yes ➔ If No, provide a letter of authorization from the property owner.

Applications for Part 315 regulated dam removal projects must also include the following:

- An evaluation of the capacity of the remaining structure to pass flood flows.
- An evaluation of the quantity and quality of the sediments behind the impoundment.
- A description of the methods to be employed to control sediments.
- An assessment of all known existing and potential adverse impacts within the scope of the project.



**18 Utility Crossings** (See Sample Drawings 12 and 13, and EZ Guide)

- If side casting is proposed, complete Sections 10A and 10B. If spoils will be placed in or impact wetlands, complete Section 12.
  - ➔ Attach additional sheets or tables with the requested information as needed for multiple crossings.
  - ➔ For wetland crossings using the open trench method show clay plugs at the wetland/upland boundaries on the plans.

Crossing of  Inland Lake or Stream  floodplain  Great Lake  wetlands (also complete Section 12)

What method will be used to construct the crossings?  directional boring  jack and bore  open trench  plow / knife  flume

Utility Type	Number of lake or stream crossings	Number of wetland crossings	Pipe diameter with casing (in)	Pipe length per crossing (ft)	Distance below streambed or wetland (in)	Trench width (ft)
<input type="checkbox"/> sanitary sewer						
<input type="checkbox"/> storm sewer						
<input type="checkbox"/> watermain						
<input type="checkbox"/> cable						
<input type="checkbox"/> electric						
<input type="checkbox"/> fiber optic cable						
<input type="checkbox"/> oil/gas pipeline						

**19 Marina Construction, Expansion and Reconfiguration** (See Sample Drawing 21)

- For more information go to [www.mi.gov/marina](http://www.mi.gov/marina).
- Marinas located on the Great Lakes, including Lake St. Clair, may be required to secure leases or conveyances from the state of Michigan to place structures on the bottomlands. If a conveyance is necessary, an application must be submitted before the Joint Permit Application can be determined complete.
  - ➔ Fully complete Section 10 E. For multiple structures provide a table with the requested information.
  - ➔ Enclose a copy of any current pump-out agreement with another marina facility, if on-site sanitary pump out facilities are not available.
  - ➔ Attach a copy of the property legal description, mortgage survey, or a property boundary survey to your application.
  - ➔ The WRD may require a riparian interest area (RIA) estimate survey, sealed by a licensed surveyor, in order to determine whether the proposed project will adversely impact riparian rights. Include any available sealed RIA estimate survey and/or written authorizations from affected adjoining riparian owners with your application.

PRELIMINARY DRAFT FOR DISCUSSION PURPOSES

Proposed Marina Activity  New construction  Expansion  Reconfiguration

Do you have an existing Great Lake Conveyance?  No  Yes For more information visit [www.mi.gov/deqgreatlakes](http://www.mi.gov/deqgreatlakes).

Are sanitary pump-out facilities available?  No  Yes Is there a pump out agreement?  No  Yes If Yes, provide a copy.

Marina Description	Current Count	Final Count
Number of boat slips/wells (do not include broadside dockage or mooring buoys)		
Lineal feet of broadside dockage		
Maximum number of boats at broadside dockage		
Number of mooring buoys		
Number of launch ramps/lanes		



**20 Critical Dune Areas and High Risk Erosion Areas** (See Sample Drawings 19 and 20)

**Critical Dune Areas (See Sample Drawing 20)**

- Although not required, submitting **PHOTOGRAPHS** of the site may provide for a faster application review.
- For more information go to [www.mi.gov/jointpermit](http://www.mi.gov/jointpermit), select "Sand Dune Protection" under "Related Links."
- All property boundaries and proposed structure corners, including decks, septic systems, water wells, driveways, grading, and terrain alteration locations must be staked before the WRD site inspection.
- Scaled overhead and cross-section plans must include all property boundaries, locations, and dimensions of all existing structures and impacted areas, and all proposed structures, terrain alterations, and construction access. Cross-sections must show existing and proposed grades, including foundations.
- Construction in critical dune areas on slopes greater than 33 percent (1 vertical: 3 horizontal) is prohibited without a special exception.
- Construction in critical dune areas on slopes that measure from 25 percent (1 vertical: 4 horizontal) to less than 33 percent requires sealed plans prepared by a registered architect or licensed professional engineer.

**High Risk Erosion Areas (See Sample Drawing 19)**

- For more information go to [www.mi.gov/jointpermit](http://www.mi.gov/jointpermit), select "HREA" under "Related Links."
- All property boundaries, proposed structure corners, and septic system locations must be staked before the WRD site inspection.
- Scaled overhead plans must include all property boundaries, and the location and dimensions of all structures and septic systems must be included.
- Additional information, including the building construction plans, may be required to complete the application review.

<b>Critical Dune Areas</b>	Parcel dimensions (ft) width          depth		Date project staked (M/D/Y)	
	Property is a <input type="checkbox"/> platted lot <input type="checkbox"/> unplatted parcel		Year current property boundaries created	
	Dune habitat present in Building Site and access route (check all that apply): <input type="checkbox"/> Wooded <input type="checkbox"/> Open Dune <input type="checkbox"/> Shrubs			
	<input type="checkbox"/> Bare Sand <input type="checkbox"/> Lakefront Lot <input type="checkbox"/> MNFI Community if known: _____			
	Type of construction activities <input type="checkbox"/> addition <input type="checkbox"/> driveway <input type="checkbox"/> garage <input type="checkbox"/> new home <input type="checkbox"/> renovation <input type="checkbox"/> septic <input type="checkbox"/> deck(s) <input type="checkbox"/> other			
	<input type="checkbox"/> Provide a sand relocation plan with location and dimensions of disposal area. Indicate <input type="checkbox"/> on-site OR <input type="checkbox"/> off-site			
	If on-site show location and how the disposal site will be accessed on the plans. Indicate the depth of the disposed sand on the plans.			
	<input type="checkbox"/> Provide the permit or letter from the County Enforcing Agent stating the project complies with Part 91 (Soil Erosion and Sedimentation Control).			
	The proposed project will be serviced by <input type="checkbox"/> public sewer <input type="checkbox"/> private septic system			
	<p>➔ On the plans, show the location and dimensions of the private septic system.</p> <p>If a private septic system is proposed, has a permit been issued by the health department? <input type="checkbox"/> No    <input type="checkbox"/> Yes</p> <p>➔ If Yes, provide a copy of the permit for all Critical Dune Area projects.</p>			
<input type="checkbox"/> Provide a copy of the vegetation assurance letter. <input type="checkbox"/> Provide a re-vegetation plan, including # _____ of trees to be removed and # _____ of trees to be replanted.				
<b>Proposed Utility Installation</b>		<b>Proposed New Construction</b>		
Utility Installation Method		Foundation type		
<input type="checkbox"/> directional bore <input type="checkbox"/> plowing in		<input type="checkbox"/> basement		
<input type="checkbox"/> open trench <input type="checkbox"/> other		<input type="checkbox"/> concrete slab <input type="checkbox"/> pilings		
		<input type="checkbox"/> crawl space <input type="checkbox"/> other		
➔ Show utility locations and dimensions on the site plan.		Area of existing structure (sq ft)		
➔ Show construction access route on the site plan.		Area of proposed structure (sq ft)		
➔ Show existing and proposed grades on the cross-section.		Area of existing deck (sq ft)		
➔ Show locations of vegetation to be removed on the site plan.		Area of proposed deck (sq ft)		
Provide the following information for special use projects:				
(a) Lot size, width, density, and front and side setbacks.				
(b) Storm water drainage that provides for disposal of drainage water without serious erosion.				
(c) Methods for controlling erosion from wind and water.				
(d) Re-stabilization plan.				
(e) Environmental Impact Statement.				



<b>High Risk Erosion Areas</b>	Parcel dimensions (ft) width      depth		Date project staked (M/D/Y)	
	<b>Existing Structure Information</b>		<b>Proposed New Construction</b>	
	Foundation type <input type="checkbox"/> basement <input type="checkbox"/> concrete slab <input type="checkbox"/> pilings <input type="checkbox"/> crawl space <input type="checkbox"/> other		Foundation type <input type="checkbox"/> basement <input type="checkbox"/> concrete slab <input type="checkbox"/> pilings <input type="checkbox"/> crawl space <input type="checkbox"/> other	
	Material above foundation wall <input type="checkbox"/> block <input type="checkbox"/> log <input type="checkbox"/> stud frame <input type="checkbox"/> other		Material above foundation wall <input type="checkbox"/> block <input type="checkbox"/> log <input type="checkbox"/> stud frame <input type="checkbox"/> other	
	Siding material <input type="checkbox"/> block <input type="checkbox"/> vinyl <input type="checkbox"/> wood <input type="checkbox"/> other		Siding material <input type="checkbox"/> block <input type="checkbox"/> vinyl <input type="checkbox"/> wood <input type="checkbox"/> other	
	Area of the foundation, excluding attached garage (sq ft)		Area of the foundation, excluding attached garage (sq ft)	
	Area of the garage foundation (sq ft)		Area of the garage foundation (sq ft)	
	If renovating or restoring an existing structure, indicate the renovation or restoration cost \$			
	Current structure replacement value \$			
	Tax assessed value of existing structure excluding land value \$		Assessment Year	
Provide the number of individual living units in the proposed building				

***PRELIMINARY DRAFT FOR  
DISCUSSION PURPOSES***

**PRE-APPLICATION MEETING REQUEST**

The Department of Environmental Quality (DEQ) Water Resources Division (WRD) has established a voluntary process for meeting with staff prior to submitting a permit application under Part 301, Inland Lakes and Streams and Part 303, Wetlands Protection, of the Natural Resources and Environmental Protection Act, 1994 PA 451, as amended. If you would like to request a pre-application meeting with WRD staff, please submit the following information to your local WRD district office:

1. The Pre-application Meeting Request Form. You must provide all requested information to allow us to process your request.
2. A map indicating the location of your project site (a county map or one obtained from an internet mapping system, is acceptable). This map should include all streets, roads, intersections, highways, and a north arrow.
3. If the applicant is not the property owner, a letter from the landowner authorizing the DEQ to meet with the applicant and/or agent and enter the property described on this form for the purposes of the pre-application meeting.
4. The appropriate fee (as shown below). Checks must be made payable to the State of Michigan. The WRD can also accept [Credit Card and EFT Payments](#).
5. A preliminary site plan, if available.

Please keep in mind that providing any other available information may allow staff to better evaluate your project. Other information that may be helpful in WRD's review includes photographs of the site, aerial photos, more detailed site plans, etc. You may also provide a draft permit application. The permit application is available at [www.michigan.gov/jointpermit](http://www.michigan.gov/jointpermit).

Indicate on the form whether you wish to meet in the district office or at the project site. A current district contact information map may be viewed on the DEQ Web site referenced above. Please submit the form and if applicable, payment, to the address provided on the Web site for your local [district office](#).

The WRD's staff will contact you to schedule a meeting at a mutually convenient time. Meetings will be scheduled as soon as staff's time and/or weather conditions allow. A meeting may be rescheduled if you provide at least 24 hours advance notice. If you need to cancel a pre-application meeting, you may do so up to 24 hours (not including weekends or holidays) prior to the scheduled meeting with a full refund. No refund will be given if the meeting is canceled by you with less than 24 hours' notice.

**FEES**

<b>TYPE OF PRE-APPLICATION MEETING</b>	<b>FEE</b>
<b>Single-family residential lot less than 1 acre in size</b>	
Meeting in district office	No Charge
Meeting on site	\$ 100.00
<b>Other pre-application meeting in district office</b>	\$ 150.00
<b>Other meeting on project site</b>	
First acre or portion of acre of project area	\$ 250.00
Each additional acre or portion of acre	\$ 50.00
Maximum	\$ 1,000.00
Example: 4.7 acres = \$250 + (4 x \$50) = \$450.	

**DEPARTMENT OF ENVIRONMENTAL QUALITY  
WATER RESOURCES DIVISION  
PRE-APPLICATION MEETING REQUEST**

DEQ FILE NO.-FOR OFFICIAL USE

**Applicant**

Applicant: <b>RACER Trust c/o Dave Favero</b>		
Address: <b>500 Woodward Avenue, Suite 1510</b>		
City: <b>Detroit</b>	State: <b>MI</b>	Zip: <b>48226</b>
Phone: <b>734-879-9525</b>	Fax:	
Email: <b>dfavero@racertrust.org</b>		

**Property Owner**

Property Owner: <b>RACER Trust c/o Dave Favero</b>		
Address: <b>500 Woodward Avenue, Suite 1510</b>		
City: <b>Detroit</b>	State: <b>MI</b>	Zip: <b>48226</b>
Phone: <b>734-879-9525</b>	Fax:	
Email: <b>dfavero@racertrust.org</b>		

**Agent (if applicable)**

Agent: <b>John-eric Pardys</b>		Company: <b>Conestoga-Rovers &amp; Associates, Inc.</b>	
Address: <b>651 Colby Drive</b>			
City: <b>Waterloo</b>	State: <b>ON</b>	Zip: <b>N2V 1C2</b>	
Phone: <b>519-884-0510</b>	Fax:		Email: <b>jpardys@croworld.com</b>

**Site Location**

Address: <b>2100 Veterans Memorial Parkway</b>		Township/City: <b>Saginaw</b>	Zip: <b>48601</b>
County: <b>Saginaw</b>	Town: <b>Buena Vista</b>	Range: <b>SW 1/4, NW 1/4</b>	Section: <b>Section 8, T12N, R5E</b>
Project Name: <b>Nodular Facility - North Ditch</b>			
Directions (nearest major intersection and directions from major intersection): <b>Nearest Major Intersection:</b> North Washington Road and Veterans Memorial Parkway <b>Directions:</b> Head north on Veterans Memorial Parkway approximately 0.8mi and take third driveway on right			

**PRE-APPLICATION MEETING REQUEST**

- The meeting is requested at the  Project site or  DEQ district office
- DEQ staff should contact  Applicant or  Agent
- Is the proposed project a single family residential lot one acre or less in size?  Yes  No

**GENERAL INFORMATION**

Project description (use additional sheets if necessary): \_\_\_\_\_  
See attached Stabilization Alternative Evaluation and Recommendation for the North Ditch memorandum dated February 26, 2014.

Estimated total project area (acres): -3 acres  
 Will wetlands be involved?  Yes,  No,  Unsure  
 Has a wetland delineation been conducted?  Yes,  No  
 Will inland lakes and streams be involved?  Yes,  No,  Unsure  
 Will floodplains be involved?  Yes,  No,  Unsure  
 Other resources involved (Critical Dunes, High Risk Erosion Areas, etc.): \_\_\_\_\_

Estimated acreage of impact: -3 acres  
 Estimated cubic yards of fill: 8,000 cubic yards  
 Waterbody name: Saginaw River

**SIGNATURE**

I hereby certify that I am familiar with the information contained in this application, that it is true and accurate. I understand that there are penalties for submitting false information and that any finding pursuant to this request may be revoked if information on this request is untrue.

Signed David Favero

Date 13 August 2014

**DEQ FILE NUMBER** \_\_\_\_\_

**MEETING HELD**

**ATTENDEES**

Date \_\_\_\_\_, \_\_\_\_\_

Location \_\_\_\_\_

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

**STAFF COMMENTS**

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

**FINDINGS REGARDING THE NEED FOR A PERMIT UNDER PART 301, INLAND LAKES AND STREAMS AND PART 303, WETLANDS PROTECTION, OF THE NATURAL RESOURCES AND ENVIRONMENTAL PROTECTION ACT, 1994 PA 451, AS AMENDED**

The Department of Environmental Quality has determined that:

- A permit is required. Please reference the file number at the top of this form when submitting a permit application.
- A permit is not required. **(This can only be determined for meetings on the project site.)**
- It cannot be determined whether a permit is required given the information presented.

This determination is based on the attached project plans prepared by \_\_\_\_\_ and dated \_\_\_\_\_ and other attached information provided at the time of this meeting only. Provided that the proposed project and location are not altered, this determination is binding for a period of two years from the date of this meeting.

\_\_\_\_\_  
DEQ Staff Signature

\_\_\_\_\_  
Date

**THIS DOCUMENT IS NOT A PERMIT** Staff can not indicate during a pre-application meeting whether or not a permit will be issued. The DEQ cannot make a decision regarding a permit until it has considered all of the information provided in the final permit application, and, in some instances, has also considered comments received in response to a public notice of the project. Therefore, staff cannot legally tell you whether your project will be authorized in advance of a permit application. They can, however, give you information that will improve the likelihood that it will meet regulatory standards, and thus be authorized, or they may also be able to identify issues which will be of significant concern.

## Receipt

# DEQ Joint Permit Ap

**Payment Receipt**[PRINT](#)

---

**Merchant:** DEQ Joint Permit Ap  
**Merchant City/State:** Lansing, MI  
**Merchant Location Code:** 00001  
**Payment Status:** Success  
**Payment Date:** 08/13/2014  
**Confirmation Number:** 14081335870927  
**Billing Address:** John-eric Pardys  
396 Lakeview Drive  
Waterloo  
ON N2L4Z6  
CA  
519-884-0510  
**E-Mail Address:** jpardys@croworld.com  
**Total Amount:** 400.00 USD  
**Convenience Fee Amount:** 8.00 USD  
**Card Type:** MC  
**Account #:** x2565  
**Authorization Code:** 06441B  
**Reference:** RACER Trust,500 Woodward Avenue&#44;  
Suite 1510,Detroit,MI,48226  
**Disclaimer:** There is a processing fee of 2% for the use of  
this online payment function. You will be  
charged the application fee plus the 2%  
processing fee as a single transaction.

[Michigan.gov Home](#) | [DEQ Home](#) | [Online Services](#)

[Permits](#) | [Programs](#) | [Site Map](#) | [Contact DEQ](#)

[State Web Sites](#) | [Privacy Policy](#) | [Link  
Policy](#) | [Accessibility Policy](#)

[Security Policy](#) | [Michigan News](#) | [Michigan.gov  
Survey](#)

All trademarks, service marks and trade names  
used in this material are the property of their  
respective owners.



## MEMORANDUM

TO: Nate Nemani (U.S. EPA)

REF. NO.: 058502

FROM: Michael Tomka (CRA)/kf/5

DATE: February 26, 2014

CC: Dave Favero and Grant Trigger (RACER)

RE: **Stabilization Alternative Evaluation and Recommendation for the North Ditch  
RACER Trust Saginaw Nodular Industrial Land  
Saginaw, Michigan**

### 1.0 Introduction

This memorandum has been prepared by Conestoga-Rovers & Associates (CRA) on behalf of Revitalizing Auto Communities Environmental Response (RACER) Trust, for work associated with stabilizing the Former Stormwater Discharge Ditch (North Ditch) at the Saginaw Nodular Industrial Land (Site) located in Saginaw, Michigan [United States Environmental Protection Agency (USEPA) Resource Conservation and Recovery Act (RCRA) ID No. MID 041 793 340]. Figure 1 presents the Site location and property boundaries. Work is currently being completed at the Site under an Administrative Order on Consent (AOC), which was executed by USEPA and RACER on September 29, 2011.

The purpose of this memorandum is to identify and evaluate potential stabilization alternatives to minimize potential exposures to constituents in the North Ditch and to improve stormwater drainage. The alternatives are evaluated consistent with the RCRA Corrective Measures Evaluation Criteria.

### 2.0 Site Background

The North Ditch is located north of the Former Nodular Iron Plant north parking lot as identified on Figure 1. Between 1965 and 1988 the North Ditch was utilized for discharging treated water from the Wastewater Treatment Plant (WWTP) to the Saginaw River under a National Pollutant Discharge Elimination System (NPDES) permitted outfall (Outfall 002). In addition, the North Ditch received water from two basement sumps in the Former Nodular Iron Plant basement and stormwater from surface water runoff. In 1988, at the advent of the recycle water system for the WWTP, the North Ditch no longer received treated water from the WWTP and Outfall 002 was plugged in 1995. In 2004, the closed outlet was found to be leaking. The former discharge pipes were located, filled with flowable fill and clay was placed over the ends of the pipes at the termination in the North Ditch. The North Ditch is 30 feet at its widest point, approximately 900 feet in length, and 8-10 feet in depth. Currently, the North Ditch only receives surface water runoff.

RACER obtained NPDES permit MI0059042 which includes a permitted discharge location at the North Ditch, however, currently the only potential for discharge is under extreme high water conditions when water has the

potential to overflow into an existing catchbasin adjacent to the North Ditch. The only outlet for stormwater runoff that accumulates in the North Ditch area are two catchbasins that were installed as part of the Tri-Cap property development and Saginaw Supplier Park development as identified on Drawing 1. The catchbasin rims are a few inches below the driveway level at an elevation of approximately 585.7 feet above mean sea level (ft amsl). Figure 2 presents a photo that was taken following a rain event in the fall of 2006. RACER is not aware of any discharge events to this outfall from the North Ditch since the NPDES permit was issued.

The Description of Current Conditions Report (DOCC) prepared by EMCON (1995) identified various incidents/spills associated with the North Ditch. The incidents/spills reported pesticides, Polychlorinated Biphenyl (PCBs), Base-Neutral Extractables (BNEs), Volatile Organic Compounds (VOCs), Semi-VOCs, and Metals in samples collected and analyzed.

### 3.0 North Ditch Investigations

Initial sampling of the North Ditch area was conducted as part of the RCRA Facility Investigation (RFI) which was completed by GMC. Two sediment samples were collected and analyzed for metals, SVOCs, PCBs and general chemistry. Two additional sediment samples were collected at a later date to further delineate PCBs. The results were screened against the Michigan Act 451, Part 201 Generic Cleanup Criteria and were found to all be below cleanup criteria. Figure 3 presents the sediment sample locations in the North Ditch. Table 1 presents a summary of the sediment results. One surface water sample was collected and analyzed for metals (total and dissolved) and PCBs. The results were screened against the Michigan Act 451, Part 201 Generic Cleanup Criteria and were found to be below cleanup criteria. Figure 3 presents the surface water sample location in the North. Table 2 presents a summary of the surface water results.

The surface water and sediment results from the North Ditch were evaluated for exposure risks to human and ecological receptors in the Human Health Risk Assessment (HHRA) and Ecological Risk Assessment (ERA) which were submitted by GMC as part of the Phase 1C RFI, in March 2007 (Phase 1C RFI). The results of the risk assessments identified that there is no unacceptable risk to humans and the risk of adverse ecological effects is low to negligible.

Following the bankruptcy, RACER submitted the Supplemental RFI Report on September 21, 2012. The Supplemental RFI presented additional data associated with the RACER Site obtained since the Revised Phase 1C RFI and addressed comments received on the Phase 1C RFI which related to the RACER Site. No new data associated with the North Ditch was included in the Supplemental RFI and the conclusions remained the same from the Supplemental RFI to the GMC RFI.

More recently, an additional investigation of the North Ditch was completed to characterize impacts in North Ditch to assist in assessing alternatives to address the North Ditch. The work was completed in July 2013 in accordance with the Additional Investigation Sampling and Analysis Plan (SAP) prepared by CRA in April 2013, which was approved via email by the USEPA on July 8, 2013 via email.

Six water samples were collected from three locations at two depths (surface and mid depth) from the North Ditch. The samples were analyzed for: target analyte list (TAL) metals, polychlorinated biphenyls (PCBs), ammonia, biochemical oxygen demand (BOD), chemical oxygen demand (COD), cyanide (total and amenable), hardness, nitrate, oil and grease, pH, phenols, and total organic carbon (TOC). The results were screened against the Michigan Department of Environmental Quality (MDEQ) Groundwater Surface Water Interface (GSI) criteria and the DEQ Rule 57 Water Quality Values for surface water. All sample results were below criteria. Figure 3 presents the surface

water (SW) and mid-depth (MD) sample locations in the North Ditch and Figure 4 presents the depth of water and sediment at each sample location. Table 1 presents a summary of the surface water sample results.

Seven sediment samples were collected from six locations in the North Ditch. In addition, five soil samples were collected from the native material (soil) underlying the sediment. The seven sediment and five soil samples were analyzed for: TAL metals, PCBs, ammonia, cyanide (total), nitrate, pH, sulfide, and TOC. The seven sediment samples were also analyzed for acid volatile sulfide/simultaneously extracted metals (AVS/SEM). The results were first screened against the Michigan Statewide Default Background Levels then compared to the MDEQ GSI protection criteria. All the soil and sediment sample results exceeded GSI protection criteria for at least one of four metals (arsenic, chromium, cobalt, and selenium) or total cyanide.

AVS/SEM analyses consider the bioavailability of divalent metals and potential toxicity to benthic invertebrates. For the AVS/SEM data, USEPA guidance (USEPA 2005) indicates that values of carbon normalized excess (CNE) - SEM less than 130 umol/gram organic carbon (OC) are not toxic to benthic invertebrates. Values above 130 umol/gram OC but below 3,000 umol/gram OC are potentially toxic to benthic invertebrates, and values above 3,000 umol/gram OC are more likely to be toxic than nontoxic. The CNE-SEM values for all seven samples were calculated. Five of the seven sediment samples had CNE-SEM concentrations less than 130 umol/gram OC, indicating no reasonable potential for toxicity. The remaining two samples were above 130 umol/gram OC at 296 and 248 umol/gram OC. These two sediment samples were well below 3,000 umol/gram OC, above which sediments are predominantly toxic. Based on information provided in USEPA guidance (USEPA 2005), these two samples have a low probability, about 10 percent, of being toxic to benthic invertebrates from divalent metals. Figure 3 presents the sediment (SD) and native material (SO) sample locations in the North Ditch and Figure 4 presents the depth of water and sediment at each sample location. Table 2 presents a summary of the sediment and native soil sample results.

Eighteen soil samples were collected from nine locations at two depths (0-5 inches and 5-12 inches) on the banks of the North Ditch. The nine shallow samples were analyzed on a one week turn for: TAL metals, PCBs, ammonia, cyanide (total), Nitrate, pH and total organic carbon. The nine deeper samples were placed on hold pending the analysis of the shallow samples. The results of the shallow samples were first screened against the Michigan Statewide Default Background Levels then compared to the MDEQ GSI protection criteria and MDEQ Direct Contact Criteria. The sample results exceeded GSI protection criteria for three metals (arsenic, chromium, and selenium) as well as total cyanide but did not exceed Direct Contact criteria. The PCB results of the shallow samples were well below the TSCA high occupancy criteria of 1,000 micrograms per kilogram ( $\mu\text{g}/\text{kg}$ ). The highest detection of PCBs in the bank soil was 0.35  $\mu\text{g}/\text{kg}$ . Due to the low detected concentrations of PCBs as well as no North Ditch water sample results exceeding GSI criteria for those compounds that exceeded GSI protection criteria in soil, analysis of the deeper soil samples was not completed. Figure 3 presents the bank soil (SO) sample locations in the North Ditch. Table 3 presents a summary of the bank soil sample results.

The results of the North Ditch surface water investigation identified no exceedances of MDEQ GSI criteria or Rule 57 Water Quality Values. The results of the North Ditch soil and sediment investigation identified exceedances of MDEQ GSI protection criteria. The soil or sediment sample results exceeded GSI protection criteria for four metals (arsenic, chromium, cobalt, and selenium) as well as total cyanide. However, since the surface water sample results did not exceed GSI criteria for these constituents, this indicates that the parameters exceeding criteria did not leach significantly into the surface water. The soil and sediment have been in place for many years, therefore, we expect that leaching, if any, is in equilibrium. Therefore, soil and sediment exceedances of GSI protection criteria do not warrant further consideration with the exception of the potential for re-suspension of solids.

The results of the AVS/SEM analyses identified that five of the seven samples would not be toxic to benthic invertebrates from divalent metals, while the remaining two samples have a low potential of being toxic (USEPA

2005). Hence, the sediments of the North Ditch, on overall average, have no significant toxicity to benthic invertebrates.

The alternatives discussed in this memorandum were selected to eliminate re-suspension of solids and to minimize potential unacceptable exposure to constituents, even though risk to human health and ecological receptors is low to negligible.

#### 4.0 Alternatives

As presented in Section 7.0 of the Supplemental RFI, Site stabilization measures were recommended to reduce potential sediment migration and to improve stormwater drainage, thereby minimizing the potential for unacceptable risk to ecological receptors. The alternatives identified below will immobilize or remove sediments in the North Ditch and improve drainage to prevent stormwater from ponding.

The alternatives are as follows:

Alternative 1: Install a 6-inch storm sewer pipe and catchbasin, approximately 80 feet from existing catchbasin (CB01) to the North Ditch (complete with rodent grate); install geo-fabric on top of sediments to immobilize sediments but maintain groundwater communication and backfill ditch with a minimum of 2 feet of sand plus 4 inches of topsoil; grade North Ditch to drain towards new catchbasin and vegetate; and place a restrictive covenant on the area that identifies that caution is required and proper precautions should be in place while excavating or conducting other work in the area, and that requires submittal and approval of an excavation plan to prevent or repair damage to the geofabric and to properly manage any material below the geofabric that might be encountered.

Alternative 2: Excavate sediment from the North Ditch; stabilize, and dispose of material off-Site; install 6-inch storm sewer pipe and catchbasin, approximately 80 feet from catchbasin (CB01) to ditch, complete with rodent grate; backfill ditch with a minimum of 2 feet of sand plus 4 inches of topsoil; and grade North Ditch to drain towards new catchbasin and vegetate.

Drawing 1 presents the approximate stormwater catchment area that directs water to the North Ditch, cross-sections, the proposed connection to the existing catchbasin, and the ultimate discharge point to the Saginaw River.

The alternatives were developed with the following assumptions:

- Available capacity in the existing storm sewer network
- Concurrence from the following parties: County Drain Commission, Michigan Department of Environmental Quality (NPDES), neighbor (easement to discharge water into existing storm system and access for completing work), US Army Corp of Engineers and USEPA. In the event approval for the proposed work is not provided and a separate outfall is required, there will be significant additional costs

For construction sequencing, CRA would recommend conducting the work in late summer, which is typically the driest time of the year, to minimize the amount of water that will be required to be pumped from the ditch to complete the work. Water in the ditch will be required to be removed, prior to conducting the work. CRA recommends discharging the top half of the water column within the North Ditch under NPDES permit MI0059042. Water would be pumped from the surface so as to minimize disturbance of the sediments and to pump and

discharge water free of sediments. The remainder of the water within the ditch would be pumped and discharged into the secondary pond.

The alternatives were evaluated consistent with the RCRA Corrective Measures Evaluation Criteria as presented in Tables 4 and 5 for Alternatives 1 and 2, respectively. The approximate construction costs for Alternatives 1 and 2 are on the order of \$200,000 and \$1,000,000, respectively. Additional annual costs will be required to comply with any NPDES requirements.

## 5.0 Recommendation

The purpose of this memorandum was to identify and evaluate alternatives to minimize potential risk in the North Ditch and to improve stormwater drainage. Both alternatives offer the same drainage improvements; therefore, the only difference in the alternatives is how the low-level constituents are addressed. Since the constituents are low-level and have low to negligible risk to human and ecological receptors, removal of the sediments is not cost-effective. Covering the sediments will reduce potential risk, with the exception of future intrusive work in this area, which would be managed by restrictive covenant and is cost-effective. CRA recommends implementing Alternative 1.

### List of Figures, Drawings, and Tables

Figure 1 – Approximate RACER Trust Property Limits

Figure 2 – North Ditch – Fall 2006

Figure 3 – North Ditch Sediment and Soil Summary of Exceedances

Figure 4 – North Ditch Water Depth and Sediment Thicknesses

Drawing 1 – North Ditch Plan and Profile Recommended Alternative 1

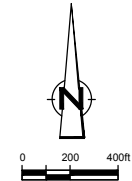
Table 1 – Analytical Results Summary – Sediment/Material Beneath Sediment

Table 2 – Analytical Results Summary – Surface Water Data

Table 3 – Analytical Results Summary – Bank Soil

Table 4 – North Ditch Stabilization Alternatives – Alternative 1

Table 5 – North Ditch Stabilization Alternatives – Alternative 2



- LEGEND**
- INVESTIGATIVE UNIT BOUNDARY AND IDENTIFIER
  - APPROXIMATE FORMER PROPERTY BOUNDARY
  - APPROXIMATE LIMITS OF RACER PROPERTY

AERIAL: NAP, 2009.

NOTE: TOPO - SANBORN, 1998

SCALE VERIFICATION

THIS BAR MEASURES 1" ON ORIGINAL. ADJUST SCALE ACCORDINGLY.



**RACER TRUST  
SAGINAW NODULAR INDUSTRIAL LAND  
SAGINAW, MICHIGAN**

**APPROXIMATE RACER TRUST  
PROPERTY LIMITS**



Source Reference:  
MICHIGAN STATE PLANE SOUTH, NAD 83 USING INTERNATIONAL FEET, NGVD 88

Project Manager: M.T.	Reviewed By: B.P.	Date: NOVEMBER 2013
Scale: 1" = 500'	Project N <sup>o</sup> : 58502-T02	Report N <sup>o</sup> : MEMO005
		Drawing N <sup>o</sup> : figure 1

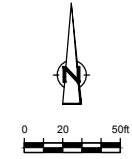
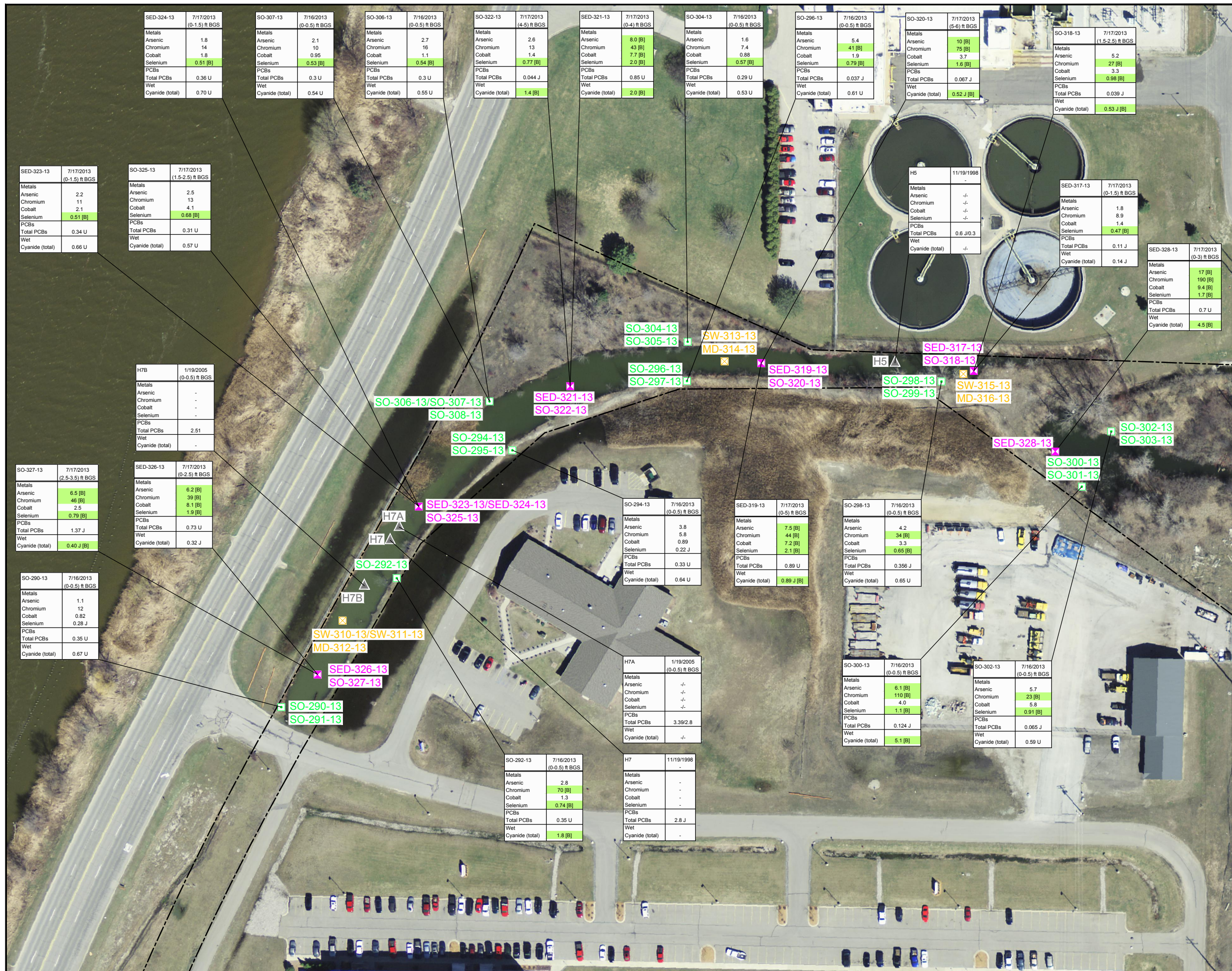


NORTH DITCH AFTER RAINFALL EVENT - FALL 2006. PHOTOGRAPH TAKEN FROM THE DRIVEWAY INTO THE SUPPLIER PARK OFF OF VETERANS MEMORIAL PARKWAY LOOKING TO THE NORTHEAST.

figure 2

NORTH DITCH - FALL 2006  
RACER TRUST  
SAGINAW NODULAR INDUSTRIAL LAND  
*Saginaw, Michigan*





- LEGEND**
- SURVEYED PROPERTY BOUNDARY
  - ▲ HISTORICAL SEDIMENT SAMPLE LOCATION
  - ✱ SEDIMENT SAMPLE LOCATION
  - SOIL SAMPLE LOCATION
  - ⊗ SURFACE WATER SAMPLE LOCATION

**NOTES:**  
 SO = SOIL  
 SED = SEDIMENT  
 SW = SURFACE WATER  
 MD = DEPTH OF WATER COLUMN

**EXAMPLE DATA TABLE:**

SOIL SAMPLE LOCATION	DATE	DEPTH	PARAMETER	RESULT (mg/kg)	CRITERIA
SED-317-13	7/17/2013	(0-1.5) ft BGS	Metals		
			Arsenic	1.8	
			Chromium	8.9	
			Cobalt	1.4	
			Selenium	0.47 [B]	EXCEEDS CRITERIA
			PCBs		
			Total PCBs	0.11 J	
			Wet		
			Cyanide (total)	0.14 J	

**CHEMICAL NAME CRITERIA TABLE:**

Chemical Name	A	B	C	Unit
Arsenic	5.8	4.6	37	mg/kg
Chromium	18	3.3	9200	mg/kg
Cobalt	6.8	2	9000	mg/kg
Selenium	0.41	0.4	9600	mg/kg
Total PCBs	-	-	16	mg/kg
Cyanide (total)	0.39	0.1	250	mg/kg

- A: Statewide Default Background Levels
- B: GSI Criteria
- C: Non\_RES/Direct Contact

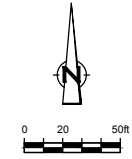
**SCALE VERIFICATION**  
 THIS BAR MEASURES 1" ON ORIGINAL. ADJUST SCALE ACCORDINGLY.

**RACER TRUST  
 SAGINAW NODULAR INDUSTRIAL LAND  
 SAGINAW, MICHIGAN  
 NORTH DITCH SEDIMENT AND SOIL  
 SUMMARY OF EXCEEDANCES**



Source Reference:  
 MICHIGAN STATE PLANE SOUTH, NAD 83 USING INTERNATIONAL FEET, NGVD 88  
 AERIAL PHOTO BY USGS, DATED MARCH 2010.

Project Manager: M.T.	Reviewed By: B.P.	Date: NOVEMBER 2013
Scale: 1" = 50'	Project N°: 58502-T02	Report N°: MEMO005 Drawing N°: figure 3



- LEGEND**
- SURVEYED PROPERTY BOUNDARY
  - ▲ HISTORICAL SEDIMENT SAMPLE LOCATION
  - ✕ SEDIMENT SAMPLE LOCATION
  - SOIL SAMPLE LOCATION
  - ⊠ SURFACE WATER SAMPLE LOCATION
  - ∇ WATER DEPTH
  - 1.5' SEDIMENT THICKNESS

SOURCE: 2010 USGS

SCALE VERIFICATION  
 THIS BAR MEASURES 1" ON ORIGINAL. ADJUST SCALE ACCORDINGLY.

**RACER TRUST  
 SAGINAW NODULAR INDUSTRIAL LAND  
 SAGINAW, MICHIGAN**

**NORTH DITCH WATER DEPTH  
 AND SEDIMENT THICKNESS**



Source Reference:  
 MICHIGAN STATE PLANE SOUTH, NAD 83 USING INTERNATIONAL FEET, NGVD 88  
 AERIAL PHOTO BY USGS, DATED MARCH 2010.

Project Manager: M.T.	Reviewed By: B.P.	Date: NOVEMBER 2013
Scale: 1" = 50'	Project N <sup>o</sup> : 58502-T02	Report N <sup>o</sup> : MEMO005
		Drawing N <sup>o</sup> : figure 4



**ANALYTICAL RESULTS SUMMARY - SEDIMENT/MATERIAL BENEATH SEDIMENT  
NORTH DITCH  
RACER NODULAR INDUSTRIAL LAND (10040)  
SAGINAW, MI**

<b>Sample Location:</b>	H5	H5	H7	H7A	H7A	H7B
<b>Sample ID:</b>	S00016	S00017	S00020	B-7-0531	B-7-0532Q	B-7-0530
<b>Sample Date:</b>	11/19/1998	11/19/1998	11/19/1998	1/19/2005	1/19/2005	1/19/2005
<b>Sample Depth:</b>		DUP		(0-0.5) ft BGS	DUP (0-0.5) ft BGS	(0-0.5) ft BGS
<b>matrix_code</b>	SE	SE	SE	SE	SE	SE

<b>Parameters:</b>	<b>Units</b>	<b>Statewide Default Background Levels</b>	<b>Res/Non_Res/GW Prot_GW SW Interface Prot</b>					
<b>Metals</b>								
Aluminum	mg/kg		-					
Antimony	mg/kg		94					
Arsenic	mg/kg	5.8	4.6					
Barium	mg/kg		-					
Beryllium	mg/kg		-					
Cadmium	mg/kg		-					
Calcium	mg/kg		-					
Chromium	mg/kg	18	3.3					
Cobalt	mg/kg	6.8	2					
Copper	mg/kg		-					
Iron	mg/kg		-					
Lead	mg/kg		-					
Magnesium	mg/kg		-					
Manganese	mg/kg		-					
Mercury	mg/kg	0.13	0.05					
Nickel	mg/kg		-					
Potassium	mg/kg		-					
Selenium	mg/kg	0.41	0.4					
Silver	mg/kg	1.0	0.1					
Sodium	mg/kg		-					
Thallium	mg/kg		4.2					
Vanadium	mg/kg		190					
Zinc	mg/kg		-					
<b>Metals - SEM</b>								
Cadmium	mg/kg		-					
Copper	mg/kg		-					
Lead	mg/kg		-					
Mercury	mg/kg		0.05					
Nickel	mg/kg		-					
Zinc	mg/kg		-					
SEM/AVS	none		-					
<b>Polychlorinated Biphenyls</b>								
Aroclor-1016 (PCB-1016)	ug/kg		-	0.3 UJ	0.2 U	0.2 UJ	0.50 U	0.10 U
Aroclor-1221 (PCB-1221)	ug/kg		-	0.3 UJ	0.2 U	0.2 UJ	1.0 U	0.20 U
Aroclor-1232 (PCB-1232)	ug/kg		-	0.3 UJ	0.2 U	0.2 UJ	0.50 U	0.10 U
Aroclor-1242 (PCB-1242)	ug/kg		-	0.6 J	0.3	0.7 J	0.50 U	0.60
Aroclor-1248 (PCB-1248)	ug/kg		-	0.3 UJ	0.2 U	0.2 UJ	1.1	0.67
Aroclor-1254 (PCB-1254)	ug/kg		-	0.3 UJ	0.2 U	0.9 J	0.99	0.73
Aroclor-1260 (PCB-1260)	ug/kg		-	0.3 UJ	0.2 U	1.2 J	1.3	1.4
Aroclor-1262 (PCB-1262)	ug/kg		-					
Aroclor-1268 (PCB-1268)	ug/kg		-					
Total PCBs (ND = 0)	ug/kg		-	0.6 J	0.3	2.8 J	3.39	2.8
Total PCBs At 1% OC	ug/kg		-					2.51
<b>General Chemistry</b>								
Ammonia	mg/kg		-					
Cyanide (total)	mg/kg		0.1					
Nitrate (as N)	mg/kg		-					
pH, lab	s.u.		-					
Sulfide	mg/kg		-					
Total organic carbon (TOC)	mg/kg		-					
Total organic carbon (TOC)	%		-					
Selenium			-					
Aluminum			-					

<b>AVS/SEM Expressed in umol/g</b>		
		<b>Molecular Weight</b>
cadmium	umol/gram	112.40
copper	umol/gram	63.54
lead	umol/gram	207.20
mercury	umol/gram	200.59
nickel	umol/gram	58.70
zinc	umol/gram	65.37
total SEM	umol/gram	
Sulfide	umol/gram	33.48
Estimated from AVS/SEM ratio		
Carbon normalized SEM criteria is 130		
Conclusion		

Notes:  
 J - Estimated concentration.  
 U - Not present at or above the associated value.

**ANALYTICAL RESULTS SUMMARY - SEDIMENT/MATERIAL BENEATH SEDIMENT  
NORTH DITCH  
RACER NODULAR INDUSTRIAL LAND (10040)  
SAGINAW, MI**

Sample Location:	SED-317-13	SO-318-13	SED-319-13	SO-320-13				
Sample ID:	S-58502-071713-SSH-317	S-58502-071713-SSH-318	S-58502-071713-SSH-319	S-58502-071713-SSH-320				
Sample Date:	7/17/2013	7/17/2013	7/17/2013	7/17/2013				
Sample Depth:	(0-1.5) ft BGS	(1.5-2.5) ft BGS	(0-5) ft BGS	(5-6) ft BGS				
matrix_code	SE	SO	SE	SO				
Parameters:	Units	Statewide Default Background Levels	Res/Non_Res/GW Prot	SW Interface Prot				
<b>Metals</b>								
Aluminum	mg/kg	-	2400	6100	13000	7600		
Antimony	mg/kg	-	94	0.12 J	0.41 J	0.71 J	1.0 J	
Arsenic	mg/kg	5.8	4.6	1.8	5.2	7.5	10	
Barium	mg/kg	-	14	44	75	55		
Beryllium	mg/kg	-	0.13 J	0.31	0.76	0.61		
Cadmium	mg/kg	-	0.046 J	0.43	1.2	1.2		
Calcium	mg/kg	-	14000 J	29000 J	51000 J	24000 J		
Chromium	mg/kg	18	3.3	8.9	27	44	75	
Cobalt	mg/kg	6.8	2	1.4	3.3	7.2	3.7	
Copper	mg/kg	-	7.8	26	51	44		
Iron	mg/kg	-	6500	16000	35000	36000		
Lead	mg/kg	-	6.4 J	52 J	130 J	230 J		
Magnesium	mg/kg	-	3800	7300	14000	3800		
Manganese	mg/kg	-	110	380	1200	1600		
Mercury	mg/kg	0.13	0.05	0.056 U	0.042 J	0.10 J	0.046 J	
Nickel	mg/kg	-	6.5	17	29	22		
Potassium	mg/kg	-	310 J	820	1700	500 J		
Selenium	mg/kg	0.41	0.4	0.47	0.98	2.1	1.6	
Silver	mg/kg	1.0	0.1	0.021 J	0.10 J	0.32 J	0.43	
Sodium	mg/kg	-	88 J	200	430	260		
Thallium	mg/kg	-	4.2	0.057 J	0.10 J	0.20 J	0.18 J	
Vanadium	mg/kg	-	190	6.4	13	22	11	
Zinc	mg/kg	-	60	730	1800	5000		
<b>Metals - SEM</b>								
Cadmium	mg/kg	-	0.075 J	-	1.3	-	-	
Copper	mg/kg	-	7.3	-	49	-	-	
Lead	mg/kg	-	6.8	-	160	-	-	
Mercury	mg/kg	0.05	0.017 U	-	0.040 U	-	-	
Nickel	mg/kg	-	5.0	-	21	-	-	
Zinc	mg/kg	-	75	-	2600	-	-	
SEM/AVS	none	-	0.87	-	1.4	-	-	
<b>Polychlorinated Biphenyls</b>								
Aroclor-1016 (PCB-1016)	ug/kg	-	0.35 U	0.5 U	0.89 U	0.43 U		
Aroclor-1221 (PCB-1221)	ug/kg	-	0.35 U	0.5 U	0.89 U	0.43 U		
Aroclor-1232 (PCB-1232)	ug/kg	-	0.35 U	0.5 U	0.89 U	0.43 U		
Aroclor-1242 (PCB-1242)	ug/kg	-	0.11 J	0.039 J	0.89 U	0.067 J		
Aroclor-1248 (PCB-1248)	ug/kg	-	0.35 U	0.5 U	0.89 U	0.43 U		
Aroclor-1254 (PCB-1254)	ug/kg	-	0.35 U	0.5 U	0.89 U	0.43 U		
Aroclor-1260 (PCB-1260)	ug/kg	-	0.35 U	0.5 U	0.89 U	0.43 U		
Aroclor-1262 (PCB-1262)	ug/kg	-	0.35 U	0.5 U	0.89 U	0.43 U		
Aroclor-1268 (PCB-1268)	ug/kg	-	0.35 U	0.5 U	0.89 U	0.43 U		
Total PCBs (ND = 0)	ug/kg	-	0.11	0.039	0	0.067		
Total PCBs At 1% OC	ug/kg	-	0.04	0.02	0.00	0.01		
<b>General Chemistry</b>								
Ammonia	mg/kg	-	26 J	120	270	190		
Cyanide (total)	mg/kg	0.1	0.14 J	0.53 J	0.89 J	0.52 J		
Nitrate (as N)	mg/kg	-	340 U	480 U	860 U	410 U		
pH, lab	s.u.	-	7.29 J	7.23 J	7.01 J	7.16 J		
Sulfide	mg/kg	-	51	-	920	-		
Total organic carbon (TOC)	mg/kg	-	28000	26000	120000	57000		
Total organic carbon (TOC)	%	-	0.03	0.03	0.12	0.06		
Selenium	mg/kg	-	0.47	0.98	2.1	1.6		
Aluminum	mg/kg	-	2400	6100	13000	7600		
<b>AVS/SEM Expressed in umol/g</b>								
			Molecular Weight					
cadmium	umol/gram		112.40	0.00	0.01			
copper	umol/gram		63.54	0.11	0.77			
lead	umol/gram		207.20	0.03	0.77			
mercury	umol/gram		200.59	0.00	0.00			
nickel	umol/gram		58.70	0.09	0.36			
zinc	umol/gram		65.37	1.15	39.77			
total SEM	umol/gram			1.38	41.69			
Sulfide	umol/gram			1.52	27.48			
			Estimated from AVS/SEM ratio					
				1.59	29.78			
			Carbon normalized SEM criteria is 130					
				-5.09	118.39			
			Conclusion					
				Not Toxic	Not Toxic			

Notes:  
 J - Estimated concentration.  
 U - Not present at or above the associated value.

**ANALYTICAL RESULTS SUMMARY - SEDIMENT/MATERIAL BENEATH SEDIMENT  
NORTH DITCH  
RACER NODULAR INDUSTRIAL LAND (10040)  
SAGINAW, MI**

Sample Location:	SED-321-13	SO-322-13	SED-323-13	SED-324-13	SO-325-13	
Sample ID:	S-58502-071713-SSH-321	S-58502-071713-SSH-322	S-58502-071713-SSH-323	S-58502-071713-SSH-324	S-58502-071713-SSH-325	
Sample Date:	7/17/2013	7/17/2013	7/17/2013	7/17/2013	7/17/2013	
Sample Depth:	(0-4) ft BGS	(4-5) ft BGS	(0-1.5) ft BGS	DUP (0-1.5) ft BGS	(1.5-2.5) ft BGS	
matrix_code	SE	SO	SE	SE	SO	
Parameters:	Units	Statewide Default Background Levels	Res/Non_Res/GW Prot_GW SW Interface Prot			
<b>Metals</b>						
Aluminum	mg/kg	-	14000	2800	3200	4900
Antimony	mg/kg	94	0.78 J	0.59 J	0.12 J	0.065 J
Arsenic	mg/kg	5.8	4.6	8.0	2.2	1.8
Barium	mg/kg	-	79	17	17	16
Beryllium	mg/kg	-	0.74	0.25	0.16 J	0.15 J
Cadmium	mg/kg	-	1.4	0.61	0.18	0.14
Calcium	mg/kg	-	61000 J	7100 J	43000 J	41000 J
Chromium	mg/kg	18	3.3	43	11	14
Cobalt	mg/kg	6.8	2	7.7	2.1	1.8
Copper	mg/kg	-	52	18	9.2	6.5
Iron	mg/kg	-	35000	8300	7500	6300
Lead	mg/kg	-	150 J	100 J	16 J	9.5 J
Magnesium	mg/kg	-	16000	1700	14000	13000
Manganese	mg/kg	-	1400	450	300	310
Mercury	mg/kg	0.13	0.05	0.092 J	0.053	0.018 J
Nickel	mg/kg	-	28	6.8	6.6	5.7
Potassium	mg/kg	-	2100	210 J	610	520
Selenium	mg/kg	0.41	0.4	2.0	0.77	0.51
Silver	mg/kg	1.0	0.1	0.40 J	0.24	0.042 J
Sodium	mg/kg	-	400	130	130	130
Thallium	mg/kg	-	4.2	0.23 J	0.11 J	0.090 J
Vanadium	mg/kg	-	190	24	4.8	8.0
Zinc	mg/kg	-	2900	3300	150	140
<b>Metals - SEM</b>						
Cadmium	mg/kg	-	1.3	-	0.078 J	0.10 J
Copper	mg/kg	-	47	-	4.8	6.1
Lead	mg/kg	-	130	-	7.3	8.9
Mercury	mg/kg	0.05	0.0047 J	-	0.016 U	0.017 U
Nickel	mg/kg	-	20	-	3.4	4.0
Zinc	mg/kg	-	2400	-	110	130
SEM/AVS	none	-	2.5	-	1.2	1.6
<b>Polychlorinated Biphenyls</b>						
Aroclor-1016 (PCB-1016)	ug/kg	-	0.85 U	0.34 U	0.34 U	0.36 U
Aroclor-1221 (PCB-1221)	ug/kg	-	0.85 U	0.34 U	0.34 U	0.36 U
Aroclor-1232 (PCB-1232)	ug/kg	-	0.85 U	0.34 U	0.34 U	0.36 U
Aroclor-1242 (PCB-1242)	ug/kg	-	0.85 U	0.044 J	0.34 U	0.36 U
Aroclor-1248 (PCB-1248)	ug/kg	-	0.85 U	0.34 U	0.34 U	0.36 U
Aroclor-1254 (PCB-1254)	ug/kg	-	0.85 U	0.34 U	0.34 U	0.36 U
Aroclor-1260 (PCB-1260)	ug/kg	-	0.85 U	0.34 U	0.34 U	0.36 U
Aroclor-1262 (PCB-1262)	ug/kg	-	0.85 U	0.34 U	0.34 U	0.36 U
Aroclor-1268 (PCB-1268)	ug/kg	-	0.85 U	0.34 U	0.34 U	0.36 U
Total PCBs (ND = 0)	ug/kg	-	0	0.044	0	0
Total PCBs At 1% OC	ug/kg	-	0.00	0.02	0.00	0.00
<b>General Chemistry</b>						
Ammonia	mg/kg	-	94	81	40 J	66
Cyanide (total)	mg/kg	0.1	2.0	1.4	0.66 U	0.70 U
Nitrate (as N)	mg/kg	-	790 U	320 U	330 U	340 U
pH, lab	s.u.	-	7.03 J	8.12 J	7.17 J	7.20 J
Sulfide	mg/kg	-	490	-	50	46
Total organic carbon (TOC)	mg/kg	-	96000	27000	28000	17000
Total organic carbon (TOC)	%	-	0.10	0.03	0.03	0.02
Selenium		-	2	0.77	0.51	0.51
Aluminum		-	14000	2800	3200	2900
<b>AVS/SEM Expressed in umol/g</b>						
			Molecular Weight			
cadmium	umol/gram		112.40	0.01	0.00	0.00
copper	umol/gram		63.54	0.74	0.08	0.10
lead	umol/gram		207.20	0.63	0.04	0.04
mercury	umol/gram		200.59	0.00	0.00	0.00
nickel	umol/gram		58.70	0.34	0.06	0.07
zinc	umol/gram		65.37	36.71	1.68	1.99
total SEM	umol/gram			38.43	1.85	2.20
Sulfide	umol/gram		33.48	14.64	1.49	1.37
			Estimated from AVS/SEM ratio			
				15.37	1.54	1.37
			Carbon normalized SEM criteria is 130			
				247.89	12.81	48.40
			Conclusion		Not Toxic	Not Toxic
			Uncertain, probably not toxic			

Notes:  
 J - Estimated concentration.  
 U - Not present at or above the associated value.

TABLE 1

**ANALYTICAL RESULTS SUMMARY - SEDIMENT/MATERIAL BENEATH SEDIMENT  
NORTH DITCH  
RACER NODULAR INDUSTRIAL LAND (10040)  
SAGINAW, MI**

Sample Location:	SED-326-13	SO-327-13	SED328-13			
Sample ID:	S-58502-071713-SSH-326	S-58502-071713-SSH-327	S-58502-071713-SSH-328			
Sample Date:	7/17/2013	7/17/2013	7/17/2013			
Sample Depth:	(0-2.5) ft BGS	(2.5-3.5) ft BGS	(0-3) ft BGS			
matrix_code	SE	SO	SE			
Parameters:	Units	Statewide Default Background Levels	Res/Non_Res/GW Prot_GW SW Interface Prot			
<b>Metals</b>						
Aluminum	mg/kg	-	-	14000	5300	8600
Antimony	mg/kg	94	-	0.48 J	0.54 J	1.3 J
Arsenic	mg/kg	5.8	4.6	6.2	6.5	17
Barium	mg/kg	-	-	83	55	110
Beryllium	mg/kg	-	-	0.74	0.40	0.90
Cadmium	mg/kg	-	-	1.1	1.2	0.83 U
Calcium	mg/kg	-	-	74000 J	23000 J	38000 J
Chromium	mg/kg	18	3.3	39	46	190
Cobalt	mg/kg	6.8	2	8.1	2.5	9.4
Copper	mg/kg	-	-	43	63	120
Iron	mg/kg	-	-	27000	23000	180000
Lead	mg/kg	-	-	94 J	71 J	65 J
Magnesium	mg/kg	-	-	22000	4600	5300
Manganese	mg/kg	-	-	1100	630	3500
Mercury	mg/kg	0.13	0.05	0.12	0.13	0.10 U
Nickel	mg/kg	-	-	27	15	100
Potassium	mg/kg	-	-	2400	390 J	480 J
Selenium	mg/kg	0.41	0.4	1.9	0.79	1.7
Silver	mg/kg	1.0	0.1	0.39 J	0.47	0.14 J
Sodium	mg/kg	-	-	360	160	300
Thallium	mg/kg	-	4.2	0.23 J	0.079 J	0.067 J
Vanadium	mg/kg	-	190	26	8.7	11
Zinc	mg/kg	-	-	1700	1300	1100
<b>Metals - SEM</b>						
Cadmium	mg/kg	-	-	1.0	-	2.6 U
Copper	mg/kg	-	-	37	-	140
Lead	mg/kg	-	-	82	-	33
Mercury	mg/kg	-	0.05	0.0096 J	-	0.026 U
Nickel	mg/kg	-	-	19	-	76
Zinc	mg/kg	-	-	1700	-	740
SEM/AVS	none	-	-	2.4	-	0.86
<b>Polychlorinated Biphenyls</b>						
Aroclor-1016 (PCB-1016)	ug/kg	-	-	0.73 U	1.9 U	0.7 U
Aroclor-1221 (PCB-1221)	ug/kg	-	-	0.73 U	1.9 U	0.7 U
Aroclor-1232 (PCB-1232)	ug/kg	-	-	0.73 U	1.9 U	0.7 U
Aroclor-1242 (PCB-1242)	ug/kg	-	-	0.73 U	1.9 U	0.7 U
Aroclor-1248 (PCB-1248)	ug/kg	-	-	0.73 U	0.49 J	0.7 U
Aroclor-1254 (PCB-1254)	ug/kg	-	-	0.73 U	1.9 U	0.7 U
Aroclor-1260 (PCB-1260)	ug/kg	-	-	0.73 U	0.88 J	0.7 U
Aroclor-1262 (PCB-1262)	ug/kg	-	-	0.73 U	1.9 U	0.7 U
Aroclor-1268 (PCB-1268)	ug/kg	-	-	0.73 U	1.9 U	0.7 U
Total PCBs (ND = 0)	ug/kg	-	-	0	1.37	0
Total PCBs At 1% OC	ug/kg	-	-	0.00	0.15	0.00
<b>General Chemistry</b>						
Ammonia	mg/kg	-	-	54	69	120
Cyanide (total)	mg/kg	0.1	-	0.32 J	0.40 J	4.5
Nitrate (as N)	mg/kg	-	-	690 U	360 U	660 U
pH, lab	s.u.	-	-	7.14 J	7.20 J	7.53 J
Sulfide	mg/kg	-	-	350	-	550
Total organic carbon (TOC)	mg/kg	-	-	57000	91000	91000
Total organic carbon (TOC)	%	-	-	0.06	0.09	0.09
Selenium		-	-	1.9	0.79	1.7
Aluminum		-	-	14000	5300	8600
<b>AVS/SEM Expressed in umol/g</b>						
				Molecular Weight		
cadmium	umol/gram			112.40	0.01	0.01
copper	umol/gram			63.54	0.58	2.20
lead	umol/gram			207.20	0.40	0.16
mercury	umol/gram			200.59	0.00	0.00
nickel	umol/gram			58.70	0.32	1.29
zinc	umol/gram			65.37	26.01	11.32
total SEM	umol/gram				27.32	14.99
Sulfide	umol/gram			33.48	10.45	16.43
				Estimated from AVS/SEM ratio		
					11.38	17.43
				Carbon normalized SEM criteria is 130		
					295.83	-15.81
				Conclusion		
					Uncertain, probably not toxic	Not Toxic

Notes:  
 J - Estimated concentration.  
 U - Not present at or above the associated value.

TABLE 2

**ANALYTICAL RESULTS SUMMARY - SURFACE WATER DATA  
NORTH DITCH  
RACER NODULAR INDUSTRIAL LAND (10040)  
SAGINAW, MI**

<b>Sample Location:</b>			<b>H6</b>	<b>MD-312-13</b>	<b>MD-314-13</b>	<b>MD-316-13</b>	
<b>Sample ID:</b>			<b>W00013</b>	<b>W-58502-071713-SSH-312</b>	<b>W-58502-071713-SSH-314</b>	<b>W-58502-071713-SSH-316</b>	
<b>Sample Date:</b>			<b>11/18/1998</b>	<b>7/17/2013</b>	<b>7/17/2013</b>	<b>7/17/2013</b>	
<b>Sample Depth:</b>			<b>(0-0) ft BWS</b>	<b>(2.5-2.5) ft BWS</b>	<b>(2.5-2.5) ft BWS</b>	<b>(2-2) ft BWS</b>	
<b>matrix_code</b>			<b>WS</b>	<b>WS</b>	<b>WS</b>	<b>WS</b>	
<b>Parameters:</b>	<b>Units</b>	<b>Res/Non_Res/GW SW Interface</b>	<b>DEQ Rule 57 - Surface Water Quality Values</b>				
<b>Metals</b>							
Antimony	mg/L	0.13	0.0017	0.05 U	0.00038 J	0.00045 J	0.00029 J
Arsenic	mg/L	0.01	0.01	0.005 U	0.005 U	0.005 U	0.005 U
Barium	mg/L	-	1.9	0.035	0.036 J	0.033 J	0.033 J
Beryllium	mg/L	-	0.16	0.005 U	0.001 U	0.00013 J	0.000056 J
Cadmium	mg/L	-	0.0025	0.004 U	0.00003 J	0.00012 J	0.001 U
Chromium	mg/L	0.011	0.12	0.005 U	0.005 U	0.005 U	0.005 U
Cobalt	mg/L	0.1	0.1	0.01 U	0.00018 J	0.0002 J	0.000093 J
Copper	mg/L	-	0.47	0.01 U	0.002 U	0.002 U	0.002 U
Lead	mg/L	-	0.014	0.002 U	0.0014 J	0.001 J	0.00053 J
Manganese	mg/L	-	1.3	0.093	0.16	0.14	0.14
Mercury	mg/L	0.0000013	0.0000013	0.0002 U	0.00002 U	0.0002 U	0.0002 U
Nickel	mg/L	-	2.6	0.02 U	0.02 U	0.02 U	0.02 U
Selenium	mg/L	0.005	0.005	0.005 U	0.00067 J	0.00056 J	0.00035 J
Silver	mg/L	0.0002	0.00006	0.01 U	0.000019 J	0.000018 J	0.00001 J
Thallium	mg/L	0.0037	0.0012	0.005 U	0.001 U	0.001 U	0.001 U
Vanadium	mg/L	0.012	0.027	0.01 U	0.004 U	0.004 U	0.004 U
Zinc	mg/L	-	3.3	0.018 UJ	0.02 U	0.02 U	0.02 U
<b>Polychlorinated Biphenyls</b>							
Aroclor-1016 (PCB-1016)	mg/L	0.0002	0.000000026	0.0002 U	0.000095 U	0.000095 U	0.000095 U
Aroclor-1221 (PCB-1221)	mg/L	0.0002	0.000000026	0.0002 U	0.000095 U	0.000095 U	0.000095 U
Aroclor-1232 (PCB-1232)	mg/L	0.0002	0.000000026	0.0002 U	0.000095 U	0.000095 U	0.000095 U
Aroclor-1242 (PCB-1242)	mg/L	0.0002	0.000000026	0.0002 U	0.000095 U	0.000095 U	0.000095 U
Aroclor-1248 (PCB-1248)	mg/L	0.0002	0.000000026	0.0002 U	0.000095 U	0.000095 U	0.000095 U
Aroclor-1254 (PCB-1254)	mg/L	0.0002	0.000000026	0.0002 U	0.000095 U	0.000095 U	0.000095 U
Aroclor-1260 (PCB-1260)	mg/L	0.0002	0.000000026	0.0002 U	0.000095 U	0.000095 U	0.000095 U
Aroclor-1262 (PCB-1262)	mg/L	0.0002	0.000000026	0.0002 U	0.000095 U	0.000095 U	0.000095 U
Aroclor-1268 (PCB-1268)	mg/L	0.0002	0.000000026	0.0002 U	0.000095 U	0.000095 U	0.000095 U
<b>General Chemistry</b>							
Ammonia	mg/L	-	-	-	1.4 J	2.0 U	2.0 U
Ammonia (unionized)	mg/L	0.053	0.053	-	0.01	-	-
Biochemical oxygen demand (BOD)	mg/L	-	-	-	2.0 U	2.0 U	2.0 U
Chemical oxygen demand (COD)	mg/L	-	-	-	20	20	22
Cyanide (amenable)	mg/L	-	-	-	0.010 U	0.010 U	0.010 U
Cyanide (total)	mg/L	0.0052	0.0052	-	0.010 U	0.010 U	0.010 U
Hardness, carbonate	mg/L	-	-	-	130	130	120
Hardness, magnesium	mg/L	-	-	-	44	45	46
Nitrate (as N)	mg/L	-	10	-	0.10 U	0.10 U	0.10 U
Oil and grease (HEM), polar	mg/L	-	-	-	4.7 U	4.8 UJ	4.8 U
pH, lab	s.u.	-	-	-	7.45 J	7.52 J	7.42 J
Phenolics (total)	mg/L	-	-	-	0.040 U	0.040 U	0.040 U
Total organic carbon (TOC)	mg/L	-	-	-	5.9	6.2	6.1

## Notes:

J - Estimated concentration.

U - Not present at or above the associated value.

UJ - Estimated reporting limit.

BWS - Below Water surface

<sup>(1)</sup> The generic GSI criteria are based on the toxicity of unionized ammonia (NH<sub>3</sub>); the criteria is 53 µg/L warm water surface water

<sup>(2)</sup> Temperature of the water was assumed to be approximately 65 degrees F at the criteria is 53 µg/L warm water surface water

TABLE 2

**ANALYTICAL RESULTS SUMMARY - SURFACE WATER DATA  
NORTH DITCH  
RACER NODULAR INDUSTRIAL LAND (10040)  
SAGINAW, MI**

**Sample Location:****Sample ID:****Sample Date:****Sample Depth:****matrix\_code**

	<b>SW-310-13</b>	<b>SW-311-13</b>	<b>SW-313-13</b>	<b>SW-315-13</b>
	<b>W-58502-071713-SSH-310</b>	<b>W-58502-071713-SSH-311</b>	<b>W-58502-071713-SSH-313</b>	<b>W-58502-071713-SSH-315</b>
	<b>7/17/2013</b>	<b>7/17/2013</b>	<b>7/17/2013</b>	<b>7/17/2013</b>
	<b>(0-0) ft BWS</b>	<b>(0-0) ft BWS</b>	<b>(0-0) ft BWS</b>	<b>(0-0) ft BWS</b>
	<b>WS</b>	<b>WS</b>	<b>WS</b>	<b>WS</b>

<b>Parameters:</b>	<b>Units</b>	<b>Res/Non_Res/GW SW Interface</b>	<b>DEQ Rule 57 - Surface Water Quality Values</b>				
<b>Metals</b>							
Antimony	mg/L	0.13	0.0017	0.0005 J	0.00036 J	0.00032 J	0.00036 J
Arsenic	mg/L	0.01	0.01	0.005 U	0.005 U	0.005 U	0.005 U
Barium	mg/L	-	1.9	0.037 J	0.036 J	0.033 J	0.033 J
Beryllium	mg/L	-	0.16	0.00025 J	0.00015 J	0.00004 J	0.000096 J
Cadmium	mg/L	-	0.0025	0.00014 J	0.000029 J	0.001 U	0.001 U
Chromium	mg/L	0.011	0.12	0.005 U	0.005 U	0.005 U	0.005 U
Cobalt	mg/L	0.1	0.1	0.00029 J	0.00018 J	0.000083 J	0.00014 J
Copper	mg/L	-	0.47	0.002 U	0.002 U	0.002 U	0.002 U
Lead	mg/L	-	0.014	0.002 J	0.0015 J	0.00062 J	0.001 J
Manganese	mg/L	-	1.3	0.17	0.15	0.11	0.18
Mercury	mg/L	0.000013	0.000013	0.0002 U	0.0002 U	0.0002 U	0.0002 U
Nickel	mg/L	-	2.6	0.02 U	0.02 U	0.02 U	0.02 U
Selenium	mg/L	0.005	0.005	0.00083 J	0.00052 J	0.00055 J	0.00049 J
Silver	mg/L	0.0002	0.00006	0.000039 J	0.000022 J	0.000017 J	0.000012 J
Thallium	mg/L	0.0037	0.0012	0.001 U	0.001 U	0.001 U	0.001 U
Vanadium	mg/L	0.012	0.027	0.004 U	0.004 U	0.004 U	0.004 U
Zinc	mg/L	-	3.3	0.02 U	0.02 U	0.02 U	0.02 U
<b>Polychlorinated Biphenyls</b>							
Aroclor-1016 (PCB-1016)	mg/L	0.0002	0.00000026	0.00011 U	0.0001 U	0.0001 U	0.000097 U
Aroclor-1221 (PCB-1221)	mg/L	0.0002	0.00000026	0.00011 U	0.0001 U	0.0001 U	0.000097 U
Aroclor-1232 (PCB-1232)	mg/L	0.0002	0.00000026	0.00011 U	0.0001 U	0.0001 U	0.000097 U
Aroclor-1242 (PCB-1242)	mg/L	0.0002	0.00000026	0.00011 U	0.0001 U	0.0001 U	0.000097 U
Aroclor-1248 (PCB-1248)	mg/L	0.0002	0.00000026	0.00011 U	0.0001 U	0.0001 U	0.000097 U
Aroclor-1254 (PCB-1254)	mg/L	0.0002	0.00000026	0.00011 U	0.0001 U	0.0001 U	0.000097 U
Aroclor-1260 (PCB-1260)	mg/L	0.0002	0.00000026	0.00011 U	0.0001 U	0.0001 U	0.000097 U
Aroclor-1262 (PCB-1262)	mg/L	0.0002	0.00000026	0.00011 U	0.0001 U	0.0001 U	0.000097 U
Aroclor-1268 (PCB-1268)	mg/L	0.0002	0.00000026	0.00011 U	0.0001 U	0.0001 U	0.000097 U
<b>General Chemistry</b>							
Ammonia	mg/L	-	-	2.0 U	1.1 J	1.1 J	2.0 U
Ammonia (unionized)	mg/L	0.053	0.053	-	0.01	0.01	-
Biochemical oxygen demand (BOD)	mg/L	-	-	2.0 U	2.0 U	2.0 U	2.0 U
Chemical oxygen demand (COD)	mg/L	-	-	22	25	17 J	30
Cyanide (amenable)	mg/L	-	-	0.010 U	0.010 U	0.010 U	0.010 U
Cyanide (total)	mg/L	0.0052	0.0052	0.010 U	0.010 U	0.010 U	0.010 U
Hardness, carbonate	mg/L	-	-	180	180	170	170
Hardness, magnesium	mg/L	-	-	45	44	45	44
Nitrate (as N)	mg/L	-	10	0.10 U	0.10 U	0.10 U	0.10 U
Oil and grease (HEM), polar	mg/L	-	-	4.9 U	4.9 U	4.8 U	4.9 U
pH, lab	s.u.	-	-	7.43 J	7.44 J	7.44 J	7.41 J
Phenolics (total)	mg/L	-	-	0.040 U	0.040 U	0.040 U	0.040 U
Total organic carbon (TOC)	mg/L	-	-	6.0	6.1	6.0	6.4

**Notes:**

J - Estimated concentration.

U - Not present at or above the associated value.

UJ - Estimated reporting limit.

BWS - Below Water surface

<sup>(1)</sup> The generic GSI criteria are based on the toxicity of unionized ammonia (NH<sub>3</sub>); the criteria is 53 µg/L warm water surface water

<sup>(2)</sup> Temperature of the water was assumed to be approximately 65 degrees F at the criteria is 53 µg/L warm water surface water

TABLE 3

ANALYTICAL RESULTS SUMMARY - BANK SOIL  
NORTH DITCH  
RACER NODULAR INDUSTRIAL LAND (10040)  
SAGINAW, MI

<i>Sample Location:</i>				<i>SO-290-13</i>		<i>SO-292-13</i>		<i>SO-294-13</i>	
<i>Sample ID:</i>				<i>S-58502-071613-SSH-290</i>		<i>S-58502-071613-SSH-292</i>		<i>S-58502-071613-SSH-294</i>	
<i>Sample Date:</i>				<i>7/16/2013</i>		<i>7/16/2013</i>		<i>7/16/2013</i>	
<i>Sample Depth:</i>				<i>(0-0.5) ft BGS</i>		<i>(0-0.5) ft BGS</i>		<i>(0-0.5) ft BGS</i>	
<i>matrix_code</i>				<i>SO</i>		<i>SO</i>		<i>SO</i>	
<i>Parameters:</i>	<i>Units</i>	<i>Statewide Default Background Levels</i>	<i>Direct Contact Criteria &amp; RBSLs (a)</i>	<i>Res/Non_Res/G W Prot_GW SW Interface Prot (b)</i>					
<b>Metals</b>									
Aluminum	mg/kg		370000	-	2200		4100		890
Antimony	mg/kg		670	94	0.13 J		0.14 J		0.094 J
Arsenic	mg/kg	5.8	37	4.6	1.1		2.8		3.8
Barium	mg/kg		130000	-	14		65		6.0
Beryllium	mg/kg		1600	-	0.10 J		0.42		0.066 J
Cadmium	mg/kg		2100	-	0.11		0.065 J		0.096
Calcium	mg/kg		-	-	3600		17000		1600
Chromium	mg/kg	18		3.3	12		70 (b)		5.8
Cobalt	mg/kg	6.8	9000	2	0.82		1.3		0.89
Copper	mg/kg		73000	-	7.5		18		3.6
Iron	mg/kg		90000	-	5300		16000		6100
Lead	mg/kg		900	-	15		11		15
Magnesium	mg/kg		1000000	-	1300		1800		640
Manganese	mg/kg		90000	-	61		940		100
Mercury	mg/kg	0.13	580	0.05	0.055 U		0.058 U		0.050 U
Nickel	mg/kg		150000	-	4.9		13		2.5
Potassium	mg/kg		-	-	180 J		290 J		450 U
Selenium	mg/kg	0.41	9600	0.4	0.28 J		0.74 (b)		0.22 J
Silver	mg/kg	1.0	9000	0.1	0.013 J		0.081 J		0.019 J
Sodium	mg/kg		1000000	-	100 U		84 U		91 U
Thallium	mg/kg		130	4.2	0.14 J		0.17		0.18 U
Vanadium	mg/kg		5500	190	5.1		6.4		6.7
Zinc	mg/kg		630000	-	99		270		73
<b>Polychlorinated Biphenyls</b>									
Aroclor-1016 (PCB-1016) <sup>(1)</sup>	µg/kg		1000	-	0.35 U		0.35 U		0.33 U
Aroclor-1221 (PCB-1221) <sup>(1)</sup>	µg/kg		1000	-	0.35 U		0.35 U		0.33 U
Aroclor-1232 (PCB-1232) <sup>(1)</sup>	µg/kg		1000	-	0.35 U		0.35 U		0.33 U
Aroclor-1242 (PCB-1242) <sup>(1)</sup>	µg/kg		1000	-	0.35 U		0.35 U		0.33 U
Aroclor-1248 (PCB-1248) <sup>(1)</sup>	µg/kg		1000	-	0.35 U		0.35 U		0.33 U
Aroclor-1254 (PCB-1254) <sup>(1)</sup>	µg/kg		1000	-	0.35 U		0.35 U		0.33 U
Aroclor-1260 (PCB-1260) <sup>(1)</sup>	µg/kg		1000	-	0.35 U		0.35 U		0.33 U
Aroclor-1262 (PCB-1262) <sup>(1)</sup>	µg/kg		1000	-	0.35 U		0.35 U		0.33 U
Aroclor-1268 (PCB-1268) <sup>(1)</sup>	µg/kg		1000	-	0.35 U		0.35 U		0.33 U
<b>General Chemistry</b>									
Ammonia	mg/kg			-	48 U		49 U		50 U
Cyanide (total)	mg/kg		250	0.1	0.67 U		1.8 (b)		0.64 U
Nitrate (as N)	mg/kg			-	330 U		330 U		310 U
pH, lab	s.u.			-	7.46 J		7.07 J		8.36 J
Total organic carbon (TOC)	mg/kg			-	12000		12000		8200

## Notes:

J - Estimated concentration.

U - Not present at or above the associated value.

<sup>(1)</sup> MDEQ guidance references TSCA regulations. 1000ppb PCBs is the criteria for unrestricted use

TABLE 3

ANALYTICAL RESULTS SUMMARY - BANK SOIL  
NORTH DITCH  
RACER NODULAR INDUSTRIAL LAND (10040)  
SAGINAW, MI

Sample Location:		SO-296-13		SO-298-13		SO-300-13	
Sample ID:		S-58502-071613-SSH-296		S-58502-071613-SSH-298		S-58502-071613-SSH-300	
Sample Date:		7/16/2013		7/16/2013		7/16/2013	
Sample Depth:		(0-0.5) ft BGS		(0-0.5) ft BGS		(0-0.5) ft BGS	
matrix_code		SO		SO		SO	
Parameters:	Units	Statewide Default Background Levels	Direct Contact Criteria & RBSLs (a)	Res/Non_Res/G W Prot_GW SW Interface Prot (b)			
<b>Metals</b>							
Aluminum	mg/kg		370000	-	3200	5100	7900
Antimony	mg/kg		670	94	0.27 J	0.49 J	0.43 J
Arsenic	mg/kg	5.8	37	4.6	5.4	4.2	6.1 (b)
Barium	mg/kg		130000	-	27	38	79
Beryllium	mg/kg		1600	-	0.22	0.28	0.64
Cadmium	mg/kg		2100	-	0.19	0.081 J	0.19 J
Calcium	mg/kg			-	15000	9200	35000
Chromium	mg/kg	18		3.3	41 (b)	34 (b)	110 (b)
Cobalt	mg/kg	6.8	9000	2	1.9	3.3	4.0
Copper	mg/kg		73000	-	15	28	54
Iron	mg/kg			-	16000	32000	61000
Lead	mg/kg		900	-	29	20	33
Magnesium	mg/kg		1000000	-	3000	2700	5600
Manganese	mg/kg		90000	-	380	580	1400
Mercury	mg/kg	0.13	580	0.05	0.049 U	0.050 U	0.047 U
Nickel	mg/kg		150000	-	13	20	57
Potassium	mg/kg			-	320 J	410 J	610
Selenium	mg/kg	0.41	9600	0.4	0.79 (b)	0.65 (b)	1.1 (b)
Silver	mg/kg	1.0	9000	0.1	0.062 J	0.049 J	0.088 J
Sodium	mg/kg		1000000	-	100 U	92 U	78 U
Thallium	mg/kg		130	4.2	0.22	0.18 U	0.16 U
Vanadium	mg/kg		5500	190	6.9	7.5	9.9
Zinc	mg/kg		630000	-	98	86	370
<b>Polychlorinated Biphenyls</b>							
Aroclor-1016 (PCB-1016) <sup>(1)</sup>	µg/kg		1000	-	0.34 U	0.33 U	0.29 U
Aroclor-1221 (PCB-1221) <sup>(1)</sup>	µg/kg		1000	-	0.34 U	0.33 U	0.29 U
Aroclor-1232 (PCB-1232) <sup>(1)</sup>	µg/kg		1000	-	0.34 U	0.33 U	0.29 U
Aroclor-1242 (PCB-1242) <sup>(1)</sup>	µg/kg		1000	-	0.34 U	0.16 J	0.075 J
Aroclor-1248 (PCB-1248) <sup>(1)</sup>	µg/kg		1000	-	0.34 U	0.33 U	0.29 U
Aroclor-1254 (PCB-1254) <sup>(1)</sup>	µg/kg		1000	-	0.037 J	0.17 J	0.049 J
Aroclor-1260 (PCB-1260) <sup>(1)</sup>	µg/kg		1000	-	0.34 U	0.026 J	0.29 U
Aroclor-1262 (PCB-1262) <sup>(1)</sup>	µg/kg		1000	-	0.34 U	0.33 U	0.29 U
Aroclor-1268 (PCB-1268) <sup>(1)</sup>	µg/kg		1000	-	0.34 U	0.33 U	0.29 U
<b>General Chemistry</b>							
Ammonia	mg/kg			-	80	50 U	68
Cyanide (total)	mg/kg		250	0.1	0.61 U	0.65 U	5.1 (b)
Nitrate (as N)	mg/kg			-	310 U	310 U	270 U
pH, lab	s.u.			-	8.18 J	7.97 J	8.13 J
Total organic carbon (TOC)	mg/kg			-	23000	18000	44000

Notes:

J - Estimated concentration.

U - Not present at or above the associated value.

<sup>(1)</sup> MDEQ guidance references TSCA regulations. 1000ppb PCBs is the criteria for unrestricted use

TABLE 3

ANALYTICAL RESULTS SUMMARY - BANK SOIL  
NORTH DITCH  
RACER NODULAR INDUSTRIAL LAND (10040)  
SAGINAW, MI

<b>Sample Location:</b>	SO-302-13	SO-304-13	SO-306-13
<b>Sample ID:</b>	S-58502-071613-SSH-302	S-58502-071613-SSH-304	S-58502-071613-SSH-306
<b>Sample Date:</b>	7/16/2013	7/16/2013	7/16/2013
<b>Sample Depth:</b>	(0-0.5) ft BGS	(0-0.5) ft BGS	(0-0.5) ft BGS
<b>matrix_code</b>	SO	SO	SO

Parameters:	Units	Statewide Default Background Levels	Direct Contact Criteria & RBSLs (a)	Res/Non_Res/G W Prot_GW SW Interface Prot (b)	SO-302-13 S-58502-071613-SSH-302 7/16/2013 (0-0.5) ft BGS SO	SO-304-13 S-58502-071613-SSH-304 7/16/2013 (0-0.5) ft BGS SO	SO-306-13 S-58502-071613-SSH-306 7/16/2013 (0-0.5) ft BGS SO	
<b>Metals</b>								
Aluminum	mg/kg		370000	-	9300	4100	2900	
Antimony	mg/kg		670	94	0.15 J	0.11 J	0.16 J	
Arsenic	mg/kg	5.8	37	4.6	5.7 (b)	1.6	2.7	
Barium	mg/kg		130000	-	59	34	19	
Beryllium	mg/kg		1600	-	0.47	0.22	0.20	
Cadmium	mg/kg		2100	-	0.24	0.097	0.045 J	
Calcium	mg/kg			-	36000	7300	3300	
Chromium	mg/kg	18		3.3	23 (b)	7.4	16	
Cobalt	mg/kg	6.8	9000	2	5.8	0.88	1.1	
Copper	mg/kg		73000	-	19	4.5	6.7	
Iron	mg/kg		90000	-	15000	4700	9500	
Lead	mg/kg		900	-	23	8.4	12	
Magnesium	mg/kg		1000000	-	13000	1600	810	
Manganese	mg/kg		90000	-	530	170	240	
Mercury	mg/kg	0.13	580	0.05	0.035 J	0.050 U	0.043 U	
Nickel	mg/kg		150000	-	18	3.1	5.2	
Potassium	mg/kg			-	1700	260 J	280 J	
Selenium	mg/kg	0.41	9600	0.4	0.91 (b)	0.57 (b)	0.54 (b)	
Silver	mg/kg	1.0	9000	0.1	0.053 J	0.019 J	0.023 J	
Sodium	mg/kg		1000000	-	87	80 U	86 U	
Thallium	mg/kg		130	4.2	0.17 U	0.16 U	0.17 U	
Vanadium	mg/kg		5500	190	20	4.3	4.5	
Zinc	mg/kg		630000	-	110	29	35	
<b>Polychlorinated Biphenyls</b>								
Aroclor-1016 (PCB-1016) <sup>(1)</sup>	µg/kg		1000	-	0.31 U	0.29 U	0.3 U	
Aroclor-1221 (PCB-1221) <sup>(1)</sup>	µg/kg		1000	-	0.31 U	0.29 U	0.3 U	
Aroclor-1232 (PCB-1232) <sup>(1)</sup>	µg/kg		1000	-	0.31 U	0.29 U	0.3 U	
Aroclor-1242 (PCB-1242) <sup>(1)</sup>	µg/kg		1000	-	0.31 U	0.29 U	0.3 U	
Aroclor-1248 (PCB-1248) <sup>(1)</sup>	µg/kg		1000	-	0.31 U	0.29 U	0.3 U	
Aroclor-1254 (PCB-1254) <sup>(1)</sup>	µg/kg		1000	-	0.065 J	0.29 U	0.3 U	
Aroclor-1260 (PCB-1260) <sup>(1)</sup>	µg/kg		1000	-	0.31 U	0.29 U	0.3 U	
Aroclor-1262 (PCB-1262) <sup>(1)</sup>	µg/kg		1000	-	0.31 U	0.29 U	0.3 U	
Aroclor-1268 (PCB-1268) <sup>(1)</sup>	µg/kg		1000	-	0.31 U	0.29 U	0.3 U	
<b>General Chemistry</b>								
Ammonia	mg/kg			-	68	50 U	81	
Cyanide (total)	mg/kg		250	0.1	0.59 U	0.53 U	0.55 U	
Nitrate (as N)	mg/kg			-	290 U	280 U	280 U	
pH, lab	s.u.			-	8.14 J	8.04 J	7.60 J	
Total organic carbon (TOC)	mg/kg			-	27000	18000	24000	

Notes:

J - Estimated concentration.

U - Not present at or above the associated value.

<sup>(1)</sup> MDEQ guidance references TSCA regulations. 1000ppb PCBs is the criteria for unrestricted use

TABLE 3  
ANALYTICAL RESULTS SUMMARY - BANK SOIL  
NORTH DITCH  
RACER NODULAR INDUSTRIAL LAND (10040)  
SAGINAW, MI

Sample Location: SO-307-13  
Sample ID: S-58502-071613-SSH-307  
Sample Date: 7/16/2013  
Sample Depth: (0-0.5) ft BGS  
matrix\_code: SO  
(Duplicate)

Parameters:	Units	Statewide	Direct	Res/Non_Res/G	
		Default Background Levels	Contact Criteria & RBSLs (a)	W Prot	GW SW Interface Prot (b)
<b>Metals</b>					
Aluminum	mg/kg		370000	-	2900
Antimony	mg/kg		670	94	0.072 J
Arsenic	mg/kg	5.8	37	4.6	2.1
Barium	mg/kg		130000	-	18
Beryllium	mg/kg		1600	-	0.18
Cadmium	mg/kg		2100	-	0.038 J
Calcium	mg/kg			-	2600
Chromium	mg/kg	18		3.3	10
Cobalt	mg/kg	6.8	9000	2	0.95
Copper	mg/kg		73000	-	5.0
Iron	mg/kg			-	7200
Lead	mg/kg		900	-	11
Magnesium	mg/kg		1000000	-	870
Manganese	mg/kg		90000	-	160
Mercury	mg/kg	0.13	580	0.05	0.043 U
Nickel	mg/kg		150000	-	3.3
Potassium	mg/kg			-	260 J
Selenium	mg/kg	0.41	9600	0.4	0.53 (b)
Silver	mg/kg	1.0	9000	0.1	0.027 J
Sodium	mg/kg		1000000	-	82 U
Thallium	mg/kg		130	4.2	0.16 U
Vanadium	mg/kg		5500	190	4.3
Zinc	mg/kg		630000	-	34
<b>Polychlorinated Biphenyls</b>					
Aroclor-1016 (PCB-1016) <sup>(1)</sup>	µg/kg		1000	-	0.3 U
Aroclor-1221 (PCB-1221) <sup>(1)</sup>	µg/kg		1000	-	0.3 U
Aroclor-1232 (PCB-1232) <sup>(1)</sup>	µg/kg		1000	-	0.3 U
Aroclor-1242 (PCB-1242) <sup>(1)</sup>	µg/kg		1000	-	0.3 U
Aroclor-1248 (PCB-1248) <sup>(1)</sup>	µg/kg		1000	-	0.3 U
Aroclor-1254 (PCB-1254) <sup>(1)</sup>	µg/kg		1000	-	0.3 U
Aroclor-1260 (PCB-1260) <sup>(1)</sup>	µg/kg		1000	-	0.3 U
Aroclor-1262 (PCB-1262) <sup>(1)</sup>	µg/kg		1000	-	0.3 U
Aroclor-1268 (PCB-1268) <sup>(1)</sup>	µg/kg		1000	-	0.3 U
<b>General Chemistry</b>					
Ammonia	mg/kg			-	49 U
Cyanide (total)	mg/kg		250	0.1	0.54 U
Nitrate (as N)	mg/kg			-	280 U
pH, lab	s.u.			-	7.53 J
Total organic carbon (TOC)	mg/kg			-	21000

## Notes:

J - Estimated concentration.

U - Not present at or above the associated value.

<sup>(1)</sup> MDEQ guidance references TSCA regulations. 1000ppb PCBs is the criteria for unrestricted use

TABLE 4

**NORTH DITCH SITE STABILIZATION ALTERNATIVES  
SAGINAW NODULAR INDUSTRIAL LAND  
SAGINAW, MICHIGAN**

<i>Criteria</i>	<i>Alternative 1 - Install New Catchbasin Along the North Ditch - Hook into Tri-Cap outfall - Cover Sediments</i>
Protect Human Health and the Environment	Stormwater ponding will be prevented by directing runoff to a catchbasin. By preventing the ponding of stormwater, the potential exposure of avian and mammalian populations by consumption will be significantly reduced. Furthermore, covering the sediments will prevent potential suspension and migration of impacted sediments to potential downstream receptors.
Attain Media Cleanup Standards	The results of the risk assessments identified that there is no unacceptable risk to humans and the risk of adverse ecological effects is low to negligible but alternative will eliminate low to adverse ecological risk.
Controlling the Source of Release	Contaminants of concern include PCBs which have an affinity for solids as evidenced by the lack of PCBs found in the Ditch water. In addition, the following parameters were detected above GSI protection criteria: arsenic, cobalt, chromium, selenium, and cyanide. Through the installation of a geo-fabric and a clean layer of soil, the source is being immobilized.
Comply with Applicable Waste Management Standards	No waste management is required by this corrective measure.
Long-term Reliability and Effectiveness	This is a reliable and effective mechanism to restrict avian/mammalian exposures and prevent the migration of sediments.
Reduction in the Toxicity, Mobility, and Volume of Waste	This option reduces potential exposures on-Site and prevents the mobility of hazardous constituents; however, this option does not reduce the toxicity or the volume of waste.
Short-term Effectiveness	This is a reliable mechanism which can be implemented in a relatively short period of time to prevent migration of hazardous constituents and reduce potential exposures.
Implementability	This option would be easily implemented from a construction stand point using standard engineering practices, however, permits, approvals and agreements from various parties will be required to complete the work.
Community Acceptance	This option would reduce ponding and improve the aesthetics of the North Ditch. Community acceptance is likely, especially adjacent property owners because of the improvement of stormwater drainage.
State Acceptance (MDEQ)	MDEQ acceptance is anticipated. Discussions to follow.
Sustainability	This option requires short term construction. Following construction, additional resource consumption is not required.
Cost	Costs are on the order of \$200,000, assuming there is available capacity in the existing network and concurrence is obtained from the following parties: County Drain Commission, Michigan Department of Environmental Quality (NPDES), neighbor (easement to discharge water into existing storm system and access for completing work), US Army Corp of Engineers and USEPA

TABLE 5

**NORTH DITCH SITE STABILIZATION ALTERNATIVES  
SAGINAW NODULAR INDUSTRIAL LAND  
SAGINAW, MICHIGAN**

<i>Criteria</i>	<i>Alternative 2 - Excavate Sediment from North Ditch, backfill with clean material, and regrade ditch to drain to new catchbasin that will tie into Tri-Cap outfall (manhole)</i>
Protect Human Health and the Environment	Removal of the hazardous constituents would eliminate potential exposure of avian and mammalian populations at the North Ditch.
Attain Media Cleanup Standards	All media above cleanup standards would be removed and disposed of off-Site.
Controlling the Source of Release	By removing the sediments the source of any contaminants in the sediment will be eliminated.
Comply with Applicable Waste Management Standards	All excavated materials would be disposed of at a local disposal facility which is permitted to receive the materials.
Long-term Reliability and Effectiveness	All media above cleanup standards would be removed and disposed of off-Site.
Reduction in the Toxicity, Mobility, and Volume of Waste	All media above cleanup standards would be removed and disposed of off-Site.
Short-term Effectiveness	This alternative could be completed in a short time frame and all media above cleanup standards would be removed and disposed of off-Site.
Implementability	This option would be easily implemented from a construction stand point using standard engineering practices, however, permits, approvals and agreements from various parties will be required to complete the work.
Community Acceptance	This option would reduce ponding and improve the aesthetics of the North Ditch, while removing the hazardous constituents. Community acceptance is expected, especially adjacent property owners.
State Acceptance (MDEQ)	MDEQ acceptance is anticipated. Discussions to follow.
Sustainability	This option requires extensive excavation and transportation of excavated materials; however, following construction no additional resource consumption is anticipated.
Cost	Costs are on the order of \$1,000,000, assuming there is available capacity in the existing network and concurrence is obtained from the following parties: County Drain Commission, Michigan Department of Environmental Quality (NPDES), neighbor (easement to discharge water into existing storm system and access for completing work), US Army Corp of Engineers and USEPA



Proposed Site Work

CARROLLTON TOWNSHIP

Saginaw River

Carrollton Rd

BUENA VISTA CHARTER TOWNSHIP

13

23

75

151

23

151

13

81

81

81

13



PHOTO 1: NORTH DITCH - LOOKING NORTHEAST FROM DRIVEWAY (4/2013)



PHOTO 2: NORTH DITCH – MIDDLE (4/2013)

SITE PHOTOGRAPHS  
NORTH DITCH  
NODULAR INDUSTRIAL LAND  
**SAGINAW, MI**



PHOTO 3: NORTH DITCH LOOKING NORTH FROM TRICAP PARKING LOT (4/2013)



PHOTO 4: NORTH DITCH FROM SECONDARY POND LANE LOOKING WEST (4/2013)

SITE PHOTOGRAPHS  
NORTH DITCH  
NODULAR INDUSTRIAL LAND  
**SAGINAW, MI**



PHOTO 5: NORTH DITCH (7/2013)



PHOTO 6: NORTH DITCH NEAR SECONDARY POND (7/2013)

SITE PHOTOGRAPHS  
NORTH DITCH  
NODULAR INDUSTRIAL LAND  
**SAGINAW, MI**



PHOTO 7: NORTH DITCH - LOOKING NORTHEAST FROM DRIVEWAY (9/2013)



PHOTO 8: NORTH DITCH – OUTFALL 22 DISCHARGE LOCATIONS (5/2014)

SITE PHOTOGRAPHS  
NORTH DITCH  
NODULAR INDUSTRIAL LAND  
**SAGINAW, MI**