

MEMO

To: Julie VanderWiere, Charter Township of Texas
From: Steven M. Rice, CWB, GEI Consultants of Michigan, P.C. (GEI)
cc: Thomas Wheat, P.E., Prein & Newhof
Date: May 26, 2021
Re: Weekly Wetland Survey and Assessment Report
EGLE Permit No: WRP015489 v.1, Site Name: 39-7244 Bentwood Trail-Kalamazoo

On Thursday, May 20, 2021, a GEI wetland ecologist conducted the weekly survey and assessment of each of the seven (7) monitoring sites that were assessed in 2019. In addition to these seven original sites, GEI also conducted assessments of two monitoring sites (C3 and C5 near Scouter's Pond) that were added in 2020 as reference sites in agreement with the Michigan Department of Environment, Great Lakes and Energy (EGLE – formerly MDEQ) (Figure 1). The purpose of weekly assessments is to evaluate each of the seven 30-foot-radius monitoring sites for any changes in ecological health associated with pumping activities, and compare them to observed condition changes in the two Scouter's Pond reference monitoring sites that are located outside the influence of pumping activities.

The results of this week's survey and assessment are presented below.

General Vegetation Composition and Floristic Inventory

The nine monitoring sites are located within two vegetative communities including rich tamarack swamp (Sites 1-4, C3 and C5) and high-quality shrub/emergent wetland (Sites 5-7) (Figure 1).

GEI staff noted all species present within the nine designated monitoring sites along with approximate absolute percent cover by species (Tables 1-9). Photographs in each cardinal direction (north, south, east, and west) were taken from each staff gage (center point of each monitoring plot) and are contained in Attachment A.

Water Levels

In general, the rich tamarack swamp community contained unconsolidated muck and organic soils with shallow levels of inundation within the Site 1-4, C3, and C5 monitoring plots. The high-quality shrub/emergent wetland complex also contained unconsolidated muck and organic soils with slightly deeper water levels within the Site 5-7 monitoring plots.

Water levels were recorded at all nine monitoring sites (Table 10). Water elevations ranged from 874.66' to 885.16' NAVD88 at the time of the weekly field reconnaissance.



Trees and shrubs were growing on hummocks at all monitoring sites, and water levels were recorded at those representative woody shrubs and trees (Figure 2) and water depths were measured (Table 11). During the site assessment on May 20, 2021, water depths at all representative trees and shrubs were zero except in Site 5 (Table 11). Minimum and maximum pool depths within each 30-foot monitoring plot were estimated for each site and recorded to the nearest inch (Table 12).

Vegetative Health and Condition

As temperatures have risen over the past few weeks, the herbaceous vegetative cover has increased rapidly in each of the nine monitoring sites. Skunk cabbage (*Symplocarpus foetidus*) and jewelweed (*Impatiens capensis*) are among the most dominant species, and new herbaceous species are observed and noted each week. No obvious signs of stressed or stunted woody or herbaceous vegetation were noted, except for red maples (*Acer rubrum*). The red maples at Sites 3, 4, and 6 were observed with far fewer buds emerging on them, in contrast to the robust growth in buds on adjacent tree and shrub species. In recent weeks, GEI has observed a growing number of buds emerging on the weaker red maples, but their growth still lags behind the adjacent trees, shrubs, and other maples outside the monitoring area.

Important to note, several shrubs appear to have been cut at Sites 1, 3, 4, 5, 6, C3, and C5. It appears that they were cut late last fall or early winter in an attempt to provide better access for reading the staff gauges during the winter. This may have an impact on species composition and/or percent cover at these sites.

This report will be the final monitoring report for the spring and summer of 2021, since the water pumps were shut off as of Thursday May 20th, 2021. Additional monitoring reports may be requested, if the pumps are turned back on later in the growing season.

Attachments

Figure 1. Wetland Monitoring Site Location Map

Figure 2. Wetland Monitoring Site Plots

Figure 3. Bentwood Trail Supplemental Photo Point Locations

Table 1. Floristic Inventory and Estimated Percent Cover – Monitoring Site 1

Table 2. Floristic Inventory and Estimated Percent Cover – Monitoring Site 2

Table 3. Floristic Inventory and Estimated Percent Cover – Monitoring Site 3

Table 4. Floristic Inventory and Estimated Percent Cover – Monitoring Site 4

Table 5. Floristic Inventory and Estimated Percent Cover – Monitoring Site 5

Table 6. Floristic Inventory and Estimated Percent Cover – Monitoring Site 6

Table 7. Floristic Inventory and Estimated Percent Cover – Monitoring Site 7

Table 8. Floristic Inventory and Estimated Percent Cover – Monitoring Site C3

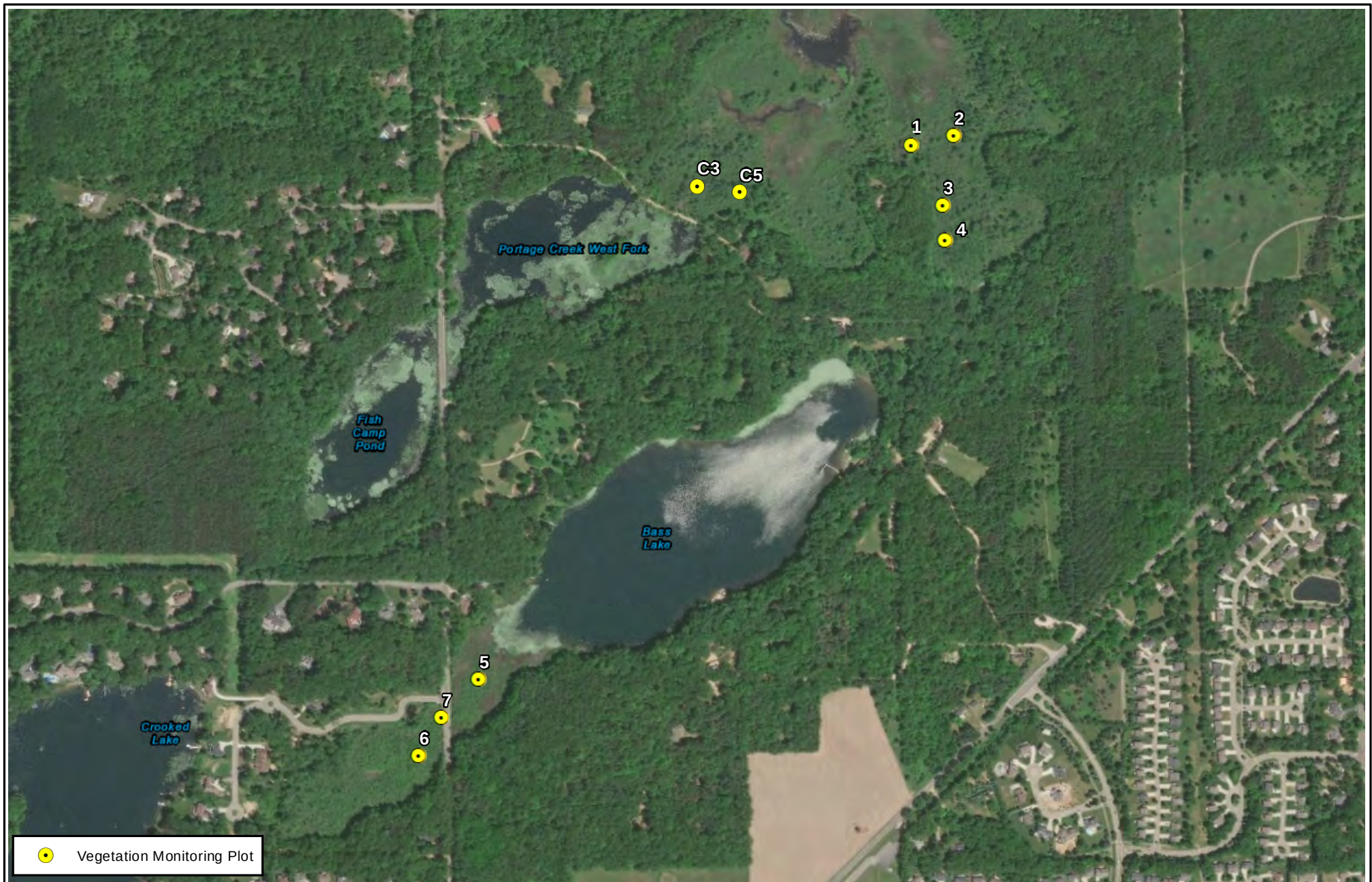
Table 9. Floristic Inventory and Estimated Percent Cover – Monitoring Site C5

Table 10. Staff Gage Water Levels

Table 11. Representative Woody Water Level Monitoring Locations and Water Depths

Table 12. Monitoring Site Minimum and Maximum Depths of Inundation

Attachment A. Monitoring Site Photographs



MDEQ Permit No. WRP015489 v.1
Bentwood Trail
Kalamazoo County, Michigan

Charter Township of Texas



0 250 500 750 1,000 Feet
1 inch = 750 feet

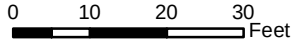


2020 VEGETATION MONITORING PLOTS

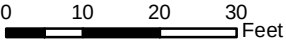
Project: 1902439

Figure: 1



MDEQ Permit No. WRP015489 v.1 Bentwood Trail Kalamazoo County, Michigan	  1 inch = 25 feet		WETLAND MONITORING SITE PLOT 1	
Charter Township of Texas			Project: 1902439	Figure: 2

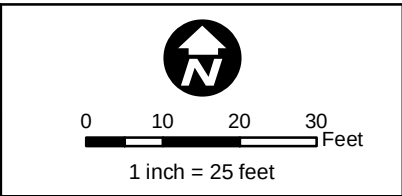


MDEQ Permit No. WRP015489 v.1 Bentwood Trail Kalamazoo County, Michigan	  1 inch = 25 feet		WETLAND MONITORING SITE PLOT 2
Charter Township of Texas			Project: 1902439 Figure: 2



MDEQ Permit No. WRP015489 v.1
 Bentwood Trail
 Kalamazoo County, Michigan

Charter Township of Texas



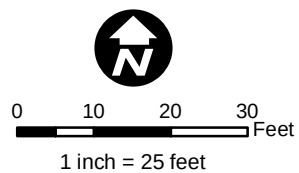
**WETLAND MONITORING
 SITE PLOT 3**

Project: 1902439 Figure: 2



MDEQ Permit No. WRP015489 v.1
Bentwood Trail
Kalamazoo County, Michigan

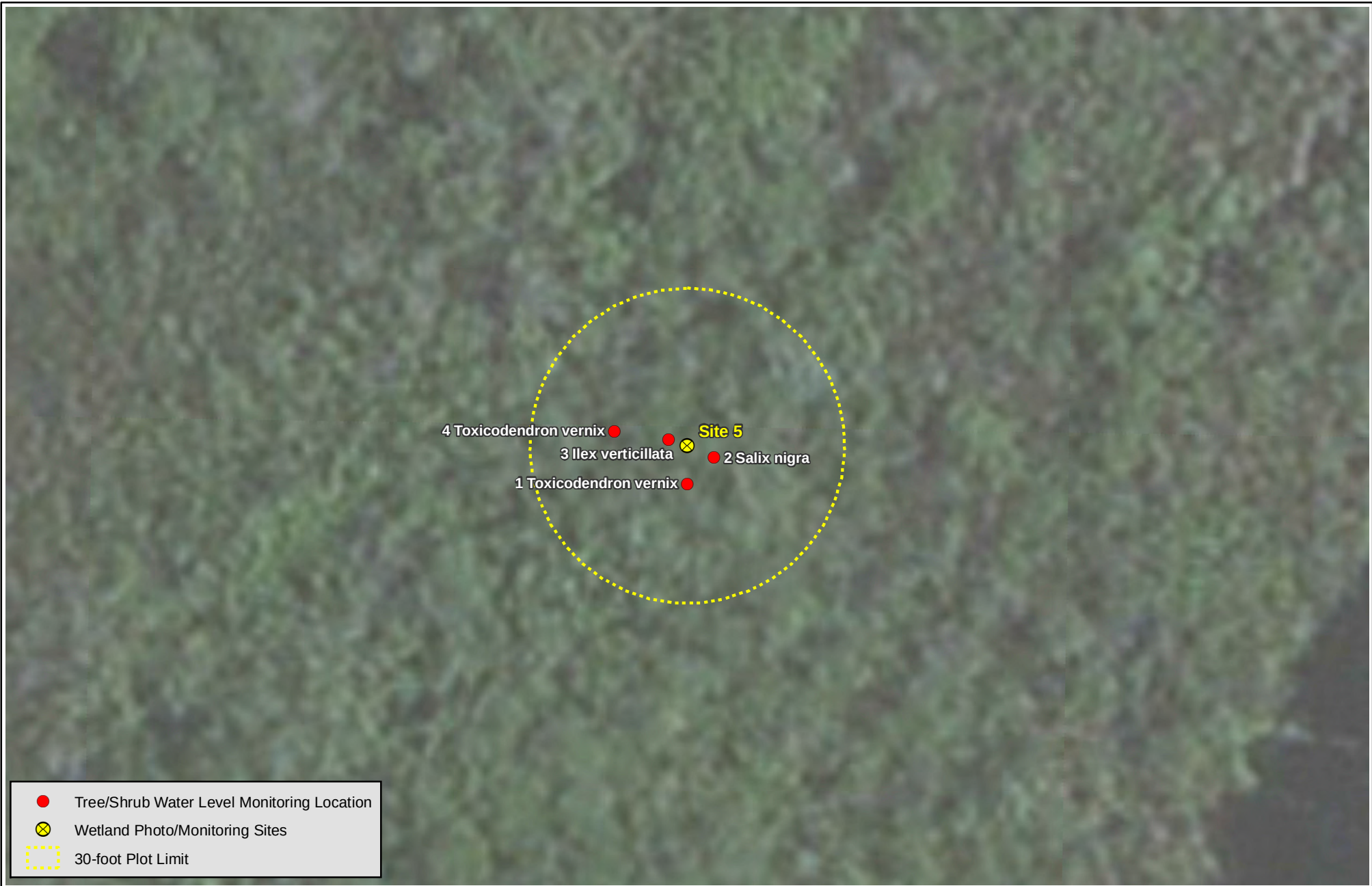
Charter Township of Texas

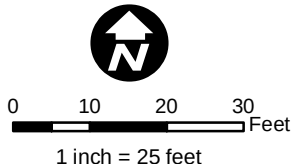


WETLAND MONITORING SITE PLOT 4

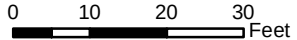
Project: 1902439

Figure: 2



MDEQ Permit No. WRP015489 v.1 Bentwood Trail Kalamazoo County, Michigan			WETLAND MONITORING SITE PLOT 5
Charter Township of Texas			Project: 1902439 Figure: 2

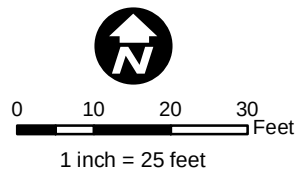


MDEQ Permit No. WRP015489 v.1 Bentwood Trail Kalamazoo County, Michigan	  1 inch = 25 feet		WETLAND MONITORING SITE PLOT 6	
Charter Township of Texas			Project: 1902439	Figure: 2



MDEQ Permit No. WRP015489 v.1
Bentwood Trail
Kalamazoo County, Michigan

Charter Township of Texas



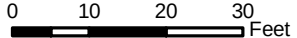
WETLAND MONITORING SITE PLOT 7

Project: 1902439

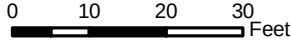
Figure: 2

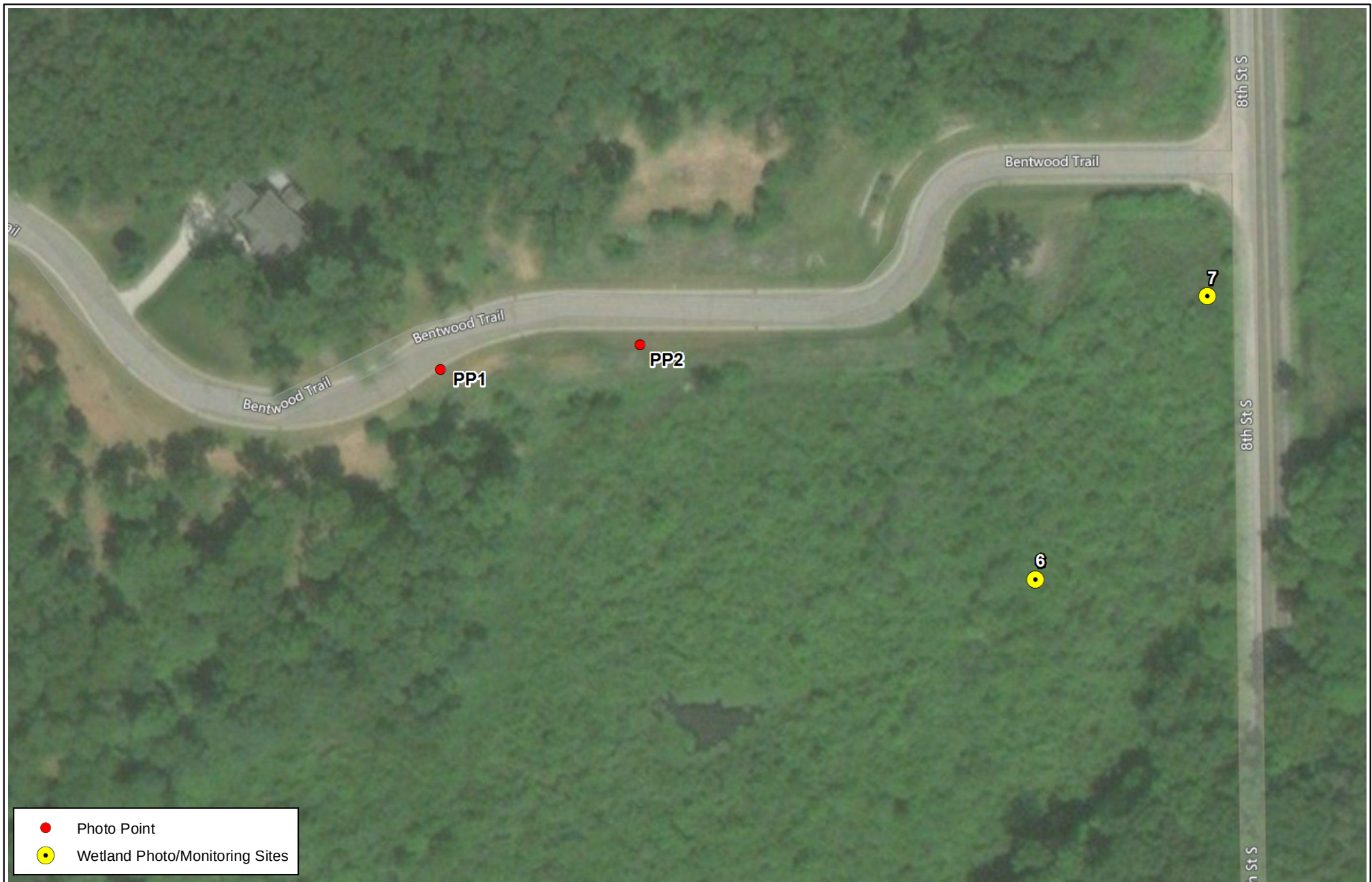


- Tree/Shrub Water Level Monitoring Location
- ⊗ Wetland Photo/Monitoring Sites
- ⋯ 30-foot Plot Limit

MDEQ Permit No. WRP015489 v.1 Bentwood Trail Kalamazoo County, Michigan	  1 inch = 25 feet		WETLAND MONITORING SITE PLOT C3	
Charter Township of Texas			Project: 1902439	Figure: 2



MDEQ Permit No. WRP015489 v.1 Bentwood Trail Kalamazoo County, Michigan	  1 inch = 25 feet		WETLAND MONITORING SITE PLOT C5
Charter Township of Texas			Project: 1902439 Figure: 2



MDEQ Permit No. WRP015489 v.1 Bentwood Trail Kalamazoo County, Michigan	0 50 100 150 Feet 1 inch = 100 feet	GEI Consultants	BENTWOOD TRAIL SUPPLEMENTAL PHOTO POINT LOCATIONS	
Charter Township of Texas			Project: 1902439	Figure: 3

Scientific Name	Common Name	Approximate Percent Cover
<i>Acer rubrum</i>	Red Maple	2
<i>Amelanchier arborea</i>	Juneberry	1
<i>Bidens cernua</i>	Nodding Beggartick	10
<i>Calamagrostis canadensis</i>	Bluejoint Grass	1
<i>Caltha palustris</i>	Marsh-Marigold	1
<i>Cardamine bulbosa</i>	Spring Cress	1
<i>Cardamine pensylvanica</i>	Pennsylvania Bittercress	1
<i>Carex stipata</i>	Sedge	5
<i>Carex stricta</i>	Tussock Sedge	5
<i>Cephalanthus occidentalis</i>	Buttonbush	1
<i>Cornus foemina</i>	Stiff Dogwood	5
<i>Epilobium coloratum</i>	Cinnamon Willow-Herb	5
<i>Equisetum fluviatile</i>	Water Horsetail	2
<i>Eupatorium perfoliatum</i>	Boneset	0
<i>Frangula alnus</i>	Glossy Buckthorn	5
<i>Galium obtusum</i>	Wild Madder	1
<i>Geum canadense</i>	White Avens	1
<i>Geum laciniatum</i>	Rough Avens	1
<i>Impatiens capensis</i>	Jewelweed	20
<i>Iris virginica</i>	Blue Flag Iris	2
<i>Larix laricina</i>	Tamarack	15
<i>Lemna minor</i>	Duckweed	1
<i>Leersia oryzoides</i>	Rice Cutgrass	0
<i>Lindera benzoin</i>	Spicebush	5
<i>Lobelia siphilitica</i>	Great Blue Lobelia	0
<i>Micranthes pensylvanica</i>	Swamp Saxifrage	1
<i>Onoclea sensibilis</i>	Sensitive Fern	5
<i>Osmunda regalis</i>	Royal Fern	1
<i>Packera aurea</i>	Common Ragwort	5
<i>Parthenocissus quinquefolia</i>	Virginia Creeper	0
<i>Persicaria amphibia</i>	Water Smartweed	0
<i>Persicaria sagittata</i>	Arrow-Leaved Tear-Thumb	0
<i>Phragmites australis</i> subsp. <i>australis</i>	Common Reed	1
<i>Phalaris canariensis</i>	Reed Canary Grass	5
<i>Populus deltoides</i>	Cottonwood	1
<i>Prunus virginica</i>	Black Cherry	1
<i>Onoclea sensibilis</i>	Sensitive Fern	5
<i>Osmundastrum cinnamomeum</i>	Cinnamon Fern	1
<i>Oxypolis rigidior</i>	Cowbane	0
<i>Ranunculus recurvatus</i>	Hooked Crowfoot	1
<i>Ranunculus sceleratus</i>	Cursed Crowfoot	1
<i>Rosa multiflora</i>	Multiflora Rose	1
<i>Rosa palustris</i>	Swamp Rose	1
<i>Rubus pubescens</i>	Dwarf Raspberry	1
<i>Scirpus cyperinus</i>	Woolgrass	0

Scientific Name	Common Name	Approximate Percent Cover
<i>Solidago gigantea</i>	Late Goldenrod	5
<i>Solidago rugosa</i>	Wrinkleleaf Goldenrod	1
<i>Solidago uliginosa</i>	Bog Goldenrod	1
<i>Symphyotrichum puniceum</i>	Swamp Aster	0
<i>Symplocarpus foetidus</i>	Skunk Cabbage	5
<i>Taraxacum officinale</i>	Common Dandelion	1
<i>Thelypteris palustris</i>	Marsh Fern	1
<i>Toxicodendron vernix</i>	Poison Sumac	10
<i>Typha x glauca</i>	Hybrid Cattail	2
<i>Viburnum opulus</i>	Guelder Rose	5
<i>Vitis riparia</i>	Riverbank Grape	0

Scientific Name	Common Name	Approximate Percent Cover
<i>Acer rubrum</i>	Red Maple	5
<i>Arisaema triphyllum</i>	Jack-In-The-Pulpit	0
<i>Bidens cernua</i>	Nodding Beggartick	0
<i>Cardamine bulbosa</i>	Spring Cress	5
<i>Calamagrostis canadensis</i>	Bluejoint Grass	5
<i>Carex</i> spp.	Sedge	5
<i>Cephalanthus occidentalis</i>	Buttonbush	1
<i>Cornus foemina</i>	Stiff Dogwood	5
<i>Dryopteris intermedia</i>	Evergreen Woodfern	1
<i>Epilobium coloratum</i>	Cinnamon Willow-Herb	1
<i>Erigeron annuus</i>	Daisy Fleabane	0
<i>Fragaria virginiana</i>	Wild Strawberry	1
<i>Fragula alnus</i>	Glossy Buckthorn	15
<i>Fraxinus nigra</i>	Black Ash	1
<i>Galium obtusum</i>	Wild Madder	1
<i>Geum canadense</i>	White Avens	3
<i>Geum laciniatum</i>	Rough Avens	1
<i>Glyceria</i> sp.	Manna Grass	0
<i>Impatiens capensis</i>	Jewelweed	20
<i>Larix laricina</i>	Tamarack	20
<i>Leersia oryzoides</i>	Rice Cutgrass	0
<i>Lindera benzoin</i>	Spicebush	5
<i>Linnaea borealis</i>	Twinflower	1
<i>Lonicera x bella</i>	Showy Fly Honeysuckle	5
<i>Lycium barbarum</i>	Matrimone-Vine	5
<i>Maianthemum canadense</i>	Canada Mayflower	5
<i>Micranthes pensylvanica</i>	Swamp Saxifrage	1
<i>Morus alba</i>	White Mulberry	1
<i>Onoclea sensibilis</i>	Sensitive Fern	10
<i>Osmundastrum cinnamomeum</i>	Cinnamon Fern	1
<i>Packera aurea</i>	Common Ragwort	5
<i>Parthenocissus quinquefolia</i>	Virginia Creeper	0
<i>Phragmites australis</i> subsp. <i>australis</i>	Common Reed	1
<i>Potentilla</i> sp.	Cinquefol	0
<i>Prunus serotina</i>	Black Cherry	5
<i>Quercus bicolor</i>	Swamp White Oak	1
<i>Ranunculus recurvatus</i>	Hooked Crowfoot	1
<i>Ribes americanum</i>	Wild Black Currant	1
<i>Rosa multiflora</i>	Multiflora Rose	1
<i>Rosa palustris</i>	Swamp Rose	1
<i>Rubus pubescens</i>	Dwarf Raspberry	5
<i>Rubus strigosus</i>	American Raspberry	1
<i>Solidago gigantea</i>	Late Goldenrod	1
<i>Solidago rugosa</i>	Wrinkleleaf Goldenrod	1
<i>Solanum dulcamara</i>	Woody Nightshade	0

Scientific Name	Common Name	Approximate Percent Cover
<i>Symphyotrichum firmum</i>	Smooth Swamp Aster	0
<i>Symplocarpus foetidus</i>	Skunk Cabbage	5
<i>Toxicodendron vernix</i>	Poison Sumac	10
<i>Toxicodendron rydbergii</i>	Poison Ivy	0
<i>Typha x glauca</i>	Hybrid Cattail	1
<i>Veronica officinalis</i>	Common Speedwell	1
<i>Viburnum dentatum</i>	Southern Arrowwood	1
<i>Viburnum opulus</i>	Guelder Rose	1
<i>Vitis riparia</i>	Riverbank Grape	0

Scientific Name	Common Name	Approximate Percent Cover
<i>Acer rubrum</i>	Red Maple	5
<i>Bidens cernua</i>	Nodding Beggartick	50
<i>Calamagrostis canadensis</i>	Bluejoint Grass	20
<i>Cardamine bulbosa</i>	Spring Cress	1
<i>Cardamine pensylvanica</i>	Pennsylvania Bitter Cress	1
<i>Carex stipata</i>	Sedge	5
<i>Carex stricta</i>	Tussock Sedge	20
<i>Chelone glabra</i>	Turtlehead	0
<i>Cornus foemina</i>	Stiff Dogwood	1
<i>Dryopteris carthusiana</i>	Spinulose Woodfern	1
<i>Epilobium coloratum</i>	Cinnamon Willow-Herb	2
<i>Equisetum fluviatile</i>	Water horsetail	1
<i>Eupatorium perfoliatum</i>	Common Boneset	0
<i>Euthamia graminifolia</i>	Grass Leaf Goldenrod	0
<i>Frangula alnus</i>	Glossy Buckthorn	20
<i>Impatiens capensis</i>	Jewelweed	10
<i>Lathyrus palustris</i>	Marsh Pea	0
<i>Larix laricina</i>	Tamarack	10
<i>Leersia oryzoides</i>	Rice Cutgrass	0
<i>Lemna minor</i>	Duckweed	1
<i>Lindera benzoin</i>	Spicebush	2
<i>Lobelia siphilitica</i>	Great Blue Lobelia	0
<i>Lonicera x bella</i>	Showy Fly Honeysuckle	1
<i>Onoclea sensibilis</i>	Sensitive Fern	1
<i>Osmundastrum cinnamomeum</i>	Cinnamon Fern	1
<i>Pakera aurea</i>	Common Ragwort	2
<i>Persicaria amphibia</i>	Water Smartweed	0
<i>Phalaris canariensis</i>	Reed Canary Grass	1
<i>Phragmites australis</i> subsp. <i>australis</i>	Common Reed	1
<i>Pinus strobus</i>	White Pine	5
<i>Rosa multiflora</i>	Multiflora Rose	1
<i>Rosa palustris</i>	Swamp Rose	5
<i>Salix nigra</i>	Black Willow	1
<i>Sambucus canadensis</i>	Common Elderberry	1
<i>Scirpus cyperinus</i>	Woolgrass	1
<i>Solidago rugosa</i>	Wrinkleleaf Goldenrod	1
<i>Solidago gigantea</i>	Late Goldenrod	3
<i>Spiraea alba</i>	Meadowsweet	15
<i>Symphyotrichum puniceum</i>	Swamp Aster	5
<i>Symplocarpus foetidus</i>	Skunk Cabbage	10
<i>Toxicodendron vernix</i>	Poison Sumac	5
<i>Typha x glauca</i>	Hybrid Cattail	1
<i>Viburnum dentatum</i>	Arrowwood	0
<i>Viburnum opulus</i>	Guelder Rose	1

Scientific Name	Common Name	Approximate Percent Cover
<i>Acer rubrum</i>	Red Maple	5
<i>Bidens cernua</i>	Nodding Beggartick	35
<i>Calamagrostis canadensis</i>	Bluejoint Grass	5
<i>Caltha palustris</i>	Marsh Marigold	1
<i>Cardamine bulbosa</i>	Spring Cress	5
<i>Cardamine pensylvanica</i>	Pennsylvania Bittercress	1
<i>Carex</i> sp.	Sedge	5
<i>Carex stipata</i>	Sedge	2
<i>Cephalanthus occidentalis</i>	Buttonbush	1
<i>Chenopodium glaucum</i>	Oak-Leaved Goosefoot	0
<i>Equisetum fluviatile</i>	Water Horsetail	1
<i>Frangula alnus</i>	Glossy Buckthorn	20
<i>Geum canadense</i>	White Avens	0
<i>Impatiens capensis</i>	Jewelweed	10
<i>Larix laricina</i>	Tamarack	5
<i>Leersia oryzoides</i>	Rice Cutgrass	0
<i>Lemna minor</i>	Duckweed	5
<i>Onoclea sensibilis</i>	Sensitive Fern	5
<i>Osmunda regalis</i>	Royal Fern	2
<i>Osmundastrum cinnamomeum</i>	Cinnamon Fern	2
<i>Packera aurea</i>	Common Ragwort	2
<i>Persicaria amphibia</i>	Water Smartweed	1
<i>Phalaris canariensis</i>	Reed Canary Grass	1
<i>Pilea pumila</i>	Clearweed	0
<i>Ranunculus sceleratus</i>	Cursed Crowfoot	1
<i>Rosa multiflora</i>	Multiflora Rose	1
<i>Rumex orbiculatus</i>	Greater Water Dock	1
<i>Salix bebbiana</i>	Beaked Willow	1
<i>Salix nigra</i>	Black Willow	1
<i>Scirpus cyperinus</i>	Woolgrass	0
<i>Solidago gigantea</i>	Late Goldenrod	1
<i>Spiraea alba</i>	Meadowsweet	5
<i>Symplocarpus foetidus</i>	Skunk Cabbage	15
<i>Toxicodendron vernix</i>	Poison Sumac	5
<i>Viburnum dentatum</i>	Southern Arrowwood	1
<i>Vitis riparia</i>	Riverbank Grape	0

Scientific Name	Common Name	Approximate Percent Cover
<i>Acer rubrum</i>	Red Maple	1
<i>Amelanchier arborea</i>	Juneberry	1
<i>Betula pumila</i>	Bog Birch	5
<i>Calamagrostis canadensis</i>	Bluejoint Grass	0
<i>Caltha palustris</i>	Marsh Marigold	1
<i>Carex lacustris</i>	Lake Sedge	2
<i>Carex stricta</i>	Tussock Sedge	2
<i>Cicuta bulbifera</i>	Water Hemlock	1
<i>Cornus foemina</i>	Stiff Dogwood	3
<i>Cornus sericea</i>	Red Osier Dogwood	1
<i>Epilobium coloratum</i>	Cinnamon Willow-Herb	0
<i>Eupatorium perfoliatum</i>	Boneset	2
<i>Frangula alnus</i>	Glossy Buckthorn	10
<i>Galium obtusum</i>	Wild Madder	1
<i>Ilex verticillata</i>	Common Winterberry	5
<i>Impatiens capensis</i>	Jewelweed	5
<i>Lathyrus palustris</i>	Marsh Pea	0
<i>Lemna minor</i>	Duckweed	5
<i>Lythrum salicaria</i>	Purple Loosestrife	1
<i>Nuphar advena</i>	Yellow Pond-Lily	0
<i>Onoclea sensibilis</i>	Sensitive Fern	5
<i>Osmunda regalis</i>	Royal Fern	15
<i>Phragmites australis</i> subsp. <i>australis</i>	Common Reed	1
<i>Pilea pumila</i>	Clearweed	0
<i>Polygonum hydropiperoides</i>	Swamp Smartweed	2
<i>Rosa palustris</i>	Swamp Rose	1
<i>Rumex orbiculatus</i>	Greater Water Dock	1
<i>Salix discolor</i>	Pussy Willow	5
<i>Salix nigra</i>	Black Willow	7
<i>Solanum dulcamara</i>	Woody Nightshade	0
<i>Solidago</i> sp.	Goldenrod	1
<i>Spiraea alba</i>	Meadowsweet	3
<i>Thelypteris palustris</i>	Marsh Fern	1
<i>Toxicodendron vernix</i>	Poison Sumac	5
<i>Typha x glauca</i>	Hybrid Cattail	30

Scientific Name	Common Name	Approximate Percent Cover
<i>Acer rubrum</i>	Red Maple	5
<i>Alnus incana</i>	Grey Alder	1
<i>Amelanchier arborea</i>	Juneberry	1
<i>Betula pumila</i>	Bog Birch	1
<i>Bidens cernua</i>	Nodding Beggartick	5
<i>Boehmeria cylindrica</i>	False Nettle	0
<i>Calamagrostis canadensis</i>	Bluejoint Grass	0
<i>Carex</i> spp.	Sedge	5
<i>Carex stricta</i>	Tussock Sedge	5
<i>Carex striata</i>	Sedge	5
<i>Cephalanthus occidentalis</i>	Buttonbush	10
<i>Cicuta bulbifera</i>	Water Hemlock	1
<i>Cornus foemina</i>	Stiff Dogwood	1
<i>Decodon verticillatus</i>	Swamp Loosestrife	5
<i>Frangula alnus</i>	Glossy Buckthorn	10
<i>Ilex verticillata</i>	Common Winterberry	15
<i>Impatiens capensis</i>	Jewelweed	2
<i>Leersia oryzoides</i>	Rice Cutgrass	0
<i>Lemna minor</i>	Duckweed	5
<i>Ludwigia palustris</i>	Water purslane	2
<i>Lycium barbarum</i>	Matrimony Vine	1
<i>Lythrum salicaria</i>	Purple Loosestrife	2
<i>Onoclea sensibilis</i>	Sensitive Fern	3
<i>Osmunda regalis</i>	Royal Fern	8
<i>Osmundastrum cinnamomeum</i>	Cinnamon Fern	1
<i>Polygonum hydropiperoides</i>	Swamp Smartweed	5
<i>Rosa palustris</i>	Swamp Rose	1
<i>Rubus hispidus</i>	Swamp Dewberry	0
<i>Rumex orbiculatus</i>	Greater Water Dock	1
<i>Salix nigra</i>	Black Willow	5
<i>Scirpus cyperinus</i>	Woolgrass	0
<i>Solidago gigantea</i>	Late Goldenrod	0
<i>Thelypteris palustris</i>	Marsh Fern	2
<i>Toxicodendron vernix</i>	Poison Sumac	15
<i>Ulmus americana</i>	American Elm	0

Scientific Name	Common Name	Approximate Percent Cover
<i>Acer rubrum</i>	Red Maple	1
<i>Alnus incana</i>	Grey Alder	5
<i>Ambrosia trifida</i>	Giant Ragweed	0
<i>Barbarea vulgaris</i>	Yellow Rocket	1
<i>Betula pumila</i>	Bog Birch	2
<i>Bidens cernua</i>	Nodding Beggartick	2
<i>Carex</i> spp.	Sedge	1
<i>Carex stricta</i>	Tussock Sedge	20
<i>Cephalanthus occidentalis</i>	Buttonbush	5
<i>Cicuta bulbifera</i>	Water Hemlock	0
<i>Cornus foemina</i>	Stiff Dogwood	5
<i>Dactylis glomerata</i>	Orchard Grass	5
<i>Daucus carota</i>	Queen-Anne's-Lace	1
<i>Dipsacus fullonum</i>	Wild Teasel	0
<i>Frangula alnus</i>	Glossy Buckthorn	1
<i>Galium aparine</i>	Annual Bedstraw	0
<i>Ilex verticillata</i>	Common Winterberry	20
<i>Impatiens capensis</i>	Jewelweed	15
<i>Iris virginica</i>	Virginia Iris	0
<i>Lamium purpureum</i>	Purple Dead-Nettle	0
<i>Leersia oryzoides</i>	Rice Cutgrass	0
<i>Lemna minor</i>	Duckweed	10
<i>Lonicera x bella</i>	Showy Fly Honeysuckle	1
<i>Lythrum salicaria</i>	Purple Loosestrife	5
<i>Melilotis</i> sp.	Clover	1
<i>Osmunda regalis</i>	Royal Fern	7
<i>Phalaris arundinacea</i>	Reed Canarygrass	5
<i>Pinus strobus</i>	White Pine	0
<i>Poa pratensis</i>	Kentucky Bluegrass	1
<i>Potamogeton friesii</i>	Fries's Pondweed	0
<i>Rosa palustris</i>	Swamp Rose	1
<i>Rumex orbiculatus</i>	Greater Water Dock	0
<i>Salix discolor</i>	Pussy Willow	5
<i>Salix nigra</i>	Black Willow	10
<i>Scirpus cyperinus</i>	Woolgrass	0
<i>Solidago gigantea</i>	Late Goldenrod	1
<i>Symphyotrichum firmum</i>	Smooth Swamp Aster	1
<i>Toxicodendron vernix</i>	Poison Sumac	1
<i>Typha x glauca</i>	Hybrid Cattail	25
<i>Verbena hastata</i>	Blue Vervain	0
<i>Verbena urticifolia</i>	White Vervain	0

Scientific Name	Common Name	Approximate Percent Cover
<i>Acer rubrum</i>	Red Maple	5
<i>Arisaema triphyllum</i>	Jack-In-The-Pulpit	0
<i>Bidens cernua</i>	Nodding Beggartick	20
<i>Boehmeria cylindrica</i>	False Nettle	0
<i>Calamagrostis canadensis</i>	Bluejoint Grass	5
<i>Caltha palustris</i>	Marsh Marigold	5
<i>Cardamine bulbosa</i>	Spring Cress	2
<i>Carex comosa</i>	Sedge	5
<i>Carex crinita</i>	Sedge	1
<i>Carex leptalea</i>	Sedge	5
<i>Carex stricta</i>	Tussock Sedge	1
<i>Carex stipata</i>	Sedge	5
<i>Cornus sericea</i>	Red Osier Dogwood	1
<i>Cirsium muticum</i>	Swamp Thistle	0
<i>Epilobium coloratum</i>	Cinnamon Willow-Herb	0
<i>Equisetum hyemale</i>	Horsetail	2
<i>Frangula alnus</i>	Glossy Buckthorn	20
<i>Galium</i> sp.	Bedstraw	0
<i>Impatiens capensis</i>	Jewelweed	5
<i>Laportia canadensis</i>	Wood Nettle	0
<i>Larix laricina</i>	Tamarack	15
<i>Leersia oryzoides</i>	Rice Cut Grass	0
<i>Lemna minor</i>	Duckweed	0
<i>Lindera benzoin</i>	Spicebush	5
<i>Lonicera x bella</i>	Showy Fly Honeysuckle	5
<i>Maianthemum canadense</i>	Canada Mayflower	0
<i>Osmunda regalis</i>	Royal Fern	1
<i>Packera aurea</i>	Common Ragwort	2
<i>Parthenocissus quinquefolia</i>	Virginia Creeper	1
<i>Pilea pumila</i>	Clearweed	0
<i>Phalaris arundinacea</i>	Reed Canary Grass	1
<i>Polygonum hydropiperoides</i>	Swamp Smartweed	0
<i>Populus deltoides</i>	Cottonwood	1
<i>Prunus serotina</i>	Black Cherry	1
<i>Ranunculus recurvatus</i>	Hooked Crowfoot	1
<i>Ribes americanum</i>	Wild Black Currant	0
<i>Rosa multiflora</i>	Multiflora Rose	1
<i>Rosa palustris</i>	Swamp Rose	1
<i>Rubus pubescens</i>	Dwarf Raspberry	0
<i>Salix nigra</i>	Black Willow	10
<i>Scirpus cyperinus</i>	Woolgrass	1
<i>Spiraea alba</i>	Meadowsweet	1
<i>Symphyotrichum firmum</i>	Smooth Swamp Aster	0
<i>Symplocarpus foetidus</i>	Skunk Cabbage	75
<i>Thelypteris palustris</i>	Marsh Fern	1

Scientific Name	Common Name	Approximate Percent Cover
<i>Toxicodendron rydbergii</i>	Poison Ivy	0
<i>Toxicodendron vernix</i>	Poison Sumac	10
<i>Typha x glauca</i>	Hybrid Cattail	2
<i>Viola blanda</i>	Sweet White Violet	1
<i>Vitis riparia</i>	Riverbank Grape	0

Scientific Name	Common Name	Approximate Percent Cover
<i>Acer rubrum</i>	Red Maple	5
<i>Amphicarpaea bracteata</i>	Hog-Peanut	0
<i>Bidens cernua</i>	Nodding Beggartick	10
<i>Calamagrostis canadensis</i>	Bluejoint Grass	0
<i>Caltha palustris</i>	Marsh Marigold	1
<i>Cardamine bulbosa</i>	Spring Cress	1
<i>Carex</i> sp.	Sedge	1
<i>Carex stipata</i>	Sedge	1
<i>Chelone glabra</i>	Turtlehead	0
<i>Clematis virginiana</i>	Virgin's Bower	0
<i>Cornus foemina</i>	Gray Dogwood	1
<i>Dryopteris carthusiana</i>	Spinulose Woodfern	0
<i>Eupatorium perfoliatum</i>	Common Boneset	1
<i>Frangula alnus</i>	Glossy Buckthorn	20
<i>Galium</i> sp.	Bedstraw	0
<i>Geum canadense</i>	White Avens	0
<i>Geum laciniatum</i>	Rough Avens	0
<i>Glyceria striata</i>	Fowl Manna Grass	0
<i>Impatiens capensis</i>	Jewelweed	15
<i>Iris virginica</i>	Blue Flag Iris	1
<i>Larix laricina</i>	Tamarack	30
<i>Leersia oryzoides</i>	Rice Cut Grass	0
<i>Lemna minor</i>	Duckweed	10
<i>Lindera benzoin</i>	Spicebush	5
<i>Lobelia siphilitica</i>	Great Blue Lobelia	0
<i>Lonicera x bella</i>	Showy Fly Honeysuckle	5
<i>Lycium barbarum</i>	Matrimone-Vine	0
<i>Onoclea sensibilis</i>	Sensitive Fern	2
<i>Osmunda regalis</i>	Royal Fern	1
<i>Osmundastrum cinnamomeum</i>	Cinnamon Fern	0
<i>Packera aurea</i>	Common Ragwort	0
<i>Parthenocissus quinquefolia</i>	Virginia Creeper	0
<i>Persicaria</i> sp.	Smartweed	0
<i>Phalaris canariensis</i>	Reed Canary Grass	10
<i>Pilea pumila</i>	Clearweed	0
<i>Polygonum hydropiperoides</i>	Swamp Smartweed	0
<i>Lonicera x bella</i>	Showy Fly Honeysuckle	5
<i>Ranunculus recurvatus</i>	Hooked Crowfoot	1
<i>Rosa multiflora</i>	Multiflora Rose	1
<i>Rubus pubescens</i>	Dwarf Raspberry	1
<i>Salix nigra</i>	Black Willow	5
<i>Scirpus cyperinus</i>	Woolgrass	0
<i>Solidago rugosa</i>	Wrinkleleaf Goldenrod	1
<i>Solanum dulcamara</i>	Woody Nightshade	0
<i>Spiraea alba</i>	Meadowsweet	1

Scientific Name	Common Name	Approximate Percent Cover
<i>Symphyotrichum puniceum</i>	Swamp Aster	0
<i>Symplocarpus foetidus</i>	Skunk Cabbage	65
<i>Thelypteris palustris</i>	Marsh Fern	0
<i>Toxicodendron vernix</i>	Poison Sumac	10
<i>Typha x glauca</i>	Hybrid Cattail	5
<i>Viburnum lentago</i>	Nannyberry	5

Table 10. Staff Gage Water Levels

5/20/2021

Date	Monitoring Site Water Elevations (NAVD88)											
	Site 1	Site 2	Site 3	Site 4	Site 5	Site 6	Site 7	Site C3	Site C5	Well #8	Well #9	Well C6**
4/23/2021	874.95	875.74	877.78	878.19	884.80	885.36	885.10	878.90	879.32	879.30	877.94	880.19
4/30/2021	874.92	875.68	877.78	878.22	885.02	885.28	884.74	879.34	878.92	879.28	877.91	880.18
5/7/2021	874.92	875.68	877.78	878.18	884.56	885.22	884.62	879.34	878.92	879.34	878.00	880.25
5/14/2021	874.74	875.68	877.74	878.14	884.52	885.16	884.54	879.32	878.86	879.33	877.8	880.02
5/20/2021	874.66	875.68	877.72	878.10	884.52	885.16	884.54	879.32	878.86	879.31	877.71	879.96

** -Well located below Scouter's Pond

Top of well elevations

Well #8	885.65
Well #9	883.22
Well #C6	885.74

Table 11. Representative Woody Water Level Monitoring Locations and Water Depths

5/20/2021

Date	Feature ID	Monitoring Site Water Depths (inches)																																						
		Site 1				Site 2				Site 3				Site 4				Site 5				Site 6				Site 7				Site C3				Site C5						
		1 - Larix laricina	2 - Toxicodendron vernix	3 - Larix laricina	4 - Toxicodendron vernix	1 - Acer rubrum	2 - Larix laricina	3 - Larix laricina	4 - Toxicodendron vernix	1 - Toxicodendron vernix	2 - Toxicodendron vernix	3 - Larix laricina	4 - Toxicodendron vernix	1 - Larix laricina	2 - Larix laricina	3 - Acer rubrum	4 - Toxicodendron vernix	5 - Frangula alnus	1 - Toxicodendron vernix	2 - Salix nigra	3 - Ilex verticillata	4 - Toxicodendron vernix	1 - Toxicodendron vernix	2 - Amelanchier arborea	3 - Salix nigra	4 - Acer rubrum	1 - Cephalanthus occidentalis	2 - Ilex verticillata	3 - Salix discolor	4 - Acer rubrum	1 - Larix laricina	2 - Acer rubrum	3 - Larix laricina	4 - Larix laricina	1 - Larix laricina	2 - Acer rubrum	3 - Salix nigra	4 - Acer rubrum		
4/23/2020		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.0	2.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
4/30/2020		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.0	2.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
5/7/2020		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.0	2.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
5/14/2020		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.0	2.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
5/20/2020		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.0	2.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Site	Current Notes

Table 12. Monitoring Site Depths of Inundation

5/20/2021

	Monitoring Site Water Depths																	
	Site 1		Site 2		Site 3		Site 4		Site 5		Site 6		Site 7		Site C3		Site C5	
Date	Minimum (inches)	Maximum (inches)	Minimum (inches)	Maximum (inches)	Minimum (inches)	Maximum (inches)	Minimum (inches)	Maximum (inches)	Minimum (inches)	Maximum (inches)	Minimum (inches)	Maximum (inches)	Minimum (inches)	Maximum (inches)	Minimum (inches)	Maximum (inches)	Minimum (inches)	Maximum (inches)
4/23/2021	0	<1	0	<1	0	1	0	1	0	36	0	16	0	10	0	2	0	1
4/30/2021	0	<1	0	<1	0	2	0	1	0	36	0	16	0	12	0	2	0	1
5/7/2021	0	<1	0	<1	0	1	0	1	0	36	0	14	0	10	0	2	0	2
5/14/2021	0	<1	0	<1	0	1	0	1	0	30	0	<1	0	8	0	2	0	2
5/20/2021	0	<1	0	<1	0	<1	0	1	0	30	0	<1	0	6	0	2	0	1

Site	Current Notes
1	Less than 10% of plot is inundated
2	Less than 10% of plot is inundated
3	Less than 30% of plot is inundated - suspended muck
4	Approximately 30% of plot is inundated, suspended muck
5	Hummocks are only portion of monitoring plot above water, some deep pockets of water and suspended muck.
6	Suspended muck, muck exposed, 80% of site inundated
7	Hummocks are only portion of monitoring plot above water, water flowing through site
C3	Approximately 10% of plot is inundated, deep muck present
C5	Approximately 10% of plot is inundated, deep muck present



Photo 1. Monitoring Site 1 facing north



Photo 2. Monitoring Site 1 facing south



Photo 3. Monitoring Site 1 facing east



Photo 4. Monitoring Site 1 facing west



Photo 5. Monitoring Site 2 facing north



Photo 6. Monitoring Site 2 facing south



Photo 7. Monitoring Site 2 facing east



Photo 8. Monitoring Site 2 facing west



Photo 9. Monitoring Site 3 facing north



Photo 10. Monitoring Site 3 facing south



Photo 11. Monitoring Site 3 facing east



Photo 12. Monitoring Site 3 facing west



Photo 13. Monitoring Site 4 facing north



Photo 14. Monitoring Site 4 facing south



Photo 15. Monitoring Site 4 facing east



Photo 16. Monitoring Site 4 facing west



Photo 17. Monitoring Site 5 facing north



Photo 18. Monitoring Site 5 facing south



Photo 19. Monitoring Site 5 facing east



Photo 20. Monitoring Site 5 facing west



Photo 21. Monitoring Site 6 facing north



Photo 22. Monitoring Site 6 facing south



Photo 23. Monitoring Site 6 facing east



Photo 24. Monitoring Site 6 facing west



Photo 25. Monitoring Site 7 facing north



Photo 26. Monitoring Site 7 facing south



Photo 27. Monitoring Site 7 facing east



Photo 28. Monitoring Site 7 facing west



Photo 29. Monitoring Site C3 facing north



Photo 30. Monitoring Site C3 facing south



Photo 31. Monitoring Site C3 facing east



Photo 32. Monitoring Site C3 facing west



Photo 33. Monitoring Site C5 facing north



Photo 34. Monitoring Site C5 facing south



Photo 35. Monitoring Site C5 facing east



Photo 36. Monitoring Site C5 facing west



Photo 37. Bentwood Trail Photo Point 1 facing east/southeast 130 degrees



Photo 38. Bentwood Trail Photo Point 2 facing east/southeast 120 degrees



Photo 39. Bentwood Trail Photo Point 3 facing south 90 degrees