NOTES:

1. TOPOGRAPHIC SURVEY PROVIDED BY FLEIS & VANDENBRINK ENGINEERING, INC. IN JULY 2012.

2. SOIL BORING DATA AND ABANDONED OIL WELL DATA ON SHEET C2.

3. THE CONTRACTOR SHALL NOTIFY MISS DIG, UTILITY COMMUNICATION SYSTEM, 800-482-7171, 3 WORKING DAYS PRIOR TO STARTING ANY EXCAVATING WITH POWER EQUIPMENT. IT IS THE CONTRACTOR'S RESPONSIBILITY TO HAVE UTILITIES ADEQUATELY LOCATED PRIOR TO STARTING ANY AND ALL WORK. IF UTILITIES ARE DAMAGED DURING CONTRACTORS WORK, IT IS THE SOLE RESPONSIBILITY OF THE CONTRACTOR TO REPAIR THE UTILITY TO A CONDITION AS GOOD OR BETTER THAN BEFORE THE DAMAGE OCCURRED.
### SOIL BORING DATA

<table>
<thead>
<tr>
<th>Soil Core ID</th>
<th>Depth (inches)</th>
<th>Munsell Color</th>
<th>Texture</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>0-3.75&quot; N/A</td>
<td>N/A</td>
<td>Flocculent muck</td>
<td>DRY, dark consolidated muck throughout entire core, below flocculent layer</td>
</tr>
<tr>
<td></td>
<td>6-10&quot; N/A</td>
<td>N/A</td>
<td>Dry consolidated muck</td>
<td></td>
</tr>
<tr>
<td></td>
<td>13-17&quot; N/A</td>
<td>N/A</td>
<td>Dry consolidated muck</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>0-9&quot; 10YR 2/1</td>
<td>black</td>
<td>Muck</td>
<td>Woody fibers in peat layer</td>
</tr>
<tr>
<td></td>
<td>9-13&quot;+ 10YR 3/2</td>
<td>black/brown</td>
<td>Mucky peat</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>0-15&quot; 10YR 2/1</td>
<td>black</td>
<td>Muck</td>
<td>Some silt also apparent at approximately 5&quot; depth</td>
</tr>
<tr>
<td></td>
<td>15-20&quot; 10YR 3/2</td>
<td>black/brown</td>
<td>Mucky peat</td>
<td>Some mucky silt also apparent</td>
</tr>
<tr>
<td>4</td>
<td>0-9&quot; 10YR 2/1</td>
<td>black</td>
<td>Muck</td>
<td>Very dense with wood fibers throughout</td>
</tr>
<tr>
<td></td>
<td>9-12&quot; 10YR 3/2</td>
<td>black/brown</td>
<td>Mucky peat</td>
<td></td>
</tr>
<tr>
<td></td>
<td>12-15&quot; 10YR 5/3</td>
<td>brown/gray</td>
<td>Sand</td>
<td>Abrupt soil profile layer change</td>
</tr>
<tr>
<td>5</td>
<td>0-3&quot; N/A</td>
<td>N/A</td>
<td>Flocculent muck</td>
<td>There was a large air pocket at the bottom of the core, thus the shorter length than previously measured. Light-colored muck (with play-doh consistency)</td>
</tr>
<tr>
<td></td>
<td>8.25-12.25&quot; N/A</td>
<td>N/A</td>
<td>Dry consolidated muck</td>
<td></td>
</tr>
<tr>
<td></td>
<td>17.25-21.25&quot; N/A</td>
<td>N/A</td>
<td>Wet light-colored muck</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>0-4&quot; N/A</td>
<td>N/A</td>
<td>Flocculent muck</td>
<td>DRY, dark consolidated muck throughout entire core, below flocculent layer</td>
</tr>
<tr>
<td></td>
<td>6-10&quot; N/A</td>
<td>N/A</td>
<td>Dry consolidated muck</td>
<td></td>
</tr>
<tr>
<td></td>
<td>13-17&quot; N/A</td>
<td>N/A</td>
<td>Dry consolidated muck</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>0-4&quot; N/A</td>
<td>N/A</td>
<td>Flocculent muck</td>
<td>Wet, light-colored muck (see notes from Site 5 core)</td>
</tr>
<tr>
<td></td>
<td>15-19&quot; N/A</td>
<td>N/A</td>
<td>Dry consolidated muck</td>
<td>Wet light-colored muck begins at 20&quot; deep</td>
</tr>
<tr>
<td></td>
<td>27-30&quot; N/A</td>
<td>N/A</td>
<td>Sand</td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>0-10&quot; 10YR 2/1</td>
<td>black</td>
<td>Muck</td>
<td>Higher wood fiber content and density than cores 2-4</td>
</tr>
<tr>
<td></td>
<td>10-22&quot; 10YR 3/2</td>
<td>black/brown</td>
<td>Mucky peat</td>
<td>Some wood fibers scattered throughout layer</td>
</tr>
<tr>
<td></td>
<td>22-24&quot; 10YR 6/2</td>
<td>gray</td>
<td>Marl</td>
<td></td>
</tr>
<tr>
<td></td>
<td>24-26&quot;-</td>
<td></td>
<td>Solid wood chunks</td>
<td></td>
</tr>
</tbody>
</table>

### SOIL BORING DATA

<table>
<thead>
<tr>
<th>Soil Core ID</th>
<th>Depth (inches)</th>
<th>Munsell Color</th>
<th>Texture</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>9</td>
<td>0-2&quot; 10YR 3/1</td>
<td>black</td>
<td>Muck</td>
<td>Shell fragments</td>
</tr>
<tr>
<td></td>
<td>2-12&quot; 10YR 5/2</td>
<td>gray</td>
<td>Clay</td>
<td>Refusal at approx. 2 foot depth. Very firm and dry.</td>
</tr>
<tr>
<td></td>
<td>12-18&quot; 10YR 2/1</td>
<td>black</td>
<td>Muck</td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>0-4&quot; 10YR 4/1</td>
<td>gray</td>
<td>Sand</td>
<td>Shell fragments</td>
</tr>
<tr>
<td></td>
<td>4-28&quot; 10YR 5/1</td>
<td>gray</td>
<td>Clay</td>
<td>Abrupt soil profile layer change</td>
</tr>
<tr>
<td></td>
<td>26-28&quot; 10YR 3/2</td>
<td>black/brown</td>
<td>Sand</td>
<td>Very firm and sandy core</td>
</tr>
<tr>
<td></td>
<td>26-30&quot;+ 10YR 5/3</td>
<td>brown</td>
<td>Sand</td>
<td></td>
</tr>
<tr>
<td>11</td>
<td>0-4&quot; 10YR 3/1</td>
<td>black</td>
<td>Muck</td>
<td>With wood chips/fragments</td>
</tr>
<tr>
<td></td>
<td>10YR 5/1</td>
<td></td>
<td>Muck</td>
<td>With wood chips/fragments</td>
</tr>
<tr>
<td>12</td>
<td>0-8&quot; 10YR 2/1</td>
<td>black</td>
<td>Muck</td>
<td>Sand at approximately 10 inch depth</td>
</tr>
<tr>
<td></td>
<td>8-20&quot; 10YR 5/3</td>
<td>brown</td>
<td>Sand</td>
<td>With wood chips/fragments</td>
</tr>
<tr>
<td>13</td>
<td>0-6&quot; 10YR 3/1</td>
<td>black</td>
<td>Mucky peat</td>
<td>Shank when dried in tube, woody fibers present/visible</td>
</tr>
<tr>
<td></td>
<td>6-9&quot; 10YR 6/3</td>
<td>brown/gray</td>
<td>Sand</td>
<td>Some organic coating</td>
</tr>
<tr>
<td></td>
<td>9-18&quot; 10YR 6/3</td>
<td>brown/gray</td>
<td>Sand</td>
<td></td>
</tr>
<tr>
<td>14</td>
<td>0-12&quot; 10YR 2/1</td>
<td>black</td>
<td>Muck</td>
<td>Abrupt soil profile layer change</td>
</tr>
<tr>
<td></td>
<td>12-30&quot;+ 10YR 6/3</td>
<td>brown/grey</td>
<td>Sand</td>
<td>Sand at approximately 18&quot; depth</td>
</tr>
</tbody>
</table>

### ABANDONED WELL DATA

<table>
<thead>
<tr>
<th>Permit_Number</th>
<th>Well_Name_and_Number</th>
<th>Location_Description</th>
<th>Well_Type</th>
<th>Well_Status</th>
<th>Total_Depth</th>
<th>Formation_at_Total_Depth</th>
<th>Lean</th>
<th>Permit_Date</th>
<th>Lat</th>
<th>Long</th>
</tr>
</thead>
<tbody>
<tr>
<td>439</td>
<td>FORTIER 1</td>
<td>upload Willbrandt triangle</td>
<td>Dry Hole</td>
<td>Plugging Approved</td>
<td>2010</td>
<td>DUNDEE Vertical</td>
<td>3/13/2019</td>
<td>43.2673</td>
<td>-86.2625</td>
<td></td>
</tr>
<tr>
<td>553</td>
<td>MARSH, C. G. 2</td>
<td>in water off conoids</td>
<td>Oil Well</td>
<td>Plugging Approved</td>
<td>2018</td>
<td>DUNDEE Vertical</td>
<td>5/11/2019</td>
<td>43.2656</td>
<td>-86.2626</td>
<td></td>
</tr>
<tr>
<td>660</td>
<td>ANDREE, R. 3</td>
<td>in water - north edge west pond</td>
<td>Oil Well</td>
<td>Plugging Approved</td>
<td>2017</td>
<td>DUNDEE Vertical</td>
<td>7/12/2019</td>
<td>43.2669</td>
<td>-86.2632</td>
<td></td>
</tr>
<tr>
<td>602</td>
<td>KONNING 3</td>
<td>water's edge - NW corner east pond</td>
<td>Dry Hole</td>
<td>PROJECT VALUE</td>
<td>2023</td>
<td>DUNDEE Vertical</td>
<td>6/10/1929</td>
<td>43.2677</td>
<td>-86.2613</td>
<td></td>
</tr>
<tr>
<td>80S</td>
<td>TURNER-DELONG 1</td>
<td>north of Bear Creek</td>
<td>Dry Hole</td>
<td>PROJECT VALUE</td>
<td>2029</td>
<td>DUNDEE Vertical</td>
<td>10/17/1929</td>
<td>43.2673</td>
<td>-86.2646</td>
<td></td>
</tr>
</tbody>
</table>

*DATA PROVIDED BY MDEQ OFFICE OF OIL, GAS, AND MINERALS.
CONSTRUCTION SEQUENCING NOTES:

Construction sequencing shall be approximately as follows. Changes from this schedule must be approved in writing by the ENGINEER.

1. Clear and grub site as needed within excavation limits or for construction access only.

2. Begin construction of access road improvements and construction staging/laydown pads.

3. Install dewatering system and dewater excavation areas (ponds) to a minimum 1 foot below lowest proposed excavated grade. CONTRACTOR shall dewater both ponds simultaneously during excavation, unless otherwise noted.

4. Complete construction of access road improvements and construction staging/laydown pads.

5. Conduct demolition of former pump house, abandoned power poles, and power lines.

6. Excavate site to grade shown on the Plans, installing erosion control measures before, during, or after excavation as depicted in the Soil Erosion and Sedimentation Control plan.

7. Dispose of all excavated material at an approved Type II landfill.

8. Backfill with sand or topsoil to grade, as shown on the Drawings.

9. Install habitat structures, native seed, and erosion control blanket.

10. Deconstruct access pad in dewatered area.

11. Raise water levels to reach equilibrium with Bear Creek.

12. Excavate berm to create hydrologic connection.

13. Remove dewatering system.

14. Deconstruct temporary access road and restore to pre-construction conditions.

15. Place a 2” MDOT 4C hot mix asphalt overlay on Witham road from the Dykstra Road intersection to 10 feet south of the haul road limit.

16. Remove silt fence approximately 1-2 months following reconnection, or when vegetation is established and sediment has settled out of pond.

17. Install native plants, shrubs, and any final seeding and erosion control measures.

FIELD OBSERVATIONS.

BASED OFF UTILITY AND/OR AS-BUILT PLANS OR SHOWN ARE APPROXIMATE

ALL UNDERGROUND UTILITIES ARE APPROXIMATE

ALL PROPERTY AND/OR RIGHT-OF-WAY LINES

EXCAVATION BEFORE BERM REMOVAL.  (SEE DETAIL SHEET D-1).

MODIFY AS NEEDED WITH APPROVAL FROM THE ENGINEER.

BASE, OR OTHER IMPROVEMENT.  RESTORE ACCESS ROADS TO PRE-CONSTRUCTION CONDITIONS FOLLOWING CONSTRUCTION.

CONSTRUCTION TRAILER STAGING AREA.  NO HEAVY EQUIPMENT ALLOWED.

POTENTIAL CONTRACTOR EMPLOYEE PARKING AND CONSTRUCTION TRAILER STAGING AREA.  NO HEAVY EQUIPMENT ALLOWED.
1. The CONTRACTOR shall be responsible for providing all materials, equipment, labor, and services necessary for management of surface and groundwater, including seepage and precipitation.

2. Install a dewatering system to lower and control ground and surface water in order to permit excavation and placement of backfill materials to be performed under dry conditions. Miske the dewatering system adequate to provide the water table in each area to allow for the bottom of utilities and other excavations.

3. Dewatering system shall be of sufficient size and capacity necessary to lower and maintain ground water table to an adequate level for the duration of the contract. Dewatering system to be continuous until backfill work has been completed. Drainage features shall have sufficient capacity to avoid flooding of work areas.

4. The CONTRACTOR shall provide all necessary erosion and sediment control measures as described herein to avoid construction related degradation of the natural water quality.

5. Maintain stability of sides and bottom of excavation. Control of surface and subsurface water is part of dewatering requirements. Maintain adequate levels of the stability of excavated and constructed slopes are not adversely affected by saturation levels, including water entering prepared cutouts and subgrades where subdrainage materials are not free draining or unsaturated subject to soaking or freeze-thaw action.

6. Prevent loss of fines, seepage, boils, quick conditions or softening of foundation strata.

7. CONTRACTOR may only temporarily stockpile excavated material within the limits of the dewatered areas. No upland stockpiling of excavated material shall be allowed.

8. Drainage features shall be so arranged and altered as required to avoid degradation of the final excavated surfacess. The CONTRACTOR shall utilize all necessary erosion and sediment control measures as described herein to avoid construction related degradation of the natural water quality.

STANDBY EQUIPMENT

All necessary equipment, installed and available for immediate operation, as may be required to adequately maintain de-watering for a continuous basis and in the event that any part of the system may become inadequate or fail. Corrective action if dewatering requirements are not satisfied due to inadequacy or failure of the dewatering system, perform work necessary for reinstatement of damages to grading or work in place resulting from such inadequacy or failure by CONTRACTOR, at no additional cost to the OWNER.

Abandoned Bowling Alley and Drive-in Movie Property Available for Use As Alternative Staging Area.

Approximate Access Road/ Staging Area Location

PROPOSED DEWATERING PIPE ROUTE (~3,890 LF)
WEST POND NORMAL WATER LEVEL AFTER HYDROLOGIC RECONNECTION = 577.65'
WEST POND HIGH WATER LEVEL AFTER HYDROLOGIC RECONNECTION = 579.71'

WEST POND MATERIALS SUMMARY:

<table>
<thead>
<tr>
<th>ITEM</th>
<th>QTY.</th>
<th>UNIT</th>
</tr>
</thead>
<tbody>
<tr>
<td>SAND</td>
<td>20,088</td>
<td>CY</td>
</tr>
<tr>
<td>TOPOSOIL</td>
<td>220</td>
<td>CY</td>
</tr>
<tr>
<td>2&quot;-6&quot; STONE</td>
<td>292</td>
<td>CY</td>
</tr>
<tr>
<td>80's NON-WOVEN GEOTEXTILE (UNDER STONE)</td>
<td>900</td>
<td>SY</td>
</tr>
</tbody>
</table>

RECESSION SUMMARY:
WEST POND - CUT: 102,589 CY; FILL: 20,420 CY; NET: 82,169 CY CUT
BEAR POND - CUT: 20,996 CY; FILL: 286 CY; NET: 20,710 CY CUT
TOTAL: CUT: 123,585 CY; FILL: 23,706 CY; NET: 100,859 CY CUT

NOTES:
1. DREDGE 2-FOOT AVERAGE DEPTH OF MUCK FROM POND BOTTOM AND DEPOSE OF AT A TYPE II LANDFILL.
2. ALL GRADING ACTIVITIES WITHIN POND SHALL BE COMPLETED PRIOR TO BERM REMOVAL.
3. CONTRACTOR SHALL BE RESPONSIBLE FOR REPAIRING DAMAGE TO EXISTING STRUCTURES, UTILITIES,
   FACILITIES, OR MACHINERY RESULTING FROM CONSTRUCTION ACTIVITIES.
4. GRAVEL IN SOUTHEAST CORNER OF POND TO REMAIN INTACT AND UNDISTURBED.
5. PLACEMENT OF 2-6" FINE GRAVEL ALONGSIDE OF SOUTH CREES MUST BE COMPLETED PRIOR TO THE
   COMMENCEMENT OF BERM-REMOVAL ACTIVITIES.
6. FILL ASSOCIATED WITH PENSULAR AT CROSS-SECTION "E" SHALL CONSIST OF SAND WITH 8 INCHES OF
   CLEAN TOPSOIL, TOPPRESSING ABOVE 581.0' OR EXISTING WATER LEVEL.
7. CONTRACTOR MAY ENCOUNTER HISTORIC ABANDONED TUBE DRAINS (CLAY OR PLASTIC), PIPES, OR DRIP
   RAINWATER WASHES WITHIN PROJECT WORK AREA.
8. ALL EXCAVATED SOIL AND MISCELLANEOUS DEBRIS SHALL BE DISPOSED OF AT A TYPE II LANDFILL. ANY
   REMNANT METAL MATERIALS OR PIPE ASSOCIATED WITH THE OLD PUMP HOUSES SHALL BE RECYCLED
   TO THE EXTENT POSSIBLE AT A LOCAL RECYCLING FACILITY.
9. CONTRACTOR SHALL BE RESPONSIBLE FOR CLEANING AND REMOVAL OF BERM AND SHALL CONTROL
   DUST FROM CONSTRUCTION ACTIVITIES BY THE APPLICATION OF WATER OR OTHER APPROVED
   MEANS AS NECESSARY.
10. PROPOSED WATER LEVELS IN PONDS FOLLOWING CONSTRUCTION ARE ESTIMATES BASED ON AVERAGE
    WATER LEVELS IN LAKE MICHIGAN. WATER LEVELS IN THE PONDS WILL FLUCTUATE SOMewhat BASED ON
    CHANGES IN WATER LEVELS IN LAKE MICHIGAN.

West Michigan Shoreline Regional Development Commission & the Muskegon
Lake Watershed Partnership

Bear Creek Hydrologic Reconnection &
Habitat Enhancement Project

Grading & Layout Plan - West Pond

REV 1

This scale bar will measure 1" when plotted at full-size 22x34" and ½" when plotted at half-size 11x17".

Bear Creek Hydrologic Reconnection

ACCESS ROAD AND STAGING
AREA FOOTPRINT

MARBURG, C.G. 2
PERMIT # - 805
OIL WELL

ANDREE, R. 3
PERMIT # - 660
OIL WELL

MARSH, C.G. 2
PERMIT # - 553
OIL WELL

FORTIER 1
PERMIT # - 439
DRY HOLE

TURNER-DELONG 1
PERMIT # - 805
DRY HOLE

TWO RANCH CONDOS

BAY RIDGE

WEST POND MATERIALS SUMMARY:

<table>
<thead>
<tr>
<th>ITEM</th>
<th>QTY.</th>
<th>UNIT</th>
</tr>
</thead>
<tbody>
<tr>
<td>SAND</td>
<td>20,088</td>
<td>CY</td>
</tr>
<tr>
<td>TOPOSOIL</td>
<td>220</td>
<td>CY</td>
</tr>
<tr>
<td>2&quot;-6&quot; STONE</td>
<td>292</td>
<td>CY</td>
</tr>
<tr>
<td>80's NON-WOVEN GEOTEXTILE (UNDER STONE)</td>
<td>900</td>
<td>SY</td>
</tr>
</tbody>
</table>

EXCAVATION SUMMARY:
WEST POND - CUT: 102,589 CY; FILL: 20,420 CY; NET: 82,169 CY CUT
BEAR POND - CUT: 20,996 CY; FILL: 286 CY; NET: 20,710 CY CUT
TOTAL: CUT: 123,585 CY; FILL: 23,706 CY; NET: 100,859 CY CUT

NOTE:
1. DREDGE 2-FOOT AVERAGE DEPTH OF MUCK FROM POND BOTTOM AND DEPOSE OF AT A TYPE II LANDFILL.
2. ALL GRADING ACTIVITIES WITHIN POND SHALL BE COMPLETED PRIOR TO BERM REMOVAL.
3. CONTRACTOR SHALL BE RESPONSIBLE FOR REPAIRING DAMAGE TO EXISTING STRUCTURES, UTILITIES,
   FACILITIES, OR MACHINERY RESULTING FROM CONSTRUCTION ACTIVITIES.
4. GRAVEL IN SOUTHEAST CORNER OF POND TO REMAIN INTACT AND UNDISTURBED.
5. PLACEMENT OF 2-6" FINE GRAVEL ALONGSIDE OF SOUTH CREES MUST BE COMPLETED PRIOR TO THE
   COMMENCEMENT OF BERM-REMOVAL ACTIVITIES.
6. FILL ASSOCIATED WITH PENSULAR AT CROSS-SECTION "E" SHALL CONSIST OF SAND WITH 8 INCHES OF
   CLEAN TOPSOIL, TOPPRESSING ABOVE 581.0' OR EXISTING WATER LEVEL.
7. CONTRACTOR MAY ENCOUNTER HISTORIC ABANDONED TUBE DRAINS (CLAY OR PLASTIC), PIPES, OR DRIP
   RAINWATER WASHES WITHIN PROJECT WORK AREA.
8. ALL EXCAVATED SOIL AND MISCELLANEOUS DEBRIS SHALL BE DISPOSED OF AT A TYPE II LANDFILL. ANY
   REMNANT METAL MATERIALS OR PIPE ASSOCIATED WITH THE OLD PUMP HOUSES SHALL BE RECYCLED
   TO THE EXTENT POSSIBLE AT A LOCAL RECYCLING FACILITY.
9. CONTRACTOR SHALL BE RESPONSIBLE FOR CLEANING AND REMOVAL OF BERM AND SHALL CONTROL
   DUST FROM CONSTRUCTION ACTIVITIES BY THE APPLICATION OF WATER OR OTHER APPROVED
   MEANS AS NECESSARY.
10. PROPOSED WATER LEVELS IN PONDS FOLLOWING CONSTRUCTION ARE ESTIMATES BASED ON AVERAGE
    WATER LEVELS IN LAKE MICHIGAN. WATER LEVELS IN THE PONDS WILL FLUCTUATE SOMewhat BASED ON
    CHANGES IN WATER LEVELS IN LAKE MICHIGAN.

West Michigan Shoreline Regional Development Commission & the Muskegon
Lake Watershed Partnership

Bear Creek Hydrologic Reconnection &
Habitat Enhancement Project

Grading & Layout Plan - West Pond

REV 1

This scale bar will measure 1" when plotted at full-size 22x34" and ½" when plotted at half-size 11x17".

Bear Creek Hydrologic Reconnection

ACCESS ROAD AND STAGING
AREA FOOTPRINT

MARBURG, C.G. 2
PERMIT # - 805
OIL WELL

ANDREE, R. 3
PERMIT # - 660
OIL WELL

MARSH, C.G. 2
PERMIT # - 553
OIL WELL

FORTIER 1
PERMIT # - 439
DRY HOLE

TURNER-DELONG 1
PERMIT # - 805
DRY HOLE

TWO RANCH CONDOS

BAY RIDGE

WEST POND MATERIALS SUMMARY:

<table>
<thead>
<tr>
<th>ITEM</th>
<th>QTY.</th>
<th>UNIT</th>
</tr>
</thead>
<tbody>
<tr>
<td>SAND</td>
<td>20,088</td>
<td>CY</td>
</tr>
<tr>
<td>TOPOSOIL</td>
<td>220</td>
<td>CY</td>
</tr>
<tr>
<td>2&quot;-6&quot; STONE</td>
<td>292</td>
<td>CY</td>
</tr>
<tr>
<td>80's NON-WOVEN GEOTEXTILE (UNDER STONE)</td>
<td>900</td>
<td>SY</td>
</tr>
</tbody>
</table>

EXCAVATION SUMMARY:
WEST POND - CUT: 102,589 CY; FILL: 20,420 CY; NET: 82,169 CY CUT
BEAR POND - CUT: 20,996 CY; FILL: 286 CY; NET: 20,710 CY CUT
TOTAL: CUT: 123,585 CY; FILL: 23,706 CY; NET: 100,859 CY CUT

NOTE:
EAST POND MATERIALS SUMMARY:

<table>
<thead>
<tr>
<th>ITEM</th>
<th>QTY.</th>
<th>UNIT</th>
</tr>
</thead>
<tbody>
<tr>
<td>2&quot;-6&quot; STONE</td>
<td>310</td>
<td>CY</td>
</tr>
<tr>
<td>8oz NON-WOVEN GEOTEXTILE (UNDER STONE)</td>
<td>950</td>
<td>SY</td>
</tr>
</tbody>
</table>

NOTES:
1. DREDGE 1-FOOT AVERAGE DEPTH OF MUCK FROM POND BOTTOM AND DISPOSE OF AT A TYPE II LANDFILL.
2. ALL GRAADING ACTIVITIES WITHIN POND SHALL BE COMPLETED PRIOR TO BERM REMOVAL.
3. CONTRACTOR SHALL BE RESPONSIBLE FOR REPAIRING DAMAGE TO EXISTING STRUCTURES, UTILITIES, ROADS, OR TURFGRASS OUTSIDE THE LIMITS OF GRADING.
4. PLACEMENT OF Silt Fence Along Line of Bear Creek Must be Completed Prior to the commencement of berm removal and grading activities.
5. THE CONTRACTOR MAY ENCOUNTER HISTORIC ABANDONED TIE DRAINS (CLAY OR PLASTIC), PIPES, OR PUMP REMNANTS WITHIN PROJECT WORK AREA.
6. ALL EXCAVATED SOIL AND MISCELLANEOUS ODDS SHALL BE DUMPED AT A TYPE II LANDFILL. ANY REMAINING METAL MATERIALS OR PIPING ASSOCIATED WITH THE OLD PUMP HOUSES SHALL BE RECYCLED TO THE EXTENT POSSIBLE AT A LOCAL RECYCLING FACILITY.
7. THE CONTRACTOR SHALL KEEP PAVED SURFACES CLEANED AND FREE OF DEBRIS AND SHALL CONTROL DUST FROM CONSTRUCTION ACTIVITIES. DUST CONTROL MEASURES MAY INCLUDE THE APPLICATION OF WATER OR OTHER APPROVED MEANS AS NECESSARY.
8. PROPOSED WATER LEVELS IN PONDS FOLLOWING CONSTRUCTION ARE ESTIMATES BASED ON AVERAGE WATER LEVELS IN LAKE MICHIGAN. WATER LEVELS IN THE PONDS WILL FLUCTUATE SORBITICALLY BASED ON CHANGES IN WATER LEVELS IN LAKE MICHIGAN.
9. IF MUCK SOILS ARE ENCOUNTERED AT ROCK INLET, UP TO 12 INCHES OF OVER EXCAVATION AND CLEAN SAND BACKFILL MAY BE REQUIRED UNDER NON-WOVEN GEOTEXTILE LAYER.
BENCHMARK
EXISTING MAJOR/MINOR CONTOUR
PROPOSED MAJOR CONTOUR
NORMAL WATER LEVEL AFTER HYDROLOGIC RECONNECTION = 577.65'
LIMITS OF GRADING
SILT FENCE

1. IF ANY DISTURBED AREAS BELOW ELEVATION 579.0' AND ABOVE 577.0' ARE STEEPER THAN 4:1 USE C-125 BN EROSION CONTROL BLANKET.
2. STRAW MULCH SHALL ONLY BE INSTALLED AT ELEVATIONS ABOVE STANDING WATER (INUNDATION). REFERENCE EROSION CONTROL BLANKET DETAIL ON SHEET D1.
3. SILT FENCE SHALL BE INSTALLED CREEKWARD SIDE OF THE BERM AND BE INSTALLED PARALLEL TO THE BERM CONTOUR. THE OUTERMOST ROW SHALL EXTEND NO FURTHER THAN 3' INTO BEAR CREEK FROM THE TOE OF THE BERM. SILT FENCE SHALL REMAIN IN PLACE FOLLOWING BERM REMOVAL FOR A MINIMUM OF 30 DAYS AND SHALL BE REMOVED ONLY AT THE DIRECTION OF THE ENGINEER.

SILT FENCE
C-125 BN - SLOPES >3:1 (AND POTENTIALLY SUBMERGED AREAS)...................63,225 SF, 1.45 AC
SC-150 BN - SLOPES 4:1 TO 8:1................................................................................25,835 SF, 0.59 AC
STRAW MULCH - SLOPES FLATTER THAN 8:1........................................................40,780 SF; 0.94 AC

Plan View - West Pond

Notes:

SLOPE STABILIZATION ZONES AND QUANTITIES - WEST POND

STOP & VIEW DOCUMENTS1

SOUTHERN ILLINOIS SHAPELINE REGIONAL DEVELOPMENT COMMISSION

Bear Creek Hydrologic Reconnection & Habitat Enhancement Project

WEST POND

SC-150 BN EROSION CONTROL BLANKET

DOUBLE LAYER SILT FENCE (2,200 LF)

NORMAL WATER LEVEL AFTER HYDROLOGIC RECONNECTION = 577.60

C-125 BN EROSION CONTROL BLANKET

SILT FENCE

PLAN VIEW - WEST POND

KEY MAP

POLARIS

ATTENTION:
MISS DIG
BEFORE YOU DIG
CALL MISS DIG
ALL PROPERTY AND/OR RIGHT-OF-WAY LINES SHOWN ARE APPROXIMATE.
ALL UNDERGROUND UTILITIES ARE APPROXIMATE BASED OFF UTILITY AND/OR AS-BUILT PLANS OR FIELD OBSERVATIONS.

Designer: KL, BM, SD
Checked: WL
Drawn: WL
Submitted by: KL, BM, SD
Submitted Date: 04/23/2015

WEST POND

Bear Creek Hydrologic Reconnection & Habitat Enhancement Project

West Michigan Shoreline Regional Development Commission & the Muskegon Lake Watershed Partnership

Copyright ©2015 by KL, BM, SD. All Rights Reserved. No part of this work may be reproduced without written consent of the copyright holder.

This scale bar will measure 1" when plotted at full-size 22x34" and 0.5" when plotted at half-size 11x17".
FLOW
EAST POND
NORMAL WATER LEVEL AFTER HYDROLOGIC RECONNECTION = 577.95'

BEAR CREEK
DOUBLE LAYER SILT FENCE (2,350 LF)
STRAW MULCH
SC-150 BN EROSION CONTROL BLANKET
ROCK CONSTRUCTION ENTRANCE (SEE DETAIL SHEET D1)
TURBIDITY CURTAIN (22 LF)
C-125 BN EROSION CONTROL BLANKET

NOTES
1. IF ANY DISTURBED AREAS BELOW ELEVATION 579.0' AND ABOVE 577.0' ARE STEEPER THAN 4:1 USE C-125 BN EROSION CONTROL BLANKET.
2. STRAW MULCH SHALL ONLY BE INSTALLED AT ELEVATIONS ABOVE STANDING WATER (INUNDATION). REFERENCE EROSION CONTROL BLANKET DETAIL ON SHEET D1.
3. SILT FENCE SHALL BE INSTALLED CREEKWARD SIDE OF THE BERM AND BE INSTALLED PARALLEL TO THE BERM CONTOUR. THE OUTERMOST ROW SHALL EXTEND NO FURTHER THAN 3' INTO BEAR CREEK FROM THE TOE OF THE BERM. SILT FENCE SHALL REMAIN IN PLACE FOLLOWING BERM REMOVAL FOR A MINIMUM OF 30 DAYS AND SHALL BE REMOVED ONLY AT THE DIRECTION OF THE ENGINEER.

C-125 BN - SLOPES >3:1 (AND POTENTIALLY SUBMERGED AREAS)...................128,080 SF, 2.94 AC
SLOPE STABILIZATION ZONES AND QUANTITIES - WEST POND
STRAW MULCH - SLOPES FLATTER THAN 8:1........................................................46,250 SF; 1.06 AC
SC-150 BN - SLOPES 4:1 TO 8:1................................................................................1,260 SF, 0.03 AC
SILT FENCE .................................................................................................................2,350 LF
TURBIDITY CURTAIN .................................................................................................22 LF

LEGEND
PROPOSED MINOR CONTOUR
EXISTING MAJOR/MINOR CONTOUR
PROPOSED MAJOR CONTOUR
NORMAL WATER LEVEL AFTER HYDROLOGIC RECONNECTION
LIMITS OF GRADING
SILT FENCE
PLANTING ZONES WEST POND

SUBMERGENT WETLAND: BETWEEN ELEVATIONS 576'-577'........................... 42,040 SF, 0.97 AC
EMERGENT WETLAND A: BETWEEN ELEVATIONS 577'-579'............................ 91,987 SF, 2.11 AC
EMERGENT WETLAND B: BETWEEN ELEVATIONS 577'-579'............................ 9,140 SF, 0.21 AC
SCRUB SHRUB: BETWEEN ELEVATIONS 578'-580'............................................ 5,032 SF, 0.12 AC
UPLAND A: ABOVE ELEVATION 579'.................................................................... 5,940 SF, 0.14 AC
UPLAND B: ABOVE ELEVATION 579'.................................................................... 17,646 SF, 0.41 AC
UPLAND C: ABOVE ELEVATION 579'.................................................................... 3,015 SF, 0.07 AC

NORMAL WATER LEVEL AFTER HYDROLOGIC RECONNECTION = 577.65'

* SEE SHEET L3 FOR PLANT LISTS.
Normal Water Level After Hydrologic Reconnection = 577.77'

Wildlife Habitat Structures (6), See Detail Sheet D1

Legend

- Benchmark
- Property Lines
- Existing Major/Minor Contour
- Proposed Major Contour
- Proposed Minor Contour
- Normal Water Level After Hydrologic Reconnection
- Limits of Grading
- Wildlife Habitat Structures (6)

Planting Zones East Pond

- Submergent Wetland: Between Elevations 576'-577'...........................42,040 SF, 0.97 AC
- Emergent Wetland A: Between Elevations 577'-579'............................91,987 SF, 2.11 AC
- Scrub/Shrub: Between Elevations 578'-580'............................................5,032 SF, 0.12 AC
- Upland A: Above Elevation 579'....................................................................5,940 SF, 0.14 AC
- Emergent Wetland B: Between Elevations 577'-579'............................9,140 SF, 0.21 AC
- Upland B: Above Elevation 579'....................................................................17,646 SF, 0.41 AC
- Upland C: Above Elevation 579'....................................................................3,015 SF, 0.07 AC
- Submergent Wetland: Between Elevations 576'-577...........................21,867 SF, 0.50 AC
- Emergent Wetland A: Between Elevations 577'-579'............................177,503 SF, 4.08 AC
- Upland A: Above Elevation 579'....................................................................2,264 SF, 0.05 AC
- Scrub/Shrub: Between Elevations 578'-580'............................................240 SF, 0.01 AC

See Sheet D3 for Plant Lists.
EMERGENT WETLAND A - 269,490 SF, 6.19 AC
EMERGENT WETLAND B - 9,140 SF, 0.21 AC
SCRUB SHRUB SEED MIX A - 269,490 SF, 6.19 AC
SCRUB SHRUB SEED MIX B - 9,140 SF, 0.21 AC
UPLAND SEED MIX A - 8,204 SF, 0.19 AC
UPLAND SEED MIX B - 17,646 SF, 0.41 AC
UPLAND SEED MIX C - 3,015 SF, 0.07 AC

NOTES:
1. ALL LIVE PLANT MATERIAL (PLUGS & SHRUBS) TO BE INSTALLED IN LOCATIONS AT THE DIRECTION OF THE ENGINEER.
2. PLANTS SHALL BE INSTALLED IN CLUSTERS OF 200-500, SPACED 1.5' O.C. AND PROTECTED WITH ANIMAL EXCLUSION FENCING. (SEE DETAIL SHEET D1)
ROAD RESTORATION NOTES:

1. The CONTRACTOR shall coordinate with the Muskegon County Road Commission (MCRC) and obtain a MCRC construction permit prior to project initiation. A city of North Muskegon Right of Way permit shall also be obtained if needed.

2. CONTRACTOR shall sign on to the permit(s) as a condition of contract award.

3. An MDOT 4C 2" hot mix asphalt (HMA) overlay shall be placed between Dykstra Road and 10 feet south of hauling route limits upon hauling completion.

4. Contractor shall install butt joints on either side of the Bear Creek bridge, at the Dykstra road intersection, and the southern HMA limit.

5. CONTRACTOR shall repair curbs at the Dykstra Road intersection, add compacted gravel to shoulders, stabilize embankment from slopes, provide traffic control, and adjust driveways, as needed.

ROAD RESTORATION - TYPICAL SECTION

- 2-INCH MDOT 4C HOT MIX ASPHALT (HMA)
- SLOPE VARIES
- MATCH EXISTING
- SHOULDER VARIES
- MATCH EXISTING

CONSTRUCTION LIMITS

- 2-INCH MDOT 4C HOT MIX ASPHALT (HMA)
- SLOPE VARIES
- MATCH EXISTING
- SHOULDER VARIES
- MATCH EXISTING

LIMIT OF ROAD RESTORATION (10' SOUTH OF HAULING ROUTE LIMITS)

APPROXIMATE ACCESS ROAD / STAGING AREA LOCATION

PROJECT SITE INGRESS/EGRESS AND LIMITS OF ROAD RESTORATION

WEST POND

East Pond

Bear Creek

Witham Road Restoration Plan

West Michigan Shoreline Regional Development Commission & the Muskegon Lake Watershed Partnership

Bear Creek Hydrologic Reconnection & Habitat Enhancement Project

Witham Road Restoration Plan
SILT FENCE INSTALLATION - DETAIL

1. SILT FENCE SHALL BE PLACED ON SLOPE CONTURS TO MAXIMIZE PONDDING EFFICIENCY.
2. INSPECT AND REPAIR FENCE AFTER EACH STORM EVENT AND REMOVE SEDIMENT WHEN NECESSARY.
3. REMOVED SEDIMENT SHALL BE DEPOSITED TO AN AREA THAT WILL NOT CONTRIBUTE SEDIMENT OFF-SITE AND CAN BE PERMANENTLY STABILIZED.

NOTES:
1.) SLOPE SURFACE SHALL BE FREE OF ROCKS, CLODS, STICKS AND GRASS.
2.) APPLY PERMANENT SEEDING BEFORE PLACING BLANKETS.
3.) LAY BLANKETS LOOSELY AND STAKE TO MAINTAIN DIRECT CONTACT WITH SOIL CONTACT SURFACES.
4.) INSTALL NORTH AMERICAN GREEN C-125BN OR EQUIVALENT (COIR MATS AND BLANKETS SHALL HAVE GOOD SOIL CONTACT.
5.) BLANKETS SHALL BE INSTALLED PARALLEL TO CREEK CHANNEL. THE LOWEST ELEVATION BLANKET SHALL BE AT THE UPPER EDGE KEYED INTO THE SUBSTRATE A MINIMUM OF SIX INCHES.
6.) EACH SUCCESSIVE BLANKET UP THE SLOPE SHALL OVERLAP THE LOWER BLANKET UP TO A MAXIMUM OF 12 INCHES.
7.) UPSTREAM BLANKETS SHALL OVERLAP DOWNSTREAM BLANKETS BY A MINIMUM OF THREE FEET. THE UPPER MOST BLANKET ON A SLOPE SHALL HAVE THE ENTIRE SURFACE OF THE BLANKET BELOW THE DEPTH OF THE CHANNEL FOR THE LENGTH OF THE BLANKET.
8.) THE ENTIRE SURFACE OF THE BLANKET SHALL BE SECURED BY A STAKE PATTERN EVERY 3 FEET OR SQUARE YARD.
9.) BLANKETS/MATS SHALL HAVE GOOD SOIL CONTACT.
10.) BLEND BLANKETS INSTALLED HORIZONTALLY ACROSS SIDE SLOPES.

1-800-482-7171
BEFORE YOU DIG
72 HOURS
(TOLL FREE)
CALL MISS DIG

PERSPECTIVE VIEW
SIDE OF POST
SECTION VIEW

1/8" = 1' 0"