



# CHARTER TOWNSHIP OF OAKLAND PARKS AND RECREATION COMMISSION NOTICE OF PUBLIC HEARING

**WEDNESDAY March 13, 2019, 7:00 pm**

The Charter Township of Oakland Parks and Recreation Commission will hold a public hearing to receive public comments on Michigan Natural Resources Trust Fund grant application TF19-0081 to replace portable toilets with permanent restroom facilities at Bear Creek Nature Park, located at 740 West Snell Road, Rochester, MI 48306, between Orion Road and Rochester Road.

The Public Hearing will be held Wednesday March 13, 2019 at 7:00 pm at the Oakland Township Hall, 4393 Collins Road, Rochester, Michigan, 48306.

Copies of the draft grant application will be available for public inspection beginning Tuesday March 5, 2019 on the Oakland Township website at [www.oaklandtownship.org](http://www.oaklandtownship.org), at the reference desk of the Rochester Hills Public Library, at the Parks and Recreation Offices at the Paint Creek Cider Mill, 4480 Orion Road, Rochester, MI 48306 and at the Oakland Township Hall.

Written comments can be emailed to [parcsplanning@oaklandtownship.org](mailto:parcsplanning@oaklandtownship.org) or mailed to "OT Parks 2019 Bear Creek Nature Park Restrooms Grant Application", 4393 Collins Road, Rochester, MI 48306, until March 19, 2019.

If you are planning to attend the hearing and require any special assistance, please notify the Parks and Recreation Director by calling 248-651-7810 as soon as possible.

Colin Choi, Chairperson, Oakland Township Parks and Recreation Commission



# Legal Ad Proof

*If you wish to email changes please reply or use the email below*

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## AD INFORMATION

Ad Number: 0399-1909

Ad Title: Oakland Township - TF19-0081 Bear Creek Nature Park Restroom Improvements Notice of Public Hearing

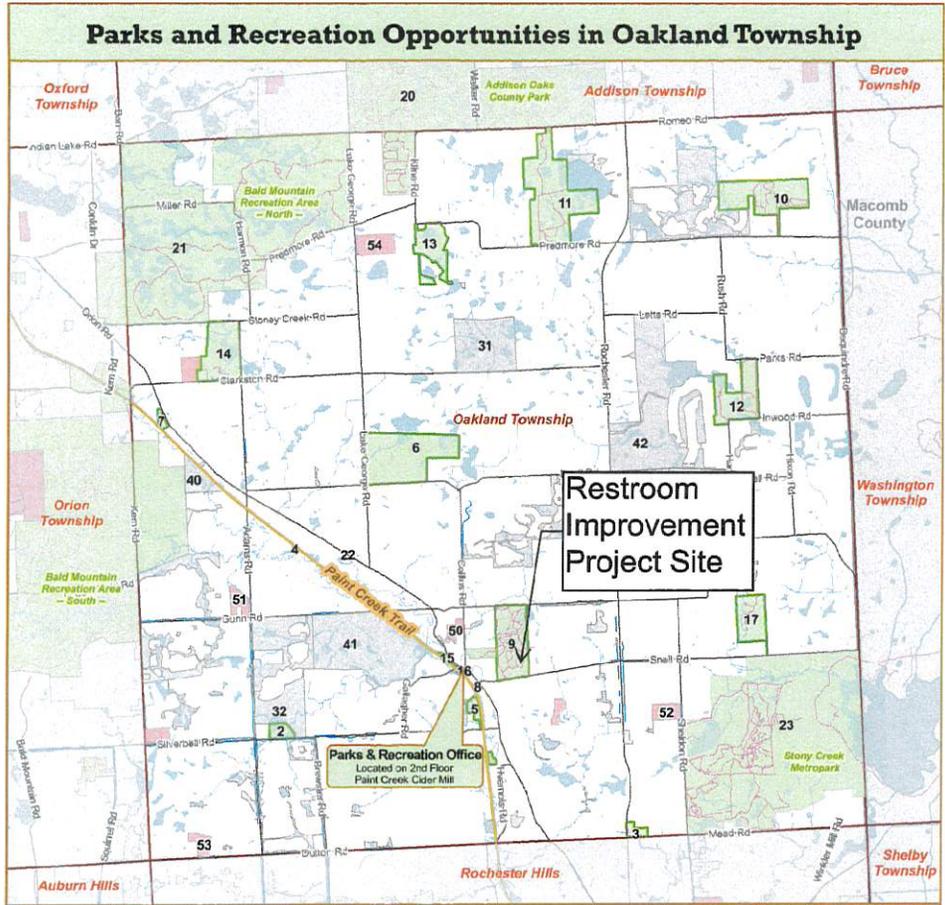
Week Of Publication: 2/27/2019

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Please scroll to the next page to view the ad.



**Oakland Township Parks and Recreation Facilities**

**Conservation Parks**

- 1. Blue Heron Environmental Area
- 2. Gallagher Creek Park
- 3. O'Connor Nature Park
- 4. Paint Creek Heritage Area - Fen
- 5. Paint Creek Heritage Area - Wet Prairie
- 6. Watershed Ridge Park

**Future Trail Connections**

- 7. Paint Creek Junction Park
- 8. Mill Creek Crossing

**Community Parks & Recreation Facilities**

- 9. Bear Creek Nature Park
- 10. Charise Isley Park
- 11. Cranberry Lake Park
- 12. Crater/Twin Lake Park
- 13. Lost Lake Nature Park
- 14. Marsh View Park
- 15. Mill Race Trail
- 16. Paint Creek Cider Mill (Parks & Rec Office)
- 17. Stony Creek Ravine Nature Park

**Other Parks and Recreation Facilities**

**Other Public Parks**

- 20. Addison Oaks County Park
- 21. Bald Mountain State Recreation Area
- 22. Paint Creek Trail
- 23. Stony Creek Metropark

**Other Public Recreation Facilities**

- 30. Blackoath Golf Club
- 31. The Myths Golf and Banquet
- 32. Westwynd Golf Course

**Private Recreation Facilities**

- 40. Royal Oak Archers
- 41. The Wyndgate Golf Course
- 42. Twin Lakes Golf and Swim Club

**Public Schools**

- 50. Baldwin Elementary School
- 51. Delta Kelly Elementary School
- 52. Hager Elementary School
- 53. Musson Elementary School
- 54. Oakview Middle School

**Key to Features:**

- Municipal Boundary
- Oakland Township Parks
- Lakes & Ponds
- Streams & Rivers
- Major Roads
- Park Path
- Safety/Side Path
- Paint Creek Trail
- Private Recreation
- Public Recreation
- Public School

0 0.5 1 2 Miles



**PROJECT LOCATION MAP**

SCALE: NTS

**APPLICANT:**

CHARTER TOWNSHIP OF OAKLAND  
 4393 COLLINS ROAD ROCHESTER, MI  
 48306 CONTACT: MELINDA  
 MILOS-DALE PHONE:  
 (248) 651-7810  
 EMAIL: mmdale@oaklandtownship.org

CHARTER TOWNSHIP OF OAKLAND  
 4393 COLLINS ROAD  
 ROCHESTER, MICHIGAN 48306

PROJECT LOCATION MAP  
 TF19-0081

BEAR CREEK NATURE PARK  
 RESTROOM IMPROVEMENTS

CHARTER TOWNSHIP OF OAKLAND, OAKLAND COUNTY, MICHIGAN

DES. JTS	SUR. PEA	SCALE	N/A	JOB NO.	OA1810
DN. JTS	P.M. JTS	DATE	03-01-19	DWG. NO.	1



**PEA, Inc.**

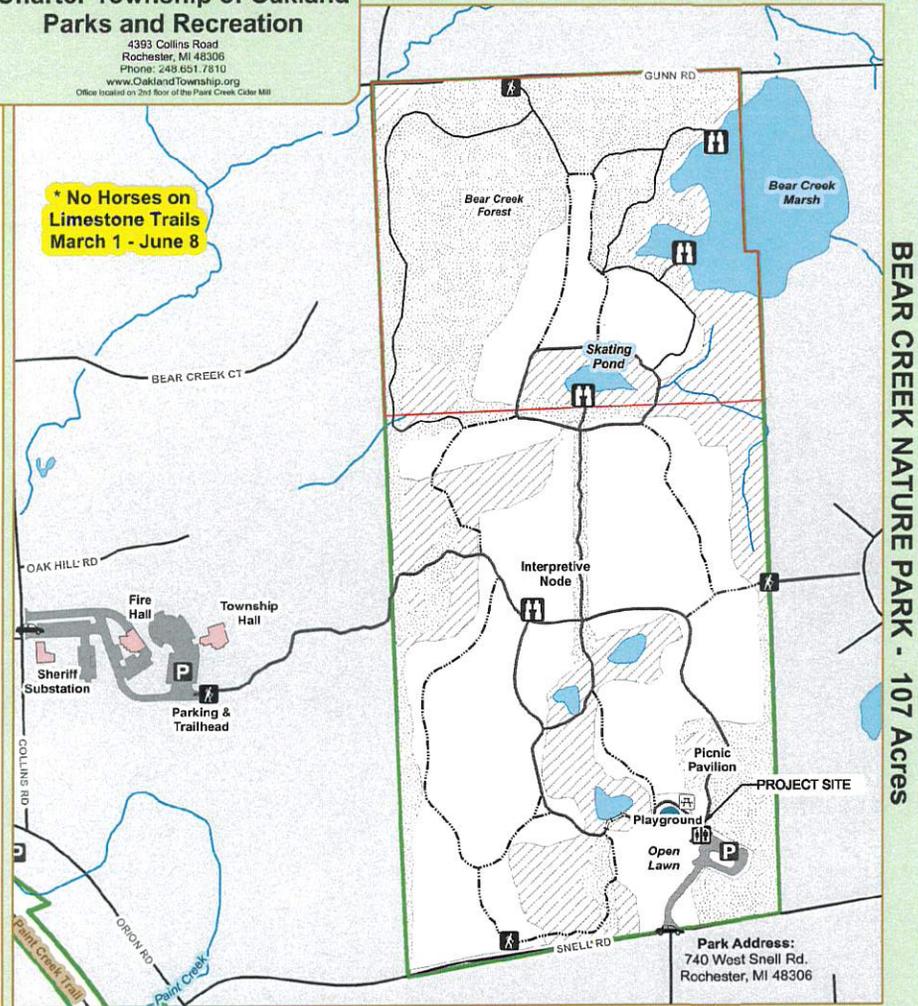
2430 Rochester Ct., Ste. 100  
 Troy, MI 48063-1872  
 t. 248.689.9090  
 f. 248.689.1044

www.peainc.com

**Charter Township of Oakland  
Parks and Recreation**

4393 Collins Road  
Rochester, MI 48306  
Phone: 248.651.7810  
www.OaklandTownship.org  
Office located on 2nd floor of the Park Creek Cider Mill

**\* No Horses on  
Limestone Trails  
March 1 - June 8**



**BEAR CREEK NATURE PARK - 107 Acres**

<b>Park Features</b>	<b>Trails</b>	<b>Boundaries</b>	<b>Habitat Type</b>
• Interpretive Node	— 8' Limestone Trail	□ Conservation Easement	□ Open Area
Ⓜ Observation Deck	— Boardwalk	□ Oakland Township Park	□ Wetlands
Ⓜ Portable Toilet	— Mowed Trail		□ Woodlands
Ⓜ Parking	— 3' Woodchip/Dirt Trail		□ Lakes & Ponds
Ⓜ Vehicle Entrance			— Rivers and Streams

0 125 250 Feet

North Arrow

Last Updated 11 December 2019

**SITE DEVELOPMENT PLAN**

SCALE: NTS

CHARTER TOWNSHIP OF OAKLAND  
4393 COLLINS ROAD  
ROCHESTER, MICHIGAN 48306

SITE DEVELOPMENT PLAN  
TF19-0081

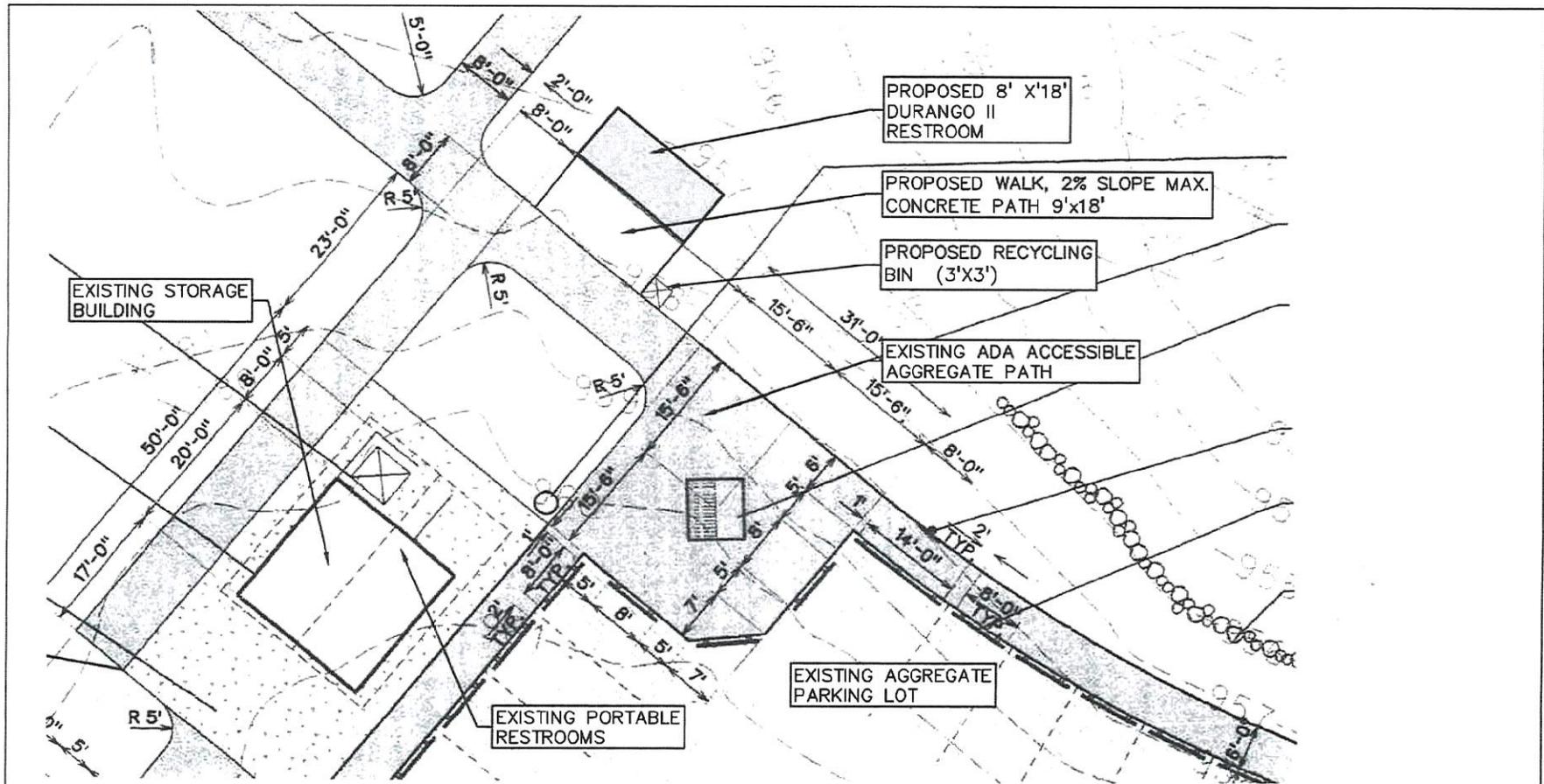
BEAR CREEK NATURE PARK  
RESTROOM IMPROVEMENTS

CHARTER TOWNSHIP OF OAKLAND, OAKLAND COUNTY, MICHIGAN

DES. JTS	SUR. PEA	SCALE N/A	JOB NO. OA1810
DN. JTS	P.M. JTS	DATE 03-01-19	DWG. NO. 2

**PEA**

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**SITE DEVELOPMENT PLAN**  
SCALE: 1" = 20'

CHARTER TOWNSHIP OF OAKLAND  
4393 COLLINS ROAD  
ROCHESTER, MICHIGAN 48306

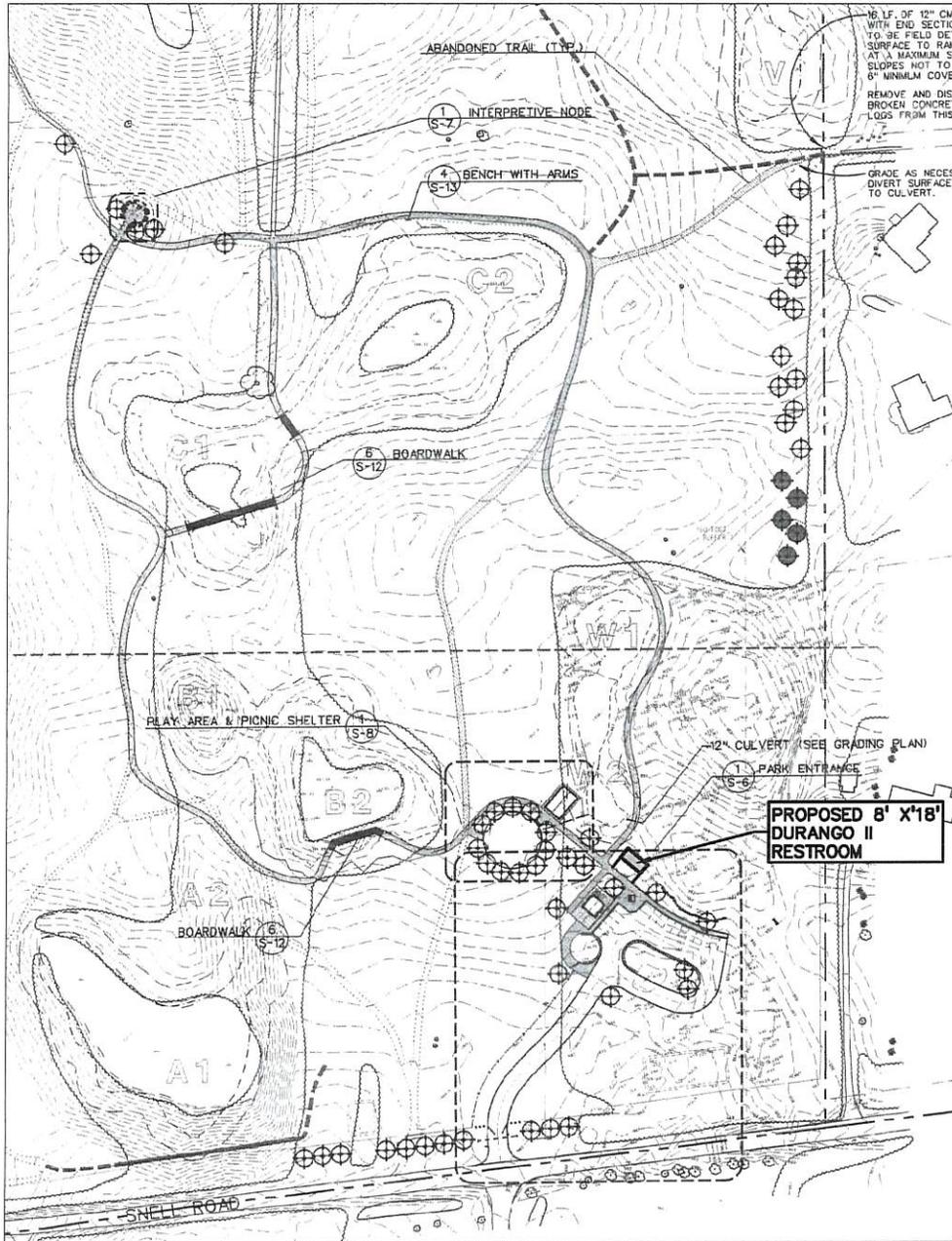
SITE DEVELOPMENT PLAN  
TF19-0081  
BEAR CREEK NATURE PARK  
RESTROOM IMPROVEMENTS

CHARTER TOWNSHIP OF OAKLAND, OAKLAND COUNTY, MICHIGAN

DES. JTS	SUR. PEA	SCALE 1" = 20'	JOB NO. OA181D
DN. JTS	P.M. JTS	DATE 03-01-19	DWG. NO. 2A



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Troy, MI 48063-1872  
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f: 248.669.1044  
www.peainc.com



# SITE DEVELOPMENT PLAN

not to scale

CHARTER TOWNSHIP OF OAKLAND  
4393 COLLINS ROAD  
ROCHESTER, MICHIGAN 48306

SITE DEVELOPMENT PLAN  
TF19-0081

BEAR CREEK NATURE PARK  
RESTROOM IMPROVEMENTS

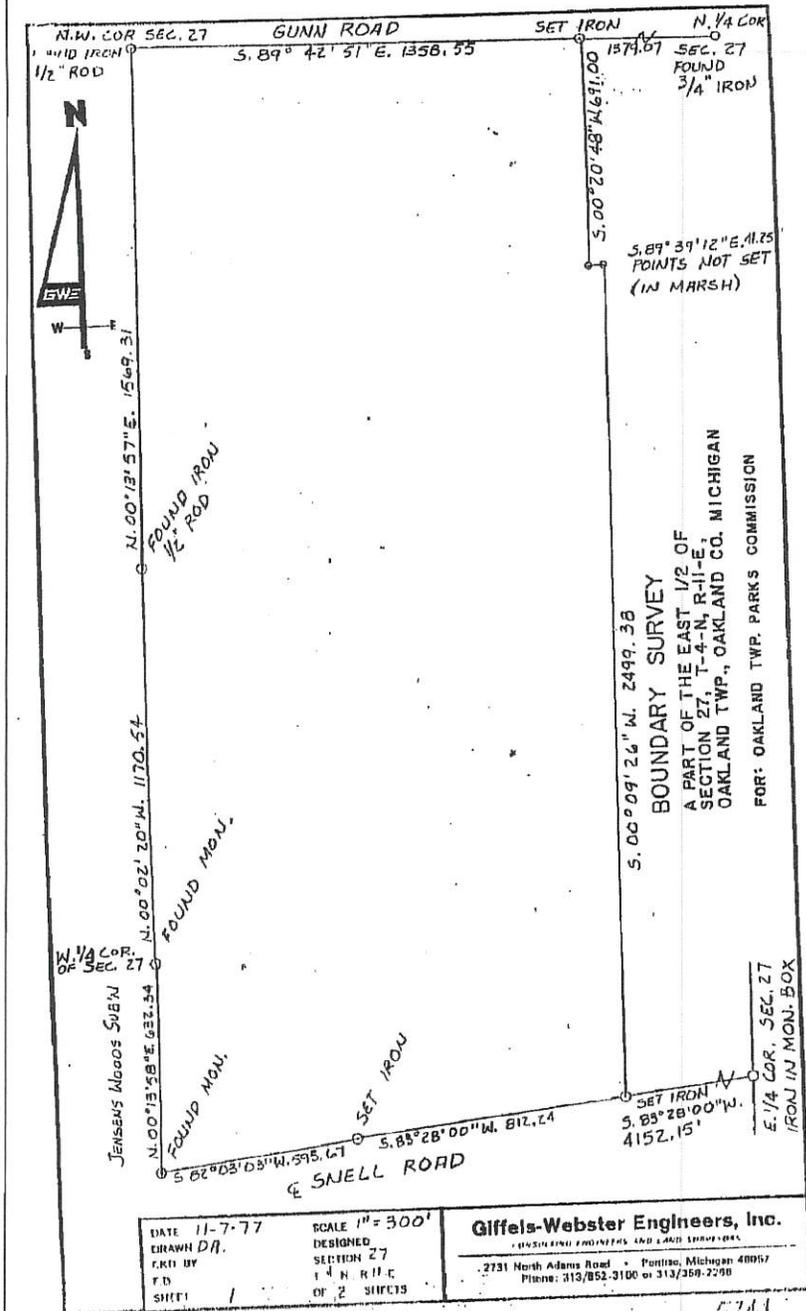
CHARTER TOWNSHIP OF OAKLAND, OAKLAND COUNTY, MICHIGAN

DES.	JTS	SUR.	PEA	SCALE	1" = 20'	JOB NO.	OA1810
DN.	JTS	P.M.	JTS	DATE	03-01-19	DWG. NO.	2A



**PEA, Inc.**

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Troy, MI 48063-1872  
t. 248.689.9090  
f. 248.689.1044  
www.peainc.com



DATE 11-7-77  
 DRAWN D.B.  
 CKD BY  
 F.D.  
 SHEET 1

SCALE 1" = 300'  
 DESIGNED SECTION 27  
 IN R.I.C. OF 2 SHEETS

**Giffels-Webster Engineers, Inc.**  
CONSULTING ENGINEERS AND LAND SURVEYORS  
 2731 North Adams Road • Pontiac, Michigan 48057  
 Phone: 313/852-3100 or 313/359-2230

**BOUNDARY MAP PLAN**  
 SCALE: NTS

**DESCRIPTION:**

A PART OF THE WEST 1/2 OF SEC. 27, T-4-N, R-11-E., OAKLAND TOWNSHIP, OAKLAND COUNTY, MICHIGAN BEING DESCRIBED, AS:

BEGINNING AT A POINT IN THE CENTER LINE OF SNELL ROAD BEING S. 83° 28' 00" W., 4152.15' FROM THE EAST 1/4 CORNER OF SAID SEC. 2. THENCE CONTINUING ALONG SAID CENTER LINE S. 83° 28' 00" W., 812.24' AND S. 02° 03' 03" W., 595.67' TO THE SOUTH EAST CORNER OF "SUPERVISORS PLAT No. 1" AS RECORDED IN L. 34, P. 46 & 46A OF PLATS, OAKLAND COUNTY RECORDS, THENCE N. 00° 13' 58" E., 632.34' ALONG THE EAST LINE OF SAID PLAT, SAID LINE BEING ALSO THE EASTERLY LINE OF "JENSENS WOODS" SUBDIVISION AS RECORDED IN LIBER 122, PAGES 21 & 22 OF PLATS, OAKLAND COUNTY RECORDS, TO THE WEST 1/4 CORNER OF SAID SECTION, THENCE N. 00° 02' 20" W., 1170.54' THENCE N. 00° 13' 57" E., 1569.31' TO THE NORTHWEST CORNER OF SAID SECTION, THENCE S. 89° 42' 51" E., 1358.55', SAID POINT BEING N. 89° 42' 51" W., 1379.07' FROM THE NORTH 1/4 CORNER OF SAID SECTION, THENCE S. 00° 20' 48" W., 691.00', THENCE S. 89° 32' 12" E., 41.25', THENCE S. 00° 09' 26" W., 2499.38' TO THE POINT OF BEGINNING AND CONTAINING 104.52 ACRES OF LAND, SUBJECT TO THE RIGHTS OF THE PUBLIC ON SNELL ROAD AND SUBJECT TO ANY RESTRICTIONS OR EASEMENTS, RECORDED OR UNRECORDED.

THIS DESCRIPTION WAS EITHER FURNISHED TO US BY THE PERSON CERTIFIED TO OR WAS PREPARED BY US FROM INFORMATION OR DOCUMENTS GIVEN TO US BY THE PERSON CERTIFIED TO, AND SHOULD BE COMPARED WITH THE ABSTRACT OF TITLE OR TITLE POLICY FOR ACCURACY, EASEMENTS OR EXCEPTIONS.

I HEREBY CERTIFY THAT I HAVE SURVEYED AND MAPPED THE LAND HEREON PLOTTED AND DESCRIBED ON NOVEMBER 7, 1977, AND THAT THE RATIO OF CLOSURE ON THE UNADJUSTED FIELD OBSERVATIONS OF SUCH SURVEY WAS LESS THAN 1/5000, AND THAT ALL OF THE REQUIREMENTS OF P.A. 132, 1970 HAVE BEEN COMPLIED WITH.

*David Pawlaceyk*  
 DAVID PAWLACEYK, R. L. S.

CHARTER TOWNSHIP OF OAKLAND  
 4393 COLLINS ROAD  
 ROCHESTER, MICHIGAN 48306

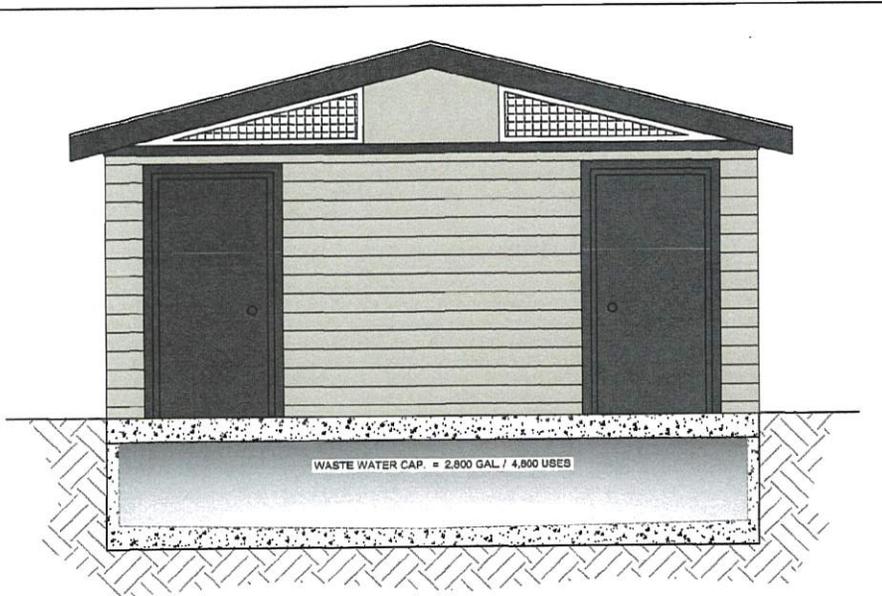
BOUNDARY MAP PLAN  
 TF19-0081  
 BEAR CREEK NATURE PARK  
 RESTROOM IMPROVEMENTS

CHARTER TOWNSHIP OF OAKLAND, OAKLAND COUNTY, MICHIGAN

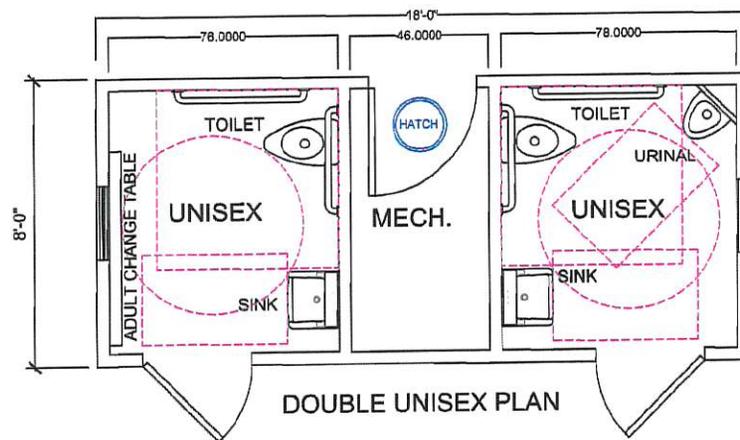
DES. JTS	SUR. PEA	SCALE N/A	JOB NO. OA1810
DN. JTS	P.M. JTS	DATE 03-01-19	DWG. NO. 3



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## DURANGO II



### RESTROOM FLOOR PLAN & ELEVATIONS

SCALE: NTS

CHARTER TOWNSHIP OF OAKLAND  
4393 COLLINS ROAD  
ROCHESTER, MICHIGAN 48306

RESTROOM PLANS  
TF19-0081

BEAR CREEK NATURE PARK  
RESTROOM IMPROVEMENTS

CHARTER TOWNSHIP OF OAKLAND, OAKLAND COUNTY, MICHIGAN

DES. JTS	SUR. PEA	SCALE N/A	JOB NO. OA1810
DN. JTS	P.M. JTS	DATE 03-01-19	DWG. NO. 4



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f: 248.689.1044  
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# GREEN TECHNOLOGY

## YOU'VE NEVER EXPERIENCED AN ENVIRONMENTALLY-FRIENDLY TOILET LIKE OURS BEFORE.

Green Flush Technologies has worked hard to build the most Earth-friendly modular flush restroom available. We've maximized water and energy conservation to bring you sustainable restrooms that support the environment and provide a pleasing experience for visitors.

### ENVIRONMENTALLY-SUPPORTIVE FEATURES

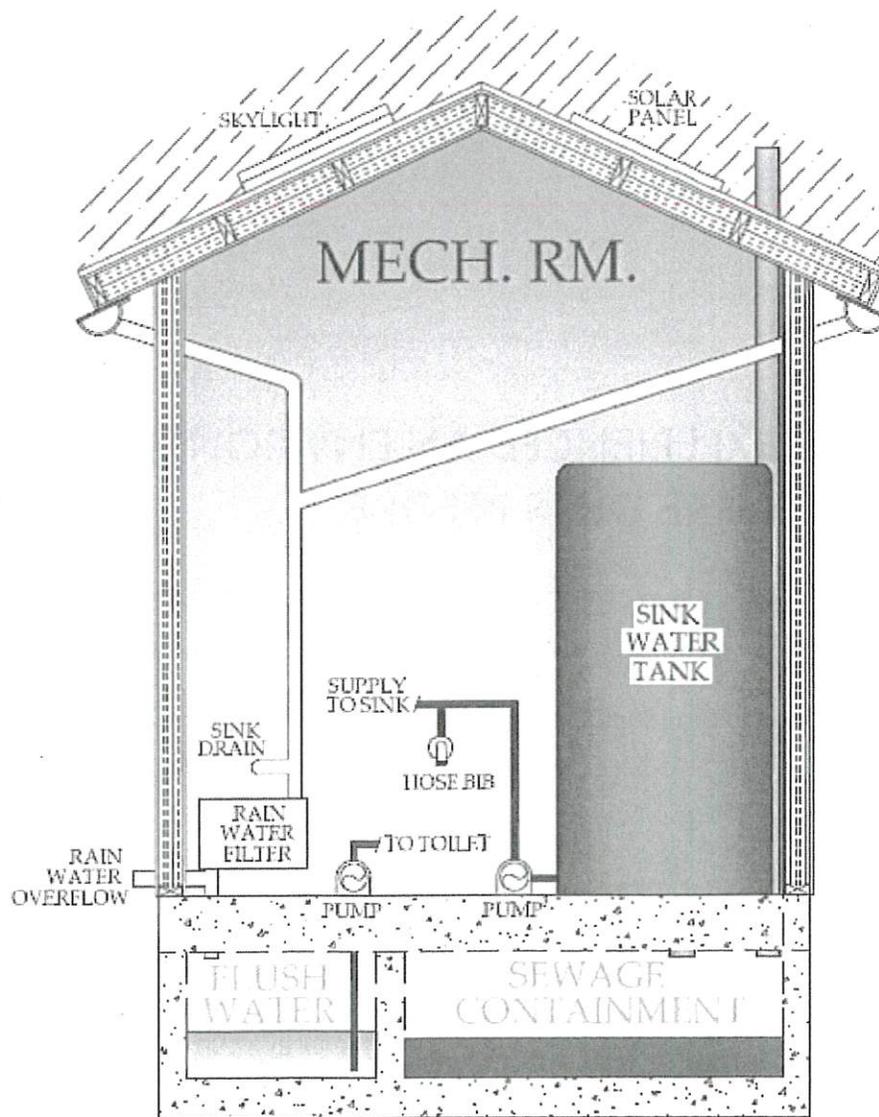
Our restrooms offer the following Earth-friendly features:

- 🌲 **Optional solar power** – This option provides all the sun-generated power needed to run your facilities day in and day out.
- 🌲 **Extreme water conservation** – We have engineered our restrooms to reduce water consumption up to 90% compared to conventional flush restrooms. Our toilets

use as little as 1 quart of water per flush. We've added limited flow sink faucets, and water-less urinals. We even offer the option of reusing sink water for flushing. By optimal use of every drop we save at least a gallon of water with every use. In some environments our restrooms can run off of rainwater collected from the roof.

- ✦ **Minimal ground disturbance** – for a reduced environmental impact. Our installations produce minimal ground disturbance due to a small excavation footprint and eliminating all trenching.

As is the case with all flush toilets, our models keep sewage odors out of the inside and outside environments, keeping the natural setting smelling the way it is supposed to.



## RAINWATER COLLECTION OPTION

## Mindy Milos-Dale

---

**From:** Kyle Earlywine <kyle@greenflushrestrooms.com>  
**Sent:** Thursday, March 01, 2018 4:49 PM  
**To:** Mindy Milos-Dale; 'Ken Earlywine'  
**Subject:** RE: Questions Concerning Flushable Vault Toilet for Oakland Township Park

Yes, the lights are LED on a sensor.

Kyle Earlywine  
Co-Owner, [Green Flush Technologies](#)  
(360) 718-7595

---

**From:** Mindy Milos-Dale [mailto:mmdale@oaklandtownship.org]  
**Sent:** Thursday, March 1, 2018 1:36 PM  
**To:** Ken Earlywine; 'Kyle Earlywine'  
**Subject:** RE: Questions Concerning Flushable Vault Toilet for Oakland Township Park

Thank you Ken and Kyle for all of your help – I will continue to work with our county health department to obtain their approval.

Question – what type of lighting would we be getting with the interior/exterior lighting option? Are the lights on a sensor? Are they LED?

Mindy

# ABOUT US

## THE GREEN FLUSH STORY

Our reinvention of flush restrooms began nearly 20 years ago when the National Park Service needed to address a public health issue at one of America's most popular national parks.

Lake Powell is one of the most beautiful reservoirs in the world. During the summer, thousands of campers and visitors enjoy the lakeshore at Lone Rock Beach. Due to the summer draw down of the reservoir, the water's edge can be over a mile from permanent restroom buildings. The lack of convenient restrooms led to high fecal coliform levels in the reservoir resulting in multiple beach closures.

The National Park Service provided chemical construction toilets, “porta-johns”, near the shoreline but hot conditions resulted in bad odors. Many campers wouldn’t use the portable toilets and the fouling of the lake continued. It was clear that what the public wanted was flush restrooms. But how do you provide flush restrooms at a lakeshore that is continually changing?



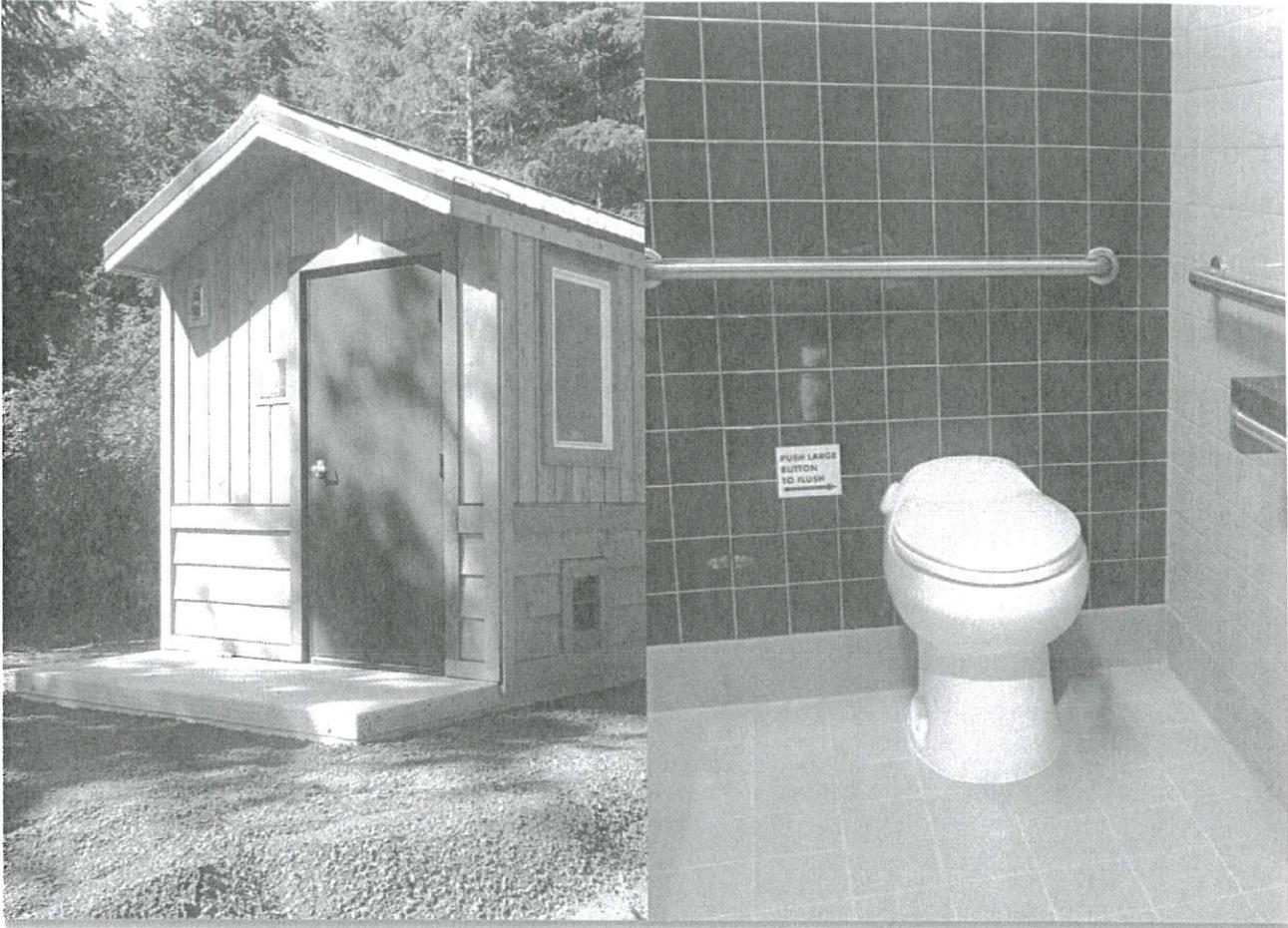
*A double portable flush restroom at Lone Rock*

As the Park Engineer for Glen Canyon National Recreation Area, I was given the task of solving this problem. I believed the best solution would be flush restrooms located near the water’s edge and they needed to be moveable.

- To solve this problem I developed the world’s first moveable, ultra-low flush restroom. These flush restroom buildings operate without power, sewer, or water utilities, and without direct road access.

The toilets proved to be completely odor free and very popular with the public, as well as the maintenance staff who found these restrooms to be very durable and low maintenance. Fifteen years later, over sixty of these moveable double cabin restroom buildings have stood up to heavy public use and are still operating without any significant problems. Since the introduction of the beach restrooms, there have been no beach closures at Lake Powell.

The portable beach restrooms became the precursor to our Green Flush Restrooms which use the same proven concepts, but with significant improvements and new features. Our restrooms make flush toilets an option in locations that were thought to be economically or environmentally unfeasible.



## FLUSHABLE VAULT TOILETS

Green Flush Technologies has combined the advantages of flush restrooms with the self-containment feature of vault toilets. We make vault toilets that flush! Park visitors always prefer flush restrooms with sinks instead of vault toilets. They often find the portable vault toilets and the permanent concrete vault toilets offensive. Our innovation is that our flush restrooms use an astonishing 90% less water than conventional flush restrooms. Because they are flush restrooms they do not have the offensiveness of vault toilets making them the obvious choice over vault toilets. The extreme water conservation of our public bathrooms not only makes them "green" but means that on-board storage of sewage is now practical. Water, sewer, and power connections are not needed for our restrooms allowing them to easily be installed and operate virtually anywhere.

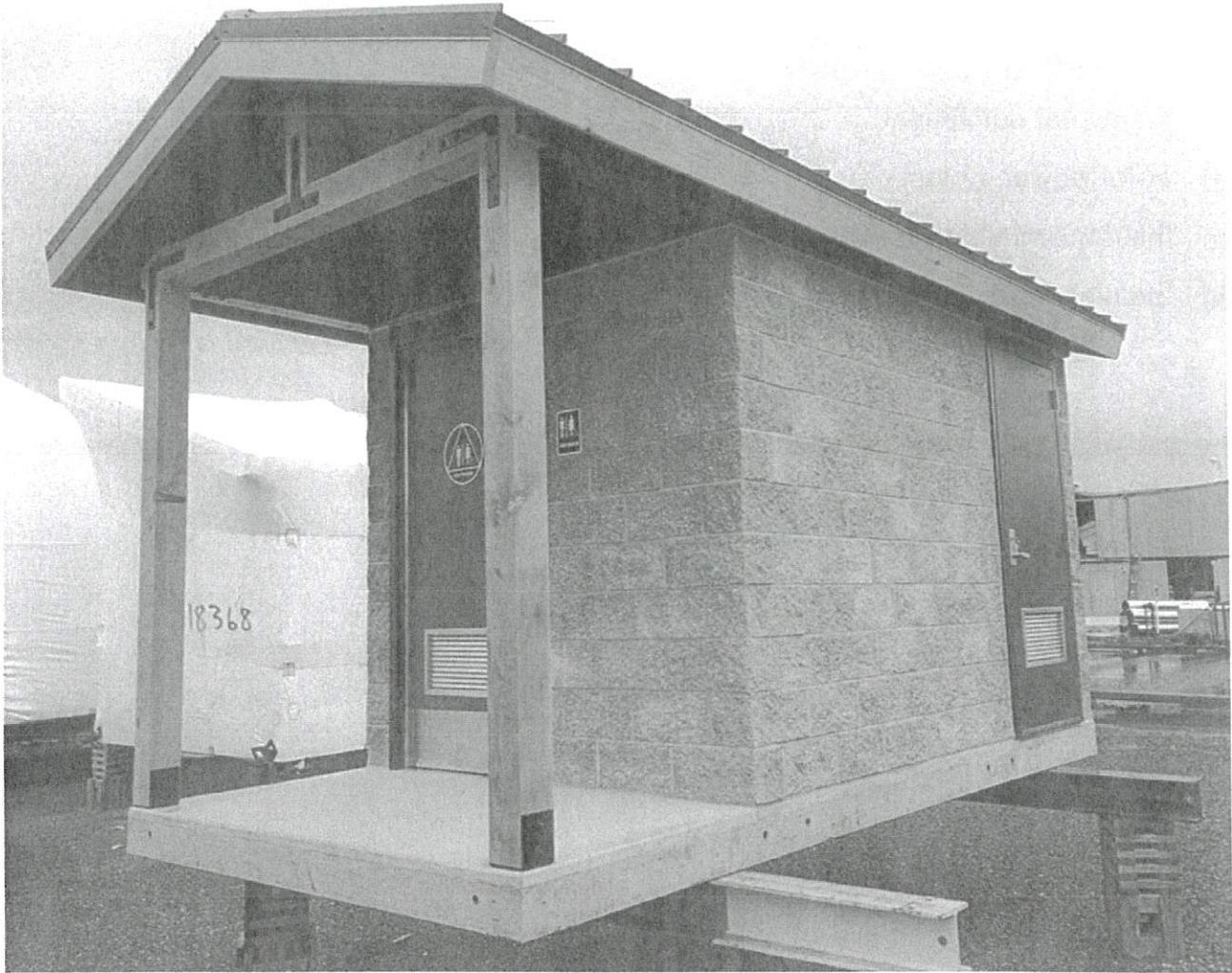
## BUILDING YOU AN AFFORDABLE FLUSH RESTROOM

Making an affordable flush restroom starts with eliminating the need for running utility services to the site. These utilities can often cost more than the restroom itself. Our flush restrooms have starting prices that are close to dry vault toilets and are less than compost restrooms. Additionally, there are no tap fees or monthly service charges from utility providers. Our restroom design has a proven track record of dependability and low maintenance.



## ODOR FREE GUARANTEE

Like all flush restrooms, ours are designed to never smell – not inside and not outside. Modern vault and compost toilet designs may reduce odors, but examples of these systems being highly offensive are commonplace. In contrast, we literally guarantee our buildings to be odor free.



## OUR STANDARD FEATURES

- ✓ Superior quality, factory built & tested
- ✓ ADA compliant cabins
- ✓ Mechanical/storage rooms
- ✓ Customer selected finishes and materials
- ✓ 1 quart per flush toilets
- ✓ Vitreous china waterless urinals
- ✓ Vitreous china hand wash sinks with limiting flow faucet
- ✓ Commercial grade flooring, doors, windows, hardware, and accessories
- ✓ Precast concrete vault

### Options, including:

- Heating
  - Hot water
  - Rainwater catchment
  - Solar power system
  - Interior and exterior lights
  - Stainless steel fixtures
-



March 16, 2018

MINDY MILOS-DALE  
PARKS AND RECREATION  
CHARTER TOWNSHIP OF OAKLAND  
4393 COLLINS ROAD  
ROCHESTER MI 48306

**RE: PROPOSED OUTDOOR RESTROOM FACILITY, OAKLAND TOWNSHIP PARKS**

Dear Ms. Milos-Dale:

The Oakland County Health Division (OCHD) has had the opportunity to review your proposal and documentation sent via email to Mike Pylar of this office on February 28, 2018. Under Sections 8 & 9 of the Oakland County Sanitary Code, Article III, OCHD can consider your proposal as a developing technology or alternative waterless toilet design. We reviewed the Breckenridge flush restroom model from Green Flush Technologies.

In order to consider your proposal further, OCHD will need clarification or documentation of the following:

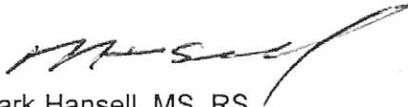
1. A description of Marsh View Park including visitation rates, types of amenities (golf, swimming, etc.), expected use-rate for the proposed restroom building, and months of operation
2. Expected average daily flow and peak flows in gallons per day
3. An updated site plan showing the restroom location, wetlands, surface water, well locations, and the surrounding area
4. Documentation showing both the greywater and toilet waste holding tanks with detailed description of greywater pump operation
5. A description of alarm and redundant alarm function including a cross-section of the proposed vault(s) showing alarm floats with elevations and location of the control panel
6. A description of water shut-off mechanisms and plan for maintaining service in a sanitary manor if water is shut off.
7. A description of the vault construction and size with specification of service/pump-out access and procedures
8. A schedule for vault pumping and contract with a licensed Michigan Septage Hauler

9. Any connection to the existing Type II Noncommunity well must be reviewed and approved by this office.
10. Submittal of a variance request specifying a variance to Article III, Section 8.1, Prohibition of Privies
11. Submittal of an application for permit to OCHD to install the vault tank.

Please submit the above information at your earliest convenience. If you have any questions regarding the above, please do not hesitate to contact me directly.

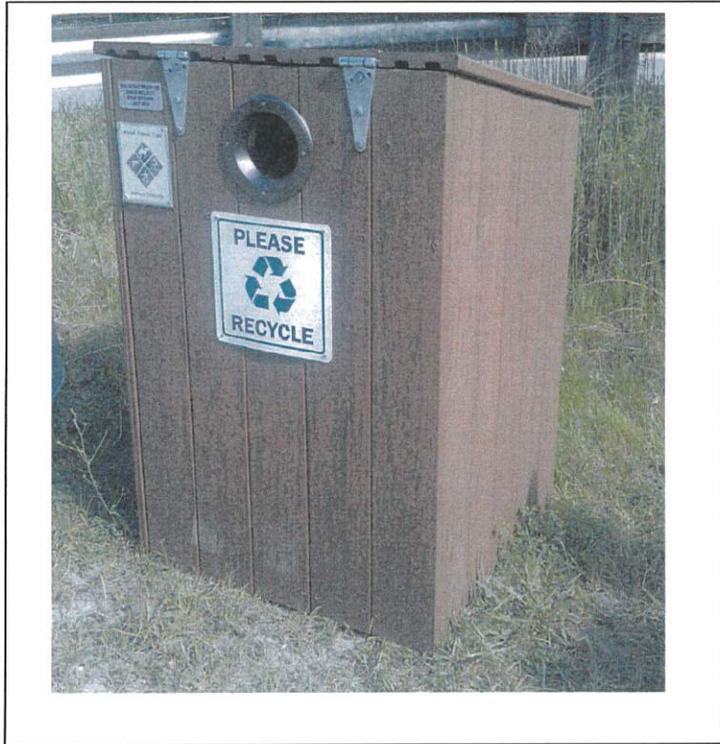
Sincerely,

**OAKLAND COUNTY HEALTH DIVISION**  
**Department of Health and Human Services**



Mark Hansell, MS, RS  
Chief, Environmental Health Special Programs  
Environmental Health Services

cc: Kevin Paladino, Public Health Sanitarian Supervisor, OCHD  
Michael Pylar, Senior Public Health Sanitarian, OCHD



## RECYCLE BIN PHOTOGRAPH AND SPECIFICATIONS

SCALE: NTS

## Eagle Scout Service Project Final Plan

### Materials

List each item, and its description, quantity, unit cost, total cost, and source. For example:

Item	Description	Quantity	Unit Cost	Total Cost	Source
Plywood	5', 4'x8', B-C interior grade	3 sheets	\$20.00	\$60.00	ABC Hardware donation*
Composite Wood	1.25x5.5x20ft	20 boards	\$47.96	\$959.20	Dillman & Upton -25%
Pressure Treated Wood	2x4x8ft	20 boards	\$4.92	\$98.40	Dillman & Upton -25%
Decking Screws	brown 2.5in	3 boxes	\$41.40	\$124.21	Dillman & Upton -25%
Hinges	Heavy metal	10	\$3.97	\$39.70	Home Depot
Bolts, Nuts, - Washers		120 total	\$.91	\$95.30	Home Depot
Paint	Brown	1 can	\$3.98	\$3.98	Home Depot
Trim Ring	Brown, 4in hole	5	\$4.97	\$24.85	Home Depot
More Deck Screws	Brown 2.5in	1	\$7.98	\$7.98	Home Depot
More Composite Wood	1.25x5.5x8ft	2 boards	\$29.00	\$58.00	Home Depot
Security Cable	Steel	50ft	\$.44	\$22.00	Home Depot
Steel Bar	6ft	1	\$4.98	\$4.98	Home Depot
Stake spiral anchor		5	\$7.63	\$38.15	Amazon.com
Trash can	metal	5	\$31.95	\$159.75	Amazon.com
Recycle Sign		5	\$7.45	\$37.25	recyclereminders.com
Boy Scout Plaque		5	\$3.05	\$15.25	trophykits.com
Paint Creek Plaque		5	\$11.89	\$59.45	speedysigns.com
<b>Total Cost of Materials:</b>				<b>\$1,748.45</b>	

\*If you plan for donations such as the one shown in the sample, you will most likely need to complete the Eagle Scout Service Project Fundraising Application found on Page 17.

### Supplies

List each item, and its description, quantity, unit cost, total cost, and source. For example:

Item	Description	Quantity	Unit Cost	Total Cost	Source
Plastic tarp	9'x12' 2 mil thick	2 tarps	\$4.00	\$8.00	AEC Hardware purchase
Garbage Bags	30gal, black	8 bags	\$0	\$0	me
Pencil		2	\$0	\$0	me
<b>Total Cost of Supplies:</b>				<b>\$0</b>	

### Tools

List each tool, with its quantity, unit cost, total cost, and who will operate or use it. For example:

Tool	Quantity	Unit Cost	Total Cost	Source	Who will operate/use?
Circular Power Saw*	1	\$0	\$0	Mr. Smith	Mr. Smith
Circular Saw	1	\$0	\$0	Father	Father/Adults
Chop Saw	1	\$0	\$0	Father	Father/Adults
Measuring Stick	2	\$0	\$0	Father	anyone
Tape Measure	2	\$0	\$0	Father	anyone
Power Screwdriver	2	\$0	\$0	Father	anyone
Square	1	\$0	\$0	Father	anyone
Trailer	1	\$0	\$0	Father	Father
Dolly	1	\$0	\$0	Father	anyone
Dremel	1	\$0	\$0	Father	anyone
<b>Total Cost of Tools</b>				<b>\$0</b>	

\*Power tools that are considered hazardous, like circular saws, must be operated by adults who are experienced in their use. See Guide to Safe Scouting.

14

CHARTER TOWNSHIP OF OAKLAND  
4393 COLLINS ROAD  
ROCHESTER, MICHIGAN 48306

RECYCLE BIN DETAILS  
TF19-0081

BEAR CREEK NATURE PARK  
RESTROOM IMPROVEMENTS

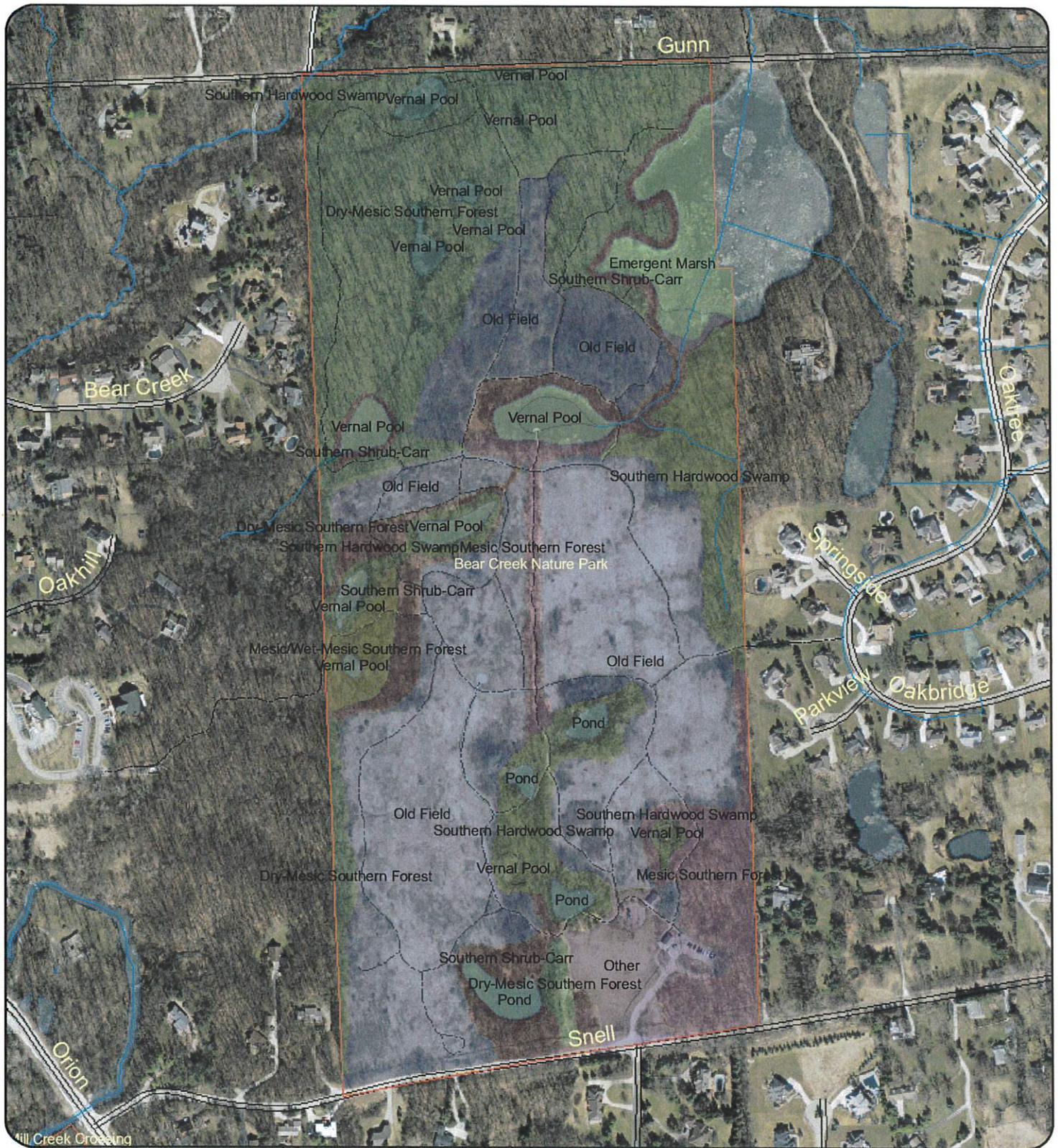
CHARTER TOWNSHIP OF OAKLAND, OAKLAND COUNTY, MICHIGAN

DES.	JTS	SUR.	PEA	SCALE	N/A	JOB NO.	0A1810
DN.	JTS	P.M.	JTS	DATE	03-01-19	DWG. NO.	5

PEA

PEA, Inc.

2430 Rochester Ct., Ste. 100  
Troy, MI 48063-1872  
T: 248.689.9090  
F: 248.689.1044  
www.peainc.com



**Legend**

-  Streams and Rivers
-  Lakes and Ponds
-  Parks Boundaries
-  Trails

# Bear Creek Nature Park Habitat Types



Lawyers Title  
Insurance Corporation

NATIONAL HEADQUARTERS  
RICHMOND, VIRGINIA

ENDORSEMENT

Duplicate of T7719781F

CODE NAME  
Oakland Township, a  
Michigan Municipal Corporation

CASE NO. T8922836  
NUMBER  
ED724250

Attached to and made a part of Lawyers Title Insurance Corporation POLICY No. J 443185

SAID POLICY IS AMENDED AS FOLLOWS:

Schedule B is Amended as follows:

Items 7 and 8 are hereby deleted from said Policy.

Effective date is September 26, 1989 at 5:00 P.M.

The total liability of the Company under said policy, binder or commitment and under this and any prior endorsements thereto shall not exceed, in the aggregate, the amount of liability stated on the face of said policy, binder or commitment, as the same may be specifically amended in dollar amount by this or any prior endorsements, and the costs which the Company is obligated to pay under the Conditions and Stipulations of the policy.

This endorsement is made a part of said policy, binder or commitment and is subject to all the terms and provisions thereof, except as modified by the provisions hereof.

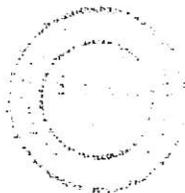
Nothing herein contained shall be construed as extending or changing the effective date of the aforesaid policy, binder or commitment unless otherwise expressly stated.

IN WITNESS WHEREOF, the Company has caused this Endorsement to be signed and sealed as of the 14th day of November 19 89, to be valid when countersigned by an authorized officer or agent of the Company, all in accordance with its By-Laws.

Issued at Troy, Michigan

COUNTERSIGNED:

*[Signature]*  
Authorized Officer or Agent



Lawyers Title Insurance Corporation  
By: *[Signature]*  
President

Attest: *[Signature]*  
Secretary

# Lawyers Title Insurance Corporation

NATIONAL HEADQUARTERS  
RICHMOND, VIRGINIA

## ENDORSEMENT

Duplicate of T7719781F

CASE NO. T8922836

CODE NAME

NUMBER

Oakland Township, a  
Michigan Municipal Corporation

**ED724241**

Attached to and made a part of Lawyers Title Insurance Corporation POLICY No. J 443185  
SAID POLICY IS AMENDED AS FOLLOWS:

Item 2 of Schedule A is amended as follows:

Oakland Township, a Michigan Municipal Corporation.

The effective date is changed to September 26, 1989 at 5:00 P.M.

The total liability of the Company under said policy, binder or commitment and under this and any prior endorsements thereto shall not exceed, in the aggregate, the amount of liability stated on the face of said policy, binder or commitment, as the same may be specifically amended in dollar amount by this or any prior endorsements, and the costs which the Company is obligated to pay under the Conditions and Stipulations of the policy.

This endorsement is made a part of said policy, binder or commitment and is subject to all the terms and provisions thereof, except as modified by the provisions hereof.

Nothing herein contained shall be construed as extending or changing the effective date of the aforesaid policy, binder or commitment unless otherwise expressly stated.

IN WITNESS WHEREOF, the Company has caused this Endorsement to be signed and sealed as of the 10th day of October 1989, to be valid when countersigned by an authorized officer or agent of the Company, all in accordance with its By-Laws.

Issued at Troy, Michigan

COUNTERSIGNED:

Maurice P. Reed  
Authorized Officer or Agent



Lawyers Title Insurance Corporation

By: Robert C. Dawson  
President

Attest: R. W. Jordan III  
Secretary

# Lawyers Title Insurance Corporation

A Stock Company  
Home Office - Richmond, Virginia

CASE NO. T-7719781 F

AMOUNT  
\$ 305,000.00

POLICY OF TITLE INSURANCE

SCHEDULE A  
NAME OF INSURED

DATE OF POLICY  
January 4, 1978  
at 8:00 A.M.

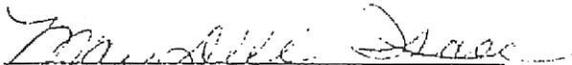
THE TOWNSHIP OF OAKLAND

1. The estate or interest in the land described herein and which is covered by this policy is:  
Fee Simple
2. The estate or interest referred to herein is at Date of Policy vested in:  
Richard C. Devereaux, deceased, an undivided .5386661 interest;  
Jean D. Henno an undivided 1/4 interest; George W. Mason, deceased,  
an undivided .1726678 interest; George W. Mason, Jr., an undivided  
.0386661 interest.
3. The land referred to in this Policy is described as follows:

Land in the Township of Oakland, County of Oakland, State of Michigan, described as:

The West 1/2 of the West 1/2 of Section 27, Town 4 North, Range 11 East, lying North of Snell Road, also the West 49.5 feet of South 2508 feet of East 1/2 of Northwest 1/4 and West 49.5 feet of East 1/2 of that part of Southwest 1/4 lying North of Snell Road.

Countersigned:

  
Authorized Officer or Agent

Issued at: Troy, Michigan

Page 1--Sched. A--Policy No J 810107

3111

# Lawyers Title Insurance Corporation

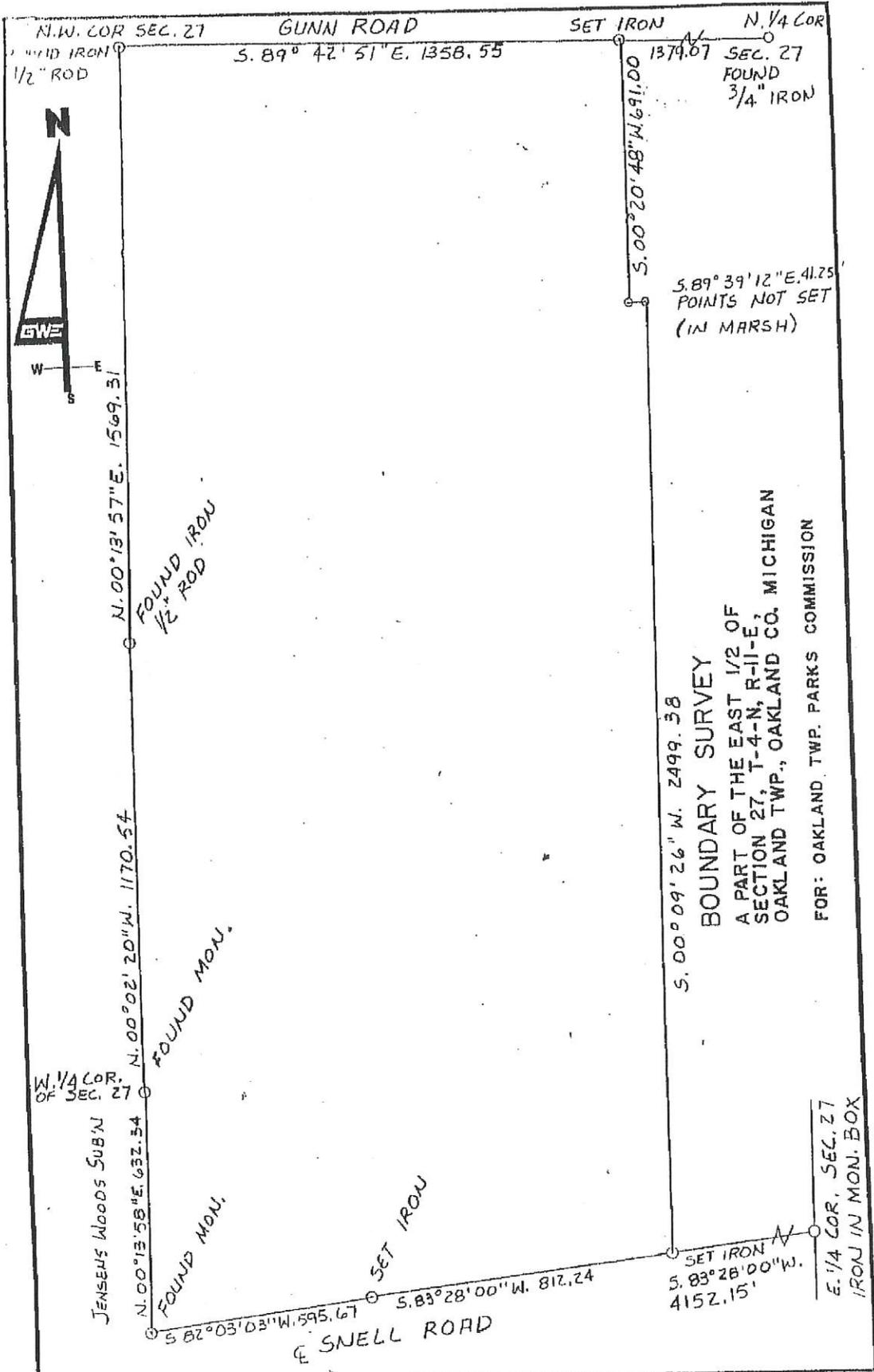
A Stock Company  
Home Office - Richmond, Virginia

Case No. T-7719781 F

## SCHEDULE B

This Policy does not insure against loss or damage by reason of the following:

1. Rights or claims of parties in possession not shown of record.
2. Unrecorded water, mineral and oil rights, unrecorded easements and claims of easement, boundary line disputes not disclosed of record and any matters which would be disclosed by an accurate survey and inspection of the premises.
3. Mechanics' liens not of record.
4. The dower or homestead rights, if any, of the wife of any individual insured or of any individual shown herein to be a party in interest.
5. Building and use restrictions not appearing of record in the chain of title, but omitting those, if any, based on race, color, religion or national origin.
6. Rights of the public and any governmental unit in that portion of the land taken, deeded or used for highway purposes.
7. Proceedings in the Estate of George W. Mason, deceased, whose Estate is being Probated in the Wayne County Probate File No. 423781. The Detroit Bank and Trust Company qualified as Trustee and has a power of sale under the will of the deceased.
8. Proceedings in the Estate of Richard C. Devereaux, deceased, whose Estate is being Probated in the Oakland County Probate File No. 116536, National Bank of Detroit qualified as executor and has a power of sale under the will of the deceased.
9. Rights of the Township of Oakland, land contract purchaser as set forth in land contract dated November 23, 1977 and recorded in Liber 7084 Page 603, Oakland County Records, of which National Bank of Detroit, Executor of the Estate of Richard C. Devereaux, deceased (and not otherwise), 611 Woodward Avenue, Detroit, Michigan, as to an undivided .5386661 interest; The Detroit Bank and Trust Company, as Trustee under the Will of George W. Mason, deceased (and not otherwise), 46 State Street, Detroit, Michigan, as to an undivided .1726678 interest; Jean D. Henno, 381 Rosita Lane, Pasadena, California, as to an undivided .25% interest; George W. Mason, Jr. and Ruth C. Mason, his wife, 4863 Meadow Moss Lane, North Ridgeville, Ohio, as to an undivided .0386661 interest; are the Sellers.
10. County Taxes - 1977 Due.



S. 89° 39' 12" E. 41.25  
POINTS NOT SET  
(IN MARSH)

BOUNDARY SURVEY  
A PART OF THE EAST 1/2 OF  
SECTION 27, T-4-N, R-11-E,  
OAKLAND TWP., OAKLAND CO. MICHIGAN  
FOR: OAKLAND TWP. PARKS COMMISSION

DATE 11-7-77  
DRAWN DA.  
CHKD BY  
FB  
SHEET 1

SCALE 1" = 300'  
DESIGNED  
SECTION 27  
T-4-N, R-11-E  
OF 2 SHEETS

**Giffels-Webster Engineers, Inc.**  
CONSULTING ENGINEERS AND LAND SURVEYORS  
2731 North Adams Road • Pontiac, Michigan 48067  
Phone: 313/852-3100 or 313/358-2200

NO. 5744

DESCRIPTION:

A PART OF THE WEST 1/2 OF SEC. 27, T-4-N, R-11-E., OAKLAND TOWNSHIP, OAKLAND COUNTY, MICHIGAN BEING DESCRIBED AS:

BEGINNING AT A POINT IN THE CENTER LINE OF SNELL ROAD BEING S. 83° 28' 00" W., 4152.15' FROM THE EAST 1/4 CORNER OF SAID SEC. 2. THENCE CONTINUING ALONG SAID CENTER LINE S. 83° 28' 00" W., 812.24' AND S. 82° 03' 03" W., 595.67' TO THE SOUTH EAST CORNER OF "SUPERVISORS PLAT No. 1" AS RECORDED IN L. 34, P. 46 & 46A OF PLATS, OAKLAND COUNTY RECORDS, THENCE N. 00° 13' 58" E., 632.34' ALONG THE EAST LINE OF SAID PLAT, SAID LINE BEING ALSO THE EASTERLY LINE OF "JENSENS WOODS" SUBDIVISION AS RECORDED IN LIBER 122, PAGES 21 & 22 OF PLATS, OAKLAND COUNTY RECORDS, TO THE WEST 1/4 CORNER OF SAID SECTION, THENCE N. 00° 02' 20" W., 1170.54' THENCE N. 00° 13' 57" E., 1569.31' TO THE NORTHWEST CORNER OF SAID SECTION, THENCE S. 89° 42' 51" E., 1358.55', SAID POINT BEING N. 89° 42' 51" W., 1379.07' FROM THE NORTH 1/4 CORNER OF SAID SECTION, THENCE S. 00° 20' 48" W., 691.00', THENCE S. 89° 32' 12" E., 41.25', THENCE S. 00° 09' 26" W., 2499.38' TO THE POINT OF BEGINNING AND CONTAINING 104.52 ACRES OF LAND, SUBJECT TO THE RIGHTS OF THE PUBLIC ON SNELL ROAD AND SUBJECT TO ANY RESTRICTIONS OR EASEMENTS, RECORDED OR UNRECORDED.

THIS DESCRIPTION WAS EITHER FURNISHED TO US BY THE PERSON CERTIFIED TO OR WAS PREPARED BY US FROM INFORMATION OR DOCUMENTS GIVEN TO US BY THE PERSON CERTIFIED TO, AND SHOULD BE COMPARED WITH THE ABSTRACT OF TITLE OR TITLE POLICY FOR ACCURACY, EASEMENTS OR EXCEPTIONS.

I HEREBY CERTIFY THAT I HAVE SURVEYED AND MAPPED THE LAND HEREON PLOTTED AND DESCRIBED ON NOVEMBER 7, 1977, AND THAT THE RATIO OF CLOSURE ON THE UNADJUSTED FIELD OBSERVATIONS OF SUCH SURVEY WAS LESS THAN 1/5000, AND THAT ALL OF THE REQUIREMENTS OF P.A. 132, 1970 HAVE BEEN COMPLIED WITH.

*David Pawlaczyk*  
DAVID PAWLACZYK, R. L. S.

DATE 11-7-77	SCALE 1" = 300'
DRAWN DA	DESIGNED
CHK BY	SECTION 27
ET 450	1/4 N. 111 E
SHEET	OF 2 SHEETS

Giffels-Webster Engineers, Inc.

CONSULTING ENGINEERS AND LAND SURVEYORS

2731 North Adams Road • Pontiac, Michigan 48057  
Phone: 313/462-3100 or 313/368-2260

NO. 5744

TF19-0081 Bear Creek Nature Park Restroom Improvements

**Existing Support Facilities at Bear Creek Nature Park**



Looking Southwest toward shelter for portable restroom located at rear of Bear Creek Nature Park Maintenance Building.



ADA Portable Restroom at Bear Creek Nature Park.



Looking northwest toward proposed permanent restroom location – right side of trail just beyond pet waste container. This location is located opposite from the maintenance building.



Picnic pavilion available for parties of 50 and located near proposed restroom facility.

**Bear Creek Nature Park Natural Areas**



Pond at southern end of park – directly west of play structure area.



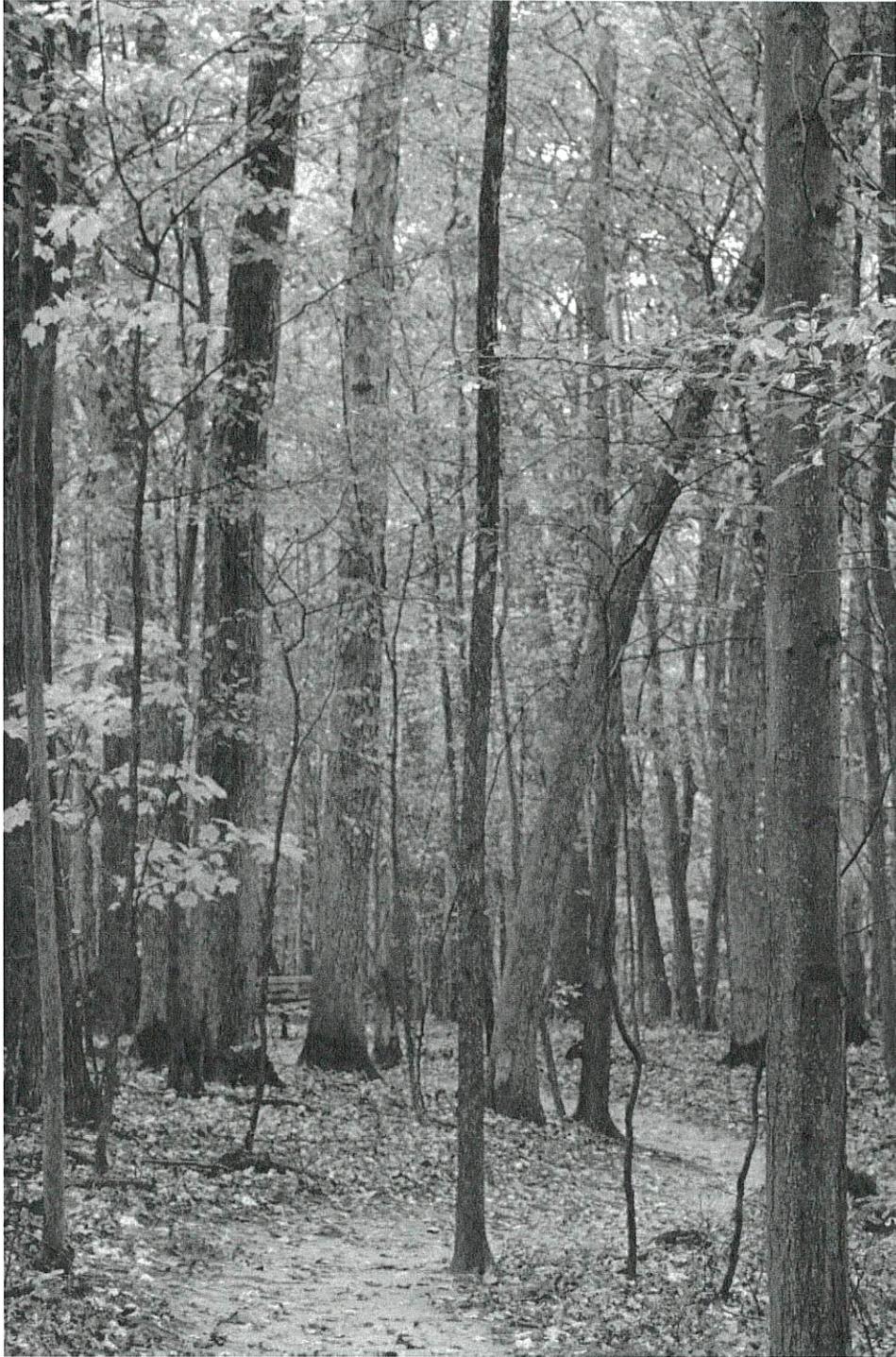
Boardwalk access for wildlife observation at pond located at southern end of park.



Boardwalk access to Dry-Mesic Southern Forest at north end of park.



Looking east across accessible limestone trail that traverses center of park.



Dry-Mesic Southern Forest at north end of park in October. Photo Credit: Cam Manino.



Bear Creek Nature Park – Bear Creek Marsh in Autumn 2018. Photo Credit: Cam Manino

**Events and Programs Held at Bear Creek Nature Park**

**January 2018 Winter Carnival at Bear Creek Nature Park**



Portable Ice Rink (open all winter in addition to Winter Carnival).



Winter Carnival Activities including balloon artist, carnival games and archery lessons.



**Music in the Meadows Concerts and Goodison Good Tyme Fall Festival at Bear Creek Nature Park**



June 16, 2017 Rodney Whittaker at Music in the Meadows at Bear Creek Nature Park.



August 24, 2018 Music in the Meadows Americana Folk Concert at Bear Creek Nature Park.



September 2018 Goodison Good Tyme activities including nature t-shirt stenciling and balloon art.



Popular Play Structure at Bear Creek Nature Park



Stewardship of Bear Creek Nature Park Natural Areas



Stewardship staff and FCA volunteers clear invasive glossy buckthorn at Bear Creek Nature Park marsh October 2018. Photo credit: Cam Manino





Stewardship staff and FCA volunteers clear invasive glossy buckthorn at Bear Creek Nature Park marsh October 2018. Photo credit: Cam Manino



# **Bear Creek Nature Park**

## **Comprehensive Management Plan**



David Mindell  
Matt Demmon  
**PlantWise, LLC**  
Ann Arbor, MI

May 2010

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## **Overall Observations and Site Description**

Bear Creek Nature Park, the Township's most actively-used park, is 107-acres of dry-mesic forest, emergent marsh, vernal pools, southern swamp/shrub-carr, and old-field areas. The oak-hickory woodland in the northern portion of the site contains the most diverse, undisturbed habitat within the park, while the park's many ponds offer excellent breeding grounds for the many amphibians occupying the site. In addition, the easement west of the park which hosts the Township offices is mostly high-quality oak woods deserving of similar management actions as the woods to the north.

The extensive trail network leads park users through the diversity of habitats, providing easy access throughout the site. However, some of these trails create erosion problems, others are perhaps unnecessary (paralleling duplicate trails nearby), while still others potentially create migratory challenges for herpetofauna and disrupt ecological functioning. Old ATV tracks in the northwest corner of the park appear to be healing over.

Generally speaking, the degree of invasion by weedy plants is moving from south to north, with the old homestead and the Snell Road edge containing large and diverse populations of pernicious weeds. As with virtually all restoration efforts, management in this park should radiate out from the most pristine areas to those that are more degraded. At this site, that means moving from north to south.

## **Overall Goals and Intended Site Uses**

This park has more visitors than any other park in the township's system. Residential development surrounding the park provides easy access to neighbors. The northern half of the park, already in a relatively intact state, lends itself to nature study, hiking, and other low-impact uses. The southern half of the park is more disturbed, containing mostly old fields with little native plant diversity, although there are several ponds and wetland areas used by wildlife. Restoration of this area could focus on prairie plantings with the goal of educating park users on the benefits of native vegetation and their maintenance through natural and human processes. There is an existing prairie planting that should be expanded.

The goals at this park are to preserve and enhance the diversity of the woodland communities already present; to preserve and enhance the wetlands as habitat for a diversity of wildlife; and to offer hiking, nature study, and other recreational opportunities as appropriate for the many park users.

## **Soils**

Marlette loam is the dominant soil type at the Bear Creek Nature Preserve, found throughout most of the agricultural areas and woodlands. Marlette is a loamy soil type formed on till plains and moraines. Moderately well-drained, there can be a seasonally high water table 2 to 6 feet below the surface. The more well-drained Oshtemo and Boyer

sandy loams are found at a few edges, and there is a large section of Glynwood loam in the center of the site. The Glynwood type is similar to Marlette, being composed of glacial till overlain with a thin layer of loess, and a seasonally high water table 1 to 2 feet below the surface. Some of the various wetlands have Houghton and Adrian muck soils, composed of decomposed organic materials with a high water table. The old fields on the site have similar soil types to the adjacent woodlands, and trying to focus succession towards woods would make sense. If no management is enacted, most of the old fields will probably convert to a shrubby habitat over the short and medium term, due to the moist and nutrient laden soils.

### **Pre-Settlement Condition**

Bear Creek is largely mapped as black oak barrens prior to settlement. A small area of mixed hardwood swamp is mapped at the northeast corner. The remnant oak woods that were not converted to agriculture have largely succeeded to closed canopied forest types with a large number of vernal pools.

**Black Oak Barrens** comprised about 1.9% of Michigan's landscape at the time of the original surveys of Michigan. They are found on flat sand plains and rolling, gravelly hills in the interior portion of the southern Lower Peninsula, and probably burned quite frequently. Oakland County historically contained more Black Oak Barrens than any other county. The typical dominant tree is black oak, but Northern pin oak, white oak, and scarlet oak were also found. Prairie grasses and forbs were common in these savannas. Because of the sparseness of trees, much of this habitat was converted to farmland, but mostly abandoned by the 1930's due to the droughty and infertile soils. Much of this habitat that remains is in the process of converting to a close-canopied oak forest, due to the lack of fire.

Covering about 3.8% of the state at that time and found mostly in the southern Lower Peninsula, **hardwood swamps and floodplain forests** have increased about 50% since that time. Several reasons account for this increase. Many were not logged, as compared to neighboring upland forests. Drainage of other wetland types and disturbance by agriculture led to conversion to hardwood swamp, as well as fire suppression. Most of the areas covered by swamp are not suitable for agriculture or residential development. Dominant tree species listed by the surveyors were silver maple, sycamore, hackberry and cottonwood.

### **Current Plant Communities**

The **dry-mesic southern forest** to the north is the largest, most intact natural community on this site. Dry-mesic southern forest is a community dominated by oaks or oaks and hickory, and dependent on frequent low-level ground fires to maintain its open condition and understory diversity. Typically found on loamy or sandy loam soils, black and white oaks are most common, with red oak on moister soils. Fire is the most important factor in

preserving this community type. These forests were typically much more open prior to the 1800's, but fire suppression has allowed woody plants to close them in.

Fire provides an important service in reducing shade-tolerant trees and invasive brush that threatens to close in the forests and reduce herbaceous diversity. Windthrow is a

smaller scale disturbance that provides gaps for young oaks to succeed to the canopy and creates areas of increased sunlight for sun-loving forbs and graminoids to temporarily flourish. The herbaceous understory even under the shade of trees can be a rich tapestry of shade-tolerant forbs and some sedges.



*Native wildflowers and shrubs return following fire, while invasive red maples are knocked back, as shown following this 2008 Bear Creek woodland burn.*

Mechanical thinning can be used where appropriate to more quickly open the canopy, but invasive shrubs should be removed first. Major invasive plant threats to biodiversity in this forest type are garlic mustard, swallow-wort, Asian bittersweet, common buckthorn, autumn olive, shrub honeysuckles, multiflora rose and Norway maple. While not numerous in the interior of the woods at present time, several large, mature buckthorns were observed with carpets of seedlings underneath. In addition, Norway maples have invaded the western parcel of woods.

The dry-mesic southern forest is the highest quality community on site. In particular, the western and northern portions of these woods contain the highest priority areas for restoration efforts. These woods are becoming more closed as the understory thickens. Specifically, red maples and black cherry are over-abundant and cast dense shade that inhibits oak recruitment. Invasive common and glossy buckthorn is spreading within the woods, as are privet and honeysuckle, to a lesser extent. Asian bittersweet is establishing itself in several places such as the homestead area and the southern end of the west woodland. These warrant immediate attention as their tenacious nature and the difficulty of control heightens considerably as times passes.

Many **vernal ponds**, as well as permanent bodies of water are found on this site. Vernal ponds provide critical habitat for amphibians. Fish cannot survive in ponds that dry up,

and this reduction in egg and young predation allows a large diversity of salamanders, frogs and toads to reproduce. Wooded vernal ponds are also important for salamander breeding.

Portions of **southern shrub-carr** and **southern hardwood swamp** are found bordering some of the wetlands at this site. Both are wetland types which have increased in coverage following settlement. Fire frequency is very low in swamps, while shrub-carr habitats can have varying degrees of fire depending on the degree of shrub cover, grassy ground cover vegetation, and water levels. Both community types are very susceptible to invasion by exotic shrubs, primarily glossy buckthorn. The death of ash trees as a result of the emerald ash borer has created a disturbance that has allowed exotic shrubs to quickly colonize these communities. If fire is reintroduced to a shrub-carr, it may gradually shift to a southern wet meadow or other open wetland type, depending on soil, existing plant cover, and water levels. As a shrub-carr becomes more open, other invasives such as reed canary grass, *Phragmites*, and purple loosestrife can become problematic.

**Emergent marsh**, found in the northeast of this site in a large wetland jointly owned by a neighbor, is characterized by frequent flooding, high water tables, and emergent vegetation such as cattails, sedges, and rushes. A variety of birds, amphibians, reptiles and fishes use emergent marshes as habitat. Fire most likely was a feature of marshes historically, but the major disturbance in this case is frequent flooding. The high water prevents establishment of woody plants and herbaceous species that cannot stand prolonged submergence, while seasonally low water allow for seed germination.

### **Surrounding Land Uses**

The property is surrounded by residential development of varying density. Several adjacent properties, especially to the northeast and southwest, are larger lots with significant portions of woodland bordering the preserve. Adjacent unmanaged natural areas can provide safe harbor for invasives that are being managed with the preserve, and a constant source of seed and vegetative invasion. Conversely, these woods also, if relatively intact, can provide the benefit of increased habitat size and diversity.

Residential neighbors, especially in the more dense developments, will sometimes dump landscape refuse into the natural area. This is the case along the west boundary of the northern woods. While some of the dump piles may be on private property, the boundary should be clearly marked and “No Yard Waste Dumping in Natural Areas” signs posted. The natural area can be perceived as a weedy, unmanaged area suitable for disposal. Neighbor education on dumping, invasives, and even water quality impacts from impervious surface can provide benefits for the preserve and greater appreciation for park neighbors. The easy access for large numbers of people nearby can cause stress to the park, but also presents an opportunity for education, volunteerism, and investment of the neighbors in caring for the park.

## **Large Scale Site Stresses**

1. Lack of fire is increasing shade in all the forests. Red maples and cherries are increasing in the upland areas, shading out understory wildflowers and preventing young oak establishment. Fire will also greatly inhibit the spread of invasive woody plants in the forest.
2. Invasive plants such as Asian bittersweet, buckthorn, honeysuckle, and Norway maple are increasing throughout the park.
3. Dumping and park storage drop spots create a vector for the spread of weeds. Neighbor encroachment and dumping of yard waste on the west side is problematic for the high-quality woods where this occurs. In addition, wood chip piles have been dumped at the northern access point for the park along Gunn Rd and may be smothering native vegetation there and may alter the natural nutrient composition of the high quality vernal pool they abut. Additional concerns arise from the piles of posts and slag in various spots within the park. These “caches” will smother the vegetation beneath them and will likely encourage weed infestations. If possible this practice should be ended, or specific designated spots established (and confined to degraded areas).
4. While use of the park is the end goal, the heavy use at this site should be carefully monitored and managed to prevent damage to the very natural areas that draw users here.
5. The property is completely surrounded by residential parcels, limiting its connection to other natural areas, and the associated benefits of larger habitat size.

## **Site Concerns and Prioritization**

1. Oak hickory woods to the north and west are of the highest quality and of sufficient size to warrant management. Controlling woody invaders, as well as sweeping for garlic mustard and other herbaceous invaders is a priority here, as is restoring connectivity between the woods. Reintroduction of fire will enhance the other goals.
2. Controlling Asian bittersweet throughout the park before it gets worse.
3. Eliminating neighbor dumping along west edge of northern woods.
4. Establishing educational opportunities about native communities and their benefits.

## **Management Actions**

1. Control woody invaders throughout the woods first, then moving to edges. Sub-pencil-sized diameter plants will be killed with fire.
2. Sweep for garlic mustard and dame’s rocket.
3. Control bittersweet throughout the park (however, the northern two-thirds is the top priority here).
4. Initially, fire in the wooded areas should be timed so as to have maximum impact on shrubs and young maple trees. Burning two years in a row is recommended to

begin with. While this may knock back spring ephemerals during the season in which the burn takes place, these plants will rebound in following seasons. Fire should be used throughout all of the dry-mesic southern forest areas, as well as edges adjacent to these areas where fire will carry. Future rotations of burning every 2 to 4 years timed to precede spring ephemerals.

5. Control lily-of-the-valley in woods.
6. Monitor vinca at west edge of the woods where it is entering park from neighbor's property. Fire should repress it, but herbicide control may be necessary.
7. Locate "storage spots" for various materials so as not to impact the quality and dynamics of the park's natural features.
8. Neighbor education regarding dumping of compostables could be accomplished with a combination of an informational letter followed up with site visits to discuss the uniqueness of the site and the effect of yard waste on the local vegetation. Boundary signs and finally, no dumping signs should be posted.
9. Begin restoration in old field sites by planting prairie species. Tilling is inappropriate due to the slopes found here. Either control existing vegetation through spraying, or over seed with native grass and forb seed and burn regularly. Ecologically, the small old field near the west boundary (just south of the northern woods) should be the highest priority, as it will increase habitat connectivity between the high quality woodland units. Otherwise, move from north to south. Even small planting areas that can be viewed from the path will enhance the site, and native species will eventually colonize other areas of the site with continued burning.
10. Continue to expand on the planted prairie in the center of the park. Additional site preparation should be done by spraying off surrounding weeds rather than by tilling; begin managing older planting(s) with fire.
11. Determine presence/absence of agricultural drain tiles and remove if present.
12. Trail management and maintenance. Assess where trails are truly needed/desirable and close those that are duplicative/inappropriate. For example, close east-west trail north of skating pond to reconnect pond to surrounding natural area; close eastern north-south mowed trail north of skating pond, as it parallels and is duplicative to the trail immediately west of this one.
13. Minimize trail-side mowing to minimize the negative effect it has on the natural features.
14. Manage deer, since they appear to be having a significant impact on the ground layer within the woodland areas. This may be especially difficult in a site with such heavy use, surrounded by neighbors.
15. Work with neighbors to control *Phragmites* on neighboring property at northern edge of cattail marsh.
16. Control woody invaders surrounding ponds in an effort to improve habitat there.
17. Control reed canary grass around skating pond.
18. Control woody invaders throughout southern portion of park, moving north to south.
19. Control garlic mustard and dame's rocket in the old homestead portion of park.
20. Return fire in old-field areas to stimulate and promote the sporadic prairie species still persisting while inhibiting invasive species.

21. Perform reed canary grass and Canada thistle control within the old-field areas, especially viewing these efforts in the context of restoring the old-fields to prairie or savanna.

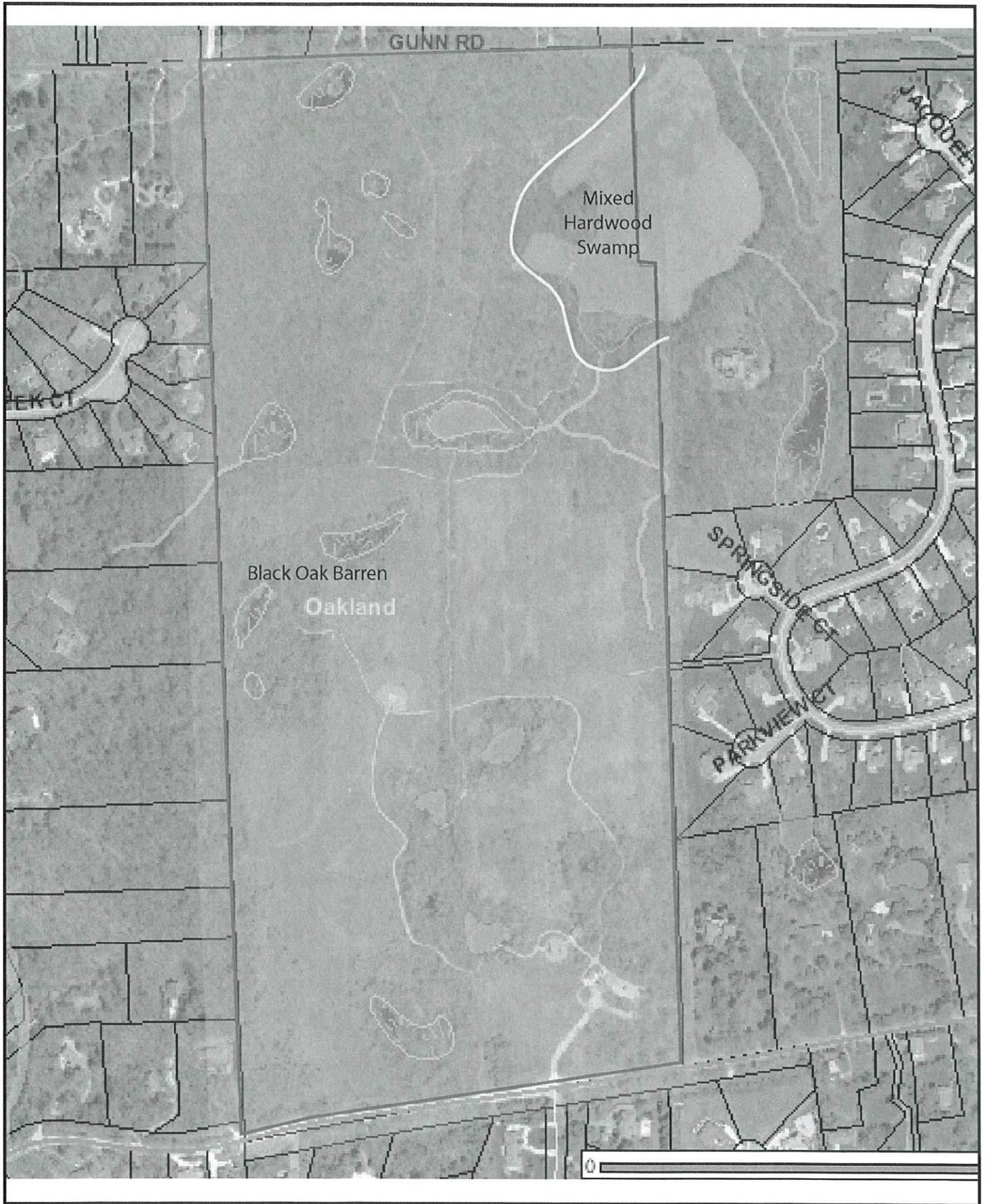
### **Monitoring Recommendations**

1. Monitor erosion sources along Gunn Road and address as necessary.
2. Establish photomonitoring points before prairie restoration efforts begin.
3. Establish long-term monitoring of fire effects in woodlands (as shown in this photo showing burned/unburned areas).





Bear Creek Nature Park - Soil Types  
 Plantwise, LLC 2009



Bear Creek Nature Park - Presettlement Vegetation  
Plantwise, LLC 2009



**Bear Creek Nature Park - Current Plant Communities**  
 Plantwise, LLC 2009



BBS - Button Bush Swamp  
 DMSF - Dry-Mesic Southern Forest  
 EM - Emergent Marsh  
 OF - Old Field  
 P - Pond  
 SHS - Southern Hardwood Swamp  
 SSC - Southern Shrub-Carr  
 VP - Vernal Pool

10B	Marlette sandy loam, 1 to 6 percent slopes
10C	Marlette sandy loam, 6 to 12 percent slopes
10D	Marlette loam, 12 to 18 percent slopes
10E	Marlette loam, 18 to 35 percent slopes
13B	Oshermo-Boyer loamy sands, 0 to 6 percent slopes
13C	Oshermo-Boyer loamy sands, 6 to 12 percent slopes
13E	Oshermo-Boyer loamy sands, 12 to 40 percent slopes
20B	Glywood loam, 2 to 6 percent slopes
20C	Glywood loam, 6 to 12 percent slopes
27	Houghton and Adrian mucks
68	Cohoctah-Fox association

**Bear Creek Nature Park - Current Community and Soil Types**  
 Plantwise, LLC 2009



Bear Creek Nature Park - Current Communities and Invasives  
 Plantwise, LLC 2009

# Amphibian and Reptile Surveys of Bear Creek Nature Park, Cranberry Lake Park and Marsh View Park in Oakland Township, Michigan

August 2008



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Cover photos from upper row left to right are American toad from Bear Creek Nature Park, volunteer group holding midland painted turtles awaiting data recording at Cranberry Lake Park, and red eft stage of red-spotted newt found at Bear Creek Nature Park; middle row from left to right are spotted salamander at Bear Creek Nature Park, Dawn Richards of the Oakland Township Parks and Recreation Commission holding aquatic traps with midland painted turtles at Cranberry Lake Park, and eastern garter snake at Bear Creek Nature Park; bottom row left to right are juvenile milk snake from Bear Creek Nature Park, salamander foray group checking artificial cover objects at Bear Creek Nature Park, and Blanding's turtle from Bear Creek Nature Park. Many thanks to Colleen Barkham for the salamander foray photograph and Matt Vance for the milk snake and Blanding's turtle photographs. All other photographs were taken by the author.

## Introduction

The global loss of biodiversity has garnered considerable attention in recent years. Amphibians and reptiles (collectively known as herpetofauna) are among those groups most affected; 37% of all amphibian species worldwide are declining or already extinct (IUCN Red List, see also Stuart et al. 2004), more than any other vertebrate group. Some authors fear reptiles may be similarly imperiled (Gibbons et al. 2000). Reasons for this decline are numerous and, in the eastern United States, likely include habitat loss and fragmentation (Hager 1998, Kjos and Litvaitis 2001, Semlitsch et al. 2007, Glista et al. 2008), fire suppression (Wilcove and Chen 1998), introduction of invasive exotic plants (McEvoy and Durtsche 2004), introduction of exotic pathogens (Longcore et al. 2007) and environmental pollutants (Green et al. 2002, DeGarady and Halbrook 2006).

The abundant herpetofauna of southeast Michigan has not escaped the same wave of declines faced elsewhere in the world. Species richness is great, with 18 amphibian (Table 1) and 24 reptile (Table 2) species existing, actually or potentially, in Oakland County and adjacent counties (Harding 1997). Ten of these species are currently listed by the State of Michigan as endangered (smallmouth salamander, Kirtland's snake and copperbelly watersnake), threatened (eastern fox snake and spotted turtle) or special concern (Blanchard's cricket frog, Blanding's turtle, eastern box turtle, black rat snake and eastern massasauga rattlesnake). The high proportion of listed species in municipalities in and around Oakland County makes currently protected Township lands invaluable to preserving our natural heritage.

As a first step in addressing herpetofaunal declines, numerous governmental and non-profit organizations have begun research, inventory, and monitoring projects. Groups working on amphibian, rather than reptile, declines have taken the lead in most of these initiatives because of the greater perceived threat to their continued presence (Gibbons et al. 2000). In order to understand amphibian and reptile declines, it is essential to collect detailed and accurate baseline data, as well as implement monitoring programs (Muths et al. 2006). Presently, Michigan has few herpetofaunal monitoring projects in place, aside from frog call surveys (e.g., DNR frog and toad calling surveys) and a salamander monitoring project (City of Ann Arbor's Natural Areas Preservation salamander survey program). There is clearly additional need for monitoring programs, especially in the herpetofaunally rich region of Oakland County.

Besides assessing the status of our declining amphibian and reptile species, monitoring the health of herpetofaunal populations has a second, equally important, function: determining the efficacy of restoration and management activities. Central to beginning any land management activity, especially habitat restoration, is documenting the presence and abundance of existing plant and animal species. By monitoring these species, or some subset thereof, we are able to ascertain the effectiveness of restoration activities. Amphibians and reptiles are indicators of ecosystem health (Wake 1991) and are especially useful as biomonitors (see U.S. EPA 2002). Previous research indicates declining herpetofaunal populations correlate with declines in water quality and environmental health, making them sensitive indicators of ecological integrity (Welsh and Ollivier 1998, Fox 2001). Many species use different habitats throughout the year, thus providing managers with a biomonitor that spans a variety of habitat types. For example, a turtle may reside in an aquatic environment for most of the year, but travel to upland sites for egg laying; a salamander may spend the majority of the year in an upland forest, but travel to wetlands for their spring breeding season. Additionally, amphibians, and reptiles to a lesser

degree, have permeable skin through which environmental pollutants can easily pass and harm the animal (see DeGarady and Halbrook 2006).

## **Objectives**

Oakland Township Parks and Recreation Commission (OTPRC) lacks a comprehensive inventory of herpetofaunal species occurrences in its parks. This survey will provide OTPRC with this information for three of their parks: Bear Creek Nature Park (BCNP), Cranberry Lake Park (CLP) and Marsh View Park (MVP). This project looks to establish baseline data from which future population trends can be determined and management actions can be adapted in response to positive or negative trends. A second objective of this project is to facilitate the development of a citizen-involved monitoring program that is engaging and provides local educators with an informal means of teaching descriptive and inquiry-based science. MVP is an exception to this idea as I only wished to survey for herpetofaunal species there in light of slated development.

## **Methods**

### *Location*

Three parks within Oakland Township were surveyed: Bear Creek Nature Park (BCNP) at 110 acres, Cranberry Lake Park (CLP) at 213 acres, and Marsh View Park (MVP) at 91 acres. All are Township-owned, multi-use parks containing natural areas. BCNP and CLP are in the early stages of intensive habitat restoration including the implementation of a prescribed burning program. MVP is slated for development into an active recreation park with limited natural areas.

Select wetland and upland sites from each park were designated as focal sites (Figures 1-3 and Table 3). These sites received artificial cover object (ACO) arrays, drift fence arrays (DFAs), aquatic funnel traps, and/or dipnetting (Table 3). Each of these methods is described below and summarized in Table 4.

### *Data Collection*

It is important to incorporate a variety of techniques when designing a comprehensive inventory and monitoring program since no single technique will thoroughly sample all species (Crosswhite et al. 1999, Ryan et al. 2002, Casper 2004, Todd et al. 2007). The methods we employed are considered standard in the herpetological literature (Heyer et al. 1994, Casper 2004), and include artificial cover objects (ACOs), aquatic funnel traps, drift fences combined with funnel and pitfall traps, visual encounter surveys (VESs), and dip-netting. Dates of operation of each method tracked the phenology of target organisms (Table 4).

As detectability of animals, especially ectotherms, is largely dependent upon weather, environmental conditions were recorded during each survey. Environmental data collected include: beginning and ending time of day, beginning and ending temperatures, wind speed (scored using the Beaufort wind codes; see Casper 2004) and cloud cover/precipitation (see Casper 2004). Additionally, as the number of observers increases, so does the detection probability using certain methods (e.g., visual encounter survey). Therefore, identities of all survey participants were also recorded. For each observation we recorded species, location,

method of observation, life stage (larva, juvenile or adult), and sex (if known). Distinguishing marks (e.g., injuries or deformities) and condition of unhealthy animals (e.g., emaciated or dead) were also recorded.

Chytrid fungus (*Batrachochytrium dendrobatidis*), an exotic pathogen that attacks amphibians, has been linked to amphibian declines and extinctions throughout the world (e.g., Skerratt et al. 2007). Since chytrid is known to occur in Michigan (Zellmer et al. 2008, Zippel and Tabaka 2008), we took precautions in preventing its spread into or within Oakland Township. In keeping with recommendations by numerous organizations (e.g., National Park Service), all gear coming in contact with natural water bodies were sterilized in a 10% bleach solution and allowed to dry before resuming work in another park.

### *Artificial Cover Objects (ACOs)*

ACOs used in this study were 2 ft x 4 ft and composed of two different materials with differing thermal properties: 3/8-inch plywood and galvanized corrugated sheet metal. The former acts as an insulator against the sun's heat, and creates a generally cool microclimate beneath the boards. Generally, wooden ACOs are successful at attracting salamanders, especially when used in wooded (i.e., shady) environments. Some snakes (and lizards in areas where they occur) will also use cover boards in hot weather. Conversely, sheet metal ACOs, when used in spring and early summer and placed in open areas, absorb radiant energy and attain a microclimate warmer than that of the surrounding environment. Generally, sheet metal ACOs are more successful in attracting snakes (and lizards in areas where they occur).

After snow melt in mid-March, 84 ACOs were assigned unique identification codes and placed in arrays and along transects. Leaf litter, sticks and rocks were cleared from underneath each ACO in keeping with recommendations of Carlson and Szuch (2007). Transect locations were determined on site and influenced by proximity to trails, large trees, and property lines. As ACOs will be used in a new citizen herpetofaunal monitoring program, an effort was made to place ACO arrays near trails and along a route easily traversed for school-aged children. ACOs were checked every one to two weeks from late March to mid-July.

ACO arrays were placed at two upland sites and six ponds at BCNP (Figure 1). Each array consisted of six ACOs, grouped into pairs of one sheet metal and one plywood (in alternating fashion) with each pair placed 4-5 m apart (Figure 4). In placing the arrays, an attempt was made to equally sample along the continuum of habitat quality found in the park. Two ponds were chosen from the north end in the highest quality habitat of the park. These ponds received an ACO array placed along a transect radiating away from the pond, with pairs of ACOs placed at approximately 1 m, 5 m, and 10 m from the pond's edge. Similarly, two ponds in the center of the park (intermediate quality habitat) and two ponds in south end of the park (low quality habitat) received ACO arrays identical to those in the north end of the park. Additionally, ACO arrays were placed in upland sites midway between the north and center ponds and center and south ponds, respectively. Analogously, six ACOs were placed in each array, with pairs 5 m apart.

ACOs were placed at three upland sites and two ponds at CLP in arrays and transects analogous to those at BCNP (Figure 2). As tiger salamanders were recently reported in the south end of the park near the historic district (C. Barkham, pers. comm.), we chose the southernmost vernal pool as one of the target ponds.

As MVP will not be part of the citizen monitoring program, ACO array design was modified from that of BCNP and CLP. One ACO array, of a design analogous with BCNP and CLP, was placed along the south edge of the larger of the two vernal ponds in the park, which is located at the north end of the park. Three additional arrays of 3-6 sheet metal and wooden ACOs were placed throughout the park (Figure 3). ACO material was 2 ft x 4 ft aluminum siding and wooden boards of miscellaneous composition and thickness.

#### *Aquatic Funnel Traps*

Selected ponds were sampled for pond breeding salamanders using two types of aquatic funnel traps: a small metal minnow trap with a 1-inch diameter opening and a large collapsible mesh trap with a 3-inch opening. Two large traps and two small traps were placed into each of six ponds at BCNP (Figure 1), three ponds at CLP (Figure 2) and three wetlands (two ponds and one marsh) at MVP (Figure 3). Each site was trapped twice in early to mid-April. In addition to this formal trapping arrangement, traps were placed for a single night at focal and non-focal sites throughout BCNP and CLP. At BCNP, about 10 small and 10 large additional traps were placed in a focal pond at the south end of the park, three small and three large additional traps were placed at the non-focal pond in the center of the park, and 11 small and 15 large additional traps were placed in the large marsh in the northeast area of the park. At CLP, eight small and 12 large additional traps were placed at the north end of the large pond in the center of the park. All traps were placed on the pond bottom along the shoreline at least 10 ft apart and utilized existing natural drift fences (logs) when possible. To eliminate drowning, a small portion of the trap was kept above the surface. Each trap was secured to a uniquely identified rod at its location to mark the location of the trap and prevent mortality from opportunistic predators. Traps were not baited and were allowed to sit overnight.

#### *Drift Fence Arrays (DFAs)*

From May to July, one DFA was run at each of the three parks (Figures 1-3). Each drift fence was arranged with three, 33-ft spokes radiating from a center point at 120° angles (Figure 5). A large, one sided funnel trap with a 2-inch opening was situated at the end of each spoke. Additionally, pitfall traps (4-5 gallon buckets) were buried flush to the ground at the midpoint of each spoke. This design was chosen to maximize large and small animal captures, using funnel traps and pitfall traps, respectively. Each DFA was placed at an interface of multiple habitat types near the center of each park. For example, the DFA at Marsh View Park had one spoke extending into a marsh and the two other spokes, at the edge of a field-shrub transition.

Pitfall and funnel traps associated with the DFA were open from 24 April to 5 July, alternating in approximately one week blocks among the three parks. Traps were open for a total of 26 days and 25 nights at BCNP, 17 days and 18 nights at CLP, and 12 days and 13 nights at MVP.

#### *Visual Encounter Surveys (VES)*

Two north-south transects were established in BCNP and CLP, and traversed once per park in May and June. Two people, spaced approximately 20 ft apart, followed each transect and

recorded all amphibians and reptiles encountered. A VES at MVP was informally conducted by traversing the park and recording amphibians and reptiles encountered.

### *Dip Net Surveys*

Ponds included in the aforementioned ACO methodology were assigned a unique identification and sampled using fine-meshed dip nets for a minimum of 20 person minutes and to a maximum of 210 person minutes (Table 5), depending upon wetland size. Each subject wetland was sampled once from mid-June to early July, allowing larvae to reach an easily detectable size (C. Davis, pers. comm.). Participants recorded number and identification of salamander larvae and number of tadpoles. Because tadpoles are difficult to identify to the species level, only the number of tadpoles was recorded.

### *Incidental Observations*

All animals not detected by the aforementioned sampling methods were recorded as incidental observations. Examples of incidental observations are frog calls heard when checking aquatic funnel traps and basking turtles sighted en route to checking drift fence arrays. Incidental observations included only those made or confirmed by me (i.e., not those made by inexperienced observers).

## **Results and Discussion**

Below are detailed species accounts for each park surveyed from March to July, 2008. Overall, 20 amphibian and reptile species were observed at BCNP, 13 species at CLP and nine species at MVP. Although this study did not include systematic nighttime frog call surveys, the informal daytime call surveys fully captured the expected diversity of frogs at each park (except northern leopard frogs at BCNP). Salamander diversity was best captured using a combination of ACOs and small and large aquatic traps, snake diversity was best captured using ACOs, and turtle diversity was best captured using large aquatic traps, although formal visual surveys for basking turtles were not conducted. The capture of one or a few individuals of a given species speaks to the utility of using a variety of survey methods. For example, a single red-spotted newt was captured in a dipnet in the large central pond of CLP that went undetected using the small aquatic traps and ACOs. It is important to note that, since captured animals were not marked, the number of individuals observed is not equal to the actual number of animals present; many animals were observed repeatedly on sequential visits (as determined by naturally occurring injuries on some animals).

### *Bear Creek Nature Park*

Table 6 summarizes the results for BCNP. A total of 535 species were observed representing all major herpetofaunal groups found in southeast Michigan. Seven species of frogs, comprised of 123 separate observations, were observed; six of those species were also heard calling on multiple occasions. Five species of salamanders, comprised of 119 separate observations, were also observed. Most notable among these is the eastern tiger salamander larva captured in the large marsh in the northeast corner of the park. Because only a single individual

was found and since the preferred habitat type of tiger salamanders is not found in BCNP, it is possible that this animal was born elsewhere and migrated up the inlet creek passing under Gunn Road. If true, this species may not reside year round in the park.

A total of 234 snakes were observed representing five species. Eastern garter snakes comprised the majority of individuals captured (76.5%). Other studies have found a similar bias in the number of garter snakes captured relative to other species (Kjoss and Litvaitis 2001), with causes likely involving the adaptability of garter snakes to anthropogenic disturbance and a decline in competitor species. It will be of particular interest to note changes in relative garter snake abundance as the habitat undergoes restoration.

One uncommon species, the blue racer, has been documented at BCNP in previous years, (see Appendix I), but was not encountered during this survey. The continued presence of this species is questionable. Rarity correlates with detectability, however, and small populations of rare or cryptic species may continue to inhabit the surveyed parks. Although this species was detected in the past by observers without formal training in herpetofaunal identification, this record is consistent with published range maps. Therefore, it is probable that past observations are accurate. Additionally, northern water snakes were observed previously (see Appendix I), but not observed during this survey. This species likely persists in the park, although in low numbers.

Lastly, 59 turtles were observed representing three species. Most notable are the two Blanding's turtles (one male and one female) captured in the large marsh in the northeast corner of the park. As Blanding's turtles are a species of special concern in Michigan, I recommend paying special attention to this area of the park during future herpetofaunal inventories and management.

Choice of focal ponds for aquatic traps and dipnetting and choice of localities for ACO placement were, in large part, to capture the spectrum of habitat quality present in the park (see *Artificial Cover Objects* under Methods above). In this survey, greater diversity was observed in the northern sites (20 species) as compared to southern sites (13 species). With on-going restoration efforts, there should be a gradual shift in herpetofaunal diversity in the south end of the park as those species from the high quality north end disperse into increasingly higher quality habitat in the south end.

### *Cranberry Lake Park*

Table 7 summarizes the results for CLP. A total of 181 species were recorded representing all major groups of amphibians and reptiles. Despite the park's larger size, herpetofaunal abundance and diversity at CLP were lower than at BCNP. Seven species of frog (51 separate observations) were found, although the presence of three of these species was detected only during the informal call surveys. Additionally, 939 individuals representing three species of salamanders were observed, the most notable of which is the eastern tiger salamander which appears with some frequency in and around the large central pond.

An adult tiger salamander with seven digits on the hind right foot was captured at site K in the central pond in CLP (Figure 6). Polydactyly in amphibians has been documented previously in southern Michigan (Gilliland and Muzzall 2002) and potential causes are numerous (e.g., parasites, pollutants, UV radiation) and likely act synergistically. Occurrences of amphibian malformations in southern Michigan are no more prevalent than in other parts of the country and a single malformed animal does not warrant special attention (S. Sessions, pers.

comm.). Following EPA recommendations, if more than 3% of amphibians captured in future inventories or monitoring are malformed, or if bizarre malformations are found, observations should be reported to the North America Reporting Center for Amphibian Malformations ([www.npwrc.usgs.gov](http://www.npwrc.usgs.gov)).

Very low reptile diversity was recorded in CLP. The only snake species observed was the eastern garter snake, however, the density of this species (77 individuals observed) appears to be high. A total of 14 individuals representing two species of turtles were recorded from CLP. One of these, the midland painted turtle, appears to be very common. The single common snapping turtle recorded was a dead individual found near the shore of Cranberry Lake. Given the large size of the park and the diversity of habitats present, it is curious that no other reptile species were recorded.

### *Marsh View Park*

In 2005, herpetofaunal surveys were conducted at MVP and Stony Creek Parks by Herpetological Resource and Management (Plymouth, MI). It should be noted that results from those surveys (Appendix I) are likely under-representative due to the time of year (early June to early August) and limited sampling techniques employed (call surveys, visual encounter surveys, trapping, and turning natural cover objects). At MVP, the present survey documented the same species as the 2005 survey, except American toads, and added six additional species (northern spring peepers, western chorus frogs, wood frogs, gray treefrogs, eastern garter snakes, midland painted turtles and common snapping turtles).

Table 8 summarizes the results for Marsh View Park. Abundance and diversity are comparatively low at MVP compared to BCNP and CLP. A total of 50 animals were observed representing nine species. Out of the six frog species observed, four were only recorded aurally. No salamanders were observed. Only a single species of snake, the eastern garter snake, were recorded, although abundance of this species appears to be high. Only two species of turtles were recorded: a single midland painted turtle crossing Adams Road immediately adjacent to the park, and two common snapping turtles (one living and one dead) also found on Adams Road.

### *Non-target Species of Interest*

During the field season we noted the presence of certain non-herpetofaunal species that are likely to be of interest to Township land managers. These observations are recorded in Appendix II.

## **Recommendations**

### *Restoration and Increased Habitat*

I recommend continued and expanded restoration efforts, specifically prescribed fire and the establishment of native plant communities. Previous studies have documented a positive response by amphibians and reptiles to prescribed fire (Kirkland et al. 1996, Moseley et al. 2003, Hossack and Corn 2007, see also Russell et al. 1999 and Pilliod et al. 2003). Causes for the beneficial effects of fire likely include decreased canopy cover allowing greater light penetration for thermoregulation, greater structural complexity and diversity, and increased prey abundance.

New research also suggests native plant communities harbor greater herpetofaunal diversity (McEvoy and Durtsche 2004). Causes for this trend are likely similar to those resulting from the application of prescribed fire. Additionally, there is increasing evidence that many non-native plant species (e.g., purple loosestrife, European buckthorn and Amur honeysuckle) have detrimental effects on tadpole growth and development through the deposition of chemical compounds (Maerz et al. 2005, Brown et al. 2006, R. Durtsche unpubl., R. King unpubl.).

I also recommend increasing the size of protected areas and creating habitat corridors wherever possible. Previous studies on home range size of some snake species such as the eastern massasauga rattlesnake (Durbian et al. 2008) and blue racer (Rosen 1991), may be on the order of 25-300 acres. Additionally, migration of certain salamanders such as the eastern tiger salamander (Madison and Farrand 1998) and spotted salamander (Madison 1997) from their breeding ponds to their overwintering sites may be 225-900 feet. Therefore, in order to maintain populations of these species in perpetuity it is essential to maximize available high quality habitat, especially around wetlands. In addition to protecting undeveloped land, this may take the form of restoring existing degraded habitat and minimizing human-made alterations such as trails and mowed areas.

#### *Citizen Involvement and Monitoring*

In keeping with the guiding principles of the Oakland Township Parks and Recreation Commission, efforts were made to integrate herpetofaunal surveys and public education. On April 20, in conjunction with Township staff, I conducted a salamander foray, during which pre-registered participants had the opportunity to hike BCNP and check ACOs and aquatic funnel traps. On June 21, a snake foray was conducted, during which participants had the opportunity to check ACOs and a drift fence array. Both events were well attended, demand for the first foray more than doubled the capacity, and most participants indicated interest for similar events in the future. Additionally, on two occasions Girl Scout Troops joined workers in the field for the opportunity to experience a scientific survey in progress. On another occasion 10 Americorps volunteers assisted workers in the field, helping with fieldwork and learning herpetological survey methods in the process.

With the baseline data established and the ACO arrays in place, I encourage the beginning and subsequent launch of a novel and scientifically-based citizen run monitoring program. The benefits of such an initiative would be two-fold. First, as suggested in this study and elsewhere (DeGraaf and Yamasaki 1992, Monti et al. 2000, Hyde and Simons 2001, Ryan et al. 2002, Marsh and Goicochea 2003, Carlson and Szuch 2007), ACOs are effective in monitoring populations of most salamander and snake species. Therefore, maintaining the existing ACO arrays will be useful for annual monitoring in Township parks. The time and expense in maintaining these arrays are inexpensive when compared to most other methods (e.g., drift fence arrays). Second, such a program would provide citizens with hands-on opportunities to participate in scientific research, and working with tangible study subjects encourages continued interest and active participation. Amphibians and reptiles are ideal organisms for citizen involvement because of the abundance and disposition of many species. Combined, these benefits contribute to building a monitoring program benefitting natural areas management, the greater public and educational institutions. Such a monitoring program may enhance science education and may also help foster a conservation ethic.

### *Future Inventories*

This report and the accompanying data (Appendices III-V) have been designed to include all information necessary to replicate this survey in every important detail. It is my recommendation to repeat this inventory with an equally intensive sampling effort after ten years of intensive restoration.

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Figure 1. Map of Bear Creek Nature Park depicting activity during 2008. ⊕ represents artificial cover object arrays, ⋆ represents drift fence arrays including terrestrial pitfall and funnel traps. Focal wetlands are outlined in yellow and are assigned an identifying letter. Non-focal wetlands surveyed during the survey are highlighted in green.



Figure 2. Map of Cranberry Lake Park depicting activity during 2008. ⊕ represents artificial cover object arrays, ✦ represents drift fence arrays including terrestrial pitfall and funnel traps. Focal wetlands are outlined in yellow and are assigned an identifying letter. Non-focal wetlands surveyed during the survey are highlighted in green.



Figure 3. Map of Marsh View Park depicting activity during 2008. ⊕ represents artificial cover object arrays, ✦ represents drift fence arrays including terrestrial pitfall and funnel traps. The focal wetland is outlined in yellow and surveyed non-focal wetlands are highlighted in green.

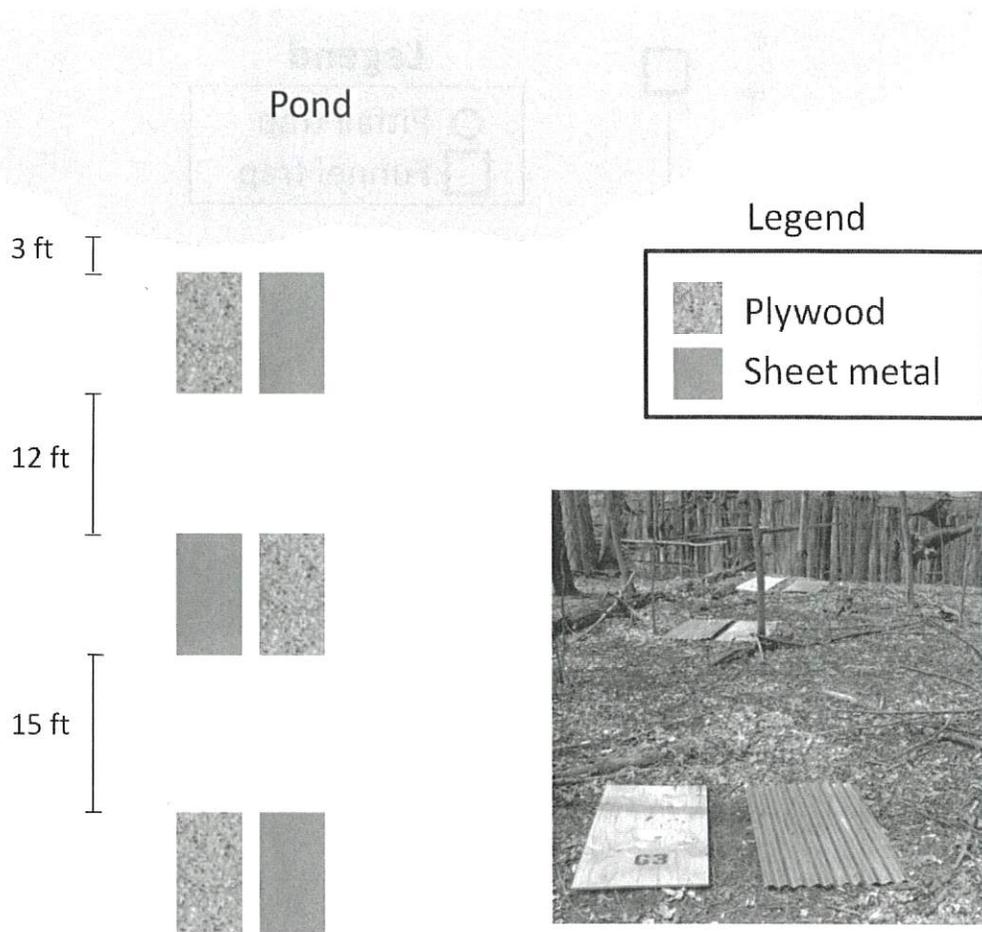


Figure 4. Layout for artificial cover object (ACO) transects at Bear Creek Nature Park, Cranberry Lake Park and Marsh View Park. Inset shows example transect at Bear Creek Nature Park.

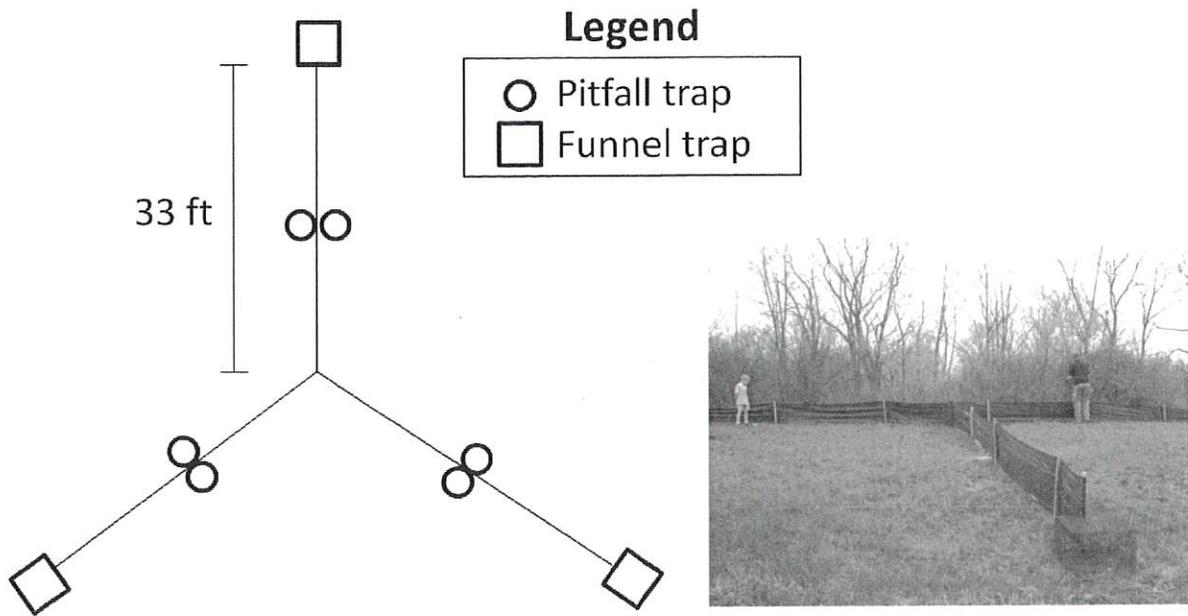


Figure 5. Top view of drift fence array (DFA). Lines represent 2-ft high drift fence (silt fencing). Pitfall traps are 4- to 5-gallon buckets. Inset shows example array at Bear Creek Nature Park.

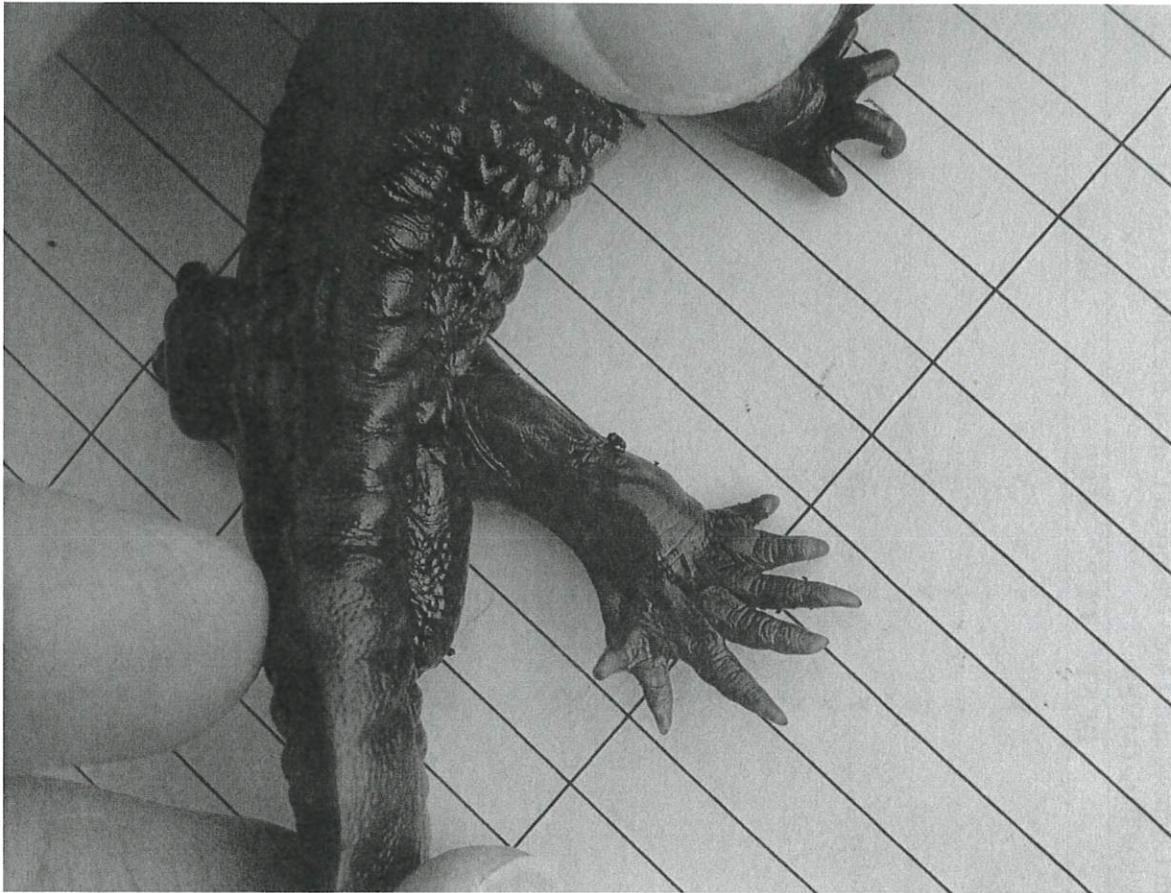


Figure 6. Hind right limb of polydactylous tiger salamander caught in large aquatic funnel trap at Cranberry Lake Park on 6 April 2008 showing seven digits rather than the normal five.

Table 1. Amphibians Known to Occur in Oakland and Adjacent Counties and Those Observed During the 2008 Survey of Bear Creek Nature Park (BCNP), Cranberry Lake Park (CLP), and Marsh View Park (MVP)

Common Name <sup>1</sup>	Scientific Name	BCNP	CLP	MVP	Status <sup>2</sup>
<i>Frogs</i>					
Green Frog	<i>Rana clamitans</i>	Y	Y	Y	
Bullfrog	<i>Rana catesbiana</i>				
Northern Leopard Frog	<i>Rana pipiens</i>	Y	Y	Y	
Wood Frog	<i>Rana sylvatica</i>	Y	Y	Y	
Pickerel Frog	<i>Rana palustris</i>				
Gray Treefrog	<i>Hyla versicolor</i> and/or <i>Hyla chrysoscelis</i> <sup>3</sup>	Y	Y	Y	
Western Chorus Frog	<i>Pseudacris triseriata triseriata</i>	Y	Y	Y	
Northern Spring Peeper	<i>Pseudacris crucifer crucifer</i>	Y	Y	Y	
American Toad	<i>Bufo americanus americanus</i>	Y	Y		
Blanchard's Cricket Frog	<i>Acris crepitans blanchardii</i>				SC
<i>Salamanders</i>					
Blue-spotted Salamander	<i>Ambystoma laterale</i>	Y	Y		
Spotted Salamander	<i>Ambystoma maculatum</i>	Y			
Eastern Tiger Salamander	<i>Ambystoma tigrinum tigrinum</i>	Y	Y		
Smallmouth Salamander	<i>Ambystoma texanum</i>				E
Red-backed Salamander	<i>Plethodon cinereus</i>	Y			
Four-toed Salamander	<i>Hemidactylium scutatum</i>				
Red-spotted Newt	<i>Notophthalmus viridescens viridescens</i>	Y	Y		
Mudpuppy	<i>Necturus maculosus maculosus</i>				

<sup>1</sup> Common and scientific names are given here to the subspecific level.

<sup>2</sup> Conservation status as designated by the State of Michigan. Abbreviations are as follows: E = endangered, T = threatened, SC = special concern.

<sup>3</sup> Both species of the morphologically cryptic Gray Treefrogs occur in Oakland Township and it is difficult to impossible to distinguish between them.

Table 2. Reptiles Known to Occur in Oakland and Adjacent Counties and Those Observed During the 2008 Survey of Bear Creek Nature Park (BCNP), Cranberry Lake Park (CLP), and Marsh View Park (MVP)

Common Name <sup>1</sup>	Scientific Name	BCNP	CLP	MVP	Status <sup>2</sup>
<i>Snakes</i>					
Eastern Garter Snake	<i>Thamnophis sirtalis sirtalis</i>	Y	Y	Y	
Butler's Garter Snake	<i>Thamnophis butleri</i>				
Northern Ribbon Snake	<i>Thamnophis sauritus sauritus</i>	Y			
Northern Redbelly Snake	<i>Storeria occipitomaculata occipitomaculata</i>	Y			
Brown Snake <sup>3</sup>	<i>Storeria dekayi</i>	Y			
Eastern milk snake	<i>Lampropeltis triangulum triangulum</i>	Y			
Blue Racer	<i>Coluber constrictor constrictor</i>				
Eastern Massasauga Rattlesnake	<i>Sistrurus catenatus catenatus</i>				SC
Kirtland's Snake	<i>Clonophis kirtlandii</i>				E
Copperbelly Watersnake	<i>Nerodia erythrogaster neglecta</i>				E
Northern Water Snake	<i>Nerodia sipedon sipedon</i>				
Eastern Fox Snake	<i>Elaphe vulpine gloydi</i>				T
Black Rate Snake	<i>Elaphe obsoleta obsoleta</i>				SC
Eastern Hognose Snake	<i>Heterodon platirhinos</i>				
Smooth Green Snake	<i>Opheodrys vernalis</i>				
Northern Ringneck Snake	<i>Diadophis punctatus edwardsii</i>				
<i>Lizards</i>					
Five-lined Skink	<i>Eumeces fasciatus</i>				
<i>Turtles</i>					
Midland Painted Turtle	<i>Chrysemys picta marginata</i>	Y	Y	Y	
Common Snapping Turtle	<i>Chelydra serpentina serpentina</i>	Y	Y	Y	
Blanding's Turtle	<i>Emydoidea blandingii</i>	Y			SC
Spotted Turtle	<i>Clemmys guttata</i>				T
Common Map Turtle	<i>Graptemys geographica</i>				
Eastern Spiny Softshell	<i>Apalone spinifera spinifera</i>				
Eastern Box Turtle	<i>Terrapene carolina carolina</i>				SC

<sup>1</sup> Common and scientific names are given here to the subspecific level.

<sup>2</sup> Conservation status as designated by the State of Michigan. Abbreviations are as follows: E = endangered, T = threatened, SC = special concern.

<sup>3</sup> Michigan lies in an intergrade zone between the Midland Brown Snake (*S. d. wrightorum*) and the Northern Brown Snake (*S. d. dekayi*).

Table 3. Sites Used in the 2008 Survey of Bear Creek Nature Park (BCNP), Cranberry Lake Park (CLP), and Marsh View Park (MVP)

Park	Site	Site Type	Survey Method	GPS Coordinates <sup>1</sup>
BCNP	A	Vernal pool	ACO <sup>2</sup> , Dipnet, Aquatic Funnel Traps	N 42°43.974' W 83°09.187'
	B	Vernal pool	ACO, Dipnet, Aquatic Funnel Traps	N 42°43.927' W 83°09.229'
	C	Upland	ACO	N 42°44.039' W 83°09.295'
	D	Vernal pool	ACO, Dipnet, Aquatic Funnel Traps	N 42°44.171' W 83°09.256'
	E	Vernal pool	ACO, Dipnet, Aquatic Funnel Traps	N 42°44.222' W 83°09.258'
	F	Upland	ACO	N 42°44.286' W 83°09.225'
	G	Vernal pool	ACO, Dipnet, Aquatic Funnel Traps	N 42°44.346' W 83°09.248'
	H	Vernal pool	ACO, Dipnet, Aquatic Funnel Traps	N 42°44.402' W 83°09.279'
	Marsh	Marsh	Dipnet, Aquatic Funnel Traps	see Figure 1 for location
	DFA <sup>3</sup>	Upland	DFA	N 42°44.179' W 83°09.354'
	Pond west of Pond E	Vernal pool	Aquatic Funnel Traps	see Figure 1 for location
CLP	I	Upland	ACO	N 42°47.199' W 83°08.855'
	J	Upland	ACO	N 42°47.462' W 83°08.886'
	K	Pond	ACO, Dipnet, Aquatic Funnel Traps	N 42°47.393' W 83°08.786'
	L	Upland	ACO	N 42°47.269' W 83°08.655'
	M	Vernal pool	ACO, Dipnet, Aquatic Funnel Traps	N 42°47.106' W 83°08.660'
	Northernmost pond	Vernal pool	Dipnet, Aquatic Funnel Traps	see Figure 2 for location
	Pond north of DFA	Vernal pool	Dipnet	see Figure 2 for location
	Bog at Cranberry Lake	Bog	Dipnet	see Figure 2 for location
	DFA	Upland	DFA	N 42°47.577' W 83°08.851'
MVP	N	Vernal pool	ACO, Dipnet, Aquatic Funnel Traps	N 42°46.487' W 83°12.041'
	O	Upland/Vernal pool	ACO, Aquatic Funnel Traps	N 42°46.435' W 83°12.116'
	P	Upland	ACO, Aquatic Funnel Traps	N 42°46.219' W 83°12.067'
	Q	Upland	ACO	N 42°46.177' W 83°11.946'
	Marsh	Marsh	Dipnet, Aquatic Funnel Traps	see Figure 3 for location
	DFA	Upland	DFA	N 42°46.458' W 83°12.039'

<sup>1</sup> GPS coordinates are given in datum NAD 83 as latitude/longitude

<sup>2</sup> ACO = artificial cover object

<sup>3</sup> DFA = drift fence array

Table 4. Methods Utilized in the 2008 Survey of Bear Creek Nature Park (BCNP), Cranberry Lake Park (CLP), and Marsh View Park (MVP)

<b>Method</b>	<b>Target Groups</b>	<b>Dates Employed</b>
Artificial cover object (ACO)		
Sheet metal	Small to large snakes	March – July
Plywood	Small to large snakes, salamanders	March – July
Aquatic funnel trap		
Small (1" opening)	Aquatic salamanders, frogs	March – April
Large (2 ½" opening)	Aquatic salamanders, turtles, frogs	March – June
Drift fence array (DFA)		
Terrestrial funnel traps	Medium to large snakes	April – July
Pitfall traps	Small to medium snakes, most frogs	April – July
Visual encounter survey (VES)	Small to large snakes, turtles, frogs	May – June
Dip-netting	Salamander larvae	June – July

Table 5. Time Spent Dip-Netting During the 2008 Survey of Bear Creek Nature Park (BCNP), Cranberry Lake Park (CLP), and Marsh View Park (MVP), June and July 2008

<b>Park</b>	<b>Site</b>	<b>Number of Person Minutes</b>
BCNP	Pond A	96
	Pond B	70
	Pond D	22
	Pond E	94
	Pond G	30
	Pond H	48
	Marsh	30
CLP	Pond K	124
	Pond M	20
	Pond north of DFA	160
	Northernmost pond surveyed	22
	Bog around Cranberry Lake	36
MVP	Marsh	210

Table 6. Results of Amphibian and Reptile Survey of Bear Creek Nature Park (BCNP), Oakland Township, Michigan, March to July 2008

Common Name	Detection Method <sup>1</sup>							VE	INC	Total
	ACOs		Aq. Traps		DFA					
	CB	SM	SA	LA	DN	TF	PF			
<i>Amphibians</i>										
<i>Frogs</i>										
Green Frog <sup>2</sup>	0	0	4	2	1	1	0	1	26	35
Northern Leopard Frog	0	0	0	0	2	0	0	0	2	4
Wood Frog <sup>2</sup>	2	1	0	0	1	0	0	1	58	63
Gray Treefrog <sup>2</sup>	0	0	0	0	0	1	0	1	10	12
Western Chorus Frog <sup>2</sup>	0	0	0	0	0	0	0	0	1	1
Northern Spring Peeper <sup>2</sup>	0	0	0	0	0	0	1	0	2	3
American Toad <sup>2</sup>	0	0	0	0	0	0	1	0	4	5
Total Frogs	2	1	4	2	4	2	2	3	103	123
<i>Salamanders</i>										
Blue-spotted Salamander	10	0	5	0	15	0	0	0	3	33
Spotted Salamander	1	0	3	12	23	0	0	0	1	40
Eastern Tiger Salamander	0	0	1	0	0	0	0	0	0	1
Red-backed Salamander	3	0	0	0	0	0	0	0	15	18
Red-spotted Newt	2	1	2	0	21	0	1	0	0	27
Total Salamanders	16	1	11	12	59	0	1	0	19	119
Total Amphibians	18	2	15	14	63	2	3	3	122	242
<i>Reptiles</i>										
<i>Snakes</i>										
Eastern Garter Snake	41	55	0	0	0	47	0	2	34	179
Northern Ribbon Snake	1	1	0	0	0	0	0	0	3	5
Northern Redbelly Snake	8	7	0	0	0	0	0	0	3	18
Brown Snake	12	11	0	0	0	0	1	0	1	25
Eastern Milk Snake	6	1	0	0	0	0	0	0	0	7
Total Snakes	68	75	0	0	0	47	1	2	41	234
<i>Turtles</i>										
Midland Painted Turtle	0	0	0	9	1	0	0	0	44	54
Blanding's Turtle	0	0	0	2	0	0	0	0	0	2
Common Snapping Turtle	0	0	0	0	0	0	0	0	3	3
Total Turtles	0	0	0	11	1	0	0	0	47	59
Total Reptiles	68	75	0	11	2	47	1	2	88	293
Total Amphibians and Reptiles	86	77	15	25	65	49	4	5	210	535

<sup>1</sup> Numbers of observed animals, actual numbers of animals present may be lower since captured animals were not marked. Abbreviations are as follows: ACO = artificial cover object, Aq. Traps = aquatic traps, DFA = drift fence array, CB = plywood ACO, SM = sheet metal ACO, SA = small aquatic trap, LA = large aquatic trap, TF = terrestrial funnel trap, PF = pitfall trap, VE = visual encounter, INC = incidental observation.

<sup>2</sup> Heard calling (actual number of individuals heard was not estimated and are not included in tally)

Table 7. Results of Amphibian and Reptile Survey of Cranberry Lake Park (CLP), Oakland Township, Michigan, March to July 2008

Common Name	Detection Method <sup>1</sup>									Total
	ACOs		Aq. Traps		DFA					
	CB	SM	SA	LA	DN	TF	PF	VE	INC	
<i>Amphibians</i>										
<i>Frogs</i>										
Green Frog <sup>2</sup>	0	0	0	0	0	0	0	0	3	3
Northern Leopard Frog <sup>2</sup>	0	0	0	0	0	0	0	3	8	11
Wood Frog <sup>2</sup>	2	0	18	1	0	0	0	4	10	35
Gray Treefrog <sup>2</sup>	0	0	0	0	0	0	0	0	0	0
Western Chorus Frog <sup>2</sup>	0	0	0	0	0	0	0	0	0	0
Northern Spring Peeper <sup>2</sup>	0	0	0	0	0	0	0	0	0	0
American Toad	0	0	0	0	0	0	0	2	0	2
Total Frogs	2	0	18	1	0	0	0	9	21	51
<i>Salamanders</i>										
Blue-spotted Salamander	0	0	7	0	25	0	0	0	0	32
Eastern Tiger Salamander	0	0	0	1	4	0	0	0	1	6
Red-spotted Newt	0	0	0	0	1	0	0	0	0	1
Total Salamanders	0	0	7	1	30	0	0	0	1	39
Total Amphibians	2	0	25	2	30	0	0	9	22	90
<i>Reptiles</i>										
<i>Snakes</i>										
Eastern Garter Snake	17	15	0	0	0	2	0	3	40	77
Total Snakes	17	15	0	0	0	2	0	3	40	77
<i>Turtles</i>										
Midland Painted Turtle	0	0	0	10	0	1	0	1	1	13
Common Snapping Turtle	0	0	0	0	0	0	0	1	0	1
Total Turtles	0	0	0	10	0	1	0	2	1	14
Total Reptiles	17	15	0	10	0	3	0	5	41	91
Total Amphibians and Reptiles	19	15	25	12	30	3	0	14	63	181

<sup>1</sup> Numbers of observed animals, actual numbers of animals present may be lower since captured animals were not marked. Abbreviations are as follows: ACO = artificial cover object, Aq. Traps = aquatic traps, DFA = drift fence array, CB = plywood ACO, SM = sheet metal ACO, SA = small aquatic trap, LA = large aquatic trap, TF = terrestrial funnel trap, PF = pitfall trap, VE = visual encounter, INC = incidental observation.

<sup>2</sup> Heard calling (actual number of individuals heard was not estimated and are not included in tally)

Table 8. Results of Amphibian and Reptile Survey of Marsh View Park (MVP), Oakland Township, Michigan, March to July 2008

Common Name	Detection Method <sup>1</sup>									Total
	ACOs		Aq. Traps		DFA					
	CB	SM	SA	LA	DN	TF	PF	VE	INC	
<i>Amphibians</i>										
<i>Frogs</i>										
Green Frog <sup>2</sup>	0	0	0	0	0	2	0	0	0	2
Northern Leopard Frog <sup>2</sup>	0	0	0	0	0	0	0	0	0	0
Wood Frog <sup>2</sup>	0	0	0	0	0	0	0	0	1	1
Gray Treefrog <sup>2</sup>	0	0	0	0	0	0	0	0	0	0
Western Chorus Frog <sup>2</sup>	0	0	0	0	0	0	0	0	0	0
Northern Spring Peeper <sup>2</sup>	0	0	0	0	0	0	0	0	0	0
Total Frogs	0	0	0	0	0	2	0	0	1	3
Total Amphibians	0	0	0	0	0	4	0	0	1	3
<i>Reptiles</i>										
<i>Snakes</i>										
Eastern Garter Snake	1	36	0	0	0	4	0	0	3	44
Total Snakes	1	36	0	0	0	4	0	0	3	44
<i>Turtles</i>										
Midland Painted Turtle	0	0	0	0	0	0	0	0	1	1
Common Snapping Turtle	0	0	0	0	0	0	0	0	2	2
Total Turtles	0	0	0	0	0	0	0	0	3	3
Total Reptiles	1	36	0	0	0	4	0	0	6	47
Total Amphibians and Reptiles	1	36	0	0	0	8	0	0	7	50

<sup>1</sup> Numbers of observed animals, actual numbers of animals present may be lower since captured animals were not marked. Abbreviations are as follows: ACO = artificial cover object, Aq. Traps = aquatic traps, DFA = drift fence array, CB = plywood ACO, SM = sheet metal ACO, SA = small aquatic trap, LA = large aquatic trap, TF = terrestrial funnel trap, PF = pitfall trap, VE = visual encounter, INC = incidental observation.

<sup>2</sup> Heard calling (actual number of individuals heard was not estimated and are not included in tally)

Appendix I. Herpetofauna Observed During 1976<sup>1</sup> and 2005<sup>2</sup> Surveys of Oakland Township

Common Name	Scientific Name
<b>1976 Survey of Bear Creek Nature Park</b>	
<i>Amphibians</i>	
<i>Frogs</i>	
Green Frog	<i>Rana clamitans</i>
Northern Leopard frog	<i>Rana pipiens</i>
Wood Frog	<i>Rana sylvatica</i>
Gray Treefrog	<i>Hyla versicolor</i> or <i>Hyla chrysoscelis</i>
Western Chorus Frog	<i>Pseudacris triseriata triseriata</i>
Northern Spring Peeper	<i>Pseudacris crucifer crucifer</i>
American Toad	<i>Bufo americanus americanus</i>
<i>Salamanders</i>	
Blue-spotted Salamander	<i>Ambystoma laterale</i>
Spotted Salamander	<i>Ambystoma maculatum</i>
Red-backed Salamander	<i>Plethodon cinereus</i>
Red-spotted Newt	<i>Notophthalmus viridescens viridescens</i>
<i>Reptiles</i>	
<i>Snakes</i>	
Eastern Garter Snake	<i>Thamnophis sirtalis sirtalis</i>
Northern Ribbon Snake	<i>Thamnophis sauritus sauritus</i>
Northern Redbelly Snake	<i>Storeria occipitomaculata occipitomaculata</i>
Brown Snake <sup>3</sup>	<i>Storeria dekayi</i>
Eastern Milk Snake	<i>Lampropeltis triangulum triangulum</i>
Blue Racer	<i>Coluber constrictor constrictor</i>
<i>Turtles</i>	
Midland Painted Turtle	<i>Chrysemys picta marginata</i>
Common Snapping Turtle	<i>Chelydra serpentina serpentina</i>
Blanding's Turtle	<i>Emydoidea blandingii</i>
<b>2005 Survey of Marsh View Park</b>	
<i>Amphibians</i>	
<i>Frogs</i>	
Green Frog	<i>Rana clamitans</i>
Northern Leopard frog	<i>Rana pipiens</i>
Wood Frog	<i>Rana sylvatica</i>
American Toad	<i>Bufo americanus americanus</i>
<b>2005 Survey of Stony Creek Park</b>	
<i>Amphibians</i>	
<i>Frogs</i>	
Green Frog	<i>Rana clamitans</i>
Wood Frog	<i>Rana sylvatica</i>
American Toad	<i>Bufo americanus americanus</i>
<i>Salamanders</i>	
Blue-spotted Salamander	<i>Ambystoma laterale</i>
Red-backed Salamander	<i>Plethodon cinereus</i>
<i>Reptiles</i>	
<i>Snakes</i>	
Eastern Garter Snake	<i>Thamnophis sirtalis sirtalis</i>

<sup>1</sup> *Natural History of the Devereaux Property*, M. Tombouliau

<sup>2</sup> *Herpetological Survey Report*, Herpetological Resource Management, Plymouth, MI

<sup>3</sup> The original report listed Brown Water Snake which does not occur on Michigan. This is certainly a misprint, and likely should have read Brown Snake and possibly Northern Water Snake as well.

Appendix II. Non-targeted Species of Interest Observed at Bear Creek Nature Park (BCNP), Cranberry Lake Park (CLP) and Marsh View Park (MVP) from March to July 2008

Common Name	Scientific Name	Number Observed			Notes
		BCNP	CLP	MVP	
<b>Birds</b>					
Sora	<i>Porzana carolina</i>			2	Nest found
Sandhill Crane	<i>Grus canadensis</i>			2	Nest with 2 eggs found
Marsh Wren	<i>Cistothorus palustris</i>			2	1 nest found
<b>Mammals</b>					
Mink	<i>Mustela vison</i>			1	Dead on Adams Rd adj. to park
Masked Shrew	<i>Sorex cinereus</i>	1		1	
Northern Short-tailed Shrew	<i>Blarina brevicauda</i>	1		1	
Meadow Jumping Mouse	<i>Zapus hudsonius</i>	2			
Meadow Vole	<i>Microtus pennsylvanicus</i>	1	1		
Mouse*	<i>Peromyscus</i> sp.	1			
Eastern Mole	<i>Scalopus aquaticus</i>	1			
<b>Insects</b>					
Baltimore Checkerspot Butterfly	<i>Euphydryas phaeton</i>			2	Mating pair

\* Unable to distinguish in the field between Deer Mouse (*Peromyscus maniculatus*) and White-footed Mouse (*Peromyscus leucopus*)

Appendix III. Key to Abbreviations Used in Appendices IV and V

<b>Abbreviation</b>	<b>Definition</b>
<b>Wind Codes</b>	
0	Calm (<1 mph), smoke rises vertically
1	Light air (1-3 mph), smoke drifts, weather vane inactive
2	Light breeze (4-7 mph), leaves rustle, can feel wind on face
3	Gentle breeze (8-12 mph), leaves and twigs move, small flags extend
4	Moderate breeze (13-18 mph), moves thin branches, raises loose papers
5	Fresh breeze (>19 mph), small trees begin to sway
<b>Sky Codes</b>	
0	Few clouds
1	Partly cloudy (scattered) or variable
2	Cloudy or overcast
4	Fog or smoke
5	Drizzle or light rain
7	Snow
8	Showers
<b>Location</b>	
BCNP	Bear Creek Nature Park
CLP	Cranberry Lake Park
MVP	Marsh View Park
<b>Census Methods</b>	
ACO	Artificial cover object
AL	Large aquatic funnel trap
AS	Small aquatic funnel trap
CB	Coverboard (wood)
DFA	Drift fence array
DN	Dipnet
INC	Incidental observation
PF	Pitfall trap
SM	Sheet metal coverboard
TF	Terrestrial funnel trap
VES	Visual encounter survey
<b>Life Stages</b>	
A	Adult
J	Juvenile
L	Larva
M	Recent metamorph

Appendix III. Key to Abbreviations Used in Appendices IV and V, Continued

Abbreviation	Definition	
<b>Species</b>		
AMLA	Blue-spotted Salamander	<i>Ambystoma laterale</i>
AMMA	Spotted Salamander	<i>Ambystoma maculatum</i>
AMTI	Eastern Tiger Salamander	<i>Ambystoma tigrinum</i>
BUAM	American Toad	<i>Bufo americanus</i>
CHPI	Midland Painted Turtle	<i>Chrysemys picta</i>
CHSE	Common Snapping Turtle	<i>Chelydra serpentina</i>
EMBL	Blanding's Turtle	<i>Emydoidea blandingii</i>
HYVE	Gray Treefrog	<i>Hyla versicolor</i> or <i>H. chrysoscelis</i>
LATR	Eastern Milk Snake	<i>Lampropeltis triangulum</i>
NOVI	Red-spotted Newt	<i>Notophthalmus viridescens</i>
PLCI	Red-backed Salamander	<i>Plethodon cinereus</i>
PSCR	Spring Peeper	<i>Pseudacris crucifer</i>
PSTR	Western Chorus Frog	<i>Pseudacris triseriata</i>
RASY	Wood Frog	<i>Rana sylvatica</i>
RACL	Green Frog	<i>Rana clamitans</i>
RAPI	Northern Leopard Frog	<i>Rana pipiens</i>
STDE	Northern Brown Snake	<i>Storeria dekayi</i>
STOC	Redbelly Snake	<i>Storeria occipitomaculata</i>
THSI	Eastern Garter Snake	<i>Thamnophis sirtalis</i>
THSA	Northern Ribbon Snake	<i>Thamnophis sauritus</i>

**CHARTER TOWNSHIP OF OAKLAND**

**RECREATION VISIONING AND PRELIMINARY  
SITE DEVELOPMENT PLAN –  
ECOLOGICAL ASSESSMENT**

**Prepared by  
Weatherbee's Botanical Surveys**

**MAY 2000**

## INTRODUCTION

Weatherbee's Botanical Surveys was contracted by the Oakland Township Parks Commission to render a professional opinion as to the relative biological quality of five park sites that are potential candidates for inclusion in a proposed grant application. The five candidate sites are: Cranberry Lake Park, Charles Ilsley Park, Blue Heron Environmental Area, Bear Creek Park, and Oakland Hills Farm. The information developed through the services provided by Weatherbee's Botanical Surveys will be used by the Oakland Township Parks Commission as part of the criteria in selecting one of the candidate sites to be the focus of the grant application. The purpose of the grant application is to obtain funding to further develop the selected site in accordance with concepts developed through the visioning and charette process to be performed by Land Ethics, Inc. and Johnson-Hill Associates, respectively.

## METHODS

**Background Information Review.** The following documents, supplied by the Oakland Township Department of Parks and Recreation, were reviewed:

- Charter Township of Oakland. 1999. *Master Parks and Recreation Plan – 1999-2004*.
- Jaworski, E. 1994. *Preservation of Great Blue Heron Rookery, Oakland Township, Michigan*.
- Michigan Department of Natural Resources, Michigan Natural Features Inventory. 1988. *Identifying our Natural Heritage* (excerpts).
- Raymer, S. L. 1999. *List of Flora & Fauna Sighted at Cranberry Lake*.
- Thompson, P. 1974. *Ecological Survey of Oakland Township*.
- Thompson, P. 1997. *An Update of Critical Natural Areas in Oakland Township*.
- Tombouliau, M. 1976. *Natural History Survey of the Devereaux Property*.

The records of the Michigan Natural Features Inventory (NFI) were reviewed at their offices in Lansing. The NFI is the repository for information and reports of examples of significant natural communities and reported locations of protected (i.e. threatened, endangered and special concern) species; such instances are referred to as "element occurrences". In the case of sites listed, not because of the presence of a protected species, but rather the presence of a natural feature, it should be recognized that listed sites constitute exceptionally high quality examples of that feature. Thus, only the most outstanding examples of natural communities, such as dry-mesic southern forest, will be listed as element occurrences in the files of the NFI. The records were reviewed for element occurrences for the five sites as well as their vicinity.

**Field Reconnaissance.** Weatherbee's Botanical Surveys performed an overview reconnaissance of the five candidate sites on 24-25 April 2000. The field team from Weatherbee's Botanical Surveys consisted of Ms. Ellen Elliott Weatherbee and Dr. Brian Klatt. Ms. Mindy Milos of the Oakland Township Department of Parks and Recreation accompanied the field team to Bear Creek Park, Blue Heron Environmental Area, and Cranberry Lake Park. Additionally, Ms. Alice

Tombouljian of the Parks Commission participated in the reconnaissance for Blue Heron Environmental Area and Charles Isley Park.

During the reconnaissance, the major plant communities, as defined in *Michigan Natural Community Types* [Michigan Department of Natural Resources, Natural Features Inventory, 1989 (draft)] were identified. Based on the reconnaissance, the maps for each site, as contained in the master plan for the Oakland Township parks, or in the case of the Oakland Hills Farm site, the map supplied by the Parks Department, were color coded and modified in accordance with the results of the field reconnaissance.

For each plant community or community complex, in each site, a list of all plant species, in a reasonably identifiable state, was compiled. These lists are presented in the section on Findings. Based on this species list, the Floristic Quality Index (FQI) was calculated for each site according to the methods defined in *Floristic Quality Assessment with Wetland Categories and Computer Application Programs for the State of Michigan* (Herman, *et al.* 1996). The FQI is calculated based on a "coefficient of conservatism" ranging from 0 – 10 that has been assigned to each plant species native to Michigan. This coefficient of conservatism represents "an estimated probability that a plant is likely to occur in a landscape relatively unaltered from what is believed to be a presettlement condition." In other words, plants with a low numerical rating can be found in a wide range of habitats, while those with a high number are "almost always restricted to a presettlement remnant, *i.e.* a high quality natural area."

To interpret values of the FQI, the Michigan Natural Heritage Program provides the following guidance, "Most of the remaining undeveloped land registers floristic quality indices (FQI) of less than 20 and has minimal significance from a natural quality perspective. Areas with a FQI higher than 35 possess sufficient conservatism and richness that they are floristically important from a statewide perspective. Areas registering in the 50s and higher are extremely rare and represent a significant component of Michigan's native biodiversity and natural landscapes."

Herman, *et al.* (1996) also present the wetland indicator status for each plant species native to, or naturalized in, Michigan. Species assigned a wetland indicator status of:

- OBL (Obligate Wetland) almost always occur in wetlands under natural conditions (more than 99% probability);
- FACW (Facultative Wetland) plants usually occur in wetlands, but occasionally are found in non-wetlands (67% - 99% probability);
- FAC (Facultative) plants are equally likely to occur in wetlands or non wetlands (34% - 66% probability);
- FACU (Facultative Upland) plants occasionally occur in wetlands, but usually occur in non-wetlands (estimated 1% - 33% probability); and
- UPL (Upland) plants almost never occur in wetlands under natural conditions (less than 1% probability).

For each plant species contained in the tables in Findings, the following are presented: scientific name, common name, coefficient of conservatism, and wetland indicator status.

In addition to the floristics recorded for the sites, observations of animals, animal sign and general notation as to the suitability of the areas for wildlife were made during the field reconnaissance.

## FINDINGS AND RECOMMENDATIONS

### General Findings

Overall, the five sites were found to have a wide array of habitat types ranging from the open water of ponds to upland areas with substantial topographic relief. A total of 186 plant species, 153 of these being native to Michigan, were identified on the five sites and direct evidence of 25 animal species was noted during the two-day reconnaissance. Within-site habitat diversity was also fairly high due to the range of hydrologic regimes (open water to dry hillside), substantial degree of topographic relief, and range of human disturbance in terms of both degree of disturbance and time since disturbance.

The following plant communities were found on the five sites:

- Wetland plant communities
  - Emergent marsh
  - Southern wet meadow
  - Bog
  - Southern swamp
  - Southern shrub-carr
  
- Terrestrial plant communities
  - Dry-mesic southern forest ("oak-hardwood forest")
  - Dry southern forest ("oak forest")
  - Old field

General descriptions of these plant communities, as well as others mentioned with respect to recommendations for the sites, based on *Michigan Natural Community Types (draft)* (MDNR 1989) are presented in Appendix A. The approximate boundaries of the communities are presented in Figures 1-5. These boundaries should be considered preliminary due to the limited time spent on each site. More detailed investigations would likely result in the modification of these boundaries, reclassification of some areas with respect to community type, and the addition of plant and animal species to the lists for each site.

Floristic Quality Indices (FQI) calculated for the five sites ranged from a low of 19.21 for the Oakland Hills Farm site to a high of 39.56 for the Blue Heron Environmental Area. Listings of the plant communities and species found in each site, the number of native and non-native plant species, and the site-specific FQIs are presented in Tables 1-5.

Evidence of wildlife, including reptiles, amphibians, birds and mammals was evident across the sites. Table 6 presents a complete list of the fauna, based on direct observation, calls, or sign, noted during the reconnaissance. We would note in particular that white-tailed deer sign, in the form of hoof prints, scat and buck rubs, was common in all five sites.

Review of the NFI files revealed that there are no reported occurrences of threatened, endangered or special concern species for any of the five park sites. However, the eastern massasauga rattlesnake (*Sistrurus catenatus catenatus*), a special concern species, has been reported from within 1,000 feet of the northeast corner of Bear Creek Park. The habitat of this, Michigan's only venomous snake, is described as swamps and marshlands, though it is known to move to upland fields and woodlands in summer, likely in search of food (mice and voles). Thus, while this species has not been reported from any of the park sites, all five of the sites contain suitable habitat for this species and it quite likely occurs in a number, if not all, of the sites. It should be pointed out that this species is normally shy and retiring and avoids contact with humans.

While no protected species, other than the rattlesnake, has been reported either in, or in the near vicinity of, the parks, two of the parks contain resources that are considered significant by the Michigan Natural Features Inventory. Both the rookery located within Blue Heron Environmental Area and the oak-hardwood forest in the northern portion of Bear Creek Park (see description in next section) are listed as element occurrences in the files of the Michigan Natural Features Inventory. As noted in the Methods section, only the most outstanding examples of natural features are listed in the NFI. Thus, while there are many examples of oak-hardwood forest in Oakland Township, the forested area in Bear Creek Park constitutes an outstanding example of this community and is recognized as such by the NFI.

While recent human activity has no doubt affected the surface topography to a great extent, glacial activity, 10,000 years ago, appears to largely explain the gross topography of the sites. Based on observation, the various ridges on the sites appear to be glacial moraines (areas where sand and gravel deposits were pushed by the advancing ice, or dropped by the melting glacier), the low areas (now pond and wetland borders) were areas of meltwater run-off, and the steep knobs on several of the sites are probably glacial kames (cone-shaped features of stratified sands and gravel which were deposited by glacial melt water percolating down through fissures in the glacial ice). These are important topographic features that characterize what occurred historically on the site. These features effect surface water runoff patterns and, in combination with groundwater elevations, probably have a large impact on microhabitat conditions, which, in turn, determine small-scale vegetation patterns. Additionally, these features provide visual interest due to their undulating nature.

### **Site-Specific Findings and Recommendations**

**Bear Creek Park.** This site contained complexes of emergent marsh/southern swamp/southern shrub-carr, dry-mesic forest (oak-hardwood forest) and old-field/fencerow plant communities. The park had a FQI of 32.65, which is the second highest FQI found among the sites. As suggested by the high FQI, portions of this site are of quite high floristic quality. In particular, the area along the pathway leading from the Township offices is in very good condition from a

biological standpoint. The reason for the quality is likely the steep grades within this area that would have made grazing or logging difficult in the past, as suggested by the high number of mature trees in this area. We realize that the area along the path is not part of Bear Creek Park, *per se*. Nevertheless, we would encourage the Park Commission to recognize the value of this parcel and to manage it in conjunction with the remainder of the park.

The most note-worthy area within the park proper is the area of oak-hardwood forest in the northern end of the park. Like the entrance area, this area appears to have been spared much of the disturbance of other areas of the park due its topography. The area supports a species-rich, oak-hardwood forest that is good condition based on the presence of a healthy groundlayer of spring wildflowers (in areas that have been severely cut-over or grazed, the spring wildflowers tend to be much reduced). Indeed, as noted above, this area is specifically listed as an element occurrence in the Michigan Natural Features Inventory.

The diversity of the oak-hardwood forest is further enhanced by the presence of a number of woodland ponds scattered through this community (and other areas of the park). These ponds contained an array of plant species that suggests that the water in the pond is present throughout most, if not all, of the growing season. The southern swamp/southern shrub-carr complexes are associated with these ponds. Sixty-five of the one-hundred and four plant species noted during the reconnaissance of the park were found in the oak-hardwood forest. While a healthy population of wildflowers (*e.g.* spring beauties, trillium) still exists in this area, Ms. Alice Tombouliau indicated that the wildflowers, especially the trillium, were formerly much more extensive. Such a decrease may be the result of browsing by white-tailed deer that appear to be abundant in the park, based on the frequency of sign. In addition to the deer sign found throughout this area, we observed several garter snakes, heard both spring peepers and chorus frogs, heard or observed a number of bird species, as well as observed evidence of squirrels. Given the limited amount of time spent in this area, the level of animal sign observed was quite impressive. Due to the very high quality of this area, we recommend that it be considered as a conservation area and as such, it be protected from development and carefully managed.

The pond that extends off the northeastern border of the park has the potential to provide good wildlife habitat. However, the structure of the plant community around the area, specifically the lack of either diversity or zonation of the plants, indicates that the water level in the area is fairly static. Lack of fluctuations in water levels in an aquatic or wetland system over the long term results in a reduction in the number of species occurring in the area; this seems to be the case with this area. Photographic evidence provided by Ms. Tombouliau, which shows a much more diverse area from the standpoint of both flora and fauna during the 1980s, corroborates this interpretation (Figure 6). Indeed, the photographs quite clearly indicate that the area has changed from an emergent marsh into an open-water pond, with only a minimal band of emergent vegetation along the edge of the pond. This shift in vegetation structure is significant from the standpoint of wildlife habitat. The photographs supplied by Ms. Tombouliau indicate that the area was formerly used for nesting by a variety of waterfowl that are no longer present, almost undoubtedly due to the change in available nesting structure. Consequently, we would strongly recommend that management of this include variation in water level accomplished through direct

intervention, or more passively through a variable flow outfall structure in order to return it to emergent marsh.

It was related to us that a portion of the Bear Creek Park is believed to contain a variety of prairie plants. We reviewed the area identified to us, but were unable to verify the presence of a significant number of prairie species. This may be due to the time of year of the reconnaissance as many prairie species are mid- to late-summer bloomers. However, at the time of the reconnaissance, grasses from the previous growing season should have still been evident and identifiable if they occurred in even moderate abundance. Thus, at this time, we are unable to concur with the opinion that a significant prairie community exists in the park, though a more thorough review of the area during mid-growing season is advisable to more fully evaluate this area for prairie plants.

The old-fields throughout the park are fairly typical. Based on the fact that many of the grasses present are not native, but are common European forage grasses, the old-fields appear to be old pasture areas or hay fields. While these areas are not particularly significant from a botanical perspective, they can be quite important from a wildlife standpoint. Old-fields provide some of the best habitat available for small mammals, such as shrews and voles, and, indeed, vole runways (*i.e.* tunnels through the grass) were observed. Voles can be especially critical in maintaining good wildlife populations, due to the fact that they are a very common food item for many predators, such as snakes, hawks, owls, fox, and coyote. In fact, a red-tailed hawk was observed hunting in the fields during the reconnaissance. Additionally, old-field provides nesting opportunities for a variety of birds such as field sparrows, pheasants, and meadow larks.

**Blue Heron Environmental Area.** This site included southern swamp/shrub-carr complexes and dry-mesic southern (oak-hardwood) forest, with some elements of southern mesic (beech-maple) forest contained within the oak-hardwood forest. The site scored an FQI of 39.6, the highest score for the five sites. As pointed out in the Methods section of this report, the Michigan Department of Natural Resources, Natural Features Inventory states that a site with an FQI above 35 possesses sufficient conservatism and richness that it is floristically important from a statewide perspective. A further indicator of the ecological quality of this site is the fact that of the 85 species recorded during the reconnaissance, 82 are native species. This is a very much intact ecosystem.

In addition to the presence of the heronry, perhaps the most significant aspect of this site is the lack of habitat fragmentation. Unlike Bear Creek Park and the other sites, in which the old-field areas are more-or-less mixed with native plant communities, the area of greatest disturbance (the farmed areas) in the Blue Heron area is limited to the eastern portion of the site. While the western portion of the area is a mosaic of different plant communities, these represent natural communities and are not fragmented. The fact that the western portion of the Blue Heron Environmental Area is comprised of a continuous mosaic of native Michigan communities is important for two reasons. First, it is well established that habitat fragmentation is associated with decreased species diversity. That is, a one-acre area of continuous (*i.e.* unfragmented) habitat will support more species than one acre of habitat comprised of a number of fragments, all

Table 1. Bear Creek Plant Communities and Species.

Scientific Name*	Common Name	Coefficient of Conservatism	Wetland Indicator Status
<b>Southern Shrub-carr/Southern Swamp Complex</b>			
<i>Acer negundo</i>	box elder	0	FACW-
<i>Acer rubrum</i>	red maple	1	FAC
<i>Acer saccharinum</i>	silver maple	2	FACW
<i>Apocynum cannabinum</i>	indian hemp; hemp dogbane	3	FAC
ARCTIUM MINUS	common burdock	*	UPL
BARBAREA VULGARIS	yellow rocket	*	FAC
<i>Carex lacustris</i>	sedge	6	OBL
<i>Carex stricta</i>	sedge	4	OBL
<i>Cephalanthus occidentalis</i>	buttonbush	7	OBL
<i>Cornus amomum</i>	silky or pale dogwood	2	FACW+
<i>Cornus foemina</i>	gray dogwood	1	FACW-
<i>Equisetum arvense</i>	common or field horsetail	0	FAC
<i>Fragaria virginiana</i>	wild strawberry	2	FAC-
<i>Fraxinus nigra</i>	black ash	6	FACW+
<i>Fraxinus pennsylvanica</i>	red ash	2	FACW
<i>Iris versicolor</i>	wild blue flag	5	OBL
<i>Lemna minor</i>	small duckweed	5	OBL
<i>Lysimachia ciliata</i>	fringed loosestrife	4	FACW
<i>Maianthemum canadense</i>	Canada mayflower	4	FAC
<i>Onoclea sensibilis</i>	sensitive fern	2	FACW
<i>Populus deltoides</i>	cottonwood	1	FAC+
<i>Quercus bicolor</i>	swamp white oak	8	FACW+
<i>Ranunculus flabellaris</i>	yellow water crowfoot	10	OBL
<i>Ranunculus sceleratus</i>	cursed crowfoot	1	OBL
RHAMNUS FRANGULA	glossy buckthorn	*	FAC+
ROSA MULTIFLORA	Japanese or multiflora rose	*	FACU
<i>Salix discolor</i>	pussy willow	1	FACW
<i>Salix nigra</i>	black willow	5	[OBL]
<i>Symplocarpus foetidus</i>	skunk cabbage	6	OBL
TARAXACUM OFFICINALE	common dandelion	*	FACU
<i>Thalictrum dasycarpum</i>	purple meadow-rue	3	FACW-
<i>Toxicodendron radicans</i>	poison-ivy	2	FAC+
<i>Trillium grandiflorum</i>	common trillium	5	UPL
TYPHA ANGUSTIFOLIA	narrow-leaved cat-tail	*	OBL
<i>Typha latifolia</i>	broad-leaved cat-tail	1	OBL
<i>Ulmus americana</i>	white or American elm	1	FACW-
<i>Urtica dioica</i>	nettle	1	FAC+
<i>Viburnum lentago</i>	nannyberry; sheepberry	4	FAC+
VIBURNUM OPULUS	European highbush cranberry	*	[FAC]

Table 1. Bear Creek Plant Communities and Species.

Scientific Name*	Common Name	Coefficient of Conservatism	Wetland Indicator Status
<b>Dry-mesic Forest Species</b>			
<i>Acer negundo</i>	box elder	0	FACW-
<i>Acer rubrum</i>	red maple	1	FAC
<i>Amelanchier laevis</i>	smooth shadbush	4	UPL
<i>Anemone quinquefolia</i>	wood anemone	5	FAC
<i>Arisaema triphyllum</i>	Jack-in-the-pulpit; Indian-turnip	5	FACW-
<i>BERBERIS VULGARIS</i>	common barberry	*	FACU
<i>Carex pensylvanica</i>	sedge	4	UPL
<i>Carya cordiformis</i>	bitternut hickory	5	FAC
<i>Carya ovata</i>	shellbark or shagbark hickory	5	FACU
<i>CELASTRUS ORBICULATA</i>	oriental bittersweet	*	UPL
<i>Claytonia virginica</i>	spring-beauty	4	FACU
<i>Collinsonia canadensis</i>	richweed	8	FAC
<i>Cornus alternifolia</i>	alternate-leaved dogwood	5	UPL
<i>Cornus foemina</i>	gray dogwood	1	FACW-
<i>Corylus americana</i>	hazelnut	5	FACU-
<i>Dentaria laciniata</i>	cut-leaved toothwort	5	FACU
<i>Dioscorea villosa</i>	wild yam	4	FAC-
<i>ELAEOAGNUS UMBELLATA</i>	autumn-olive	*	[FACU]
<i>Euonymus obovata</i>	running strawberry bush	5	UPL
<i>Fraxinus americana</i>	white ash	5	FACU
<i>Fraxinus pennsylvanica</i>	red ash	2	FACW
<i>Galium aparine</i>	annual bedstraw	0	FACU
<i>Geranium maculatum</i>	wild geranium	4	FACU
<i>Geum canadense</i>	white avens	1	FAC
<i>Hamamelis virginiana</i>	witch-hazel	5	FACU
<i>Juglans nigra</i>	black walnut	5	FACU
<i>Juniperus virginiana</i>	red-cedar	3	FACU
<i>LIGUSTRUM VULGARE</i>	common privet	*	FAC-
<i>Lindera benzoin</i>	spicebush	7	FACW-
<i>Lonicera dioica</i>	red honeysuckle	5	FACU
<i>LONICERA MAACKII</i>	amur honeysuckle	*	UPL
<i>MALUS PUMILA</i>	apple	*	[UPL]
<i>Ostrya virginiana</i>	ironwood; hop hornbeam	5	FACU-
<i>Parthenocissus quinquefolia</i>	Virginia creeper	5	FAC-
<i>Podophyllum peltatum</i>	May apple; mandrake	3	FACU
<i>Populus grandidentata</i>	big-toothed or large-toothed aspen	4	FACU
<i>Potentilla simplex</i>	old-field or common cinquefoil	2	FACU-
<i>Prenanthes alba</i>	white lettuce; rattlesnake-root	5	FACU
<i>PRUNELLA VULGARIS</i>	lawn prunella	*	FAC
<i>PRUNUS AVIUM</i>	sweet cherry	*	[UPL]
<i>Prunus serotina</i>	wild black cherry	2	FACU
<i>Pyrola elliptica</i>	large-leaved shinleaf	6	UPL
<i>Quercus alba</i>	white oak	5	FACU
<i>Quercus rubra</i>	red oak	5	FACU
<i>Quercus velutina</i>	black oak	6	UPL

Table 1. Bear Creek Plant Communities and Species.

Scientific Name*	Common Name	Coefficient of Conservatism	Wetland Indicator Status
<i>RHAMNUS CATHARTICA</i>	common buckthorn	*	FACU
<i>RHAMNUS FRANGULA</i>	glossy buckthorn	*	FAC+
<i>Rhus typhina</i>	staghorn sumac	2	UPL
<i>Ribes cynosbati</i>	prickly or wild gooseberry	4	UPL
<i>Ribes glandulosum</i>	skunk currant	5	FACW
<i>Rubus allegheniensis</i>	common blackberry	1	FACU+
<i>Rubus occidentalis</i>	black raspberry	1	UPL
<i>Rubus strigosus</i>	wild red raspberry	2	FACW-
<i>Sanguinaria canadensis</i>	bloodroot	5	FACU-
<i>Sassafras albidum</i>	sassafras	5	FACU
<i>TARAXACUM OFFICINALE</i>	common dandelion	*	FACU
<i>Thalictrum dasycarpum</i>	purple meadow-rue	3	FACW-
<i>Toxicodendron radicans</i>	poison-ivy	2	FAC+
<i>Trillium grandiflorum</i>	common trillium	5	UPL
<i>Ulmus americana</i>	white or American elm	1	FACW-
<i>VERBASCUM THAPSUS</i>	common mullein	*	UPL
<i>Viburnum lentago</i>	nannyberry; sheepberry	4	FAC+
<i>Viburnum opulus americanum</i>	highbush cranberry	5	FACW
<i>Vitis riparia</i>	riverbank grape	3	FACW-
<i>Zanthoxylum americanum</i>	prickly-ash	3	UPL

**Old-field Species**

<i>Achillea millefolium</i>	yarrow	1	FACU
<i>AGROPYRON REPENS</i>	quack grass	*	FACU
<i>BROMUS INERMIS</i>	Hungarian brome; smooth brome	*	UPL
<i>CENTAUREA MACULOSA</i>	spotted knapweed	*	UPL
<i>CIRSIUM VULGARE</i>	bull-thistle	*	FACU-
<i>Cornus amomum</i>	silky or pale dogwood	2	FACW+
<i>Cornus foemina</i>	gray dogwood	1	FACW-
<i>DACTYLIS GLOMERATA</i>	orchard grass	*	FACU
<i>DAUCUS CAROTA</i>	wild carrot; Queen-Anne's-lace	*	UPL
<i>ELAEAGNUS UMBELLATA</i>	autumn-olive	*	[FACU]
<i>Monarda fistulosa</i>	wild bergamot	2	FACU
<i>Phalaris arundinacea</i>	reed canary grass	0	FACW+
<i>POA PRATENSIS</i>	Kentucky bluegrass	*	FAC-
<i>PRUNELLA VULGARIS</i>	lawn prunella	*	FAC
<i>ROSA MULTIFLORA</i>	Japanese or multiflora rose	*	FACU
<i>Rubus allegheniensis</i>	common blackberry	1	FACU+
<i>Solidago altissima</i>	tall goldenrod	1	FACU
<i>TARAXACUM OFFICINALE</i>	common dandelion	*	FACU

Table 1. Bear Creek Plant Communities and Species.

<i>Scientific Name*</i>	Common Name	Coefficient of Conservatism	Wetland Indicator Status
	Mean Value of Index of Conservatism =	3.65	
	Native Species Count =	80	
	Total Species Count =	104	
	Square Root of Native Species Count =	8.94	
	Floristic Quality Index =	32.65	

\* Species names listed in all caps are not native to Michigan

Table 6. Fauna observed directly or detected by calls or sign.

<i>Scientific Name</i>	Common Name	Bear Creek Park	Blue Heron Environ. Area	Cranberry Lake Park	Charle s Hsley Park	Oakland Hills Farm
<b>MAMMALS</b>						
<i>Canis latrans</i>	coyote		X			
<i>Marmota monax</i>	woodchuck	X		X	X	X
<i>Microtus pennsylvanicus</i>	meadow vole	X	X	X	X	
<i>Odocoileus virginianus</i>	white-tailed deer	X	X	X	X	X
<i>Sciurus carolinensis</i>	gray squirrel	X	X	X		
<i>Sylvilagus floridanus</i>	eastern cotton-tail rabbit	X		X		
<i>Tamias striatus</i>	eastern chipmunk		X			
<b>BIRDS</b>						
<i>Agelaius phoeniceus</i>	red-winged blackbird	X			X	X
<i>Anas platyrhynchos</i>	mallard	X				
<i>Ardea herodias</i>	great blue heron	X				
<i>Buteo jamaicensis</i>	red-tailed hawk	X				
<i>Cathartes aura</i>	turkey vulture	X				
<i>Hirundo rustica</i>	barn swallow			X	X	
<i>Parus atricapillus</i>	black-capped chickadee	X				
<i>Richmondia cardinalis</i>	cardinal	X		X	X	X
<i>Spizella pusila</i>	field sparrow	X		X	X	
<i>Turdus migratorius</i>	American robin	X	X	X	X	X
<i>Zenaidura macroura</i>	mourning dove	X	X			
<i>Zonotrichia albicollis</i>	white-throated sparrow	X				
<b>REPTILES</b>						
<i>Chelydra serpentina</i>	snapping turtle		X			
<i>Thamnophis sirtalis</i>	common garter snake	X	X			

Table 6. Fauna observed directly or detected by calls or sign.

<i>Scientific Name</i>	Common Name	Bear Creek Park	Blue Heron Environ. Area	Cranberry Lake Park	Charle s Isley Park	Oakland Hills Farm
<b>AMPHIBIANS</b>						
<i>Hyla crucifer</i>	northern spring peeper	X	X	X		
<i>Pseudacris triseriata triseriata</i>	western chorus frog	X	X			
<i>Rana pipiens</i>	northern leopard frog			X		
<i>Rana sylvatica</i>	wood frog			X		

## APPENDIX A

### DEFINITIONS OF PLANT COMMUNITIES

**Emergent Marsh.** This community typically occupies areas containing shallow water throughout much, if not all, of the year. Consequently, it is typically found along the shores of lakes, ponds and streams. It is characterized by narrow- and broad-leaved herbaceous plant species, as well as floating-leaved species, that have a portion of their above ground parts sticking out of the water, hence the term "emergent" marsh. Some of the plant species typical of these marshes are familiar to most people, such as cattail (*Typha*) and lily pads (*Nuphar* and *Nymphaea*). Other dominant plant species of these marshes include: water plantain (*Alisma plantago-aquatica*), sedges (*Carex*), spikerushes (*Eleocharis*), manna grass (*Glyceria*), rice-cut grass (*Leersia*), buckwheat (*Polygonum*), pickerel weed (*Pontederia*), arrowhead (*Sagittaria*) and bulrush (*Scirpus*).

**Southern Wet Meadow.** This community is a sedge and grass dominated wetland, located primarily south of the transition zone. It is typically found on muck soils, in stream valleys, along lake margins, and in depressions and channels in glacial outwash. Plant species characteristic of this community include: Canada blue joint grass (*Calamagrostis canadensis*), various sedges (*Carex*), reed canary grass (*Phalaris arundinacea*), spikerush (*Eleocharis*), rushes (*Juncus*), cattail (*Typha*), Joe-Pye weed (*Eupatorium maculatum*) and boneset (*Eupatorium perfoliatum*).

**Southern Swamp.** This deciduous-forest, wetland community occurs south of the transition zone. It is typically found on pH-neutral to acid, loam, silt loam, and sandy loam soils (site soils frequently include a clay layer) in depressions and channels of ground moraines, on glacial lake plains, and in depressions of glacial outwash, especially near moraines. Typical plant species include: silver maple (*Acer saccharinum*), red maple (*Acer rubrum*), red ash (*Fraxinus pennsylvanica*), black ash (*F. nigra*), American elm (*Ulmus Americana*), swamp white oak (*Quercus bicolor*), pin oak (*Q. palustris*), and black gum (*Nyssa sylvatica*).

**Southern Shrub-Carr.** This shrub-dominated community is successional intermediate between wet meadow/fen and swamp forest; and though considered successional, it can be persistent at a site for a very long time (multiple decades). The sites it occupies tend to be characterized by fluctuating water levels and poor drainage conditions; the former condition may contribute to its persistence at a site. Consequently, Southern Shrub-Carr is typically found next to streams, rivers and lakes, all of which occur in glacial outwash, ice contact topography, or coarse-textured end moraines. Soils at sites supporting Southern Shrub-Carr are typically shallowly inundated to saturated mucks; neutral to slightly alkaline. Typical shrub species include: gray dogwood (*Cornus foemina*), red-osier dogwood (*C. stolonifera*), silky dogwood (*C. amomum*), various willows (*Salix*), elderberry (*Sambucus canadensis*), and Michigan holly (*Ilex verticillata*). The herb layer of Southern Shrub-Carr is quite variable with respect to species composition.

**Bog.** This plant community is truly one of the more unique habitats one will encounter. They are characterized by a sedge or sedge-sphagnum floating mat and/or deep sphagnum peat deposits (i.e. "peat moss") dominated by *Sphagnum* and low shrubs of the blueberry family. They are found in kettles on end moraines, on the margins of lakes and ponds, in depressions in glacial outwash and sandy glacial lake plains. The common characteristic of the typical bog location is that the water reaching the area is entirely trapped by the topography, or the flow through the area is very reduced (i.e. ombrotrophic situations). Dominant plants of bogs include: sphagnum moss (*Sphagnum*), blueberries (*Vaccinium*), sedges (*Carex*), andromeda (*Andromeda*), sundews (*Drosera*), and leather leaf (*Chamaedaphne*).

**Dry-Mesic Southern Forest .** Dry-mesic southern forests are typically dominated by white and black oak. Other tree species frequently found in this community type include: wild-black cherry (*Prunus serotina*); shag-bark and pignut hickories (*Carya ovata* and *C. glabra*); and red maple (*Acer rubrum*), occurring on the moister, lower sections of slopes. This forest type tends to occur on dry-mesic sites in the southern half of the Michigan lower peninsula on glacial outwash, on kettle-kame topography, and on coarse-textured end and ground moraines. Most dry-mesic southern forests have at least some shrubs in the understory. The shrub species vary from native species (such as witch hazel (*Hamamelis Virginiana*) to non-native, invasive honeysuckles (primarily *Lonicera tartarica*).

**Mesic Southern Forest.** The *Michigan Natural Community Types (draft)* describes this community as "A southern hardwood forest type on moist ground with little oak, lying mostly south of the transition zone." It occurs primarily on medium- or fine-textured ground moraine, fine-textured end moraine, and on silty/clayey glacial lake plains, but may also occur on sandy lake plains and sand dunes. Typical soils of sites occupied by this community are variable, but tend to have a predominance of clay to loam texture. Dominant species tend to be sugar maple (*Acer saccharum*), American beech (*Fagus grandifolia*); occasionally, red oak (*Quercus rubra*) or tulip tree (*Liriodendron tulipifera*) codominate. This community is also known for a rich, spring, ephemeral flora that may include: wild leek (*Allium tricoccum*), wild ginger (*Asarum canadense*), cut-leaved toothwort (*Dentaria laciniata*), Dutchman's breeches (*Dicentra cucullaria*), yellow trout lily (*Erythronium americanum*), Virginia waterleaf (*Hydrophyllum virginianum*), false rue anenome (*Isopyrum biternatum*), woodland phlox (*Phlox divaricata*), and common trillium (*Trillium grandiflorum*).

**Dry Southern Forest.** Floristically, this community is very similar to dry-mesic southern forest, being dominated by oaks and occurring in glacial outwash areas. However, this community tends to found in drier sites relative to dry-mesic southern forest. Dominant plant species in the canopy are black oak (*Quercus velutina*) and white oak (*Q. alba*), but may also include pignut hickory (*Carya glabra*). Species that are faithful to the community also include red maple (*Acer rubrum*), wild black cherry (*Prunus serotina*), and sassafras (*Sassafras albidum*). The community tends to be found on loamy sand or sandy loam soils that are strongly to mediumly acidic. It is believed that in some cases this community type is, in fact, a later successional stage of oak barrens (following fire suppression). In such cases, typical shrub and herb species may include New Jersey tea (*Ceanothus americanus*), hazelnut (*Corylus americana*), stickseed (*Hackelia virginiana*), whorled loosestrife (*Lysimachia quadrifolia*) and summer grape (*Vitis aestivalis*). Non-oak barrens-derived examples of this community may have witchhazel (*Hamamelis virginiana*), Indian pipe (*Monotropa uniflora*) and summer grape prominent in the groundlayer.

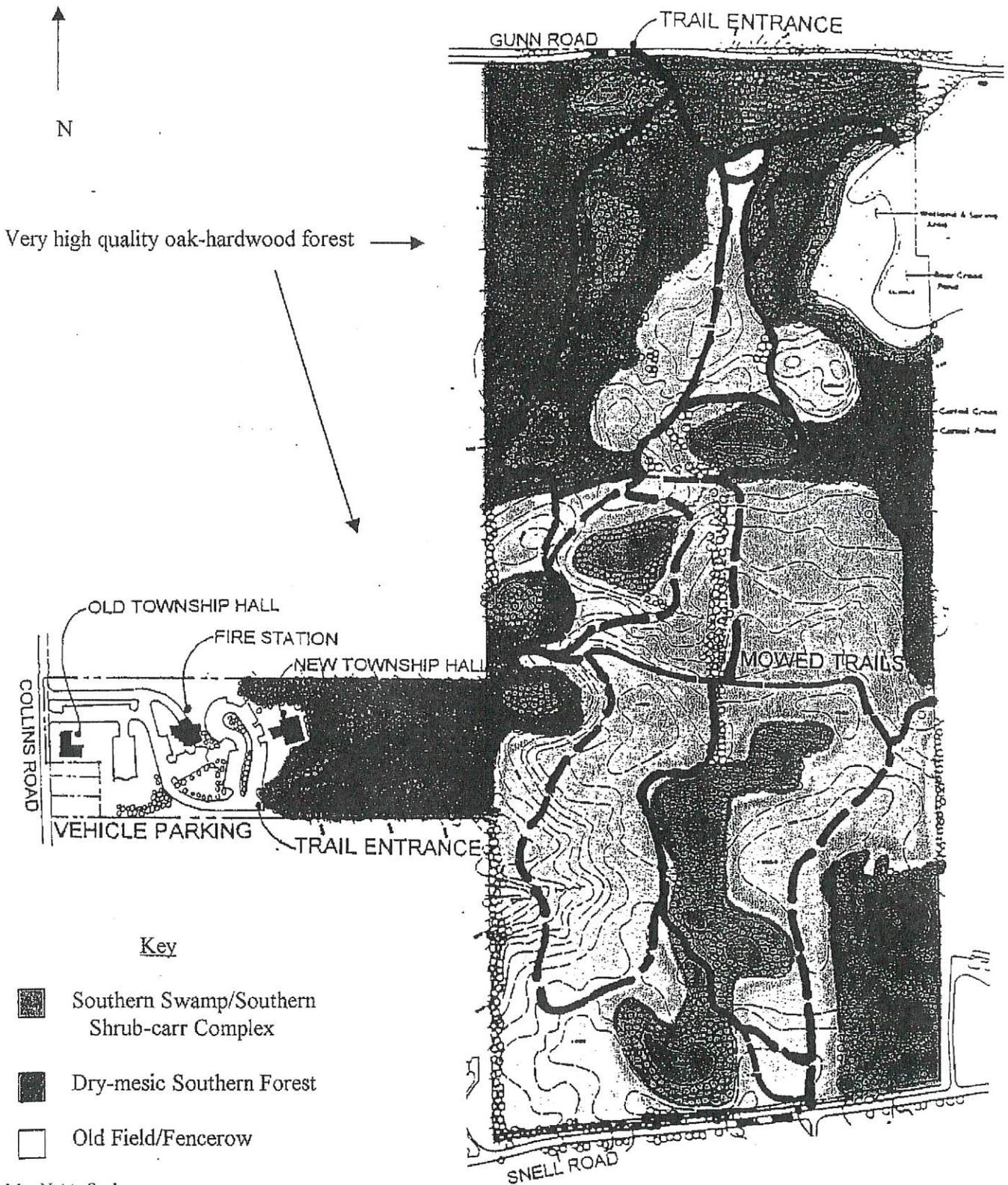
**Oak Openings.** This community is known primarily from literature, though it was formerly widespread in Michigan. A type of savanna, it was a fire-dependent community that occurred in dry-mesic conditions on level to rolling topography on well-drained outwash plains and coarse-textured end moraines. In the absence of fire, this community would rapidly undergo succession to oak-hardwood or oak forest within 20-30 years. The canopy of this community was dominated by white oak (*Quercus alba*), but also might include bur oak (*Q. macrocarpa*), black oak (*Q. velutina*), shagbark hickory (*Carya ovata*), and pignut hickory (*Carya ovalis*). The understory of this community would be dominated by dry to mesic prairie species such as big bluestem (*Andropogon gerardii*) and little bluestem (*Andropogon scoparius*).

**Hillside Prairie.** *Michigan Natural Community Types (draft)* describes this community as "Native grassland and savanna relicts on dry exposed slopes and crests of hills, surrounded by oak forest or former oak savanna." Hillside prairie tended to occur on the south- or west-facing slopes of hills, where the aspect contributed to relatively high evapotranspiration rates. Water stress in this community was also caused by

soils with poor water retention capacity such as sandy-loam and loamy-sand. The community is believed to occur solely in glacial outwash situations. The dominant species of the community were trees and grasses: black oak (*Quercus velutina*), white oak (*Q. alba*), little bluestem (*Andropogon scoparius*), porcupine grass (*Stipa spartea*), and, in shady areas, big bluestem (*Andropogon gerardii*).

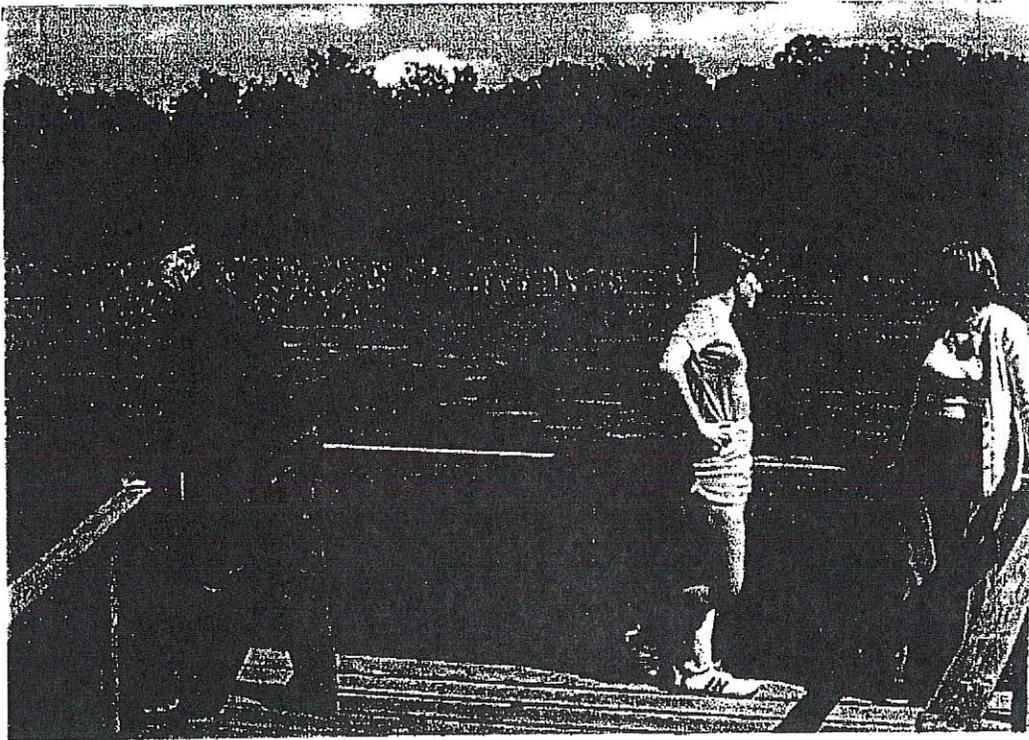
**Old-field.** While this community is not recognized and described in the *Michigan Natural Community Types*, it is nevertheless a widespread community throughout Michigan, though primarily of anthropogenic origins. As implied by the name, this community is found in areas that have been disturbed, usually by plowing or pasturing, and subsequently abandoned. The dominant plant species are highly variable and dependent on the agricultural history of the specific site. Thus, areas that were formerly plowed may be dominated by both native and non-native weedy species such as common ragweed (*Ambrosia artemisiifolia*) and foxtail grasses (*Setaria* spp.). Areas that were used for pasturing are likely to be dominated by the forage grasses planted at the site. Frequently, these are brome grasses (*Bromus* spp.) or fescues (*Festuca* spp.). The community is considered successional, but may be the dominant plant community on a site for many decades.

Figure 1. Bear Creek Park – Plant Community Distribution.



Map Not to Scale  
 Map source: Master Parks and Recreation Plan 1999-2004, Charter Township of Oakland

Figure 6. Photographs of wetland area at northeast corner of Bear Creek Park



View of area in 1980.



View of area in 2000.

# **IDENTIFYING OUR NATURAL HERITAGE**



**A NATURAL AREAS INVENTORY  
OF OAKLAND COUNTY**

---

Daniel T. Murphy, COUNTY EXECUTIVE

Kenneth Burchill, Executive Officer - Operations

Joseph D. Joachim, Director, Community & Economic Development Dept.

Philip W. Dondero, Manager, Planning Division

---

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## INTRODUCTION

In 1986, the Oakland County Planning Division contracted with staff of the Michigan Natural Features Inventory (MNFI), a unit within the Michigan Department of Natural Resources, to complete an inventory of the County's remaining natural areas. The biologists, botanists and ecologists of the MNFI were looking for land areas supporting high quality native vegetation in a state similar to pre-European settlement. In a sense, the identified areas are the least altered by man and the most natural sites in the County. They harbor special plants, animals and geologic features. These natural areas are reservoirs of the County's biological diversity. They are our natural heritage.

This document is a summary of a larger 242 page document that was prepared by MNFI staff. A copy of the full report can be viewed at the Planning Division's offices. It contains a more detailed account of what is included in this document. To accompany the written word, Planning staff prepared a map showing the location of Oakland County's natural areas. A copy of the map may be purchased at the Planning Division offices for \$2. After two years of field work, the ecologists identified 37 natural areas consisting of about 3000 acres and containing many rare plants and animals. All 37 areas are shown on the map. To arrive at the final 37 sites, four times that many were ground surveyed. Although they did not make the final list, these other sites may be of some local importance. Please contact the Planning Division for more information about these sites.

A standardized, objective approach for identifying natural areas was utilized. An extensive set of evaluative criteria and a systematic methodology ensured that the inventory ranked sites appropriately and included only the most natural areas.



## INVENTORY RESULTS

Although it has been stated earlier that a total of 37 natural areas were identified, it is also important to note that at those 37 sites a total of 63 natural communities were identified. Therefore, several of the 37 sites are comprised of more than one natural community. For example, the Lakeville Swamp natural area is comprised of three natural communities; a cedar swamp, a wet meadow and a prairie fen.

Eight of the 63 natural communities are of exceptional, or state-wide, significance. The remaining 55 natural communities are of notable, or county-wide, significance. Each site is described below in terms of the number of natural communities occurring there and their significance.

Of the 37 natural areas, eleven occur in State Parks. Six sites have some other type of public ownership such as township, county or the Huron-Clinton Metropolitan Authority. The largest number of sites, 20, are in some type of private or corporate ownership. The combined acreage of all 37 sites is 2992, or only one-half of one percent of the County's land area.

In addition to identifying natural land areas, MNFI staff also located several significant natural features. The locations of 48 endangered, threatened and special concern plant species were identified. Fourteen animal species of endangered, threatened or special concern were identified. There were sightings of orchids, gentians and lady-slippers. Ecologists also spotted a copperbelly water snake, least shrew and spotted turtles. There were recordings of champion specimens of four tree species, including silver maple and northern pin oak. Several great blue heron rookeries were found. Outstanding glacial geological features were identified as well. A complete listing of all of these special natural features is included in the full report.

The following list of sites gives a brief description of the common species found at each site, the site's significance, its ownership, its size, and a suggested conservation action for its protection. Conservation actions are discussed further in the "What Next?" section. A detailed species listing for each natural community is included in the full report.

**19. OAKLAND TOWNSHIP PARK FOREST (Oakland Township)**

This 24 acre dry-mesic southern forest is of county-wide significance. It is characterized by black red and white oaks, sugar maple and basswood. Part of this site is in private ownership and part is owned by Oakland Township. For further protection of the private lands portion, perhaps enrollment in P.A. 116 or registration with the Nature Conservancy would help.

**20. TROUT LAKE (Orion Twp., Oakland Twp.)**

Four natural plant communities totally within Bald Mountain State Recreation Area combine for a total of 160 acres. The communities are of county-wide significance. It is suggested that a dry-mesic southern forest and a relict conifer swamp be designated as a State Wild Area. One prairie fen needs further study before designation and the fourth plant community, another prairie fen should be protected in the park master plan. The dry-mesic southern forest is 129 acres and largely comprised of mature red and white oaks. It sits on irregular glacial terrain. The prairie fens total 13 acres. The fen that needs no further study contains sedges, cinquefoil and birch trees. An 18 acre conifer swamp is comprised of many species, including arborvitae, ash, elder, skunk cabbage, dewberry and lily of the valley.

**21. HUCKLEBERRY LAKE SWAMP (Springfield Township)**

This 11 acre relict conifer swamp is of county-wide significance. It contains tamarack, black spruce, highbush blueberries, mosses and pitcher plants. The swamp surrounds a glacial brown-water (due to tree tannins) pond. A shrub bog surrounds the swamp. The site is privately owned. Existing wetland protection laws should protect this site. Enrollment in the Open Space Preservation Act is another alternative.

**22. PONTIAC LAKE WOODS (White Lake Township)**

This is the only dry southern forest listed in the inventory. It is a 34 acre site totally within the Pontiac State Recreation Area. This site is of county-wide significance. Common species found here include black and white oak, flowering dogwood, and sedges. Further study on the distribution and rarity of this type of plant community is needed before final recommendations can be made. In the interim, protection in the park Master Plan is suggested.

# OAKLAND TWP

## OAKLAND TWP. PARK FOREST

24 ACRES

COUNTY-WIDE SIGNIFICANCE

TOWNSHIP AND PRIVATELY OWNED

ENROLL IN OPEN SPACE  
PRESERVATION ACT

19

## PAINT CREEK FOREST

17 ACRES

COUNTY-WIDE SIGNIFICANCE

PRIVATELY OWNED

ENROLL IN OPEN SPACE PRESERVATION  
ACT

18

## SHELDON FOREST

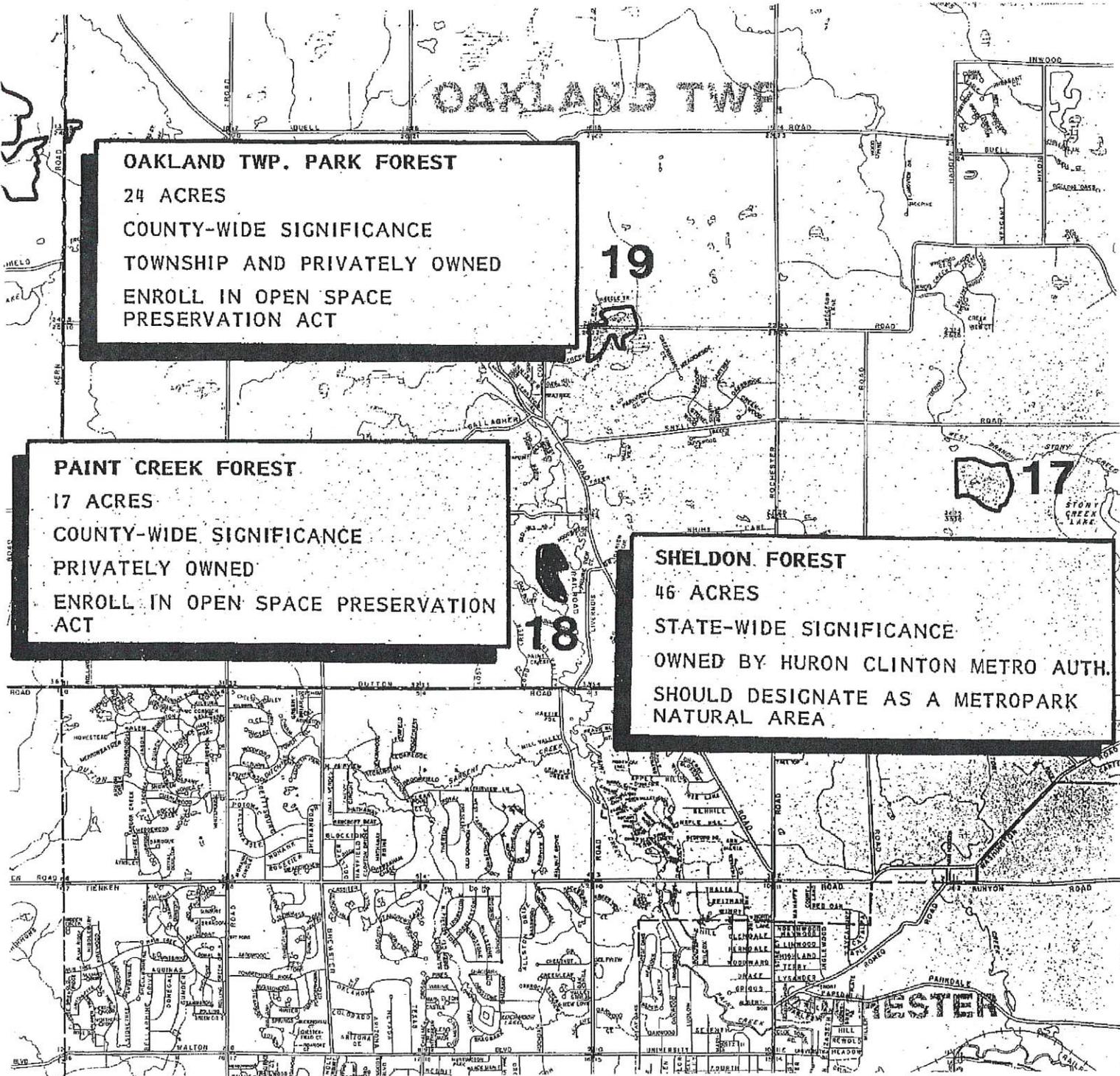
46 ACRES

STATE-WIDE SIGNIFICANCE

OWNED BY HURON CLINTON METRO AUTH.

SHOULD DESIGNATE AS A METROPARK  
NATURAL AREA

17



**TF19-0081 Bear Creek Nature Park Restroom Improvements Maintenance Plan (February 25, 2019)**

**Proposed Restroom Facilities**

Double Restroom vertical groove-sided Structure -2800 gallon Vault (approximately 4800 uses per vault). Life expectancy of vault toilet structure is 25 years and vault will be 35+ years.

**Current Maintenance Budget**

Oakland Township’s Parks and Recreation Parks millage funds the improvements, operation and maintenance of Oakland Township parks. The operations and maintenance portion of Oakland Township's 2019/2020 Parks and Recreation Millage budget will total \$1,066,000.

**Annual Maintenance Schedule and Costs for Marsh View Park Restroom Improvements**

<b>TASK NAME</b>	<b>FREQUENCY ESTIMATED</b>	<b>CONTRACTOR COST</b>	<b>ANNUAL STAFF TIME (\$17/hr)</b>	<b>EQUIPMENT/ MATERIALS COST</b>	<b>COMMENTS</b>
Restroom Interior Cleaning and Paper Products	Weekly		200 hours staff time 1 person	\$500 for cleaning/paper supplies	
Pumping of restroom vault	Yearly	\$1000			
<b>TOTALS</b>		<b>\$1,000</b>	<b>\$3,400</b>	<b>\$500</b>	<b>GRAND TOTAL \$4,900</b>

**Additional Maintenance Costs**

<b>TASK NAME</b>	<b>FREQUENCY</b>	<b>ANNUAL STAFF TIME</b>	<b>CONTRACTOR, EQUIPMENT/MATERIALS COST</b>	<b>TOTAL COST DURING 25 YEARS</b>
Staining of Restroom Siding	5 year cycle	16 hours staff time, 1 person	\$200	\$2,360
<b>TOTAL 25-Year COSTS</b>				<b>\$2,360</b>

**Total Life Cycle Cost Estimate**

<b>TASK NAME</b>	<b>FREQUENCY</b>	<b>ANNUAL STAFF TIME</b>	<b>CONTRACTOR, EQUIPMENT/MATERIALS COST</b>	<b>TOTAL LIFE CYCLE COST DURING 25 YEARS</b>
Design/Construction	Once			\$127,400
Annual Maintenance	Annual	\$3,400	\$1,500	\$122,500
Additional Maintenance	As Necessary			\$2,360
<b>TOTAL 25-Year COST</b>				<b>\$252,260</b>



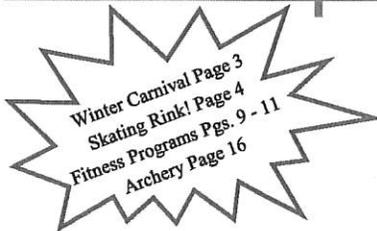
# Oakland Township Parks and Recreation Commission Newsletter

## Winter/Spring 2019

The Mission of Oakland Township Parks and Recreation Commission is to provide a sustainable system of parks, trails, programs, amenities, and services which create memorable experiences and a sense of place, contributes to the economic value of the Township and preserves the historical and natural heritage of the landscapes for existing and future generations.



Winter Carnival 2015 By Brian Bialik



Winter Carnival Page 3  
 Skating Rink! Page 4  
 Fitness Programs Pgs. 9 - 11  
 Archery Page 16

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## Gallagher Creek Park and Pathway Grand Opening

Refreshments & Giveaways!

Thursday, May 23, 2019 4:00 pm  
 2780 Silverbell Road

Please join Township officials and staff at a Grand Opening ceremony to celebrate the addition of recreation and transportation facilities, the protection of Gallagher Creek natural areas, and the restoration of prairie habitat. Family and friends can walk or bike on the new sidewalk from Adams Road to enjoy the playground's custom Treehouse structure including three sets of slides, 2-person swings, crawling and balancing logs, and a dragonfly seesaw.



(Continued on page 17)

## Land Preservation Landslide!



Photo by Cam Mannino

Thank you Oakland Township residents for your continued support of land preservation in your Oakland Township parks! On November 6<sup>th</sup> 68.53% of Oakland Township voters chose to again renew the 10-year Parks and Recreation Land Preservation millage.

For nearly 20 years, through the continued funding of our Land Preservation Millage, the Oakland Township Parks and Recreation Commission has protected more than 444 acres of Oakland Township

(Continued on page 24)

### Special points of interest:

- ◆ Winter Carnival
- ◆ Skating Rink  
New Location!
- ◆ Sled Hill!
- ◆ Programs
- ◆ Stewardship
- ◆ Paint Creek Trail  
Closures

## Mark your calendars!

### Winter Carnival is January 26, 2019!

Join us for Winter Carnival as we shift locations to Bear Creek Nature Park for a fun-filled winter day of activities — including ice skating, ice carving demonstration, kiddie sledding, archery, magic and balloon shows, and more! Bring your own skates or use a pair of ours for free. See page 3.



# What's New in The Parks

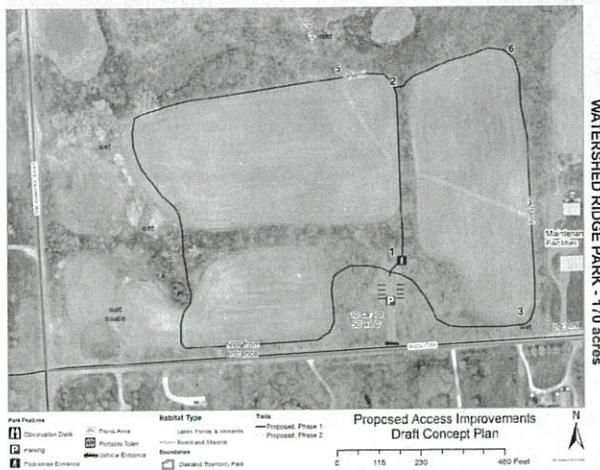
## From the Director

The renewal of our Land Preservation millage enables the Parks and Recreation Commission to not only continue the protection and stewardship of Township park natural areas, but to also provide public access to these areas.



In the spring and summer of next year, Parks and Recreation staff will be constructing initial access improvements at Watershed Ridge Park. This 170-acre park, located at the northeast corner of Buell and Lake George Roads, was purchased from residential developers with our Land Preservation funds, for an optimal price, at the start of the last recession. The park received its name from the northwest-southeast ridge which separates the Stony Creek watershed on the northeast from the Paint Creek watershed on the southwest. Watershed Ridge Park contains a mix of active farm fields, wetlands, forest, and prairie remnants. Parks staff will be developing the first phase of a trail system and a 10-space parking lot. The entrance to these mowed trails will be from the new parking lot along Buell Road. The Parks and Recreation Commission intends to apply for state grant funding in the future to complete the trail system, trailhead, and parking improvements at this park.

**Melinda Milos-Dale,**  
**Parks and Recreation Director**



## Student Archery Club Teams!

Not everyone wants to dunk a ball, tackle, or run fast... Students that attend Adams High School and Van Hoosen Middle School are invited to join their school's Archery Club Team for practice and competition in the Spring of 2019. This is a "no cut" sport and no previous experience is necessary. All equipment, USA Archery certified instructors and coaches, and uniforms will be provided, including the use of Oakland Township's Marsh View Park Outdoor Archery Range as their home range, for a fee of \$150. The season will run from March 14 through May 16 and practices will be held on Thursday evenings from 3:30pm to 5:00pm. All team members will have the opportunity to compete against other teams at the state-wide tournament held May 19.

*(Continued on page 17)*

## Paint Creek Trail Closure



The Paint Creek Trail Bridge 33.7, located between Dutton and Silverbell Roads, is scheduled to be replaced in late spring or early summer 2019. The Paint Creek Trail between Dutton and Silverbell Roads will be completely closed to thru traffic for 60-90 days and there is no detour. You will be able to use the trail from Rochester Municipal Park to Dutton Road, or Silverbell Road to Children's Park in Lake Orion. Please plan your visit to the Paint Creek Trail accordingly. The Paint Creek Trail is also scheduled to be resurfaced with crushed limestone concurrently with the Bridge 33.7 project. Trail users are advised that rolling closures will occur. Visit [paintcreektrail.org](http://paintcreektrail.org) for the latest project updates. See page 25.

## Ice Rink Moved to Bear Creek Nature Park

Bear Creek Nature Park expands its recreation lineup this winter! Always a hit with the playground and picnicking crowd, this park offers a more uniform grade and is closer to the heart of Parks and Recreation operations. Pack up your skates and check out the ice rink's new home this winter!



**Check out our New Location!**

# 2019 Winter Carnival

Saturday, January 26, 2019 12 Noon-4pm

New Location!

Bear Creek Nature Park, 740 West Snell Road

All parking at the Paint Creek Cider Mill

FREE parking and shuttle service from 11:45am - 4:30pm from  
Paint Creek Cider Mill Building, 4480 Orion Road (.25 miles from event)  
to Bear Creek Nature Park

FREE!

FREE!

## Ongoing Events 12 Noon - 4pm

### Ice Carving Demonstrations

See the ice carver sculpt frosty works of art before your eyes! Photo ops available.



### Nature Craft

Kids come and make a pine cone bird feeder for your backyard!



### Snow Games

- \* Penguin Bowling
- \* Pin Nose on Snowman
- \* Hockey Goal Shoot
- \* Snow Ball Fight

### Archery Target Shoot

Now's your chance to target shoot like Katniss Everdeen! Ages 5 and up.



### Ice Skating

Skate on our fabulous ice rink! Tips from national competitor, Julia Budnick. Limited number of skates for loan.



### Winter Scavenger Hunt

Go search for items you find in nature. How many of these wintry treasures can you collect?



### Kiddie Sledding

Ages 6 and under. Limited number of kiddie sleds for loan.



## Scheduled Events



### "Magic Joe"

12:15-1pm & 2:15-3pm

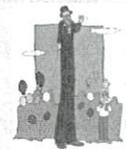
Will delight with his magic tricks!

### "Michigan Stilt Walker"

#### Balloon Show

1:15-2pm & 3:15-4pm

Learn how to make your own unique balloon designs!



## Food Tent



Grab a ticket to receive a warm beverage and a choice of pizza or a sandwich!

12pm until supplies last.

Snow or no snow!  
Bundle up, grab your skates, and head on over!



Sponsored by Oakland Township  
Parks and Recreation

For more information:  
call 248-651-7810 or visit oaklandtownship.org



Pizza Donated By: Hungry Howie's  
4930 N. Adams Rd., Oakland Twp., MI 48306

## Bear Creek Nature Park

740 West Snell Road  
Rochester, MI 48306

Call the ice rink hotline at 248-651-4440,  
ext. 289 to confirm rink is open.  
Ice must be frozen solid for rink to be open.

### Ice Skating Rink Rules

Ice Skating Rink users must abide by the following rules and regulations:

1. Ice rink unsupervised; skate at your own risk.
2. Do not enter the ice rink area when posted "Rink Closed - No Skating."
3. No digging, spraying, chipping or throwing ice.
4. Skating in a manner that endangers other skaters is not permitted.
5. No hockey, sticks or pucks are permitted.
6. Skaters must skate with the flow of traffic.
7. No loitering or use of the rink by persons without skates.
8. Do not carry items such as headsets, cell phones, etc., while skating.
9. No pets permitted in the ice rink area.
10. No drink or food including chewing gum is permitted on the ice.
11. Do not sit on, lean over, or leave articles on the side boards.
12. Children 12 years old and under must have adult supervision.
13. Children 6 years old and under must wear a helmet.
14. All other posted Oakland Township Parks rules apply.

### Ice Skating Rink Open Hours

Conditions permitting

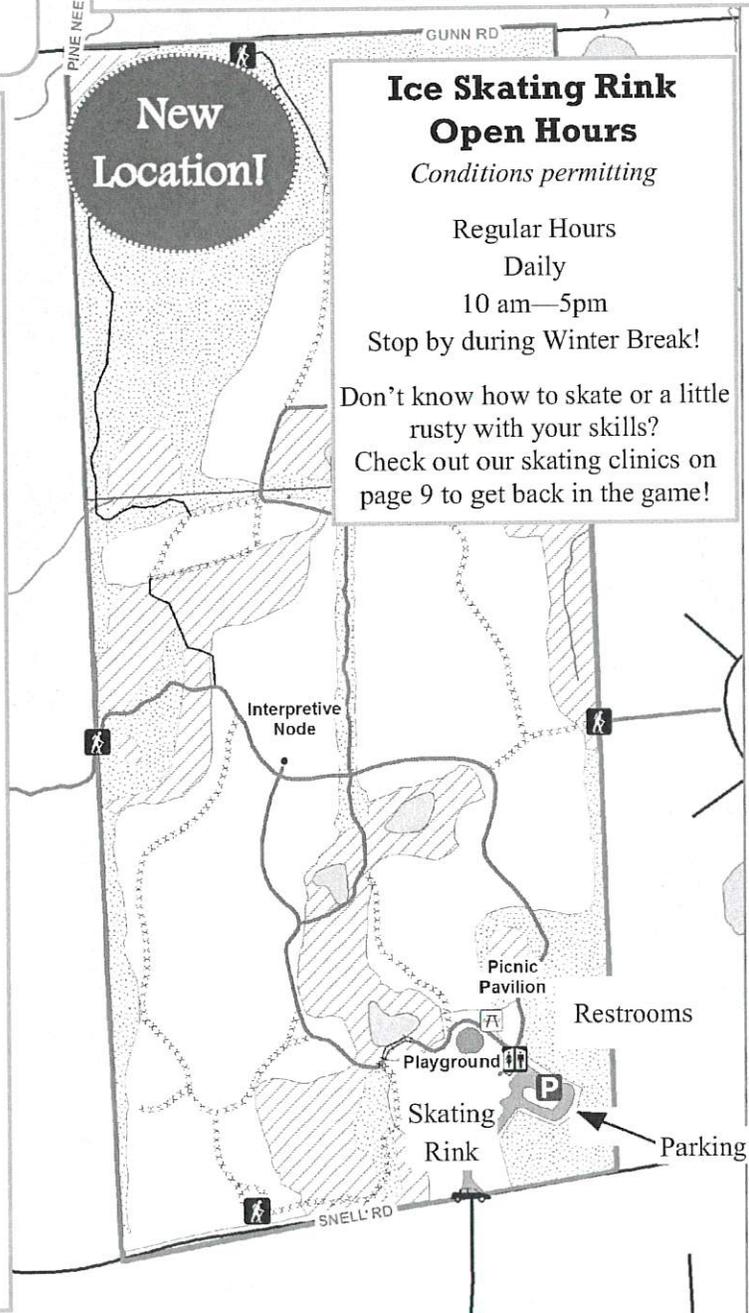
Regular Hours

Daily

10 am—5pm

Stop by during Winter Break!

Don't know how to skate or a little rusty with your skills?  
Check out our skating clinics on page 9 to get back in the game!



BEAR CREEK NATURE PARK - 107 ACRES

#### Park Features

- Interpretive Node
- Observation Deck
- Parking
- Pedestrian Entrance

- Picnic Area
- Portable Toilet
- Vehicle Entrance

**Oakland Township Parks  
Administrative Office**  
248-651-7810

#### Trails

- 8' Limestone Trail
- Boardwalk
- Mowed Trail
- 3' Woodchip/Dirt Trail

#### Boundaries

- Conservation Easement
- Oakland Township Park

#### Habitat Type

- Open Area
- Wetlands
- Woodlands
- Lakes & Ponds
- Rivers and Streams



Last Updated 13 March 2019

**Lost Lake Nature Park**  
 846 Lost Lake Trail  
 Oakland, MI 48363

**Call the sled hill hotline at 248-651-4440, ext. 299, to confirm hill is open. Must be 2 inches of packed snow on frozen ground for hill to be open**

**Sledding Under The Lights!**

Every Friday & Saturday Night

**Sled Hill Open Hours**

*Conditions permitting*

Daily  
 10am - 5pm  
 Friday and Saturday  
 10am - 9pm

**Sled Hill Rules**

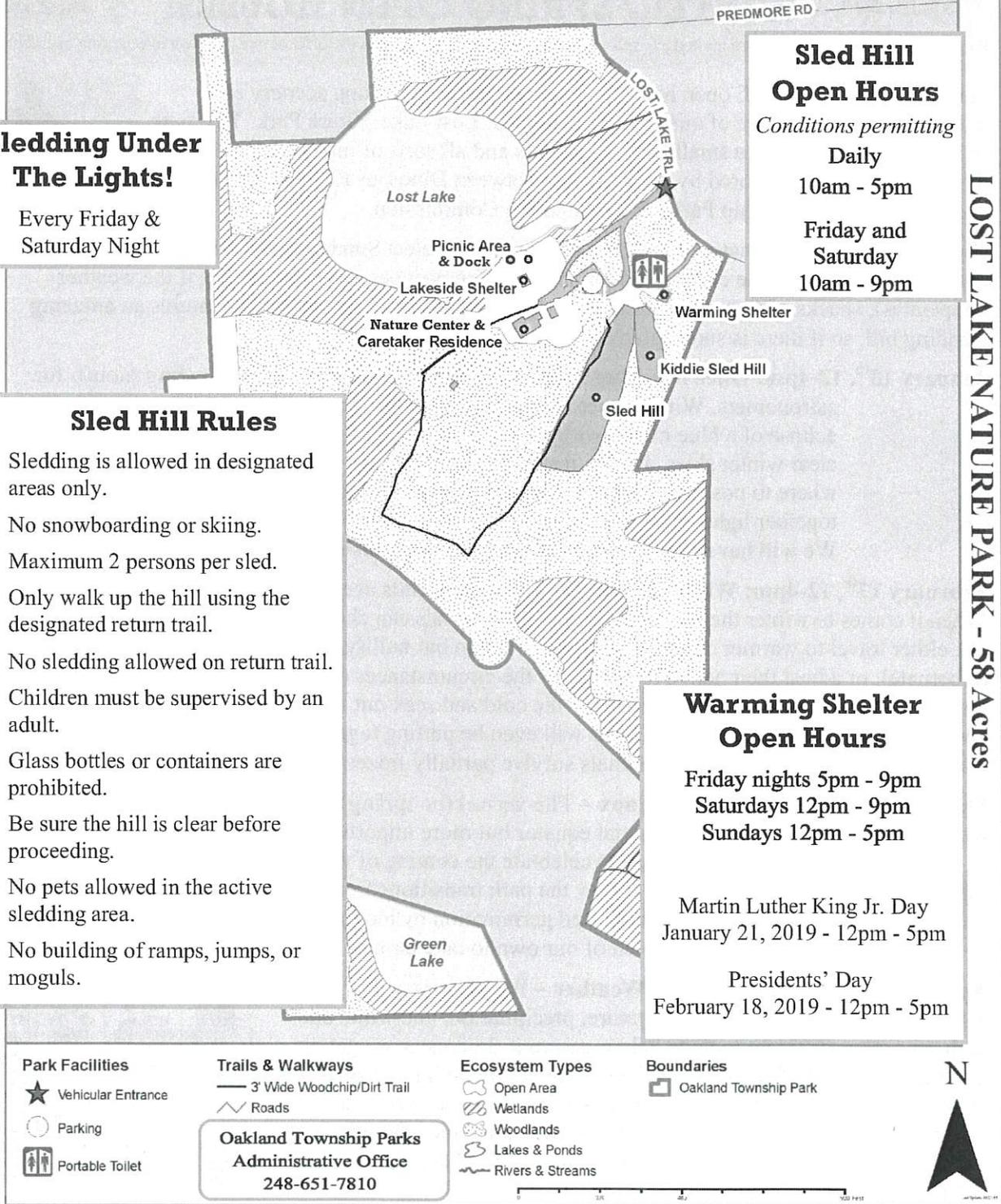
1. Sledding is allowed in designated areas only.
2. No snowboarding or skiing.
3. Maximum 2 persons per sled.
4. Only walk up the hill using the designated return trail.
5. No sledding allowed on return trail.
6. Children must be supervised by an adult.
7. Glass bottles or containers are prohibited.
8. Be sure the hill is clear before proceeding.
9. No pets allowed in the active sledding area.
10. No building of ramps, jumps, or moguls.

**Warming Shelter Open Hours**

Friday nights 5pm - 9pm  
 Saturdays 12pm - 9pm  
 Sundays 12pm - 5pm

Martin Luther King Jr. Day  
 January 21, 2019 - 12pm - 5pm

Presidents' Day  
 February 18, 2019 - 12pm - 5pm



LOST LAKE NATURE PARK - 58 Acres

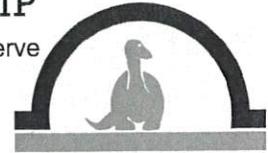
**Oakland Township Parks  
 Administrative Office  
 248-651-7810**



# LOST LAKE NATURE PARK PARTNERSHIP

Oakland Township Parks and Recreation & Dinosaur Hill Nature Preserve

Lost Lake Nature Park  
846 Lost Lake Trail, Oakland Charter Township, MI 48363



## FREE!

## WINTER/SPRING OPEN HOUSES!

## FREE!

Family, friends and neighbors are invited to explore everything this partnership has to offer at one of five winter/spring open houses!

Join us for a 100% FREE open house to celebrate the breathtaking scenery and excitement present at one of our favorite locations: Lost Lake Nature Park. This park is full of natural beauty, a small lake, huge trees and all sorts of interesting nature! The programs are sponsored by a partnership between Dinosaur Hill Nature Preserve and the Oakland Township Parks and Recreation Commission.



We will be opening the nature center for four hours on select Sundays for drop-by excitement. There will be crafts, outdoor activities (snowshoes will be available if the weather cooperates), snacks and on-site naturalists to guide your visit. The park also features an amazing sledding hill, so if there is snow, plan on a trip down the hill too!

**January 13<sup>th</sup>, 12-4pm: Once in a Blue Moon** – January is going to be an amazing month for astronomers. With a super moon, a meteor shower, a bulls-eye moon, and even an eclipse of a blue moon, we're going to be spending a lot of time glancing upward in the clear winter skies. Join us inside this chilly January day as we map out when and where to position your eyes this month for a stellar show! We will even be putting together light-up constellation boxes to take home and see the stars from your bedside! We will have snow shoes available for winter hikes if the weather cooperates.

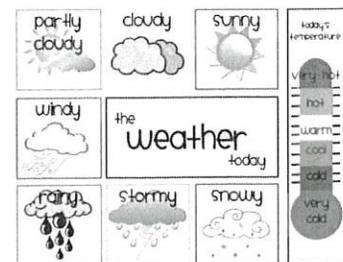
**February 17<sup>th</sup>, 12-4pm: Winter Habitats** – Not all animals are as hardy as the rest. When it comes to winter there are three pathways animals can choose to follow. They can either travel to warmer climates (migrate), remain but nullify their activity (hibernate), or adjust their active behavior for the circumstances (resist). Join us as we look at those determined critters that resist the cold and seek out warmth and sustenance and how they do it. Our smallest visitors will even be putting together snowy owl crafts while adults can learn about how animals survive partially frozen beneath the lake!



**March 24<sup>th</sup>, 12-4pm: Vernal Equinox** – The vernal (or spring) equinox is the time in March when the sun moves across the celestial equator but more importantly it means that spring has finally sprung. Join us as we celebrate the coming of wildflowers, animal activity, and rain by taking a look at how the park transitions from winter to spring. We will get really involved with seed germination by looking at seeds beneath a microscope and then planting a seed of our own to take home!



**April 14<sup>th</sup>, 12-4pm: Weather the Weather** – Weather is a combination of cloud cover, temperature, precipitation, and wind, and each aspect has different tools to help measure it. Join us as we get up close and personal with the tools of meteorology by taking our own readings of the state of nature at Lost Lake. We will even set up a weather station for a more in-depth look at how the atmosphere is faring this day. Miniature meteorologists will be given the chance to put together their own weather tools to take home!





## LOST LAKE NATURE PARK PARTNERSHIP

Oakland Township Parks and Recreation & Dinosaur Hill Nature Preserve

Lost Lake Nature Park

846 Lost Lake Trail, Oakland Charter Township, MI 48363

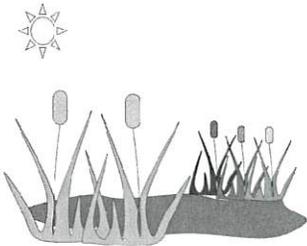


# WINTER/SPRING PROGRAMS!

Experience Lost Lake Nature Park with a class featuring both indoor and outdoor learning!

Sign up and pay in advance at [dinosaurhill.org](http://dinosaurhill.org). Registration closes a week before each class date.

**May 19<sup>th</sup>, 12-4pm: All the Water on Earth** – April showers bring May flowers but what do May flowers need? Water! With approximately 326 quintillion gallons of water moving across our planet there is a lot to talk about! We will be taking samples of Lost Lake beneath the microscope to look at the tiniest life we can see, we will be sampling the water to determine quality of both the lake and the surrounding marshes, and even play some water games and experiments inside!



**June 2<sup>nd</sup>, 12-4pm: Bug-Out Bag** – Many of our smaller, stranger, stingier friends are often referred to as pests but we don't see them that way here at Lost Lake. Every insect has its part to play in the overall health of the ecosystem and every player to us is as important as the honeybee (even the pesky mosquito). Join us as we look at some of the most common and strange creepy crawlies that call Oakland Township home while also determining which are the most beneficial for our at-home gardens. We will be using the stereoscope to observe some segmented body parts, learning how naturalists pin and preserve insects and even putting together bug boxes with our younger crowd inside! There will be frequent hikes outside to flip over logs and do some investigating.



**Pop Up Open House** – *date to be determined by mother nature!!! (12-4pm)* With the sledding hill in full swing we will be opening up our nature center, in addition to the warming shelter, for a very special way to regain feeling of your toes. We will be putting together winter crafts and serving out cups of hot chocolate to keep sled warriors fueled for their day of recreation at the park. We'll also be donning snowshoes periodically throughout the day to practice moving atop the snow as well for a unique way to experience Lost Lake's trail system!



## VOLUNTEER OPPORTUNITIES!

We are working hard to make Lost Lake an awesome place to visit. We are always looking for volunteers to assist with programs, help us spread the word about the nature center, and so much more! If you have a skill you would like to share, please get in touch with us and we bet we can put you to good use! Please contact: [angie@dinosaurhill.org](mailto:angie@dinosaurhill.org) for more information.

\*\*\*Dinosaur Hill offers programs at other Township parks as well.

Check out the other pages in this newsletter to see what is coming up soon!\*\*\*

We're on the web!

<https://www.facebook.com/LostLakeNaturePark/>

@LostLakeNaturePark



# Sledding Science

By Sue Neal, Executive Director  
Dinosaur Hill Nature Preserve

Many Oakland Township kids (okay, and a few adults too!) have discovered the joy of sledding the amazing hill at Lost Lake Nature Park in the winter time. This hill is certainly a whole lot of fun but did you know that there is some real science to be had at Lost Lake? The nature center is a great place to explore the natural side of the park and the dock offers amazing opportunities to watch waterfowl and insects. The trails will lead you through various habitats full of fascinating plants and animals. In the winter, however, you don't even need to venture beyond the sledding hill to get really real with science!

The first lesson that you can learn at Lost Lake comes from the hill itself. If you regularly read this section of the newsletter then you will know that Lost Lake is a kettle lake and formed by a chunk of glacier. The hill has its origins in the glacial age as well. The hill at Lost Lake is what is known as a "kame". A kame is mound of sand and gravel that accumulated as meltwaters flowed down from retreating glaciers. The word "kame" comes from the Middle English word that roughly translates as "crest". If you stand back at the parking lot and look up at the hill it is easy to see where the word comes from! Imagine standing in that spot and watching an enormous glacier as it retreats...the water carrying dirt and debris scoured from the ground by the heavy mass of ice would be flowing down around you and accumulating in piles. Those glaciers sure know how to make awesome sledding hills for future generations!



The next fun science comes as you begin your ascent of the hill. As you climb higher on the hill (with your sled in tow) you burn calories to find the energy to fight your way against gravity. As you climb higher you are building up more and more potential gravitational energy. Pretty fancy stuff eh? So exchange those calories for some potential energy! Did you realize that the amount of potential energy you will accumulate will depend on two different things? The first: how high you climb and the second: your mass. So dad is going to get more potential gravitational energy when he climbs the hill than your little sister. What do you think that means for the trip down?



When you reach the top of the hill, Newton's first law will tell you that you are just going to sit there until you do something about it (object at rest tends to stay at rest until acted upon by an opposing force). That first push is all you need to start letting loose your stored potential energy. As you start moving your gravitational potential energy is converted into kinetic energy which propels you (and hopefully your sled!) down the hill as you gain more and more momentum you go even faster...and faster! Your momentum is based on your velocity (speed) and your mass. The "bigger" you are and the faster you are going the more momentum you are going to have. Momentum is great fun and a real thrill until you get to the bottom of the hill and spy the pile of straw meant to stop you.

The same inertia that kept you from starting to slide down the hill is the same inertia that makes you want to keep on sliding downhill. If you slowly glide to a stop then you have used



(Continued on page 27)

# OAKLAND TOWNSHIP PARKS AND RECREATION

## Winter/Spring 2019 Fitness/Wellness Programs

Call 248-651-7810 for more information. For registration information please see page 29.



### **Introduction to Ice Skating** Bear Creek Nature Park, 740 West Snell Rd.

Learn how to skate with 10-time National Medalist, Tracey Daniels!

Clinics will be held at Bear Creek Nature Park's Outdoor Skating Rink. These clinics are for people who have little or no skill at ice skating. Each clinic will focus on basic fundamentals of ice skating like falling down, skating forward, stopping and on practicing your new skating skills. Safety is very important and we encourage skaters to wear a helmet and additional padding. Please wear weather appropriate clothing including gloves.

**Monday, January 21, 2019 (Martin Luther King Day) Register by January 15**

**Saturday, February 2, 2019 Register by January 25**

See below for age groups and times.



**Tots 4 - 5 years old and Parents (45 minutes) 10 - 10:45am**

**Resident: \$10 each tot, parents free; Non-resident: \$15 each tot, parents free**

Come and share the excitement of ice skating with your child! Each tot must be accompanied by a parent or guardian who can skate. For the first 30 minutes, tots will learn basic balance and skating skills. The last 15 minutes will be free skate playtime to help your tot practice their new skating skills.

**Ages 6 - 12 years old (45 minutes) 11:15 - 12pm**

**Resident: \$10 each Non-resident: \$15 each**

Be like Elsa and Kristoff from the movie "Frozen" and learn how to skate! Learn the basic fundamentals and have fun practicing at our Outdoor Skating Rink!

**Ages 13 - Adults (1 hour) 12:30 - 1:30pm**

**Resident: \$10 each Non-resident: \$15 each**

Learn the basic fundamentals and have fun practicing at our Outdoor Skating Rink!

Registration information on page 29.

Please arrive at least 20 minutes early to class to check-in and change into skates. **Bring a pair of your own sharpened skates or we have limited number of skates for loan.** Provide your shoe size during class registration. Do not walk with exposed blades on parking lot, limestone paths, or concrete. Wear your skate guards when not on the ice surface.

All skaters six years and under are required to wear either a bike or hockey helmet (not provided).



# OAKLAND TOWNSHIP PARKS AND RECREATION

## Winter/Spring 2019 Fitness/Wellness Programs cont'd



**Tai Chi Beginners Adults 18+ 3 sessions!**  
**Tuesdays, January 8 - February 26, 2019 6:00-7:00pm Session 1 Register by January 2**  
**Tuesdays, March 12 - April 23, 2019 6:00-7:00pm Session 2 Register by March 5**  
*Paint Creek Cider Mill, 4480 Orion Road, Rochester, MI 48306*  
**Tuesdays, May 7 - June 25, 2019 (outdoors) 6:00-7:00pm Session 3 Register by April 30**  
*Bear Creek Nature Park, 740 W. Snell Rd., Rochester, MI 48306*



Find peace and serenity from a busy, stressful day through Tai Chi. Tai Chi exercises the mind and body by increasing wellbeing and improving balance, coordination and strength. Students will learn the basic forms and elegant movements of the Yang Style Short Form Tai Chi. Students should be able to support their weight while standing or bring a chair if unable to stand. Students should wear loose and comfortable clothing and shoes. No flip flops or sandals. Traditional Tai Chi shoes are optional. Bring water bottle. Led by Marci Jenkins. \**Marci has over 20 years of Tai Chi training and practice.*

**Residents: \$40 Non-residents: \$80**

**Tai Chi Continuing Beginners Adults 18+ 3 sessions!**  
**Wednesdays, January 9 - February 27, 2019 6:00-7:00pm Session 1 Register by January 3**  
**Wednesdays, March 13 - April 24, 2019 6:00-7:00pm Session 2 Register by March 6**  
**Wednesdays, May 8 - June 26, 2019 6:00-7:00pm Session 3 Register by May 1**  
*Paint Creek Cider Mill, 4480 Orion Road, Rochester, MI 48306*



For those students who have taken Tai Chi classes with Marci Jenkins.

**Residents: \$40 Non-residents: \$80**

**All Levels Yoga - Adults 12+**  
**Sundays, January 6 - February 10, 2019 9:30-10:30am Session 1 Register by January 2**  
**Sundays, February 24 - March 31, 2019 9:30-10:30am Session 2 Register by February 19**  
**Sundays, April 14 - May 26, 2019 9:30-10:30am Session 3 Register by April 8**  
**Sundays, November 10 - Dec. 15, 2019 9:30-10:30am Session 7 Register by November 4**  
*Cranberry Lake Farm Main House, 388 W. Predmore, Oakland, MI 48363*

Join us for All Levels Yoga inside our beautiful Cranberry Lake Farm Main House. Whether you are a seasoned practitioner or newer to yoga, these gentle All Levels classes are just right for you! Bring your own yoga mat. Led by Pavel Bednarski, RYT-200. All Levels. 6 week session. All classes will take place inside Cranberry Lake Farm Main House.

**Yoga On The Lake - Adults 12+**  
**Sundays, June 9 - July 14, 2019 9:30-10:30am Session 4 Register by June 3**  
**Sundays, August 4 - Sept. 8, 2019 9:30-10:30am Session 5 Register by July 29**  
**Sundays, Sept. 22 - October 27, 2019 9:30-10:30am Session 6 Register by Sept. 16**  
*Lost Lake Nature Park, 846 Lost Lake Trail, Oakland, MI 48363*

Wouldn't you rather be outside during springtime? Step out of the studio and enjoy doing yoga in the warmth of the sun and in full view of serene Lost Lake. Whether you are a seasoned practitioner or newer to yoga, this gentle All Levels class is just right for you! Bring your own yoga mat. Led by Pavel Bednarski, RYT-200. All Levels. 6 week session.



All classes will take place on the dock. Rain location is the on-site Warming Shelter.

**Residents: \$48 Non-residents: \$72**

Registration information on page 29.

# Oakland Township Parks and Recreation

## Winter/Spring 2019 Fitness/Wellness Programs cont'd



### Seasonal Hikes for Adults: Winter's Snow Moon

Saturday, February 16, 2019 7:00 - 8:30pm

Cranberry Lake Farm Main House, 388 W. Predmore, Oakland, MI 48363

Join a park naturalist as we venture out into the winter wonderland of February guided by the light of the snow moon (February's full moon). We will start by putting together a track book to take on the trails to use as a reference for any marks in the snow we see. We shall don our warm gear and head out to see if we

can find some signs of forest forensics as animals leave behind clues to their appearances in the snow, on the branches and in piles upon the ground. We will even learn a little about shrubbery that can bring color to your home garden in the winter. Participants are asked to bring their own headlamp or flashlight for the hike.



Residents: \$5 Non-residents: \$7 Register by February 8

### Ice Rink at Bear Creek Nature Park!

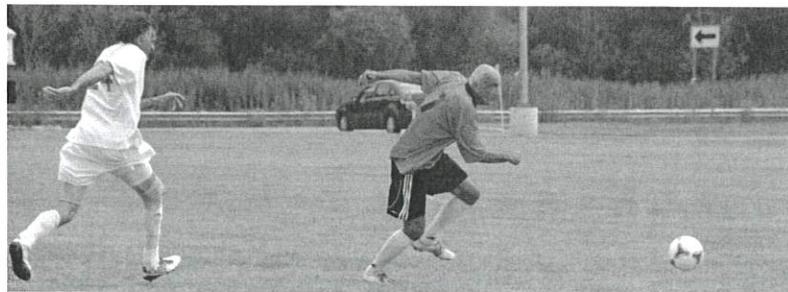
Visit the ice rink on your own any day of the week, by attending a class (*page 9*) or by dropping by during our January 26th **Winter Carnival** (*page 3*)! The ice rink is unsupervised and children should have adult supervision. Hockey is not permitted. Call the ice rink hotline at 248-651-4440, extension 289 for rink open and closure information. The ice rink will be regularly maintained in the mornings before the rink opens at 10am. See *page 4* for open hours.

### Sled Hill at Lost Lake Nature Park!

Visit the sled hill on your own any day of the week or by stopping by during one of our open evenings (*page 5*). The sled hill is unsupervised and children must have adult supervision. Call the sled hill hotline at 248-651-4440, extension 299 for open and closure information. The sled hill will be regularly inspected in the mornings before the hill opens at 10am. See *page 5* for open hours.

**Adult Men's Soccer League at Marsh View Park** Did you love playing soccer as a kid? You can play post-high school to post-retirement right in your own backyard by joining the Michigan United Soccer League. Marsh View Park is host to MUSL games - players are mostly local or from the Greater Rochester Area. Join early - teams form in January.

To join visit: [musl.net](http://musl.net)



**REGISTER NOW!**

Drop your registration in the mail or Township Hall dropbox or visit us in person!  
Complete registration details on page 29.



# OAKLAND TOWNSHIP PARKS AND RECREATION

## Spring/Summer 2019 Outdoor Adventure Programs



Call 248-651-7810 for more information. For registration information please see page 29.



### Kayaks Available for Rental at Draper Twin Lake Park!

We have kayaks to offer park users the opportunity to get out on Draper Twin Lake where wildlife abounds! Paddlers can rent kayaks at Draper Twin Lake Park on Saturdays and Sundays throughout the warm weather season when staff is available. Take advantage of this opportunity to practice your kayaking skills. Kayak, paddle and life vest supplied.

Note: Weight limit for single kayak is 230 lbs. Kayak at your own risk. No supervision or instruction is provided. A park staff person will assist you with equipment fitting, portage, launching, and landing. Please call the Parks office for more information on dates and pricing. View our kayak rental policy on our website: [www.oaklandtownship.org](http://www.oaklandtownship.org)

One person kayak: minimum age 10 years old.

Two person kayak: minimum age 6 years old with an adult on board.

**Registration must be completed one week in advance of requested rental date.**

Fees:	Resident Rate:	Non-Resident Rate:
1-person kayak for 2 hours	\$10/boat	1-person kayak for 2 hours \$20/boat
2-person kayak for 2 hours	\$15/boat	2-person kayak for 2 hours \$30/boat

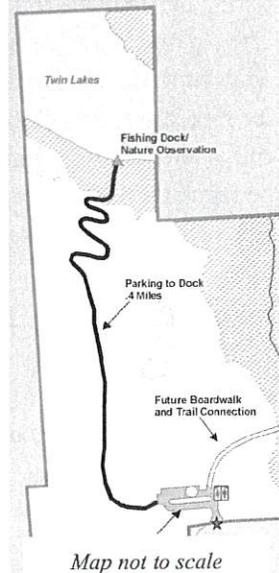
### Fun Basics of Kayaking - 5 sessions! Ages 10 yrs. to Adult

Draper Twin Lake Park, 1015 Inwood Road, Oakland, 48363

Saturday, May 18, 2019	10:00am - 12:00pm	Register by May 10
Saturday, June 22, 2019	10:00am - 12:00pm	Register by June 14
Saturday, July 27, 2019	10:00am - 12:00pm	Register by July 19
Saturday, Aug. 24, 2019	10:00am - 12:00pm	Register by Aug. 16
Saturday, Sept. 21, 2019	10:00am - 12:00pm	Register by Sept. 13

This clinic is taught both on land and in the water and will focus on safety and introductory stroke *techniques*. Learn basic kayaking safety skills such as fitting your life jacket, what clothing to wear and getting into and out of your kayak from a dock. Basic paddling skills include forward, reverse, and turning strokes. Designed for new paddlers and anyone who would like formal instruction. Draper Twin Lake is open calm flat water without jet skis and motor boats.

**Residents: \$20 Non-residents: \$35**



### Items to bring to all water programs:

Water, water shoes or light weight sneakers, wear synthetic clothing, sunglasses, and bug repellent. At the time of registration we will ask you for your approximate height and weight so that we may size you with the proper gear. We paddle in light rain (it is a water sport). However, if there is a 60% or greater chance of thunderstorms 2 hours prior to the clinic we will contact you to cancel with a full refund issued or reschedule the clinic.

# OAKLAND TOWNSHIP PARKS AND RECREATION

## Spring/Summer 2019 Outdoor Adventure Programs cont'd



### **Next Step Beginning Kayaking - 5 sessions! Ages 10 yrs. to Adult**

Draper Twin Lake Park, 1015 Inwood Road, Oakland, 48363

Saturday, May 18, 2019	12:30 - 2:00pm	Register by May 10
Saturday, June 22, 2019	12:30 - 2:00pm	Register by June 14
Saturday, July 27, 2019	12:30 - 2:00pm	Register by July 19
Saturday, Aug. 24, 2019	12:30 - 2:00pm	Register by Aug. 16
Saturday, Sept. 21, 2019	12:30 - 2:00pm	Register by Sept. 13



This clinic is for those who have completed our *Fun Basics of Kayaking* clinic or have some experience at kayaking and are looking to increase their skill level. This clinic will focus on safety on the water and stroke *development*. Learn how to fit your boat to your body on land in order to practice techniques for staying in your boat on water to avoid tipping over! Discuss what to do if you do tip over. Learn about the different types of paddles and the side stroke. Then use paddling patterns to practice and perfect your paddling strokes. For the more adventurous we may have kayak races!

**Residents: \$20 Non-residents: \$35**



### **Stand Up Paddle Boarding! Ages 14 and up**

Saturday, June 29, 2019	10 - 11am and 11:30am - 12:30pm	Register by June 21
Saturday, July 20, 2019	10 - 11am and 11:30am - 12:30pm	Register by July 12
Saturday, August 17, 2019	10 - 11am and 11:30am - 12:30pm	Register by August 9
Saturday, September 14, 2019	10 - 11am and 11:30am - 12:30pm	Register by Sept. 6



Draper Twin Lake Park, 1015 Inwood Rd., Rochester, MI 48306

Stand Up Paddle Boarding (SUP) is a great new water activity sweeping the country, and it's easy and fun to learn. Learn to paddle in a safe environment with experienced instructors, and quality equipment at breathtaking and beautiful Draper Twin Lake! Paddlers 14 years and older welcome. All equipment is included. Please wear clothing you don't mind getting wet. All levels welcome. Weight limit 220 lbs.

**Residents: \$20 Non-residents: \$35**

*Draper Twin Lake is a calm water lake.*

***Come early. The distance from the parking lot to the dock is approximately .4 mile via accessible path.***

# OAKLAND TOWNSHIP PARKS AND RECREATION

## Winter/Spring 2019 Nature Programs

Call 248-651-7810 for more information. For registration information please see page 29.

All nature programs led by Dinosaur Hill Nature Preserve naturalists.



### **Freezing Mad Science - Ages 3-5 years old**

**Friday, January 18, 2019 10 - 11:30am**

*Lost Lake Nature Park Warming Shelter, 846 Lost Lake Trail, Oakland, MI 48363*



With winter breathing its frigid air across the ponds and streams we've noticed them turning solid! We're not one to ignore nature's cues so we will be playing with ice today! From the warmth of the nature center we will perform experiments with wacky hand-shaped ice cubes and salt, see if we are able to paint cubes of ice before they melt, and even make ice fizz up like soda pop! Afterwards we will be taking a trip into the woods (with snow shoes if nature is kind enough to give us snow) to explore Lost Lake for signs of natural ice! We will even be putting together ICE CANDLES to take home!

**Residents: \$5 Non-residents: \$7 Register by January 11**

### **Stylish Fur Coats - Ages 5-8 years old**

**Wednesday, February 13, 2019 4:30 - 6:00pm**

*Lost Lake Nature Park, 846 Lost Lake Trail, Oakland, MI 48363*



Whether they're sophisticated stripes like on the pelt of a skunk or glamorous spots like on the back of a giraffe, we are always impressed with the showmanship of the animal community. Join us as we take a look at and wear several different animal furs to experience their warmth and differentiate between textures to figure out why certain pelts feel (and look) the way they do. We will even perform experiments with the furs to prove how great of a job they do to block out the cold. We will also look at animal skulls, beaks, claws and bones to notice the many varieties of animal adaptations AND playing an animal matching game. Afterward we will venture into the woods to see if we can find any live animals to observe (with snow shoes if the weather cooperates) and we will put together our own "touch books" with samples of fur from real animals!

**Residents: \$5 Non-residents: \$7 Register by February 6**

### **Monster Maples - Family - 2 Sessions!**

**Sunday, March 17, 2019 Session 1 1-2:15pm Session 2 2:30-3:45pm**

*Cranberry Lake Park, 388 West Predmore, Oakland, MI 48363*



Michigan is one of the few places in the world where the conditions are just right for the collection of sap from maple trees. In this program we explore the history and techniques of tapping maple trees to collect sap which is turned into maple syrup. Indoors we will learn important tips such as how to identify a maple tree and how many taps can be placed in one tree. Outdoors we will actually practice tapping trees and even take a taste of sap as it flows (sap is dependent on weather conditions). Inside we will taste maple syrup and an authentic native American recipe. Each family will even receive a spile to take home to practice what we learned at Cranberry Lake!

**Residents: \$5 Non-residents: \$7 Register by March 8 for either session**

**REGISTER NOW!**

**Drop your registration in the mail or Township Hall dropbox or visit us in person!**

**Complete registration details on page 29.**



## OAKLAND TOWNSHIP PARKS AND RECREATION

### Winter/Spring 2019 Nature Programs

Call 248-651-7810 for more information. For registration information please see page 29.

All nature programs led by Dinosaur Hill Nature Preserve naturalists (except Birds of Prey).



#### **Michigan Birds of Prey - Families (Ages 5-Adult)**

**Friday, April 5, 2019 7-8:00pm**

*Lost Lake Nature Park Warming Shelter, 846 Lost Lake Trail, Oakland, MI 48363*

Come join us in learning about Michigan's birds of prey where you will meet raptors such as a hawk, an owl, a falcon, and even an eagle! These engaging birds will model and demonstrate their incredible survival adaptations and behaviors. You will have the chance to observe skulls, feel feathers, and handle other bird parts such as feet and bones. This hand-on experience is fascinating! Presented by Francie Krawcke and Michigan Avian Experience.



**Residents: \$5 Non-residents: \$7 Register by March 29**

#### **Building Birdfeeders for Hungry Birds - Grandparents & Grandchildren (Ages 5-12)**

**Saturday, April 13, 2019 10-11:30am**

*Lost Lake Nature Park, Warming Shelter, 846 Lost Lake Trail, Oakland, MI 48363*

With the sights, sounds and smells of spring in the air we can only assume that we're about to witness the population boom that comes from creatures surviving the winter. There are about to be a lot of brand new hungry mouths out in the woods and we would like to give them a warm welcome to planet Earth by providing them with a great meal. Join us for a special grandparent and grandchild program as we put together our own recycled bird feeders to take home and learn about the feathered friends that would be most likely to stop by for a snack!



**Residents: \$5 Non-residents: \$7 Register by April 5**

#### **Michigan's Free Fishing Weekend - Family - 2 Days!**

**Saturday, June 8, 2019**

**9:00-10:15 am or 10:30-11:15am**

*Lost Lake Nature Park, 846 Lost Lake Trail, Oakland, MI 48363*

**Sunday, June 9, 2019**

**9:00-9:25am or 9:30am-9:55am or 10:00-10:25am or 10:30-11:00am**

*Draper Twin Lake Park, 1015 Inwood, Oakland, MI 48363*



Fishing is a part of Michigan's Heritage. Fishing is also a relaxing pastime and a great way to spend time with your family. There is no room for cell phones, texting or tv on the dock. This program is your chance to try out fishing. Learn about the types of baits and lures to use, the types of fish you may encounter in township parks and some tips about nearby "fishing holes". Saturday at Lost Lake will be a great first experience for young anglers and families as we learn how to drop cast while Sunday's event at Draper will be reserved for the more experienced group as we learn to cast into the lake. We provide everything so no need to remember your poles or bait! All fishing license fees are waived, register early as we fill up quickly!

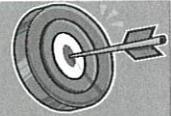
**NO Drop-ins. Must register for sessions.**

**Register by May 31**

Registration information on page 29.

*Come early! The distance from the parking lot to the dock is approximately .4 miles via accessible path.*

# OAKLAND TOWNSHIP PARKS AND RECREATION



## Spring 2019 Archery Programs

Call 248-651-7810 for more information. For registration information please see page 29.

All classes held at Marsh View Park Archery Range, 3100 E. Clarkston Rd., Oakland, MI 48363.

Outdoor range. Rain or shine we shoot! No crossbows or broadheads.

### **Beginning Archery - All Ages (Ages 8 - Adult)**

Looking for something new and fun to try on a beautiful spring Saturday morning? This fun class is for you and your family! Our instructors will cover safety, equipment and basic fundamentals of shooting. All equipment provided. 4 weeks.

Saturdays, April 27 - May 18, 2019 9:30-10:30am **Register by: April 19**

Saturdays, May 25 - June 15, 2019 9:30-10:30am **Register by: May 17**

**Residents: \$45 Non-Residents: \$60**

Registration  
information on  
page 29.

### **Next Step Archery - All Ages (Ages 8 - Adult)**

This program is for archers who have taken Beginning Archery or archers with experience. Focus on improving your archery form and accuracy. Equipment provided or may use your own. 6 weeks.

Fridays, April 26 - May 31, 2019 6:00 - 7:00pm **Register by: April 19**

**Residents: \$60 Non-Residents: \$77**



### **Easter Egg Archery Shoot - Family Ages 6 to Adult**

Hop on by the range and enjoy an afternoon of archery with an Easter theme. Fun for the whole family! Try your skill shooting at a target of Easter eggs filled with vouchers for prizes such as an archery t-shirt, candy, an *Introductory to Archery* class (value \$15), *Beginning Archery* program (value \$45), and more! Each session is one-half hour in length. No experience necessary. Receive instruction and win prizes. All equipment provided. You can also reserve your spot and sign up for our spring Beginning Archery classes right there at the range!

Saturday, April 20, 2019 **4 sessions!**  
Noon - 12:30pm, 12:30 - 1:00pm, 1:00 - 1:30pm, 1:30 - 2:00pm

**Residents: \$5 Non-residents: \$7 Register by: April 12**



### **Open Range Shoot - Ages 8 - Adult "FREE" to the Public**

Drop-in opportunity to practice archery skills! Prior archery experience necessary. No instruction provided. No crossbows or broadheads. Children between 8 and 17 years of age must be accompanied by an adult. Range supervised by certified USA Archery Instructors. *Not sure how to shoot?* Range Masters can assist you with our **1st Shot Demo Program** - 5 minute teaching time/demo during Open Shooting Hours, or sign up for a Beginner Class.



**DROP-IN - NO REGISTRATION Saturdays, April 27 - October 26, 2019 11:00am - 4:00pm**

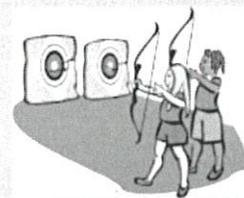
### **Private Archery Group Programs!**

Book your birthday, special event, celebration, work group, scout badge with a focus on archery at Marsh View Park Archery Range. Equipment provided with all group events.

### **Archery Range Rental Opportunities!**

If your archery league or club is interested in renting our facility please contact the Parks and Recreation Department for fees and availability.

For more information on either of these categories please call 248-651-7810.

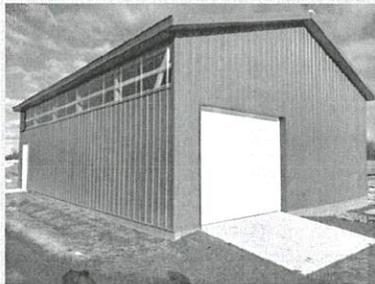


## Student Archery Club Teams! (Continued from page 2)

For more information call Oakland Township Parks and Recreation at 248-651-7810. Register early as space is limited. These Archery Club Teams are being offered through a partnership of Oakland Township Parks and Recreation, Michigan High School Archery Association, and Rochester Community Schools to bring the sport of archery to the district's students.



## Archery Range News



In 2016 we expanded our archery range at Marsh View Park from 45 yards to 90 meters with the goals of appealing to a broader group of archery enthusiasts, expanding our programs and increasing the use of the range. Obviously, the expansion of programs requires additional supplies and equipment! Our small shed did not adequately meet our needs anymore so we contacted our stakeholders for their advice on a new shed. The result is a beautiful new 40 x 30 x 12 foot pole barn with side eave light and solar panels, roof insulation to keep the building cool in the summer, and lots of storage space with room enough for a fletching jig table for repairing arrows.

## Gallagher Creek Park and Pathway Grand Opening

*(Continued from page 1)*

In 2000, when Gallagher Creek Park was donated to Oakland Township, very few people foresaw the important natural area and recreation destination it would become!



This park's location along Silverbell Road, with numerous neighborhoods nearby, makes it an ideal site for new recreation facilities within walking distance of many homes. Though a mere 15 acres in size, Gallagher Creek Park's wetland communities provide a refuge for wildlife along the margins of Gallagher Creek, one of the strongholds for brook trout in southeastern Michigan.

After the ceremony refreshments and giveaways will be available. In case of bad weather the event will be rescheduled. Please call 248-651-4440, ext. 299 for event information.



*Bottom three photos of Gallagher Creek Park by Cam Mannino*

# Furry, hairy or wooly?

By Sue Neal, Executive Director  
Dinosaur Hill Nature Preserve



What is one cool trait that all mammals have in common? Yep, all mammals have hair. Now wait a minute you might say: my dog has fur and I have hair. A sheep is wooly but a bear is furry and my uncle Harry is hairy! Guess what: furry, hairy or wooly, it is all the same to Mother Nature! Fur and hair and wool are the same thing! The fur of a bear and the wool of the sheep is made of the same material as the hair on your head.

Fur is made of a protein called “keratin” (the same stuff that makes fingernails and claws). All fur is not created equal though, as I am sure you have observed. Scientists generally break down fur into three classifications. The first type of fur is what is called “**tactile fur**”. Tactile is a fancy word for touching and feeling. This type of fur acts as sort of sensory organ for the mammal. The best example are the adorable whiskers on a kitten. Those whiskers are very sensitive and the



(Continued on page 26)



For membership information contact [othsmember@comcast.net](mailto:othsmember@comcast.net).

We enjoy activities that inform us of our history and ways to preserve it.

**Come Join Us and have some fun!**

## Winter Spring 2019 Programs

### Motor Sports:

#### The Thrill of the Track



Presented by Marc Trahan  
February 6, 2019, 7:30pm  
Paint Creek Cider Mill  
4480 Orion Road  
Oakland Twp, MI 48306

### The Burned Over District: Revival, Reform and the Migration to Michigan



Presented by Jim Craft  
March 6, 2019, 7:30pm  
Paint Creek Cider Mill  
4480 Orion Road  
Oakland Twp, MI 48306

### Prohibition History in Detroit



Presented by Steve Johnson,  
Motor City Brew Tours  
April 3, 2019, 7pm  
Rochester Mills Beer Company  
400 Water Street,  
Rochester, MI 48307

### Archive Room at Cranberry Lake Farm

The archive room at Cranberry Lake Farm Main House is open to the public by appointment on Wednesdays from 1-4pm. Contact us at [othsmember@comcast.net](mailto:othsmember@comcast.net). If you have archives pertaining to Oakland Township or the local area, please keep us in mind as a repository for these precious artifacts.

*Our Township has a rich history to share and we strive to gather, preserve and protect it for future generations.*



Oakland Township Historical Society recently updated their informational display to include a collection of donated lanterns. Stop by the first floor of the Paint Creek Cider Mill M-F, 8am-4:30pm, to see this display of fascinating historic treasures.

# CRANBERRY LAKE FARM HISTORIC DISTRICT

*A community historical center - work in progress for you!*

For more information contact Historic District Commission office 248-608-6807



Outhouse ribbon cutting at Cranberry Lake Farm (CLF), the Historic District Commissioners (HDC) and Oakland Township Historical Society member enjoy the compliments of the new facility opening. The HDC had this outhouse constructed to provide convenience to our residents, local travelers, and park users. Funded 100% by the Historic District Commission millage, the HDC oversees the maintenance and operations of CLF, and strives to preserve and interpret an evolving rural setting, historic environment, and promote our local cultural heritage. Cranberry Lake Park and Cranberry Lake Farm Historic District were purchased in 1996. The 16-acre farmstead became listed in the National Register of Historic Places in 2002.

*Cranberry Lake Farm Historic District is open year round for photography, winter hikes, snow showing, horseback riding, and cross-country skiing. Come relax in the historic character of the farm.*

*Cooking, Crafts, and Culture Program; Romance through the Ages with cooking demonstrations from Chef Pam Gustairs teaching us the finer secrets of chocolate fondue. Of course we'll have the card making supplies and presentation too. \$15/\$18 ea. Tues. Feb 12 from 7 to 9 PM at CLF main house.*

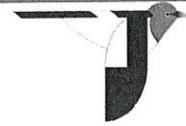
## ***Ramblings from the Past; Historical Progress Report by David A. Phillips, Chairman 2018***

We have much to celebrate in Oakland Township at Cranberry Lake Farm! The new privy is finally done after five years and applying for various grants. It was a challenge to get everything lined up and finished, but I believe it will last for a good many years and is a needed - fine improvement to the Historic District. Also, Addison Oaks Trail Riders have provided two hitching posts to tie up their horses while using the trail that passes through Cranberry Lake Park up towards Addison Oaks County Park. Down on the Farm was a little soggy this year from the rain, but the kid's smiling faces from painting pumpkins, made the "day shine." The musical performances filled the air and had some people dancing. If you come out to Down on the Farm next year, you are in for an education on what happens on a working farm. We could not have done this without our volunteers. Thank you one and all!!



### ***What's new in the historic district?***

Stone Barbeque area cleared and mulched.  
New privy outhouse just north of the barn.  
New hitching posts west of the Northfield.  
Antique farm implements are being restored.  
Addition of overflow parking area just east of the apple trees in the restored orchard.  
One of the young apple trees gave the gift of a bright red apple this fall - an early surprise!  
The Hen House windows are sparkling clean.



**Winter 2019 Natural Areas Stewardship Events**

Please come out and join us for one of our nature events! Updated information and any last minute changes to these events can be found on our Natural Areas Notebook website at [oaklandnaturalareas.com](http://oaklandnaturalareas.com).

**New Zealand Mud Snails: A Threat to Michigan's Rivers and Lakes**

*Emily Bovee and Kennedy Phillips, Oakland University Aquatic Ecology Lab*

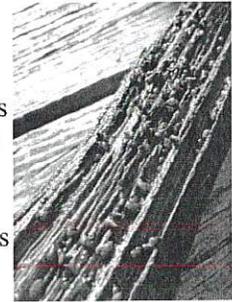
*Thursday, January 17, 6:30 pm at the Paint Creek Cider Mill*

The Great Lakes region contains 20% of Earth's freshwater, but this enormous ecosystem is threatened by aquatic non-native species. These non-native species have altered every level of the food web and reduced the diversity of native species. Annually, aquatic invasive species impose costs of over 100 million dollars in the Great Lakes region. The New Zealand Mud Snail is the latest invasive species. Initially found in the western United States in the 1980s, the New Zealand Mud Snail has recently invaded Michigan rivers, including the Au Sable River, an internationally renowned trout stream. This presentation will discuss the impacts of aquatic invasive species in the Great Lakes and focus on New Zealand Mud Snails, including current research at Oakland University to better understand the impacts of these invaders.



*Emily Bovee & Kennedy Phillips*

Emily Bovee and Kennedy Phillips are graduate students in the Aquatic Ecology Lab at Oakland University.



*New Zealand mud snails on log*



*Nate Haan*

**Monarch Butterfly Ecology and Conservation**

*Nate Haan, Michigan State University Department of Entomology*

*Thursday, February 7, 6:30 pm at the Paint Creek Cider Mill*

Monarch butterflies are one of the most interesting and recognizable insects in the world. Every year they migrate thousands of miles, from our backyards in Michigan to mountains in central Mexico. They also have fascinating interactions with their toxic milkweed host plants. Unfortunately, monarchs have declined in recent decades and the overwintering population in Mexico is only around 20% of its former size. Nate Haan is a postdoctoral research associate at Michigan State University who does research on monarch butterflies. He will share about their natural history and ecology, as well as some of the current research on their decline and what we can do to save them.



*Butterfly milkweed at Paint Creek Heritage Area-Wet Prairie*

**Natural Areas Stewardship Winter Potluck**

*Thursday, January 31, 6:30 pm to 8:00 pm at the Paint Creek Cider Mill*

Trying to shake that winter gloom? Come join us for a celebration of last year's achievements as we warm ourselves with some hearty conversation and great food. Learn about upcoming event and projects while connecting with others involved in our programs. **RSVP appreciated** to [bvanderweide@oaklandtownship.org](mailto:bvanderweide@oaklandtownship.org) or 248-651-7810 ext. 401 by Tuesday, January 29.



# Oakland Township Parks Natural Areas

# Stewardship



## Volunteer Fire Crew Training

Saturday, February 23, 9:00 am to 2:30 pm at the Paint Creek Cider Mill

If you are interested in volunteering with our prescribed fire crew, join us for this training workshop. We will cover reasons for using prescribed fire, preparations for conducting a fire, necessary tools, roles of each burn crew member, and ignition patterns. Weather permitting, we will do a small demonstration burn after lunch. New crew members are required to attend; past volunteers are encouraged to attend as a refresher. Snacks provided, but please bring your own lunch. **RSVP required** to [bvanderweide@oaklandtownship.org](mailto:bvanderweide@oaklandtownship.org) or 248-651-7810 ext. 401 by Thursday, February 21.



Paint Creek Heritage Area - Wet Prairie. From left, Prescribed fire in process, By Sue Greenlee; Burn Crew Members Dr. Ben VanderWeide, Burn Crew Member, Commissioner Dan Simon, Jim Lloyd, By Sue Greenlee; Flowers in bloom after prescribed fire.

## Spring 2019 Controlled Burns in Oakland Township Parks

Oakland Township Parks and Recreation will conduct prescribed burns in spring 2019 between late February and mid-May at **Bear Creek Nature Park, Charles Hsley Park, Cranberry Lake Park, Draper Twin Lake Park, Marsh View Park, Stony Creek Ravine Nature Park, and natural areas along the Paint Creek Trail.**

Historically, fire occurred regularly in natural communities of southeast Michigan. Our prairies, oak savannas, oak woodlands, and even some wetlands are not only adapted to fire, but require fire for their continued existence. We use prescribed burns to help restore ecological function to these natural communities.

Prescribed burns are conducted by a trained fire crew and done with permission from the local fire department. Although burns create smoke, we work to minimize the amount of smoke produced and limit public exposure to the smoke. We consult the weather forecast in the morning before making the decision to burn, so we cannot schedule prescribed burns for a specific day.



You can find more information about controlled burns at [oaklandnaturalareas.com/prescribed-fire](http://oaklandnaturalareas.com/prescribed-fire).

## Watch the Woodcock Dance: A Celebration of Spring

Free - drop in!

Friday, April 26, 7:30 pm at Bear Creek Nature Park, 740 West Snell Road



We'll savor s'mores and watch "timberdoodles" do their cool aerial mating dance! While we wait for sunset, we'll enjoy snacks, a spring evening, and some cool facts about woodcock biology. As the light fades we will watch with hushed anticipation for this avian spectacle. Bring a comfortable lawn chair, binoculars, and layers to add as the night cools down.

Woodcock image credit: <http://i691.photobucket.com/albums/vv273/stacey13/Paintings/woodcockimage.jpg>

# Oakland Township Parks Natural Areas

# Stewardship



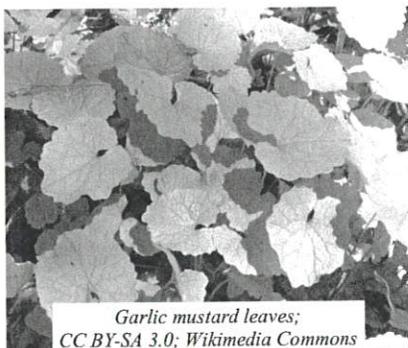
## Natural Areas Stewardship Events

Please come out and join us for one of these events! Updated information and any last minute changes to these events can be found on our Natural Areas Notebook website at [oaklandnaturalareas.com](http://oaklandnaturalareas.com).

### Celebrate Spring, Pull Garlic Mustard!

Garlic mustard and dame's rocket push out the native plants that our wildlife need. We need your help to remove these invasive plants from our parks! Pulls last from 9 am to 1 pm, but will be cancelled if the weather is bad. It's easy work and we provide refreshments. All volunteers must sign a waiver (with minor's waiver signed by a guardian), and minors under 14 must also be accompanied by a guardian. Updated information and last minute changes to these events can be found on our Natural Areas Notebook website at [oaklandnaturalareas.com](http://oaklandnaturalareas.com).

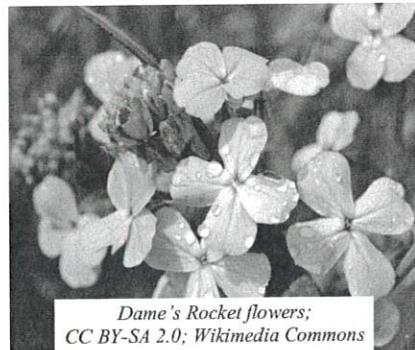
- Friday, May 3, 9 am to 1 pm.  
Bear Creek Nature Park, 740 W. Snell Rd.
- Friday, May 10, 9 am to 1 pm.  
Blue Heron Environmental Area,  
3320 N. Rochester Rd.
- Friday, May 17, 9 am to 1 pm.  
Paint Creek Trail. Meet at the Paint Creek Cider  
Mill, 4480 Orion Rd.
- Thursday, May 23, 9 am to 1 pm.  
Cranberry Lake Park, 388 W. Predmore Rd.



Garlic mustard leaves;  
CC BY-SA 3.0; Wikimedia Commons



Garlic mustard flowers;  
CC-BY-SA-3.0; Wikimedia Commons



Dame's Rocket flowers;  
CC BY-SA 2.0; Wikimedia Commons

### Weekly Bird Walks

Join our friendly birders every Wednesday from January to May. We want to document the bird species using natural areas in our parks so that we can work to improve their habitat. All walks will start at 8:30 am. Extra binoculars are available.



- 1<sup>st</sup> Wednesday of month –  
Bear Creek Nature Park
- 2<sup>nd</sup> Wednesday of month –  
Cranberry Lake Park
- 3<sup>rd</sup> Wednesday of month –  
Charles Ilsley Park
- 4<sup>th</sup> Wednesday of month –  
Draper Twin Lake Park
- 5<sup>th</sup> Wednesday of January & May –  
Lost Lake Nature Park



## Natural Areas Information at your Fingertips!



Have you checked out our blog recently? The **Natural Areas Notebook** has the latest about what's happening in the parks, news about the latest stewardship work, and up-to-date information about stewardship events. Find this and much more at [oaklandnaturalareas.com](http://oaklandnaturalareas.com).

# Thank You!



Thanks  
to Our  
Volunteers!

## Stewardship Volunteers Summer/Fall

David Bargiel, Colleen Barkham, Francesco Bertolino, Emily Boyer, Komar Chambers, Lei Chen, Rich Chutorash, Leslie Clark, Sally Cornett, Paul Dang, Sue Ferko, Donald Garrett II, Louise Hartung, Matt Hindrichs, Mario Holmes, Brenan Hudgens, Mark Isken, Tom Korb, Alex Korb, Jonathan Kuhn, Andre Lorian, Eric Lund, Rob Mair, Cam Mannino, J. Antonio Martinez Zamora, Tirath Matharu, Greg Matsuka, Ken McCabe, Patrick McKean, Rich Miller, Andrew Morris, Adam Mucciaccio, Ron Mueller, Susan Nathan, Mike Parisean, Kimberly Patrick, Megan Paulsen, Laurie Peklo, Christopher Pennoni, Donna Perkins, Sabrina Price-Biven, Gabriel Ramirez, Kamal Rathi, Jon Reed, R. Stewart Robertson, Lisa Rosenberg, Kith Samaronayake, Jasnet Siohu, Dawn Sun, Chris Walling, Lee Willey II, Thomas Zetle, Rino Zuech



## Recreation Volunteers at Goodison Good Tyme!

Shannon Varney, Emily Barkham, Hank Van Agen



### Donations

Park Benches - Mark Arney of Woodlands Mobile Home Estates, Colleen Barkham, Colin Choi.  
Native Plant Purchases - Louise Hartung, Rochester Garden Club

## Congratulations!

Congratulations to our summer raffle winners, Lisa Fitzpatrick Sokol, Jeff and Kimberly Matis, and Nancy Dakin. They won packets of specially selected native plant seeds with plant descriptions and guidelines for establishing native plantings! For your chance to win in 2019, just complete an evaluation at one of our summer concerts in the parks!



# Parks and Recreation Team Update



**Congratulations to Mindy Milos-Dale**, Oakland Township Parks and Recreation Director. Mindy received the **Trail, Water, and Land Alliance Service Award** in recognition of her great work protecting and preserving Oakland Township's natural areas as well as improving the County's Green Infrastructure Vision. This annual award is given to those who demonstrate significant and consistent support of improving the quality of life in Oakland County through strong leadership and legislative efforts. Thank you Mindy for your continued dedication to the natural areas of Oakland Township and Oakland County!

*Mindy Milos-Dale receives the 'Partner' award from Kristen Myers, former PCT Manager*

**Makayla Kroening**, a recent graduate of Eastern Michigan University, joined our team this fall as Recreation Program Assistant. Makayla double majored in Sports Management and Communication. Growing up in a small town in West Michigan, she has always been involved in local parks and recreation activities, from football competitions to community gardening. She enjoys playing all sports, doing puzzles, going for walks, and being a part of her community. Makayla is excited to be joining the Oakland Township Parks and Recreation family and enhancing her knowledge of the Oakland Township community as well as her workforce skills. Welcome aboard Makayla!



# Land Preservation Landslide! (Continued from page 1)

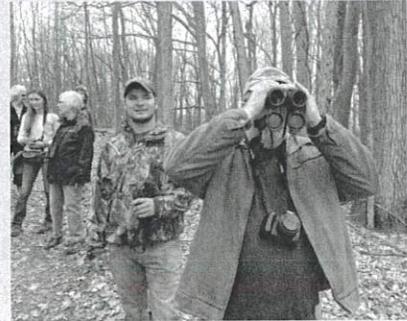


waterways, forests, and meadows. We are happy to continue this important work for another 10 years.

These natural areas provide nearby recreation and nature observation opportunities which increase our residents' quality of life and the economic value of Oakland Township.

Please take a moment to read on pages 20 – 22 about some natural education and hands-on

training opportunities that this millage provides. This winter and spring we are hosting experts from local universities who will speak about topics including our much-loved monarch butterflies as well as new aquatic invasive species. Our natural areas stewardship staff will also continue to host our volunteer prescribed fire crew training, garlic mustard pulls, weekly bird walks and our annual Woodcock Dance event. Hoping that you can participate in one or more!



## Dogs In Township Parks Must be On a Leash and Under Control

A dog may well be man's – and woman's best friend, but off-leash dogs in public parks can pose problems to themselves or others. The leash law for the State of Michigan dictates that whenever dogs are not on their owner's property, they must be restrained with a leash. Oakland Township's Parks and Recreation regulations specifically state that pets must be on a leash and that the pet must be kept under control at all times.

***Keep your dog on a 6 foot long regular leash – not a retractable one!***

Retractable leashes can allow dogs to get far enough away from their humans that a situation can quickly turn dangerous. An off-leash dog or a dog on a retractable leash is often able to make uninvited contact with other dogs or people, potentially endangering your dog, other dogs, or people. Your dog may be the one who gets injured. The state and local regulations are in place to protect everyone – it is in your best interest to obey them!



Many species of viewable wildlife decline along the trail edges when dogs explore the brush. Off-leash dogs prevent turkey and other birds from ground-nesting, may discover and harm fawns (a natural instinct), and push mammals further into the woodlands, thus decreasing the park experience for all visitors.

Dog excrement is both unpleasant and can spread disease to humans and wildlife. Clean-up bag dispensers are located at several park entries and along the Paint Creek Trail for your use.

# Paint Creek Trail News

By Melissa Ford, Trail Manager  
manager@paintcreektrail.org

## Paint Creek Trail Hires New Trail Manager



The Paint Creek Trailways Commission, an intergovernmental agency that owns and operates the 8.9 mile recreational Paint Creek Trail, is proud to announce the hiring of Melissa Ford as the Paint Creek Trail's new manager. Ford's responsibilities as Trail Manager include overseeing the maintenance of the Trail, managing Trail development projects, grant administration, and leading updates of the Trail's Recreation Master Plan.

Ford replaces Kristen Myers, who served as the Trail's manager for more than fifteen years. Myers recently left the Trail to take a position with the Six Rivers Land Conservancy as their new Development Specialist.

Through her role as Trail Manager, Ford hopes to increase volunteer activity on the Trail, develop new programming opportunities, and raise public awareness of the Trail through social media and other outreach initiatives.

"I look forward to working with the Paint Creek Trailways Commission, the Friends of the Paint Creek Trail volunteer organization, and the surrounding communities to make improvements on the Trail and to provide our users with an enhanced educational recreation experience." said Ford.



## 2019 Paint Creek Trail Construction and Closures

The Paint Creek Trail is scheduled for two major construction projects in 2019. Bridge 33.7, which is located on the trail between Dutton and Silverbell Roads, is scheduled to be replaced in early spring.



**The Paint Creek Trail will be completely closed to through traffic for 60-90 days.**

**Unfortunately, there is no detour.**

You will be able to use the trail from Rochester Municipal Park to Dutton Road or Silverbell Road to Children's Park in Lake Orion. At this time, bridge construction is tentatively planned to start April 1, 2019. Please plan your visit to the Paint Creek Trail accordingly.

In addition, the entire Paint Creek Trail is scheduled to be resurfaced with crushed limestone, with rolling closures, starting in the spring.

**For regular updates on the construction updates and trail closure information visit:**



[facebook.com/PaintCreekTrail](https://facebook.com/PaintCreekTrail)



[twitter.com/PaintCreekTrail](https://twitter.com/PaintCreekTrail)



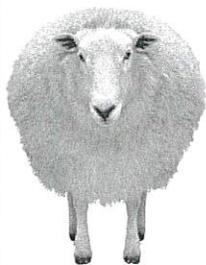
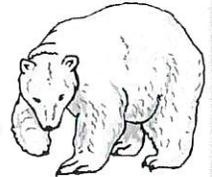
[PaintCreekTrail.org](https://PaintCreekTrail.org)

# Furry, hairy or wooly?

(Continued from page 17)

cat can use them to sense their environment. These hairs are embedded deeper into the skin and are attached to receptors which feed information to the brain. Cats (and other whiskered critters) use these hairs to sense their position in space (proprioception) and they may rely on them to sense vibrations in the air when hunting for prey. So whiskers are essential for the well-being of several species. Remember when I said all mammals had fur...guess what - even dolphins! When dolphins are first born they have a little whisker moustache that helps them locate their mom in the water!

The next type of fur that we can look at is what are called “**guard hairs**”. Guard hairs are the most easily observed type of animal fur. This type of fur is longer and acts as a protective covering for the animal. Guard hairs can be hollow in some winter loving animals like polar bears and snow leopards. Hollow hair acts as an insulation layer to help keep warm while also protecting the other layer of fur below! Guard hairs can do much more than this as you will learn in a few minutes. Human hair is less fancy and is sort of a cross between guard hair and underhair.



The last basic type of fur is the “**underhair**”. Think underhair = long underwear! Underhair is fluffy and downy and really does an amazing job insulating the animal from weather extremes. When you wear wool, you are wearing the underhair of a sheep! While the guard hairs of a sheep are longer and rougher, the fluffy wool below is shorter and cozier. Animals will alter the amount of underhair they have depending on the time of year. More warmth is needed in winter, so many animals grow denser coats to make it through this challenging season. Did you know that a muskox can shed up to eight pounds of underhair as he gets ready for the summer bathing suit season?!?!?!?

Even though there are only three basic types of fur, there is incredible variation and adaptation within this range. Some animals have fur that is waterproof so they don't get exposed to the frigid temperature as they hunt and swim in arctic waters. Other animals have adapted their guard hairs to the max: the quills of the porcupine are actually special hairs! Pangolins (scaly anteaters) hairs are fused together so that it forms plates (or scales) that offer protection. We also know that animals have adapted special coloration in their fur that helps them blend in with their environment while other animals use fur coloration (like stripes!) to stand out as a warning to predators. For example, certain rodents have toxins in their skin and they tend to have dramatic black and white patterns that show up well in the dark: a warning to predators that they are certainly NOT good for eating!



Fur, hair or wool...whatever you want to call it...is another fascinating adaptation of the natural world. Animals spend hours caring for their fur because it is so important to their survival. The condition of the fur can also tell you a lot about the general health of the animal. In humans we may call it vanity, but in the non-human animal world, it is all about survival!

Learn more fun facts about fur and even feel the fur of several different animals (can you guess who it belongs too?) during the *Stylish Fur Coats* program with Dinosaur Hill Nature Preserve (See page 14).



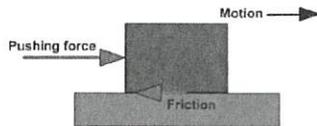
# Sledding Science



(Continued from page 8)

up your energy and all is good...friction and air resistance and loss of potential energy have saved you. If you keep on going and run into the straw pile then you will transfer your energy to the straw rather dramatically. There is another force at work here on our hill that is worth mentioning. You might notice that different sleds tend to go faster and that different snow conditions can make for faster sledding. You might even notice that, at times, the sledding hill is closed due to unsafe sledding conditions. There is one physical force that is at play in each of these scenarios: kinetic friction. Kinetic friction is both the friend and foe of the Lost Lake sledder. Friction is the rubbing together of your sled bottom (or your bottom if you forgot your sled) against the rough surface of the snow. When the snow is nice and slick, friction is reduced. When your sled has a nice, slippery surface, friction is reduced. Less friction means less energy is needed to overcome the friction so more energy goes directly toward making you go fast! But if there is not enough friction then you will have trouble keeping your sled heading in a straight line. When the hill gets too icy it has to be shut down because of a lack of friction...sleds would be out of control. Not safe.

## What is Friction?



The wind and air also push against you and slow your descent. The bigger you are in surface area, the greater the force. Picture a luge sledder or bobsled team in the Olympics...they lay or crouch down as much as they can. They do this to limit the air resistance against them. In these events, hundredths of a second can make a difference between gold and going home with nothing. The forces of wind and friction slow you down.

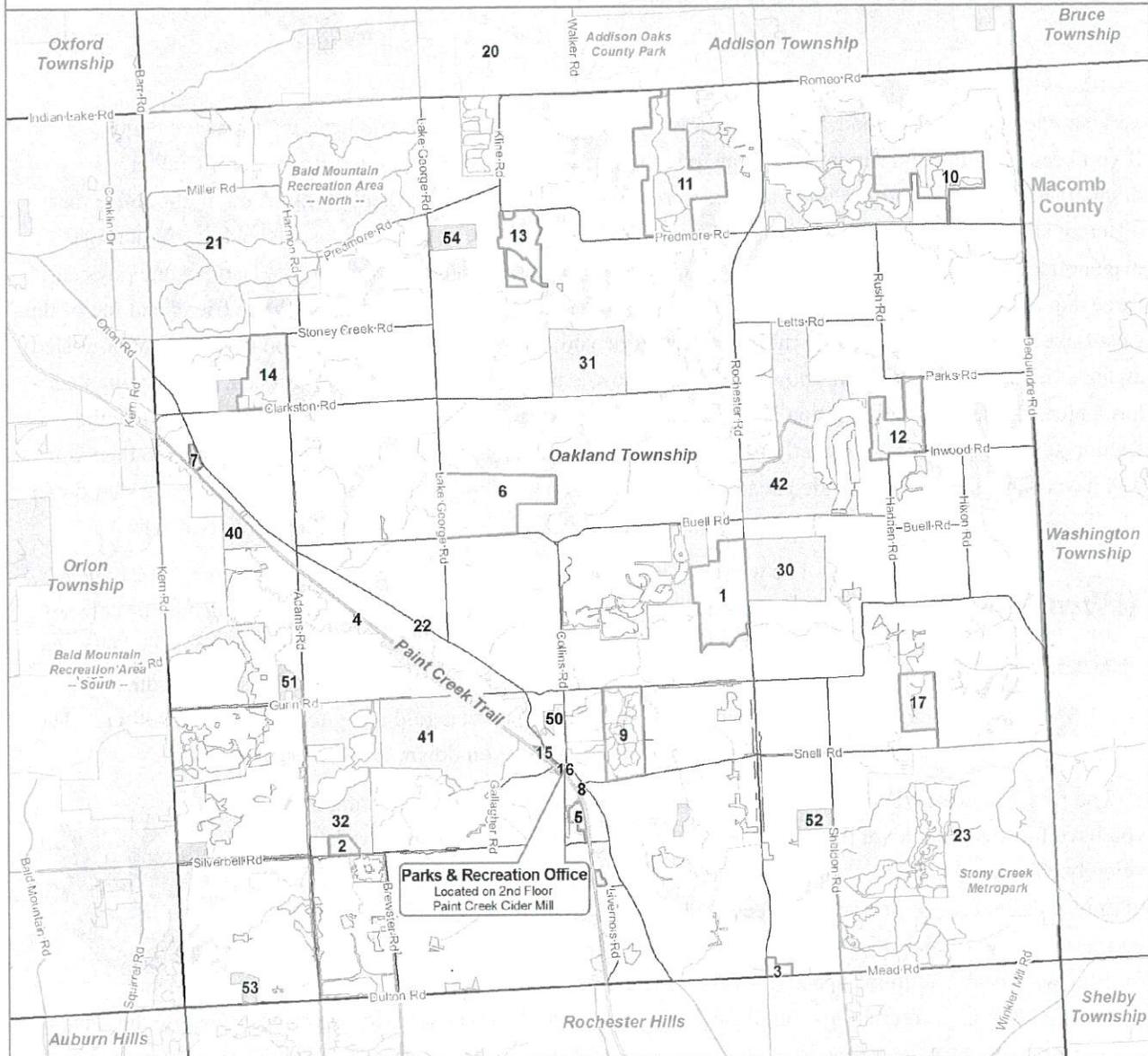
The forces slowing you down and the forces speeding you up are all operating on you as you have fun sledding down the hill. As you sled, imagine yourself racing toward terminal velocity. Terminal velocity is the fastest potential speed you can attain given the resistance of drag and the force of gravity in a freefall. If you are freefalling you will accelerate until you reach your terminal velocity after which you will go no faster. A peregrine falcon diving for prey will reach a terminal speed of over 90 meters per second!!!! Slow down your sleds...sledding isn't freefalling...but it sure is fun to pretend! Be thankful for the forces of nature that make life so much fun! The next time you are Lost Lake converting calories into potential gravitational energy keep an eye out for our Pop-Up Nature programs that will occur by surprise this winter during peak sledding days!



See page 5 for sled hill information. Always call the hotline at 248-651-4440, ext. 299 before heading over.



# Parks and Recreation Opportunities in Oakland Township



## Oakland Township Parks and Recreation Facilities

### Conservation Parks

1. Blue Heron Environmental Area
2. Gallagher Creek Park
3. O'Connor Nature Park
4. Paint Creek Heritage Area - Fen
5. Paint Creek Heritage Area - Wet Prairie
6. Watershed Ridge Park

### Future Trail Connections

7. Paint Creek Junction Park
8. Mill Creek Crossing

### Community Parks & Recreation Facilities

9. Bear Creek Nature Park
10. Charles Ilsley Park
11. Cranberry Lake Park
12. Draper Twin Lake Park
13. Lost Lake Nature Park
14. Marsh View Park
15. Mill Race Trail
16. Paint Creek Cider Mill (Parks & Rec Office)
17. Stony Creek Ravine Nature Park

## Other Parks and Recreation Facilities

### Other Public Parks

20. Addison Oaks County Park
21. Bald Mountain State Recreation Area
22. Paint Creek Trail
23. Stony Creek Metropark

### Other Public Recreation Facilities

30. Blackheath Golf Club
31. The Myth Golf and Banquet
32. Westwynd Golf Course

### Private Recreation Facilities

40. Royal Oak Archers
41. The Wyndgate Golf Course
42. Twin Lakes Golf and Swim Club

### Public Schools

50. Baldwin Elementary School
51. Delta Kelly Elementary School
52. Hugger Elementary School
53. Musson Elementary School
54. Oakview Middle School

### Key to Features:

- Municipal Boundary
- Oakland Township Parks
- ~ Major Roads
- Lakes & Ponds
- Park Path
- Streams & Rivers
- Safety/Side Path
- Paint Creek Trail
- Private Recreation
- Public Recreation
- Public School

0 0.5 1 2 Miles



Eastman 06/2013

# Oakland Township Parks and Recreation Registration Information



**Oakland Township** resident registration starts NOW!

*(This is for residents living within the Oakland Township boundary.)*

Non-Resident registration begins one week prior to the program registration deadline date.

*Programs fill-up quickly so please contact us early!*

## Registration Options:

**1. Fill out the form below, and the release of liability waiver on back of form for each participant, register by mail or drop in the drop-box at Township Hall, (4393 Collins Rd.) after hours. (One waiver is needed for each person and each program.)** *Mail at least two weeks before program date!*

Make checks payable to "Charter Township of Oakland" and mail with registration form and signed waiver for each participant to: *Charter Township of Oakland, 4393 Collins Rd., Rochester, MI 48306*

**2. Visit us at our office location and register in person. Payment options include:**

Credit cards (MasterCard, American Express, or Discover) accepted in person only **(\$2.95 fee)**, cash, or check.

*Paint Creek Cider Mill Bldg. (2nd Floor)  
4480 Orion Rd., Rochester, MI 48306*

Additional registration forms and waivers  
are available to print from the park pages at  
[www.oaklandtownship.org](http://www.oaklandtownship.org)

Office Hours: Monday - Friday 8am - 4:30pm

Adult's Name: \_\_\_\_\_

Address: \_\_\_\_\_

City/Zip: \_\_\_\_\_ Emergency phone: \_\_\_\_\_

Home Phone: \_\_\_\_\_ Cell Phone: \_\_\_\_\_

E-Mail Address: \_\_\_\_\_

Resident of (circle one): Oakland Twp. Rochester Rochester Hills Other

Enrollee's Name: \_\_\_\_\_ Age (if child): \_\_\_\_\_

Program Name: \_\_\_\_\_ Date and Time: \_\_\_\_\_

Program Name: \_\_\_\_\_ Date and Time: \_\_\_\_\_

Amount Due: \_\_\_\_\_ *Mail at least two weeks before program date!*

## Oakland Township Parks and Recreation Program Refund Policy



Registrants will receive a full refund for programs cancelled by Oakland Township Parks and Recreation. Registrants withdrawing more than 4 business days prior to the program start date will receive a refund, less a \$5.00 administration fee. No refunds will be made if withdrawing less than 4 business days from program start date. All registrants wishing to withdraw, must do so during regular business hours Monday-Friday, 8am-4:30pm in person at the Paint Creek Cider Mill, 4480 Orion Rd., or by phone at 248-651-7810. Visit [www.oaklandtownship.org](http://www.oaklandtownship.org) for complete program information and other Park and Recreation information, permits, and ordinances.

### Oakland Township Parks and Recreation

### Release of Liability Waiver and Permission to Publish Photographs

Use this waiver for general programs. A separate release of liability waiver must be submitted for each program for which each participant registers.

Special waivers are required for Camps, Archery, Kayaking, and Stand Up Paddleboarding and are available on the Park Programs page of the Township website: [www.oaklandtownship.org](http://www.oaklandtownship.org)

Liability Waiver For Participant: As a participant (or as a parent of a participant under 18 years of age) in the above Oakland Township Parks & Recreation program, I recognize and acknowledge that there are certain risks of physical injury and I agree to assume the full risk of any injuries, including death, damages, loss which I sustain as a result of participating in any and all activities connected with or associated with the program. I do hereby fully release and discharge the Charter Township of Oakland, Oakland Township Parks & Recreation Commission, their officers, agents, volunteers, sponsors and employees from any and all claims from injuries, including death, damages or loss which I may have or which may occur to me on account of my participation in the program. I further agree to indemnify and hold harmless and defend the Charter Township of Oakland, Oakland Township Parks & Recreation Commission, their officers, agents, volunteers, sponsors and employees from any and all claims resulting from injuries, including death and losses sustained by and arising out of, connected with, or in any way associated with this program.

I authorize the use photographs showing my image in any of their printed documents and on their website.

**Medical Care.** Please check one of the following boxes:

I am willing to allow my child to receive First Aid treatment, and if necessary, further medical attention that may include transportation to a local medical facility. I understand that, if possible, I will be contacted if additional medical care is needed.

I am willing to allow my child to receive First Aid Treatment, but I do not want my child to receive additional medical attention, including transportation to a local medical facility. If advanced medical care is necessary, please follow these instructions:

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

Signature of participant (Parent's signature if minor)

Date

Print Name (include name of minor, if any)

Address

Phone

E-mail

Emergency Contact and Phone Number

Program Name

Program Date

Township Park

Program Name

Program Date

Township Park

# Oakland Township Parks

## Get outdoors and explore our winter wonderland!

Bundle up and head out to one of your favorite parks this season. These natural jewels provide great opportunities for you to get off the couch and burn some calories this winter!! Best of all, they're just minutes away, easy to find and FREE!! In addition to enhancing your cardiovascular workouts, winter is without a doubt the best time to observe tracks and animal signs in the snow; a pastime that changes with each new snowfall. One excellent book to help in that pursuit is *Tracking and The Art of Seeing* by Paul Rezendes.



**Bear Creek Nature Park** — With the skating rink relocated here, now you can visit for a skate date! (page 4) Don't miss Winter Carnival on January 26 (Page 3) or Ice Skating Clinics led by National Medalist Tracey Daniels (page 9). Call 248-651-4440, ext. 289, for ice rink conditions. Pop back in the spring to build a birdfeeder (page 15) or go for a hike.



**Lost Lake Nature Park** — Home to a great sled hill (page 5), this 58-acre park is located at 846 Lost Lake Trail on the south side of Predmore between Kline and Rochester Roads. Wild turkey like this park for winter roosting — try spotting them while you're at the park for one of our programs (pages 6, 7, 14 & 15)! . Note: Dogs are not permitted in the sledding area or on the hill. Call 248-651-4440, ext. 299, for sled hill conditions.

**Cranberry Lake Park** — This 213-acre park is just right for cross-country skiing with gentle hills, meadows, red maple swamps and thickets full of birds and rabbits. Join us as we look for eastern bluebirds and soaring red-tailed hawks (page 22). Parking and a portable toilet are located at 388 West Predmore Road. Parking is also an option at the Romeo Road entry where you can pick up the Addison Connector Trail. Join us for programs (pages 14 & 22) at this park. The historic farmstead is open to the public during scheduled programs and events (pages 18 & 19).



**Charles Ilsey Park** — 1479 East Predmore Road. The rolling hills at this 120-acre park provide an ideal setting for quiet cross-country skiing. Enjoy the solitude of the wide-open fields and picturesque fence-row oaks while the prairie plants sleep below the snow. Look for coyote tracks or a flock of turkey at the woods' edge! Parking is available on the north side of Predmore, between Rush and Dequindre Roads. One of several parks managed with prescribed burns (page 21).

**Draper Twin Lake Park** — This 90-acre park offers a level trail system in the east meadow area - great for a brisk cross-country ski or snowshoe workout! Park near the maintenance garage at 1181 Inwood. If you prefer a more tranquil outing, try some tracking or nature photography along the lake trail, accessed just northeast of the Hadden and Inwood Roads intersection at 1015 Inwood Road. In the spring join us for Free Fishing Day on June 9th (See page 15).



**Be safe, stay warm and have fun!!**

**If you have questions or would like more information, call the Oakland Township Parks and Recreation Office at 248-651-7810.**

**-Please note that all areas are unsupervised and users assume all risks and liabilities.-**

Parks and Recreation Commission  
Charter Township of Oakland  
4393 Collins Road  
Rochester, MI 48306-1670

Phone: (248) 651-7810  
Fax: (248) 601-0106  
www.oaklandtownship.org

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*Seal designed by  
Richard Krupp*

### Commission Meetings

The Parks & Recreation Commission meets at 7 pm on the second Wednesday of every month in the Township Hall Boardroom.

### Office Hours and Location

Park permits, maps and descriptions are available at the Parks and Recreation Department office, located on the second floor of the Paint Creek Cider Mill, 4480 Orion Road. Normal office hours are from 8am to 4:30pm Monday through Friday.

### Parks and Recreation Commissioners

Colin Choi, Chairman  
Hank Van Agen, Vice Chairperson  
Craig Blust, Treasurer  
Emily Barkham, Secretary  
Dan Bukowski, Commissioner  
Cathy Rooney, Commissioner  
Dan Simon, Commissioner

### Oakland Township Parks and Recreation Staff

Parks and Recreation Director	Melinda Milos-Dale
Administrative Assistant	Carol Kasprzak
Clerical Assistant	Deb Gallo
Recreation Manager	Becky McLogan
Recreation Program Assistant	Makayla Kroening
Maintenance Foreman	Doug Caruso
Maintenance Technician	Jeff Johnson
Natural Areas Stewardship Manager	Dr. Ben VanderWeide
Stewardship Specialist	Alyssa Radzwion
Maintenance and Recreation Staff	Clif Selent, Robert Zbytowski, Alex Dziadzio



Oakland Township Park Rules are enforced by the Oakland County Sheriff's Office.

### **FOR EMERGENCIES CALL 911**

If you have information or questions concerning a reported crime or accident, call the substation at 248-652-4617 Monday-Friday, 8 am-4 pm. All other calls please use dispatch at 248-858-4950.

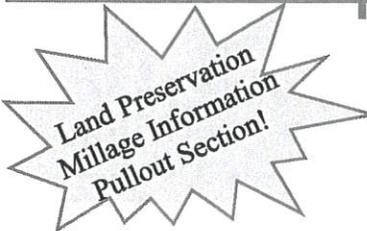
# Oakland Township Parks and Recreation Commission Newsletter

**Fall 2018**

The Mission of Oakland Township Parks and Recreation Commission is to provide a sustainable system of parks, trails, programs, amenities, and services which create memorable experiences and a sense of place, contributes to the economic value of the Township and preserves the historical and natural heritage of the landscapes for existing and future generations.



Kendra Lary, Sandra Staehlin, Harrison, Riley, & Danielle McComb, and Anton Staehlin at Lost Lake Nature Park Kayaking Class June 2, 2018



## Inside this issue:

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## Land Preservation Millage Renewal

### Land Preservation Millage Renewal Vote Set for November 6

A proposal to renew Oakland Township's Land Preservation Millage will be on the November 6, 2018 ballot. The acquisition and preservation of open green spaces in Oakland Township is funded by this millage. This 10-year millage renewal is neither a new tax nor a tax increase.

In 2014 Oakland Township Parks and Recreation (OTPR) surveyed 5940 Township households to understand residents' preferences concerning Township parks. A majority of respondents indicated that OTPR should continue to acquire land for natural area protection and that land should be acquired for passive recreation usage (trails, picnicking and enjoyment of outdoors). These preferences, gathered through surveys and additional methods, help guide the land preservation efforts funded by the Oakland Township Land Preservation Millage.

The renewal of the .6310 of one mill will enable the Oakland Township Parks and Recreation Commission to continue acquiring, permanently protecting, and providing access to Township green spaces.

Please review the center section of this newsletter for detailed millage information.

### Come to Free Tours of Land Preservation Parks

Since 2001, Oakland Township Parks and Recreation (OTPR) has used our Township's Land Preservation millage to acquire and permanently protect 444 acres of high-quality Township green spaces and to manage natural areas in the Township parks. Join our Land Stewardship staff for guided tours of two parks that were protected using Land Preservation Millage funds:



#### Lost Lake Nature Park

Thursday, September 20, 2018  
from 6 – 8 pm.

Meet in the parking lot at 846 Lost Lake Trail.

#### Stony Creek Ravine Nature Park

Saturday, October 20, 2018  
from 1 pm – 3 pm.

Meet at 1280 Knob Creek Drive (Dead End of Road).

(Continued on page 11)

### Special points of interest:

- ◆ Goodison Good Tyme!
- ◆ Programs/Kayaking/Archery
- ◆ Paint Creek Trail
- ◆ Lost Lake Open Houses!

## Sixteenth Annual Goodison Good Tyme!

We return to Bear Creek Nature Park for this favorite fall celebration.

See page 3 for complete details.



## *What's New in the Parks*

### **From The Director...**

#### **Gallagher Creek Park – Re-opening this Fall!**

The July 14<sup>th</sup> “Community-Built” playground installation at Gallagher Creek Park was a success thanks to enthusiastic volunteers, our event sponsors, and perfect weather! See page 6 for recognition of our invaluable sponsors and volunteers.

While the new playground structure is this park’s star, this project also includes several other exciting features! A picnic pavilion and restroom enclosure, designed to resemble our Township’s historic farm buildings, will allow visitors to enjoy the better part of a day at this park. Plus, this park will be accessible by foot, bicycle, or car thanks to the new sidewalk being constructed from the northeast corner of Adams Road and the enlargement of the parking lot. The park is projected to re-open by October 1, 2018 with a grand opening planned for Spring 2019.



*Gallagher Creek Park Playground August 6, 2018*

Major funding for these park improvements was provided by the Oakland Township Parks and Recreation millage. Donations are still being accepted for the finishing touches at Gallagher Creek Park including benches, picnic tables and a native plant garden. See page 23 for more information.

### **Mindy Milos-Dale Parks and Recreation Director**



*Volunteers assembling components at Gallagher Creek Park  
Community Built playground. July 14, 2018.*

### **Celebrate New Partnership With Us!**



Join us for one, two, or all **four**  
**FREE open houses** this fall at  
Lost Lake Nature Park’s Nature

Center! Our 2018 partnership season continues with a great selection of open houses including The Fall Harvest, Spooky Woods, A Michigan Thanksgiving, and The Happy Holiday Hullabaloo. Presented in partnership with Dinosaur Hill Nature Preserve.  
*Full details on pages 4 & 5.*

### **Guided Evening Nocturnal Hikes - NEW!**

Experiencing a trail at night can be a completely different experience than during the day. Come sharpen your senses by joining our **NEW Seasonal Night Hike Series** for adults! The first hike of the series kicks off at Cranberry Lake Park on Friday, October 26. *Details on page 9.*

### **Pre-Teen Day Camp - NEW!**

Day off from school and lookin' for something to do? Sign up for our **NEW Super Eco-Adventure & Forest Forensics Day Camp!** A nature extravaganza and **FREE!** *See page 5.*

# 2018 Goodison Good Tyme!

Saturday, September 15, 2018

11:00am - 3:00pm

Bear Creek Nature Park

746 West Snell Road

Please join us for the 16th year of this great **FREE** event!

Sponsored by: Oakland Township Parks & Recreation

## Festival Activities

Rock Wall & Zip Line Adventures

Archery Shooting

Stiltwalker and Balloon Art

Face Painting

T-Shirt Stenciling

Pioneer Games

Historical Displays

Bake Sale



## Refreshments

Hot Dogs, Chips,  
and Water

While supplies last!



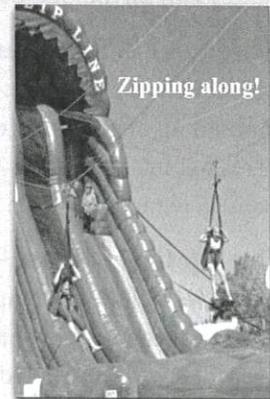
## Festival Participants

Oakland Township Parks & Recreation

Historic District Commission

Oakland Township Historical Society

Paint Creek United Methodist Church



For more information call 248-651-7810

Mums compliments of:



# LOST LAKE NATURE PARK PARTNERSHIP

Oakland Township Parks and Recreation & Dinosaur Hill Nature Preserve



## Lost Lake Nature Park

846 Lost Lake Trail, Oakland Charter Township, MI 48363



Open houses are FREE! Open houses are FUN! Open houses are for the whole family! The nature center will be open for four hours. You are welcome to drop by any time during those hours. You will have a chance to explore this amazing park, check out the nature center, participate in crafts, games and other ongoing activities led by Dinosaur Hill Naturalists! No Registration required for Open Houses!



**FREE!**

## Fall 2018 Open Houses!

**FREE!**

**September 16th, Sunday (12-4) – The Fall Harvest** – There's no better time of year for comfort food than the autumn and people have known this going back as far as ancient Greece. Join us as we celebrate all that autumn has to offer by producing some interesting crafts with harvested fruits and vegetables. Inside we will also put several fruits beneath the stereoscope to see just how amazing their structures can be up close. We will also take guided walks in the woods to see if we can find some fruits growing in the wilds.

**October 14th, Sunday (12-4) – Spooky Woods** – Even the scariest aspects of nature are ludicrously cool and we plan on heading out there to learn all about that which goes bump in the night. We'll have owl mounts and owl pieces to admire and touch, a real tarantula, a build-a-bug station and more hauntingly entertaining activities inside. Outdoors we will flip over logs to glimpse the last of our creepy-crawlies before they seemingly vanish for the winter. We'll even talk about how they survive!

**November 4th, Sunday (12-4) – A Michigan Thanksgiving** – With the approaching celebration of our favorite pudgy bird we figure it only fitting to celebrate our graceful friend with a day all about the turkey... But then we thought, why not pepper in some discussion of Native Americans while we're at it? So join us for the best of both worlds as we honor the true tradition of Thanksgiving by learning about the indigenous people of Michigan while simultaneously putting together our own turkey crafts to take home. Outside we will perfect our turkey call on tours of the woods and we will play some Ojibwa games.

**December 2nd, Sunday (12-4) – The Happy Holiday Hullabaloo** – With the holidays right around the corner it's time to ring in the new year and celebrate our families by taking everyone out to Lost Lake Nature Park for an afternoon of ornament making, carols, popcorn-stringing, refreshments and more! We will be taking hikes out into the woods to collect natural materials to turn into hanging ornaments inside, playing some festival holiday games, and even going on a scavenger hunt outside for missing prizes!

**Pop Up Open House** – *date to be determined by mother nature!!! (12-4)* With the sledding hill in full swing we will be opening up our nature center, in addition to the warming shelter, for a very special way to regain feeling of your toes. We will be putting together winter crafts and serving out cups of hot chocolate to keep sled warriors fueled for their day of recreation at the park. We'll also be donning snowshoes periodically throughout the day to practice moving atop the snow as well for a unique way to experience Lost Lake's trail system!

# LOST LAKE NATURE PARK PARTNERSHIP

Oakland Township Parks and Recreation & Dinosaur Hill Nature Preserve

## Lost Lake Nature Park

846 Lost Lake Trail, Oakland Charter Township, MI 48363



### FREE Pre-Teen Day Camp – Ages 9-12

#### November 5th, Monday (10-2) - Super Eco-Adventure & Forest Forensics

We welcome folks of all ages to our programs at Lost Lake but this special event will feature some extra special activities for the pre-teen set. This awesome day is planned for a day when school is closed...so why not shake off the cabin fever and spend an awesome day with Dinosaur Hill up at Lost Lake.

With school being out we are opening our doors for a special preteen day camp! We will be heading outside and collecting specimens from nature to place beneath microscopes and stereoscopes, dissecting owl pellets and reassembling the bones, and creating edible versions of animal scat that we find out in the woods for a delicious and gross snack! In the woods we will also hone our tracking skills as we become sleuths on the track for elusive wildlife. We will be combining the best of entertainment and education into this nature extravaganza for the older kids, oh, and did we mention this camp is free? Registration is required via [dinosaurhill.org](http://dinosaurhill.org)

## When a Barren Forest is a Good Thing

By Sue Neal, Executive Director, Dinosaur Hill Nature Preserve

The first time you visit Lost Lake Nature Park in Oakland Township, a likely reaction is a sudden feeling that you have stepped out into a very unique forest, perhaps more reminiscent of northern Michigan than Oakland Township. There is a good reason that you have this sensation. Lost Lake has some very special habitat indeed...known as an Oak-Pine Barren. Oak-Pine Barrens are, in fact, exceedingly rare in our entire region. The Barrens are disappearing from our state landscape and the remnants at Lost Lake are a state treasure. Let's learn a little bit more about Oak-Pine Barrens and why our Township is working hard to preserve our little piece of natural history.



Lost Lake Nature Park

The word barren has a negative connotation to it, but when it comes to this type of habitat, it is actually a good thing. The land is not at all barren, but it is not a dense forest either...more like a savannah, with some mature trees and open areas of grasslands and scrub oak in the understory. Among the mature trees, you are likely to find various species of oak combined with red, white and jack pine. You will see some of these trees at Lost Lake, including some incredible white pines that dominate the view. The landscape is majestic but also provides critical habitat for several species of plants and insects that are dependent on this unique landscape.

Oak-Pine barrens were more widespread in the past in Michigan, representing about 112,000 acres of land pre-European settlement. Today, only a few hundred acres remain. For a while, they thrived in the warm and dry climate that dominated our area about 4,000-6,000 years ago. The soils were sandy, outwash left behind by the retreating glaciers. The climate and soils were conducive to the development of the Oak-Pine Barren landscape.

(Continued on page 19)

# Gallagher Creek Park and Pathway Project

July 14th Playground Build  
Register at [oaklandtownship.org](http://oaklandtownship.org)

Thank you volunteers and sponsors

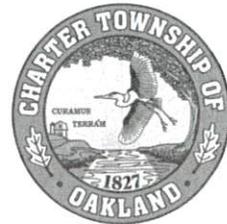


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L.J. Construction Inc.



Parks and Recreation  
Safety and Trails

Oakland Township Parks and Recreation would like to thank the following organizations and individuals for their contributions to the Gallagher Creek Park Playground installation:

- Our event sponsors including the Oakland Township Kroger Store which provided and served breakfast and lunch, The Home Depot Foundation which provided materials and equipment to secure the play structure, and Turner Sanitation for portable toilets. Please support these organizations that gave so generously,
- The dedicated staff of Oakland Township Parks and Recreation Department and Oakland Township Fire Department and Great Lakes Recreation Company,
- Our enthusiastic volunteers!

### Volunteers

Barb Barber, Emily Barkham, Dan Bukowski, Colin Choi, Sid Clark, Sylvia Coss, Rick Czechowski, Cheryl Dodds, Larry Earhart, Ken Faragher, Liz Faragher, Brett Leiteritz, Angela Mitchell, John Myers, Erica Nye, Paul Pakizer, Tom Rapson, Karen Reilly, Stewart Robertson, Blake Schram, Dylan Schram, Heather Schram, Tom Schram, Michaela Sommer, Hank VanAgen, Jay Verran, Scott Webster



Oakland Township Parks and Recreation  
Commissioner Hank VanAgen

### Oakland Township Parks and Recreation Staff

Doug Caruso, Deb Gallo, Katlyn Hilmer, Jeff Johnson, Alex Kreibel, Mindy Milos-Dale, Alyssa Radzwion, Clif Selent, Ben VanderWeide

### Oakland Township Fire Department Staff

Chuck Beach, Andrew Linn, Stacy Linn

**We are also grateful for Bench Installation Donations received from:**

Carol Madison in memory of Alexander Madison.  
Craig Blust in honor of Adele and Ralph Blust.

# Oakland Township Parks and Recreation 2018 Fitness/Wellness Fall Programs

See page 21 for registration information.

## Tai Chi Adults 18+

Tuesdays, October 16 - December 4, 2018 6:00 - 7:00pm  
Paint Creek Cider Mill, 4480 Orion Road, Rochester, MI 48306



Find peace and serenity from a busy, stressful day through Tai Chi. Tai Chi exercises the mind and body by increasing wellbeing and improving balance, coordination and strength. Students will learn the basic forms and elegant movements of the Yang Style Short Form Tai Chi. Students should be able to support their weight while standing or bring a chair if unable to stand. Students should wear loose and comfortable clothing and shoes. No flip flops or sandals. Traditional Tai Chi shoes are optional. Bring water bottle. Led by Marci Jenkins.\* 8 week session. \*Marci has over 20 years of Tai Chi training and practice.

**Residents: \$40 Non-residents: \$80 Register by October 9**

## Tai Chi Continuing Beginners Adults 18+

Wednesdays, October 17 - December 5, 2018 6:00 - 7:00pm  
Paint Creek Cider Mill, 4480 Orion Road, Rochester, MI 48306



For those students who have taken Tai Chi classes with Marci Jenkins.

**Residents: \$40 Non-residents: \$80 Register by October 10**

## Outdoor Boot Camp In The Park Ages 12+

Mondays, September 10 - October 15, 2018 6:30 - 7:30pm  
Bear Creek Nature Park, 740 W. Snell Road, Rochester, MI 48306



Break out of the confines of your gym and take in the refreshing spring air of Bear Creek Nature Park! Bear Creek Nature Park offers a small-group outdoor boot camp that uses the different features around the park to create a fun workout for all levels. Circuit activities like the meadow mile, pavilion push-ups, and nature node knee bends, are sure to offer enough variety to keep you motivated. This fun and challenging boot camp-in-the-park will get you fit! Taught by Rochester Athletic Club certified trainer, Sharon DeRouin, a certified trainer with 25 years experience. 6 week session. 1 hour class (5 min. warm up, 45 min. circuit activities, 10 min. cool down and stretch).

**Residents: \$40 Non-residents: \$80 Register by September 4**

## Yoga on the Lake - Adults 12+

Sundays, September 9 - October 14, 2018  
9:30 - 10:30am (Session 1)

Lost Lake Nature Park  
846 Lost Lake Trail, Oakland, MI 48363

**Register by August 31**

## All Levels Yoga - Adults 12+

Sundays, October 28 - December 9, 2018  
9:30 - 10:30am (Session 2)

**No class November 25**

Cranberry Lake Farm House  
388 W. Predmore, Oakland, MI 48363

**Register by October 19**



Step out of the studio and enjoy doing yoga in the warmth of the sun and in full view of serene Lost Lake or choose All Levels Yoga inside our beautiful Cranberry Lake Farm House. Bring your own yoga mat. Led by Pavel Bednarski, RYT-200. All Levels. 6 week session. Session 1 will take place on the dock at Lost Lake. Session 2 will be inside Cranberry Lake Farm House. Rain location for Yoga on the Lake is the on-site Warming Shelter.

**Residents: \$48 Non-residents: \$72**

Registration information on page 21.

# Oakland Township Parks and Recreation Fall 2018 Explore Nature Programs

See page 21 for registration information.

## Conservation Friends - Grandparents/Grandkids Ages 5-10 years old

Sunday, September 9, 2018 10 - 11:30am  
Cranberry Lake Park, 388 W. Predmore Rd., Oakland, MI 48363



On the 4th of September, zoos, parks, aviaries and more observe National Wildlife Day, a day all about presenting the world with opportunities to learn about endangered species, preservation and conservation efforts all across the globe. It's no secret that we're fans of wildlife here and we would like to welcome a special population of grandparents and grandchildren with the opportunity to learn about species that used to call Michigan home, as well as some threatened species from faraway lands. We will be getting hands-on with several unique species of animals from tarantulas, turtles, geckos, snakes and more while developing an appreciation for the variety of life that calls Earth home. Afterwards we will take a short hike to see if we can't spot some wildlife right in our own backyards!

**Residents: \$5 Non-residents: \$7 Register by August 31**

## Marks in the Mud - Ages 3-5 years old

Wednesday, September 12, 2018 9:30 - 10:30am  
Bear Creek Nature Park, 740 W. Snell Rd., Rochester, MI 48306



The moist autumn soil is the perfect place to find clues about the animals that patrol parks looking for their next snack or shelter. We will be putting on our detective hats and using magnifying glasses to tip-toe down the trails in search of animal tracks to see if we can figure out who, besides us, has been enjoying a hike. Beneath the shelter of the pavilion we will put together our own artwork using animal tracks!

**Residents: \$5 Non-residents: \$7 Register by September 5**

## Great Pumpkin Bowl - Family (Ages 4 to Adult)

Friday, October 12, 2018 7 - 8:30pm  
Lost Lake Nature Park Sled Hill, 846 Lost Lake Trail, Oakland, MI 48363



We excitedly invite you to celebrate the majesty of the orange pumpkin by engaging in the largest pumpkin bowling course ever imagined (and our largest to date!). We will be turning on the spotlights surrounding the Lost Lake sledding hill and setting up trashcan pins at the bottom of the hill. Participants will have to carry their ammunition to the top of the hill, aim true, and then send their pumpkins careening back down with the intention of obliterating the cans. Participants are asked to bring their OWN pumpkins (we recommend at least two per bowler). Cider and doughnuts served to hungry bowlers!

**Residents: \$5 Non-residents: \$7 Register by October 5**

## And when the snow flies...

### Lost Lake Nature Park Sled Hill

846 Lost Lake Trail  
Open Daily 10am - 5pm  
Friday and Saturday nights until 9pm

Warming Shelter Open Hours  
Friday nights 5pm - 9pm  
Saturdays 1pm - 9pm  
Sundays 1pm - 5pm

**Sled Hill Hotline 248-651-4440 Ext. 299**

### Marsh View Park Skating Rink

3100 E. Clarkston Road  
Open Daily 10am - 5pm



**Ice Rink Hotline 248-651-4440 Ext. 289**

Visit our web pages for complete information on these winter areas including Rules and Maps!  
Don't forget to check the hotlines to confirm the sled hill and ice rink are open before heading out.

# Oakland Township Parks and Recreation Fall 2018 Explore Nature Programs

See page 21 for registration information.

## ***Fall Mushrooms of Michigan - Adults 18+***

Sunday, September 9, 2018 10:00 - 11:30am  
Lost Lake Nature Park, 846 Lost Lake Trail, Oakland, MI 48363



Take a tour of the amazing world of mushrooms. Discover the many types of mushrooms in Michigan in this unique and very hands-on program from mushroom expert Phil Tedeschi of the Michigan Mushroom Hunters Club. We will peruse the Seasonal Mushrooms of Michigan with a *PowerPoint* presentation from our expert and learn about where and how mushrooms grow while inspecting numerous samples up close. Then, we'll take a walk (no picking) to search for mushrooms in the park too! There is no substitute for the excellent opportunity of doing a mushroom hunt with a true mushroom expert.

**Sign up early for this popular program!**

**Residents: \$5 Non-residents: \$7 Register by September 4**

## ***Guided Evening Nocturnal Hikes - Fall - Adults***

Friday, October 26, 2018 6:30 - 8pm  
Cranberry Lake Park, 388 W. Predmore Rd., Oakland, MI 48363



Join a park naturalist through the heart-pounding world of evening hikes in this, the first class of our new hiking series that will continue this winter. We shall don our warm gear and head out onto the trail in search of rabbit, deer, raccoon, and coyote tracks, nests, and signs that animals (and their habitats) are getting ready for winter. Participants will even learn how to call owls and learn some interesting facts about some of our favorite migratory winter birds. Participants are asked to bring their own headlamp or flashlight for the tour.

**Residents: \$5 Non-residents: \$7 Register by October 19**

## ***Hunters of the Sky - Families (Ages 4 to Adult)***

Friday, November 2, 2018 7:00 - 8:00pm  
Lost Lake Nature Park Warming Shelter, 846 Lost Lake Trail, Oakland, MI 48363



It's all about survival! Three engaging raptors (such as a hawk, owl, falcon) will visit your site to demonstrate and model their amazing survival characteristics and techniques. Hand-on explorations of feathers, skulls, and other bird parts provide a stimulating introduction to the Hunters of the Sky. Presented by Leslie Science & Nature Center.

**Residents: \$5 Non-residents: \$7 Register by: October 26**

## ***The Bigger the Better - Afterschool (Ages 7 - 11)***

Tuesday, November 6, 2018 4:30 - 6pm  
Cranberry Lake Park, 388 W. Predmore, Oakland, MI 48363



This time of the year the forest floor is a treasure trove of interesting specimens and objects which, as is the trend this time of year, fell to the ground from the trees above. Join us as we adventure outdoors to scour the forest floor for seeds, soil, insects and more before heading back indoors to view our specimens beneath both stereoscopes and microscopes. We will even put on our Charles Darwin hats and learn how to journal and illustrate our specimens. And in true Dinosaur Hill fashion we will also have a few intriguing surprises for the microscopes from our own coffer.

**Residents: \$5 Non-residents: \$7 Register by: October 30**

**Registration Form on page 21.**

# Oakland Township Parks and Recreation Fall 2018 Outdoor Adventure Programs

See page 21 for registration information.

## Stand Up Paddle Boarding! Ages 14 and up

Saturday, September 8, 2018 10 - 11am or 11:30am - 12:30pm  
Draper Twin Lake Park, 1015 Inwood Rd., Rochester, MI 48306\*

Stand Up Paddle Boarding (SUP) is a great new water activity sweeping the country, and it's easy and fun to learn. Learn to paddle in a safe environment with experienced instructors, and quality equipment at breathtaking Lost Lake or beautiful Draper Twin Lake! Paddlers 14 years and older welcome. All equipment is included. Please wear a bathing suit or clothes you don't mind getting wet. All levels welcome. Weight limit 220 lbs.

1 class - 1 hour session (May sign up for more than one session)

**Residents: \$20 Non-residents: \$35 Register by August 31**

*\*Draper Twin Lake is larger than Lost Lake and will be more challenging for the beginner. Come early. The distance from the parking lot to the dock, which has lake access, is approximately one-half mile via accessible path.*



## Fun Basics of Kayaking - Ages 10 and up

Lost Lake Nature Park, 846 Lost Lake Trail, Oakland, MI 48363

Saturday, September 22, 2018 10:00am - 12:00pm

This clinic is taught both on land and in the water and will focus on safety and introductory stroke *techniques*. Learn basic kayaking safety skills such as fitting your life jacket, what clothing to wear, and getting into and out of your kayak from a dock. Basic paddling skills include forward, reverse, and turning strokes. Designed for new paddlers and anyone who would like formal instruction. Lost Lake is open calm flat water without jet skis and motor boats. Lost Lake Nature Park and its beautiful dock and kayak launch are universally accessible.

**Residents: \$20 Non-residents: \$35 Register by September 14**



Items to bring: water bottle, water shoes or light weight sneakers, sunglasses, bug repellent, and wear synthetic clothing. At the time of registration we will ask you for your approximate height and weight so that we may size you with the proper gear. We paddle in light rain (it is a water sport). However, if there is a 60% or greater chance of thunderstorms 2 hours prior to the clinic we will contact you to cancel with a full refund issued or reschedule the clinic.

## Next Step Beginning Kayaking Ages 10 and up

Lost Lake Nature Park, 846 Lost Lake Trail, Oakland, MI 48363

Saturday, September 22, 2018 12:30 - 2:00pm

This clinic is for those who have completed our *Fun Basics of Kayaking* clinic or have some experience at kayaking and are looking to increase their skill level. This clinic will focus on safety on the water and stroke *development*. Learn how to fit your boat to your body on land in order to practice techniques for staying in your boat on water to avoid tipping over! Discuss what to do if you do tip over. Learn about the different types of paddles and the side stroke. Then use paddling patterns to practice and perfect your paddling strokes. For the more adventurous we may have kayak races!

**Residents: \$20 Non-residents: \$35 Register by September 14**



Complete Registration information on pages 21 & 22.

# Oakland Township Parks and Recreation Fall 2018 Kayak Rentals

See page 21 for registration information.

## Kayaks Available for Rental at Lost Lake Nature Park!

We have recently purchased kayaks to offer park users the opportunity to get out on Lost Lake, where wildlife and water lilies abound! Starting April 28, 2018, paddlers can rent kayaks at Lost Lake Nature Park on Saturdays and Sundays, throughout the warm weather season. Lost Lake's small size and easily accessible kayak launch are great for paddlers of all abilities. Take advantage of this opportunity to practice your kayaking skills while exploring this 8-acre glacial lake. Kayak, paddle and life vest supplied.

Note: Weight limit for single kayak is 230 lbs. Kayak at your own risk. No supervision or instruction is provided.

View our kayak rental policy on our website: [www.oaklandtownship.org](http://www.oaklandtownship.org)

## Registration must be completed one week in advance of requested rental date

Anyone under 18 must be accompanied by an adult. Pre-registration, driver's license, signed liability waiver, rental fee and deposit required. One person kayak: minimum age 10 years old. Two person kayak: minimum age 6 years old with an adult on board.

## Rental Dates

Saturdays 10am - 12pm or 12pm - 2pm  
September 29, October 6, 13, 20, 27

Sundays 12pm - 2pm or 2pm - 4pm  
September 9, 23, 30, October 7, 21, 28



# Land Preservation Millage Renewal

## Come to Free Tours of Land Preservation Parks (Continued from page 1)

In 2004 and 2008 the purchase of Lost Lake Nature Park's 58 acres was funded by combining a



Michigan Natural Resources Trust Fund (MNRTF) grant and the Township's Land Preservation Millage funds. This park is home to unique habitats, including imperiled oak-pine barrens, emergent wetland, shrub wetland, and wet meadow. The tall sled hill that is enjoyed by many in the winter months is a kame; clear evidence of the glacial history of Oakland Township. In 2013 a MNRTF grant was combined with Parks and Recreation and Land Preservation funds to add a parking lot, pathways, universally accessible dock, interpretive signage, lakeside native species plantings, and a nature center.

Stony Creek Ravine Nature Park's 60 acres were purchased in 2008 with a combination of Land Preservation Millage funds and a MNRTF grant. The varied topography of this park makes a hike in any season interesting. After winding through open fields and mature forest, the path comes to the edge of the steep ravine that overlooks the West Branch of Stony Creek. This fall we hope to add 208 beautiful acres to this park, again funded by a MNRTF grant and Land Preservation Millage funds.

# Oakland Township Parks and Recreation Fall 2018 Archery Programs

See page 21 for registration information.

## ***Beginning Archery - All Ages (Ages 8 - Adult)***

Looking for something new and fun to try on a beautiful spring Friday evening or Saturday morning? This fun class is for you and your family! Our instructors will cover safety, equipment and basic fundamentals of shooting. All equipment provided. Taught by USA Archery certified instructors.



Saturdays 9/8/18 - 10/6/18 10:00 - 11:00am **Register by August 31**

**Residents: \$45 Non-Residents: \$60**

## ***Next Step Archery - All Ages (Ages 8 - Adult)***

This program is for archers who have taken Beginning Archery or archers with experience. Focus on improving your archery form and accuracy. Equipment provided or may use your own. Taught by USA Archery certified instructors.



Fridays 9/7/18 - 9/28/18 6:00 - 7:30pm **Register by: August 31**

**Residents: \$60 Non-Residents: \$77**

## ***Explore Bow Hunting Class - Ages 8+***

From Paleo to today, hunting with a bow and arrow is a skill set that, when honed, is fun and rewarding. Come out and learn skills such as animal signs, shot placement and proper equipment. Taught by USA Archery and MDNR trained archery instructor. No crossbows or broadheads.



Sunday 9/16/18 4:00 - 7:00pm **Register by September 10**

**Residents: \$30 Non-Residents: \$35**

## ***Halloween Hoot Shoot - Families Ages 8+***

Come in costume and shoot for treats! *Don't know how to shoot?* We'll show you how with our **1st Shot Demo Program**. While supplies last.



**"FREE" Drop-in. No registration necessary!**

Saturday 10/27/18 3:30 - 5pm

## ***Gobble Shoot - Families Ages 8+***

Join us in celebrating a successful outdoor archery season at Marsh View Park! *Don't know how to shoot?* We'll show you how with our **1st Shot Demo Program**. Doughnuts and cider while supplies last!



**"FREE" Drop-in. No registration necessary!**

Saturday 11/24/18 3:30 - 5pm

## ***Open Range Shoot - Ages 8 - Adult "FREE" to the Public***

Drop-in opportunity to practice archery skills! Prior archery experience necessary. No instruction provided. No crossbows or broadheads. Children between 8 and 17 years of age must be accompanied by an adult. Range supervised by certified USA Archery certified instructors. *Not sure how to shoot?* Range Masters can assist you with our **1st Shot Demo Program** - 5 minute teaching time/demo during Open Shooting Hours, or sign up for a Beginner Class.



**DROP-IN - NO REGISTRATION**

Saturdays 4/14/18 - 11/24/18 11:00am - 3:00pm



**OAKLAND TOWNSHIP  
LAND PRESERVATION  
MILLAGE RENEWAL  
NOVEMBER 6, 2018  
BALLOT PROPOSAL  
QUESTIONS & ANSWERS**



**PULL-OUT SECTION (AUGUST 7, 2018)**

**The Mission of Oakland Township Parks and Recreation Commission**

***“To provide a sustainable system of parks, trails, programs, amenities, and services which create memorable experiences and a sense of place, contribute to the economic value of the Township and preserve the historical and natural heritage of the landscapes for existing and future generations.”***

**What is the purpose of the proposed Land Preservation Millage renewal?**

To continue to finance the acquisition and preservation of open green spaces within Oakland Township. The green spaces acquired with millage monies are representative of the natural and rural history of our Township and are permanently protected from residential or commercial development.

**How will the Land Preservation Millage Funds be Used?**

The majority of the .6310 of one mill renewal will be used by Oakland Township during the 10-year millage period for the following:

• **Acquisition of land or interests in land to protect:**

- Land along Paint Creek and Stony Creek.
- Land that contains lakes, ponds, and wetlands.
- Land where residents could hike or observe wildlife.
- Land that connects green spaces or natural areas.
- Habitat for our native plants and animals.
- Land with important natural features such as forests or prairie remnants.



• **Management of Oakland Township parks' natural areas:**

- Monitoring and preserving green spaces once they are purchased.
- Management of properties' natural features to maintain ecological and scenic values.
- Offering educational programs for residents to learn about natural area special features.
- Providing outreach for residents to participate in natural area management activities.



• **Improvements to provide public access to park natural areas:**

Projects proposed in the current capital improvement plan include adding improvements such as parking lots, trails and creek access at Watershed Ridge Park and Stony Creek Ravine Nature Park.

**10% of Millage Funds Will Be Reserved for Long-term Natural Area Management.**

This will initiate a permanent revenue stream for management of Land Preservation properties in perpetuity in the event that dedicated revenue is no longer available.

## How much land in the Township has potential for green space preservation?

Oakland County Planning and Economic Development Services estimates that there are approximately 3000 acres of land in the Township available for preservation, exclusive of park land. This represents about 13% of all Township land, which is greatly decreased from the 23% (5400 acres) that were available when the Land Preservation millage was last renewed in 2006. Of the 3000 acres, more than 1900 acres contain high-quality green spaces, which are the highest priority candidates for Land Preservation Millage funds.



## What will happen to our land preservation program if the millage is not renewed?



If this millage is not renewed early it will limit the Parks and Recreation Commission's ability to plan land acquisition and management beyond the year 2020. The Parks and Recreation Commission will not be able to apply for grants, which typically require matching funding, nor finance the purchase of additional significant green spaces, nor manage the natural areas that have been acquired with these millage funds.

## How will the Land Preservation ballot question be worded?

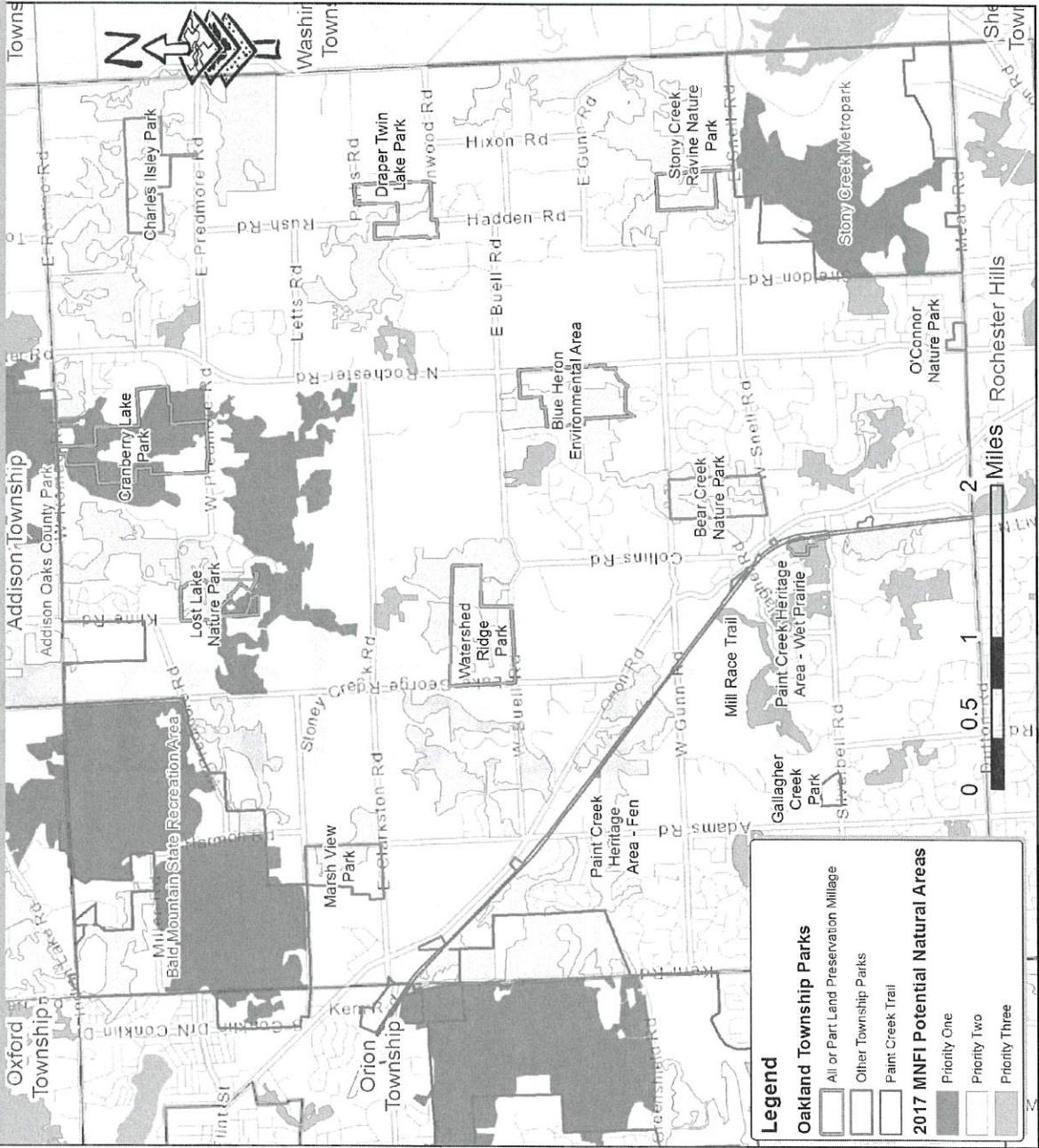
"Shall the Charter Township of Oakland be authorized to renew a levy of up to 0.6310 of one mill for a period of ten (10) years starting with the December 2021 levy for the purpose of continuing to provide funds and financing for the timely acquisition of land, the protection of natural habitat, and the preservation of green spaces within the Township? Approval of this proposal would renew the previously authorized tax limitation increase of approximately 63 cents per \$1,000.00 of taxable value on all taxable property in the Township. Revenue from the levy renewal shall be disbursed to the Charter Township of Oakland. Based upon the projected 2021 Township wide taxable value, it is estimated that this proposal would result in authorization to collect up to \$924,318 of revenue in the first year (2021) if this millage renewal is authorized and levied."

## Why is the renewal of this millage on the ballot this year?

Oakland Township has been fortunate in leveraging Land Preservation funds with grants and donations to protect more than 444 acres of important natural areas. To accomplish this, the Parks and Recreation Commission has committed the majority of the existing millage funds to finance these acquisitions in a timely way. While the current Land Preservation Millage expires in 2020, the millage renewal would extend the revenue stream from 2021 through 2030, enabling Oakland Township to proactively finance the protection of green spaces. In 2006, Oakland Township voters approved by 66% an early renewal of the Land Preservation Millage which enabled Oakland Township to purchase Stony Creek Ravine Nature Park and Watershed Ridge Park, saving 230 acres from residential development.



# Oakland Township Parks Natural Areas



**Legend**

**Oakland Township Parks**

- All or Part Land Preservation Millage
- Other Township Parks
- Paint Creek Trail

**2017 MNFI Potential Natural Areas**

- Priority One
- Priority Two
- Priority Three

New data from the map are from the "Oakland County Potential Natural Areas Report: 2017 Update," which was funded by the Oakland County Economic Development and Community Affairs Department.

# Timeline I

Insert Here

## Will voting 'yes' on this millage renewal increase taxes?

A 'yes' vote will NOT increase the tax rate of Township property owners beyond its current level. A 'yes' vote will extend the time period of the authorized millage. The annual roll-back required by the Headlee Amendment would continue after the approval of this millage renewal.

## Since the 2006 early renewal what has been accomplished using Land Preservation Millage funds?

Since 2006 Oakland Township has been successful in leveraging these millage monies with donations and \$3,396,168 in grants to accomplish land acquisition, public access improvements, natural habitat management/restoration and citizen outreach/education. See map on page 3 which shows where the Land Preservation millage has funded the protection of natural areas in Oakland Township parks.



## Natural Areas Acquired since the 2006 Land Preservation Millage Renewal include:

2018 – Stony Creek Ravine Nature Park Expansion: Oakland Township is in the process of acquiring a 208-acre addition to Stony Creek Ravine Nature Park by combining a \$2,216,400 Michigan Natural Resources Trust Fund (MNRTF) grant with Township Land Preservation Millage monies.

2008 – Stony Creek Ravine Nature Park: 60 acres acquired by Land Preservation Millage and \$893,700 MNRTF Grant.

2008 – Lost Lake Nature Park: 6-acre addition acquired by Land Preservation Millage.

2008 – O'Connor Nature Park: 10.5 acres donated (Land Preservation Millage paid for boundary survey, environmental assessment, and appraisal).

2008 – Paint Creek Heritage Area – Fen: .5 acres acquired by Land Preservation Millage.

2008 – Watershed Ridge Park: 170 acres acquired by Land Preservation Millage.

## Public Access Improvements since 2006:



2008 Draper Twin Lake Park: Parking lot, pathway, boardwalk and dock funded by Land Preservation Millage.

2013 Lost Lake Nature Park: Parking lot, pathways, dock, signage, lakeside native species plantings, and nature center funded by Land Preservation Millage, Parks and Recreation Millage, and \$154,900 MNRTF Grant.

## Natural Habitat Management and Restoration since 2006:

Improved 200 acres of Pollinator Habitat Along the Paint Creek Trail: Funded by USDA Wildlife Habitat Incentive Program \$84,000 Grant.



Road Right-of-Way Phragmites Treatment: Received \$12,968 Michigan Invasive Species Grant to treat Phragmites and other invasive species in the road right-of-way and selected high-priority areas in 2016.

**Land Preservation Accomplishments since 2006 (Habitat Management and Restoration continued):**

Habitat Restoration with Prescribed Fire: Performed 55 prescribed ecological burns to cost-effectively manage more than 900 acres of natural areas.

Established Planted Prairies: Conversion of 75 acres of old agricultural fields to habitat for pollinators and grassland birds was funded by Land Preservation Millage, \$34,200 US Fish & Wildlife Service Partners for Fish and Wildlife Grant and private donations.

Monitoring and Planning: Land preservation funds were used to perform botanical and wildlife surveys and to create land management plans that guide natural area management actions.

Large-scale Invasive Shrub Control: Controlled invasive shrubs across 60 acres of natural areas; preserving scenic vistas and maintaining habitat for native wildlife and plants.



**Outreach and Education:**

Phragmites Outreach Program: Facilitated treatment of more than 60 acres of Phragmites for nearly 50 Township residents.

Natural Areas Stewardship Blog:

This blog's

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

244 posts have provided

information about stewardship events and programs, interesting features of each Township park and natural areas management activities.

Volunteer Program: Volunteers help with nest box and vernal pool monitoring, prescribed fire crew, and volunteer workdays (seed collecting, invasive species control).

Educational Events: Regularly offer opportunities to learn about special features of our natural areas including weekly bird walks, winter seminar series (featuring experts in fields), and invasive species workshops.



**Which Township entity would manage the Land Preservation Millage funds and evaluate properties?**

The Parks and Recreation Commission, having considerable experience in land purchases and donation, would continue to be responsible for managing the Land Preservation Millage monies. The OTPRC employs a combination of full-time, part-time and seasonal staff to meet operational and programming needs. They currently manage fourteen Oakland Township parks, including natural areas acquired with Land Preservation Millage funds, as well as managing the Oakland Township section of the Paint Creek Trail. The Parks and Recreation Commission has obtained ecologists' reports on the significant environmental areas within the

Township. The Commission would continue to proactively seek available green space properties and evaluate them according to well-defined criteria, incorporating the recommendations of Township citizens. They would continue to work with real estate and legal professionals to pursue acquisition of the top-priority areas.



**If approved, what would be the estimated cost to property owners of the millage renewal, starting in 2021?**

\$100,000 home: Taxable Value \$50,000 = \$31.55/year or \$2.63/month

\$250,000 home: Taxable Value \$125,000 = \$78.88/year or \$6.57/month

\$500,000 home: Taxable Value \$250,000 = \$157.75/year or \$13.15/month

## How much funding would this millage renewal provide over the 10-year period?

The renewal millage itself would raise nearly \$10 million and enable the Township to maximize its value by pursuing matching grants that could provide up to \$15 million more.

## Would this millage renewal restrict private landowners' rights to sell or develop their property?

No. The millage funds will only enable the Township to work with willing sellers to purchase remaining green spaces, and will have no effect on regulations concerning the development of private property.

## In addition to the preservation of natural and scenic areas, there are other public benefits from purchasing green spaces:

- Studies have found that green spaces are a desirable amenity that positively affects nearby private property values.
- Our Green Infrastructure Vision, a network of green spaces, preserves our Township's unique identity, protects native plants and wildlife and provides additional opportunities for passive recreation.
- Green spaces owned by the Township do not require the types of services associated with residential developments, including police protection, fire protection and public schools.
- Green spaces will not contribute to traffic congestion, whereas each new residential household averages 10 vehicle trips per day.



## Where can I learn about Oakland Township parks and this proposed millage renewal?



The Parks and Recreation page of the Oakland Township website, [www.oaklandtownship.org](http://www.oaklandtownship.org), contains maps and descriptions for each Township park, descriptions of our most current program offerings, advertisements of upcoming community events, volunteer opportunities, and an online version of our most current newsletter.

The 2015 – 2019 Parks, Recreation and Land Preservation Plan, is also available on the Parks and Recreation page of the Township website under the subheading 'Newsletters and Publications'. This plan, which is updated every five years, includes descriptions of Township park lands and facilities, preferences of residents which were gathered from surveys and public meetings, assessment of park system needs, park concept plans and a five-year action plan to meet the residents' desires and needs.

This document provided by  
Oakland Township Parks and Recreation  
4393 Collins Road,  
Rochester, MI 48306



## Fall 2018 Natural Areas Stewardship Events

Please come out and join us for one of these events! Updated information and any last minute changes to these events can be found on our Natural Areas Notebook website at [oaklandnaturalareas.com](http://oaklandnaturalareas.com).

\*All minors must have a waiver signed by a guardian, and minors under 14 must be accompanied by a guardian.

### Seed Collecting & Cleaning

Many native plant seeds are only available for collecting for a few weeks in the fall, so we need as much help as possible during harvest! Seed collecting is a fun, relaxing way to learn new native plant species while experiencing unique natural areas. We use the seed to restore areas where we have removed invasive plants. All workdays are 12:30 - 3:30 pm.

- **Seed Collecting.** Meet at the Paint Creek Cider Mill before heading to our site for the day. October 9, 18, 25 & November 1.
- **Seed Cleaning.** Meet at Watershed Ridge Park, 1720 W. Buell Rd. December 6.



2015 Seed Collecting at the Wet Prairie.

### Land Stewardship Workdays



We will remove invasive shrubs such as buckthorn and autumn olive at Bear Creek Nature Park and the Paint Creek Heritage Area – Wet Prairie. These special natural areas provide habitat for wildlife and a haven for native plants. Removing invasive shrubs this fall will set the stage for more beauty next year! All tools and training will be provided. All workdays are 9 am to 12 pm.

- October 19 – Bear Creek Nature Park, 740 W. Snell Rd.
- November 10 and 15 – Paint Creek Heritage Area-Wet Prairie. Meet at the Silverbell Rd parking lot along the Paint Creek Trail, approximately 1103 Silverbell Rd.

### Weekly Bird Walks

Join us every Wednesday from September through November 14 for our weekly bird walks. We want to document the bird species using our parks so that we can work to improve their habitat. Walks will start at 8 am. Extra binoculars are available.

- 1<sup>st</sup> Wednesday of month – Bear Creek Nature Park
- 2<sup>nd</sup> Wednesday of month – Cranberry Lake Park
- 3<sup>rd</sup> Wednesday of month – Charles Ilsley Park
- 4<sup>th</sup> Wednesday of month – Draper Twin Lake Park
- 5<sup>th</sup> Wednesday of October – Lost Lake Nature Park



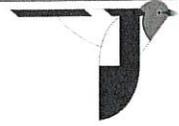
\*All minors must have a waiver signed by a guardian, and minors under 14 must be accompanied by a guardian.



The Natural Areas Notebook has the latest about what's happening in the parks (like Cam Mannino's weekly feature **This Week at Bear Creek**), news about the latest stewardship work, and up-to-date information about stewardship events. Find this and much more at [oaklandnaturalareas.com](http://oaklandnaturalareas.com).

# Oakland Township Parks Natural Areas

# Stewardship



## *Phragmites Control Planned Along Major Oakland Township Roads*

Oakland Township will be treating invasive *Phragmites* along major roads rights-of-way in August, September, and early October 2018. *Phragmites* is a grass that grows in wetlands and can reach heights of 15 feet or more, leading to safety and environmental problems. *Phragmites* can cause hot, damaging fires if ignited; blocks views at intersections; and impairs drainage in ditches and streams, damaging road infrastructure. This large grass forms dense stands, crowding out habitat for wildlife and native plants.

## NOTICE 2018

PLM Lake and Land Management Corp  
10222 Rose Blvd, Morrice, MI 48857  
(800) 382-4434(o) (517) 913-6233(f)  
www.plmcorp.net



### **The Oakland Township Phragmites treatments along roadway Right-of-Ways have been scheduled during the months of August, September and October, 2018**

DEQ permitting restrictions, national holidays, and/or weather conditions may influence the timing of treatments. The treatment schedule is approximate. Please watch your property if you are adjacent to planned treatment areas for the posting of the 8.5x11 inch, yellow signs. The signs will indicate the date of the treatment, the products used, and any restrictions on the use of treated property.

This notice is being circulated in accordance with Department of Environmental Quality (DEQ) procedures. Below is a list of herbicides that may be applied and the associated use restrictions. On the day of treatment, signs will be posted that indicate what products were used and specific restrictions that apply:

Check all that apply	Chemical product/active ingredient	Chemical trade name	Do Not Enter Area Until Plants Are Dry
X	Glyphosate	Aquaneat, AquaPro	X
X	Imazapyr	Habitat	X
X	Adjuvant	Cygnat Plus	X

**For a complete listing of all product labels, please see the PLM website.**

The chemicals used for Aquatic Nuisance Control are registered by the U.S. Environmental Protection Agency and the Michigan Department of Agriculture. The potential for damage to fish and other non-target organisms is minimal provided that the product is used as directed on the product label and the permit. To minimize the possible effects on health and the environment, the treated area is restricted for the above purposes.

**PLM Lake & Land Management Corp. Certified Applicators:** Salvatore Adams, Randall Brazelton, Jason Broekstra, Charles Cilek, Jaimee Conroy, Bill D'Amico, Jeff Fischer, BreAnne Grabill, Dustin Grabill, Steve Hanson, Cole Hazeltine, Kyle Heath, Jake Hunt, Jacob Jabaay, Nate Karsten, Adam Kehr, Dylan Kitchen, Alec Krueger, Michael Krueger, James Lee, Shannon Leifker, Anna Linqvist, Blake Mallory, Casey Mohr, Michael Pichla, Carly Pieri, Eric Reed, Colton Risner, Cameron Robinson, James Scherer, Alison Schermerhorn, Ben Schermerhorn, Casey Shoaff, Lucas Slagel, Jeff Tolan, Andy Tomaszewski, Dennis Vangessel, Trent Willard

# Parks and Recreation Team Update

SEASONAL STEWARDSHIP TECHNICIANS

**Katlyn Hilmer** is new to our crew this summer as a land stewardship technician. She graduated in December 2017 from the State University of New York College of Environmental Science and Forestry (SUNY ESF) with a degree in forest ecosystem science, specializing in Dendrology. She has always loved being outdoors, and has a passion for nature and helping to protect the environment. She enjoys hiking, camping, kayaking, and playing soccer. She is excited to work in and help preserve the natural areas in Oakland Township.



**Sarah Rosche** is a late addition to the crew as a land stewardship technician. She graduated from North Carolina State University in July 2018 with her Master's degree in fisheries, wildlife, and conservation biology. Passionate about nature from an early age, Sarah is interested in preserving the integrity of natural areas to provide habitat for wildlife and to also provide opportunities for recreational activities. She enjoys spending time exploring the great outdoors, going hiking and camping, and playing rugby. Sarah is excited to join the team and work hard to help preserve Oakland Township's natural areas.

### Thank-you to our Seasonal Land Stewardship Technicians!

A big thank-you to Billy Gibala, Alyssa Radzwion, Katlyn Hilmer, and Sarah Rosche for their great work this summer as land stewardship technicians. Together the crew pulled thousands of pounds of garlic mustard, collected native plant seed, installed new wildflowers in natural areas and native plant beds, and controlled many acres of invasive plants. Each crew member contributed their skills and background to help us enhance and restore our natural areas. Good luck in your future endeavors!

If this position sounds like fun to you, consider applying for the 2019 crew! Look for the job announcement this winter on our website.

### Natural Areas Stewardship Volunteers Summer 2018

THANK YOU!

Cam Mannino, Reg Brown, Jim Fostey, Louise Hartung, Vinnie Morganti, Chris Walling, Susan Nathan, Sabrina Price-Biven, Matt Hindrichs, Jonathan Kuhn, Don Garrett, Jasneet Sidhu, Adam Mucciaccio, Komar Chambers, Gabriel Ramirez, Lei Chen, Andrew Morris, Patrick McKeon, Greg Matsura, Rino Zuech, Laurie Peklo, Tom Korb, Alex Korb, Lisa Rosenberg, Sue Ferko, Mark Isken, Donna Perkins, Colleen Barkham, Ian Ableson, Maryann Whitman, Mike Kent, Joan Kent, Mark Arney, Tom Lee, Rob Mair, Eagle Creek Academy 4<sup>th</sup> and 5<sup>th</sup> graders

Thank  
You

IN MEMORIUM



It is with deep regret that we report the death of our dear colleague and friend, Roger Smith, who passed away June 21, 2018. Roger was a Maintenance Technician with the Oakland Township Parks and Recreation Commission from 2005-2014. His constructive solutions and valuable contributions helped keep our parks and trails in top shape. We thank Roger for his nine cheerful years of service to Oakland Township and offer our sympathy and condolences to his family and friends.



# Seeing You After the Sun Goes Down

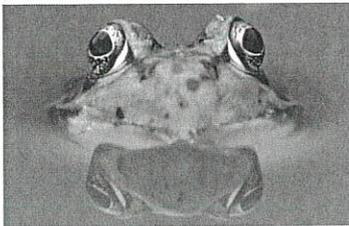
By Sue Neal, Executive Director, Dinosaur Hill Nature Preserve

Oakland Township parks are normally closed at night but we are inviting adults out for a truly special and unique chance to explore the park “after dark”. Want to test out your night vision while learning about all of the fascinating animals that party at the parks after dark? Join Dinosaur Hill naturalists for a fun foray into the night during our upcoming Guided Evening Nocturnal Hike at Cranberry Lake Park on page 9.

Taking a walk in the woods after dark can reveal a whole new world of sights and sounds compared to a mid-afternoon journey in the same spot. You may hear animals exploring the forest floor, a hoot from an owl in a nearby tree or the swoop of a bat overhead. If there is a full moon then you may see a variety of insects on the move or perhaps catch sight of an opossum searching the forest floor for dropped fruit. Exploring the forest at night can be a truly unique experience. If the moon isn't full though, we humans pretty much must use a flashlight in order to see, but how do all these animals that are active at night see without flashlights? Let's explore a few cool adaptations Oakland Township animals have so they can hang out in the forest at night without the aid of a flashlight.



Opossum



Frog

“My what large eyes you have!” You may remember this quip from the classic fairy tale of Little Red Riding Hood as she converses with the wolf pretending to be her grandmother. There is quite a grain of truth in this as wolves and other animals that are active at night tend to have larger eyes. Think of those big round eyes that the wise owl has. The eye lens is not unlike a camera lens: the larger the diameter of the lens, the greater the amount of light that can enter. Large eyes are also found in animals that spend their time in dense rainforests where much less light makes it to the forest floor.

Of rods and cones. You might remember from your high school biology that the eye has receptor cells within it. There are two basic types of receptors: rods and cones. Cones are the receptors for color while rods receive only black and white...but they are very effective at doing so and work well even in dim light. You can test this out for yourself by checking your color vision in dim light. Open up a box of crayons. In dim light you can clearly see what you are doing and you can make out the box and the individual crayons but try to distinguish the colors of crayons and I bet you will end up getting most of them wrong as they will only appear as shades of grey. This means you are relying on those light sensitive rods while your cones are pretty much ineffective. So night time animals make a sacrifice, they give up many of the cones to make room for more rods. This means that many animals that see well in the dark have little to no color vision.

Mirror, mirror on the wall. Well, not on the wall, but inside the eye! Think of a few of the animals you know well that are active in low light conditions. Let's consider the deer, the raccoon and the cat. Now if you are ever out driving in the dark down one of our many dirt roads I am sure you have caught site of one of these animals out on patrol on the side of the road. What is the first thing you notice? Yes, that eerie glow of their eyes in your headlights! Doesn't it almost look like the light is being reflected by their eyes? Well, that is because that is exactly what is happening. These animals have a special layer of tissue immediately behind the retina of their eye that acts as reflector to shine light back through the retina. This increases the amount of light that hits the eye and improves their night vision considerably. This layer of tissue is called the “tapetum lucidum” which translates very meaningfully to read “bright carpet”. Did you know that even some spiders

(Text and photo credits continued on page 20)

# CRANBERRY LAKE FARM HISTORIC DISTRICT

*A community historical center - work in progress for you!*

For more information contact Historic District Commission office 248-608-6807

To Register: please email [bbarber@oaklandtownship.org](mailto:bbarber@oaklandtownship.org) or phone the office.



## DOWN ON THE FARM FAMILY FUN DAY SATURDAY, OCTOBER 6, 11:00 AM TO 2:00 PM

The historic farmstead is open for family fun with hay rides, pumpkin painting, horse demonstrations, chickens, beekeeping, apple history, tractors, games, painting exhibition, corn husking, spinning, and quilting, all set to tunes of banjos, guitar, and harmonica music! Come on down for the fun and don't forget to stop at the famous Flumerfelt flea-market barn sale to find an antique treasure of your choosing. (Event brought to you by the Historic District Commission in partnership with the Oakland Township Historical Society with sponsorship from the Parks and Recreation Commission and Dinosaur Hill Nature Preserve.



*Tractor driver, Hank Van Agen from the Parks and Recreation pulling the hay wagon, loaned by Oakland County Parks, with Boy Scouts of America monitoring the wagon for safe travels through the woods, to the farm, and all the way home!*

## FREE SQUARE DANCE SAT. SEPT 8, 2018 FROM 7:00 PM TO 9:00 PM

The CLF Flumerfelt Barn Vintage Family Square Dance is free and open to the public. **Glen Morningstar and the Ruffwater Stringband** will return to calling dance moves for the evening festivities. We dance in the barn or on the lawn, so please wear appropriate shoes. Dinner anyone? Bring your own picnic or reserve a BBQ sandwich for a fee - only served from 6 to 7 and pre-reservation is required at 248-608-6807 by September 3. The square dance is for all ages who like to *promenade left and swing your partners!*



### *What's new in the historic district?*

The twenty-five seedling apple trees made it through their first winter with a display of spring blossoms.

A permanent restroom 'Privy' will be installed in Aug. 2018, paid for with Historic District Commission funds.

Antique farm implements are being moved and restored.

The north field has an addition of landscape rocks.

The Hen House has a new coat of Barn Red paint!

<p>September 5 6:30 pm CLF Barn</p> <p>“The Long Journey to Cleveland” by Rudolph (Rudy) Ruder pot-luck dinner and awards.</p> <p> Potluck Dinner</p>	<p>October 13 10:00 am (field trip)</p> <p>Chaldean Cultural Center guided tour \$10 per person 5600 Walnut Lake Rd W. Bloomfield, MI Lunch after</p>	<p>November 7 7:00 pm PCCM</p> <p>“Missing in Action: US Bombardiers and the French Resistance in WWII” by Mary Shier</p> <p></p>	<p>December 5 7:00 pm PCUMC</p> <p>“Selections from OTHS Oral History Archives” by Mary Tischler Christmas Carols sing-a-long follows.</p>	<p>Join Us At These Special Events!</p> <p>Square Dance at CLF Sat Sept 8, 7-9 pm Goodison Good Tyme, Sat Sept 15, 11am-2pm Down on The Farm Sat Oct 6, 11am-2pm</p>
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Pot-lucks are in the Cranberry Lake Farm (CLF) Flumerfelt Barn. CLF Programs are in the Main House. December program is at the Paint Creek United Methodist Church (PCUMC), 4420 Collins Rd. CLF is at 384 W. Predmore Rd in Oakland Township. A bad snow storm will mean that we would cancel our program and reschedule it. Join our Society to stay on our mailing list and receive more information about program location, time and details.

**WE WELCOME NEW MEMBERS.**



The public is welcome to our programs. There is no charge for our programs. For program information or to submit program ideas and speaker suggestions, e-mail Mary Tischler, Program Chairperson, [marytischler@comcast.net](mailto:marytischler@comcast.net). For membership or other information contact Sue Fox, Membership Chairperson, (248) 693-9646.

**Visit our Facebook Page @othsmi or our website:** [www.oaklandtownshiphistoricalsociety.org](http://www.oaklandtownshiphistoricalsociety.org)



Six Rivers Land Conservancy  
4480 Orion Road  
P. O. Box 80902  
Rochester, Michigan 48308-0902  
248-601-2816

[www.sixriversrlc.org](http://www.sixriversrlc.org) | [info@sixriversrlc.org](mailto:info@sixriversrlc.org)



We conserve, sustain, and connect natural areas, lands and waters that make the places we live special.



Submit up to five photos celebrating our natural environment in Southeastern Michigan in a JPEG (.jpg) file format to [SixRiversPhotos@gmail.com](mailto:SixRiversPhotos@gmail.com). Photo submissions will be accepted until August 29, 2018. All photos that meet our guidelines will be eligible and available for public viewing. We have two categories for submission: Juried (photo files of 5MB or greater) and Enthusiast (photo files less than 5MB). In the Juried category, the 1st, 2nd and 3rd place award winners will be determined by a distinguished panel of judges. Finalists in the Enthusiast category will be selected by Six Rivers staff with the winning entry, “People’s Choice: Enthusiast,” selected by attendees at the Six Rivers’ Fall Celebration on October 3 from 6-9pm at the Paint Creek Cider Mill. Attendees will also vote for the “People’s Choice: Juried” winner. (Fall Celebration date TBD.)

**Juried Category Prizes:**

First Place	\$200
Second Place	\$150
Third Place	\$100
People’s Choice	\$150

**Enthusiast Category:**

**People’s Choice \$100**

Entries must be accompanied with a completed submission form. See our website at [www.sixriversrlc.org](http://www.sixriversrlc.org) for complete rules and submission forms.

# Paint Creek Trail News By Kristen Myers, Trail Manager



## 13th Annual Paint Creek Trail Labor Day Virtual Bridge Walk and Run Monday, September 3, 2018



Join us for our 13th Annual Labor Day Virtual Bridge Walk and Run! Starting at the Rochester Municipal Park Kiwanis Pavilion, participants can choose either a 2 mile walk, or 10K run on the Paint Creek Trail. Onsite registration starts at 8:00 am, and the event starts at 9:00 am. This is a free community event, with a suggested donation of \$5.00 per family. Online registration will open August 15th at <http://paintcreektrail.org/wordpress/events/labor-day-bridge-walk>. Join us for giveaways, fun, and donuts! Everyone will be entered into a drawing to win a \$500 gift card to Rochester Bike Shop!

*Sponsored by Friends of the Paint Creek Trail, Trader Joe's, Starbuck's, Lucido Fine Jewelry, Red Knapp's Dairy Bar, Grand Traverse Pie Company, Back to the Beach Runners, Dillman & Upton, Great Clips, and Retro Fitness.*



## Paint Creek Trail Bridge 33.7 and Trail Resurfacing Construction Update

The Paint Creek Trail Bridge 33.7 Renovation and Trail Resurfacing have both been POSTPONED until 2019. Bad news for us, good news for trail users! Bids came back 38.4% higher than our engineer's estimate. The trail will remain open for the remainder of 2018. The Trailways Commission and Parks Commission have met with engineers and revised the project scope to reduce the budget. We're hoping to re-bid in October 2018, with construction to start in March 2019. You can get regular updates on the construction and trail closures the following ways:

Paint Creek Trail Facebook Page: <https://www.facebook.com/paintcreektrail/>

Paint Creek Trail Twitter Page: <https://twitter.com/paintcreektrail>

Paint Creek Trail Website Page: <http://paintcreektrail.org/wordpress/2018-trail-construction-updates>

Email: [manager@paintcreektrail.org](mailto:manager@paintcreektrail.org)

Phone: 248-651-9260



*Replacement bridge example.*

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## *When a Barren Forest is a Good Thing...* (Continued from page 5)

So where did all the Barrens go? Michigan's climate has changed continually over the centuries but the Barrens in Michigan began their decline during the mid to late 1800s when extensive logging changed the landscape dramatically. Michigan led the country in timber harvest during this period and essentially all of the forests had been logged by the close of the century. This activity decimated the population of valuable, mature hardwoods and eventually the majority of softwood pines as well. Since Barrens rely on the canopy of these old trees to suppress undergrowth, the majority of the Barrens disappeared at the hands of the loggers.

Barrens are also naturally susceptible to the process of forest succession. A habitat is not a static environment...landscapes go through cycles of growth, maturation and change over decades and centuries. Normally, Oak-Pine Barren habitat is reliant on periodic fire to keep the understory clear of other species, buildups of decaying organic matter, etc. and some trees actually rely on fire in order to reproduce themselves!

*(Continued on page 20)*

## Seeing You After the Sun Goes Down (Continued from page 16)

possess this nifty adaptation. Talk about a surprise in the dark if you see your flashlight beam reflecting off the many eyes of a night spider! Yikes.

So who sees best at night? You might think of some of the flagship nighttime predators such as owls, wolves or foxes. Take another guess! It is a predator but on a much smaller scale, preferring a snack of mosquitoes and other insects, they live happily in our township's many small ponds and wetlands, they sing their songs in the spring at night and if you walk down the path in the morning you will see many of them hopping to get out of your way... yep, you guessed it! Many scientists would consider our areas best night time viewer to be the simple, yet totally awesome: frogs and toads!!! Now I admit, I am biased because I love (!) frogs and toads and have total respect for these incredibly adaptable animals. Here is further proof of how totally awesome they are too. See, as far as scientists know, frogs and toads are the only animals that can distinguish color in total darkness! Cool eh? Now we know that cones give humans (and all other animals) their color vision but these amazing little amphibians actually have two types of rod cells which allow them to combine the color sensing powers of cones with the dim light superiority of rods. Ribbit!



Owl

Now many of these adaptations come with sacrifice. Extra rod cells may mean that an animal cannot distinguish color well and other adaptations may result in blurry, poor vision during the day. But make no mistake about it, the animals right in your own back yard pack some pretty incredible biological creativity in order to make their way in the dark...no flashlight necessary.

*Photo Credits: Opossum photo - By U.S. Fish and Wildlife Service Southeast Region - Opossum, Public Domain, <https://commons.wikimedia.org/w/index.php?curid=45488527>; Frog photo - By Pduant [CC BY 3.0 (<https://creativecommons.org/licenses/by/3.0/>)], from Wikimedia Commons; Owl photo - <http://www.ForestWander.com> [CC BY-SA 3.0 us (<https://creativecommons.org/licenses/by-sa/3.0/us/deed.en>)], via Wikimedia Commons*

## When a Barren Forest is a Good Thing (Continued from page 19)

Suppression of forest fires can contribute to the accelerated succession of a forest type. As Michigan's population grew, we developed a complicated relationship with fire: giver and taker of life.

During and after the logging era, wildfires struck fear into the hearts of Michigan pioneers. Deadly fires were common and many a town was destroyed and lives lost in fires that ravaged the state at the turn of the century. After the loggers left, the landscape was one of exposed dirt and massive piles of dry brush which made Michigan vulnerable to extreme fire danger. In response to the life and property damage that resulted from severe fire outbreaks, state and local leaders adopted aggressive fire-suppression policies in the 1920's. While this saved lives and property, it impacted the remaining Oak-Pine Barren habitat. Forest succession ultimately resulted in a change to a denser woodland/forest type habitat.

Oakland Township Parks and Recreation Commission recognized the unique value and heritage of the habitat at Lost Lake. Experts within the parks system have plans and are actively managing the park to restore and preserve the Oak-Pine Barrens we are so lucky to have here. I encourage you to visit the park and take the time to reflect on what Michigan may have looked like a few hundred years ago. As you listen to the wind through the pines and enjoy the beautiful scenery, be proud that you live in a Township that recognizes the ecological value of the park and has the expertise to protect this unique treasure we have been entrusted with!

And stay tuned to this section of the Oakland Township Parks and Recreation Newsletter where we will continue to feature the natural history and ecology of this amazing park! You can also visit during Open Houses and learn all about the park while having a ton of fun at the same time!!!!

# Oakland Township Parks and Recreation Registration Information



**Oakland Township** resident registration starts NOW!

*(This is for residents living within the Oakland Township boundary.)*

Non-Resident registration begins one week prior to the program registration deadline date.

*Programs fill-up quickly so please contact us early!*

## Registration Options:

1. **Fill out the form below, and the release of liability waiver on back of form for each participant, register by mail or drop in the drop-box at Township Hall after hours. (One waiver is needed for each person and each program.)**

Make checks payable to "Charter Township of Oakland" and mail with registration form and signed waiver for each participant to: *Charter Township of Oakland, 4393 Collins Rd., Rochester, MI 48306*

2. **Visit us at our office location and register in person.**

Credit cards (MasterCard, American Express, or Discover) accepted in person only. **(\$2.95 fee)**

Cash or check

*Paint Creek Cider Mill Bldg. (2nd Floor)*

*4480 Orion Rd., Rochester, MI 48306*

Office Hours: Monday - Friday 8am - 4:30pm

Additional registration forms and waivers are available to print from the park pages at [www.oaklandtownship.org](http://www.oaklandtownship.org)

*Mail at least two weeks before program date!*

Adult's Name: \_\_\_\_\_

Address: \_\_\_\_\_

City/Zip: \_\_\_\_\_ Emergency phone: \_\_\_\_\_

Home Phone: \_\_\_\_\_ Cell Phone: \_\_\_\_\_

E-Mail Address: \_\_\_\_\_

Resident of (circle one): Oakland Twp. Rochester Rochester Hills Other

Enrollee's Name: \_\_\_\_\_ Age (if child): \_\_\_\_\_

Program Name: \_\_\_\_\_ Date and Time: \_\_\_\_\_

Program Name: \_\_\_\_\_ Date and Time: \_\_\_\_\_

Amount Due: \_\_\_\_\_

*Mail at least two weeks before program date!*

# Oakland Township Parks and Recreation

## Program Refund Policy



Registrants will receive a full refund for programs cancelled by Oakland Township Parks and Recreation. Registrants withdrawing more than 4 business days prior to the program start date will receive a refund, less a \$5.00 administration fee. No refunds will be made if withdrawing less than 4 business days from program start date. All registrants wishing to withdraw, must do so during regular business hours Monday-Friday, 8am-4:30pm in person at the Paint Creek Cider Mill, 4480 Orion Rd., or by phone at 248-651-7810. Visit [www.oaklandtownship.org](http://www.oaklandtownship.org) for complete program information and other Park and Recreation information, permits, and ordinances.

## Oakland Township Parks and Recreation

### Release of Liability Waiver and Permission to Publish Photographs

Use this waiver for general programs. A separate release of liability waiver must be submitted for each program for which each participant registers.

Special waivers are required for Camps, Archery, Kayaking, and Stand Up Paddleboarding and are available on the Park Programs page of the Township website: [www.oaklandtownship.org](http://www.oaklandtownship.org)

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Liability Waiver For Participant: As a participant (or as a parent of a participant under 18 years of age) in the above Oakland Township Parks & Recreation program, I recognize and acknowledge that there are certain risks of physical injury and I agree to assume the full risk of any injuries, including death, damages, loss which I sustain as a result of participating in any and all activities connected with or associated with the program. I do hereby fully release and discharge the Charter Township of Oakland, Oakland Township Parks & Recreation Commission, their officers, agents, volunteers, sponsors and employees from any and all claims from injuries, including death, damages or loss which I may have or which may occur to me on account of my participation in the program. I further agree to indemnify and hold harmless and defend the Charter Township of Oakland, Oakland Township Parks & Recreation Commission, their officers, agents, volunteers, sponsors and employees from any and all claims resulting from injuries, including death and losses sustained by and arising out of, connected with, or in an way associated with this program.

I authorize the use of photographs showing my image in any of their printed documents and on their website.

_____ Signature of participant (Parent's signature if minor)	_____ Date
_____ Print Name (include name of minor, if any)	_____
_____ Address	_____ Phone
_____ E-mail	_____ Emergency Contact and Phone Number

_____ Program Name	_____ Program Date	_____ Township Park
_____ Program Name	_____ Program Date	_____ Township Park

## Share The Love – Leave A Legacy – Make A Difference In Our Community!

Your support is needed for the finishing touches at Gallagher Creek Park! The Township Parks and Recreation millage funds have been reserved for this park's new recreation facilities including a playground, picnic pavilion, expanded entrance and parking lot, pathways, and a restroom enclosure.

**Assistance is needed to purchase benches, picnic tables, and native garden plants.** Contributions would only need to cover the cost of the materials since our capable maintenance and stewardship staff would install the site furnishings and the native plant garden.

Donations in any amount would be welcome and may be tax deductible since Oakland Township is considered a non-profit entity for charitable donation purposes. Donations above \$200 will include a placard to designate your contribution. All donations will be commemorated with an acknowledgement of appreciation in the Parks and Recreation Newsletter and at the Gallagher Creek Park Grand Opening.



*Typical  
park  
bench*



*Native  
plant  
garden*

**Contributions  
would be welcome**

**3 Park Benches** for adults to supervise children on the playground and to relax in this park's natural surroundings.  
Cost of each 60" bench = \$1000.

**2 Picnic Tables** where friends and family could gather under the new picnic pavilion. These furnishing would be similar in appearance to Bear Creek Nature Park's.  
Cost of each 72" ADA picnic table = \$1800.

**1 Native Plant Garden** including native grasses, flowers, oak trees, and shrubs including viburnum, spiraea, and serviceberry.  
Cost of 9300 square foot native garden = \$6000.

The benches and tables, manufactured in the Midwest, are constructed of 100% recycled HDPE plastic lumber. They are durable, environmentally responsible, and maintenance-free. The identical ones were installed at Bear Creek Nature Park in 2003 and they have remained as attractive as the day they were installed. Oakland Township Parks' stewardship staff would obtain plants for the garden from Michigan Native Plant nurseries; local businesses which are "committed to enhancing the diversity and health of Michigan's unique natural heritage".

This is a wonderful way to commemorate an organization, a significant person, or an event while making a difference in our Township. Please use this form or contact Parks and Recreation Director Mindy Milos-Dale at 248-651-7810 if you would like to make a donation or need more information.

Name \_\_\_\_\_

Address \_\_\_\_\_

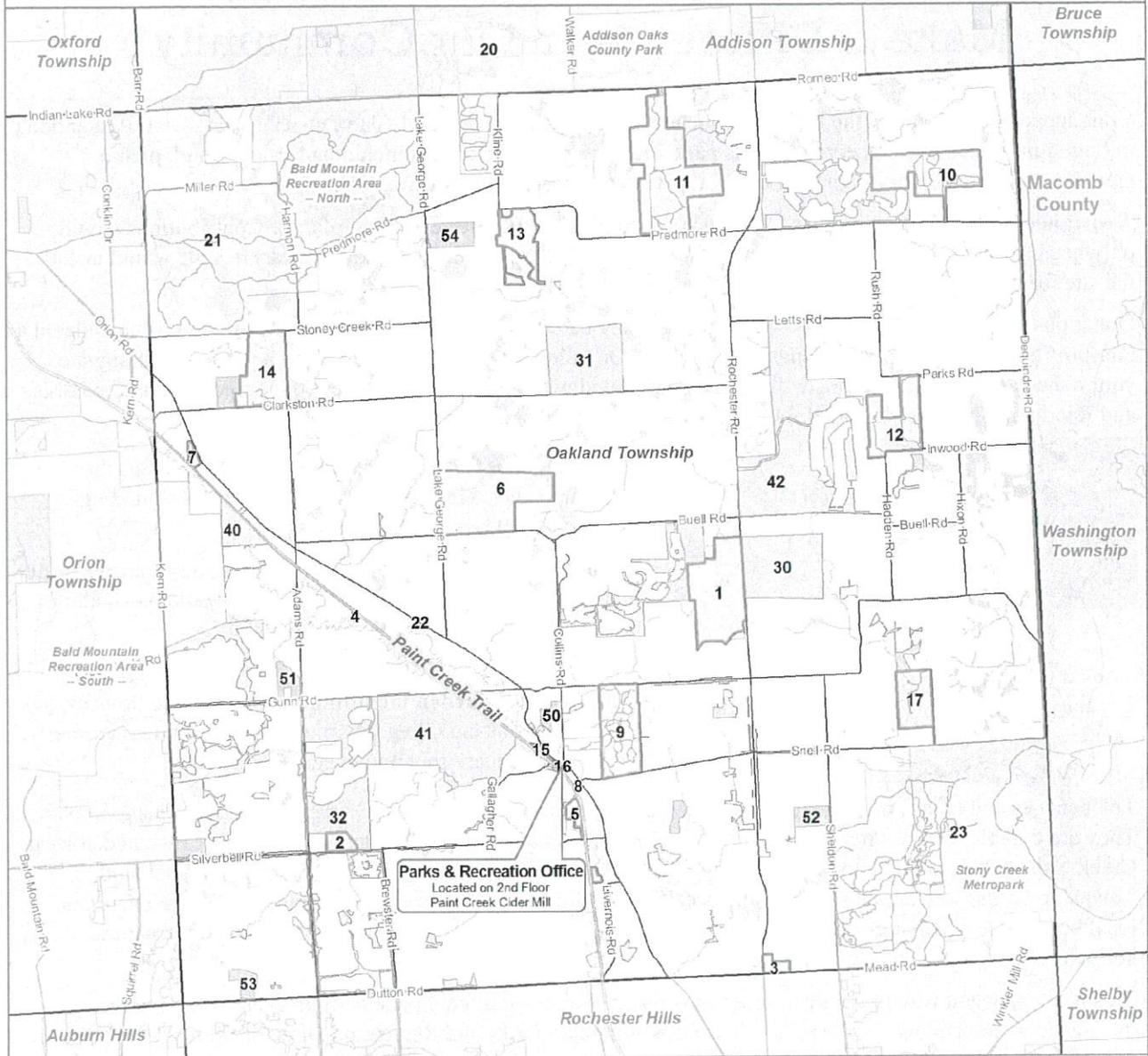
Contact Email and/or phone \_\_\_\_\_

Contribution Amount \_\_\_\_\_

In Memory of/On Behalf of/To Commemorate \_\_\_\_\_

Please mail your check made payable to "Charter Township of Oakland" (noting that it is a donation for Gallagher Creek Park) with this form to Gallagher Creek Park Donations, Oakland Township Parks and Recreation, 4393 Collins Road, Rochester, MI 48306.

# Parks and Recreation Opportunities in Oakland Township



## Oakland Township Parks and Recreation Facilities

### Conservation Parks

1. Blue Heron Environmental Area
2. Gallagher Creek Park
3. O'Connor Nature Park
4. Paint Creek Heritage Area - Fen
5. Paint Creek Heritage Area - Wet Prairie
6. Watershad Ridge Park

### Future Trail Connections

7. Paint Creek Junction Park
8. Mill Creek Crossing

### Community Parks & Recreation Facilities

9. Bear Creek Nature Park
10. Charles Isley Park
11. Cranberry Lake Park
12. Draper Twin Lake Park
13. Lost Lake Nature Park
14. Marsh View Park
15. Mill Race Trail
16. Paint Creek Cider Mill (Parks & Rec. Office)
17. Stony Creek Ravine Nature Park

## Other Parks and Recreation Facilities

### Other Public Parks

20. Addison Oaks County Park
21. Bald Mountain State Recreation Area
22. Paint Creek Trail
23. Stony Creek Metropark

### Other Public Recreation Facilities

30. Blackheath Golf Club
31. The Myth Golf and Banquet
32. Westynd Golf Course

### Private Recreation Facilities

40. Royal Oak Archers
41. The Wyndgate Golf Course
42. Twin Lakes Golf and Swim Club

### Public Schools

50. Baldwin Elementary School
51. Delta Kelly Elementary School
52. Huger Elementary School
53. Musson Elementary School
54. Oakview Middle School

### Key to Features:

- Municipal Boundary
- Oakland Township Parks
- Lakes & Ponds
- Park Path
- Paint Creek Trail
- ⊗ Private Recreation
- Major Roads
- Streams & Rivers
- Safety/Side Path
- ⊗ Public Recreation
- ⊗ Public School

0 0.5 1 2 Miles



LAJ 03066 09/16/23 E

**Controlled Archery Antlerless Deer Hunting at Stony Creek Ravine Nature Park  
(Other Township parks do not permit any type of hunting)**

Oakland Township purchased Stony Creek Ravine Nature Park in March 2008 with 67% of our purchase cost being paid by a Michigan Natural Resources Trust Fund grant. One of the conditions of our receipt of this substantial grant was that we must allow controlled archery deer hunting at this park as part of the DNR's program to manage deer populations in southeast Michigan.

To meet this commitment, a maximum of four hunters per hunt date will be issued Township permits for antlerless archery deer hunting at Stony Creek Ravine Nature Park on restricted weekdays between October 1, 2018 and January 31, 2019. On the days when hunting will occur the park will be closed to other types of use. Signs are posted on the park perimeter indicating these days of closure.

**Hunters will be selected on a first-come, first-served basis. To be considered for this program, applications must be submitted between 8am and 4:30pm on the below-listed Mondays.**

**Hunters must each hunt with a partner to participate in this program. Partners' applications must be submitted at the same time to qualify for selection. Hunters must obtain their own deer hunting license and kill tags and must obey all Township regulations and State of Michigan hunting laws. Hunters must provide their own portable blinds and will be responsible for their own field dressing and transporting of all harvested deer. No baiting of any kind is allowed.**

**On the application date indicated below, between 8am and 4:30pm, bring this application, a copy of your current deer hunting license, and a copy of the identification used to purchase your deer hunting license, such as a driver's license, to:**

Oakland Township Parks and Recreation Office,  
Paint Creek Cider Mill, 4480 Orion Road, Rochester, MI 48306

If you have questions about this procedure please call (248) 651-7810. **No mailed applications will be accepted.**

Name \_\_\_\_\_ Driver's License# \_\_\_\_\_  
 Address \_\_\_\_\_  
 City, State, Zip \_\_\_\_\_ Vehicle Plate# \_\_\_\_\_  
 Phone: Home \_\_\_\_\_ Work \_\_\_\_\_ Cell \_\_\_\_\_  
 Hunting Partner's Name \_\_\_\_\_ Phone: \_\_\_\_\_

Circle the dates you are interested in for antlerless archery deer hunting only:

Monday, Sept 24 Application	Monday, Oct 15 Application	Monday, Nov 26 Application	Monday, Dec 17 Application	Monday Jan 7 Application
<i>For hunt dates of:</i>	<i>For hunt dates of:</i>	<i>For hunt dates of:</i>	<i>For hunt dates of:</i>	<i>For hunt dates of:</i>
Tues/Weds, Oct 2 & 3	Tues/Weds, Oct 23 & 24	Tues/Weds, Dec 4 & 5	Tues/Weds, Dec 25 & 26	Tues/Weds, Jan 15 & 16
Tues/Weds, Oct 9 & 10	Tues/Weds, Oct 30 & 31	Tues/Weds, Dec 11 & 12	Tues/Weds, Jan 1 & 2	Tues/Weds, Jan 22 & 23
Tues/Weds, Oct 16 & 17	Tues/Weds, Nov 6 & 7	Tues/Weds, Dec 18 & 19	Tues/Weds, Jan 8 & 9	Tues/Weds, Jan 29 & 30

- Waiver     
  Safety Zone Map     
  Hunter Phone Numbers     
  Ordinance 38A-1     
  Hunter Rules     
  Mirror Tag Permit

Parks and Recreation Commission  
Charter Township of Oakland  
4393 Collins Road  
Rochester, MI 48306-1670

Phone: (248) 651-7810  
Fax: (248) 601-0106  
www.oaklandtownship.org

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*Seal designed by  
Richard Krupp*

### Commission Meetings

The Parks & Recreation Commission meets at 7 pm on the second Wednesday of every month in the Township Hall Boardroom.

### Office Hours and Location

Park permits, maps and descriptions are available at the Parks and Recreation Department office, located on the second floor of the Paint Creek Cider Mill, 4480 Orion Road. Normal office hours are from 8am to 4:30pm Monday through Friday.

### Parks and Recreation Commissioners

Colin Choi, Chairman  
Hank Van Agen, Vice Chairperson  
Craig Blust, Treasurer  
Emily Barkham, Secretary  
Dan Bukowski, Commissioner  
Cathy Rooney, Commissioner  
Dan Simon, Commissioner

### Oakland Township Parks and Recreation Staff

Parks and Recreation Director	Mindy Milos-Dale
Administrative Assistant	Carol Kasprzak
Clerical Assistant	Deb Gallo
Recreation Manager	Becky McLogan
Maintenance Foreman	Doug Caruso
Maintenance Technician	Jeff Johnson
Natural Areas Stewardship Manager	Dr. Ben VanderWeide
Stewardship Specialist	Alex Kriebel
Seasonal Land Stewardship Technicians	Alyssa Radzwion, Katlyn Hilmer, Sarah Rosche
Maintenance and Recreation Staff	Clif Selent, Robert Zbytowski, Alex Dziadzio

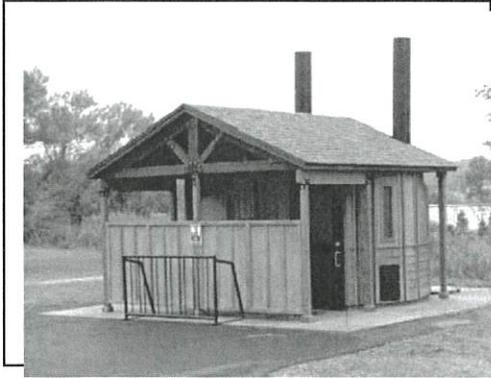


Oakland Township Park Rules are enforced by the Oakland County Sheriff's Office.

### **FOR EMERGENCIES CALL 911**

If you have information or questions concerning a reported crime or accident, call the substation at 248-652-4617 Monday-Friday, 8 am-4 pm. All other calls please use dispatch at 248-858-4950.

# Charter Township of Oakland Parks and Recreation Commission



## **ACCESSIBILITY WORKSHOP FOR PROPOSED OAKLAND TOWNSHIP RECREATION IMPROVEMENTS**

Oakland Township Parks and Recreation is presenting an Accessibility Workshop to receive public comments and input from disability advocates and individuals on two Michigan Natural Resources Trust Fund grant applications. The purpose of the workshop is to receive comments and suggestions regarding accessibility for individuals with disabilities.

**The Accessibility Workshop will be held Monday, September 10, 2018 from 6:30-8:30 pm at the Paint Creek Cider Mill, 4480 Orion Road, Rochester, Michigan, 48306. Project engineers will be present to discuss the projects and answer any questions regarding the designs.**

### **IRON BELLE – PAINT CREEK TRAIL NORTHERN TRAILHEAD – Grant Application TF18-0098**

The project site is at Oakland Township's Paint Creek Junction Park; 2210 and 2280 Orion Rd, Oakland, MI 48363, between Clarkston and Adams Roads. The project will provide access, parking and rest facilities for Paint Creek Trail users including pedestrians, bicyclists, skiers, and equestrians on the 1.5-mile section between Adams Road and Clarkston Road. This project will include a universally accessible parking lot, access trail, two unisex universally accessible vault toilets, an accessible well for potable water and a picnic area.

### **MARSH VIEW PARK RESTROOM – Grant Application TF18-0099**

The project site is located at Oakland Township's Marsh View Park, 3100 E. Clarkston Road, Oakland, MI 48363. This project will provide restroom facilities for increasing number of Marsh View Park visitors. Portable toilets will be replaced with two environmentally sustainable and universally accessible flushable vault toilets. These all-season restrooms will support the increasing use of this park's soccer fields, basketball court, picnic area, walking paths and Olympic archery range during warmer seasons as well as an ice skating rink during the winter.

The grant applications are available for review on the Township website, [www.oaklandtownship.org](http://www.oaklandtownship.org), and at the Parks and Recreation Offices at the Paint Creek Cider Mill, 4480 Orion Road, Rochester, MI 48306. We look forward to your participation and input. If you are planning to attend the workshop and require any special assistance, please notify the Parks and Recreation Director at 248-651-7810 as soon as possible. If you cannot attend the workshop but would like to provide input, written comments can be emailed to [mmdale@oaklandtownship.org](mailto:mmdale@oaklandtownship.org) or mailed to "Oakland Township 2018 MNRTF Grant Accessibility Workshop", 4393 Collins Road, Rochester, MI 48306.

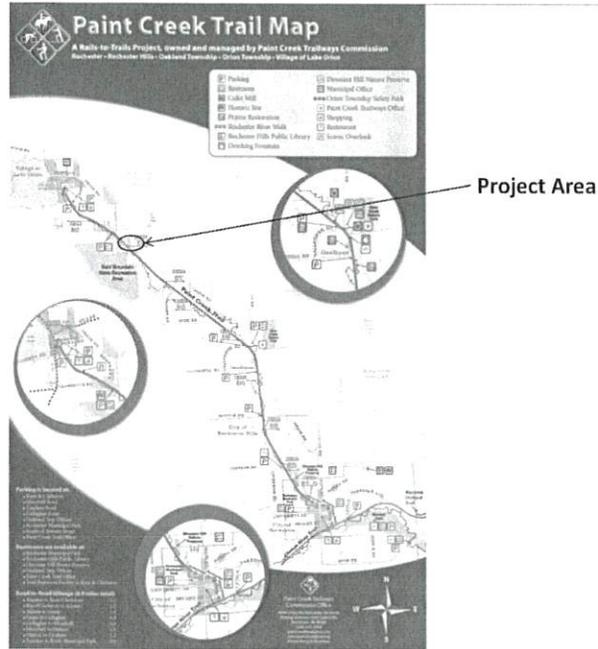
Mailing: 4393 Collins Road, Rochester, Michigan, 48306-1670

Office: 4480 Orion Road, Rochester, Michigan 48306-1670

Telephone: (248) 651-7810 Fax: (248) 601-0106

[www.oaklandtownship.org](http://www.oaklandtownship.org)





Iron Belle – Paint Creek Trail Northern Trailhead Location

## MEDIA ALERT FOR IMMEDIATE RELEASE August 23, 2018

*From:* Mindy Milos-Dale, *Director,*  
*Oakland Township Parks and Recreation*  
248-431-9950 or [mmdale@oaklandtownship.org](mailto:mmdale@oaklandtownship.org)

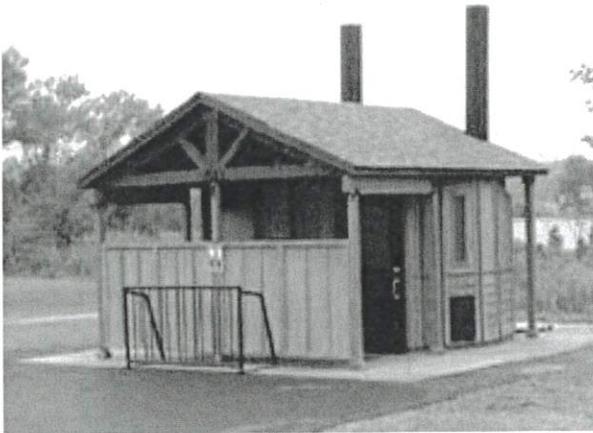
Kristen Myers, Trail Manager  
*Paint Creek Trail*  
248-651-9260 or [manager@paintcreektrail.org](mailto:manager@paintcreektrail.org)

*Contacts:* Colin Choi, Chairperson,  
*Oakland Township Parks and Recreation Commission*  
586-431-7961 or [cchoi@oaklandtownship.org](mailto:cchoi@oaklandtownship.org)

David Becker, Chairperson,  
*Paint Creek Trailways Commission*  
[dbecker@oakland.edu](mailto:dbecker@oakland.edu)

### ACCESSIBILITY WORKSHOP FOR PROPOSED RECREATION IMPROVEMENTS in OAKLAND TOWNSHIP

Oakland Township Parks and Recreation is presenting an Accessibility Workshop to receive comments and input from the general public and disability advocates on two Michigan Natural Resources Trust Fund grant applications. **The Accessibility Workshop will be held Monday, September 10, 2018 from 6:30-8:30 pm at the Paint Creek Cider Mill, 4480 Orion Road, Rochester, Michigan, 48306.** Project engineers will be present to discuss the projects and answer any questions regarding the designs.



Paint Creek Trail Northern Trailhead

“We would love to get feedback from a variety of participants to ensure our projects will be appropriate and accessible for everyone,” said Parks Director Mindy Milos-Dale.

**IRON BELLE – PAINT CREEK TRAIL NORTHERN TRAILHEAD – Grant Application TF18-0098**

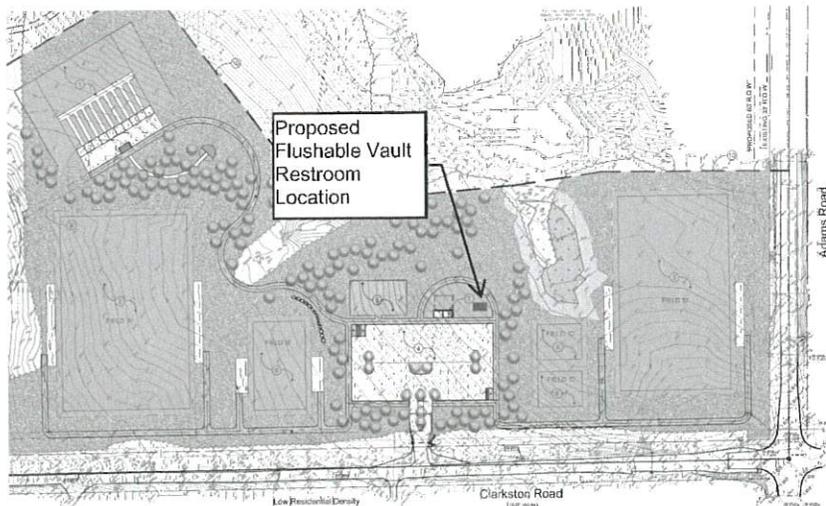
This project site is at Oakland Township’s Paint Creek Junction Park; 2210 and 2280 Orion Rd, Oakland, MI 48363, between Clarkston and Adams Roads.

Oakland Township Parks and Recreation and the Paint Creek Trailways Commission have been discussing the need for a parking facility and rest area near the Adams Road crossing of the Paint Creek Trail. “We are very

excited about this project, and our partnership with Oakland Township Parks and Recreation. Additional parking and restroom facilities in this area have been listed in our Recreation Master Plan for over 20 years. While look forward to ideas and suggestions at our Accessibility Workshop from all participants, including the general public and disability advocates,” said Paint Creek Trail Manager Kristen Myers.

The addition of this trailhead will greatly improve accessibility in the only section of the Paint Creek Trail that lacks a parking lot and rest area. The project will provide Iron Belle and Paint Creek Trail pedestrians, bicyclists, skiers, and equestrians with a universally accessible parking lot, access trail, two unisex universally accessible vault toilets, an accessible well for potable water and a picnic area. Oakland Township owns the proposed project site, which is adjacent to the Paint Creek Trail, and has applied for a Michigan Natural Resources Trust Fund grant to help fund the construction.

**MARSH VIEW PARK RESTROOM – Grant Application TF18-0099**



The project site is located at Oakland Township’s Marsh View Park, 3100 E. Clarkston Road, Oakland, MI 48363. This project will replace portable toilets with two environmentally sustainable and universally accessible flushable vault toilets. These all-season restrooms will support the increasing use of this park.

Since the development of Marsh View Park’s recreation facilities in 2007, this park has become a regional recreation resource. During warm seasons the soccer fields are occupied by adult and youth soccer leagues and the 10-lane universally-accessible Olympic-level archery range is also occupied with

beginning, intermediate and Junior Olympic archery classes. In the winter an ice rink, installed on the basketball court, is open daily and ice skating lessons are offered. Colin Choi, Chairperson, Oakland Township Parks and Recreation Commission, explained “Based on resident feedback, the #1 park improvement that residents want to see is restrooms. Couple that with the growing demand for recreational activities at Marsh View Park and we felt the need to upgrade the restroom facilities to better accommodate all users of this park.”

Both grant applications are available for review on the Township website, [www.oaklandtownship.org](http://www.oaklandtownship.org), and at the Parks and Recreation Offices at the Paint Creek Cider Mill, 4480 Orion Road, Rochester, MI 48306.

If you are planning to attend the workshop and require any special assistance, please notify the Parks and Recreation Director at 248-651-7810 as soon as possible.

If you cannot attend the workshop but would like to provide input, written comments can be emailed before September 15, 2018 to [mmdale@oaklandtownship.org](mailto:mmdale@oaklandtownship.org) or mailed to “Oakland Township 2018 MNRTF Grant Accessibility Workshop”, 4393 Collins Road, Rochester, MI 48306.



Oakland Township Parks and Recreation - Paint Creek Trailways Commission  
Iron Belle – Paint Creek Trail Northern Trailhead Development  
MNRTF 2018 Grant Application TF18-0098  
Accessibility Workshop  
Disability Advocate Invitation List

Paralyzed Veterans of America  
46701 Commerce Center Drive  
Plymouth, MI 48170  
Mike Harris- Government Relations Director  
(248) 476-9000  
mharris@michiganpva.org

Disability Network of Oakland and Macomb  
1709 John R Road  
Troy, MI 48083  
Mark Bashaw- Community Resource Specialist  
(586) 268-4160 ext. 6606  
mebashaw@dnom.org

Leader Dogs for the Blind  
1039 Rochester Rd S  
Rochester Hills, MI 48307  
Rod Haneline- Chief Programs and Service Officer  
(248) 651-9011  
RHaneline@leaderdog.org

Older Person's Commission  
650 Letica Dr  
Rochester, MI 48307  
Renee Cortright- Executive Director  
(248) 656-1403 (main office)  
renee\_cortright@opcseniorcenter.org

Oakland County Parks Adaptive Recreation  
27725 Greenfield Rd  
Southfield, MI 48076  
Sandra Dorey- Recreation Supervisor Adaptive Recreation  
(248) 424-7081  
Adaptive@oakgov.com

**Area Agency on Aging**

(AAA 1-B Central Office (Oakland County))

**The Franklin**

**29100 Northwestern Hwy #400**

**Southfield, MI 48034**

**Michael Karson-Chief Executive Officer (direct dial 248-262-9200)**

**(800) 852-7795**

**mkarson@aaa1b.com**

**Orion Center**

**1335 Joslyn Road**

**Lake Orion, MI 48360**

**Aaron Whatley – Parks and Recreation Director**

**(248) 391-0304 x 3501**

**awhatley@oriontownship.org**

**Macomb Oakland Regional Center (MORC)**

**16200 19 Mile Rd.**

**Clinton Township , MI 48038**

**Carla Dean-Ogene**

**(586) 263-8700 (main office)**

**(586) 263-8715 (direct dial)**

**Carla.dean-ogene@morcinc.org**

**The Arc of Oakland County**

**Coventry Place**

**1641 West Big Beaver Rd**

**Troy, MI 48084**

**Thomas Kendziorski- Executive Director**

**(248) 816-1900**

**info@thearcoakland.org**

**Dutton Farm**

**2270 Dutton Rd**

**Rochester, MI 48306**

**Michele Smither- Chief Executive Officer**

**(248) 760-6081**

**michelesmither@att.net**

United Cerebral Palsy, Detroit  
23077 Greenfield Rd  
Suite 205  
Southfield, MI 48075  
Leslynn R Angel- President  
(248) 557-5070  
langel@ucpdetroit.org

Dinosaur Hill Nature Preserve  
333 North Hill Cir  
Rochester, MI 48307  
Sue Neal- Executive Director  
(248) 656-0999  
sue@dinosaurhill.org

Ascension Crittenton Hospital  
Community Health and Education  
1101 W University Drive  
Rochester, MI 48307  
Angie DelPup- Director, Community Health and Education  
248-652-5000  
Angela.delpup@ascension.org

Easter Seals Michigan  
2399 E Walton Blvd  
Auburn Hills, MI 48326  
Craig Sharum- Director, Communications and Outreach  
(248) 475-6400  
csharum@essmichigan.org

Rochester Community School District  
Special Education  
501 W University  
Rochester, MI 48307  
Anne Evans- Executive Director Special Education  
(248) 726-3195  
aevans@rochester.k12.mi.us

Lake Orion Community School District  
90 Pine Tree Road  
Lake Orion, Mich. 48362-2547  
Julie Gutman- Director of Special Education  
(248) 693-5430  
Julie.Gutman@lok12.org

Baldwin Elementary School  
4325 Bannister  
Rochester Hills, MI 48306  
Cathy Kochanski- Principal  
(248) 726-3200  
ckochanski@rochester.k12.mi.us

Delta Kelly Elementary School  
3880 Adams Rd  
Oakland, MI 48363  
Dr. Amanda McKay, Principal  
(248) 726-3500  
amckay@rochester.k12.mi.us

Musson Elementary School  
3500 Dutton Rd  
Rochester Hills, MI 48306  
Principal: Laura Walsh  
(248) 726-4200 (main office)  
248.726-4201 (direct)  
lwalsh@rochester.k12.mi.us

Oakview Middle School  
917 Lake George Rd  
Lake Orion, MI 48363  
Sarah Manzo, Principal  
(248) 693-0321  
Sarah.Manzo@lok12.org





CHARTER TOWNSHIP OF OAKLAND PARKS AND RECREATION COMMISSION  
ACCESSIBILITY WORKSHOP FOR PROPOSED IMPROVEMENTS

September 10, 2018

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The September 10, 2018, Accessibility Workshop for Proposed Oakland Township Recreation Improvements was called to order at 6:40 p.m. in the main conference room of the Paint Creek Cider Mill.

PRESENT: Melinda Milos-Dale, Director  
Emily Barkham, PRC Commissioner  
Jeff Smith, Project Engineer, PEA, Inc.  
Ingrid Kliffel, Recording Secretary  
Rod Haneline on behalf of Leader Dogs for the Blind  
Roger and Earlene Steeley, residents who live near the Iron Belle –  
Paint Creek Trail Northern Trailhead  
Maureen Kijek on behalf of Dutton Farm  
Michelle Smither on behalf of Dutton Farm  
Kelly Zazekis, physical therapist with Rochester Community Schools  
Cathy Kochanski, principal, Baldwin Elementary School

**WELCOME AND INTRODUCTION**

Rod Haneline was present on behalf of Leader Dogs for the Blind.

Roger and Earlene Steeley are residents who live near the Iron Belle – Paint Creek Trail Northern Trailhead.

Maureen Kijek and Michelle Smither were present on behalf of Dutton Farm. They explained that Dutton Farm is a place where adults with disabilities, who have completed school, can go to build life skills and receive job training. Dutton Farm offers skill building, has a micro-enterprise opportunity, and offers supportive employment.

Kelly Zazekis is one of two physical therapists who work for the Rochester Community School District.

Cathy Kochanski is the principal of Baldwin Elementary School, located in Goodison.

Director Milos-Dale welcomed everyone. She explained that Oakland Township is looking to receive public comments and input regarding accessibility for individuals with disabilities from disability advocates and individuals on two Michigan Natural Resources Trust Fund grant applications.

Ms. Milos-Dale explained that one project is the Iron Belle – Paint Creek Trail Northern Trailhead (grant application TF18-0098). The project site, Oakland Township's Paint Creek Junction Park, is located on the west side of Orion Road between Clarkston and Adams Road. The project will provide access, parking and restroom facilities for Paint Creek Trail users including pedestrians, bicyclists, skiers and equestrians on the 1.5 mile section between Adams Road and Clarkston Road. This project will include a universally accessible parking

CHARTER TOWNSHIP OF OAKLAND PARKS AND RECREATION COMMISSION  
ACCESSIBILITY WORKSHOP FOR PROPOSED IMPROVEMENTS

September 10, 2018

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lot, access trail, two unisex universally accessible vault toilets, an accessible well for potable water, and a picnic area. Ms. Milos-Dale noted that this trailhead is close to the new proposed trail connection to Bald Mountain State Park.

The second project is the Marsh View Park Restroom (grant application TF18-0099). Oakland Township's Marsh View Park is Oakland Township's active recreation facility, and is located on Clarkston Road, just west of Adams Road. This project will provide restroom facilities for the increasing number of Marsh View Park visitors. Portable toilets will be replaced with two environmentally sustainable and universally accessible flushable vault toilets. These all-season restrooms will support the increasing use of this park's soccer fields, basketball court, picnic area, walking paths and universally accessible Olympic archery range during warmer seasons, as well as an ice skating rink during the winter. Ms. Milos-Dale noted that, while we currently have portable restrooms at this park, there is a demand for flushable toilets.

**REVIEW OF PROJECT GRAPHICS AND DISCUSSION REGARDING  
ACCESSIBILITY IMPROVEMENTS**

**Iron Belle – Paint Creek Trail Northern Trailhead**

Project Engineer Jeff Smith shared maps and presented an overview of this project. Oakland Township's Paint Creek Junction Park is approximately 6 acres in size, and is currently vacant. This park is proposed to be able to accommodate equestrians with an area for horse trailer parking, and a separate path for equestrians to access the Paint Creek Trailways. There will also be three paved handicapped parking spaces (only two are required, so this exceeds that minimum requirement), with a paved pathway to access two universally accessible vault toilets. Park amenities include an ADA accessible hand pump for potable water (the pump is both wheelchair accessible and requires only a gentle cranking motion to operate), a picnic table that has an open end so that a wheelchair can wheel up to it, and an asphalt pad for a future bicycle repair station. The pathway from the restrooms to the picnic area is gradual, to meet ADA requirements.

Ms. Kijek asked if there will be an adult-sized changing table in either restroom. She explained that it is challenging to plan outings with adults who wear incontinence products if they need assistance and there is no place to change them. She explained that an adult-sized changing table is much like a baby changing table in that it folds down from the wall. The changing table could also be used for babies. Those present agreed that this would be a good thing to include.

Paint Creek Junction Park will also have interpretive signage (the "SoundPost" system). Oakland Township is already using this system in other parks. The interpretive signs will be located along the ADA accessible paths in the Paint Creek Junction Park.

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The group next discussed details regarding the toilets. Ms. Milos-Dale explained that they will be on a concrete pad, and the pathway will be surfaced from the parking lot to the restrooms. The restrooms meet all ADA requirements. The restrooms have a door, but Ms. Milos-Dale asked if there was a preference to have a privacy screen or not; those present did not have a preference. In response to questions, Ms. Milos-Dale explained that we do not have electricity at the site, so the doors are not electrically operated. They do, however, have ADA appropriate door pulls, the toilet has a riser, there is an appropriate turning radius, etc. It was noted that there is also no running water at the site (this is a vault toilet, which will have to be pumped periodically), but restrooms will have hand sanitizer available.

Director Milos-Dale, Mr. Smith and those present discussed the location of the vault toilets as compared to the other park amenities. While the vault toilets use “sweet smell technology,” they agreed that it is nonetheless “good insurance” to locate the picnic area at a distance. Ms. Kijek asked about the surfacing of the pathway from the restrooms to the picnic areas and pump, noting that it is difficult for wheelchairs to wheel on a gravel/crushed limestone surfacing. After discussion, everyone agreed that it would be good to extend the paved surfacing from the restrooms to the picnic table and hand pump well.

Ms. Milos-Dale asked if Mr. Haneline had any comments as they might pertain to the visually impaired. He responded that he has no concerns as the restrooms are unisex (so there is no signage issue), and the trails do not cross roads.

**Marsh View Park Restroom**

Director Milos-Dale next reviewed the proposed restroom improvements to Marsh View Park. She explained that the new restrooms are proposed to be located to the north of the easternmost parking lot. We currently have two portable ADA accessible toilets at this location. They will be removed, the pad that they currently sit on will be enlarged, and the new flushable vault toilets will be placed in this area. She continued that these are unisex toilets, they will have wooden siding, and there will be a ramp to access them. Other improvements include new concrete walkways to access this area, and recycling facilities.

Ms. Milos-Dale explained that this park has wetlands on it, so we cannot have a septic field on the park, and there is no sewer available. We do, however, have electricity and water at the site. This flushable vault toilet is new technology, which uses a low volume flush. The toilet will look like a regular flush toilet, there will be a waterless urinal, and there will be a sink (with ADA appropriate push down faucets) for hand washing. While it will look like a regular flush restroom, we will need to have the vault pumped periodically.

Again, Ms. Kijek asked that Oakland Township add adult-sized changing tables. There were no other suggestions relative to this proposed project.

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**SUMMARY OF FINDINGS**

Director Milos-Dale expressed her gratitude to everyone who attended and shared their suggestions. She explained that we submitted our grant application to the Michigan Natural Resources Trust Fund in April, but have the opportunity to amend it now. Oakland Township will be able to incorporate these ideas to improve the projects. In Michigan, we are very fortunate to have the resource of grants through the MNRTF; we would not be able to complete these projects without this funding. Ms. Milos-Dale will send our revised grant application to the MNRTF. If anyone wishes to send a letter in support, that would be wonderful.

Ms. Kijek wondered how many people use the Paint Creek Trailways each year. Director Milos-Dale said this is a regional trail, but she understands that most of the people who use this section of the trail are local. A figure she has from several years ago is an estimate of 100,000 users annually. Ms. Kijek said a rough guide is that 10 percent of park users have disabilities, so these improvements have the potential for making the park experience better for many people.

**ADJOURNMENT**

Director Milos-Dale thanked everyone for coming this evening, and for sharing their expertise. There being no further business, the workshop was adjourned at 7:22 p.m.

Respectfully submitted,

Ingrid R. Kliffel  
Recording Secretary



Civil Engineers | Land Surveyors | Landscape Architects

experienced responsive passion for quality

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September 20, 2017

Ms. Mindy Milos-Dale, Director  
Parks and Recreation Department  
Charter Township of Oakland  
4393 Collins Road  
Rochester, Michigan 48306

**RE: Summary of Input from Accessibility Workshop  
Iron Belle - Paint Creek Trail Northern Trailhead & Marsh View Park Restroom  
Oakland Township, Oakland County, Michigan**

Dear Ms. Milos-Dale,

On Monday, September 10, 2018 PEA attended an Accessibility Workshop for the above referenced projects. There were a number of representatives in attendance from local advocacy groups as well as interested residents. In a brief presentation, PEA reviewed the proposed ADA and Universally accessible features for both the Iron Belle-Paint Creek Northern Trailhead project and the Marsh View Park Restroom Project. The attendees offered support for the projects and noted two additional items that could be addressed in the designs to further improve the accessibility and enhance the user experience. Below is a description of the two items identified for improvement. The design plans for each project have been revised to reflect the improvements.

- 1. Provide a paved access to the hand pump well and the picnic area at the trailhead park.** The previous plans had a paved pathway to the restroom area, but the pathway that leads to the Paint Creek Trail is a crushed aggregate pathway. The picnic area in the previous plan was accessed by the aggregate pathway. It was requested that the pathway be paved up to the picnic area to make access easier for wheel chair users. There was no need to pave the pathway after the picnic area since that portion only leads to the Paint Creek Trail which is not paved. By paving this additional area there will be paved access to all of the amenities on site. The plans have been revised to show the asphalt pathway to up to the picnic area.
- 2. Provide an adult changing table in the restroom.** A representative from Dutton Farm, a local organization that serves adults with physical, mental or emotional impairments, requested an adult changing table to be placed in the restrooms. They explained that the visitation time to the parks could be limited if there are not adequate changing facilities for impaired users of all ages. This request could not be accommodated at the Trail Head restroom due to structural limitations of the pre-fab wall construction, but an adult changing table has been added to the Marsh View Park restroom plan.

Sincerely,

PEA, Inc.

A handwritten signature in black ink, appearing to read 'Jeff Smith', is written over a light blue horizontal line.

Jeffrey T. Smith, PLA, LEED AP  
Director of Landscape Architecture

