



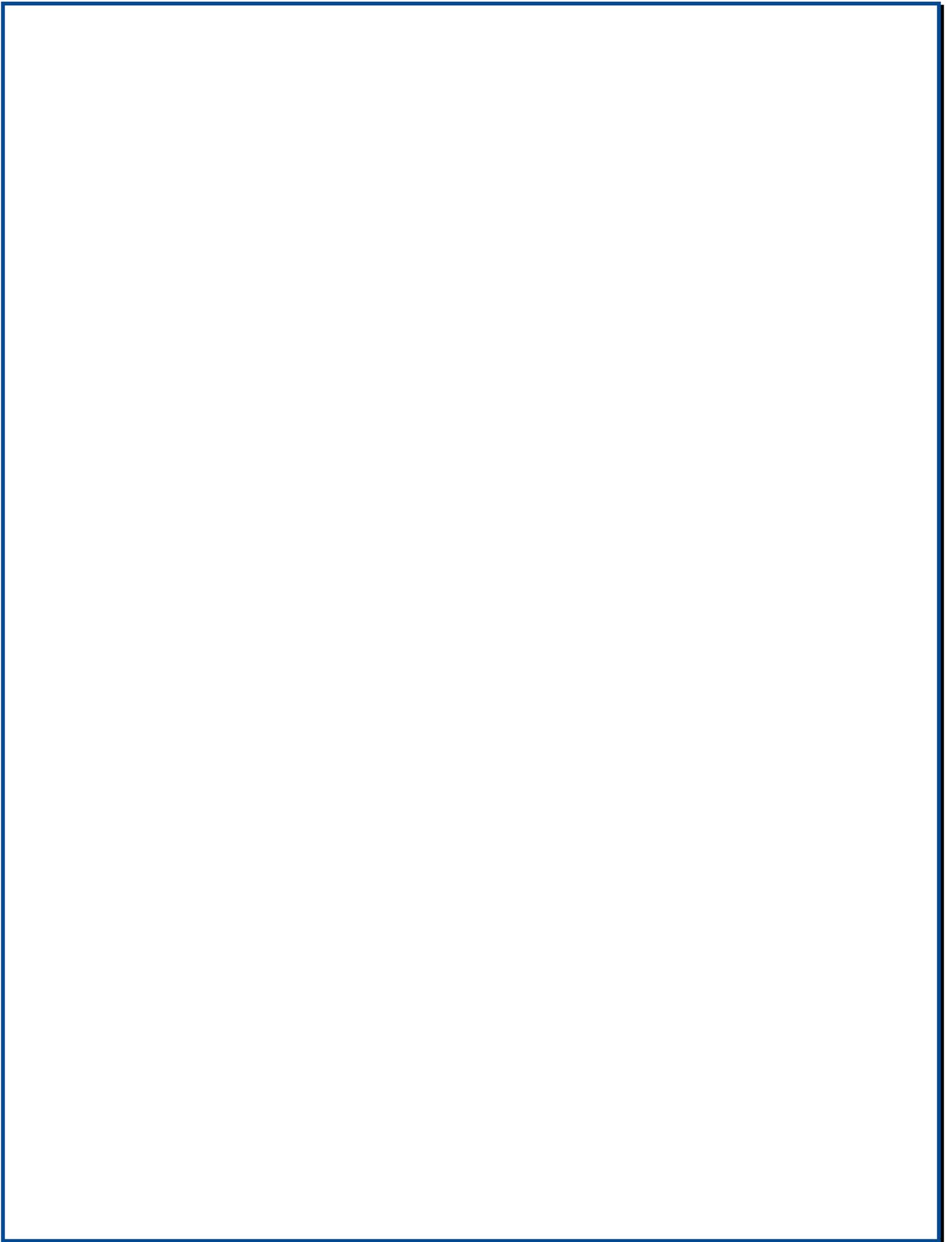
## Engineering & Environmental Services Department

# 2014 Annual Report



### MISSION STATEMENT

Our mission is to provide professional engineering and environmental services in a respectful and efficient manner, which safeguards the Township's public infrastructure and natural resources for the well-being of our residents.



## Engineering and Environmental Services Department Staff

The following are current EESD employees with their years of Township service included.

### Wayne Domine, PE, Director (23 years)

Department Head, responsible for supervising the overall activities of the Engineering and Environmental Services Department in conjunction with the needs to sustain the operation of the Township's water supply system and sanitary sewer system and other public works activities.

### Lance Scram, Project Coordinator (17 years)

Responsible for coordinating public works projects, such as the Township's safety path construction and road paving projects with the Township DPW, consultants, contractors, other public agencies, and customers. Also, assists the Department of Public Works with snow removal activities as needed.

### Olivia Olsztyn-Budry, PE, Township Engineer (5 years)

Responsible for managing public improvement projects in conjunction with the needs of the Township's DPW operations. Provides technical support associated with the planning and construction of public improvements and review of site development projects submitted for Building Permits. Also, reviews Building Permit applications on behalf of the DPW- Water Division.

### Charles Markus, Program Coordinator (3 years)

Responsible for implementing the activities involving management of the Township's environmental programs to meet regulatory compliance in conjunction with the Township's Phase II Watershed-based Storm Water permit, wetlands, pest management, woodlands, and protection of other natural features. Also, reviews Tree Permit applications on behalf of Planning, Building, and Ordinance Departments.



EESD Team (left to right): Angela Pasciolla, Wayne Domine, Olivia Olsztyn-Budry, Lance Scram, and Charles Markus.

**Engineering & Environmental Services Department**

**2014 Support & Technical Assistance**

## Support, Technical Assistance, and Project Summary

The EESD supports other departments in the review of projects that seek permits from the Township. In cooperation with the Planning, Building & Ordinance Department and Department of Public Works, the EESD reviews applications for building permits, demolition permits, fill permits, planning permits, and tree removal permits. Also, the EESD assists the Clerk's Office in reviewing applications for right-of-way disturbance permits, and Wetland Permits.

The EESD staff provides technical support to the DPW Water Division throughout several emergency water and sewer repairs. In addition, EESD staff provides assistance to residents regarding connection to Township water and sewer services, drainage concerns impacting their property, and natural resource development regulations. EESD staff also provides project management and technical direction during the replacement and upgrading of public utilities. The EESD works collaboratively with other jurisdictions, including MDOT, DWSD, SOCWA, and the Water Resource Commissioner's office.

Below is a numerical summary of projects and work that the EESD either managed or provided assistance in 2014.

- 232 building, tree, and fill permit reviews
- 0.34 miles of new safety path
- 2,170 tons of asphalt for road paving overlays
- 42,300 square feet of concrete road repair
- 10.48 miles of new road through SAD process
- 29,040 feet (5.5 miles) of new water main
- 3,168 feet (0.6 miles) of sanitary and combined sewer rehabilitated
- 2,980 feet (0.6 miles) of new sanitary sewer
- 23,702 feet joint sealing
- 67 right of way permit reviews
- 20 new private development engineering plan reviews and project oversights

**Engineering & Environmental Services Department**

# 2014 Department Highlights

## Department Highlight

### Water System

#### **Bloomfield Village Water Main Enhancement Project Phase I**

As part of the Township's continuing capital improvement program, existing water mains in Bloomfield Village will be rehabilitated or replaced over the next several years. The water system that serves most of Bloomfield Village was installed from 1925 through 1968 and consists of 11 miles of underground piping. Because of the overall size of the water system in Bloomfield Village, the project will be constructed in different phases. This phase delineation was also in consideration to avoid other utility upgrades, such as improvements by Consumers Energy that are planned for the existing gas distribution system in the Bloomfield Village Subdivisions. The scope of the project includes upsizing 6-inch diameter water mains, replacing 8-inch to 12-inch diameter water mains, replacing and adding hydrants, and replacing valves.



Left Photo: Access pit for hydraulic pipe bursting equipment for installation of new water main.

Right Photo: Partial restoration of access pit from installation of hydrant assembly, and water main 24 hours after new water main was installed.



The selected method of construction is pipe bursting, which involves splitting or bursting the existing water main in place underground, and then inserting the new water main into the same channel as the old water main. Above ground excavations are minimized and only require excavations for access pits at the upstream and downstream ends of the section of water main being replaced, and access pits at all valve and hydrant locations. The impact to residents adjacent to the work is minimized to a day, and water service is restored within 10-12 hours.

The first phase of the water main enhancement program was to enhance the oldest water mains constructed in 1925. To date, 33% of the water pipes have been replaced east of Covington Road and a few small portions just west of Covington Road. In August 2013, the project was awarded to Bidigare Contractors. Phase 1 construction began in October 2013 and was completed by November 2014. A total of 5.2 miles (27,500 feet) of pipe has been replaced thus far. This leaves approximately 10.4 miles (54,855 lineal feet) of water pipes remaining to be replaced. In 2015, we are proposing to replace and upgrade the size of approximately 0.9 miles (4,900 feet) of the water main on Covington Road from Quarton to Cranbrook and replace approximately 2.4 miles (12,500 feet) of pipe in the Village subdivision, west of Cranbrook Road, for a total of 3.3 miles (17,400 feet).

## Department Highlight

### Water System Wing Lake Shores Water Main Replacement

In 2004, the Township Board authorized the EESD to proceed with a Long Term Capital Improvement Program for water main. The program began in 2006 in the Hickory Heights area, 2008 the Charing Cross Estates Subdivision, 2009 the Colberry Park Subdivision, and in 2013 the Village Phase I water system enhancement program. Wing Lake Shores was recognized for replacement based on pipe size and number of breaks per year. Wing Lake Shores Subdivision is the last known subdivision with undersized four inch diameter water mains in Bloomfield Township. In 1965, the existing water system was extended to include both six inch and eight inch water mains with the existing four inch water mains. The current minimum standard size for water main to meet fire flows and demand is eight inch diameter water main.



Installing new water hydrants.



Township contractor digging up existing water main.

The scope of work consists of installing, via pipe bursting, approximately 3,600 linear ft. of eight inch diameter HDPE water main to replace existing four inch and six inch diameter mains. This project included the installation of two new hydrants and thirteen gatewells, and the reconnection of thirty-eight water services.

The project was awarded to Bidigare Contractors and work began in November 2014. The roads affected subside in Wing Lake Shores and Wing Lake Shores Estate. Work on this project will be completed in 2015.



Township contractor installing new water main.

## Department Highlight

### Illicit Discharge Elimination Program Vailwood Court

In late 2013 a preliminary investigation performed by the Oakland County Water Resource Commissioner's Office (WRC), of the storm drainage system, known as the Law Drain, indicated elevated levels of bacteria likely coming from the storm sewer on Vailwood Court. The WRC notified the EESD of these investigation results. The storm drains convey rainfall to Heather Lake without treatment. In this case, it was suspected that the sanitary sewer leads from some of the homes on Vailwood Court were connected to the storm drain instead of the sanitary sewer. Connection of the sanitary service leads to the storm drains is a direct source of pollution to Heather Lake, located within the subdivision. Untreated wastewater discharging through the storm drains to lakes and streams can cause excessive algae and weed growth, limit oxygen in the water available to aquatic wildlife, and cause increased bacterial level exposure to people and animals.

To determine if homes down Vailwood Court were improperly connected to the storm drain, EESD staff worked with the homeowners and DPW to investigate the sanitary connection at each home. The results of the investigation determined that one home's sanitary sewer lead was improperly connected to the storm sewer.

Once the improperly connected home was identified, the Township was able to correct the exterior sanitary sewer lead and storm drain pipe to the proper public utility. The Township and its contractors performed the work at no cost to the homeowners. The construction was completed by summer of 2014.



D'Angelo Brothers Inc. properly re-installing public utilities down Vailwood Court.



Installation of new pipe to existing sanitary sewer system.

## **Department Highlight**

### **Grant Funding**

#### **Green Landscaping and Beautification**

While surface water quality in the Township remains higher than several other areas in the Rouge River Watershed, it is critical to continue to maintain and protect these water features. In part, landscaping practices using trees and other vegetation will help protect water quality. Below is a summary of landscaping projects funded by grants received.

#### **US Forestry EAB Tree Grant**

The Alliance of Rouge Communities (ARC) applied for the US Forestry Emerald Ash Borer Tree Grant this year. This grant was established to recover the tree population in rouge communities after losing many trees due to an outbreak of emerald ash borer. The grant is for \$100,000 and will be used to purchase a total of 680 trees. So far 11 rouge communities have expressed interest in participating in this grant, including Bloomfield Township. The deadline for community interest is June 5, 2015. The requirements for the grant include a one page summary of the number and type of trees actually planted and a map of their locations in the Township. If the grant is approved, the trees will be planted throughout the Township in the summer of 2015.



Newly planted trees in Telegraph Road  
right of way.

## Department Highlight

### Road Special Assessment Districts (SAD)

The homeowners in four subdivisions requested the Township to create a special assessment district to pave their roads. The EESD drafted the petition, and oversaw the SAD process on behalf of the Township. The construction of the paving projects were managed by the Road Commission for Oakland County (RCOC) for two projects and the Township's consulting engineers managed two projects under RCOC permits. Lance Scram, with the EESD, acted as a liaison between the Township, residents, and the RCOC during the projects.

#### **SAD #406: Wabeek No. 5 and No. 6 Subdivision**

##### **4" Asphalt with Concrete Curbs**



Old Asphalt (Before)

Cost: \$13,354 / home  
Road Mileage: 2.67miles  
Number of Homes: 106



New Asphalt (After)

#### **SAD #407 Hickory Heights Subdivision**

##### **4" Asphalt with Open Ditches**



Old Asphalt (Before)

Cost: \$6,590 / home  
Road Mileage: 6.72miles  
Number of Homes: 380



New Asphalt (After)

## SAD #408 Carillon Hills Subdivision

### 4" Asphalt with Concrete Curbs



Old Asphalt (Before)

Cost: \$16,165 / home  
Road Mileage: .39miles  
Number of Homes: 19



New Asphalt (After)

## SAD # 409 Echo Park Subdivision

### 4" Asphalt with Concrete Curbs



Old Asphalt (Before)

Cost: \$9,762 / home  
Road Mileage: .70 miles  
Number of Homes: 51



New Asphalt (After)



Crew leveling sub base of the road before placing asphalt.

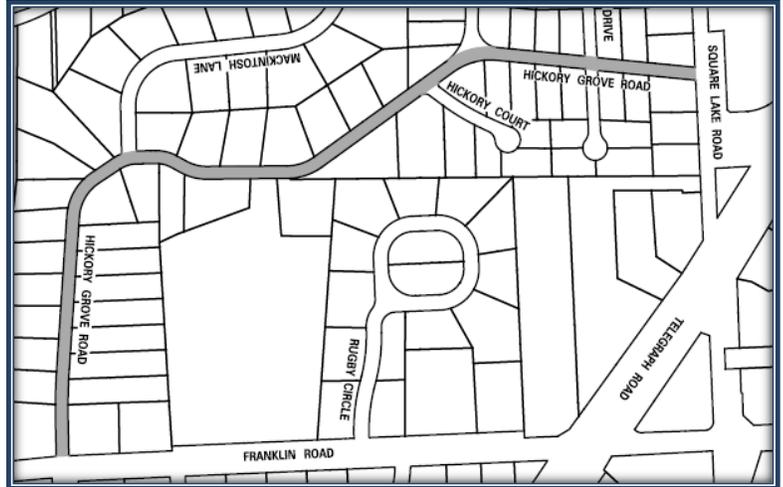
# 2014 Summary Review

## Construction Projects

The EESD provides construction oversight and management to a variety of projects. Some key programs include: safety path construction, water system upgrades, sewer rehabilitation, and road construction and replacement projects.

### Road Reconstruction Tri-Party Agreement

The Township has been a long time participant of the County's Tri-Party program and has been successful in securing Tri-Party funds for several road projects that would not normally be a priority for the Road Commission for Oakland County (RCOC). In 2014 funding from the Oakland County Tri-Party program was used for the reconstruction of Hickory Grove Road between Square Lake and Franklin Roads. Work started in August and was completed in September.



Project area for 2014 Tri-Party project.

### Concrete Replacement Program

Each year, funds are allocated to remove and replace sections of concrete roads within the Township. Although the roads are under the jurisdiction of the Road Commission for Oakland County (RCOC), residential roads are evaluated and selected for repair by Township staff. Selection criteria include RCOC Paser Rating, the number of complaints, age of road, location of repair, and type of pavement issue. In 2014, over 42,300 square feet of concrete was removed and replaced in several locations throughout the Township.



Old concrete at Sunningdale Drive and Ranch Lane.



New concrete at Sunningdale Drive and Ranch Lane.

## Asphalt Overlay Program



Old asphalt at Inwoods Circle and Inwoods Court.

In 2014, funds were budgeted to contract a portion of the paving to supplement the DPW – Road Division in completing their annual asphalt overlays on subdivision roads. This contracted work is necessary due to the short paving season in Michigan. The EESD staff developed specifications and solicited bids from paving contractors and the DPW – Road Division oversaw the work. Over 2,170 tons (1.4 miles) of asphalt was overlaid in three subdivisions. These overlays are temporary repairs that will extend the current use of the roadway surface.



New asphalt at Inwoods Circle and Inwoods Court.

## Joint Sealing Program

In 2014, the Township contracted to have 23,702 linear feet of joint sealing completed. The EESD staff developed specifications and solicited bids from joint sealing contractors. Work was performed by Ash-Con on various roads in the Township as well as the Township Campus parking lots.



Joint sealing in parking lot of Township campus.

## Safety Path Program

In 2014, 0.34 miles of new safety paths were constructed as part of the master plan approved with the 2008 millage renewal. These areas include:

- Squirrel Road, from Square Lake Road to the I-75 Bridge
- Maple Road, from Lahser Road to Gilbert Lake Road (delayed for 2015 construction)
- Telegraph Road, from Exeter Road to Long Lake Road (delayed for 2015 construction)

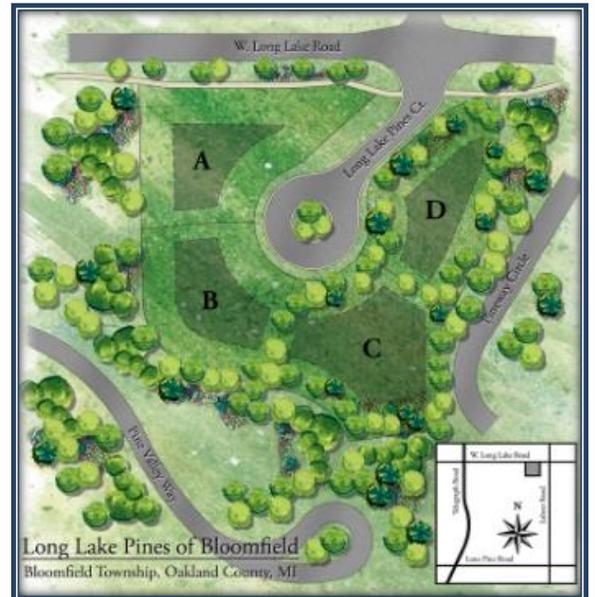


New concrete safety path.

Also in 2014 the Township voters renewed the safety path millage to continue the construction of new safety paths thru 2018.

## Escrow Accounts

The EESD also manages new private construction through the use of escrow accounts. Developers interested in constructing private facilities in the Township post funds with the Township for the EESD or the Township's consultant to review construction plans for conformance to the Township's engineering ordinance and standards for public water and sewer construction and connections. During construction, Township representatives are on site to observe and inspect the construction per the approved plans. Bloomfield High School, Tel Square Plaza, and Long Lake Pines development are three of several projects that were started in 2014. To date, the EESD has collected over \$102,204 in fees for review and inspection on these three projects alone. As part of these projects, the developers are installing approximately 1,399 feet of sewer and 1,379 feet of water main.



Long Lake Pines of Bloomfield subdivision.



New Lifetime Fitness Center off Telegraph Road.

## **Bloomfield Township CSO Chapter 20 Drainage District Rehabilitation Project**

Bloomfield Township partnered with Oakland County in 2010 to obtain Recovery Zone Bonds for sanitary and combined sewer rehabilitation in the Bloomfield Township Chapter 20 Drainage District. The scope of the project included cleaning, inspecting and rehabilitating sanitary sewers and manholes in order to reduce infiltration and inflow (I/I) and restore structural integrity of the aging sewer system. A total of 56,590 linear feet of sewer was relined and 38 manholes were rehabilitated. This project will continue into 2015.

## **Connection to the SOCWA Water Supply**

In 2011, Bloomfield Township became a customer of SOCWA for purchasing water. Bloomfield Township had been a customer of DWSD since 1964, but by purchasing water from SOCWA, the Township has saved on the cost of water. This savings was realized in the first year and subsequent years to be about \$2,000,000 per year.

In 2014, the final connection to the SOCWA water system was completed to create a new pressure district that includes a section of the City of Bloomfield Hills and the Township, south of Quarton Road. To accomplish this new pressure district in both communities, a new pressure regulating valve chamber located near Chesterfield and Woodward, in the City of Bloomfield Hills, was also completed July 2014. The completion of the SOCWA connection and integration with the City of Bloomfield Hills water system satisfies SOCWA's contract requirements for the Township.

## **Sanitary Sewer Extensions**

Bloomfield Township managed one sanitary sewer project in 2014. Public sanitary sewer was extended into the Upper Long Lakes Estates Subdivision to serve existing properties. A total of 2,980 feet of sewer was installed on Long Point Drive.



Proposed sanitary sewer extension on Long Point Drive.

## EESD Programs

In addition to construction projects, the EESD manages and oversees several Township-wide programs both specific to EESD and in coordination with other departments.

### **Intern Program**

The EESD is proud to continue our intern program. In 2014 the EESD continued our intern program with two student interns: Kristen Shetler from U of M - Ann Arbor, and Angela Pasciolla from Lawrence Technological University. The interns work closely with EESD staff to gain experience in construction management, plan review and inspection; and administration of environmental programs. Interns assist EESD staff with various tasks, including:

- Performing tree inspections,
- Ordinance violation inspections,
- Administrating the West Nile Virus program (including sampling and treatment)
- Performing engineering and building plan reviews,
- Inputting data for the water and sewer systems, and
- Conducting construction site visits for Township projects.



Kristen learning about the new PRVs with Ken Brown, Water Foreman, and Olivia Olsztyn-Budry, Township Engineer.



Angela reviewing construction plans for a new sanitary sewer.



Residential tree protection fencing.

### **Tree Preservation & Protection Ordinance**

The EESD works with the Planning, Building & Ordinance Departments to assist Township residents and their contractors in the form of pre-application meetings, site visits, plan evaluation and phone conversations with perspective applicants and interested residents. After a tree permit application is submitted to the Building Department, the EESD staff reviews the application and inspects the site to confirm the work to be done.

In addition to the private projects, the EESD staff reviews the construction plans of public improvements such as safety path and water main installation to assure that trees are protected during construction.

## **Fertilizer Ordinance**

Through Bloomfield Township's Registered Fertilizer Applicator Program, commercial fertilizer firms agree to follow the requirements of the Fertilizer Ordinance for all fertilization done in the Township. The registrars are issued a permit for a two year period. The first year of the two year phase for this permit process began in spring of 2014.

## **National Pollution Discharge Elimination System (NPDES) Permit Management**

Bloomfield Township continues to implement the requirements under the Storm Water Pollution Preventive Initiative (SWPPI) plan which was required as part of the 2003 National Pollutant Discharge Elimination System (NPDES) general permit for our Municipal Separate Storm Sewer System (MS4) Permit. In addition, Bloomfield Township also incorporates elements from the rescinded 2008 permit.

The Township was audited in September of 2014 by the DEQ for compliance with the National Pollutant Discharge Elimination System (NPDES) storm water permit. The Township is currently in the process of updating Township standards to meet state requirements. The Township is also working towards improvements to accommodate new standards spelled out in the 2017 permit. The permit application is due to the MDEQ in April of 2016.



## **West Nile Virus Management Program**

The Township West Nile Virus (WNV) Management Program continues to address the WNV problem through an integrated pest management program that consisted of identifying and prioritizing approximately 1300 catch basins and detention basins. Public areas found to be in high priority of mosquito control treatment are sampled and treated. Once it is determined that breeding has begun, treatment of street side catch basins, ditches, and retention and detention basins will begin. Catch basins will be treated with the larvicide Natular XRT. Natular XRT is an extended release tablet that prevents mosquito larvae from developing to adults and lasts up to 6 months.

Throughout the year the EESD provides public education and community outreach activities through the WNV hotline, Township newsletter articles, and printed materials. The website provides additional information, such as the modes of virus transmission; means of prevention; and how to reduce the risk of exposure. There were no recent cases reported of the WNV in the Township. However, the risk for contracting the disease is still present in Southeast Michigan.

## Gypsy Moth Management Program

Since 1993 Bloomfield Township, together with the National Gypsy Moth Management Group, has implemented an integrated pest management approach to reduce and contain the Gypsy Moth problem. Components of the program include: public education, intensive biological monitoring, and treatment plus evaluation.



Adult gypsy moth

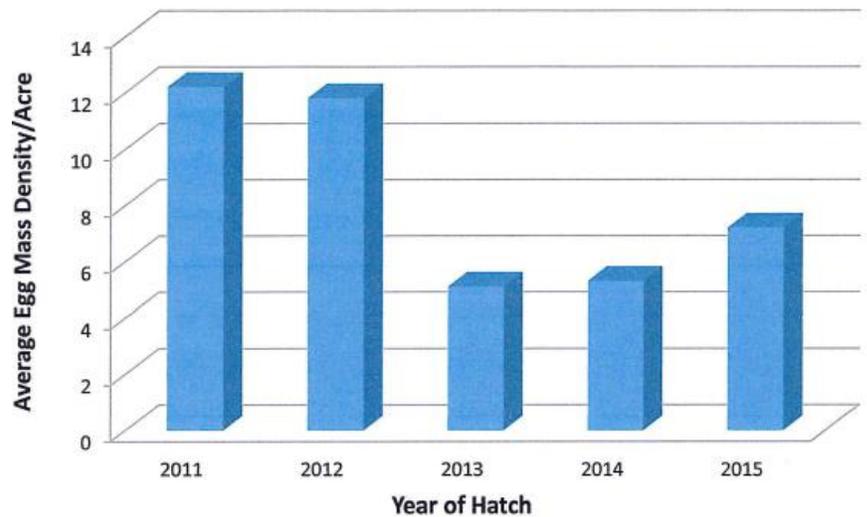


Gypsy moth caterpillar

The National Gypsy Moth Management Group personnel collected data from biological surveys at permanently established survey locations to determine Gypsy Moth population, density and health, susceptibility and vulnerability of trees and infestation trends. In the spring, fungus inoculations were applied to many locations throughout the Township.

The results of the data collected in 2014 revealed the average egg mass density for the managed areas increased by 24% from 5.3 EMA to 7.2 EMA that will hatch in spring of 2015. However, the number of focal areas of infestation decreased slightly from 41 to 36. The 2015 gypsy moth program will be the final year of a three-year contract with National Gypsy Moth Management Group. The program for 2015 is scheduled to target 13 sites.

### Change in Gypsy Moth Density



Gypsy moth population trend in Bloomfield Township over a 5 year period.

## Community Participation

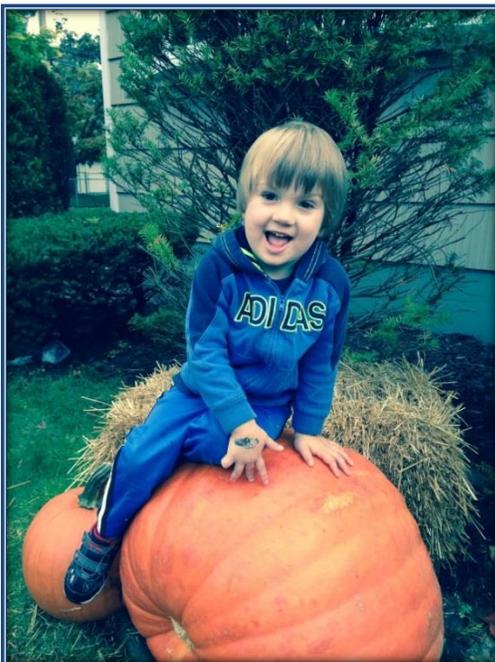
### **Open House**

EESD staff participated in Bloomfield Township's open house in October. EESD answered questions, displayed information, and educational materials addressing storm drain awareness, water conservation, earth-friendly landscape materials, fertilizer education, car washing techniques, proper HHW disposal, Emerald Ash Borer, West Nile Virus, "Ours to Protect" materials, and safety path maps.

The EESD held two free raffles at this year's open house. The first being a tree raffle and the second being a giant pumpkin contest where participants had to come close to guessing the weight of the pumpkin. The pumpkin weighed a total of 132 lb. 10 oz., with the closest guess being 132 lb. 8 oz.



2014 Tree Raffle Winners – The Baker family pictured with their new tree.



2014 Giant Pumpkin Raffle Winners – Darren and Stephanie Wheat with son Coen (pictured to the left) were the winners of the giant pumpkin.

## River Rouge Rescue

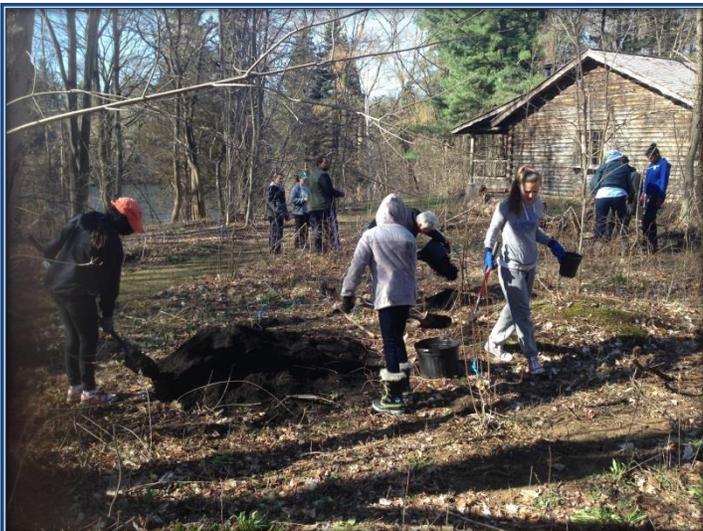
# Friends of the ROUGE

Each spring, Friends of the Rouge, in partnership with communities throughout the Rouge, brings volunteers together from across the watershed to work towards the common goal of

improving the Rouge River. This annual event began in 1986 with volunteers removing large quantities of trash from the river. Today much of the event is focused on river restoration. Also volunteers work to remove invasive plants from the river corridor, install native plantings, and stabilize stream banks to improve the health of the river.



EESD partnered with Friends of the Rouge to host a River Rouge Rescue at the EL Johnson Nature Center in Bloomfield Township. This year the event was held on April 26<sup>th</sup>, 2014. A total of 120 volunteers participated. Work involved planting 900 native wild flowers and grasses, 50 trees, and 76 plugs of shrubs at the nature center. Volunteers also cleaned up trash from Franklin Road.



**Engineering & Environmental Services Department**

**A Look Ahead**

## A Look Ahead

As we look ahead to the future, the EESD will continue to oversee the Township's construction projects and continue to provide support to all Township departments regarding the environment, natural features, building projects, and Township utilities.

Projects planned for 2015 include:

- Continue the water system capital improvement programs
- Continue the sanitary sewer rehabilitation program
- Construction of new safety paths
- Continue road paving, concrete replacement and joint sealing
- Work with the WRC with regional sanitary sewer system improvements
- Develop an Asset Management Program for sewer and water systems
- Continue the Intern Program

