NORTHFIELD TOWNSHIP BOARD WORKSHOP AGENDA
March 24, 2015 - - 7:00 PM
8350 Main Street, 2nd Floor

CALL TO ORDER
PLEDGE/INVOCATION
ROLL CALL
ADOPT BALANCE OF AGENDA
CALL TO THE PUBLIC
BOARD MEMBER COMMENTS
CORRESPONDENCE and ANNOUNCEMENTS

DISCUSSION ITEMS:

1. Annual Report from the Washtenaw County Road Commission
2. Sewer Capacity Study Presentation
3. Waste Water Treatment Plant request for Rebuild of Tertiary Sand Filters
4. Board Room Construction – Construction Manager quotes
5. Code Enforcement Contract Renewal
6. Board Retreat Goals Discussion

2nd CALL TO THE PUBLIC
BOARD MEMBER COMMENTS
ADJOURNMENT

* Denotes previous backup; + denotes no backup in package

This notice is posted in compliance with PA 267 of 1976 as amended (Open Meetings Act) MCLA 41.72A (2) (3) and the Americans with Disabilities Act. (ADA) individuals with disabilities requiring auxiliary aids or services should contact the Northfield Township Office, (734-449-2880) seven days in advance.

Memo

To: Northfield Township Board

From: Howard Fink

Date: 3/19/2015

Re: Annual Meeting with Washtenaw County Road Commission

Dear Township Board,

Its that time of year when we get to discuss the quality of our roads. On the agenda is the annual meeting with the Washtenaw County Road Commission. Mr. Wagner and I intend to drive the township and provide recommendations on projects. In the new budget year, we have $120,000 budgeted for road improvements. These dollars are in addition to the Road Commissions matching funds. We don't have to spend it all, but there are plenty of needs. Mike Moran for Ann Arbor Township will be in the audience as he is encouraging us to engage in a joint project to address some of the issues on Joy Road. Prior to the workshop, I will be driving Joy Road with Mr. Moran and see if there is anything we can do. Obviously, we can not deal with the project costs that the Road Commission is proposing, but maybe there is some temporary / less expensive solution.

Respectfully Submitted,

Howard Fink, Township Manager

2015

ANNUAL MEETING

NORTHFIELD TOWNSHIP

WASHTENAW COUNTY
BOARD OF COUNTY ROAD COMMISSIONERS
555 NORTH ZEEB ROAD
ANN ARBOR, MICHIGAN 48103
WWW.WCROADS.ORG

ROY D. TOWNSEND, P.E.
MANAGING DIRECTOR
SHERYL SODERHOLM SIDDALL, P.E.
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COUNTY HIGHWAY ENGINEER
JAMES D. HARMON, P.E.
DIRECTOR OF OPERATIONS
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Dear Northfield Board of Trustees:

We would like to thank all the Townships for last year's support in assisting the Road Commission complete numerous successful road improvement projects. Without your assistance most of the local road improvements would not have been possible. We are also pleased to provide Northfield Township Officials with our 2015 Annual Local Road Program. In addition, we have included a few other updates on our activities and major project initiatives in your Township.

Our Annual Meeting Booklet includes cost summaries of 2014 expenditures in your township. Also, to assist townships in determining the level of local road improvements that you are willing to entertain, we have provided the following items.

1. 2015 Local Road Program and Matching Fund Allocations
2. A Summary of 2014 Maintenance and Project Activities
3. Proposed 2015 Local Road Projects and Dust Control Program
4. 2015 Road & Bridge Improvement Projects
5. PA 283 Projects for 2015
6. Governor Snyder's Road Funding Ballot Proposal

Please note **May 22** is the commitment due date for this year's 2015 Local Road Program. Your timely response and participation is essential to successfully accomplish this year's program.

We annually look forward to this opportunity to discuss common issues with the Township Officials and your citizens as we seek solutions to the challenges that we face. If you have any immediate concerns related to the attached information, please feel free to contact me at 327-6662 or our Director of Operations, Jim Harmon at 327-6653.

Very truly yours,

Roy D. Townsend

Roy D. Townsend, P.E
Managing Director

RDT:amw

WASHTENAW COUNTY ROAD COMMISSION
2015 LOCAL MATCHING PROGRAM

The Washtenaw County Road Commission is anticipating it will receive $17,450,000 in Michigan Transportation Fund (MTF) revenues for 2014. The Road Commission is anticipating the same amount of MTF revenues for 2015.

The Road Commission has recognized that local road funds are inadequate to maintain the 1,064 centerline miles of local roads in Washtenaw County; the Road Commission has historically transferred funds from the Primary Road Fund to the Local Road Fund, even though this transfer severely limits maintenance activity on our primary road system.

A summary of our 2015 budget as approved by the Board of Road Commissioners at its regular meeting on December 2, 2014 (RC14-416) is provided as follows.

2015 Road Commission Budget

Revenues

Michigan Transportation Fund	$ 17,450,000
Federal/ State Funds	$ 8,846,000
Trunkline Maintenance	$ 2,328,000
Township Contributions	$ 4,318,000
Other Contributions	$ 4,710,000
Miscellaneous Income	$ 2,240,000
Total	$ 39,892,000

Expenditures

Administration	$ 935,000
Operations	$ 8,519,000
Engineering	$ 2,622,000
Non-Departmental	$ 6,212,000
Debt Service	$ 1,137,000
Road Improvement Program	$ 21,816,000
Total	$ 41,240,000

Matching Funds

The Road Commission has allocated a total of $500,000 in 2015 for the conventional Local Road Matching Program. This consists of a countywide allocation of $423,077 for matching programs on local roads in all twenty townships based on the distribution formula used by the Michigan Department of Transportation to allocate local road funds to the 83 counties of Michigan. In addition to this, recognizing the fact that the urban local roads receive a higher allocation of Michigan Transportation Funds, $76,923 is allocated based on the amount of urban local miles within eligible townships. Ann Arbor, Augusta, Dexter, Lima, Lodi, Northfield, Pittsfield, Salem, Saline, Scio, Superior, Sylvan, Webster, York and Ypsilanti Townships are within the urban area and are eligible for these additional matching funds.

The Road Commission has allocated $200,000 for the 2015 Drainage Matching Program for local uncurbed, non-subdivision roads. The Road Commission has recognized the need for directing more resources towards improving the drainage along our local roads. The drainage

matching program is in addition to the conventional local road matching program available to the Townships. Some of the key features of drainage matching program include:

- Funding distribution is based on the total uncurbed, non-subdivision local road centerline mileage for each township
- Eligible work activities are limited to uncurbed, non-subdivision local roads
- Eligible work activities include roadside berm removal, ditch establishment & restoration, large culvert or bridge replacement

TOWNSHIP	2014 CONVENTIONAL LOCAL ROAD MATCHING PROGRAM	2015 CONVENTIONAL LOCAL ROAD MATCHING PROGRAM	2014 DRAINAGE MATCHING PROGRAM	2015 DRAINAGE MATCHING PROGRAM
Salem	$ 16,398	$ 16,373	$ 10,493	$ 10,493
Northfield	24,697	24,916	13,732	13,732
Webster	17,940	17,714	11,792	11,792
Dexter	15,999	15,974	6,932	6,932
Lyndon	11,950	11,956	10,048	10,048
Sylvan	13,756	13,731	11,489	11,489
Lima	14,676	15,393	12,745	12,745
Scio	38,179	37,857	7,157	7,157
Ann Arbor	10,817	10,759	3,833	3,833
Superior	31,568	31,537	8,793	8,793
Ypsilanti	104,924	104,199	5,924	5,924
Pittsfield	68,644	68,504	4,669	4,669
Lodi	22,704	22,538	12,879	12,879
Freedom	13,519	13,526	13,684	13,684
Sharon	10,401	10,406	9,971	9,971
Manchester	14,261	14,268	13,176	13,176
Bridgewater	11,719	11,725	11,481	11,481
Saline	9,515	9,471	8,125	8,125
York	27,261	27,101	8,521	8,521
Augusta	21,071	22,054	14,554	14,554
	$ 500,000	$ 500,000	$ 200,000	$ 200,000

* Totals do not equal sum of individual allocations, because of rounding

The WCRC Matching Program is subject to the following conditions:

(a) Township Assistance

In order to allow local road improvements to proceed in a timely manner, townships are asked to assist Road Commission personnel in acquiring necessary tree removal and grading permits, holding public hearings and coordinating any necessary citizen contacts.

(b) Project Overruns

Road Commission staff will provide an estimated cost for each individual project to be included within the agreement between the township and the Road Commission. If, prior to beginning an individual project, it is determined that the original cost estimate will not cover project costs, the Road Commission will notify the township to determine, if the

township desires to proceed with the project with a reduced scope or an additional funding commitment. Budgets are closely monitored on each project and every effort is made to avoid overruns. Any unexpected project cost overrun shall be taken from any unexpended funds remaining in that township's total township agreement. If the overrun exceeds the total township agreement, the Road Commission may bill the township up to an additional 10 percent of the total agreement amount with the township. At the township's option, such overruns can be taken from the following years matching funds.

(c) Billing Procedures

As has been the practice for the past several years, the first 40 percent of the total Matching Program for construction and heavy maintenance projects will be due in June or 30 days from receipt of the first invoice. A second 40 percent will be due in August or 30 days from receipt of the second invoice. A final billing will be due in December or 30 days from receipt of final invoice. Any credits due townships will be returned at the time of final billing or credited to the following year, as determined by the township. The above billing methods apply only to those projects considered to be construction and heavy maintenance and does not apply to those projects considered routine maintenance such as dust control, street sweeping, etc. These will be billed at cost to the date at time of billing.

(d) Administrative Fee

In addition to direct costs, the Washtenaw County Road Commission will charge an 8% administrative fee on all township improvement projects on local roads. The overhead charge is intended to cover costs not directly attributable to the individual project. The administrative fee is not charged for seasonal dust control or work performed by non-road commission crews.

(e) Primary Road Matching

Any township board may, at their option, request that a part or all of their allocated matching WCRC funds, along with an equal amount of township funds, be used on a Primary Road Project within their township boundaries.

(f) Reallocation of Funds

Any township that has not notified the WCRC of their intent to utilize matching funds by May 22, 2015 will forfeit all rights to the use of the matching money. The WCRC will determine the amount of unused matching funds and reallocate these funds to primary road maintenance.

(g) Local Road and Bridge Planning /Engineering Projects

The Road Commission provides planning and engineering services for local road and bridge projects. If the township requests the Road Commission to provide these services, the township is expected to enter into an agreement with the Road Commission to reimburse the Commission for 50% of the cost for these services. Depending on the scope of the project and the amount of matching funds available to a township, these services may be eligible for the matching program.

The Road Commission recognizes that local road bridges are vital assets that require significant resources to maintain and replace. This program fosters a cooperative approach with the Townships, as we partner to renovate or replace deficient bridges.

The Road Commission will continue to provide routine maintenance service and the federally mandated biennial inspections at our expense. Also, we will continue to seek federal grant funding to assist with any major renovation or replacement costs. All costs beyond the grant amounts for major renovation or replacement costs on local bridge projects will be shared equally with the townships. Available local matching funds can be utilized to cover 50% the townships share of a local road bridge project costs.

(h) Shoulder Paving

If a local road is to be paved, the Road Commission will pay the cost of paving the shoulders when it is feasible. The Road Commission has agreed to assume this cost because of the enhanced safety for vehicles and non-motorized travel and reduced maintenance costs inherent in paved shoulders. This provision will not apply to subdivision streets.

(i) Dust Control

Conventional matching funds can be used for dust control only for solid applications.

(j) Local Matching Fund Carryover

If a township determines that they desire to carry over the funds allocated for a given year into the following year, the township must provide written notification to the Road Commission that they are requesting this carryover, and identify an eligible project for which the funds will be held. The Road Commission carry-over fund will be preserved for one year. Beyond this point the funds will be reallocated as stated in Paragraph f. The carryover option allows the township to accumulate the funds that are allocated with the previous year allocation; in other words, the carry over funds cannot exceed the previous year's allocation.

NORTHFIELD TOWNSHIP 2014 ACTIVITIES

LOCATION	PROJECT	WCRC COST	TOWNSHIP COST	TOTAL COST
PRIMARY				
Maintenance	Roads	$ 154,358.89		$ 154,358.89
Maintenance	Winter	85,213.81		85,213.81
Maintenance	Traffic	39,243.55		39,243.55
Rushton Rd, Seven Mile to Eight Mile	Limestone	52,515.29		52,515.29
Seven Mile Rd, Spencer to E. Shore	Chipseal	27,854.47		27,854.47
N. Territorial Rd, Whit Lk to Web Ch	Chipseal	22,788.34		22,788.34
N. Territorial Rd, Dixboro to Earhart	Mill & Overlay	155,000.00		155,000.00
N. Territorial Rd, Nollar to US-23	Chipseal	24,134.93		24,134.93
Sutton Rd btwn Nthfld Church & Pont Trl	Crossroad Culvert	10,390.50		10,390.50
		$ 571,499.78		$ 571,499.78
LOCAL				
Maintenance	Roads	$ 276,664.21		$ 276,664.21
Maintenance	Winter	70,619.19		70,619.19
Maintenance	Traffic	11,180.41		11,180.41
Local Road	Dust Control	38,347.20	11,737.02	50,084.22
Dixboro Rd, N. Territorial to Five Mile	Limestone	18,451.55	38,751.27	57,202.82
Township Wide Limestone	Limestone	8,240.41	17,306.21	25,546.62
Hellner Rd, 995' s/N. Territorial Rd	Crossroad Culvert	1,587.70		1,587.70
Five Mile Rd, 1,070' w/Earhart Rd	Crossroad Culvert	3,231.58		3,231.58
* Eight Mile Rd, Rushton to Spencer	Limestone	10,390.92	25,400.58	169,144.50
		$ 438,713.17	$ 93,195.08	$ 665,261.25

* Green Oak Costs - 133,353.00

NORTHFIELD TOWNSHIP

PROPOSED 2015 LOCAL ROAD PROJECTS

- JOY ROAD, DIXBORO ROAD TO EARHART ROAD
  Work to include ditching, roadside berm removal, tree trimming, shaping the existing surface, the application of 4" (C.I.P.) 23a limestone (approximately 2,850 tons) with associated dust control and project restoration. This is a proposed township share project with Ann Arbor Township.
  Estimated project cost: $ 118,000
  Estimated cost to Northfield Township: $ 59,000

- JOY ROAD, EARHART ROAD TO PONTIAC TRAIL
  Work to include ditching, roadside berm removal, tree trimming, shaping the existing surface, the application of 4" (C.I.P.) 23a limestone (approximately 2,600 tons) with associated dust control and project restoration. This is a proposed township share project with Ann Arbor Township.
  Estimated project cost: $ 92,100
  Estimated cost to Northfield Township: $ 46,050

- JOY ROAD, PONTIAC TRAIL TO NOLLAR
  Work to include ditching, roadside berm removal, tree trimming, shaping the existing surface, the application of 8" (C.I.P.) 23a limestone (approximately 5,250 tons) with associated dust control and project restoration. This is a proposed township share project with Ann Arbor Township.
  Estimated project cost: $ 178,400
  Estimated cost to Northfield Township: $ 89,200

- JOY ROAD, NOLLAR ROAD TO WHITMORE LAKE ROAD
  Work to include ditching, roadside berm removal, tree trimming, shaping the existing surface, the application of 8" (C.I.P.) 23a limestone (approximately 5,010 tons) with associated dust control and project restoration. This is a proposed township share project with Ann Arbor Township.
  Estimated project cost: $ 152,600
  Estimated cost to Northfield Township: $ 76,300

- JOY ROAD, WHITMORE LAKE ROAD TO HELLNER ROAD
  Work to include ditching, roadside berm removal, tree trimming, shaping the existing surface, the application of 8" (C.I.P.) 23a limestone (approximately 4,950 tons) with associated dust control and project restoration. This is a proposed township share project with Ann Arbor Township.
  Estimated project cost: $ 201,500
  Estimated cost to Northfield Township: $ 100,750

- JOY ROAD, HELLNER ROAD TO MAPLE ROAD

  Work to include ditching, roadside berm removal, tree trimming, shaping the existing surface, the application of 8" (C.I.P.) 23a limestone (approximately 2,550 tons) with associated dust control and project restoration. This is a proposed township share project with Ann Arbor Township.

  Estimated project cost: $ 126,100

  Estimated cost to Northfield Township: $ 63,050

- JENNINGS ROAD, E.O.P. TO KEARNEY ROAD

  Work to include ditching, roadside berm removal, tree trimming, shaping the existing surface, the application of 8" (C.I.P.) 23a limestone (approximately 6,100 tons) with associated dust control and project restoration.

  Estimated project cost: $ 221,900

- JENNINGS ROAD, KEARNEY ROAD TO TOWNSHIP LINE

  Work to include ditching, roadside berm removal, tree trimming, shaping the existing surface, the application of 8" (C.I.P.) 23a limestone (approximately 1,600 tons) with associated dust control and project restoration.

  Estimated project cost: $ 69,500

- JENNINGS ROAD, US-23 ON-RAMP TO E.O.P

  Work to include roadside berm removal, pulverizing the existing surface, the placement of a 3" HMA overlay, placement of limestone shoulders and associated project restoration. Final cost to be determined by competitive bid.

  Estimated project cost: $ 139,800

- NOLLAR ROAD, N. TERRITORIAL ROAD TO FIVE MILE ROAD

  Work to include ditching, roadside berm removal, tree trimming, shaping the existing surface, the application of 8" (C.I.P.) 23a limestone (approximately 3,950 tons) with associated dust control and project restoration.

  Estimated project cost: $ 137,100

- NOLLAR ROAD, N. TERRITORIAL ROAD TO NORTHFIELD CHURCH ROAD

  Work to include ditching, roadside berm removal, tree trimming, shaping the existing surface, the application of 8" (C.I.P.) 23a limestone (approximately 6,800 tons) with associated dust control and project restoration.

  Estimated project cost: $ 228,100

- NOLLAR ROAD, NORTHFIELD CHURCH ROAD TO JOY ROAD

  Work to include ditching, roadside berm removal, tree trimming, shaping the existing surface, the application of 8" (C.I.P.) 23a limestone (approximately 5,330 tons) with associated dust control and project restoration.

  Estimated project cost: $ 141,800

- EARHART ROAD, N. TERRITORIAL ROAD TO FIVE MILE ROAD

  Work to include ditching, roadside berm removal, tree trimming, shaping the existing surface, the application of 8" (C.I.P.) 23a limestone (approximately 8,050 tons) with associated dust control and project restoration.

  Estimated project cost: $ 177,200

WASHTENAW COUNTY ROAD COMMISSION

2015 DUST CONTROL MATERIAL OPTIONS

MATERIAL	COST/GALLON APPLIED
Contract Brine	$0.1310
Calcium Chloride	$0.58

NORTHFIELD TOWNSHIP OPTIONS

49.61 miles certified local gravel roads

Contract Brine

(Recommended application rate – 2,000 gallons per mile)

Two Solid Applications 198,440 gallons = $ 25,995.64

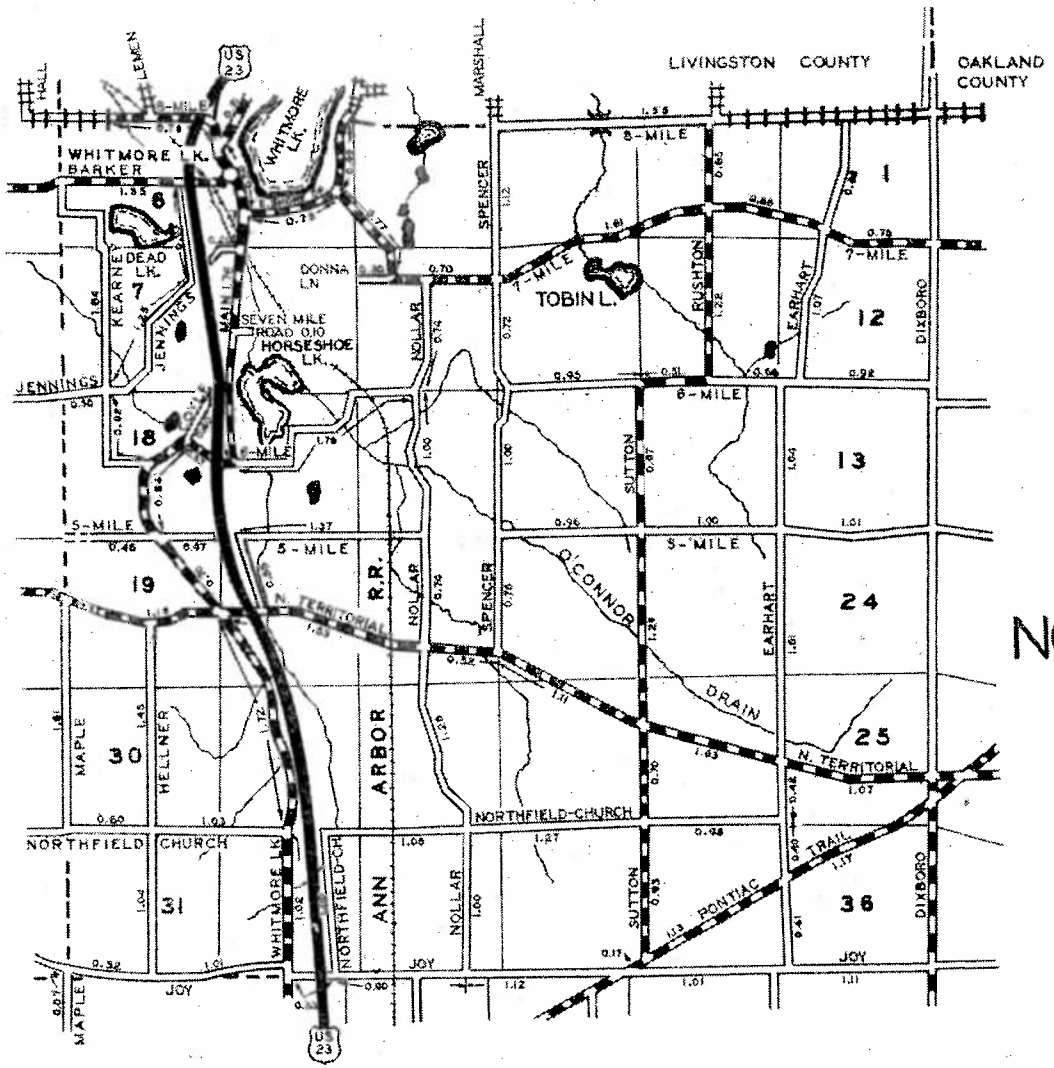
Calcium Chloride

(Recommended application rate – 2,000 gallons per mile)

Two Solid Applications 198,440 gallons = $ 115,095.20

For Information Only

2014 Use: 184,110 gallons Contract Brine
(2 solid applications)



LEGEND

COUNTY LINE
CORPORATE LIMITS
STATE TRUNKLINE
COUNTY PRIMARY
COUNTY LOCAL
ADJACENT COUNTY
CITY OR VILLAGE STREET

PRIMARY ROAD SYSTEM IS 30.85 MILES

LOCAL ROAD SYSTEM IS 48.12 MILES

I HEREBY CERTIFY THAT THE ROADS SHOWN HEREON BY SYMBOL OR IN RED AS PRIMARY ROADS AND THOSE SHOWN HEREON BY SYMBOL OR IN GREEN AS LOCAL ROADS ARE IN USE AND ARE UNDER THE JURISDICTION OF THE COUNTY ROAD COMMISSION.

CHAIRMAN _____ DATE _____

NORTHFIELD TWP.

N
W E
S

SCALE 0 1 MILE
One Inch Equals 3080 Ft.

Prepared by

Federal Aid Eligible Paved Roads

Washtenaw County Road Commission

Not to Scale

2014 Pavement Surface Evaluations and Ratings (PASER)

- 10 - New construction
- 9 - Like new condition, recent overlay, no defects.
- 8 - Occasional tranverse crack, all cracks tight.
- 7 - First signs of aging. Tranverse cracks 10'-40' apart. No raveling or rutting. Few, if any patches.
- 6 - Shows signs of aging, sound structural condition. First signs of of block cracking. Slight raveling, polishing, flushing. No rutting.
- 5 - Surface aging, sound structural condition. Cracks open >1/2". First signs of cracking at edges. Some patching and wedging. Moderate/severe raveling.
- 4 - Significant aging and first signs of need for strengthening. Longitudinal cracking in wheelpath. Rutting 1/2"-1" deep. Patching in fair condition.
- 3 - <25% alligator cracking. Moderate rutting 1"-2" deep. Severe block cracking. Occasional pothole. Cracks showing erosion.
- 2 - Severe deterioration. >25% alligator cracking. Severe rutting >2". Closely spaced cracks with erosion. Potholes frequent.
- 1 - Loss of surface integrity. Extensive surface distress.

Date: 05Feb2015
Note: 2014 Paser Ratings

Federal Aid Eligible Paved Roads

Washtenaw County Road Commission

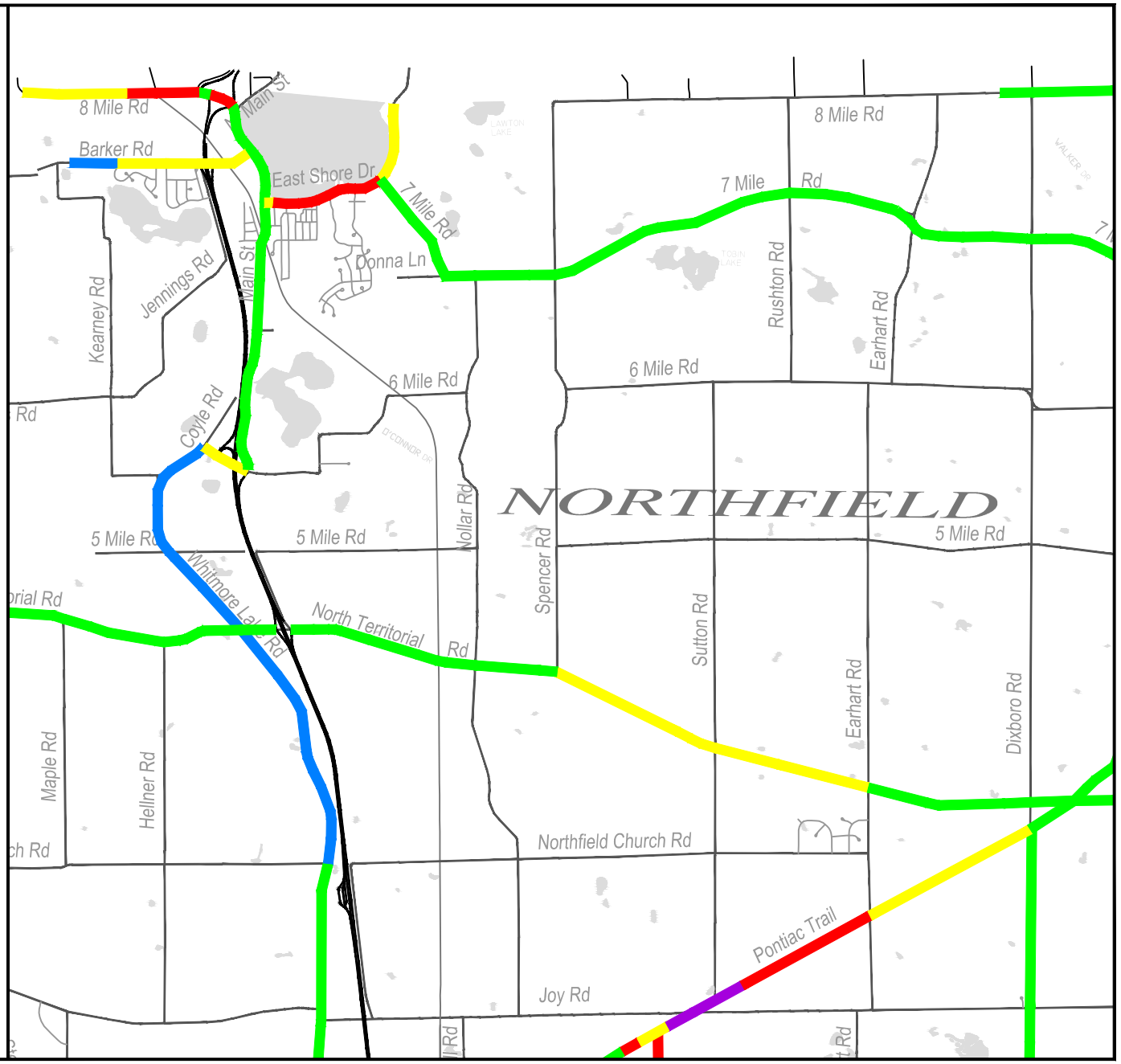
Not to Scale

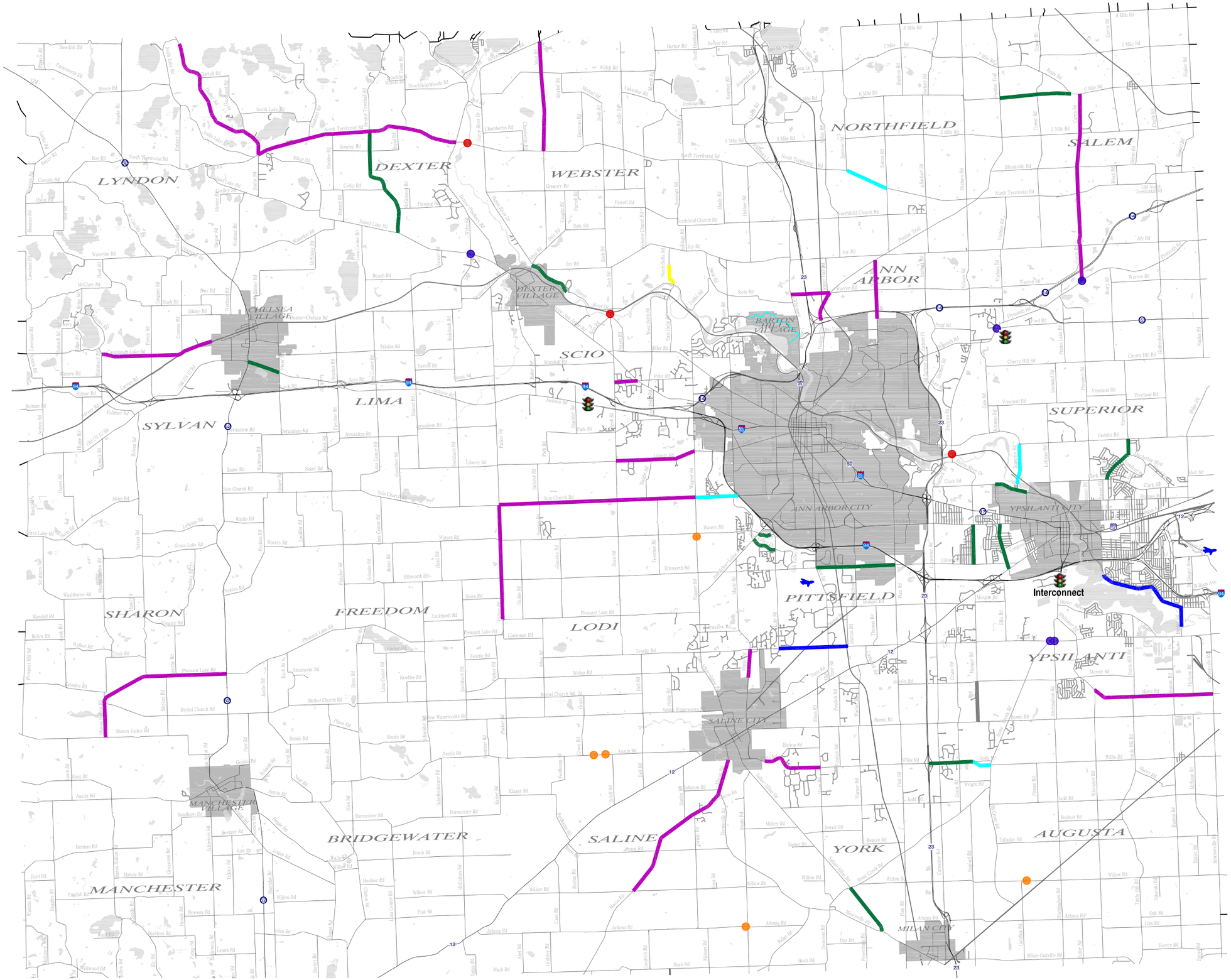
2014 Pavement Surface Evaluations and Ratings (PASER)

- Crack Seal - PASER Rating 6-9
- Sealcoat - PASER Rating 5
- Overlay - PASER Rating 4
- Mill/Overlay - PASER Rating 3
- Reconstruct - PASER Rating 1-2

Northfield Township

Date: 30Jan2015
Note: 2014 Fed. Aid Ratings





2015 Road & Bridge Improvement Projects

Not to Scale

Legend - Proposed Projects

- Reconstruction
- Mill/Overlay
- Pulverize/Overlay
- Chipseal
- Non-Materized Path
- Limestone Overlay
- Bridge/Culvert Replacement
- Bridge Deck Maintenance
- Intersection Project
- Signal Improvement

Date: 02/20/2015

Planned Capital Investments - Michigan Transportation Fund Obligations

Project Name	Planning Area	Project Limits	Project Type	Year	Total MTF Cost (1,000's)	Total Project Cost (1,000's)
Asset Mgmt/GIS	WCRC	Countywide	GIS/Mapping	2015-2019	$50	$50
Equipment/Fleet	WCRC	Countywide	Equipment	2015-2019	$1,625	$1,625
Facility and Grounds	WCRC Property	Countywide	Facility & Grounds	2015-2019	$375	$375
Northeast Service Center	WCRC Property	Northeast Service Center	Site Civil Design	2015	$100	$100
Overlay Program	Countywide	Countywide	Resurface	2015-2019	$0	$0
Primary Limestone/Gravel	Countywide	Countywide	Resurface	2015-2019	$250	$250
Sealcoat Program	Countywide	Countywide	Resurface	2015-2019	$1,500	$1,500
Primary Bridge Program	Countywide	Countywide	Bridge	2015-2019	$450	$450
Austin Road Bridge	Saline	Over Saline River	Bridge - Replace	2015	$200	$1,150
Austin Road Bridge	Saline	Over Bauer Drain	Bridge - Replace	2015	$170	$556
Dixboro Road Bridge	Ann Arbor	Over Huron River	Bridge - Preserve Deck	2015	$103	$592
North Territorial Road Bridge	Dexter	Over Huron River	Bridge - Preserve Deck	2015	$47	$270
Wagner Road Culvert	Lodi	Over Unnamed Tributary	Bridge - Replace	2015	$115	$460
Willow Road Bridge	Augusta	Over Buck Creek	Bridge - Replace	2015	$250	$250
Zeeb Road Bridge	Scio	Over Huron River	Bridge - Preserve Deck	2015	$40	$230
Jerusalem Road Bridge	Lima	Over Mill Creek	Bridge - Preserve Deck	2016	$46	$189
Maple Road Bridge	Saline/York	Over Saline River	Bridge - Preserve Deck	2016	$37	$156
McGregor Road Bridge	Dexter	Over Portage Lake Outlet	Bridge - Replace	2016	$538	$2,239
Mooreville Road Bridge	York	Over Saline River	Bridge - Preserve Deck	2016	$49	$206
Wiard Road Bridge	Ypsilanti	Over Tyler Road	Bridge Removal	2016	$1,251	$2,500
Limestone Program - PA 283	Countywide	Countywide	Resurface	2015	$0	$80
HMA Resurfacing Program - PA 283	Countywide	Countywide	Resurface	2015	$0	$2,735
Sealcoat Program - PA 283	Countywide	Countywide	Resurface	2015	$0	$1,370
Pavement Preservation STL	Countywide	Countywide	Resurface	2015-2019	$336	$1,682
Pavement Preservation STU	Countywide	Countywide	Resurface	2015-2019	$531	$2,657
Pavement Preservation TEDF-D	Countywide	Countywide	Resurface	2015-2019	$181	$912
Resurfacing 3R STL	Countywide	Countywide	Resurface	2015-2019	$275	$1,377
Resurfacing 3R STU	Countywide	Countywide	Resurface	2015-2019	$662	$3,314
Resurfacing 3R TEDF-D	Countywide	Countywide	Resurface	2015-2019	$205	$1,024
Hewitt Road	Ypsilanti	Michigan Ave to Packard Rd	Resurface	2015	$153	$706
Huron River Drive/Superior Road	Ypsilanti	Hewitt Rd to Cornell St	Resurface	2015	$122	$562
Huron Road	Ypsilanti	Huron River Drive to I-94	Signal Upgrade	2015	$0	$449
Island Lake Road	Dexter	At Wylie Road	Safety - Hillcut	2015	$68	$403
Jennings Road	Webster	N. Territorial Rd to Twp Line	Pave Gravel Rd	2015	$300	$900
North Delhi Road	Scio	Huron River Dr to Eastgate Dr	Pave Gravel Rd	2015	$0	$700
Old US-12	City of Chelsea	M-52 to Freer Rd	Resurface	2015	$114	$374
Plymouth Road	Superior	At Curtis Road	Safety - Turn Lanes	2015	$53	$242
Plymouth Road	Superior	At Ford Road	Safety - Turn Lanes/Signal	2015	$113	$518
Scio Township SAD	Scio	Various Roads in Scio Twp	Resurface	2015	$0	$2,500
Textile Intersections	Ypsilanti	Stony Creek and Hitchingham	Safety	2015	$0	$900
Traffic Calming Program	Countywide	Various Locations	Safety	2015	$0	$500
Ann Arbor-Saline Road	Lodi	At Textile	Safety - Intersection	2016	$125	$625
Huron Road/Whittaker Road	Ypsilanti	Stony Creek Rd to I-94	Resurface	2016	$125	$625
Liberty Road	Scio	Park Rd to Stag's Leap Ln	Drainage, Limestone	2016	$0	$700
Prospect Road	Superior/Ypsilanti	Holmes Rd to Geddes Rd	Resurface	2016	$50	$250
Rawsonville Road	Augusta	Willow Rd to Talladay Rd	Resurface	2016	$0	$625
Textile Road	Lodi	Ann Arbor-Saline Rd to Maple Rd	Resurface	2016	$100	$500
Whittaker Road	Ypsilanti	At Merritt Rd	Safety - Roundabout	2016	$669	$1,569
Carpenter Road	York/Pittsfield	Judd Rd to Textile Rd	Resurface	2017	$125	$625
Harris Road	Ypsilanti	Michigan Ave to Holmes Rd	Reconstruct	2017	$1,175	$1,675
Rawsonville Road	Augusta	Talladay Rd to Judd Rd	Resurface	2017	$0	$400
Willis Road	Augusta	Hitchingham Rd to Whittaker Rd	Safety	2017	$355	$900
State Road	Pittsfield	Morgan Rd to Ellsworth Rd	Preliminary Engineering	2018	$0	$250
				Totals	$13,053	$45,999

Washtenaw County Road Commission

2013 PASER Ratings Paved Local Roads & Non-Federal Aid Roads

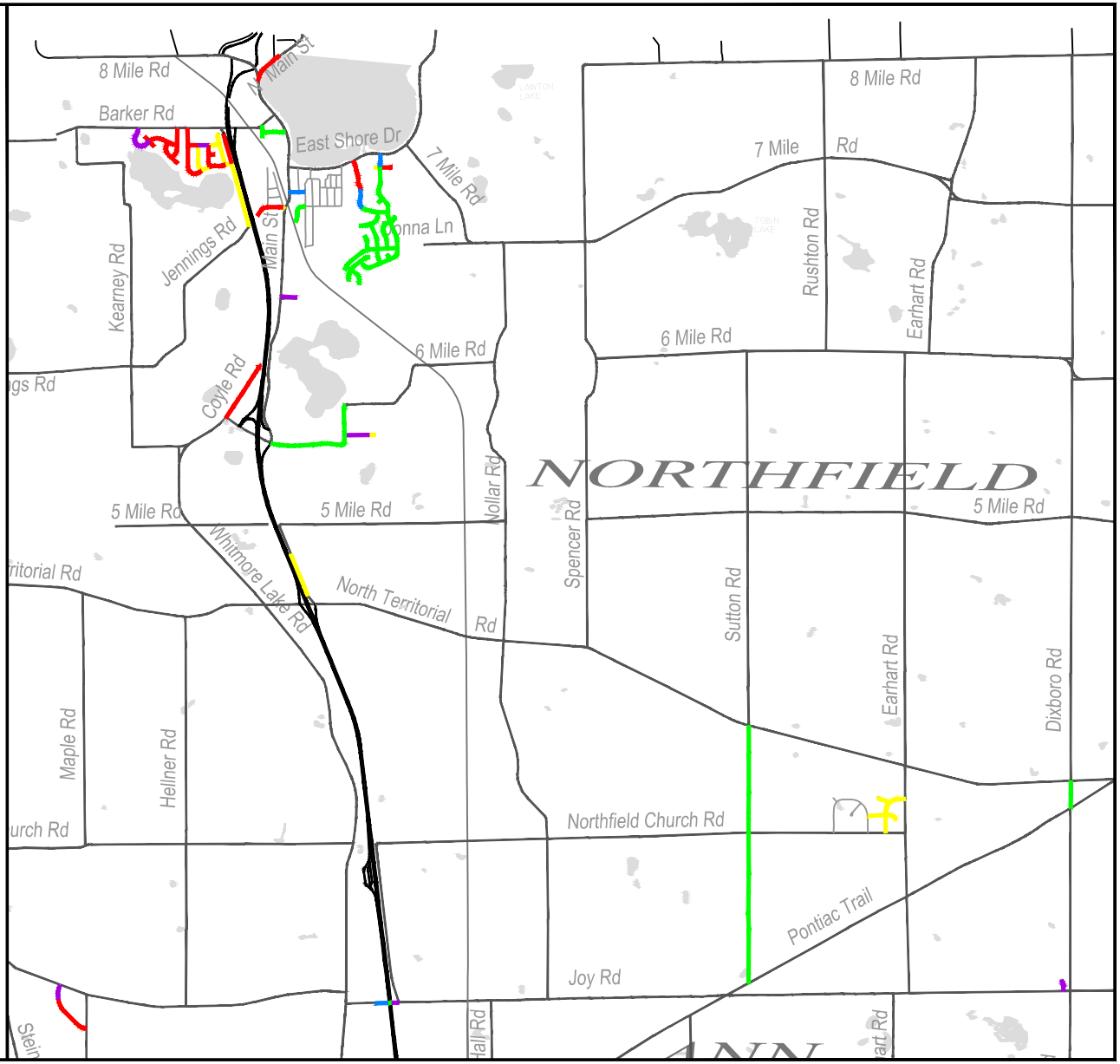
Not to Scale

2013 Pavement Surface Evaluations and Ratings (PASER)

	Crack Seal - PASER Rating 6-9	5.30 miles
	Sealcoat - PASER Rating 5	0.30 miles
	Overlay - PASER Rating 4	0.60 miles
	Mill/Overlay - PASER Rating 3	2.58 miles
	Reconstruct - PASER Rating 1-2	1.90 miles
	Total miles:	10.68 miles

Northfield Township

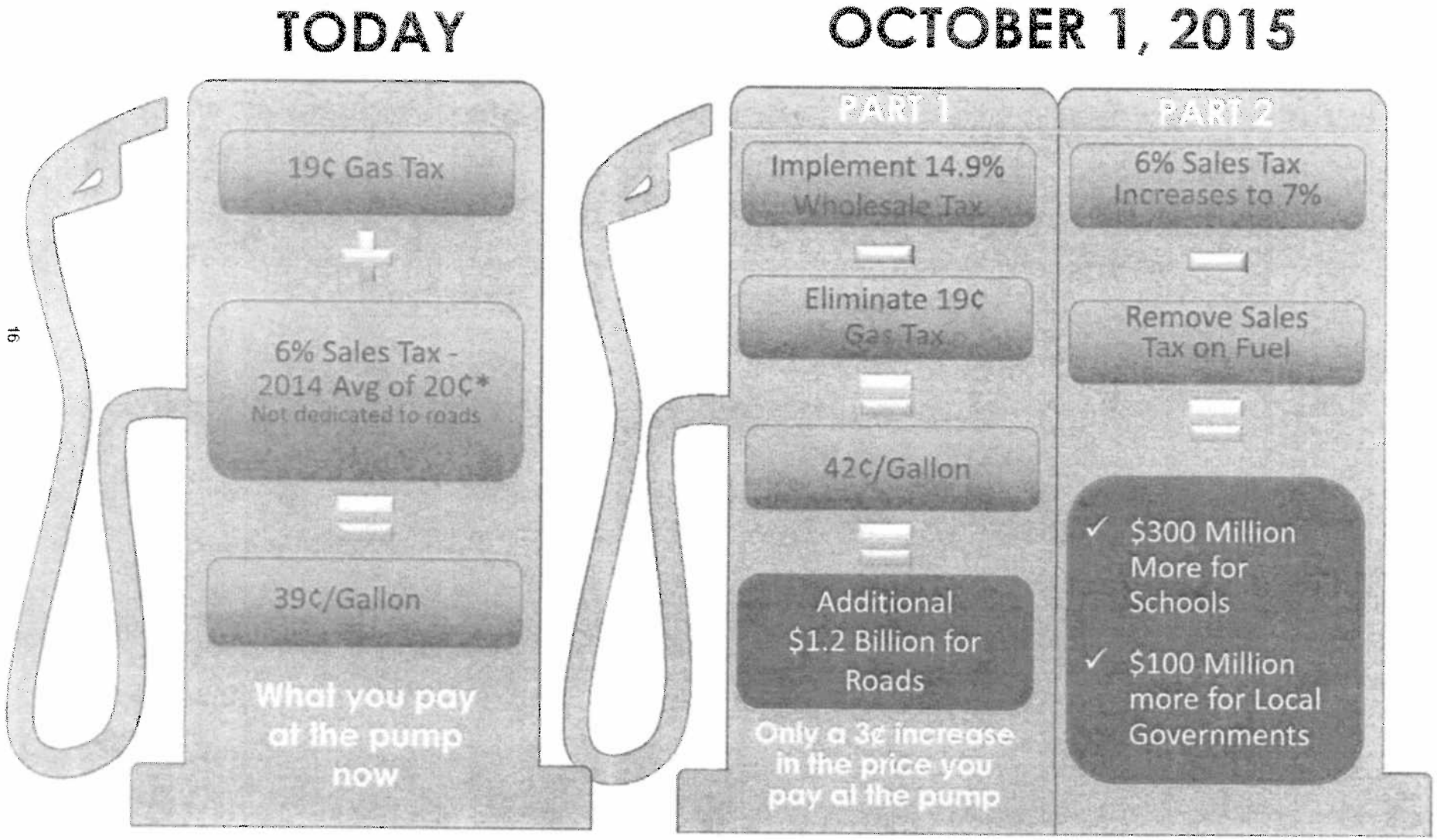
Date: 05Feb2015
Note: 2013 PASER Ratings



2015-03 Washtenaw County Act PA 283

Road	WCC Dist	Note	Project Limits	Type of Work	Length (miles)	Est. Cost	Est. Cost-0.5	TaxRev/0.50
Scio Church Road	1	A-3	Wagner to I-94	Pulverize & Overlay	1.00	$ 200,000		
North Territorial Road	1		Hadley to Dexter Pinckney	Sealcoat	5.00	$ 125,000		
Dexter Townhall Road	1		Quigley to North Territorial	Mill & Overlay	0.50	$ 75,000		
Huron River Drive	1		Mast to Dexter-Huron Metropark	Mill & Overlay	1.50	$ 225,000		
Hadley Road	1		North Territorial to county line	Chipseal & Fog Seal	3.80	$ 130,000		
Scio Church Road	1	A-3	Wagner to Parker	Sealcoat	5.00	$ 62,500		
Liberty Road	1		Zeeb to Wagner	Sealcoat	2.00	$ 50,000		
Pratt Road	1		Zeeb to Dexter - Ann Arbor	Wedge & Dbl Sealcoat	0.60	$ 40,000		
Cavanagh Lake Road	1		Kalmbach to Chelsea city limits	Wedge & Sealcoat	3.00	$ 75,000	$ 982,500	$ 1,000,000
					22.40			
North Territorial Road	2		Spencer to Sutton	Pulverize & Overlay	1.00	$ 300,000		
Superior	2		Huron River Drive to Geddes	Pulverize/Mill & Overlay	1.00	$ 280,000		
Mast Road	2		North Territorial to county line	Sealcoat	3.00	$ 75,000		
MacArthur Blvd	2	A-6	Clark to Harris	Mill & Overlay	0.90	$ 70,000		
Nixon Road	2		Joy to Ann Arbor city limits	Sealcoat	1.30	$ 32,500		
Warren Road	2		Whitmore Lake Rd to Pontiac Trail	Sealcoat	1.00	$ 25,000		
Pontiac Trail	2		M14/US23 to Warren	Sealcoat	0.70	$ 17,500		
Curtis Road	2		Plymouth to Six Mile	Double Sealcoat	5.00	$ 220,000		
Harris Road	2		MacArthur to Geddes	Mill & Overlay	0.40	$ 60,000	$ 1,080,000	$ 1,080,000
					14.30			
Willis Road	3		US23 to Bolla	Mill & Overlay	1.00	$ 150,000		
Willis Road	3		Moon to Saline city line	Wedge & Sealcoat	1.50	$ 60,000		
Macon/Jordan Road	3		Willow to Saline city line	Sealcoat	3.60	$ 90,000		
Scio Church Road	3	A-1	Wagner to I-94	Pulverize & Overlay	1.00	$ 100,000		
Parker Road	3		Pleasant Lake to Scio Church	Sealcoat	3.00	$ 75,000		
Pleasant Lake Road	3		M52 to Sharon Hollow	Sealcoat	3.20	$ 80,000		
Sharon Hollow Road	3		Pleasant Lake to Sharon Valley	Wedge & Sealcoat	1.00	$ 35,000		
Scio Church Road	3	A-1	Wagner to Parker	Sealcoat	5.00	$ 62,500	$ 652,500	$ 660,000
					19.30			
Golfside Road	4	A-5,6	Ellsworth to Packard	Mill & Overlay	1.00	$ 100,000		
Oak Valley Drive	4		Lohr to Ann Arbor-Saline	Remove pvmt & resurface	0.70	$ 400,000		
Maple Road	4		Textile to Saline city line	Sealcoat & drainage	1.00	$ 40,000		
Ellsworth Road	4	B-0.33	State Road to Platt	Mill & Overlay w/ bike lanes	2.00	$ 250,000		
Munger Road	4	A-5,6	Bemis to Merritt	6" limestone	1.00	$ 40,000	$ 830,000	$ 800,000
					5.70			
MacArthur Blvd	5 & 6	A-2	Clark to Harris	Mill & Overlay	0.90	$ 135,000		
Munger Road	5 & 6	A-4	Bemis to Merritt	6" limestone	1.00	$ 40,000		
Golfside Road	5 & 6	A-4	Ellsworth to Packard	Mill & Overlay	1.00	$ 100,000		
New Meadow	5 & 6		Willowbridge to Big Pine	Remove pvmt & resurface	0.50	$ 200,000		
Willis Road	5 & 6		Bolla to Stony Creek	Pulverize & Overlay	0.30	$ 90,000		
Martz Road	5 & 6		Rawsonville to Whittaker	Sealcoat	3.00	$ 75,000	$ 640,000	$ 620,000
					6.70			
City of Ann Arbor								
Ellsworth Road	7, 8 & 9		State Street to Platt	Mill & Overlay w/ bike lanes	2.0	$ 600,000		
Eisenhower	7, 8 & 9		AA-Saline to Boardwalk	Mill & Fill	1.4	$ 580,000		
State Street	7, 8 & 9		Eisenhower to I-94	Mill & Fill	0.3	$ 350,000		
Packard	7, 8 & 9		State Street to Stadium Blvd	Mill & Fill w/bike lanes	0.9	$ 360,000		
Newport	7, 8 & 9		Miller to Sunset	Mill & Fill w/bike lanes	0.6	$ 200,000		
Huron River Dr	7, 8 & 9		City Limits to Bird Rd	Mill & Overlay	0.7	$ 120,000		
Huron Pkwy	7, 8 & 9		Plymouth to Hubbard	Mill & Fill	0.5	$ 280,000		
				Total	6.43	$ 2,420,000		
City of Chelsea								
Congdon Street	1		W. Summit to Lincoln St	Reconstuct w/ sidewalks and ADA ramps		$ 113,000		
City of Milan								
North Street	3		First to Michigan Ave	Reconstruct w/ sidewalks and ADA ramps		$ 45,000		
City of Saline								
North Harris	3		Michigan Ave (US-12) to Wallace	Resurfacing/reconstruction w/ sidewalk and ADA ramps		$ 204,000		
City of Ypsilanti								
Adams Street	6		Pearl to Cross	Reconstruct w/ sidewalk repairs and ADA ramps		$ 145,000		
Village of Barton Hills								
Whitmore Lake Road	2		AA City Limits north one mile	Resurfacing		$ 20,000		
Stein Road			Whitmore Lake west one mile	Resurfacing		$ 8,000		
				Total		$ 28,000		
Village of Dexter								
Central Street	1		Main to 5th St.	Mill & Overlay		$ 30,000		
Huron Street			Mast to Broad	Mill & Overlay		$ 20,000		
2nd Street			Hudson to Central	Mill & Overlay		$ 20,000		
Forest Street			Broad to Kensington	Pulverize & Overlay		$ 20,000		
Grand Street			Broad to Kensington	Pulverize & Overlay		$ 20,000		
				Total		$ 110,000		
Village of Manchester								
Woodland Way	3		Entire Street	Chipseal & Fog Seal		$ 14,000		
Glenwood Circle			Entire Street	Chipseal & Fog Seal		$ 7,000		
Riverbend			Clarkston to River	Chipseal & Fog Seal		$ 10,000		
				Total		$ 31,000		
Totals					74.83		$ 4,185,000	$ 3,096,000 $ 7,256,000

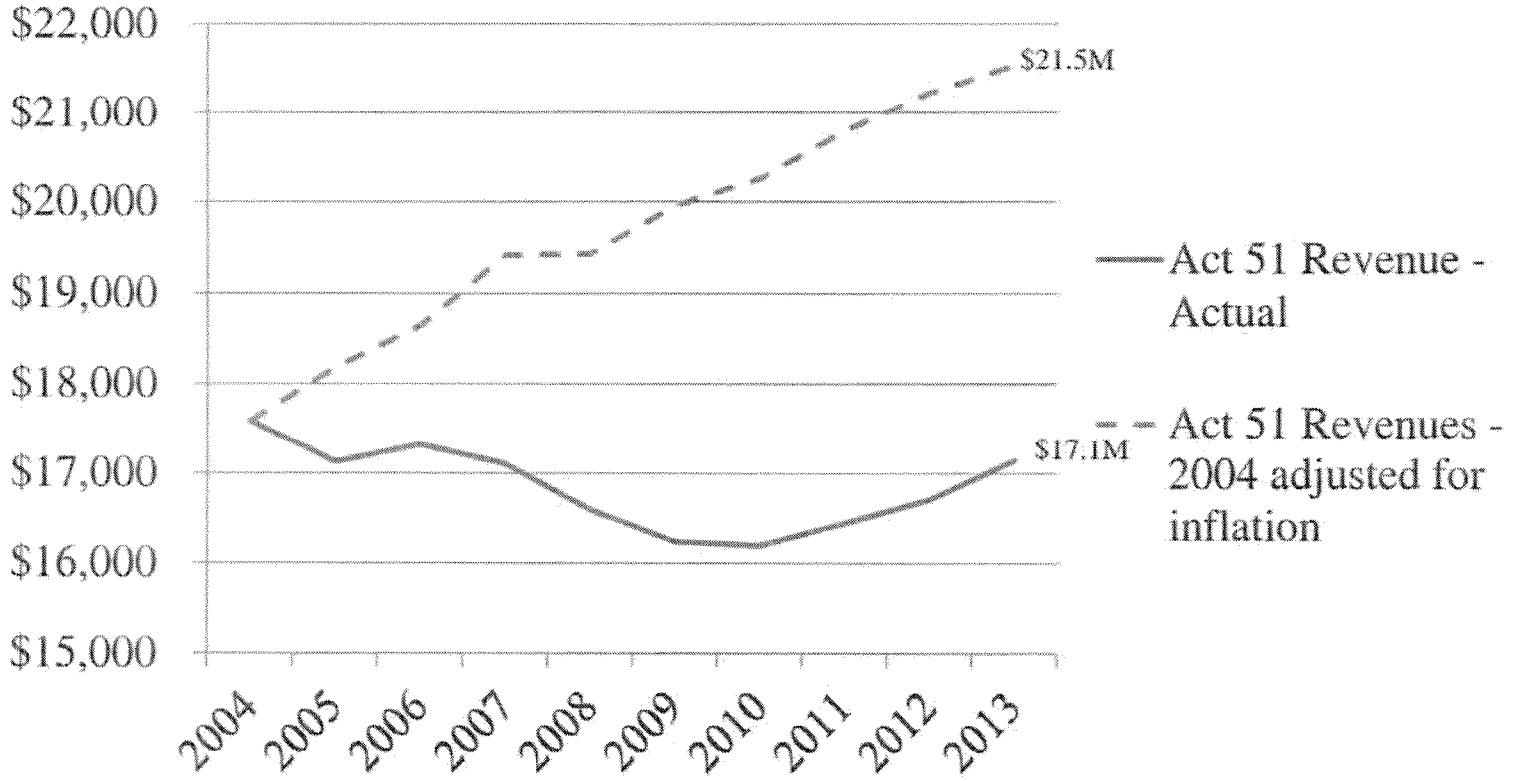
2015 Ballot Proposal



*Based on wholesale price of $3.33/gal

Washtenaw County Road Commission

Act 51 Revenue – Actual Compared to Inflationary Level
Years Ended December 31, 2004 through 2013



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TOWNSHIP CONTRIBUTION SUMMARY 2011 - 2014

TOWNSHIP	TOTAL 2011	TOTAL 2012	TOTAL 2013	TOTAL 2014	4 Year Average
ANN ARBOR	$ 49,000	$ 54,000	$ 122,000	$ 224,919	$ 75,000.00
AUGUSTA	$ 97,000	$ 202,000	$ 203,000	$ 192,169	$ 167,333.33
BRIDGEWATER	$ 32,000	$ 34,000	$ -	$ 40,306	$ 22,000.00
DEXTER	$ 90,000	$ 105,000	$ 82,000	$ 536,784	$ 92,333.33
FREEDOM	$ 42,000	$ 45,000	$ 57,000	$ 31,716	$ 48,000.00
LIMA	$ 47,000	$ 51,000	$ 70,000	$ 117,285	$ 56,000.00
LODI	$ 150,000	$ 415,000	$ 141,000	$ 483,502	$ 235,333.33
LYNDON	$ 20,000	$ 23,000	$ 16,000	$ 45,285	$ 19,666.67
MANCHESTER	$ 100,000	$ 128,000	$ 47,000	$ 64,246	$ 91,666.67
NORTHFIELD	$ 42,000	$ 62,000	$ 84,000	$ 93,195	$ 62,666.67
PITTSFIELD	$ 183,000	$ 792,000	$ 393,000	$ 880,819	$ 456,000.00
SALEM	$ 173,000	$ 296,000	$ 1,042,000	$ 459,327	$ 503,666.67
SALINE	$ 101,000	$ 92,000	$ 110,000	$ 143,066	$ 101,000.00
SCIO	$ 471,000	$ 1,245,000	$ 833,000	$ 1,108,452	$ 849,666.67
SHARON	$ 54,000	$ 34,000	$ 20,000	$ 14,755	$ 36,000.00
SUPERIOR	$ 161,000	$ 280,000	$ 322,000	$ 324,001	$ 254,333.33
SYLVAN	$ 17,000	$ 10,000	$ 8,000	$ 26,852	$ 11,666.67
WEBSTER	$ 135,000	$ 153,000	$ 89,000	$ 16,019	$ 125,666.67
YORK	$ 26,000	$ 34,000	$ 108,000	$ 418,883	$ 56,000.00
YPSILANTI	$ 1,190,000	$ 4,970,000	$ 2,794,000	$ 2,510,384	$ 2,984,666.67
	$ 3,180,000	**$ 9,025,000**	**$ 6,541,000**	**$ 7,731,963**	**$ 6,619,490.83**

Three year avg. 2012 - 2014 **$ 7,765,988**

Northfield Township WWTP Capacity Evaluation Report

March 18, 2015

PRESENTED TO

Northfield Township
8350 Main Street
Suite A
Whitmore Lake, Michigan 48189

PRESENTED BY

Tetra Tech
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Ann Arbor, Michigan 48108

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ACRONYMS AND ABBREVIATIONS

Acronym/Abbreviations	Definition
gpd	gallons per day
I/I	infiltration and inflow
MDEQ	Michigan Department of Environmental Quality
MG	million gallons
MGD	million gallons per day
NPDES	National Pollution Discharge Elimination System
REU	residential equivalent unit
SAD	special assessment district
SRF	State Revolving Fund
SSES	Sewer System Evaluation Survey
WWTP	wastewater treatment plant

EXECUTIVE SUMMARY

Northfield Township owns and operates a wastewater treatment plant and sanitary collection system, which has an average flow rate of 0.7 MGD and can be as high as 0.9 MGD during the spring season. This is less than the treatment capacity of 1.3 MGD, but with potential future development, improvements will be necessary. The Township engaged Tetra Tech to define the potential growth within the existing wastewater service area and identify improvements necessary at the wastewater treatment plant to meet the growth. Tetra Tech used flow data measured at the influent of the wastewater treatment plant as a basis point to estimate the magnitude and timeline for the improvements. The purpose of this report is to document the level of projected growth, summarize the analysis used to develop recommendations, and summarize the recommendations.

In addition to service areas within Northfield Township, flows from neighboring Green Oak Township are also treated at the Northfield Township wastewater treatment plant. Two service agreements between the two townships specifies that Green Oak Township can discharge an additional 227,000 gallons per day (equivalent to 873 REUs) to Northfield Township than it does currently.

The four sanitary sewer special assessment districts in Northfield Township have a potential to include an additional 1,865 REUs with a design average day flow of 485,000 gallons per day. Three of these SADs have been in place several years with only modest recent interest in development and in new connections being made.

However, should this development occur, improvements will be needed to meet both the additional daily flow and to meet the requirements of the state for wet weather flows up to the 25-year, 24-hour design storm. An increase in treatment capacity will address dry weather flow requirements, while a long-planned storage basin at the wastewater treatment plant will address wet weather flow requirements.

The initial recommendation is to construct a storage basin large enough to meet future needs up to the next expansion in treatment capacity because the cost of the storage will be less than the cost of the facilities required to increase the treatment rate. A 1.7 million gallon storage basin is recommended in the near term before much growth occurs. The basin size may be able to be made smaller through a more detailed analysis during the preliminary design of the facility. Previous analysis of the WWTP indicated the basin will equalize peak flows and allow an even higher rate of flow to be treated. When between 800 and 1,500 REUs of growth occurs (the lower end corresponding to no storage basin and the upper end corresponding to a condition where the storage basin is in place), a commitment to increase the WWTP capacity will need to be made.

If the Township decides to construct the recommended storage and wants to pursue construction funding through the State Revolving Fund Loan Program, additional intermediate studies are required to secure the funding. These intermediate studies will take multiple years to complete; therefore, pursuit of funds through the state's loan program will likely mean that funding will not be available until at least July 2017. Should the Township desire to initiate construction earlier, the Township will need to arrange its funding through another source.

1.0 INTRODUCTION

Northfield Township owns and operates a wastewater collection and treatment system that serves portions of Northfield and Green Oak Townships, but has not previously adopted a defined sanitary sewer service area. The Township has evaluated developments on a case-by-case basis. A formal sanitary sewer master plan has been discussed but is yet to be completed. Developing a wastewater master plan for Northfield Township is a large undertaking. As an initial step in better understanding the sewer system needs, the Board of Trustees elected to initiate this study of the sewer system to better understand the Township's wastewater treatment needs. This study has the following objectives:

- Update the Township's sanitary sewer map to include changes since the last map was created in 1996
- Identify potential development in the existing special assessment districts within Northfield Township and the likely flow impact on the Township's wastewater treatment plant (WWTP)
- Understand the commitment to provide sewer service to Green Oak Township and the likely flow impact at the WWTP
- Conceptually size a wet weather storage tank (also referred to as an equalization basin) at the Township's WWTP

A smaller scale revised sewer map is included in this document, and a full scale map will be delivered to the Township separately.

Two other components that are commonly included in a master plan have been deferred to a later time, including the detailed analysis of wastewater treatment plant expansion(s) and impacts to the collection system caused by potential growth. Impacts to the collection system generally require flow monitoring and detailed calculations to fully understand.

2.0 EXISTING WASTEWATER INFRASTRUCTURE

2.1 INFRASTRUCTURE HISTORY AND CONFIGURATION

The Township's WWTP was originally constructed in 1961 to serve a State of Michigan correctional facility. The WWTP was then purchased by Northfield Township and sewer systems were constructed through the 1970s to initially serve portions of Green Oak Township and Northfield Township around Whitmore Lake and portions of Northfield Township around Horseshoe Lake. Expansion of the system continued in the 1980s and 1990s to serve growing residential development.

The Township's existing wastewater treatment plant has a National Pollution Discharge Elimination System (NPDES) permit limit of 1.3 MGD. This is a nominal limit on the average daily flow that the WWTP may accept, treat and discharge. Peak flows into the WWTP may be higher than this and are allowed as long as the WWTP can acceptably process and treat the water. Calculations by Tetra Tech in 2005 suggest that the WWTP may be able to treat up to 1.5 MGD on average and meet limits if the peak flows into the WWTP are controlled through the use of a storage basin.

The WWTP has been expanded and upgraded numerous times since its 1961 construction. In its current configuration, the plant provides primary treatment (clarification), secondary treatment with a trickling filter and a second stage activated sludge process, and tertiary treatment with travelling bridge sand filters. The wastewater is disinfected with chlorine gas and receives post aeration by a cascade before being discharged to the Horseshoe Lake Drain.

WWTP operations staff indicate that they can routinely treat a peak flow rate of 2.5 to 3.0 MGD. However, they also indicate that the sand filters have reduced capacity due to suspected biological fouling of the underplates. These plates are due to be refurbished in the next few years. In its present configuration, the sand filters can only process a peak flow rate of approximately 2 MGD.

2.2 WWTP FLOW RATES

Average flows to the WWTP are lower than the permit limit of 1.3 MGD. Between 2011 and 2014, the WWTP averaged 0.7 MGD of influent flow. In the spring, when more precipitation and a higher groundwater table typically occur, the average flow was 0.9 MGD.

During wet weather, influent flows to the WWTP increase. On several occasions the Township has observed the peak flow into the WWTP reaching 3 MGD, which is the limit that can be measured at the WWTP. This increase in flows with wet weather is typical of older systems and is due to stormwater and groundwater being allowed to enter the sewer system. This water is referred to as infiltration/inflow (I/I) and can occur due to leaks in the public sewer, leaks in the privately-owned laterals, and improper connections made to either the publicly-owned system (such as storm drains) or to privately-owned parts of the system (such as basement sump pumps).

The Township has not previously conducted a comprehensive evaluation of I/I. However, in 1999, a brief flow monitoring program was conducted that showed that most parts of the Township's sewer system experienced flow increases with rainfall. Thus, the I/I was not isolated to a single part of the system. The Township also conducted a survey that showed that several homeowners had sump pumps connected to the sanitary sewer. While these connections are in violation of the Township's sewer use ordinance, there is no record that the Township followed up on removing these sources of I/I. It is also known that high water levels in Horseshoe Lake have submerged toilets and other sewer inlets creating lake inflow.

3.0 WASTEWATER SERVICE TO GREEN OAK TOWNSHIP

Wastewater service to Green Oak Township originated in the 1960s and 1970s concurrently with service to Northfield Township. The majority of this early service area occurred around the perimeter of Whitmore Lake.

A 2001 agreement between the Townships allows an additional 124 REUs to be connected within the existing service area around Whitmore Lake. Mr. St. Charles, Green Oak Township Supervisor, indicated in a telephone call that Green Oak Township's records show that 20 REUs around the lake have been connected since the 2001 agreement. Therefore, 104 REUs remain to be connected from Green Oak Township around Whitmore Lake. At 260 gallons/day, these 104 REUs produce an average daily flow of 27,040 gallons/day.

Sometime after 2001, Green Oak Township approached Northfield Township about serving an additional area in Green Oak Township. Northfield and Green Oak Township entered into a sewer service agreement dated November 11, 2004, to serve development in a designated area west of US-23 and north of 8 Mile Road. This agreement specifies that an additional 200,000 gallons of average daily flow will be allowed from Green Oak Township equivalent to 1,600 residential equivalent units (REUs). These agreements with Green Oak Township are presented in Appendix A.

Recent discussions with Green Oak Township resulted in a determination that a negligible amount of development has occurred in this new service area, so Northfield Township has a remaining obligation of approximately 200,000 gallons per day (gpd) to Green Oak Township. The discussions with Green Oak Township also addressed the 1,600 REUs mentioned in the agreement. Northfield Township's engineering standards define one REU equal to 260 gpd of average daily flow. Thus, 200,000 gallons equates to 769 REUs, not the 1,600 REUs listed in the agreement. Green Oak Township Supervisor Mark St. Charles indicated that Green Oak Township was likely to honor the 769 REU allocation.

In summary, the agreement with Green Oak Township suggests that Northfield Township is obligated to provide an additional 873 REUs, or an equivalent average daily flow rate of 227,040 gpd.

4.0 FUTURE WASTEWATER SERVICE IN NORTHFIELD TOWNSHIP

Northfield Township has existing obligations to provide wastewater service to four special assessment districts (SADs). The SADs were created specifically to provide wastewater service. The four SADs include the Lake Point SAD, North Territorial SAD, Seven Mile Road SAD, and Whitmore Lake Road SAD, and are shown on Figure 1.

Northfield Township's design standard for average daily wastewater flow is 260 gpd per REU. The density of REUs for a particular zoning type is an estimate based on minimum lot size in the Township's zoning ordinance and values used on past planning projects.

4.1 LAKE POINT SAD

The Lake Point SAD was established in 2003. The SAD is small, consisting of four parcels along Lake Point Drive on a peninsula extending into Whitmore Lake. All of the parcels are zoned single family residential or low density residential and appear to be developed and understood to be already connected to the WWTP. There are four total REUs in this SAD, all of which are currently connected to the WWTP.

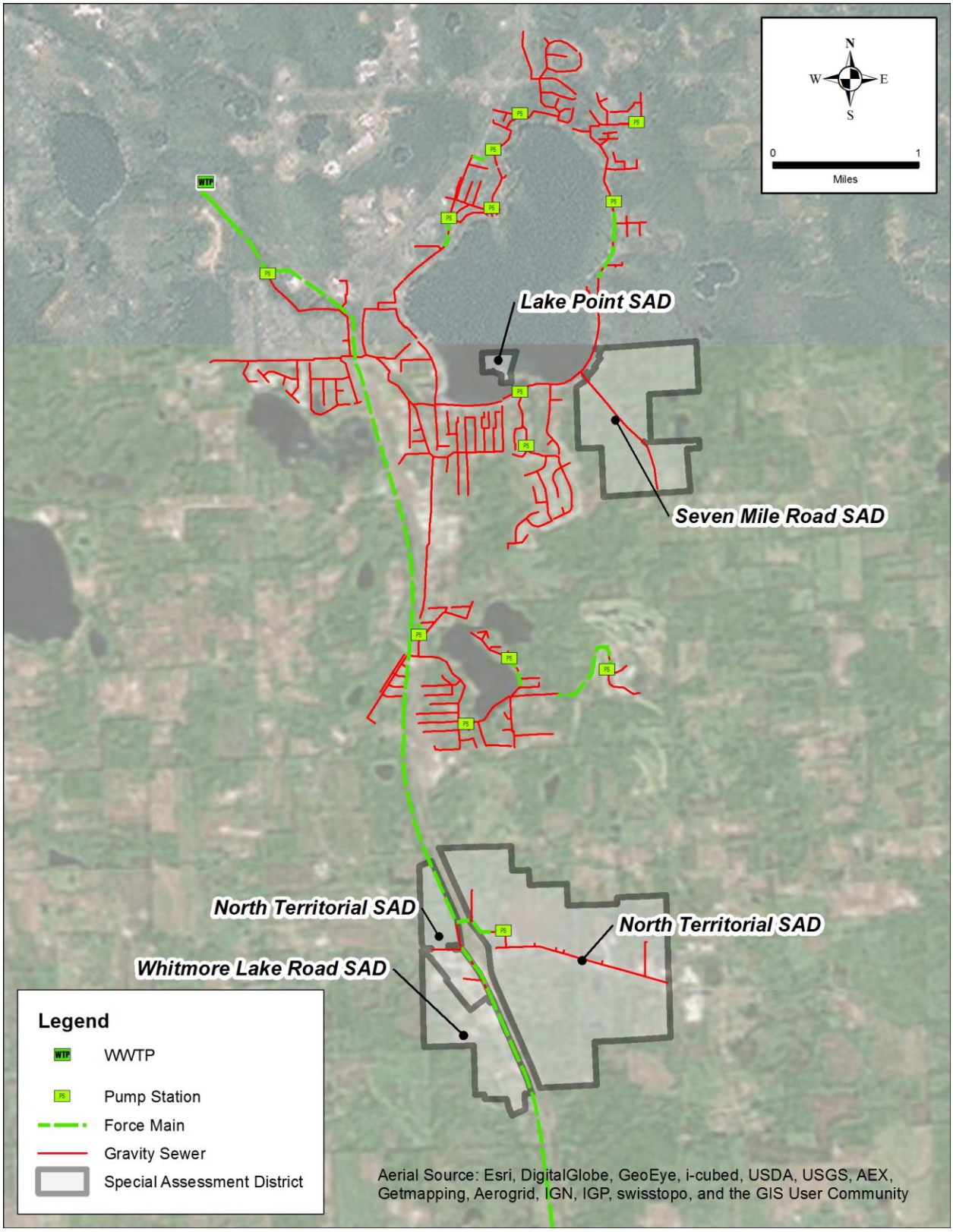
4.2 NORTH TERRITORIAL SAD

The North Territorial SAD was established around 2000 to provide wastewater service to a planned commercial area. A trunk sewer, pump, station, and force main were constructed. The force main discharges to the Township's Eight Mile Road Pump Station. To date, only a few parcels within the SAD have connected to the trunk sewer representing about 49 REUs. The concept for this SAD was that the area could be expanded both west and east as development demanded more wastewater service. Only the area within the current SAD is depicted on Figure 1. Table 1 shows the estimated wastewater demand for parcels within the current district limits.

Table 1: REUs and Average Daily Wastewater Flow in the North Territorial SAD

Zoning	Parcel Density, REUs / acre	Current Parcels	Total Area, acres	Ultimate REUs	Average Daily Wastewater Flow, gpd
Local commercial	3.0	3	16.59	50	13,000
General commercial	3.0	14	167.95	504	131,040
Planned shopping center	3.5	4	87.29	306	79.560
Research, technology, manufacturing	2.5	18	323.58	809	210,340
Total	**-**	**39**	**595.41**	**1,669**	**433,940**

Figure 1: Map of Special Assessment Districts



4.3 SEVEN MILE ROAD SAD

The Seven Mile Road SAD was established in approximately 2003 to serve the area along Seven Mile Road southeast of Whitmore Lake. The sewer has been constructed but only three connections have been made consisting of three REUs. Table 2 shows the estimated wastewater demand for the SAD.

Table 2: REUs and Average Daily Wastewater Flow in the Seven Mile Road SAD

Zoning	Parcel Density, REUs / acre	Current Parcels	Total Area, acres	Ultimate REUs	Average Daily Wastewater Flow, gpd	Notes
Agricultural	0.2	5	43.89	8	2,080	Assumes 3 parcels are split into two parcels each
Low density residential	0.5	10	21.60	13	3,380	Assumes 1 parcel is split
Recreational conservation	0.1	5	108.80	11	2,860	Assumes 1 parcel is split
Single family residential	4.0	2	45.14	140	36,400	20 percent of area allotted for right-of-ways. Remaining area developed at 4 parcels per acre
Total	**-**	**22**	**219.43**	**172**	**44,720**	**-**

4.4 WHITMORE LAKE ROAD SAD

The Whitmore Lake Road SAD was established in 2013 to provide sewer service to 24 parcels along Whitmore Lake Road south of North Territorial Road. The Whitmore Lake SAD is tributary to the sewer improvements funded by the North Territorial SAD. No sewers have yet been constructed. Table 3 shows the estimated wastewater demand for the SAD. The basis of design for the Whitmore Lake Road district estimated a total of 76 REUs to be served.

Table 3: REUs and Average Daily Wastewater Flow in the Whitmore Lake Road SAD

Zoning	Parcel Density, REUs / acre	Current Parcels	Total Area, acres	Ultimate REUs	Average Daily Wastewater Flow, gpd
Agricultural	0.2	14	64.61	14	3,640
Limited industrial	1.0	8	45.27	43	11,180
Local commercial	3.0	2	6.52	19	4,940
Total	**-**	**24**	**116.40**	**76**	**19,760**

5.0 SUMMARY OF ADDITIONAL FLOWS TRIBUTARY TO THE WWTP

In the build-out condition, a total of 2,794 REUs were estimated to be served by the WWTP within the current SAD boundaries and growth areas within Green Oak Township. Of these 2,794 REUs, 56 are already connected to the sewer system leaving 2,738 to potentially connect. These REUs would increase the average daily flow beyond the existing WWTP capacity. Furthermore, as the existing treatment capacity is approached, there will be a greater need to provide storage for both daily fluctuations in the flow and wet weather peaks. A summary of the growth is provided in Table 4.

Table 4: Summary of Additional Flows Tributary to the Northfield Township WWTP

Community	Location	Additional REUs	Additional Average Daily Wastewater Flow, gpd
Green Oak Township	around Whitmore Lake (2001 agreement)	104	27,040
	west of US-23 (2004 agreement)	769	200,000
	Subtotal	**873**	**227,040**
Northfield Township	Lake Point SAD[1]	0	0
	North Territorial SAD	1,620	421,200
	Seven Mile Road SAD	169	43,940
	Whitmore Lake Road SAD	76	19,760
	Subtotal	**1,865**	**484,900**
Total		**2,738**	**711,940**

[1] These properties are already developed and connected to the WWTP.

6.0 ALTERNATIVES TO MANAGE NEW CONNECTIONS

Determining available capacity is not a straightforward determination. A wastewater utility must consider treatment capacity during dry weather, treatment capacity during wet weather, and sewer system capacity. Analysis of the sewer system capacity was not an objective of this evaluation, however, average and wet weather conditions are discussed below.

6.1 AVERAGE FLOWS

The average flow for existing conditions is approximately 0.7 MGD and 0.9 MGD during springtime highs. The WWTP's rated capacity is presently 1.3 MGD with the potential of 1.5 MGD if storage is provided. Thus, there is existing WWTP capacity during average conditions to accommodate new connections.

The Michigan Department of Environmental Quality (MDEQ) is generally reluctant to allow new connections to a WWTP when the flow approaches 85 percent of the facility's rated capacity. Assuming a treatment capacity of 1.3 MGD, this necessitates a decision on an expansion when rates reach 1.1 MGD (1.3 x 0.85). Assuming a treatment capacity of 1.5 MGD, this necessitates a decision on an expansion when rates reach 1.3 MGD (1.5 x 0.85).

In 2005, Northfield Township explored a WWTP expansion to address the new connections it committed to in the 2004 agreement with Green Oak Township. That expansion was conceived to construct a storage basin and expand the treatment capacity to 2.25 MGD. Development did not occur and this expansion was not implemented.

Available capacity calculations are found below for various scenarios. The first two calculations consider growth without differentiating new connections between Green Oak Township and Northfield Township. The last two scenarios were calculated assuming the capacity in the Green Oak contract is reserved.

A summary of potential capacity available during average conditions without reserving capacity for Green Oak Township follows (assuming no storage provided):

Allowable Rate before Expansion (MGD)	Springtime Rates (MGD)	Allowable Increase (MGD)	Allowable Increase (REU)
1.1	0.9	0.2	800

The summary of potential capacity available during average conditions without reserving capacity for Green Oak Township follows (assuming storage provided):

Allowable Rate before Expansion (MGD)	Springtime Rates (MGD)	Allowable Increase (MGD)	Allowable Increase (REU)
1.3	0.9	0.4	1,500

The summary of potential capacity available during average conditions and reserving 0.227 MGD for Green Oak Township follows (assuming no storage provided):

Allowable Rate before Expansion (MGD)	Springtime Rates (MGD)	Allowable Increase (MGD)	Allowable Increase (REU)
1.1	0.9	0	0

The summary of potential capacity available during average conditions and reserving 0.227 MGD for Green Oak Township follows (assuming storage provided):

Allowable Rate before Expansion (MGD)	Springtime Rates (MGD)	Allowable Increase (MGD)	Allowable Increase (REU)
1.3	0.9	0.173	700

6.2 WET WEATHER FLOWS

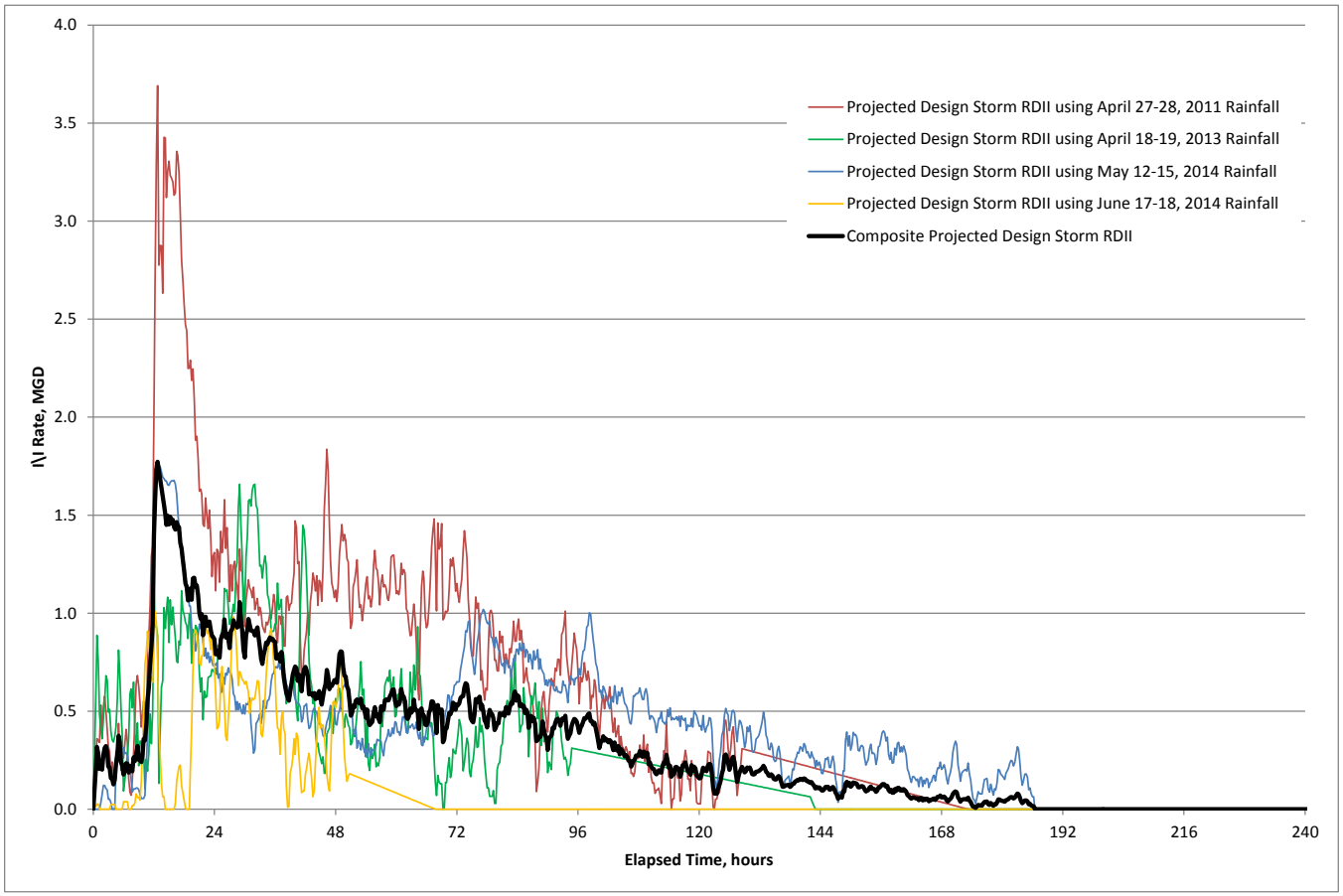
Storing wastewater during peak flow rates is a proven technique for managing flows in excess of the treatment capacity. Flows in excess of the treatment capacity are temporarily stored and returned to the system after the peak flows abate. Many, and perhaps most, wastewater treatment plants have storage tanks. The existing Northfield WWTP does not have any storage capacity. However, storage has been discussed for the WWTP since at least 1988 without the construction occurring.

In 2002, the State of Michigan adopted a policy on controlling untreated overflows from sewer systems. This policy requires that sewer systems control overflows for storms up to and including the 25-year, 24-hour storm. This storm is defined as 3.9 inches of rainfall in 24 hours throughout the state.

Flows measured at the WWTP for four severe storms between 2011 and 2014 were used to project a hydrograph for the 25-year, 24-hour storm, which can be added to a base flow to estimate the storage volume that would be necessary to eliminate overflows at the WWTP for events up to that size. The procedure used to create the hydrograph used for the 25-year, 24-hour storm followed these steps:

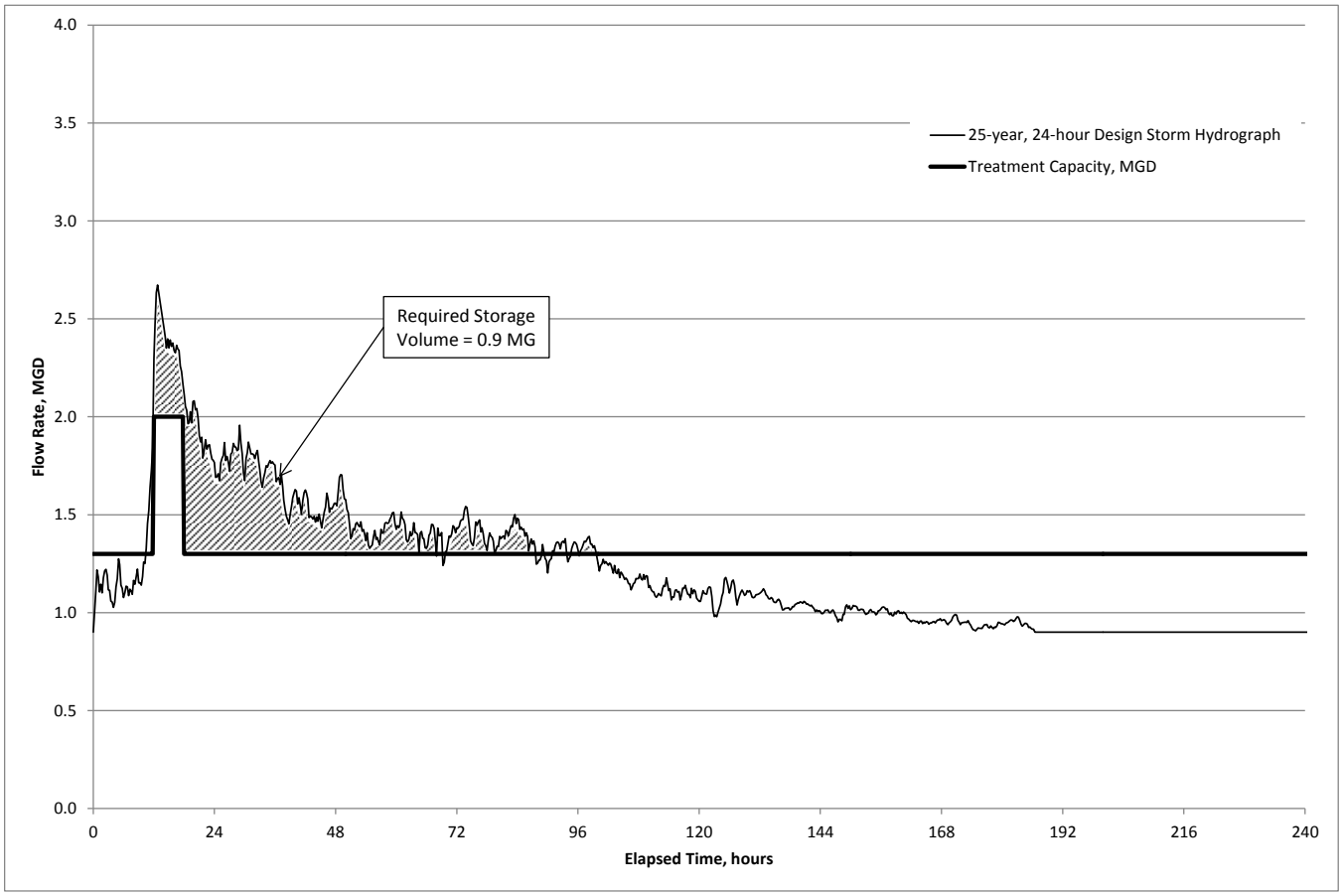
- The second through fifth most extreme events from 2011 to 2014 between April and October of each of those years, in terms of volume measured at the WWTP, were identified. The most extreme event, beginning on May 25, 2011, was excluded because it is known that inflow from Horseshoe Lake was occurring during and following this rainfall. The four rainfalls used in the analysis included:
    - April 27-28, 2011, 2.17 inches of rain, 3.0 million gallons (MG) of I/I estimated at the WWTP
    - April 18-19, 2013, 2.43 inches of rain, 1.7 MG of I/I
    - May 12-15, 2014, 4.30 inches of rain, 4.3 MG of I/I
    - June 17-18, 2014, 2.03 inches of rain, 0.5 MG of I/I
- The I/I and base flow components of the hydrograph were estimated. Plots of the components for each of the events are shown in Appendix B.
- The I/I component of the flow was projected to the 25-year, 24-hour design storm using a ratio of the design storm rainfall to the actual rainfall.
- The individual projections were averaged over an hourly period to smooth the peaks and valleys in the hydrograph using the 15-minute data from the WWTP.
- A composite of the four individual projections was created by averaging the four individual event projections. The composite projection is similar to the projection made for the May 12, 2014 event, which had the closest rainfall volume to the design storm. The individual and composite projections (with base flow removed) for the 25-year, 24-hour design storm is shown in Figure 2. The composite hydrograph was used for all analyses in this report. The tail of the hydrograph extends well beyond the end of the rainfall because of infiltration following the rainfall.

Figure 2: Composite 25-year, 24-hour I/I Hydrograph Constructed from Individual Event Projections



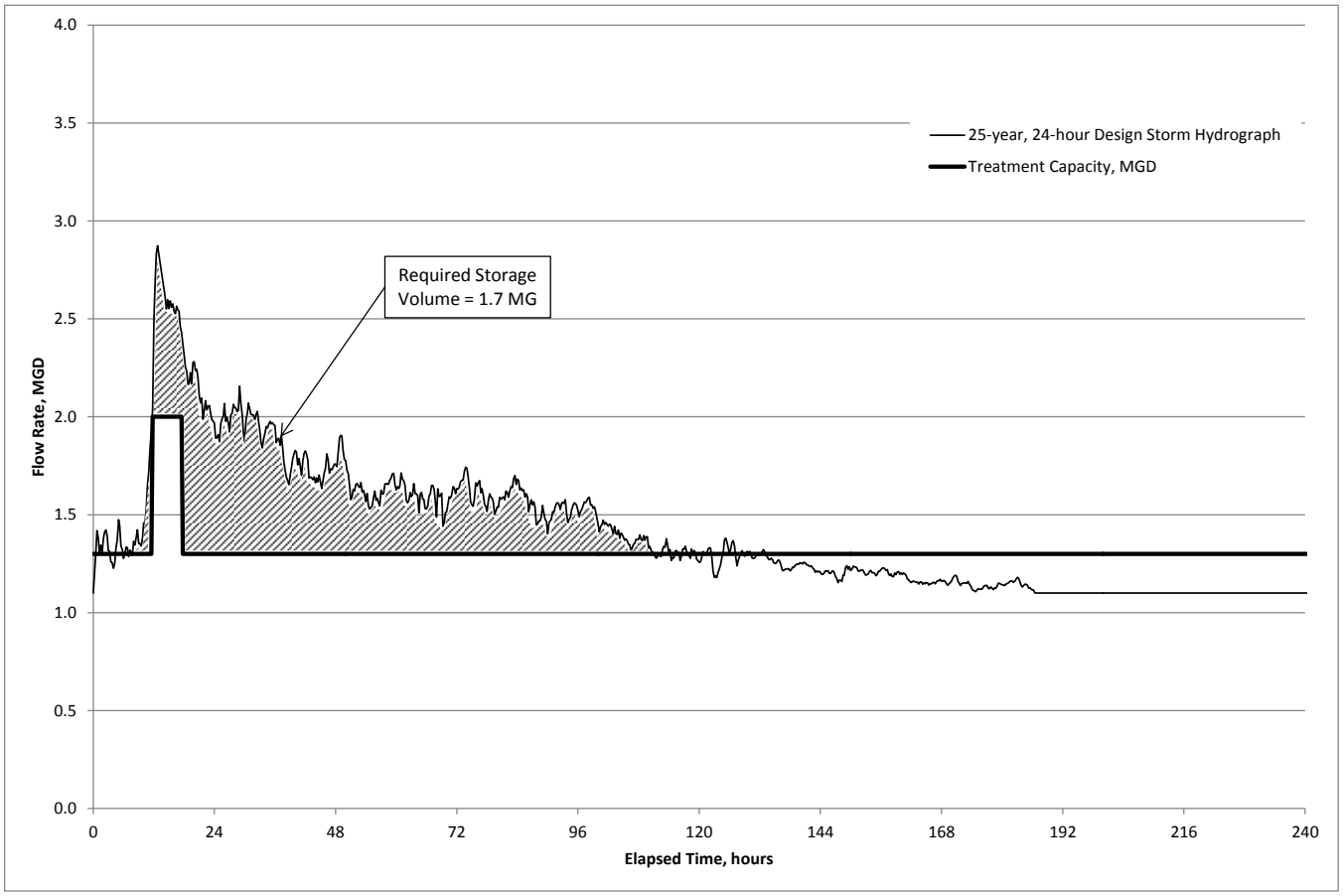
The required storage volume can now be estimated by adding the design storm I/I flows onto a base flow. For all the storage calculations it was assumed that the WWTP could treat 150 percent of its sustained treatment capacity for up to 6 hours and still meet its effluent limits. The remaining time, the WWTP could only treat its sustained capacity. For example, for the existing conditions, the WWTP could treat 2.0 MGD for 6 hours and 1.3 MGD for the remaining time. For existing conditions, we project that the required storage volume is 0.9 MG during spring (April and May) conditions. This is visually depicted in the hydrograph shown in Figure 3.

Figure 3: Spring Design Storm Hydrograph with Treatment Capacity of 1.3 MGD and No Growth



As growth occurs, the daily flow will increase and use more of the WWTP capacity. This will require that more of the flow during wet weather be stored. We project that the necessary storage volume will be 1.7 MG for an increase of 800 REUs or 0.2 MGD within the service area. This is visually depicted in the hydrograph shown in Figure 4.

Figure 4: Spring Design Storm Hydrograph with Treatment Capacity of 1.3 MGD, and 800 REUs Growth



Above this level of growth, the treatment capacity should be increased (see the *Average Flows* section), which will lessen the need for storage.

The MDEQ policy also provides an alternative methodology to demonstrate that the system will not overflow more than once every ten years. This analysis generally shows that a smaller basin size will meet the state's requirements, but requires a much more detailed approach and is best deferred as a preliminary design step if a storage project proceeds.

The cost for a storage tank will be dependent upon the type of construction (steel versus concrete) and features desired for the tank such as flushing or aeration. We suggest the Township budget $2.5 million to $3.0 million for a glass-lined steel tank. A concrete tank would have a higher initial cost but may also have a longer useful life.

7.0 GROWTH POLICY

Policy decisions on when to allow or deny new connections to the sewer system rest solely with the Northfield Township Board of Trustees. The MDEQ will occasionally deny new connections when there are obvious capacity problems with a sewer system (not presently the case with Northfield Township's system).

One important consideration is the SAD parcels. The Township has facilitated the construction of sewers in these areas. The property owners are paying an assessment for the construction of the sewers. However, these parcels are largely undeveloped and as such, have not connected to the sewer and have not paid the Township's system development charge (connection fee). This connection fee is established to recover the prorated share of the parcel's use of the treatment plant and downstream sewers.

A conservative policy decision could consider the 0.227 MGD commitment to Green Oak Township, the future SAD demands, and the higher springtime flows and determine that no other connections should be allowed until the wastewater plant is expanded. An alternate policy would be to consider that no significant development in Green Oak and the SADs has occurred in the last ten years, that new connections can be allowed and the WWTP will be expanded prior to the plant being overloaded.

Tetra Tech can appear at a future board meeting to answer any technical questions that will better allow the Board of Trustees to determine their policy regarding new connections.

8.0 PROJECT FUNDING

Wastewater utilities have the choice of financing capital projects with local funds (such as from reserves, connection fees and/or bonds) or from a state-funded loan. A self-financed project has few prerequisites and construction could be initiated within a few months of beginning.

The MDEQ administers a low interest, state funded loan program for wastewater improvements. This program is entitled the State Revolving Fund loan and abbreviated as SRF. A condition of receipt of the loan is that the loan monies are used to construct the cost-effective solution. This requires a series of studies to demonstrate that building storage is cost effective over removing the I/I at its source. Loan applications are due by July 1 each year and the prerequisite studies need to be completed ahead of this application date. Should Northfield Township begin the studies in the spring of 2015, it is likely that the loan could not be applied for until July 1, 2017, or later.

The first study that would be needed is termed an Infiltration/Inflow Study which measures flow throughout the system and makes projections regarding its likely sources and costs to remove. This study may cost $150,000 to $200,000 to complete. This study makes a recommendation that looking for I/I sources will likely be fruitful, but generally concludes that some level of detailed investigation is needed.

The second study is referred to as a Sewer System Evaluation Survey (SSES). It includes detailed investigations within the system to locate specific sources of I/I. This may involve inspecting manholes, sewer pipes, and quantifying illicit sump pumps among many other tasks. The cost of an SSES of Northfield Township's collection system cannot be determined until after completion of the I/I Study, but could range from $150,000 to $300,000.

9.0 SUMMARY AND RECOMMENDATIONS

9.1 SUMMARY

A capacity summary was completed that shows that Northfield Township has significant wastewater treatment obligations to both Green Oak Township and special assessment districts within Northfield Township. An additional 712,000 gallons per day (0.712 MGD) could be added to the system from these obligations.

Capacity determination in a wastewater system involves more than comparing a single set of numbers. An evaluation must be conducted that looks at the WWTP performance during average (dry weather), during wet weather, and in the sewer systems. This report evaluated conditions during average and wet weather conditions and deferred sewer analysis to a later time.

The Township has sufficient treatment capacity available to continue to accept new connections during average conditions (dry weather). Our analysis shows that approximately 800 REUs can be added until the WWTP flows will reach 1.1 MGD during the spring conditions and approximately 1,500 REUs until the WWTP reaches 1.3 MGD during these same spring conditions. A growth of 800 REUs is estimated to increase flows to 85 percent of the WWTP's permit limit during spring conditions, which is a typical threshold upon which the MDEQ may request

a WWTP expansion be considered. Past calculations suggest the WWTP may be able to treat 1.5 MGD if storage is built and thus the higher number of 1,500 REUs may be achievable.

However, during large storms, the Township's WWTP will struggle to treat the peak flow that arrives and meet permit limits. The Township has long discussed a storage basin to be constructed at the WWTP. The size of this basin is dependent upon the level of growth and the available WWTP capacity. A basin is significantly less expensive than a plant expansion. Therefore, the basin should be sized for a future flow condition to postpone a WWTP expansion as long as possible. The MDEQ requires that the basin be sized to contain wastewater for the 25-year, 24-hour storm of 3.9 inches. This condition suggests the basin be sized for 1.7 MG. As discussed in the report, a more sophisticated statistical analysis may show this size can be slightly reduced before it is built.

The basin will assist with existing WWTP operations and be even more critical as growth occurs. It is recommended that the basin be constructed prior to any large developments occurring. For the purpose of quantifying a threshold, it is suggested that the basin be constructed prior to allowing more than 100 REUs to connect.

Table 5 provides a timeline for recommended improvements to summarize the number of new connections (expressed as REUs) and thresholds that initiate new projects.

Table 5: Timeline of Recommended Improvements

Number of Additional REUs	Average Dry Weather Flow, MGD	Average Dry Weather Flow during Peak Months, MGD	Recommended Improvement
0 – 100	0.7	0.9	Construct 1.7 MG storage basin
800 – 1,500	0.9 – 1.1	1.1 – 1.3	Expand WWTP

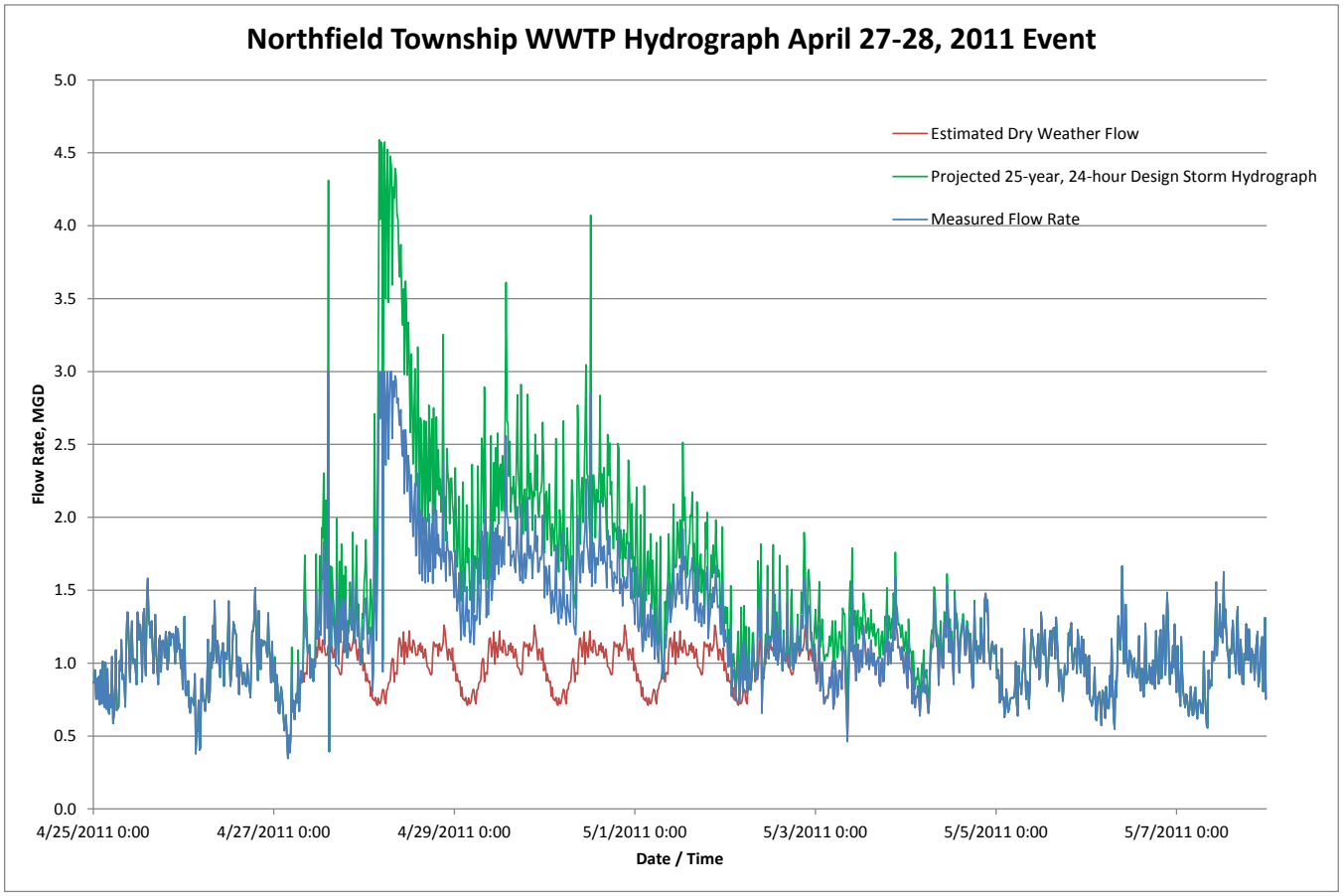
The REUs in Table 5 must consider new connections made from Green Oak Township and the 873 REUs committed to Green Oak. If Green Oak develops to the amounts included in the intergovernmental agreements, most or all of the surplus capacity in the existing wastewater treatment plant would be utilized.

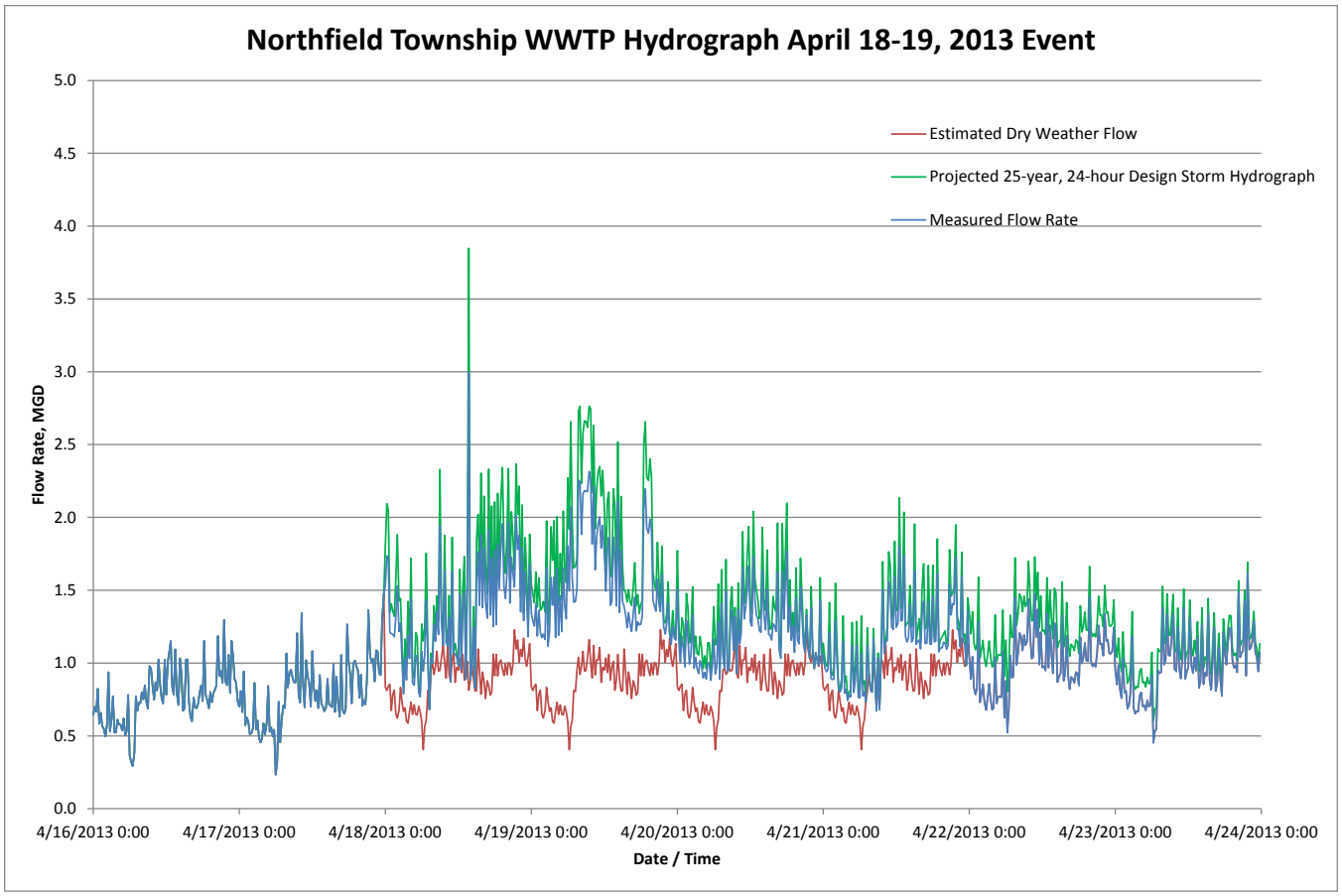
9.2 RECOMMENDATIONS

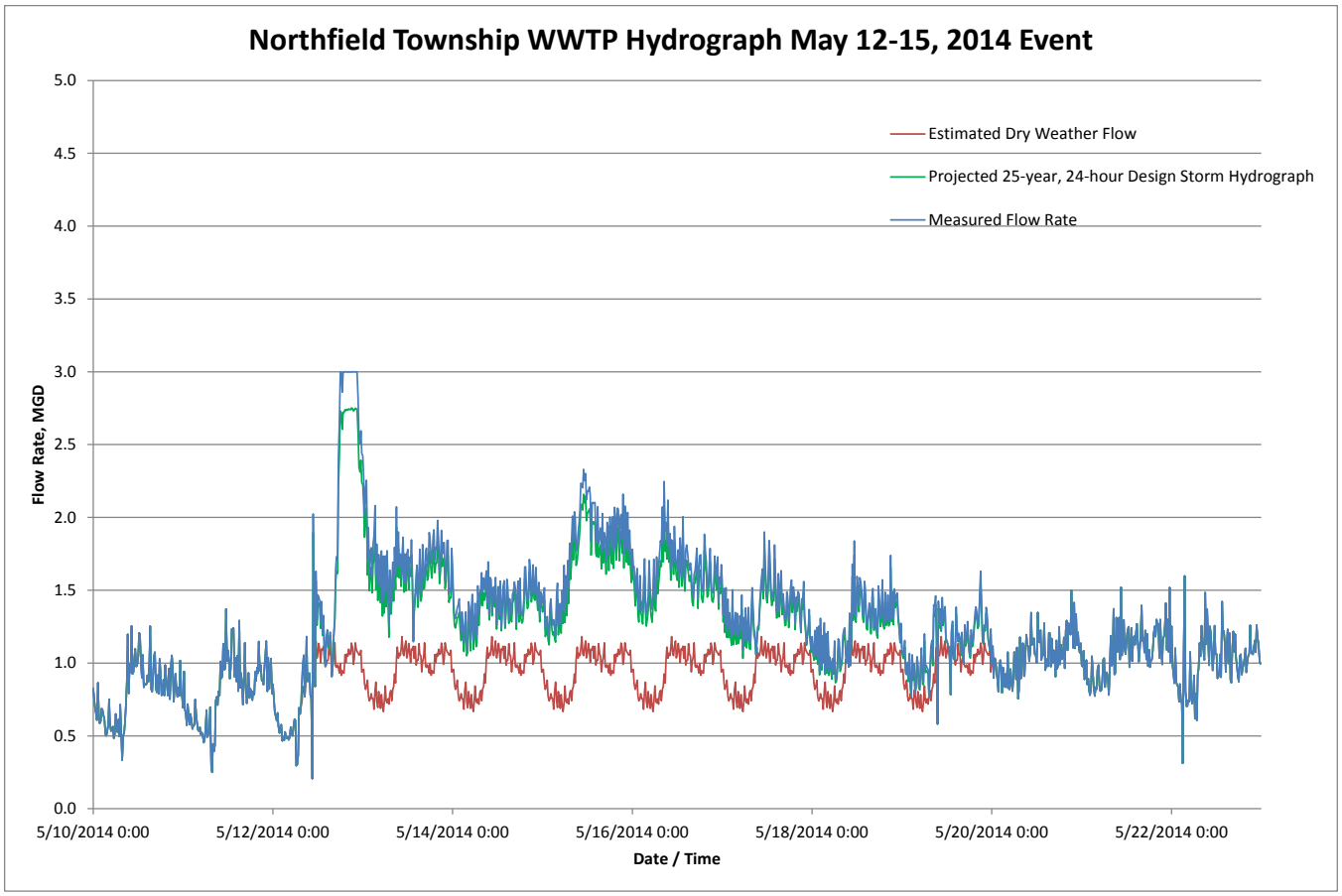
The Township should begin planning for the storage basin that has long been identified for the WWTP. The Township may also wish to revisit its 2005 thoughts about expanding the WWTP to confirm the size and cost of the expansion. The next step toward implementing the storage basin or WWTP expansion is to consider how these projects will be financed, because the method of financing may determine additional steps necessary. At a minimum, we recommend Northfield Township evaluate its system development charge (also referred to as connection fee) so that some of the cost of the basin and WWTP expansion is recovered through fees charged to new connections.

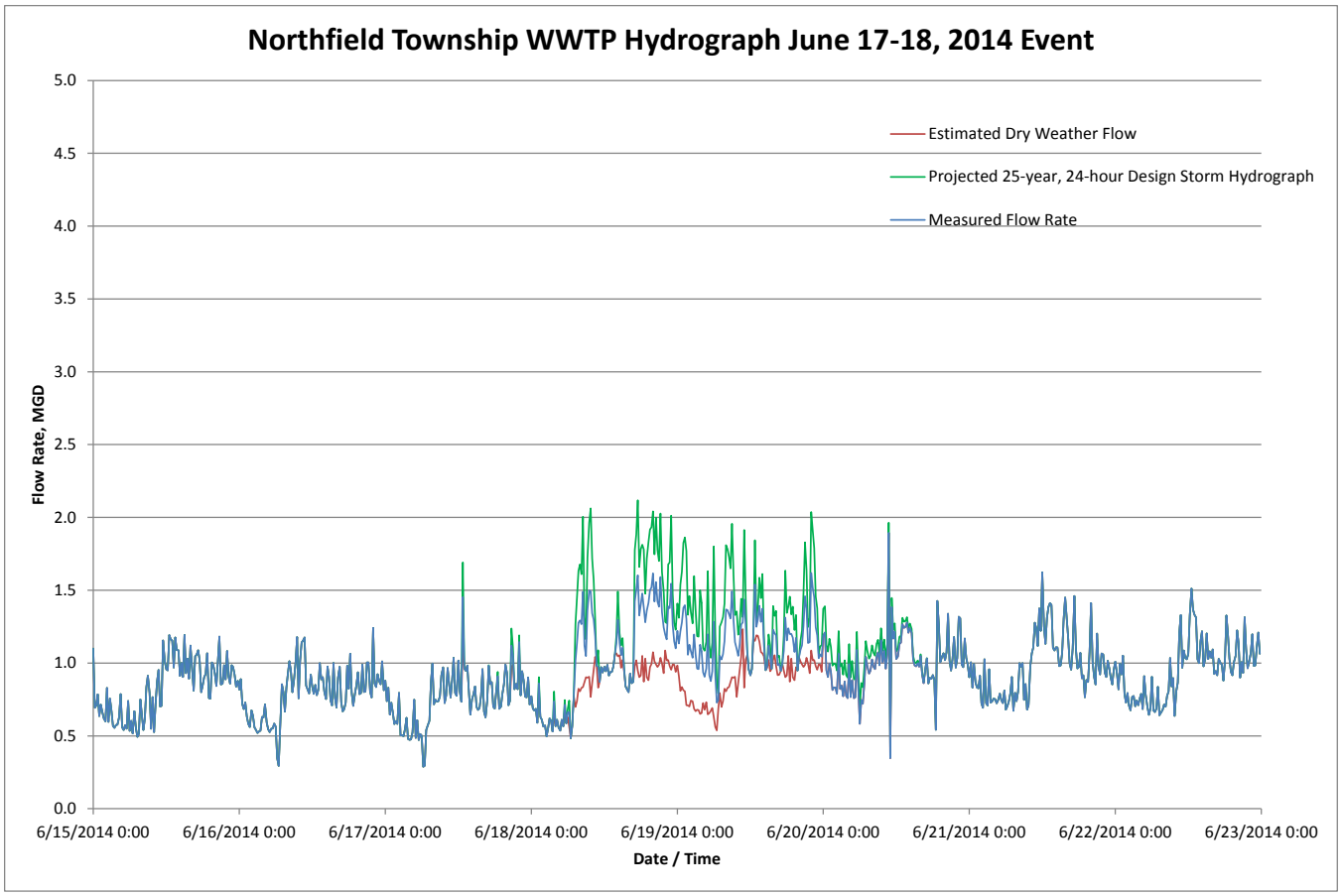
APPENDIX A: GREEN OAK TOWNSHIP AGREEMENTS

APPENDIX B: DATA USED FOR THE DEVELOPMENT OF THE 25-YEAR, 24-HOUR HYDROGRAPH




Northfield Township WWTP Hydrograph April 18-19, 2013 Event
Flow Rate, MGD
5.0
4.5
4.0
3.5
3.0
2.5
2.0
1.5
1.0
0.5
0.0
4/16/2013 0:00
4/17/2013 0:00
4/18/2013 0:00
4/19/2013 0:00
4/20/2013 0:00
4/21/2013 0:00
4/22/2013 0:00
4/23/2013 0:00
4/24/2013 0:00
Date / Time
Estimated Dry Weather Flow
Projected 25-year, 24-hour Design Storm Hydrograph
Measured Flow Rate


Northfield Township WWTP Hydrograph May 12-15, 2014 Event
Flow Rate, MGD
5.0
4.5
4.0
3.5
3.0
2.5
2.0
1.5
1.0
0.5
0.0
5/10/2014 0:00
5/12/2014 0:00
5/14/2014 0:00
5/16/2014 0:00
5/18/2014 0:00
5/20/2014 0:00
5/22/2014 0:00
Date / Time
Estimated Dry Weather Flow
Projected 25-year, 24-hour Design Storm Hydrograph
Measured Flow Rate


Northfield Township WWTP Hydrograph June 17-18, 2014 Event
Flow Rate, MGD
5.0
4.5
4.0
3.5
3.0
2.5
2.0
1.5
1.0
0.5
0.0
6/15/2014 0:00
6/16/2014 0:00
6/17/2014 0:00
6/18/2014 0:00
6/19/2014 0:00
6/20/2014 0:00
6/21/2014 0:00
6/22/2014 0:00
6/23/2014 0:00
Date / Time
Estimated Dry Weather Flow
Projected 25-year, 24-hour Design Storm Hydrograph
Measured Flow Rate

JAMES E. COX
NORTHFIELD TOWNSHIP
WATER POLLUTION CONTROL FACILITY
11500 LEMEN ROAD WHITMORE LAKE MICHIGAN
PHONE 734-449-4159 FAX 734-449-4302

To:	**Northfield Township Board of Trustees**
From:	**Tim Hardesty-Wastewater Treatment Plant Superintendent**
Date:	**March 24th, 2015**
Subject:	**Rebuild of Tertiary Sand Filters**

MEMO: The last step of our treatment process is the Tertiary Sand Filters. The sewage passes down thru the sand and then thru what are called porous plates. These plates are starting to break down and become encrusted not allowing the sewage to pass thru them as they should. Sand is also passing thru or around the plates in numerous areas. We need to have these rebuilt in July and August when our flow is at its' lowest. There are two tanks 40 feet long by 9 feet wide which will be rebuilt one at a time and take about 3 weeks per tank. It will also take 8 to 10 weeks to receive all of the material needed for the rebuild once the order has placed with Aqua Aerobics. Because of this time frame I am asking the Board to consider authorizing this project at the April Board of Trustees meeting.

Thank you for your consideration,

Tim Hardesty

Tim Hardesty

AQUA-AEROBIC SYSTEMS, INC.
Partnering for Solutions

Proposal#: 136977

TO: **Northfield Township WWTP**
11500 Lemen Road
Whitmore Lake
Michigan 48189
USA

PROJECT: NORTHFIELD TOWNSHIP, MI

ATN: **Tim Hardesty, Maint. Supv.**

PROPOSAL DATE: March 10, 2015

CC: **Hamlett Environmental Technologies / ph#: 517/545-2500 / fx#: 517/545-3231**
Randy Hamlett

The following Notes apply to Aqua-Aerobic Systems' proposal:

- We are pleased to quote, for acceptance within 90 days of this date, prices and terms on goods listed below.
- Equipment will be furnished by Aqua-Aerobic Systems, Inc. with unloading of goods and civil work by the Buyer.
- Equipment listed below is for rebuild of two 9' x 40' AquaABF unit as recommended by the customer
- Aqua field service personnel to provide filter mechanical start-up.
- If additional modifications beyond those listed in the proposal are required, they will represent an additional cost.

- Aqua-Aerobic Systems shall retain the services of a contractor to perform the following:

REMOVAL
est. $3000 per side
All media above and below the porous plates shall be removed with a vacuum truck supplied by the contractor. The 1/4-20 hardware, angles and porous plates shall be removed. After the hardware is removed, the cell dividers shall be cleaned of caulk and inspected, in preparation for installation of the new equipment. The existing wear strip in the effluent channel shall be removed.

INSTALLATION
New caulk, porous plates and retaining angles and associated hardware shall be installed. While the caulk is curing the contractor shall clean and adjust the wear strip and backwash shoe to improve the backwash efficiency. Once the installation of the underdrain is complete, new filter media will be installed in 100# bags. A new wear strip shall be installed in the effluent channel. An Aqua-Aerobic Field Service technician will assist in the mechanical startup of each filter.

The customer shall provide the following:
A. A dumpster for all waste material.
B. Electrical Service of 110 V, 20 amp.
C. Unloading of material shipments
D. Access to the site from 7 am to 7 pm
E. Customer shall prevent water from entering the filter during the filter rebuild process.

Note that all the existing media will be disposed of at the plant site (or in the dumpster), after removal. Price is baed on use of non-hazardous materials.

Underdrain Installation Component(s) consisting of:

- Ceramically bonded alumina porous plate(s).
- Tube(s) of sealant.
- Retaining angle(s).
- Stainless steel spacer stud(s).
- Wear starter strip(s).
- Insert anchor(s).
- Pneumatic caulking gun.
- High grade silica sand approximately 11 inches deep, complying with sections 1, 2.2 and 5 of the standard specifications for the filtering material (AWWA Designation B100-89). The 10% size or effective size shall be

between .55 and .65 millimeters. The uniformity coefficient (ratio of 60% size to 10% size) shall not exceed 1.50.

Supervision/Freight

Supervison/Freight Domestic

1 Supervision Services and Freight Package(s) will be provided as follows:

- 2 Day(s) On Site for Mechanical Startup
- 2 Trip(s) for Mechanical Startup
- FREIGHT TO JOBSITE

The Following Notes apply to Aqua-Aerobic Systems' Proposal:

- We expect record set drawings to be completed and in transit to you approximately 8-10 weeks after receipt of order with acceptable terms and conditions and guarantee of payment. Any changes to the record set drawings may result in price adder(s). *Schedules may be adjusted at time of order placement, depending upon existing order backlog. Weeks quoted are actual working weeks.
- Materials and Services not specifically described/itemized in this proposal are not included in the quoted total price, and are to be supplied by the installing contractor/purchaser.

- F.O.B. ORIGIN; TITLE AND RISK OF LOSS: All prices and all shipments of goods are F.O.B. Aqua-Aerobic Systems, Inc.'s plant at Loves Park, Illinois. Delivery of the goods sold hereunder to the carrier shall be deemed delivery to the Buyer, and upon such delivery, title to such goods and risk of loss or damage shall be upon Buyer.

- TAXES: State and/or local taxes are not included in the price but will be charged unless we receive a valid resale/exemption certificate.

- PAYMENT TERMS: Subject to credit approval and guarantee of payment, payment of 75% of the purchase price Net 30 days from date of equiipment shipment; and 25% upon completion of equipment installation, no retainage allowed.
- Supervision services included in Aqua-Aerobic Systems' proposal are based upon supply of the quantity of trips anc days stated. Additional supervision services can be provided for an additional charge of $1200/day plus travel and living expenses.

GOODS QUOTED ABOVE WILL BE SOLD SUBJECT ONLY TO THE TERMS AND CONDITIONS OF SALE SET FORTH HEREIN. ANY DIFFERENT OR ADDITIONAL TERMS ARE HEREBY OBJECTED TO.

Total Price: **$149,683**

Memo

To: Northfield Township Board

From: Howard Fink

Date: 3/19/2015

Re: Board Room Construction

Dear Township Board,

Attached with your packets are three quotes for construction managers. I have previously explained the advantages to the construction management over a general contracting approach. After considerable research, I am recommending that John DeMattia Construction be awarded the project. He will be on hand at the workshop to discuss the project and his role in its completion. This would be a great opportunity to ask any detailed questions that arise. As an interesting side note, in his youth, Mr. John DeMattia was a laborer that worked for his father, DeMattia Construction on the development of our current sewer treatment plant.

Respectfully Submitted,

Howard Fink, Township Manager

John DeMattia Construction LLC

March 4, 2015

Howard Fink
Township Manager
Northfield Township
8350 Main St.
Whitmore Lake, MI 48189

RE: Construction Management Proposal
Conference & Assembly Rooms
Whitmore Lake, MI

Dear Mr. Fink:

It was a pleasure meeting with you yesterday to discuss your concerns for the addition of an assembly and conference room to the second floor of the Northfield Township offices.

As discussed, we would work with Mr. Joe Phillips AIA to develop comprehensive drawings and budgets for your review before construction would begin.

We will approach this project under a construction management agreement on an open book basis.

Our fee for construction management would be 5%.

I have also included my resume and our schedule of services and fees.

I appreciate you giving me the chance to quote this project and if there are any questions please feel free to call me @ 734-754-1240.

Sincerely,

John M. DeMattia
President

9219 Tan Bay ■ Commerce Twp., MI 48382 ■ 734.754.1240 t ■ 734.483.3431 f ■ www.johndemattiaconstruction.com

John DeMattia Construction LLC

John M. DeMattia
John DeMattia Construction, LLC – President

As president, John is responsible for all company details while maintaining and fostering relationships with past, present and future clients. With over 30 years of experience in the building environment, John has a unique ability that allows him to fully understand his client's needs. He works with the project team step by step from formulating and implementing cost and construction strategies to the project closeout, including owners' financial updates and reports.

John's project experience throughout his extensive career spans everything from schools to pumping stations, glass recycling facilities, municipal offices, manufacturing plants, athletic facilities, class A offices, medical facilities and more.

Some of his experience of interest includes the renovation of an existing facility to house all the archives for the Archdiocese of Detroit at the Sacred Heart Seminary; St. Kateri Catholic Church Expansion and Renovation in Dearborn, MI; the renovation of Christ the King Lutheran Church in Southgate, MI which consisted of a daycare, kitchen and multiple classrooms; the Hope Lutheran Church addition in Farmington Hills, MI included multiple classrooms, a large multipurpose room and kitchenette; and Holy Redeemer Catholic Parish in Detroit was the extensive phased renovation of the historic church, including updating sound and lighting and staying true to its 1920's design replacing its clay roof tiles and copper downspouts as part of a five year program.

John extensive project management and estimating success is fully shown on the Dominos' Farms campus with his involvement in Mr. Monaghan's personal developments and by completing the University of Michigan's MedSports Relocation, the Domino's Farms Connection addition, the Via Sacra School, Mother House and Cellular Tower. John has also completed renovations to Ave Maria Law School, Wayne State University Hilberry Theatre, General Motors Tech Center, Cassidy Lakes Technical School, and performed the Wayne State University Educational Outreach Relocation.

John has his BS in Civil Engineering from Michigan Technological University.

John DeMattia Construction LLC

Schedule of Services and Fees

Construction Services

Professional and technical services for site evaluation, field supervision, analysis, cost estimating, attending meetings and construction.

Senior Project Manager	$ 90.00 per hour
Project Manager	$ 85.00 per hour
Chief Estimator	$ 85.00 per hour
Senior Estimator	$ 80.00 per hour
Project Estimator	$ 70.00 per hour
Superintendent	$ 80.00 per hour
Project Engineer	$ 70.00 per hour

Note:

- Printing and reproduction to be reimbursed on an at-cost basis.
- Transportation to be reimbursed on an at-cost of $.60/ mile.
- Outside consultants to be reimbursed on an at-cost plus 5% basis.
- Rates include direct hourly cost, payroll taxes, insurance, and fringe benefits.

Effective: January 1, 2015

Frank Rewold and Son, Inc.
Construction Manager • General Contractor
Geothermal
Since 1918

333 East Second St. • Rochester, MI 48307
(248) 651-7242 • Fax: (248) 651-5174
www.frankrewold.com

March 13, 2015

Mr. Howard Fink, township manager
Northfield Township Offices
8350 Main Street
Whitmore Lake, MI 48189

Re: Board Room Construction Project

Dear Mr. Fink:

Thank you for the opportunity to submit a proposal for construction management services. If physical construction activities must occur this spring, our workload will not allow us to assign a field superintendent to the project in order to properly manage the construction trades. To provide the expedient quality services Rewold and Northfield Township demands, we would like to offer two alternatives that might be of financial benefit to the Township.

Option 1. Preconstruction Services Only

Rewold will perform preconstruction services for a not-to-exceed amount of $5,000. These services begin upon written notification by the township to proceed and include typical preconstruction management services. It consists of consultation with the township and its design consultants to achieve bidding documents that meets the township's needs at the lowest fair cost. Review of design documents, preparation of estimates, investigation of alternative systems, and construction methods will be accomplished and recommendations offered. Services will be invoiced as follows.

Project Manager	$80/hr.
Project Executive/Estimator	$98/hr.
Assistant Project Manager/Engineer	$60/hr.
Administrative staff	$50/hr.

Reimbursable items are not anticipated nor included within the not-to-exceed amount. These may include testing, public notices, etc. Reimbursables, if required, are only performed with authorization from the township. Rewold internal costs such as mailings, minor printing costs, mileage, etc. are not charged to the township.

Preconstruction services and Rewold's responsibilities conclude with the bidding phase. At which point the township has the opportunity to award purchase orders to the trade(s).

Option 2. Preconstruction and Construction Services

Rewold will perform all preconstruction services and construction services for a fee structure similar to our contract with the Northfield Township Area Library (NTAL). Preconstruction services begin upon written notification by the township. On-site construction, however, does not begin until start of the NTAL addition also begins. This activity is currently scheduled to commence at the end of August.

Option 2. Compensation

Preconstruction Services:	Not-to-exceed $3,000 (discounted from Option 1)
CM Fee:	4.5% of all costs
Support Services:	Construction support services include personnel stated in Option 1 (at lower NTAL rates) plus field superintendents and accounting staff. In addition, items such as safety provisions, dust control, barricades, submittal processing, cleanup activities, etc. are included. Typically, these costs on a small project would be expected to run $15,000 to $20,000 a month. The majority of this cost is for full-time supervision; however, the boardroom project could safely run simultaneously with the NTAL project saving both projects supervision costs. We would expect the boardroom project support services cost to be in range of $10,000 to $12,500 a month. We are presuming a two-month construction timeline. Prior to the end of preconstruction services, Rewold and Northfield will agree on a not-to-exceed amount for support services

If you would like to consider proceeding with one of these two options, please contact me to discuss or with any questions you may have.

Sincerely,

FRANK REWOLD AND SON INC.

Gene P. Ferrera
Senior Project Manager

mc

c: Paul Weisenbach, FRS

SHAW
CONSTRUCTION &
MANAGEMENT CO.
COMMERCIAL & INDUSTRIAL
GENERAL CONTRACTORS

NORTHFIELD TOWNSHIP
CONSTRUCTION MANAGEMENT

On a yearly basis Shaw Construction and Management has shown the ability to average 175 estimates and budgets of projects that meet the set forth criteria of this request, along with completing on average 75 of those projects on a yearly basis. This is in conjunction with filing and completing on average 2,200 to 2,400 work orders in our property management operation. We are the perfect fit for the work that Northfield Township is planning.

KEY PERFORMANCE INDICATORS

Shaw Construction and Management will provide a professional and detailed estimates and proposals using information provided thru drawings, meetings, and site walk-thru's in conjunction with years of experience and any other available information to assist the customer in creating a complete project with most cost effective strategy.

Process of Engagement
Per project

- Respond to project request in earliest stage- dealing with permitting if necessary and determine fastest track for project
- Determine driver of project, talk about cost and timelines
- Review project site, walk thru with and without the projects point of contact
- Determine timelines for budget numbers, bid dates, and overall project completion
- Incorporate preliminary pricing for budget purposes- if needed
- Interview point of contact, gather information. Create follow up walk thru with subcontractors and vendors, establish bid list.
- Gather bids, report thru post bid thru estimate summary sheets comparing real numbers vs. budget numbers
- Strategy meeting with main point of contact, review costs, subcontractors, and vendors along with schedule to complete
- Start project
- Our goal is to bring the plan to a successful conclusion step-by-step so that our customers would confidence from the successes not just the words

Per Project Review

- We are able to update work to complete through schedule and written report
- Reporting to include schedule cost vs. estimate, work in progress reports, and committed cost shown in either standard AIA, or WIP reports already created by Shaw CM

- Actual schedule vs. preliminary schedule, including estimated days to completion
- Project broke down into standard categories to allow for easy tracking

T & M Service:

- On-call service, multiple points of contact through phone and fax. Direction from point of contact thru work order request to complete day to day maintenance.
- 24 hour service, includes call service after hours and cell phones of all Shaw CM employees
- Familiar subcontractors and vendors as needed for projects, open pricing
- Shaw CM can self-perform work with Laborers and Carpenters if needed and cost effective
- Set limit on cost, T & M to that point. After the cap, put project out to bid, i.e. painting, building, parking lots, etc. Bidding would require three subs for major trades, and Shaw CM would do the leg work and control the bidding
- On bid projects we would act as Construction Manager/General Contractor, fee based as dictated by Pricing Matrix Criteria

FEES AND COST

Pricing Matrix Criteria

Please see attached spread sheet – Appendix A

ADDITIONAL CRITERIA

Insurance

CL Finlan- 47784 Halyard Drive, Plymouth MI 48170
734.453.6000 ext. 227 Jeanine Frantsen

Valenti Trobec – 1175 W. Long Lake, Suite 200 Troy MI 48098
248.828.3377 Pat Esper

EMR Rating .81 (please see attached – Appendix B-1)

Accord Insurance Card (please see attached – Appendix B-2)

D&B Rating

Shaw Construction and Management, Livonia, MI
D&B #13-143-1322
Good standing in all categories

References

Cathy Meyers, Vice President
Community Financial Credit Union
500 Harvey St.
Plymouth MI 48170
734.582.8836

Rick Striebe, Project Manager
Viox Services
111 Lyon Street NW
Grand Rapids MI 49503
616.653.5106

Pat Esper, Insurance/Bond
Valenti Trobec Chandler Inc.
1175 W Long Lake Suite 200
Troy MI 48098
248.828.3377

Alex Bishop
City of Livonia Chief Building Inspector
33000 Civic Center Drive
Livonia, Michigan 48154
734.466.2580

Greg Rivers, President
New Paradigm Promotional Marketing
30999 Industrial
Livonia MI 48154
734.402.8346

Cheryl Doelker, President
JCD Group, Inc.
19369 Fairland Court
Livonia MI 48152
248.615.9129

Experience

The Shaw name is widely recognized as a provider of quality construction and management services and our reputation with customers, building officials, suppliers and sub-contractors is without equal. Clients find that our company is small enough to provide personal attention to their project, and at the same time the staff at Shaw Construction and Management Co. brings talent and experience usually associated with much larger firms.

We have experience in all aspects of construction as well a range of projects, from 250,000- sq. ft. department stores, to sophisticated medical facilities, to specialized industrial and retail build-outs. This diversity has provided exposure to virtually every construction method, venerable and leading-edge materials, and various trades and equipment. Our experience has sparked creative solutions to the challenges associated with all types of projects since 1984.

Small Project Management Plan

Small, Misc. Construction Projects

- Call Shaw CM for misc. T & M construction needs, depending on projects size and needs the project can be completed thru our work order processes, or the spelled out project plan
- Shaw CM surveys needs, if necessary, create budget as spelled out above
- Supply manpower, material and necessary subs and vendors i.e. Electrical, Plumbing, HVAC, Plumber as required to complete work
- Invoice based on established hourly rates and agreed upon markups and fees

Renovation Projects

- Review project with Shaw CM
- Shaw CM reviews project needs
- If Architect/Engineer/Interior Designer is required, Shaw CM with approval from our point of contact will engage them
- Shaw CM will develop preliminary budget and timelines
- After project approval, Shaw CM will put project out to bid
- After post bid approval, construction project will begin and be completed in a timely manner

Shaw Construction and Management 1.14.15

Pricing Matrix

Hourly Rates (ETC)	
Superindentent/Project Manager- SCM	$67.00 phr
Foreman/Lead/Carpenter-SCM	$62.00 phr
General Labor Hourly Rate- SCM	$48.00 phr
Overtime / Weekend Rate	$95.00 Super/PM $89.00 for Foreman/Lead $68.00 for General Laborer
Indirect Cost Executive, Estimating, Office Staff- (ex. A/R, Billing)	Covered under OHP fee below
Material, Vendor, and Subcontractor Markups Vendor/Subcontractor Contracts (non-work order) Material, Subcontractors Work Order	 7.5% on fixed agreements/contracts managed by Shaw CM 10% on materials and vendors
Consulting Fee	Consulting from Shaw CM is included in all OHP fees and inspection cost. If outside consulting is necessary, standard OHP mark up would apply
Fees on Projects Construction Management/General Contracting Fee	Cost plus, construction management process fees may be adjusted to accomodate Scale for OHP Fee: $1,000- $25,000.00- 15% $25,000-$75,000.00- 10% $75,000.00 to $350,000.00-7.5% $350,000 to $500,000.00- 5%
Are you willing to provide 3 bids on Subcontractors	Yes, if outside the typical T & M scenario or if time does not permit
Are You willing to work on a time and material basis	Yes
What other services can you provide	Shaw CM can self perform select demolition,painting, rough & finish carpentry, drywall & acoustic ceilings. This enables us to more tightly control costs, quality & schedule. Shaw CM is also regularly engaged in general contracting, construction management and design-build for a variety of diffferent owners and construction types.

Memo

To: Northfield Township Board

From: Howard Fink

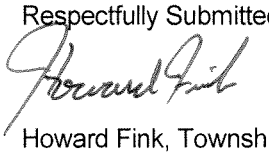
Date: 3/19/2015

Re: Code Enforcement Contract

Dear Township Board,

I have been quite happy with the contractual services of Bill Leneghan, code enforcement officer for Northfield Township. In addition to his code enforcement responsibilities, he has been assisting in serving individuals for personal property tax collections. His contract is up and I would like to renew it for another year or two. I am including it on the agenda in case the board would like to discuss code enforcement in general or particular goals for Mr. Lenegehan. Please note that I am a firm believer that the board should help create priorities for code enforcement (in the form of ordinances and policy debate), but should not be involved in individual cases, unless there are rare extenuating circumstances (i.e. 8 mile property off of U.S. 23).

Respectfully Submitted,



Howard Fink, Township Manager

INDEPENDENT CONTRACTOR AGREEMENT

This Agreement is entered into as of the _____ day of _____, 20___, between the Township of Northfield (the "Township") and William Lenaghan, 3433 Dewdrop Lane, Howell, MI 48843 ("Consultant").

1. **Independent Contractor.** Subject to the terms and conditions of this Agreement, the Township engages Consultant as an independent contractor to perform the services set forth herein, and the Consultant hereby accepts such engagement. Nothing contained herein or any document executed in connection herewith, shall be construed to create an employer-employee, partnership, or joint venture relationship between the Township and Consultant. The compensation set forth in Paragraph 4 shall be the sole consideration due Consultant for the services rendered hereunder. It is understood that the Township will not withhold any amounts for payment of taxes from the compensation of Consultant. Consultant, or any member, agent, or employee of Consultant will not represent to be, or hold themselves out as, an employee of the Township, and Consultant acknowledges absolutely no right or entitlement in or to any of the pension, retirement or other benefit programs now or hereafter available to the Township's employees. Any and all sums subject to deductions, if any, required to be withheld and/or paid under any applicable state, federal or municipal laws or regulations shall be Consultant's sole responsibility and Consultant shall indemnify and hold Township harmless from any and all damages, claims and expenses arising out of or resulting from any claims asserted by any taxing authority as a result of or in connection with said payments.

2. **Duties.** The Consultant will serve as the: **NORTHFIELD TOWNSHIP PART-TIME CONTRACTUAL CODE ENFORCEMENT OFFICER**

   The Part-time Code Enforcement Officer serves at the direction of the Township Manager.

SUMMARY OF DUTIES, ACTIVITIES AND RESPONSIBILITIES

The Consultant is responsible for enforcing municipal code regulations including, but not limited to, zoning, signage, blight, and general nuisances. The position conducts field investigations and inspections for ordinance compliance and violations of the municipal code. Maintains records related to complaints and field investigations, and issue and maintain appropriate records of citations for violations, and enter such records into Township computer system as directed. Provides notice of violations through verbal and written contact. Initiates action for swearing to complaints in connection with prosecution for violations of municipal codes. Provides assistance and coordinates investigations with the Township of Northfield and Washtenaw County Building Department. The Consultant is responsible for obtaining and maintaining any and all licenses required by law for the work contemplated herein. Provide recommendations to the Township Manager on improvements to code enforcement procedures, as well as necessary ordinances.

PRINCIPLE DUTIES AND RESPONSIBILITIES

The assigned duties for the Part-time Contractual Code Enforcement Officer will include a variety of tasks as determined by the Township Manager. The Part-time Contractual Code Enforcement Officer shall provide service in such a manner that optimum results are achieved in relation to the resources of the Township. The Part-time Contractual Code Enforcement Officer will report directly to the Township Manager, and shall fulfill any other duties reasonably requested by the Township and agreed to by the Part-time Contractual Code Enforcement Officer. Consultant shall not be entitled to compensation for time spent travelling to and from Township facilities.

3. **Term.** This Agreement shall commence on _____ _____, 20____, and shall terminate on _____ _____, 20____, unless earlier terminated by either party hereto. This Agreement may be terminated at will upon fifteen (15) days prior written notice by the Township Board, the Township Manager or Consultant. This Agreement shall automatically renew every six months, for a term of six months, unless either party provides written notice of termination fifteen (15) days prior to the expiration of the Agreement.

4. **Compensation.** As full compensation for the services performed by William Lenaghan, as representative for Consultant, the Township shall pay the Consultant at the hourly rate of $25.00, with total hours per week not to exceed 8 hours, unless directed by the Township Manager. Compensation shall only be provided for periods when William Lenaghan is providing services for the Township, not inclusive of lunch hour or breaks.

5. **Expenses.** Consultant shall bill and the Township shall reimburse Consultant for all reasonable gasoline expenses incurred in providing services under this Agreement within the Township. The gasoline expense includes only the actual cost of gasoline used in providing services in the Township, and does not include gasoline used going to and from the Township, and is not a mileage expense.

6. **Documentation of Efforts.** To assure performance of its obligations hereunder, and for proper payment for work performed, Consultant shall provide the Township monthly invoices, which shall be due by the 5th day of the following month, and shall identify and describe by date the services performed, the hours expended, and any other pertinent information requested by the Township.

7. **Consultant's Taxpayer I.D. Number.** The taxpayer I.D. number of the Consultant is 37-0441544.

8. **Insurance.** Consultant shall carry general liability, automobile liability, workers' compensation, and employer's liability insurance in an amount deemed acceptable by the Township's insurance carrier, and shall add the Township as an additional insured on such policies. If consultant fails to carry such insurance in adequate amounts, it shall indemnify and hold harmless the

Township, its agents and employees from and against any damages, claims, and expenses arising out of or resulting from work conducted by Consultant and its agents or employees.

9. **Competent Work.** All work will be done in a competent fashion in accordance with applicable standards of the profession and all services are subject to final approval by a representative of the Township prior to payment.

10. **Representations and Warranties.** The Consultant will make no representations, warranties, or commitments binding the Township without the Township's prior consent, and has no authority to do so.

11. **Legal Right.** Consultant covenants and warrants that Consultant has the legal right to enter into this Agreement and to perform in accordance with its terms without violating the rights of others or any applicable law and that Consultant has not and shall not become a party to any other agreement of any kind which conflicts with this Agreement.

12. **Waiver.** Failure to invoke any right, condition, or covenant in this Agreement by either party shall not be deemed to imply or constitute a waiver of any rights, condition, or covenant and neither party may rely on such failure.

13. **Conflicts of Interest.** The Consultant represents that it is free to enter into this Agreement and that this engagement does not violate the terms of any agreement between the Consultant and any third party.

14. **Successors and Assigns.** This Agreement is not assignable without the written consent of the Township.

15. **Choice of Law.** The laws of the state of Michigan shall govern the validity of this Agreement, the construction of its terms and the interpretation of the rights and duties of the parties hereto.

16. **Notice.** Any notice or communication permitted or required by this Agreement shall be deemed effective when personally delivered or deposited, postage prepaid, in the first class mail of the United States properly addressed to the appropriate party at the address set forth below:

    a. **Notices to Consultant:**
    3433 Dewdrop Lane
    Howell, MI 48843

    b. **Notices to the Township:**
    8350 Main St.
    P.O. Box 576
    Whitmore Lake, MI 48189

Any party hereto may change its address for purposes of this paragraph by written notice.

17. **Headings.** Section headings are not to be considered a part of this Agreement and are not intended to be a full and accurate description of the contents hereof.

18. **Waiver.** Waiver by one party hereto of breach of any provision of this Agreement by the other shall not operate or be construed as a continuing waiver.

19. **Assignment.** The Consultant shall not assign any rights under this Agreement, or delegate the performance of any duties, without prior written consent of the Township.

20. **Modification or Amendment.** No amendment, change, or modification of this Agreement shall be valid unless in writing signed by the parties hereto.

21. **Entire Understanding.** This document and any exhibit attached constitute the entire understanding and agreement of the parties, and any and all prior agreements, understandings, and representations are hereby terminated and cancelled in their entirety and are of no further force and effect.

22. **Unenforceability of Provisions.** If any provision of this Agreement, or any portion thereof, is held to be invalid and unenforceable, the remainder of this Agreement shall nevertheless remain in full force and effect.

IN WITNESS WHEREOF, the undersigned have executed this Agreement as of the day and year first written above. The parties hereto agree that facsimile signatures shall be as effective as of originals.

Township of Northfield

BY:_____

Its: _____

William Lenaghan

BY:_____

Memo

To: Northfield Township Board

From: Howard Fink

Date: 3/19/2015

Re: Board Retreat – Economic Development

Dear Township Board,

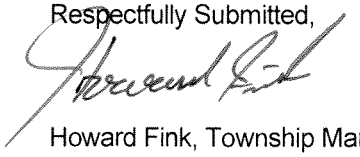
At the board retreat, we were able to discuss two of the goals in depth that the board set. Those were "framing the development debate" and "fiscal priorities". The next goal in order of votes was Economic Development. More specifically, discussion of property acquisition / disposition, issues related to 75 Barker, Van Curler property, etc. I have this on the agenda for this evening if the board wishes to discuss any of these issues.

Some Items that have come up under economic development are as follows:

1. Creation of a municipal parking lot at 75 Barker
2. Long term redevelopment / vision for 75 Barker
3. Long term vision for Van Curler Property
4. Streetscaping efforts in the downtown
5. Façade Grants for local business

This is not a comprehensive list, rather issues that have been addressed in some fashion in the past. Please note that if we are discussing property acquisition on a particular tract of land, it should be done in executive session. If the discussion is more general, it would be appropriate to discuss in open session.

Respectfully Submitted,



Howard Fink, Township Manager