**AGENDA**
**CASCADE CHARTER TOWNSHIP**
**REGULAR BOARD MEETING**
Wednesday August 10, 2016
7:00 P.M.
Cascade Branch of the Kent District Library, Wisner Center
2870 Jacksmith, S.E.

**Expected Meeting Procedures**

1. During public comments you may speak on any item not noted on the agenda for a public hearing.
2. Please limit comments to 3 minutes per person and the Board may or may not choose to respond.
3. Please limit your comments to a specific issue.
4. Please turn OFF cellular phones.

**Article 1.** **Call to Order, Roll Call**

**Article 2.** **Pledge of Allegiance to the Flag**

**Article 3.** **Approval of Agenda**

**Article 4.** **Presentations/Public Comments (limit comments to 3 minutes)**
- **Lance Werner – KDL–Annual Report**
- **Tim Haagsma – KCRC-Thornapple River/Cascade Rd. Intersection**

**Article 5.** **Approval of Consent Agenda**

a. Receive and File Various Meeting Minutes
   1. Regular Township Board Minutes of 7/27/16.
   2. Regular DDA Minutes of 4/19/16.

b. Receive and File Reports
   1. Kent County Sheriff East Precinct Quarterly Report.
   2. Treasurer's Department Monthly Report – June, 2016.

c. Education Request
   1. Mildred Pinder – MGFOA Fall Training – September 18-21 – Bellaire, MI.

**Article 6.** **Financial Actions**

**a. Consider Approval of July 2016, Payable, Payroll and Transfer Report.**

**Article 7.** **Unfinished Business**

**Article 8.** **New Business**

**060-2016** **Consider Approval of 28th St. Sidewalk – Hotel Ave. to Drury Hotel.**

**061-2016** **Consider Approval of Thornapple Hills Drain Rehabilitation Project.**

**062-2016** **Consider Approval of Hope Network Transportation Services Contract.**

**063-2016** **Introduction of Proposed Storm Water Amendments.**

**Article 9.** **Public Comments on any other matters. (limit comments to 3 minutes)**

**Article 10.** **Manager Comments**

**Article 11.** **Board Member Comments**

**Article 12.** **Adjournment**

# Programming Growth

- For all ages
- For adults
- For teens
- For school-age children
- For young children
- Community outreach and private programs (tours, workshops etc.)

**5,132** 2014 — **6,619** 2015

**181,935** 2014 — **259,560** 2015

## Letter from Lance

Like maps, great public libraries are an essential tool for any journey. With Kent District Library's exceptional service commitment, we continue to explore uncharted territory to deliver information, ideas and excitement!

From couches, coffee shops and even barracks around the globe, KDL customers are downloading more than 1 million titles from our digital collection. Bucking national trends, our circulation increased by 5% to over 6.2 million items last year. This includes items like iPads, GoPros and Wi-Fi hotspots. Beginning in 2016, you can even check out a bike at 16 KDL locations!

Through our community outreach, we deliver library services to every corner of Kent County: collaborating with school districts and farmers markets, maintaining Little Free Libraries and supporting Wi-Fi access points. Our commitment to accessible library services for all residents is embodied in our partnership with Senior Meals on Wheels and KDL's recognition as a Community Champion by Disability Advocates of Kent County.

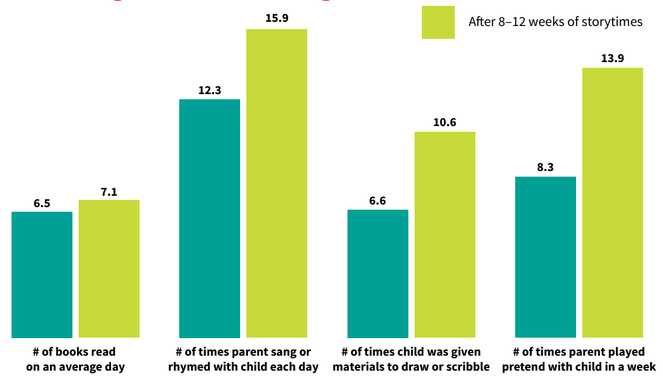
As I'm out and about, I frequently encounter people who are amazed by the size of Kent District Library—and not just the vast 734 square miles, or the nearly 400,000 residents we serve, although that's impressive. What is *really* big about KDL is the huge scope of services we are honored to provide and our customers' appreciation for them!

Lance Werner

129698MSCKDL

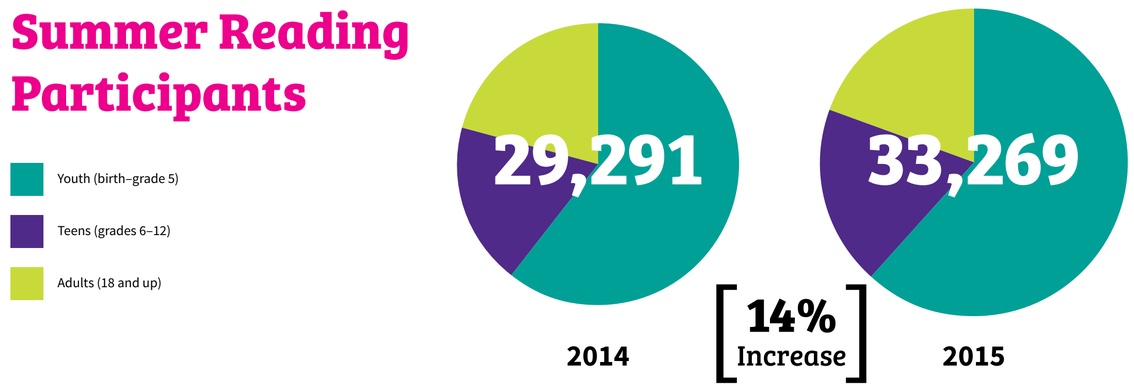
Kent District Library
KDL

# Early Literacy

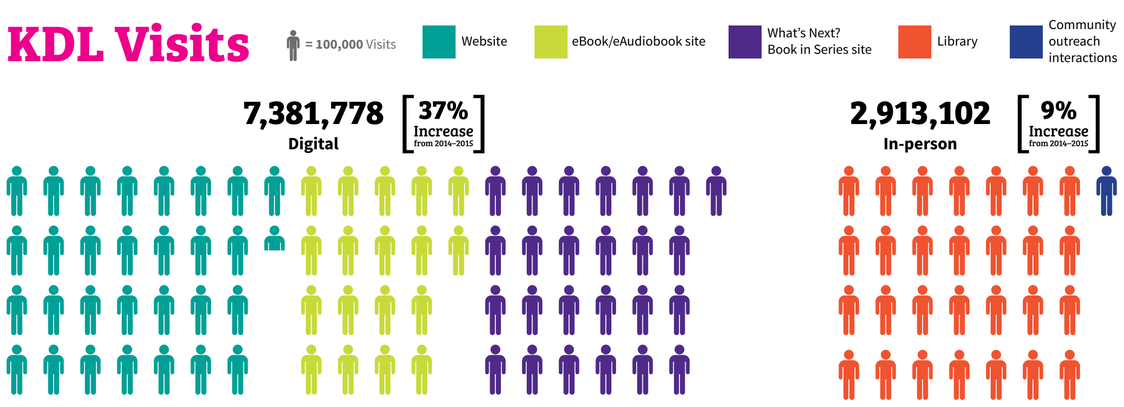



In 2015, Kent District Library secured funding from the Steelcase Foundation to measure the outcomes of public library storytimes. KDL partnered with Western Michigan University to develop the study and invited the Grand Rapids Public Library to participate. Surveys were performed with families attending early literacy storytimes at three KDL branches, measuring changes in those parent-child interactions which are proven to impact early literacy development. The results demonstrate that KDL is achieving our goal of positively impacting early literacy development in Kent County.

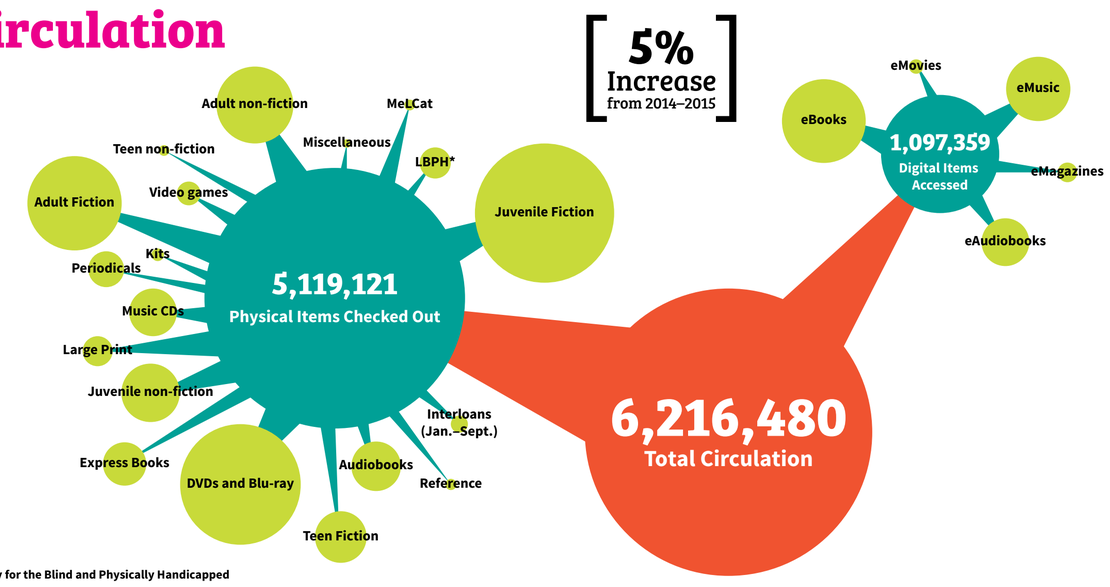
# Summer Reading Participants




# KDL Visits




# Circulation

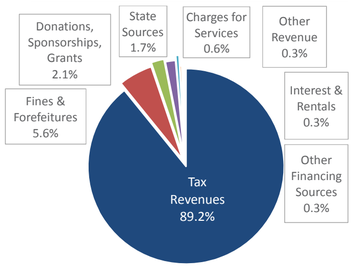



*Library for the Blind and Physically Handicapped

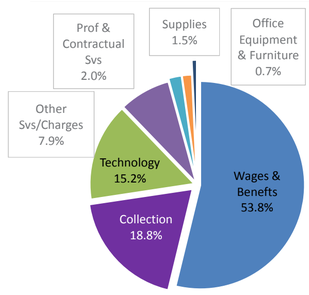
# Financial Information

**KENT DISTRICT LIBRARY**
**2015 SUMMARY FINANCIAL INFORMATION**
**GENERAL FUND**

| REVENUE | |
|---|---|
| Tax Revenues - Millage (1.28mills) | 19,731,194 |
| Fines & Forefeitures | 1,240,239 |
| Donations, Sponsorships, Grants | 470,925 |
| State Sources | 368,566 |
| Charges for Services | 125,995 |
| Other Revenue | 66,787 |
| Interest & Rentals | 59,411 |
| Other Financing Sources | 58,943 |
| **TOTAL REVENUES** | **$ 22,122,060** |




| EXPENDITURES | |
|---|---|
| Wages & Benefits | 11,206,039 |
| Books & Materials | 3,924,316 |
| Technology (all expenses related to) | 3,173,582 |
| Other Svs/Charges | 1,651,961 |
| Professional & Contractual Services | 416,506 |
| Supplies | 310,565 |
| Office Equipment & Furniture | 154,545 |
| **TOTAL EXPENDITURES** | **$ 20,837,513** |




| | |
|---|---|
| Total Fund Balance 2015 | 5,476,642 |
| Fund Balance - Unspendable (Prepaids) | (164,831) |
| Fund Balance - Assigned | (233,851) |
| Fund Balance - Restricted by Contributors | (53,868) |
| Fund Balance - Board Committed - Capital Projects | (815,300) |
| **TOTAL UNDESIGNATED FUND BALANCE** | **$4,208,792** |

The above numbers have been derived from the 2015 Financial Statements. Complete audited Annual Financial Statements will be available after June 2016.

# Donations

*Every care have been taken to acknowledge our donors and create an accurate list. Any inaccuracies or informational errors are unintentional.*

## Giving to Kent District Library

We gratefully acknowledge those gifts given to KDL from January 1–December 31, 2015. We also salute the many donors who chose to remain anonymous for their generosity.

♥ Indicates Three-Year Consecutive Donation
€ Indicates Donation to the Endowment

**Shakespeare Society (Gifts of $25,000+)**
Consumers Energy Foundation

**Hemmingway Society (Gifts of $10,000+)**
Centennial Securities Company Inc.
Grand Rapids Community Foundation
Steelcase Foundation

**Austen Society (Gifts of $5,000+)**
Edith Blodgett Fund of the Brookby Foundation
Great Start to Quality
PNC Foundation
Steelcase Inc.

**Twain Society (Gifts of $2,500+)**
Kenneth and Linda Krombeen ♥
Law Weathers & Richardson, PC
Library of Michigan Foundation
Macy's ♥
Meijer ♥
Wolverine World Wide Foundation

**Dickens Society (Gifts of $1,000+)**
Adamy Valuation Advisors
Applied Imaging
BDO
BISSELL
Bloom, Sluggett & Morgan, P.C.
Janet Boyles
Chemical Bank ♥
Dickinson Wright PLLC
First United Credit Union
Bill and Mary Ford ♥
Foster Swift ♥
Friends of the East Grand Rapids Library ♥
Friends of the Grandville Library ♥
Friends of the Plainfield Township Library ♥
Gordon Food Service
Hungerford Nichols
JMM Family Partnership LLC
Chloe Jones ♥
Lake Michigan Credit Union
Ali Mahajerin
Michigan Council for Arts and Cultural Affairs
Midwest Tape
Miller Johnson
Norris, Perne' & French, LLP
RJW Enterprises
United Bank of Michigan
W.M. Eerdmans Publishing Co.
West Michigan Whitecaps ♥

**Steinbeck Society (Gifts of $500+)**
Amazon.com ♥
Michelle Boisvenue-Fox
Mary Burns ♥
Linda Jo and Josh Carron ♥
James and Constance Christenson
Alan and Michelle Davis
Edward Jones Financial
Bill and Cecile Fehsenfeld
Fishbeck, Thompson, Carr & Huber, Inc.
Bob Gerritsen
Grand Rapids Community College
Grand Rapids Doulas
John and Katherine Gregg
GVSU
Scott and Gail Haebich
Mike and Lynn McIntosh
John Mitchell and Gina Lang
Nate and Carol Mohr
Megan Niergarth ♥
Cornelius Plantinga ♥
Scott and Anne Rush ♥
Jerome and Helen Smith ♥
Stifel, Nicolaus & Company, Inc. ♥
Phillip Van Baren ♥
Jon and Pamela VanderPloeg
Lance and Kristen Werner
Brent and Sherrie Willson
Bob and Mary Younger €

**Poe Society (Gifts of $250+)**
Edward and Kathy Aboufadel ♥
Mark Balletto
Karen and Robert Boluyt
Liz Breed
Tracy Brogan
Barbara Krause Bunbury ♥
Larry Cieply
Lee and Mary Cook
James Cullen
Jim and Harriet Engbers
Jeff and Sheila Frank
Inta Grace ♥
Grand Rapids Public Library
Richard L Hagan
Douglas and Victoria Hoekstra
Jeffrey and Jeanine Holquist
Karl Orthodontics ♥
John and Mary Lange ♥ €
Jean McCormick ♥
Josh and Molly Meringa ♥
Mortimore Family (Dick Weld) ♥ €
Heidi Nagel ♥
Jaclyn J Olmstead
Pam Spring Advertising
Fleming S Pruitt
Kevin Schaefer
Schuler Books & Music
Mark and Julianne Strauss
W. Vandenberg and Elizabeth Neubig

**Alcott Society (Gifts of $100+)**
A&K Research, Inc.
Melissa Anderson
William and Jill Beute ♥
Wendy and Jim Booydegraaff
Brewery Vivant
Charles and Lucy J. Caldwell ♥
Cheryl Cammenga
Hazel Carpenter ♥
Cheryl Carter
David and Diane Comfort (In Memory of Wanda Deubner) ♥
Mary Dersch
Eli Lilly Foundation ♥
Scott and Kathy Ellison ♥
Jim and Harriet Engbers ♥
Jane Everhart
Maurice and Sara Fetty
Priscilla Finch (In Memory of Eugene and Alma Ensing)
Barbara Fishback ♥
Karilyn Frederick
Judy Freeman
Betty Jean Fry ♥
Scott and Julie Garrison
GE Foundation
Brendan and Liz Geary
Kathryn Gerow (In Memory of Gordon Gerow) ♥
Sandra Graham ♥
Grand Rapids Drive
Christopher Haizman ♥
Bill and Claudia Hardy ♥
Charles and Martha Hayden
Cindy Hogan
Lori L. Holland
Keith and Mary Hopkins
Miles F. and Linda L. Huffaker ♥
Paul and Diane Hummell ♥
Win and Kyle Irwin ♥
James and Gail Junod
David and Jennifer Khorey
Library Design Associates
Dorothy Lorson ♥
Sharon Mah
Hugh and Georgia Makens ♥
Rodney and Mimi Martin
Jason and Kathy Marvin
Kate McCarthy ♥
Marcia Meade
Michigan Humanities Council
Maxine Moerdyk
Patrick and Christine Muldoon ♥
Charles and Noreen Myers ♥ €
Laura Nawrot
Cathy Neis and Jay Fowler
Linda Parker
Scott and Sarah Pastoor
Gregory and Linda Patterson
Rick Penn and Maureen Fitzgerald
Sharon and Aaron Phipps ♥
Rosalie Plechaty
Ronald and Kathie Redman ♥
Amy and Kyle Rokos ♥
Heather and Dave Ross
Peggy and Jud Ross
Tammy and Paul Sadek ♥
Stephanie Sanderson
Jim Sanford
Robert and Karen Schermer ♥
John and Shawn Schuring €
Joan Secchia
Carol Simpson (In Memory of Charles Fry and In Honor of Melissa DeWild) ♥ €
Brent and Diane Slay ♥
Julia Smith ♥
Shelly Smith ♥
Sherry Smith
William and Emily Smith
Jennifer Sommerdyke
Alexandra Sudak
Shirley Switek ♥
Rita Traynor
Kathleen Underwood and Gary Stark
Mike Waalkes ♥
Mike and Brenda Warne
Susan Watts
Sharon Weber
Jerry and Ginny Weddell
Judith A. Wietsma
Jeffrey and Johanna Wilberding
Craig and Laurie Wilson
Ronald and Diane Woods ♥
Mike and Mary Yoak ♥

**Dr. Seuss Society (Gifts of $1+)**
Abel, Terry and Geraldine
Bernadine Agacinski
Michael and Katrina Alexander ♥
Patsy Allen
James Andersen
Dale and Carol Austin ♥
Mary and Lawrence Austin
Jean Barkin ♥
Richard and Elizabeth Barrett
Louis and Linda Berra ♥
Carla Blandford ♥
Martha Blandford and Patrick Ladwig ♥
David Blatt
Jane Bodenmiller ♥
Fred and Nancy Brailey
William and Sharon Brandner
Ken and Laurel Bratt
Mark and Ann Marie Brehm
Gretchen Brink ♥
Michelle Brown
Teresa Burns
Robert Burr ♥
Michelle Bury
Janet K Camburn
Margaret Campbell ♥
Judy Cole
Matthew and Carlie Cook
Linda Damstra
George and Sara D'Archangel ♥
Bradley and Lori DeBruyne
Jack and Margaret DeLaat
Angela DeLing
Kaycee Duffey
Nancy Duiven ♥
Daniel and Jan Durkee
Tony and Jennifer Dykhouse ♥
Julie Ebels ♥
Parry and Chris Eckman
Victoria Erickson ♥
Charles Ezinga
Paul and Betty Flak ♥
Jason Flanigan
Karen Forester
Hannah Foster
Peggy Frizzo
David and Ruth Fry ♥
Thomas and Mary Fuller
Bill Gathen
John Gibson
Gillikin Consulting Group LLC
Adam and Sheri Glon
Richard and Patricia Hall ♥
Steven Handlovits ♥
Edward Haviland
Karen Helgevold
Janice Henry
Betty Herrick
Jane Hesselschwerdt
Samantha Holland
Dorothy Holt ♥
Betty Horrick
Evelyn Hozwarth
Martin and Zezette Hutchinson
Jon and Kerrie Karel ♥
Mary Anne Karmes ♥
Ethel Karsten ♥
Brenda Kennedy-Muraski
Vicki Kimball
Robert Knapp ♥
Mara Knuble ♥
Eiko Kondo ♥
Herbert and Wilma Jean Krol ♥
Andrew Kuklewski
Stuart and Ruth Kutsche
Emily Laird
Brian and Susan Lennon
Mary Ann Lentz
Greg Lewis
Amy Linde
Loeks Theaters, Inc.
Arend and Nancy Lubbers
Marcia Lubbers
Joe and Jil Magnan
Camilla Martin ♥
Gene and Linda Michaels ♥
Shannon Middlemiss
Glenda Middleton ♥
Kathleen Miller
Pat Miller
Katey Morse
Clarice Mae Mulder
Joan Mull
Bonnie Munger ♥
Suzanne Naas ♥
Mark and Kathleen Newman ♥
Terry Norlin
Sandra Oato
Katy O'Dell
Dennis O'Neill ♥
David and Denise Overbeek
Sungwan Park
Joan Parker ♥
Barbara Paull (In Memory of Craig Paull)
Gerrit and Janet Peddemors
C. Marjorie Peterson
Candace Ramsahoi
Ruth Reeser
Jeff and Kim Ridings
Kathleen Ringeisen
Christina Ringersma
Gary and Sharon Roberson
Ray and Francina Roberts
Bonnie Roskam
Robert & Sue Ruby
Karen Ruger
Andy Saur ♥
Mallory Schmidt
Marsha Shade
Sandra Shank
Tracy Lynn Shea (In Memory of Marie Smith)
Lynne Simon
Linda Singer
Ray and Elizabeth Skeins ♥
Joy Smith
Meredith Soddy
Else Sorensen ♥
Ann Sowle
Dave and Chris Straw (In Memory of Cliff Nelson)
Nancy Swift
The Bradt/O'Meara Family
Beth Tippet
Jim Toner
Townsend Family
Mary Tracey ♥
Patti Trepkowski
John and Cheryl Tully ♥
Judith Ullery ♥
Linda Unterkircher
Peter and Eileen VandenBerg (In Memory of James Zuppa)
Ardythe VanderVelde ♥
Wilma VanderZwaag
Barbara VanDuren
Kathleen VanLoozenoord
Grace Vegter ♥
Patrice Vrona
Patricia Walcott (In Memory of Lester Walcott) ♥
Lois E. Waldecker ♥ €
Ona Wall ♥
Ruth Watson
Sue Weatherbee
Stephanie Weaver
Laura Weld
Charles L. and Jane A. Willekes ♥
Ruth Wilson
Suzanne C. Winter ♥
Mary Wray ♥
Mary L. Yost
Clasina Young ♥

## Donations to KDL Branches

We gratefully acknowledge those gifts that provide specific support for the programs and services of our individual branches.

♥ Indicates Three-Year Consecutive Donation

**Shakespeare Society (Gifts of $25,000+)**
Friends of the Cascade Library ♥

**Hemmingway Society (Gifts of $10,000+)**
Friends of the East Grand Rapids Library ♥
Friends of the Grandville Library ♥
Friends of the Plainfield Township Library ♥

**Austen Society (Gifts of $5,000+)**
Friends of the Krause Memorial Library ♥
Tassell-Wisner-Bottrall Foundation

**Twain Society (Gifts of $2,500+)**
Cascade Township DDA
Friends of the Englehardt Library ♥
Friends of the Kentwood Library ♥
Friends of the Wyoming Library ♥

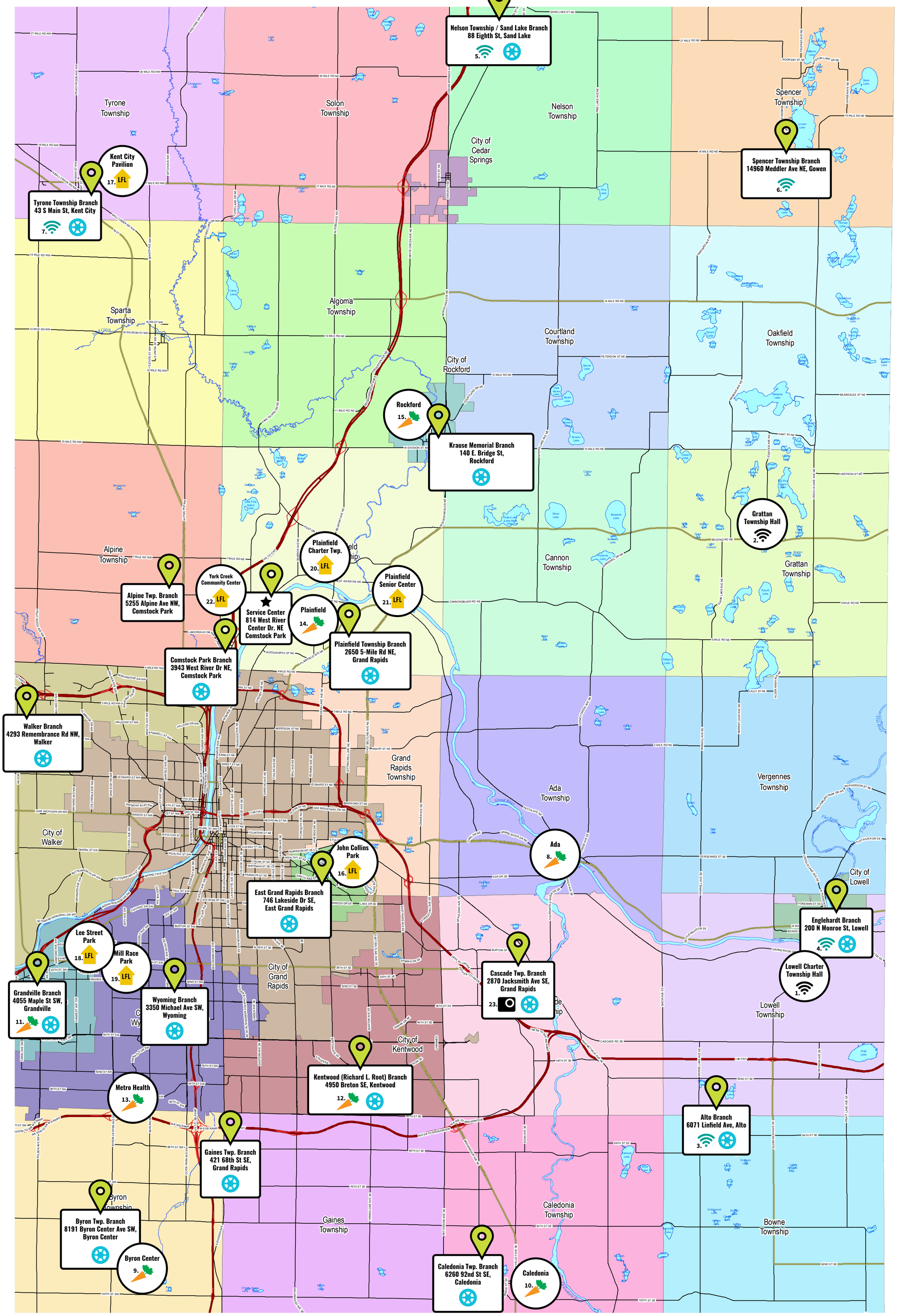
**Dickens Society (Gifts of $1,000+)**
Friends of the Sand Lake/Nelson Township Library
Friends of the Walker Library ♥
Grandville Rotary Club ♥
Guido A. and Elizabeth H. Binda Foundation ♥
Fadia Kreuzer
Steve Maas
Shannon Orthodontics, PLC

**Steinbeck Society (Gifts of $500+)**
City Of Walker
Grand Rapids Community Foundation (Douglas Leon Spalding Memorial Fund)
Grandville Downtown Development Authority ♥
Jeff and Jenni VanderLaan Foundation
Lowell Rotary Club
Macy's
Rockford Sportsman Club ♥
Kristin and Amy Smith ♥
South Kent Rotary
Weller Family Foundation

**Poe Society (Gifts of $250+)**
Shellie Adamy
Matthew and Kate Bloom (In Memory of Joanne Ammon)
Elders Electric
Friends of the Spencer Township Library ♥
Grand River Bank
David Huang
Kent City PTCO
Kentwood Women's Club
Macatawa Bank - Grandville Branch
Potjer Financial Resources
Rosalee Shier
South Kent Rotary
Spartan Nash
Steven and Rebecca Wuerthele ♥

**Alcott Society (Gifts of $100+)**
BenePay
Lester Brooks
Byron Center Chiropractic P.C.
Bruce Clarke and Jean Waeltermann-Clarke (In Honor of Madonna Waeltermann)
Cook Family Services ♥
Friends of the Englehardt Library (In Memory of Theresa Strysko)
Girl Scout Troop 4443
Grandville Ladies' Literary Club ♥
Diane Juergens (In Memory of Kristen Matthew)
Sharon Lutz-Krebill ♥
Laura Madison (In Memory of Kristen Matthew)
Ronald and Avaleen Myszak
Harold and Janet Schuiling (In Memory of Betty VanderHoning and Kittie Buck) ♥
Schuler Books and Music
Larry Seese
Gordon and Esther Start ♥
Everett and Gloria Swanson ♥
Ted Hessler and Family (In Memory of Gerry Rothwell)
Margaret Urquhart (In Memory of Kristen Matthew)
Wyoming Branch Staff

**Dr. Seuss Society (Gifts of $1+)**
Terry and Geraldine Abel
Amber Farms HOA
Judy Baer (Dick Weld)
Mark and Aleta Berghoef (In Honor of Inez Mae Smith)
Mary Brander ♥
Mija Cattanach (In Memory of Kristen Matthew)
Cornerstone University (In Memory of Caroline Joy Mulder)
Delta Kappa Gamma
Friends of the Grandville Library (In Memory of Norma DeBoer)
Robert Garcia
Mary Ellen Gerhard (In Memory of Harold Warmels)
Grandville Christian School, Inc.
Margie Griffith (In Memory of Harold Warmels)
Tom and Janet Haradine (In Memory of Ed Obermeyer)
Mark Heyboer and Melissa Lichtenwalter
Timothy and Charlene Hill
Phil and Cherry Jacobus ♥
Jodi Jarvis-Therrian
Cathleen Kaiser (In Memory of Pat Kaiser) ♥
Edward and Sonja Keiser (In Memory of Dick Weld)
Anne Lebednick
Lowell Area Historical Museum
Lowell Showboat Garden Club
M37 Auction Co. LLC
Stan and Jan Powers (In Honor of Luci King) ♥
Rockford Chapter #215, Order of the Eastern Star
Robert and Sue Ruby
Barb Schneider
Alexandra Sudak
Daniel Terry (In Memory of Dick Weld)
Tom and Carol Korenstra (In Memory of Edward R. Schuman)
Sharon Vanderwarf (In Memory Irene Helen Vaughan)
Stacie VanOosterhout (In Memory of Cindy Burpee)
Scott and Sylvia Wormmeester ♥




# LEGEND

**Branch Locations**

**KDL Cruisers, Circulating Bikes**
16 locations (not at Alpine & Spencer Twp.)

**Wi-Fi Available**

**All Branches**

**1. Lowell Charter Township Hall**
2910 Alden Nash Ave SE, Lowell

**2. Grattan Township Hall**
12050 Old Belding Rd NE, Belding

**Circulating Wi-Fi Hotspots Available**

**3. Alto Branch**

**4. Englehardt (Lowell) Branch**

**5. Nelson Twp. / Sand Lake Branch**

**6. Spencer Twp. Branch**

**7. Tyrone Twp. Branch**

**Farmers Market with KDL Booth** *Schedules may vary

**8. Ada** – Tuesdays, 11 a.m. to 4 p.m.
7239 Thornapple River Dr SE, Ada

**9. Byron Center** – Saturdays, 9 a.m. to 1 p.m.
84th & Byron Center Avenue

**10. Caledonia** – First Saturday of the month (June–September) 9 a.m. to 1 p.m.
9957 Cherry Valley Ave SE, Caledonia

**11. Grandville** – Tuesdays, 9 a.m. to 1 p.m.
At the library

**12. Kentwood** – Saturdays, 9 a.m. to 1 p.m.
At the library

**13. Metro Health** – Thursdays, 9 a.m. to 2 p.m.
5900 Byron Center Ave SW, Wyoming

**14. Plainfield** – Thursdays, noon to 6 p.m.
4111 Plainfield Avenue NE, Grand Rapids

**15. Rockford** – Saturdays, 8 a.m. to 1 p.m.
Located in the South Squires St. parking lot off of Main St.

**KDL Little Free Library**

**16. John Collins Park**
650 Lakeside Dr SE, East Grand Rapids

**17. Kent City Pavilion**
32 S. Kent St, Kent City

**18. Lee Street Park**
Corner of Lee St & Homewood St, Grandville

**19. Mill Race Park**
3370 Carlton Park, Grandville

**20. Plainfield Charter Township**
6161 Belmont Ave NE, Plainfiled Charter Twp.

**21. Plainfield Senior Center**
5255 Grand River Dr NE, Grand Rapids

**22. York Creek Community Center**
650 York Creek Dr NW, Comstock Park

**Circulating GoPro Cameras**

**23. Cascade Twp. Branch**
2870 Jacksmith Ave SE, Grand Rapids

# BRANCH HOURS

**ALPINE TOWNSHIP BRANCH**
5255 Alpine Ave. NW, Comstock Park 49321

| SUN | MON | TUE | WED | THU | FRI | SAT |
|---|---|---|---|---|---|---|
| – | 12:00 to 8:00 | 9:30 to 5:00 | 12:00 to 8:00 | 9:30 to 5:00 | 12:00 to 5:00 | 9:30 to 1:30 |

**GRANDVILLE BRANCH**
4055 Maple St. SW, Grandville 49418

| SUN* | MON | TUE | WED | THU | FRI | SAT |
|---|---|---|---|---|---|---|
| 1:00 to 5:00 | 9:30 to 8:00 | 9:30 to 8:00 | 9:30 to 8:00 | 9:30 to 8:00 | 9:30 to 6:00 | 9:30 to 5:00 |

*Closed Sundays in summer (Memorial Day to Labor Day)

**ALTO BRANCH**
6071 Linfield Ave., Alto 49302

| SUN | MON | TUE | WED | THU | FRI | SAT |
|---|---|---|---|---|---|---|
| – | 9:30 to 1:30 | 12:00 to 8:00 | 12:00 to 8:00 | 1:00 to 6:00 | 9:30 to 6:00 | 9:30 to 1:30 |

**KENTWOOD (RICHARD L. ROOT) BRANCH**
4950 Breton SE, Kentwood 49508

| SUN* | MON | TUE | WED | THU | FRI | SAT |
|---|---|---|---|---|---|---|
| 1:00 to 5:00 | 9:30 to 8:00 | 9:30 to 8:00 | 9:30 to 8:00 | 9:30 to 8:00 | 9:30 to 6:00 | 9:30 to 5:00 |

*Closed Sundays in summer (Memorial Day to Labor Day)

**BYRON TOWNSHIP BRANCH**
8191 Byron Center Ave. SW, Byron Center 49315

| SUN | MON | TUE | WED | THU | FRI | SAT |
|---|---|---|---|---|---|---|
| – | 9:30 to 8:00 | 9:30 to 8:00 | 9:30 to 8:00 | 12:00 to 8:00 | 9:30 to 5:00 | 9:30 to 5:00 |

**KRAUSE MEMORIAL BRANCH**
140 E. Bridge St., Rockford 49341

| SUN | MON | TUE | WED | THU | FRI | SAT |
|---|---|---|---|---|---|---|
| – | 9:30 to 8:00 | 9:30 to 8:00 | 9:30 to 8:00 | 12:00 to 8:00 | 9:30 to 5:00 | 9:30 to 5:00 |

**CALEDONIA TOWNSHIP BRANCH**
6260 92nd St. SE, Caledonia 49316

| SUN | MON | TUE | WED | THU | FRI | SAT |
|---|---|---|---|---|---|---|
| – | 9:30 to 8:00 | 12:00 to 8:00 | 9:30 to 5:00 | 12:00 to 8:00 | 9:30 to 5:00 | 9:30 to 5:00 |

**NELSON TOWNSHIP/SAND LAKE BRANCH**
88 Eighth St., Sand Lake 49343

| SUN | MON | TUE | WED | THU | FRI | SAT |
|---|---|---|---|---|---|---|
| – | 9:30 to 8:00 | 9:30 to 5:00 | 12:00 to 8:00 | – | 9:30 to 6:00 | 9:30 to 5:00 |

**CASCADE TOWNSHIP BRANCH**
2870 Jacksmith Ave. SE, Grand Rapids 49546

| SUN* | MON | TUE | WED | THU | FRI | SAT |
|---|---|---|---|---|---|---|
| 1:00 to 5:00 | 9:30 to 8:00 | 9:30 to 8:00 | 9:30 to 8:00 | 9:30 to 8:00 | 9:30 to 6:00 | 9:30 to 5:00 |

*Closed Sundays in summer (Memorial Day to Labor Day)

**PLAINFIELD TOWNSHIP BRANCH**
2650 5-Mile Rd. NE, Grand Rapids 49525

| SUN* | MON | TUE | WED | THU | FRI | SAT |
|---|---|---|---|---|---|---|
| 1:00 to 5:00 | 9:30 to 8:00 | 9:30 to 8:00 | 9:30 to 8:00 | 9:30 to 8:00 | 9:30 to 6:00 | 9:30 to 5:00 |

*Closed Sundays in summer (Memorial Day to Labor Day)

**COMSTOCK PARK BRANCH**
3943 W. River Dr. NE, Comstock Park 49321

| SUN | MON | TUE | WED | THU | FRI | SAT |
|---|---|---|---|---|---|---|
| – | 9:30 to 8:00 | 12:00 to 8:00 | 9:30 to 5:00 | 12:00 to 8:00 | 9:30 to 5:00 | 1:00 to 5:00 |

**SPENCER TOWNSHIP BRANCH**
14960 Meddler Ave., Gowen 49326

| SUN | MON | TUE | WED | THU | FRI | SAT |
|---|---|---|---|---|---|---|
| – | 9:30 to 5:00 | 12:00 to 8:00 | 9:30 to 5:00 | 12:00 to 8:00 | 12:00 to 5:00 | 9:30 to 1:30 |

**EAST GRAND RAPIDS BRANCH**
746 Lakeside Dr. SE, East Grand Rapids 49506

| SUN* | MON | TUE | WED | THU | FRI | SAT |
|---|---|---|---|---|---|---|
| 1:00 to 5:00 | 9:30 to 8:00 | 9:30 to 8:00 | 9:30 to 8:00 | 9:30 to 8:00 | 9:30 to 6:00 | 9:30 to 5:00 |

*Closed Sundays in summer (Memorial Day to Labor Day)

**TYRONE TOWNSHIP BRANCH**
43 S. Main St., Kent City 49330

| SUN | MON | TUE | WED | THU | FRI | SAT |
|---|---|---|---|---|---|---|
| – | 9:30 to 1:30 | 12:00 to 8:00 | 9:30 to 5:00 | 12:00 to 8:00 | 1:00 to 5:00 | 9:30 to 1:30 |

**ENGLEHARDT BRANCH**
200 N. Monroe St., Lowell 49331

| SUN | MON | TUE | WED | THU | FRI | SAT |
|---|---|---|---|---|---|---|
| – | 12:00 to 8:00 | 12:00 to 8:00 | 12:00 to 8:00 | 9:30 to 5:00 | 9:30 to 5:00 | 9:30 to 5:00 |

**WALKER BRANCH**
4293 Remembrance Rd. NW, Walker 49534

| SUN | MON | TUE | WED | THU | FRI | SAT |
|---|---|---|---|---|---|---|
| – | 9:30 to 8:00 | 9:30 to 8:00 | 9:30 to 8:00 | 9:30 to 8:00 | 9:30 to 5:00 | 9:30 to 5:00 |

**GAINES TOWNSHIP BRANCH**
421 68th St. SE, Grand Rapids 49548

| SUN | MON | TUE | WED | THU | FRI | SAT |
|---|---|---|---|---|---|---|
| – | 9:30 to 8:00 | 9:30 to 8:00 | 9:30 to 5:00 | 9:30 to 8:00 | 9:30 to 5:00 | 9:30 to 5:00 |

**WYOMING BRANCH**
& the Library for the Blind and Physically Handicapped
3350 Michael Ave. SW, Wyoming 49509

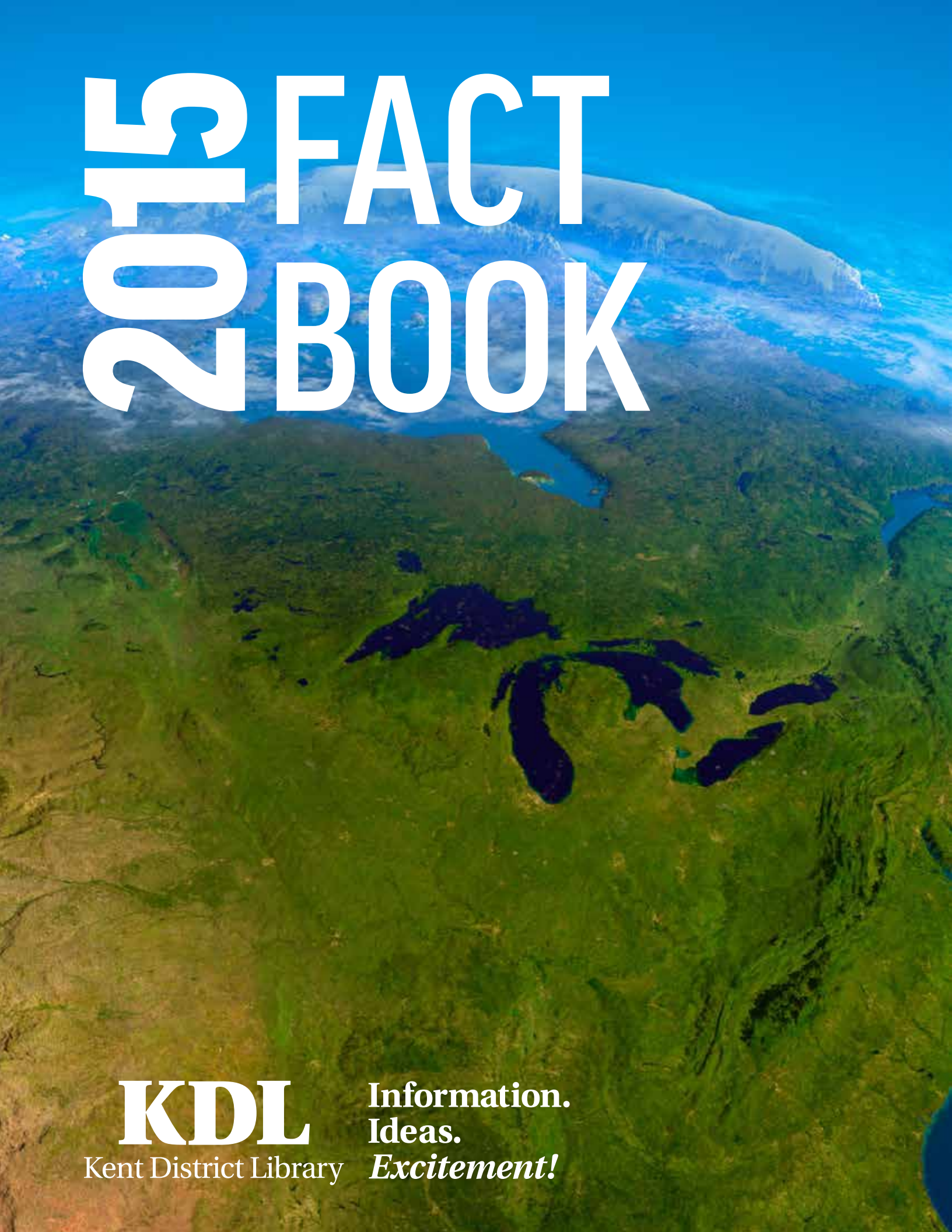
| SUN* | MON | TUE | WED | THU | FRI | SAT |
|---|---|---|---|---|---|---|
| 1:00 to 5:00 | 9:30 to 8:00 | 9:30 to 8:00 | 9:30 to 8:00 | 9:30 to 8:00 | 9:30 to 6:00 | 9:30 to 5:00 |

*Closed Sundays in summer (Memorial Day to Labor Day)

**KDL Service Center, 814 West River Center Dr. NE, Comstock Park 49321**

KDL
Kent District Library

# 2015 FACT BOOK



KDL
Kent District Library

Information.
Ideas.
*Excitement!*

# Kent District Library

**KDL Service Center**
814 West River Center Drive NE
Comstock Park, MI 49321-8955
Phone: 616-784-2007
Fax: 616-647-3828

Kent District Library is a public library system operating 18 branch libraries. KDL serves nearly 400,000 residents of 27 governmental units, comprising most of Kent County, Michigan. KDL is an IRS-designated 501(c)(3) nonprofit supported by millage dollars and private donations.

# Table of Contents

## Kent District Library Information

History ..... 3

Mission ..... 3

Strategic Plan 2014 Update ..... 4–12

KDL Branches ..... 13

Service Area ..... 14

Governance and Organizational Structure ..... 15–17

Summary of Financial Information ..... 18

Statistical Trends ..... 19–22

Statistical Information: System-wide ..... 23–27

Statistical Information: Branch Specific ..... 28–47

Statistical Information: Municipalities without Branches ..... 48–56

Peer Comparison ..... 57–60

## Kent County Information

Lakeland Library Cooperative ..... 61

Officials and Legislators ..... 62–63

Kent County Board of Commissioners ..... 64

# History

- **1927:** Kent County Federation of Women's Clubs begins project of library extension.
- **1936:** Kent County Library Association formed. Kent County Library System becomes a department of the County of Kent.
- **1994:** The Library separates from the County to form the Kent District Library, an independent taxing agency with governance by a Board of Trustees appointed by the Kent County Board of Commissioners and representing eight geographic regions of the KDL Service Area.
- **2011:** Kent District Library celebrates 75 years of providing library service to citizens in Kent County.
- **2014:** A ten-year 1.28 millage approved by voters.
- **2014:** Obtained 501 (c)(3) status.
- **2015:** Expanded the services of the Library for the Blind and Physically Handicapped by increasing the number of large print materials.
- **2015:** Implemented a new SirsiDynix ILS (Integrated Library System) for Kent District Library.

---

# Mission

***Information, Ideas, Excitement!***

---

# Kent District Library Branches and Service Center

Kent District Library provides library services to over 395,000 customers in 27 municipalities through 18 branches located throughout Kent County. With the exception of the KDL Service Center, the library buildings are owned and maintained by the local municipality while Kent District Library provides the staff, collection, technology and programming.

# Strategic Plan 2015-2017

KDL's 2015 – 2017 Strategic Plan emphasizes connecting people to the services they need and value. The plan is simple, flexible, memorable and embraced by KDL staff. Success is measured in part by determining whether customers achieve their desired outcome through using the library. Ultimately, KDL demonstrates the positive impact of library service in our communities.

This 2016 Strategic Plan update is a supplement to the original 2015-17 Strategic Plan. It both reiterates the approved Strategic Plan, and serves as a continuation, with new activities that will help the library achieve the original desired outcomes related to KDL's service priorities: Engage the Community, Create Young Readers, Support Learning, Cultivate Creativity and Serve Senior Citizens. This update includes the proposed budget for the 2016 fiscal year.

## Millage Campaign Promises

- ☑ Offer more convenient hours at more locations.
- ☑ Meet expected increased demand for Library for the Blind and Physically Handicapped.
- ☑ Expand early literacy programs for young children and their families.
- ☑ Reduce customer wait time for popular items, especially to meet increasing demand for eBooks and other digital formats.
- ☑ Expand youth and teen collections, both in print and digital formats, to help students find what they need for school and what they want for fun.
- ☑ Upgrade KDL's wireless service to increase speed and improve customer service.
- ☑ Offer improved technology-related programming, such as computer classes offered in Spanish, and more technology assistance offered as outreach service in the community.
- ☑ Employ library staff with designated time to devote to mutually-beneficial community partnerships, especially where such partnerships benefit young children and students.

## Strategic Plan Service Priorities

**KDL ENGAGES THE COMMUNITY, PARTNERSHIPS**

**Progress on Partnership Activities:**

- ☑ By September 2015, KDL administration will complete a survey of municipalities and begin working with those who are interested to place Little Free Libraries, Wi-Fi hotspots or other outreach services in their locations.

- ☐ By December 2015, KDL will create a model for partnerships that mutually contributes to organization goals and strategic initiatives. The model is specific and defined with a communication plan and consideration for multiple departments' collaboration. **[New deadline: June 2016]**
- ☑ By December 2015, KDL will present annual reports and partnership updates at all area Chamber of Commerce meetings, service clubs (where possible) and other partnership organizations' administrative meetings (such as senior centers).

## KDL ENGAGES THE COMMUNITY, VOLUNTEERS

### Progress on Volunteer-related Activities:

- ☐ By June 2015, update all volunteer forms, add them to www.kdl.org and set up an online volunteer clearinghouse with a process to manage volunteer assignments centrally. **[New deadline: June 2016]**
- ☐ By December 2015, survey current volunteers to evaluate their experiences and gain suggestions for improvements that will offer volunteers, especially senior citizens, interesting work that helps them connect with the library in meaningful ways. **[New deadline: December 2016]**
- ☑ Develop a plan for recruiting, orienting, training and recognizing volunteers, including Friends' groups.
- ☑ Develop volunteer "job descriptions" to include activities such as early literacy outreach, technology training, Little Free Library stewardships and Spanish-language services.

## KDL CREATES YOUNG READERS, EARLY LITERACY SERVICES

### Progress on Early Literacy Activities:

- ☑ KDL will continue to offer environments and activities that make reading and learning how to read fun.
- ☑ By January 2015, develop library of early literacy video tutorials.
- ☑ By December 2015, offer "1,000 Books Before Kindergarten" initiative to customers in 6 branches.
- ☑ By 2015, develop intergenerational early literacy programs, such as special grandparents' storytimes or outreach experiences with senior citizens at area childcare facilities.

## KDL CREATES YOUNG READERS, EARLY LITERACY STUDY

### Progress on Early Literacy Study:

- ☑ By December 2015, KDL will partner with Grand Rapids Public Library, Western Michigan University and the Early Childhood Investment Corporation to measure early literacy skill improvement as a result of participation in public library storytimes.

## KDL CREATES YOUNG READERS, EARLY LITERACY EDUCATION

### Progress on Early Literacy Education Activities:

- ☑ By December 2015, develop a plan for delivering early literacy outreach and programming in our communities, especially to under-served populations, including training and information for adults about the importance of early literacy.
- ☑ Develop ways to help parents incorporate early literacy in their daily interactions.

## KDL SUPPORTS LEARNING, CONSTITUENCY-BASED COLLECTION AND PROGRAM DEVELOPMENT

### Progress on Collection and Program Development Activities:

- ☑ By May 2015, KDL will perform a community survey about collection and program interests for all ages.
- ☑ By May 2015, programming staff will complete definitions of successful programs with a plan for consistent evaluation of KDL programs. All levels of programming will be targeted for audience appeal—preschool, school-age, families, teens, adults and senior citizens.

## KDL SUPPORTS LEARNING, EDUCATIONAL PARTNERSHIPS

### Progress on Educational Partnership Activities:

- ☑ By May 2015, KDL youth specialists will develop a school package detailing services, digital collections and demonstration trainings available to schools.
- ☑ By June 2015, youth services staff and the Fund Development Department will implement donor funded partnership in select schools, offering "Summer Reading @ KDL" presenter previews during school assemblies.

## KDL SUPPORTS LEARNING, COLLECTION EXPENDITURES

### Progress on Collection Expenditure Activities:

- ☑ Increase juvenile nonfiction spending 66% to $125,000 in 2015.
- ☑ Incorporate promoting juvenile nonfiction collection into school partnership activities.

## KDL SUPPORTS LEARNING, COMMUNITY READS
### Progress on Community Reads Activities:

- ☑ By June 2015, develop a plan to offer a system-wide KDL Community Reads initiative for 2016.
- ☐ In 2016, the Communications Department will implement a significant KDL Community Reads marketing campaign. **[Ongoing]**

## KDL SUPPORTS LEARNING, TECHNOLOGY TRAINING
### Progress on Technology Training Activities:

- ☑ By February 2015, introduce Design Think concepts to the Computer Class workgroup, to support new technology training delivery model/service. Any model of service will need to account for the needs of senior citizens with new devices, as well as assisting more advanced technology users with troubleshooting questions.
- ☑ By December 2015, develop a model for customers with all levels of information fluency to receive technology instruction and assistance, whether in a branch, on the phone or at a local senior center.

## KDL CULTIVATES CREATIVITY, OFFER CREATIVE OPPORTUNITIES
### Progress on Creative Opportunity Activities:

- ☑ Contests such as Write Michigan, Kent County Teen Film Festival, Teen Poetry and a Photo Contest.
- ☑ Interactive hands-on programs like KDL Lab, Studio KDL and art carts.
- ☑ Diverse collection of materials.
- ☑ Safe environments for people to explore their creativity.
- ☑ By June 2015, investigate offering Local Indie materials in digital formats.

## KDL CULTIVATES CREATIVITY, OFFER INSPIRATION & MOTIVATION
### Progress on Inspiration & Motivation Activities:

- ☑ Incorporate into 2015 marketing plan promotion of KDL staff as friendly experts who can connect readers with the next book they will love.
- ☑ By June 2015, branch managers will shop at least one other branch and a retail space focusing on evaluating displays that help connect people with what inspires them.

## Organizational Competencies

### COLLABORATION

- ☑ Beginning in 2015, every marketing plan will identify KDL staff as a target audience and identify how best to inform them of the service.
- ☑ By June 2015, patron services staff will begin creating patron records for all web registration requests. This will speed up the web registration process by allowing branch staff to add a barcode and issue the card immediately.
- ☑ By June 2015, KDL administration will foster group collaboration and inclusiveness by ensuring that the group's chair (or leader) has input from all team members before presenting ideas to the leadership team. Tools will be developed to help organize groups' communication to all KDL stakeholders.
- ☐ By June 2015, the IT Department will implement the staff collaboration features of SharePoint. **[New deadline: June 2016]**
- ☐ By December 2016, each KDL department will implement a plan to visit with branch managers and staff annually. **[Recurring annually]**
- ☐ By December 2016, the Fund Development Department will work with branch staff to develop best practices for philanthropy at KDL, including generating branch-level donations, how to discuss donations with patrons in a positive and inspiring way and regularly communicating with donors (not just when asking for a gift). **[Recurring annually]**
- ☑ By December 2015, one or more focus groups will convene to address recommendations from the Michigan Quality Council Navigator Report, resulting in a measured quality improvement to staff working conditions and/or customer service.
- ☑ By December 2015, KDL youth specialists will work with KDL program and outreach specialists to inventory program supplies and facilitate their use by all branches.

### CONVENIENCE

- ☑ In January 2015, the Collection Development Department will decrease holds ratios for shorter wait time: digital materials, audiobooks, and books – 3:1; music and movies – 6:1.
- ☑ By March 2015, the Patron Services and the Communications Departments will create a "Call us for…" bookmark to distribute in branches, promoting conveniently available phone services to KDL customers.
- ☑ By June 2015, staff will be able to use the email alias purchasing@kdl.org to communicate questions or concerns to the Business Office. Messages will be directed to multiple staff members to ensure a timely response.

- ☐ By June 2015, the IT Department will implement a patron printing solution that eliminates the required payment card and includes some form of printing for wireless devices. **[New deadline: June 2016]**
- ☐ By October 2015, KDL administration will evaluate all KDL meetings to determine which could be successfully accomplished without requiring travel. Software to facilitate remote meetings will be investigated. **[New deadline: December 2016]**
- ☐ By October 2015, the Communications Department will complete a comprehensive web redesign, implementing an event management system that incorporates fundraising events, creating donor-friendly online donating options and offering easy access to KDL financial information. **[New deadline: Spring 2016]**
- ☑ By October 2015, complete migration to new ILS system. Tentative timeline is as follows: By January 2015, KDL will hire an ILS librarian to work on the migration to a new ILS system. Test database made available to KDL February 2015. IT tests system March 2015. Staff training to begin in May–August 2015. Communication plan to the public goes into effect June 2015. Migration of records begins in September 2015. IT tests migration material with the help of staff in September 2015. ILS migration is to be completed by October 2015.

## FLEXIBILITY

- ☑ By January 2015, customer overdue fines for DVDs will be reduced from $1 a day to $0.15.
- ☑ By January 2015, the Communications Department and the Social Media Workgroup will develop marketing and content plans for each of KDL's social media venues.
- ☐ By December 2016, KDL administration will develop a Stop List, specifically identifying activities KDL will cease to engage in, in order to focus efforts on the strategic priorities identified in this document. **[Recurring annually]**
- ☑ By December 2015, the Communications Department will incorporate analytics to measure the effectiveness of advertising and social media marketing and cease unsuccessful efforts.
- ☑ By December 2015, the Fund Development Department will offer donor-friendly procedures, allowing donors the option of directing their gifts to specific projects or branches.
- ☑ By December 2015, KDL will train collection services team members to implement LEAN business practices in material handling procedures.
- ☐ By December 2015, KDL will implement recommendations from its engagement in the Baldridge Process through Michigan Quality Council. **[New deadline: December 2016]**
- ☑ By December 2015, the Collection Development Department will migrate to Baker & Taylor's TitleSource360 and add CollectionHQ's ESP module for improved collection analysis and more responsive selection.

- ☐ By December 2016, the Program and Outreach Department will work with branch staff to study the value of programming forms and deadlines to refine and streamline program planning, promotion, implementation and evaluation. **[Ongoing]**

## FRIENDLINESS

- ☑ By January 2015, new KDL employees will receive a welcome message with information about Communications and Programming Departments.
- ☑ By March 2015, the Communications Department will work with programming workgroups to capture and respond to programming ideas and market system-wide programs to KDL staff no less than two weeks before the seasonal deadline.
- ☑ By March 2015, the HR Department will negotiate compensation incentives with the UAW for staff who are bilingual, thereby creating formal recognition and placing value on such communication skills.
- ☐ By March 2015, a focus group of stakeholder employees will set out to define the "KDL Way." Using Appreciative Process techniques, the team will articulate an organizational culture approach that is uniquely KDL.
- ☐ By June 2015, KDL's IT Department will participate in communications training to foster and reinforce friendly customer interactions. **[New deadline: December 2016]**
- ☐ By June 2015, the IT and Patron Services Departments will revise the entire call center phone tree to better serve patrons, making it clear that they have been connected with KDL staff that can help them. **[New deadline: June 2016]**
- ☐ By October 2015, develop and implement a significant library card campaign related to Library Card Sign-up Month (September), with emphasis on new targeted audiences (such as senior citizens) and under-served populations (such as English as a Second Language Speakers). **[New deadline: 2016]**
- ☐ By December of 2015, KDL will recruit bilingual candidates during three job fairs and offer online training and testing for staff who wish to adopt second-language skills. **[New deadline: December 2016]**
- ☐ By December 2016, KDL's HR Department will review hiring processes and compensation levels to further strengthen staff commitment and engagement to serving library customers.

## INNOVATION

- ☑ By January 2015, KDL's Wellness Committee will complete a survey and implement results, providing activities and initiatives that support staff mental and physical well-being.

- ☐ By March 2015, the Patron Services Department and circulation managers will create a form on the Intranet to streamline the shelf check process for materials that weren't properly checked in and removed from accounts. **[New deadline: February 2016]**
- ☑ By December 2015, KDL will create a process to gather innovative ideas from all KDL team members. Recognition may be given for new ideas that have a profound positive impact on KDL's efforts to be relevant to our communities.
- ☑ By December 2015, the Digital Futures Committee will be renamed the Innovation Team, developing a protocol for considering new ideas and facilitating efforts to make them actionable.
- ☐ By December 2015, the Business Office will explore and implement a new tracking process for recording receipts (payments, donations, grants). **[New deadline: March 2016]**
- ☐ By December 2015, at least one IT staff member will become skilled in offering web-based development capability to leverage basic web application integration with KDL resources and data. **[New deadline: December 2016]**

## LEARNING

- ☑ By March 2015, programming staff will hold quarterly training sessions for new Information Services staff.
- ☐ By December 2016, KDL management will continue to improve public service through the Circulation and Information Best Practices model. Surveys will identify training needs for information staff (such as offering services and programs for senior citizens, materials advisory and technology literacy) while circulation managers will save customer service issues to determine emphasis for training. **[Ongoing]**
- ☐ By December 2016, the Business Office will survey each branch and department for training needs and implement a plan to deliver comprehensive training. **[Ongoing]**
- ☑ By December 2015, additional CollectionHQ training will be completed.
- ☐ By December 2016, the HR and Communications Departments will develop a brand for KDL's "Library2Library" training initiatives for outside libraries and organizations. **[Ongoing]**
- ☐ By December 2016, the HR Department will create an online learning library to promote the professional development of future staff. **[Ongoing]**
- ☐ By December 2015, patron services staff members will each attend at least one webinar and report on it at a monthly staff meeting. **[New deadline: December 2016]**
- ☑ By December 2015, all patron services staff members will attend at least one quarterly information services meeting.

- ☑ By December 2015, branch managers begin to explore the Harwood Institute Community Conversation methods to get community input on various issues. Activities will include a manager's discussion of the Harwood Institute's *The Work of Hope*, training at a management meeting and plans to begin implementing community conversations.

## TRUSTWORTHINESS

- ☐ By December 2016, the IT Department will implement a "read-only" interface of the help desk application which will allow KDL staff to track progress on support desk concerns. **[Ongoing]**
- ☐ By December 2015, all of KDL's public financial information, meeting minutes and strategic plan progress will be available through KDL's enhanced website in three clicks or less. **[New Deadline – Spring 2016]**
- ☐ By December of 2015, KDL management and staff in leadership roles will actively participate in training to promote behavior that encourages clear and transparent leadership. **[New deadline: December 2016]**
- ☑ By December 2015, the Fund Development Department will develop ways to ensure transparency of how donations directly benefit KDL programs and services.
- ☑ By December 2015, the patron services staff will create quarterly statistical reports regarding the amount and type of interactions in order to inform KDL staff and customers of the value of the department.
- ☑ By March 2016, the Collection Development Department will report on the patron requests received and how many were ordered/not ordered in 2015.

# Kent District Library Branches and Service Center

**ALPINE TOWNSHIP BRANCH**
5255 Alpine Ave. NW
Comstock Park, MI 49321

**ALTO BRANCH**
6071 Linfield Ave.
Alto, MI 49302

**BYRON TOWNSHIP BRANCH**
8191 Byron Center Ave. SW
Byron Center, MI 49315

**CALEDONIA TOWNSHIP BRANCH**
6260 92nd St. SE
Caledonia, MI 49316

**CASCADE TOWNSHIP BRANCH**
2870 Jacksmith Ave. SE
Grand Rapids, MI 49546

**COMSTOCK PARK BRANCH**
3943 W. River Dr. NE
Comstock Park, MI 49321

**EAST GRAND RAPIDS BRANCH**
746 Lakeside Dr. SE
East Grand Rapids, MI 49506

**ENGLEHARDT BRANCH**
200 N. Monroe St.
Lowell, MI 49331

**GAINES TOWNSHIP BRANCH**
421 68th St. SE
Grand Rapids, MI 49548

**GRANDVILLE BRANCH**
4055 Maple St. SW
Grandville, MI 49418

**KENTWOOD (RICHARD L. ROOT) BRANCH**
4950 Breton SE
Kentwood, MI 49508

**KRAUSE MEMORIAL BRANCH**
140 E. Bridge St.
Rockford, MI 49341

**NELSON TOWNSHIP/ SAND LAKE BRANCH**
88 Eighth St.
Sand Lake, MI 49343

**PLAINFIELD TOWNSHIP BRANCH**
2650 5-Mile Rd. NE
Grand Rapids, MI 49525

**SPENCER TOWNSHIP BRANCH**
14960 Meddler Ave.
Gowen, MI 49326

**TYRONE TOWNSHIP BRANCH**
43 S. Main St.
Kent City, MI 49330

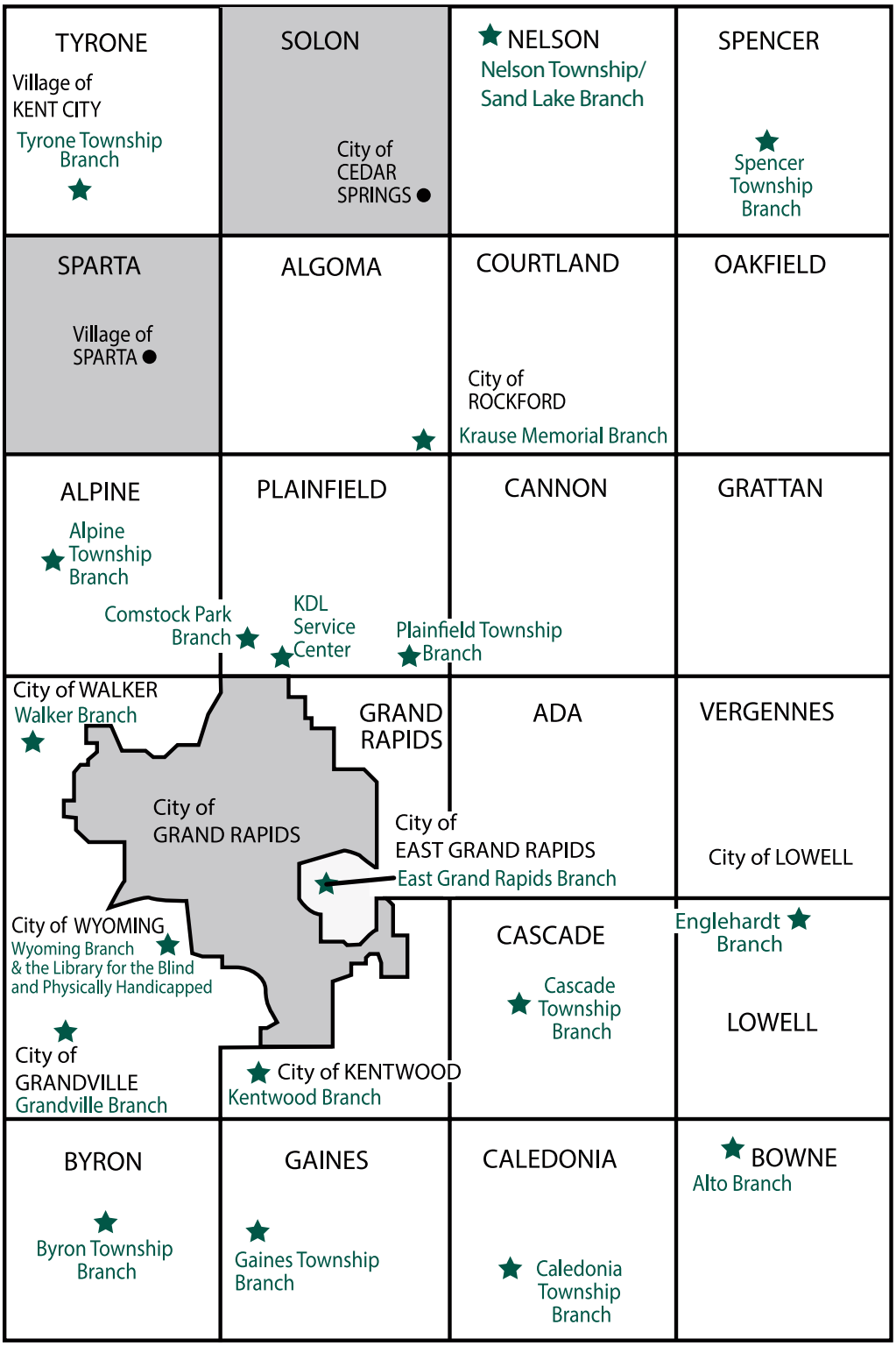
**WALKER BRANCH**
4293 Remembrance Rd. NW
Walker, MI 49534

**WYOMING BRANCH and the Library for the Blind and Physically Handicapped**
3350 Michael Ave. SW
Wyoming, MI 49509

---

**SERVICE CENTER**
814 West River Center NE
Comstock Park, MI 49321

# Service Area




Areas highlighted in grey are **outside** the KDL service area and include the City of Grand Rapids, City of Cedar Springs, Solon Township, Sparta Township, the Village of Sparta and the portion of Bowne and Caledonia townships within the Thornapple Kellogg school district.

# Governance and Organizational Structure

## BOARD OF TRUSTEES

The Kent District Library Board of Trustees is composed of eight members representing geographic regions of the KDL service area. Trustees must live in the region they represent. Board members are appointed for four-year terms by the Kent County Board of Commissioners based on recommendations from the eight regions. The KDL Board meets monthly. Major duties include establishing and maintaining a public library for Kent District Library, establishing library policies, employing the library director, adopting an annual budget, approving the expenditure of funds, entering into contracts and control of all KDL property.

| Trustee | Area of Responsibility |
|---|---|
| Charles R. Myers, Chair | **Region 4:** City of Lowell, and Bowne, Lowell and Vergennes Townships |
| Vickie Hoekstra, Vice Chair | **Region 8:** City of Wyoming |
| Penny Weller, Treasurer | **Region 3:** City of Walker, and Plainfield and Alpine Townships |
| Carol Simpson, Secretary | **Region 1:** Spencer, Tyrone, Nelson and Oakfield Townships |
| Shirley Bruursema, Trustee | **Region 6:** City of Kentwood, and Gaines and Caledonia Townships |
| Lee Cook, Trustee | **Region 7:** City of Grandville and Byron Township |
| Scott Garrison, Trustee | **Region 2:** City of Rockford, and Cannon, Algoma, Courtland and Grattan Townships |
| Craig Wilson, Trustee | **Region 5:** City of East Grand Rapids, and Cascade, Ada and Grand Rapids Townships |

Charles R. Myers, Chair

Vickie Hoekstra, Vice Chair

Penny Weller, Treasurer

Carol Simpson, Secretary

Shirley Bruursema, Trustee

Lee Cook, Trustee

Scott Garrison, Trustee

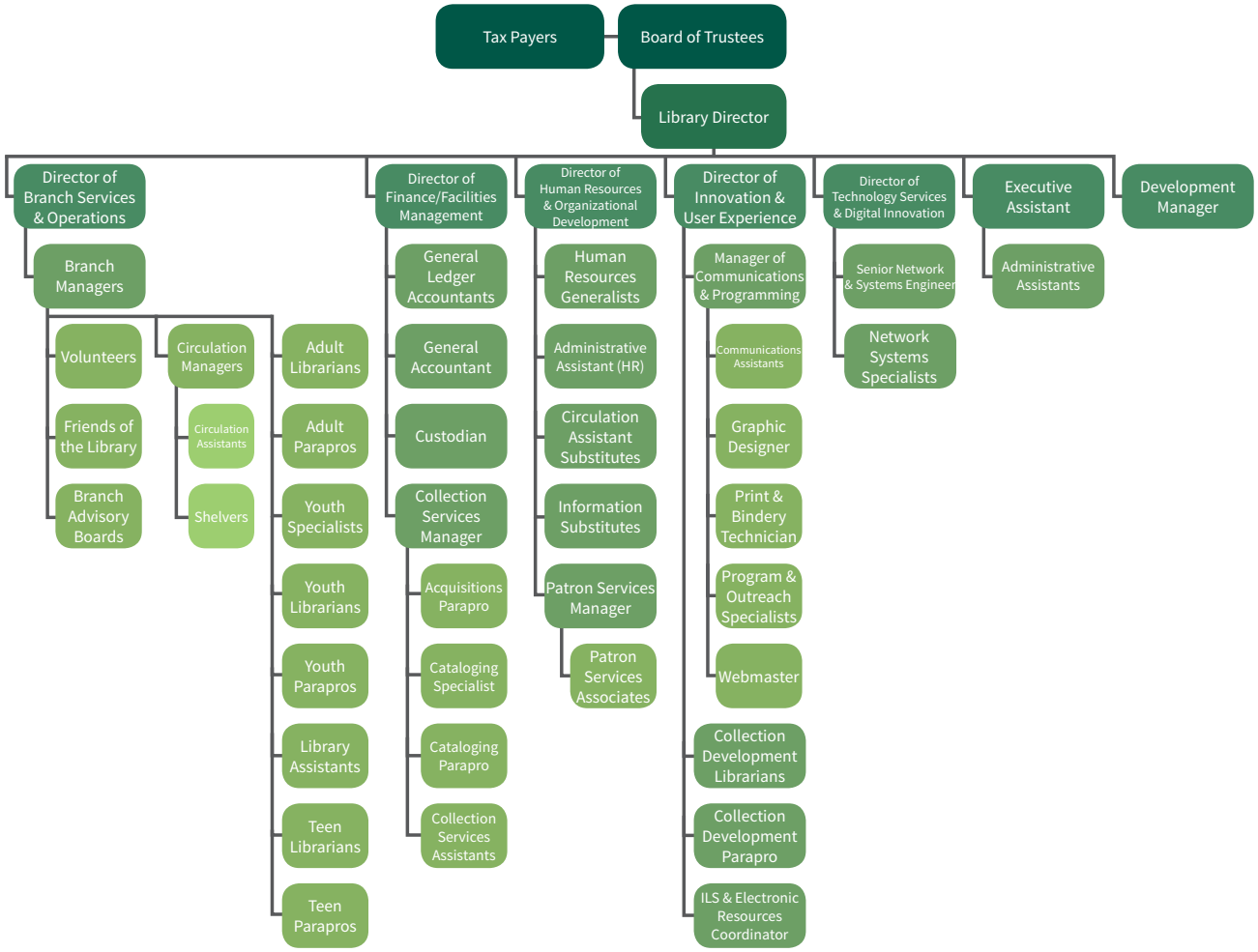
Craig Wilson, Trustee

## LEADERSHIP TEAM

The Kent District Library leadership team leads the staff in support of KDL's strategic plan, coordinates organizational functions and facilitates communication. Members of the leadership team are:

| Position | Name |
|---|---|
| Library Director | Lance Werner |
| Director of Innovation and User Experience | Michelle Boisvenue-Fox |
| Director of Branch Services and Operations [Interim] | Craig Buno |
| Director of Finance | Sherry Bava |
| Director of Human Resources & Organizational Development | Brian Mortimore |
| Director of Information and Technology [Interim] | Kurt Stevens |

## KENT DISTRICT LIBRARY ORGANIZATIONAL CHART



## FUND DEVELOPMENT BOARD

Kent District Library's development board is composed of community leaders who have a passion for libraries. Development board members support the mission, vision and values of Kent District Library, and act responsibly and prudently as stewards of KDL. These members work tirelessly to raise private donations that support programming, collections and special projects that enhance the library experience for all community members.

**Marcia Bennett Boyce**
Miller Johnson

**Linda Jo Carron**
Knape & Vogt

**Scott Ellison**
Chemical Bank
Library Board of Trustees

**Maureen Fitzgerald Penn**
Penn & Ink
Communications, Inc.

**Jamie Junod**
Stifel Nicolaus &
Company Inc.

**Jim Komondy**
Law, Weathers &
Richardson

**Charles Myers**
Kent District Library
Board of Trustees

**Heather Ross**
ddm marketing

**John Schuring**
Dickinson Wright

**Penny Weller**
Kent District Library
Board of Trustees

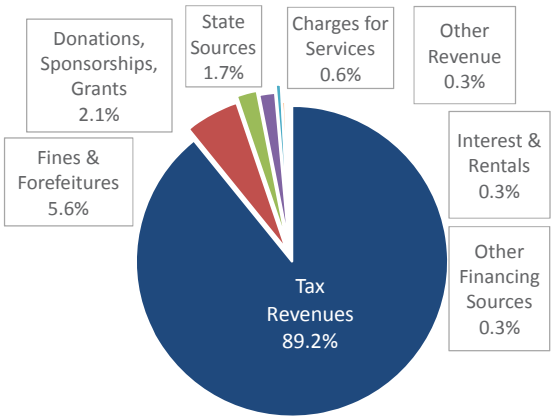
**Sherrie Willson**
Steelcase Inc.

**Robert Younger**
Zaner Bloser

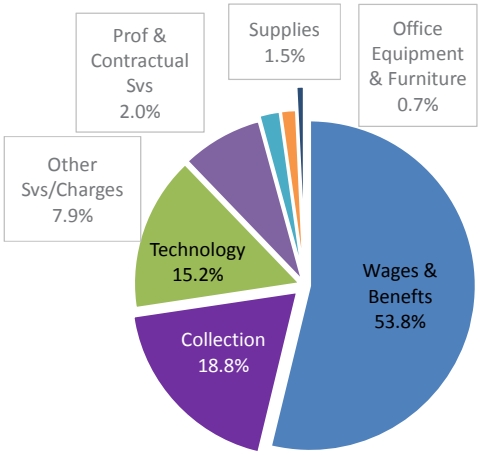
# 2015 Summary of Financial Information

**KENT DISTRICT LIBRARY**
**2015 SUMMARY FINANCIAL INFORMATION**
**GENERAL FUND**

| REVENUE | |
|---|---|
| Tax Revenues - Millage (1.28mills) | 19,731,194 |
| Fines & Forefeitures | 1,240,239 |
| Donations, Sponsorships, Grants | 470,925 |
| State Sources | 368,566 |
| Charges for Services | 125,995 |
| Other Revenue | 66,787 |
| Interest & Rentals | 59,411 |
| Other Financing Sources | 58,943 |
| **TOTAL REVENUES** | **$ 22,122,060** |



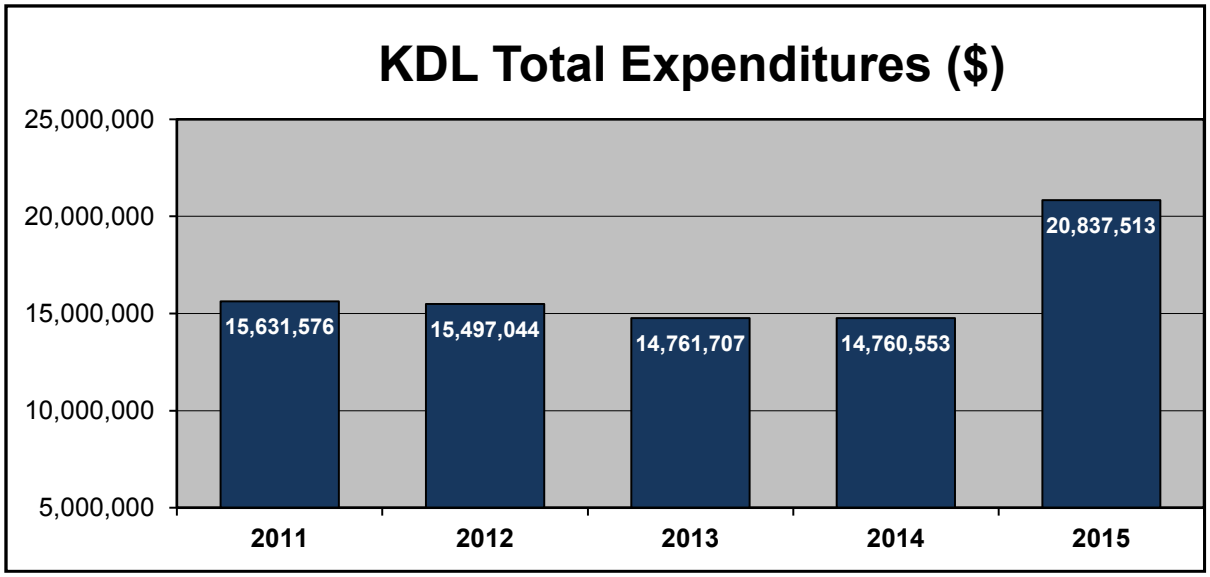

| EXPENDITURES | |
|---|---|
| Wages & Benefits | 11,206,039 |
| Books & Materials | 3,924,316 |
| Technology (all expenses related to) | 3,173,582 |
| Other Svs/Charges | 1,651,961 |
| Professional & Contractual Services | 416,506 |
| Supplies | 310,565 |
| Office Equipment & Furniture | 154,545 |
| **TOTAL EXPENDITURES** | **$ 20,837,513** |

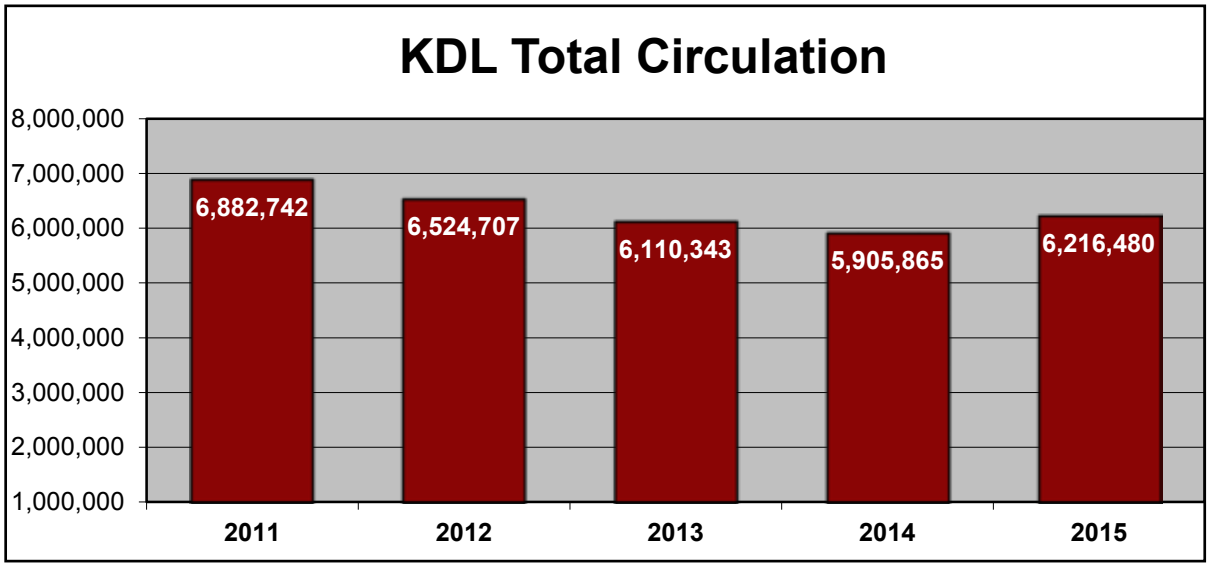


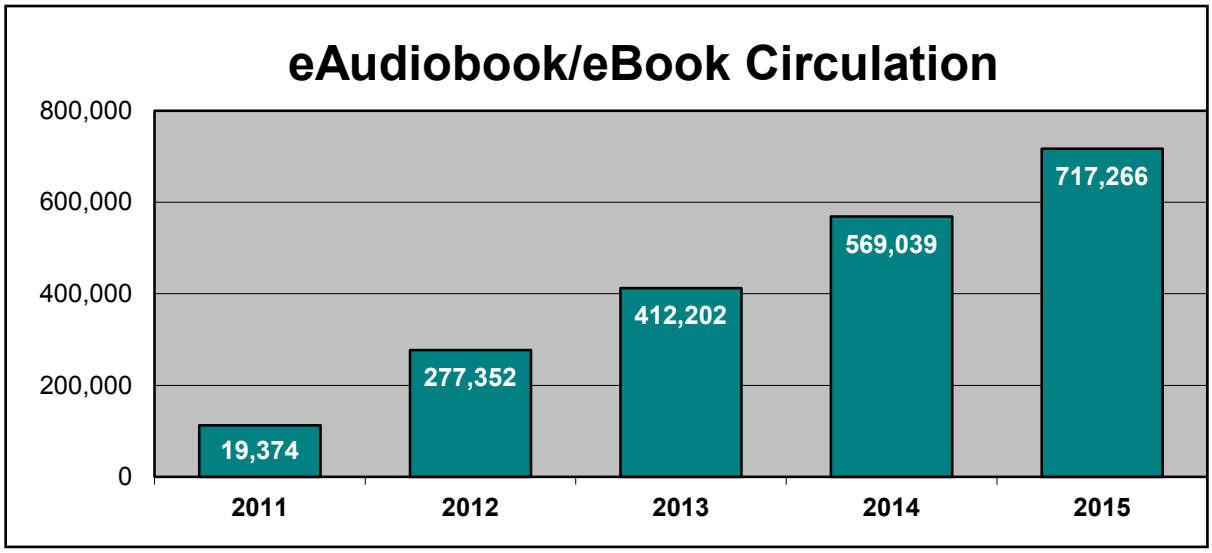

| | |
|---|---|
| Total Fund Balance 2015 | 5,476,642 |
| Fund Balance - Unspendable (Prepaids) | (164,831) |
| Fund Balance - Assigned | (233,851) |
| Fund Balance - Restricted by Contributors | (53,868) |
| Fund Balance - Board Committed - Capital Projects | (815,300) |
| **TOTAL UNDESIGNATED FUND BALANCE** | **$4,208,792** |

The above numbers have been derived from the 2015 Financial Statements.
Complete audited Annual Financial Statements will be available after June 2016.

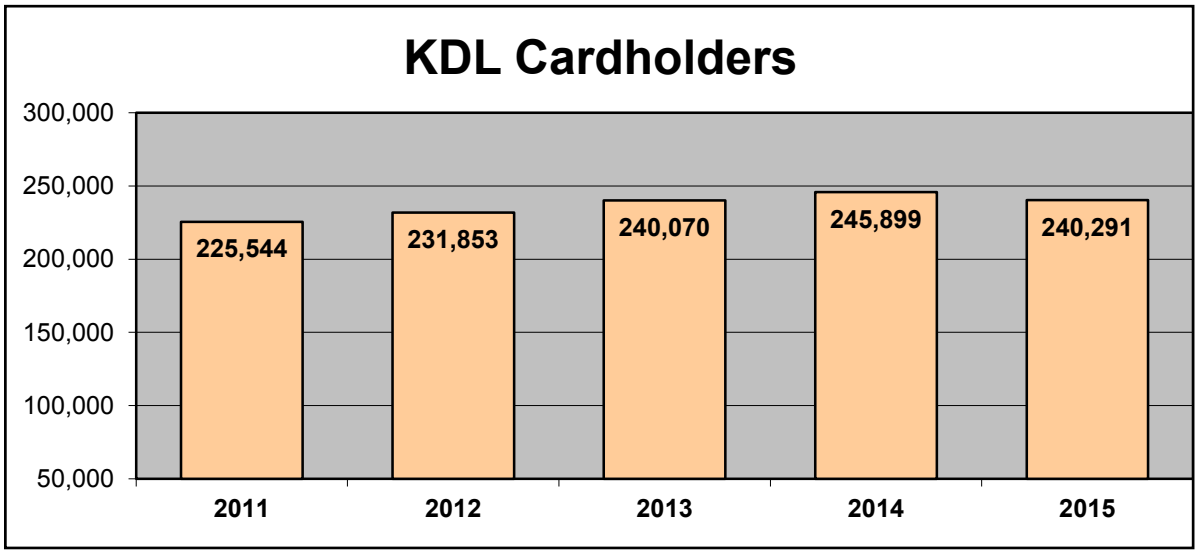
# 2015 Statistical Trends

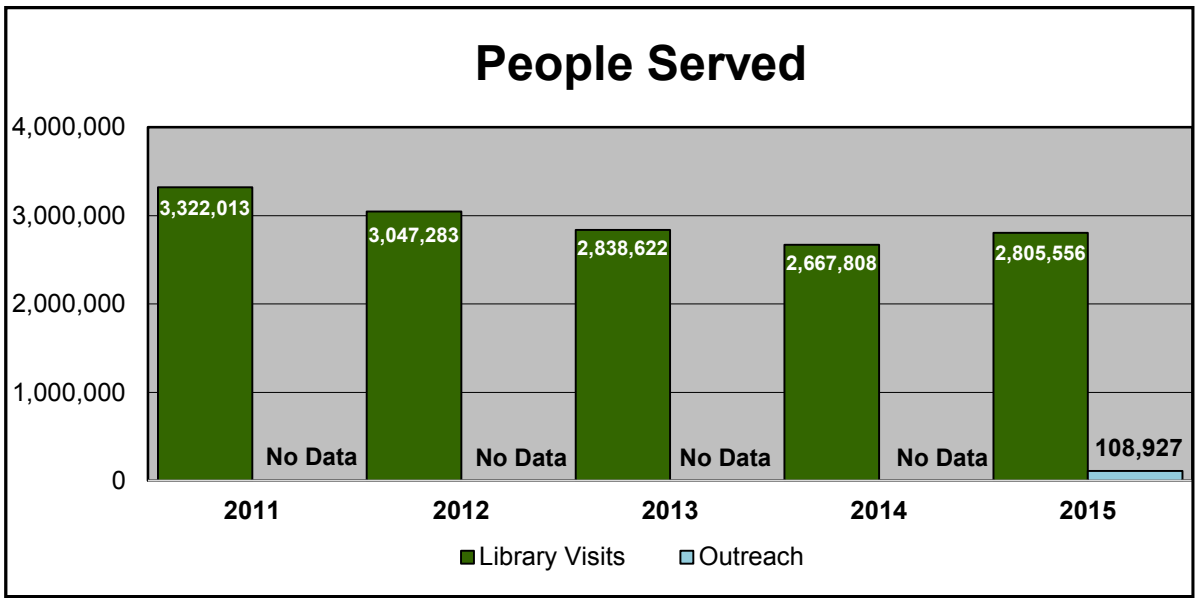


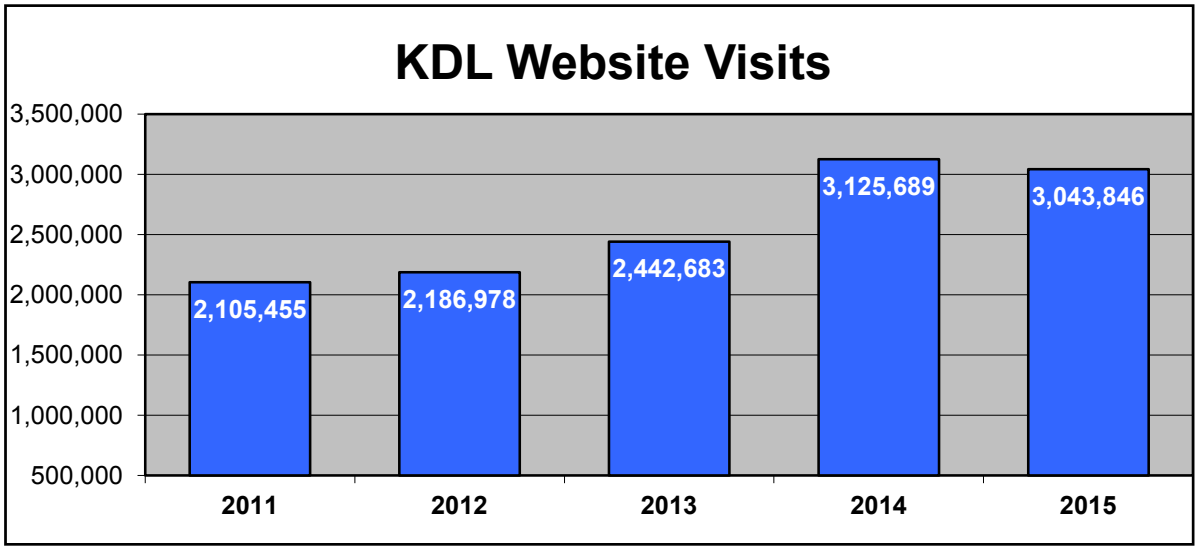



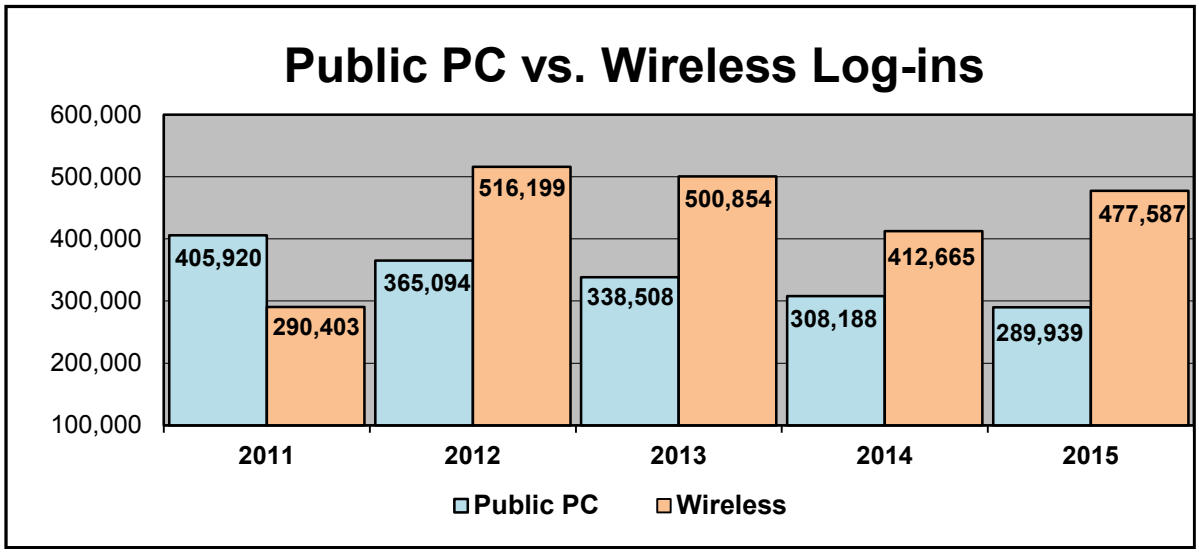
# 2015 Statistical Trends (cont.)

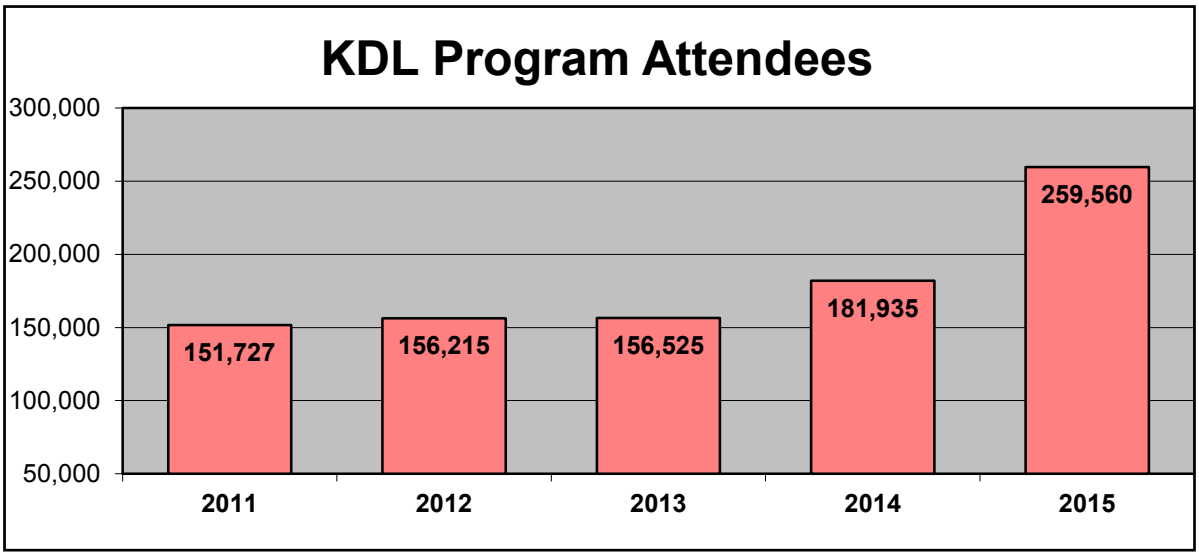


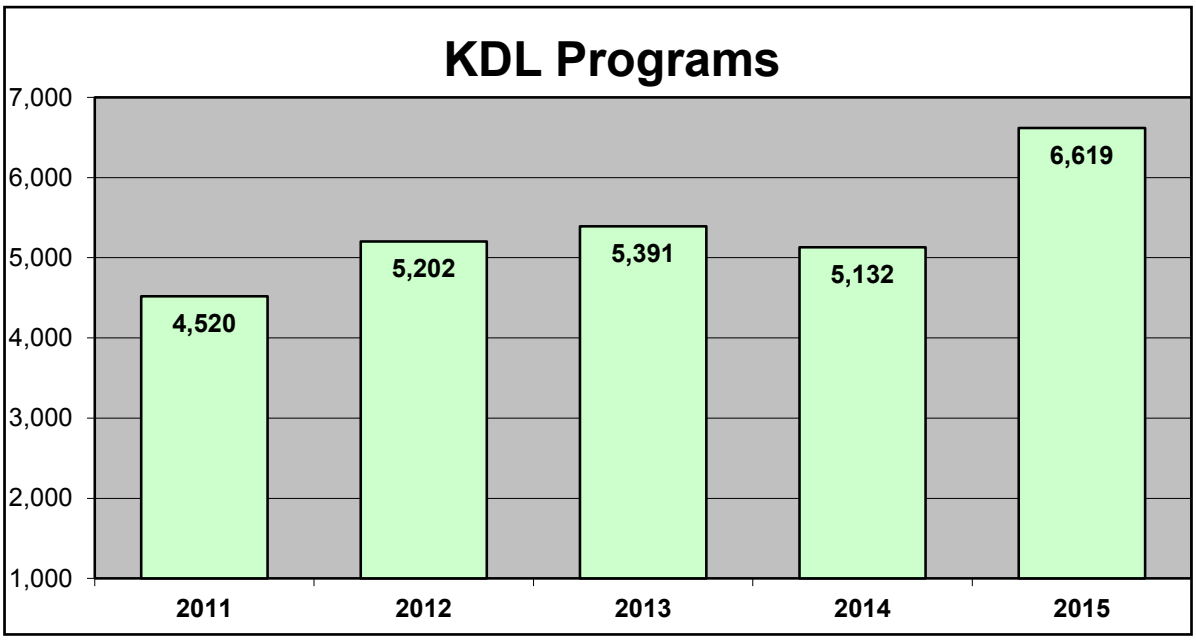



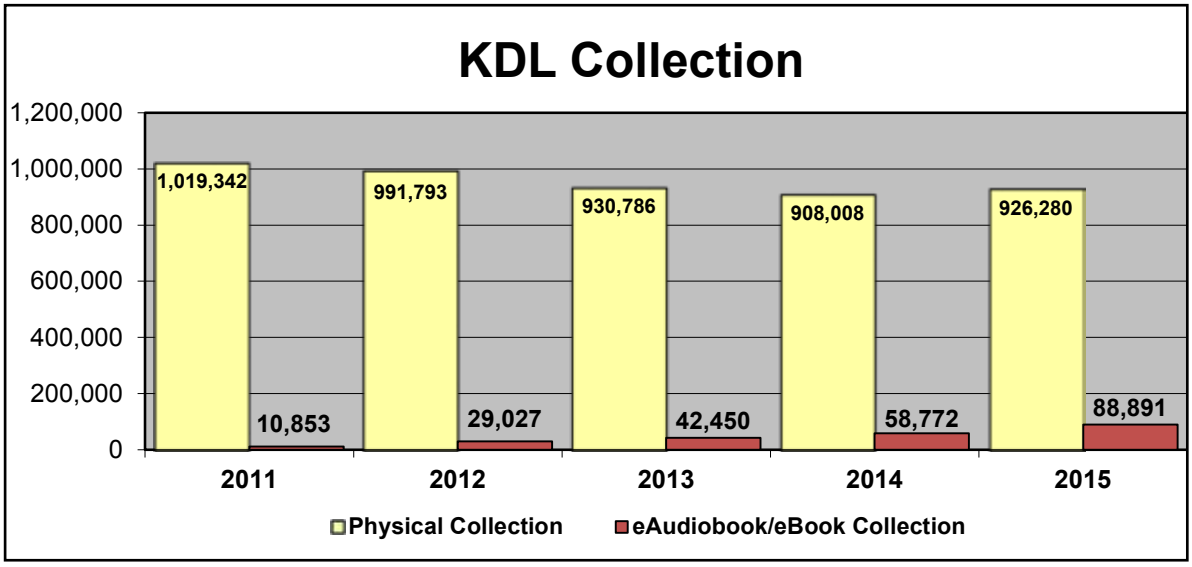
# 2015 Statistical Trends (cont.)

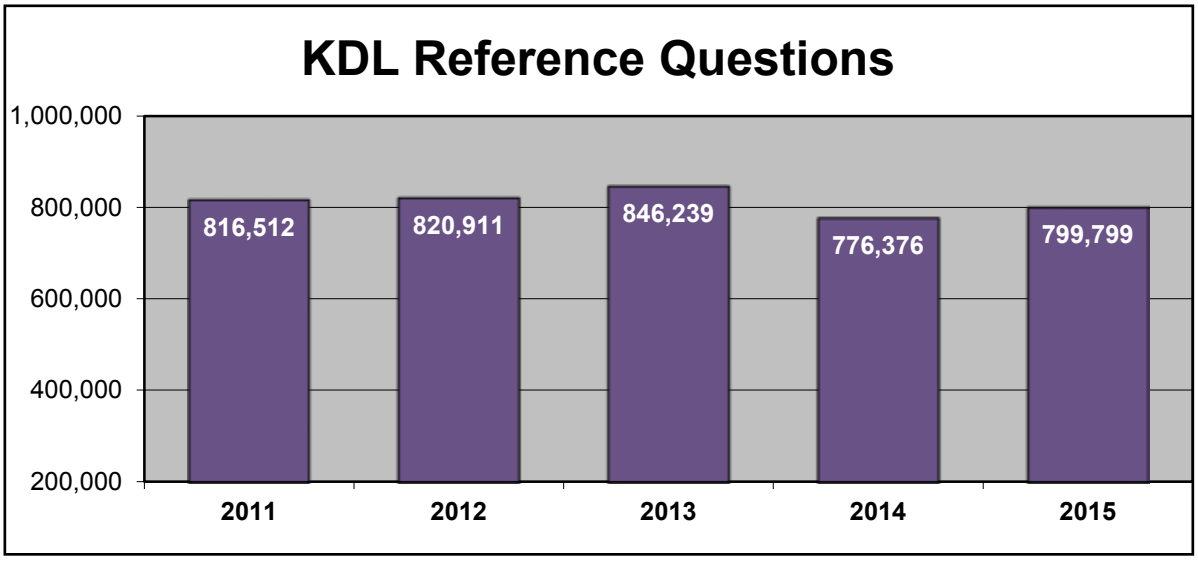


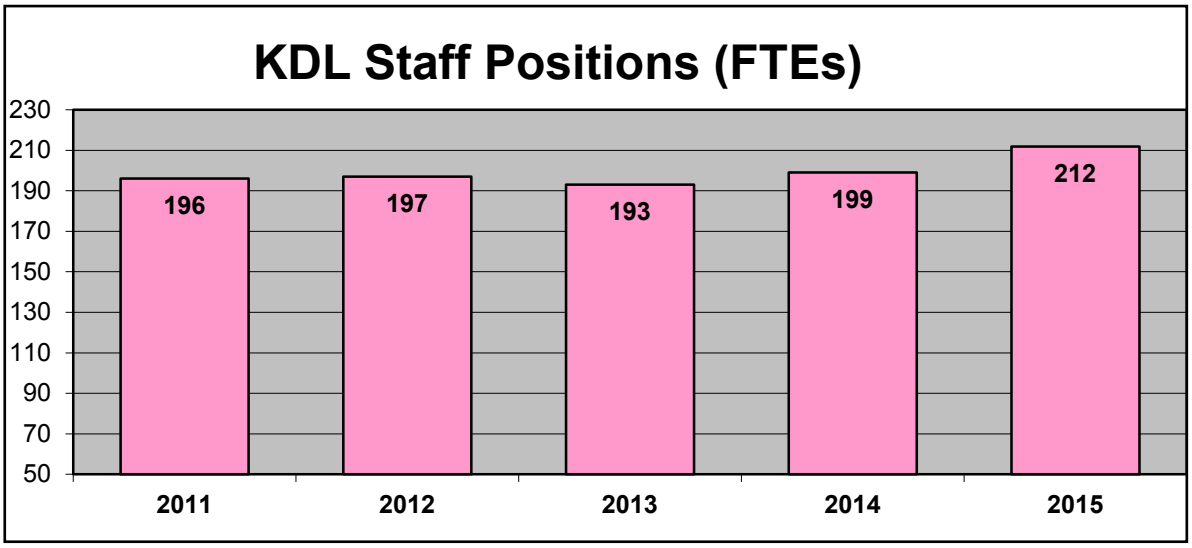



# 2015 Statistical Trends (cont.)



# 2015 Statistical Information

## Circulation

| | | |
|---|---|---|
| Adult fiction | | 700,970 |
| Express books | | 153,839 |
| Juvenile fiction | | 1,507,631 |
| Teen fiction | | 220,676 |
| Reference | | 7,793 |
| Adult non-fiction | | 441,732 |
| Juvenile non-fiction | | 269,152 |
| Teen non-fiction | | 10,162 |
| Periodicals | | 100,337 |
| Large print | | 65,038 |
| CD-ROMs | | 58 |
| Audiobooks | | 191,602 |
| DVDs and Blu-ray | | 1,115,247 |
| Music CDs | | 182,059 |
| Video games | | 43,472 |
| Kits | | 9,834 |
| Braille items | | 379 |
| LBPH (Library for the Blind and Physically Handicapped) | | 69,837 |
| Miscellaneous | | 4,312 |
| Interloans (Jan. – Sept.) | | 20,709 |
| MeLCat | | 8,941 |
| Digital Downloads | eAudiobooks | 170,649 |
| | eBooks | 546,617 |
| | eMagazines | 31,227 |
| | eMovies | 15,042 |
| | eMusic | 333,824 |
| **Total Circulation** | | **6,216,480** |

## Collection

| | |
|---|---|
| Number of books | 734,193 |
| Number of periodicals | 30,190 |
| Number of audio (audiobooks and music CDs) | 80,984 |
| Number of videos (DVDs and Blu-ray) | 73,263 |
| Number of video games | 5,799 |
| Number of CD-ROMs (no longer purchasing) | 37 |
| Number of kits | 261 |
| Number of Braille items | 305 |
| Number of miscellaneous items | 1,248 |
| **Total physical items in the library collection at year-end** | **926,280** |

## Collection (continued)

| | |
|---|---|
| Number of electronic audiobooks (eAudiobooks) | 19,346 |
| Number of electronic books (eBooks) | 69,545 |
| **Total digital items in the library collection at year-end** | **88,891** |
| Number of subscriptions | 1,874 |
| Number of licensed databases – Local | 25 |
| Number of licensed databases – State | 44 |
| **Number of licensed databases – Total** | **69** |

## Human Resources

| | |
|---|---|
| Number of MLS librarians | 67 |
| Full-time equivalent of MLS librarians | 59.325 |
| Number of non-MLS librarians | 2 |
| Full-time equivalent of non-MLS librarians | 2 |
| Number of other paid staff | 229 |
| Full-time equivalent of other paid staff | 150.525 |
| Total number of staff | 298 |
| Total full-time equivalents (FTEs) | 211.85 |
| Total hours per week worked by MLS librarians | 2,373 |
| Total hours per week worked by all staff | 8,474 |
| Staff training hours | 5,727 |

## Inter-Library Loan (ILL) & Reciprocal Borrowing

| | |
|---|---|
| ILL items borrowed by KDL patrons from other libraries | 76,378 |
| ILL items loaned by KDL to patrons from other libraries | 20,709 |
| MeLCat items borrowed by KDL from other libraries | 8,941 |
| MeLCat items loaned by KDL to other libraries | 4,284 |
| Items reciprocally borrowed by KDL patrons at other libraries | *54,979 |
| Items reciprocally borrowed by patrons from other libraries at KDL | 767,113 |

*Statistics were not available for items borrowed from GRPL by KDL patrons.

## Library for the Blind and Physically Handicapped (LBPH)

| | |
|---|---|
| Number of registered patrons | 1,029 |
| Total circulation | 66,424 |

# 2015 Statistical Information (cont.)

## Patron Services: Centralized Phone Center

| | | | |
|---|---|---|---|
| Telephone calls received | | | 67,389 |
| Percentage of calls handled (i.e., not transferred to branch staff) | | | 86% |
| Calls (by type) | Type | Total Calls | % of Total |
| | Circulation | 25,142 | 37% |
| | Directional | 3,797 | 6% |
| | Program Registration | 2,411 | 4% |
| | Reference | 26,371 | 39% |
| | Transfers to Branch Staff | 9,668 | 14% |

## Programs

| Type | # of Events | # of Participants |
|---|---|---|
| Private programs (tours, workshops, etc.) | 1,674 | 117,259 |
| Programs for young children | 2,460 | 74,551 |
| Programs for school age children | 348 | 8,982 |
| Programs for teens | 340 | 7,041 |
| Programs for adults | 1,062 | 12,188 |
| Programs for all ages | 735 | 39,539 |
| **Total** | **6,619** | **259,560** |

## Summer Reading Program

| Participants (based on age) | Total |
|---|---|
| Youth (birth – Grade 5) | 20,588 |
| Teen (grades 6-12) | 6,238 |
| Adult (18 and up) | 6,443 |
| **Total** | **33,269** |
| Completers | Total |
| Babies (0-24 months) | 764 |
| Pre-Readers (2-3 years) | 1,248 |
| Youth (4 years – grade 5) | 6,746 |
| **Total** | **8,758** |

## Technology

| | |
|---|---|
| Number of computers for staff | 242 |
| Number of computers for public | 326 |
| Number of patron log-ins to public computers | 289,939 |
| Number of patron log-ins to wireless network | 477,587 |
| Number of self check-out units | 41 |
| Number of self check-in units | 11 |
| Most concurrent patrons using the wireless network | 630 |
| Most concurrent patrons using the wireless network | 580 |

## Volunteers

| Number of Volunteers | | Total |
|---|---|---|
| Adults | 276 | 684 |
| Teens (Summer Reading Program) | 408 | |
| **Volunteer Hours** | | **Total** |
| Adults | 2,897 | 9,769 |
| Teens (Summer Reading Program) | 6,872 | |

## Website

| | |
|---|---|
| Number of visits (includes mobile website visits) | 3,043,846 |
| Average visits per day | 8,339 |
| Number of visits to KDL's eBook/eAudiobook site | 7,381,778 |
| Number of visits to What's Next?: Books in Series site | 2,529,623 |
| Number of visits to KDL databases | 104,413 |
| Number of Ask KDL questions answered | 532 |
| Number of Personalized Picks lists created | 199 |
| Number of KDL Blog Posts | 281 |
| Number of KDL Blog Comments | 238 |

## Annual Counts

| | |
|---|---|
| Library visits | 2,805,556 |
| Outreach Attendance | 107,546 |
| Population of service area (2010 U.S. Census) | 395,660 |
| Cardholders (library registrations) | 240,291 |
| Information requests/computer assistance | 799,799 |
| Total annual open hours | 50,044 |
| Total weekly public service hours | 62 |

# 2015 Statistical Information (cont.)

## Per Capita Measures

| | | |
|---|---|---|
| Circulation per capita | | 14.9 |
| Circulation per registered borrower | | 24.0 |
| Collection turnover rate (i.e., circulation/collection) | | 6.1 |
| Expenditure per capita | | $37.50 |
| Express check-out as a percentage of total customer check-out | | 86.5% |
| Holdings per capita | | 2.4 |
| Program attendance per capita | | .66 |
| Public internet use per capita (PC & wireless log-ins) | | 1.94 |
| Reference transactions per capita | | 2.0 |
| Registration as a percentage of population | | 62% |
| Visits per capita | **In Person** | **Virtual (Website)** |
| | **6.7** | **7.9** |

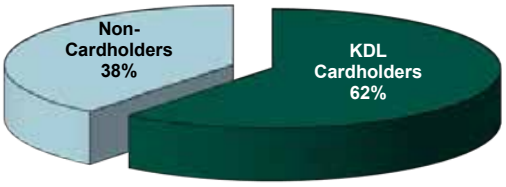
# Systemwide Overview

## 2015 Statistical Information

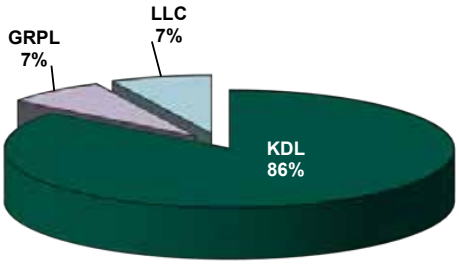
### KENT DISTRICT LIBRARY FACTS

**Library Director:** Lance Werner
**Population of Service Area:** 395,660
**Physical Collection Size:** 926,280
**Digital Collection Size:** 88,891
**Public Computers:** 326
**Staff:** 212 FTEs
**Open Hours:** 998 hrs/wk

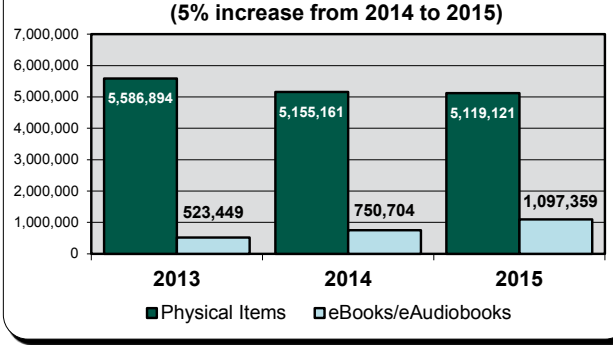
### PERCENTAGE OF POPULATION WITH A LIBRARY CARD



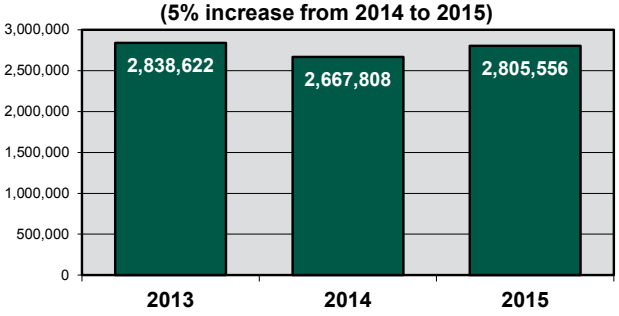

### BRANCH CHECK-OUTS BY RESIDENT



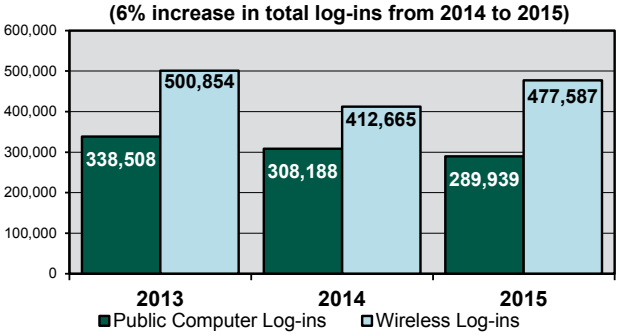

### TOTAL ITEMS CHECKED-OUT
(5% increase from 2014 to 2015)



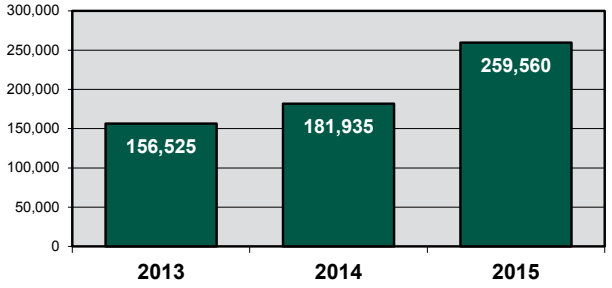

### TOTAL PEOPLE SERVED
(5% increase from 2014 to 2015)



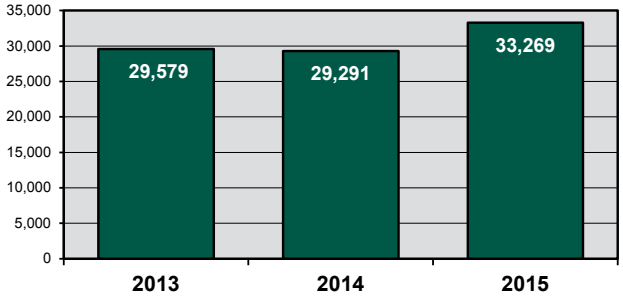

### TOTAL BRANCH COMPUTER LOG-INS
(6% increase in total log-ins from 2014 to 2015)




### TOTAL PROGRAM ATTENDANCE
(43% increase from 2014 to 2015)




### TOTAL SUMMER READING PARTICIPANTS
(14% increase from 2014 to 2015)



KDL Kent District Library — Information. Ideas. Excitement!

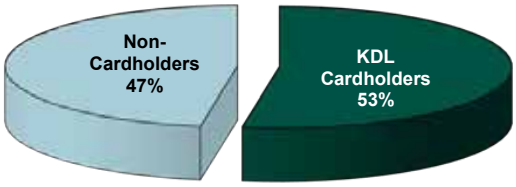
# Alpine Township Branch

## 2015 Statistical Information

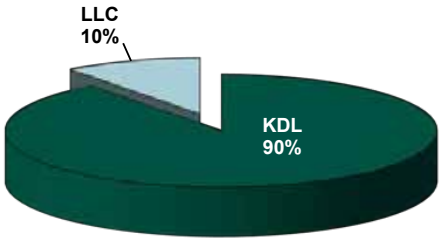
### BRANCH FACTS

**Branch Manager:** Shaunna Martz
**Population of Service Area:** 13,336
**Building Size:** 4,862 square feet
**Public Computers:** 9
**Staff:** 3.0 FTEs
**Open Hours:** 40 hrs/wk

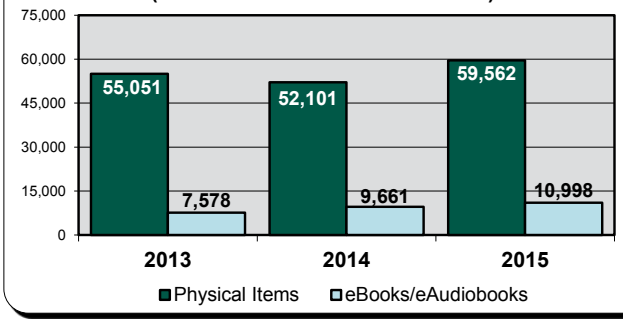
### PERCENTAGE OF POPULATION WITH A LIBRARY CARD



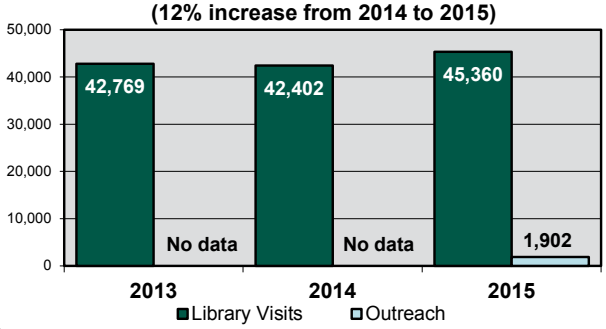

### BRANCH CHECK-OUTS BY RESIDENT



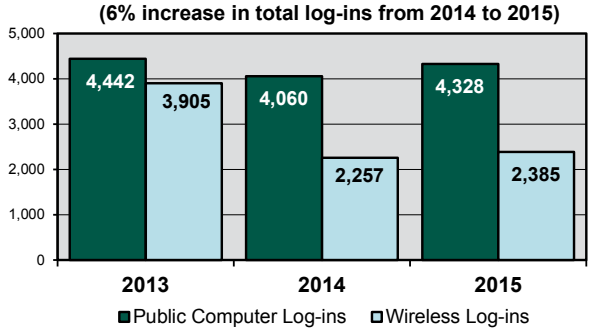

### TOTAL ITEMS CHECKED-OUT
(14% increase from 2014 to 2015)



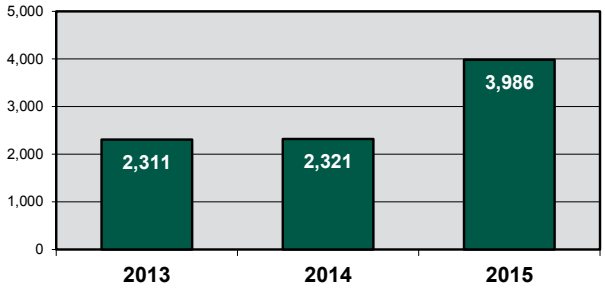

### TOTAL PEOPLE SERVED
(12% increase from 2014 to 2015)



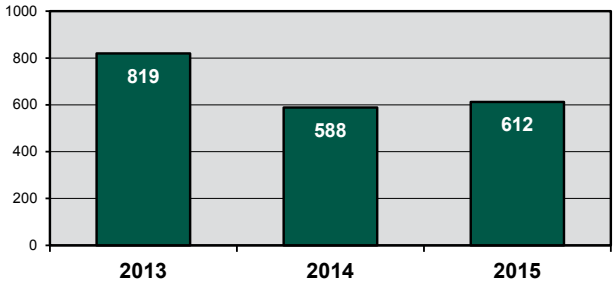

### TOTAL BRANCH COMPUTER LOG-INS
(6% increase in total log-ins from 2014 to 2015)




### TOTAL PROGRAM ATTENDANCE
(72% increase from 2014 to 2015)




### TOTAL SUMMER READING PARTICIPANTS
(4% increase from 2014 to 2015)



# Alto Branch

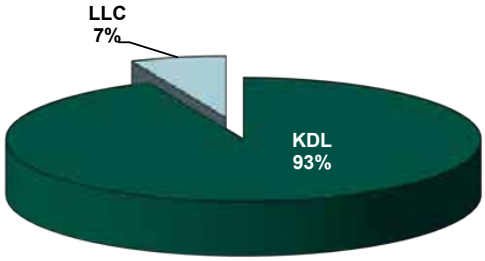
## 2015 Statistical Information

### BRANCH FACTS

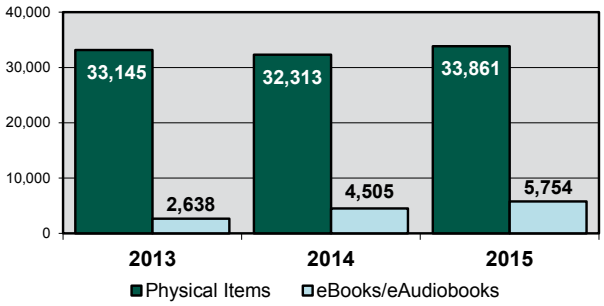
**Branch Manager:** Sandy Graham
**Population of Service Area:** 2,793
**Building Size:** 5,795 square feet
**Public Computers:** 6
**Staff:** 2.75 FTEs
**Open Hours:** 37.5 hrs/wk

### PERCENTAGE OF POPULATION WITH A LIBRARY CARD

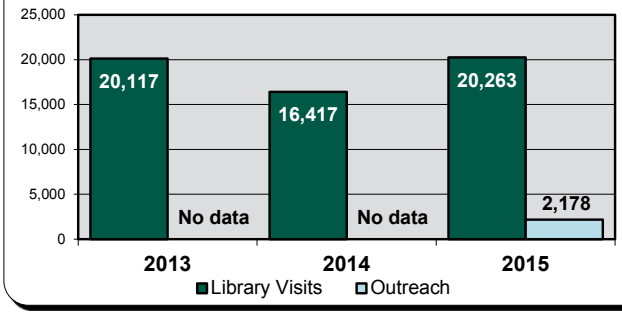
### BRANCH CHECK-OUTS BY RESIDENT



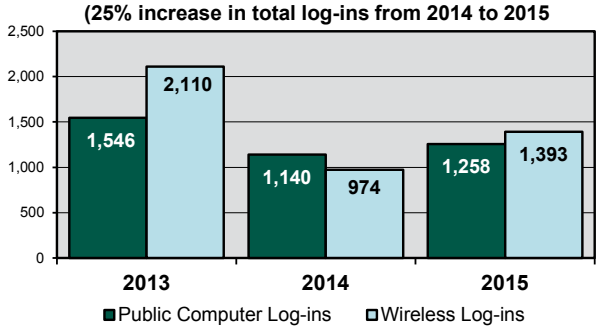

### TOTAL ITEMS CHECKED-OUT
(8% increase from 2014 to 2015)



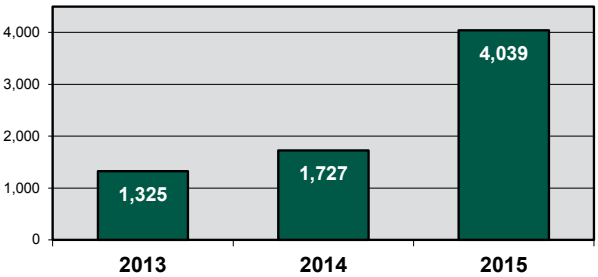

### TOTAL PEOPLE SERVED
(37% increase from 2014 to 2015)



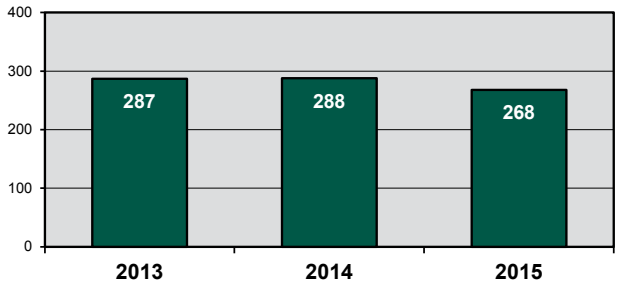

### TOTAL BRANCH COMPUTER LOG-INS
(25% increase in total log-ins from 2014 to 2015




### TOTAL PROGRAM ATTENDANCE
(134% increase from 2014 to 2015)




### TOTAL SUMMER READING PARTICIPANTS
(7% decrease from 2014 to 2015)



KDL Information. Ideas. Excitement!
Kent District Library

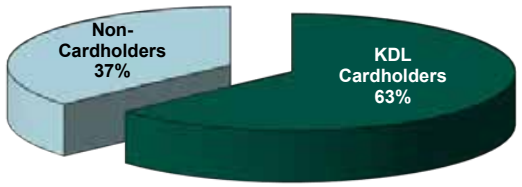
# Byron Township Branch

*2015 Statistical Information*

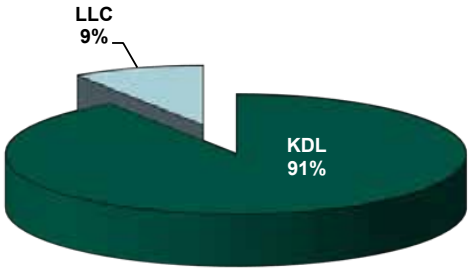
## BRANCH FACTS

**Branch Manager:** Eric DeHaan
**Population of Service Area:** 20,317
**Building Size:** 13,600 square feet
**Public Computers:** 11
**Staff:** 7.95 FTEs
**Open Hours:** 54.5 hrs/wk

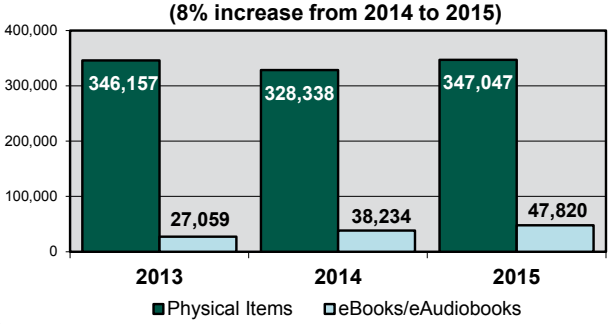
## PERCENTAGE OF POPULATION WITH A LIBRARY CARD



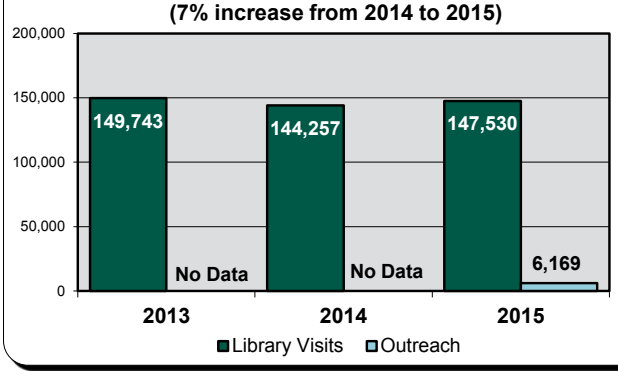

## BRANCH CHECK-OUTS BY RESIDENT



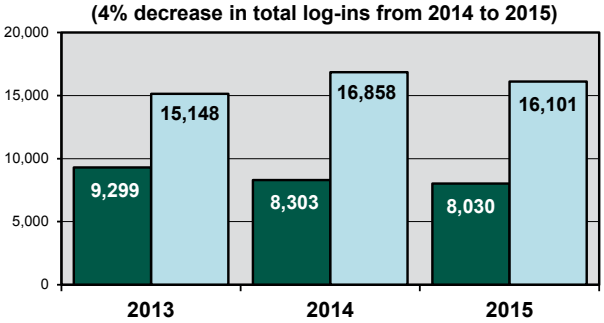

## TOTAL ITEMS CHECKED-OUT
(8% increase from 2014 to 2015)



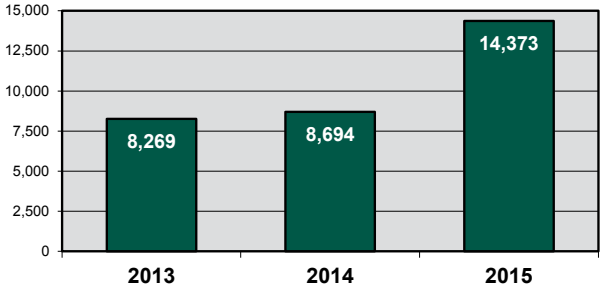

## TOTAL PEOPLE SERVED
(7% increase from 2014 to 2015)



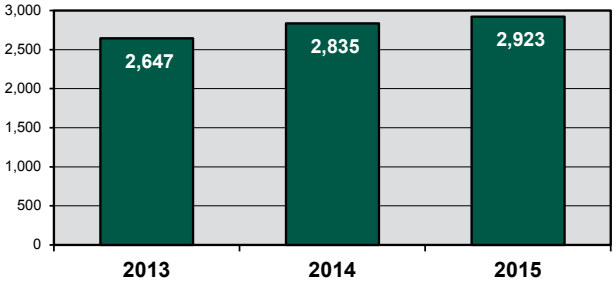

## TOTAL BRANCH COMPUTER LOG-INS
(4% decrease in total log-ins from 2014 to 2015)




## TOTAL PROGRAM ATTENDANCE
(65% increase from 2014 to 2015)




## TOTAL SUMMER READING PARTICIPANTS
(3% increase from 2014 to 2015)



KDL Kent District Library Information. Ideas. *Excitement!*

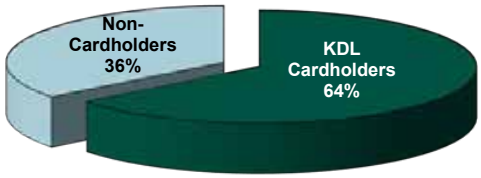
# Caledonia Township Branch

*2015 Statistical Information*

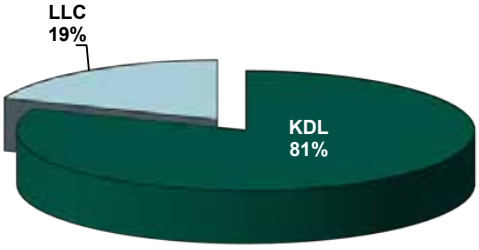
## BRANCH FACTS

**Branch Manager:** Liz Guarino-Kozlowicz
**Population of Service Area:** 12,294
**Building Size:** 15,464 square feet
**Public Computers:** 17
**Staff:** 6.5 FTEs
**Open Hours:** 49 hrs/wk

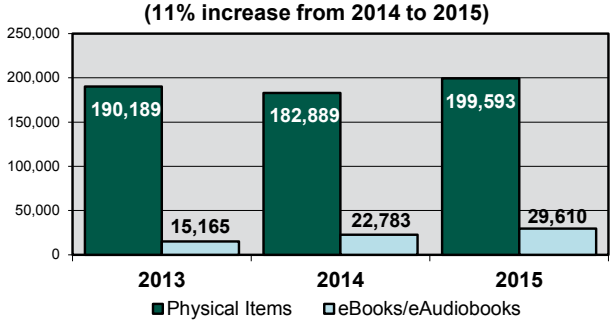
## PERCENTAGE OF POPULATION WITH A LIBRARY CARD



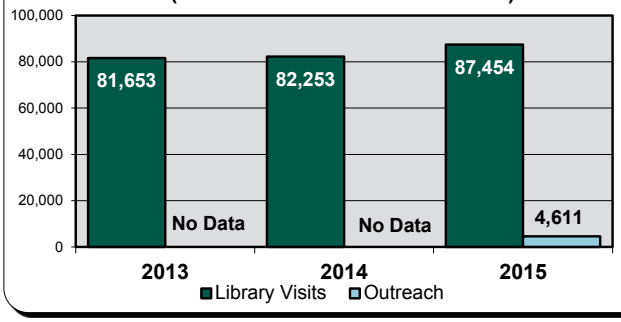

## BRANCH CHECK-OUTS BY RESIDENT



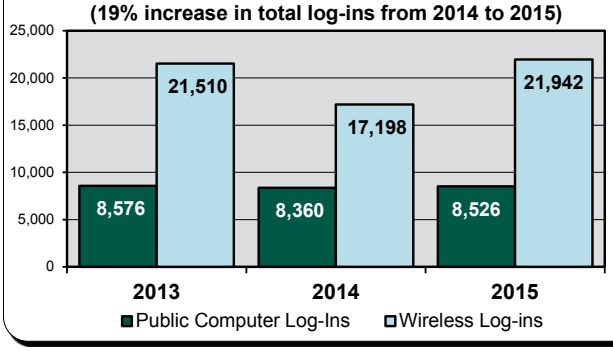

## TOTAL ITEMS CHECKED-OUT
(11% increase from 2014 to 2015)



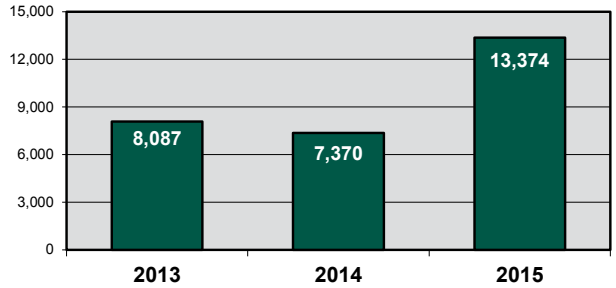

## TOTAL PEOPLE SERVED
(12% increase from 2014 to 2015)



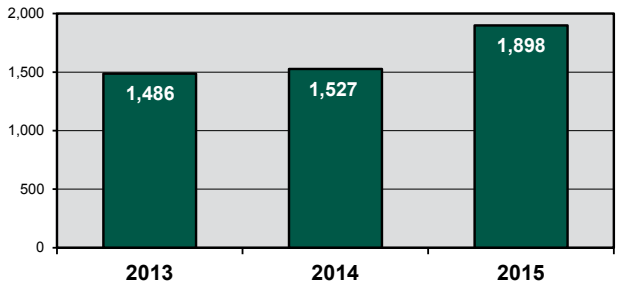

## TOTAL BRANCH COMPUTER LOG-INS
(19% increase in total log-ins from 2014 to 2015)




## TOTAL PROGRAM ATTENDANCE
(81% increase from 2014 to 2015)




## TOTAL SUMMER READING PARTICIPANTS
(24% increase from 2014 to 2015)



KDL Kent District Library Information. Ideas. *Excitement!*

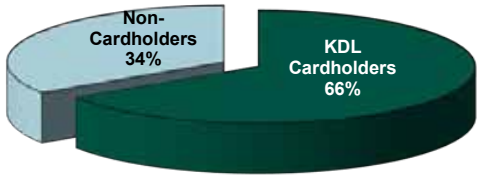
# Cascade Township Branch

*2015 Statistical Information*

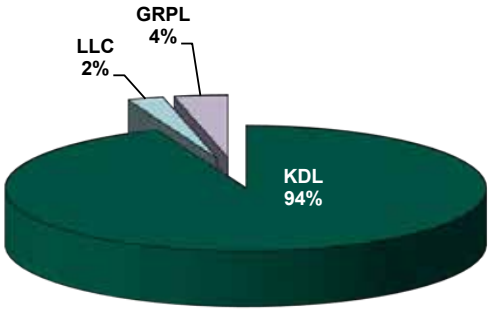
## BRANCH FACTS

**Branch Manager:** Diane Cutler
**Population of Service Area:** 17,134
**Building Size:** 21,913 square feet
**Public Computers:** 20
**Staff:** 15.825 FTEs
**Open Hours:** 62 hrs/wk

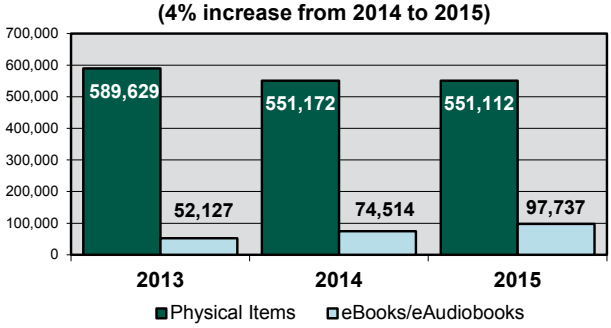
## PERCENTAGE OF POPULATION WITH A LIBRARY CARD



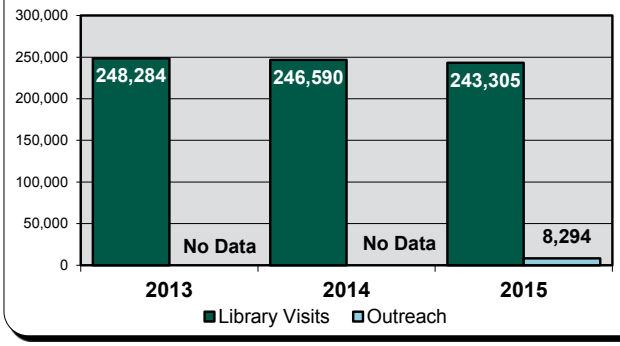

## BRANCH CHECK-OUTS BY RESIDENT



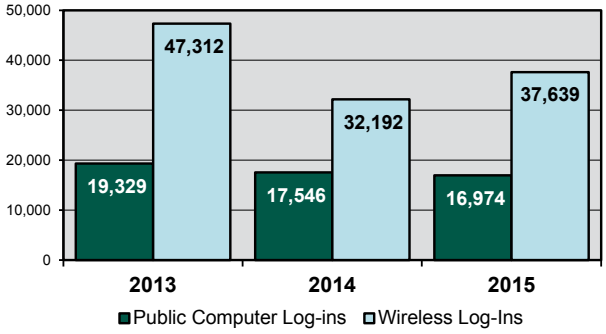

## TOTAL ITEMS CHECKED-OUT
(4% increase from 2014 to 2015)



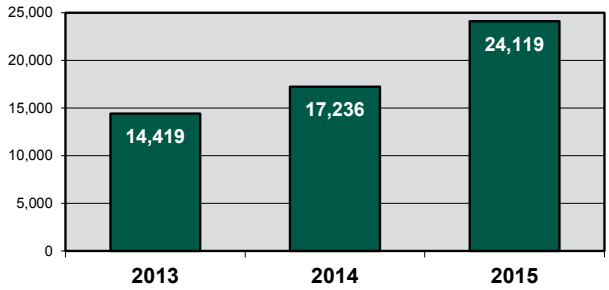

## TOTAL PEOPLE SERVED
(2% increase from 2014 to 2015)



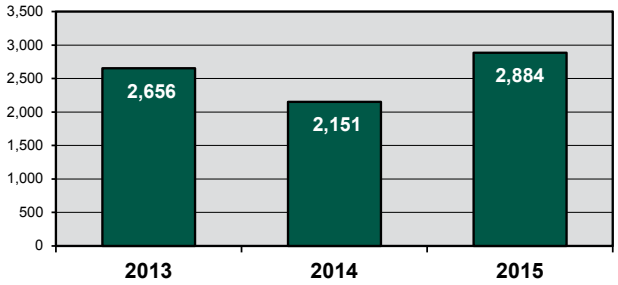

## TOTAL BRANCH COMPUTER LOG-INS
(8% increase in total log-ins from 2014 to 2015)




## TOTAL PROGRAM ATTENDANCE
(40% increase from 2014 to 2015)




## TOTAL SUMMER READING PARTICIPANTS
(34% increase from 2014 to 2015)



KDL Kent District Library Information. Ideas. *Excitement!*

# Comstock Park Branch

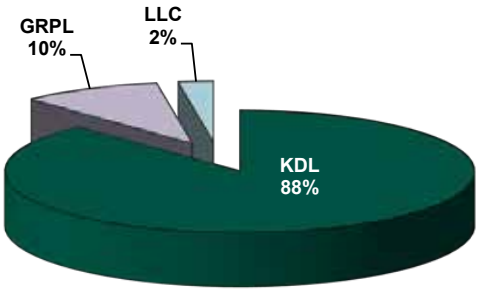
*2015 Statistical Information*

## BRANCH FACTS

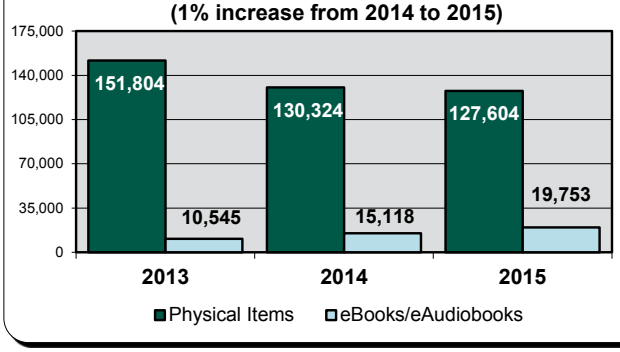
**Branch Manager:** Nancy Mulder
**Pop. of Service Area:** 30,952 (Plainfield Twp.)
**Building Size:** 4,095 square feet
**Public Computers:** 8
**Staff:** 4.675 FTEs
**Open Hours:** 45.5 hrs/wk

## PERCENTAGE OF POPULATION WITH A LIBRARY CARD

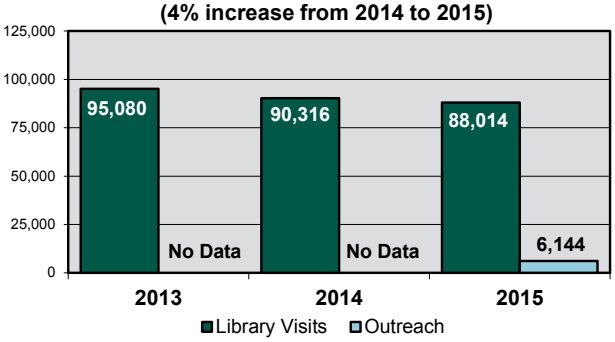
## BRANCH CHECK-OUTS BY RESIDENT



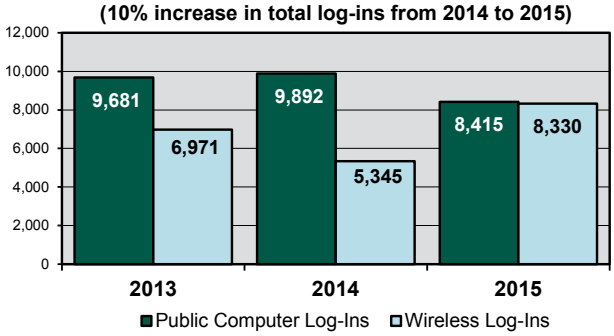

## TOTAL ITEMS CHECKED-OUT
(1% increase from 2014 to 2015)



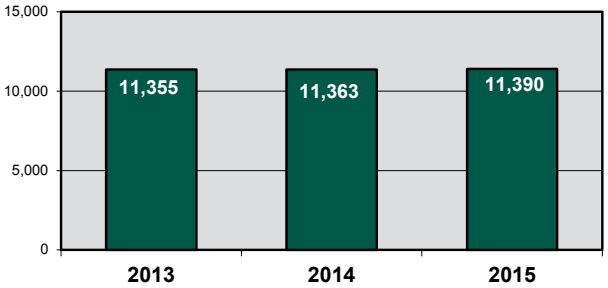

## TOTAL PEOPLE SERVED
(4% increase from 2014 to 2015)



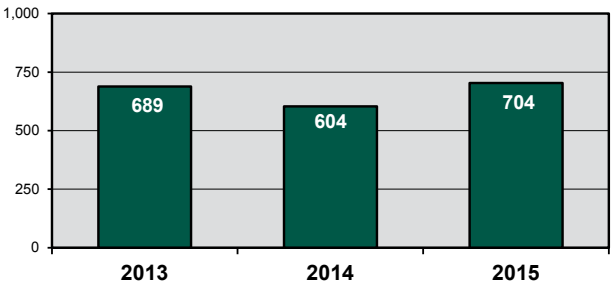

## TOTAL BRANCH COMPUTER LOG-INS
(10% increase in total log-ins from 2014 to 2015)




## TOTAL PROGRAM ATTENDANCE
(0% increase from 2014 to 2015)




## TOTAL SUMMER READING PARTICIPANTS
(17% increase from 2014 to 2015)



KDL Kent District Library Information. Ideas. Excitement!

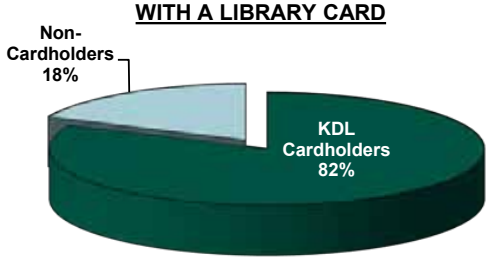
# East Grand Rapids Branch

*2015 Statistical Information*

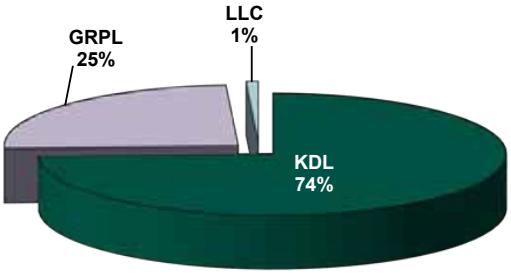
## BRANCH FACTS

**Branch Manager:** Dawn Lewis
**Population of Service Area:** 10,694
**Building Size:** 26,950 square feet
**Public Computers:** 20
**Staff:** 13.65 FTEs
**Open Hours:** 62 hrs/wk

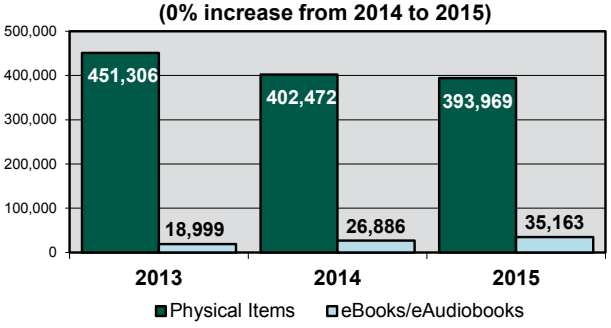
## PERCENTAGE OF POPULATION WITH A LIBRARY CARD



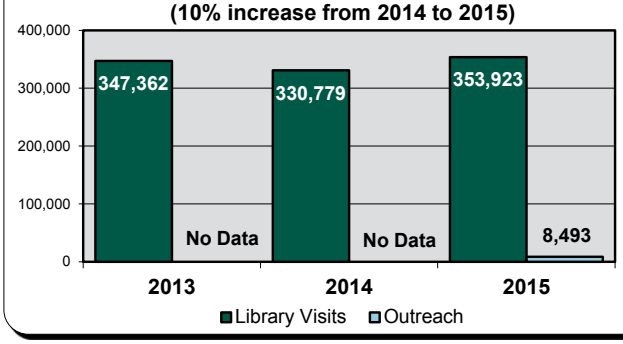

## BRANCH CHECK-OUTS BY RESIDENT



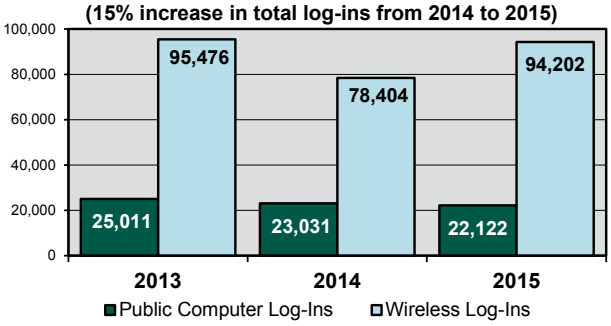

## TOTAL ITEMS CHECKED-OUT
(0% increase from 2014 to 2015)



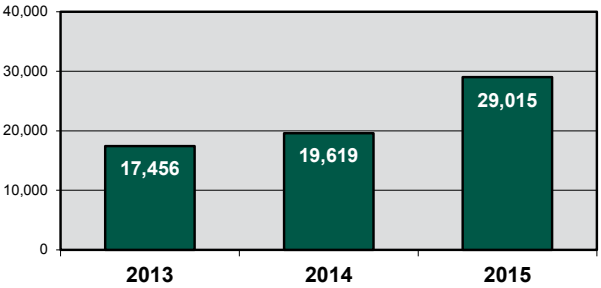

## TOTAL PEOPLE SERVED
(10% increase from 2014 to 2015)



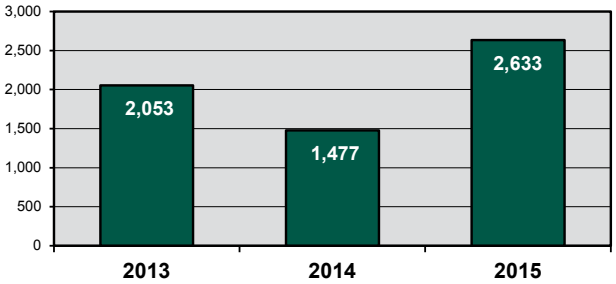

## TOTAL BRANCH COMPUTER LOG-INS
(15% increase in total log-ins from 2014 to 2015)




## TOTAL PROGRAM ATTENDANCE
(48% increase from 2014 to 2015)




## TOTAL SUMMER READING PARTICIPANTS
(78% increase from 2014 to 2015)



KDL Kent District Library Information. Ideas. *Excitement!*

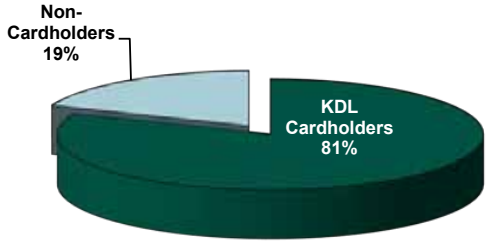
# Englehardt Branch

*2015 Statistical Information*

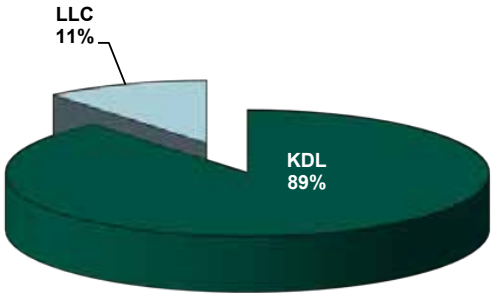
## BRANCH FACTS

**Branch Manager:** Josh Bernstein (Jan-Jun)
Heather Wood-Gramza (Jul-Dec)
**Pop. of Service Area:** 3,783 (City of Lowell)
**Building Size:** 8,771 square feet
**Public Computers:** 13
**Staff:** 5.325 FTEs
**Open Hours:** 46.5 hrs/wk

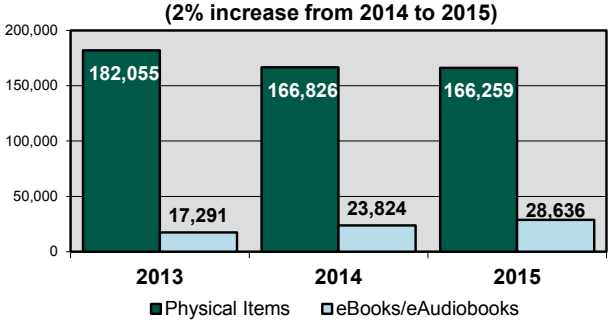
## PERCENTAGE OF POPULATION WITH A LIBRARY CARD



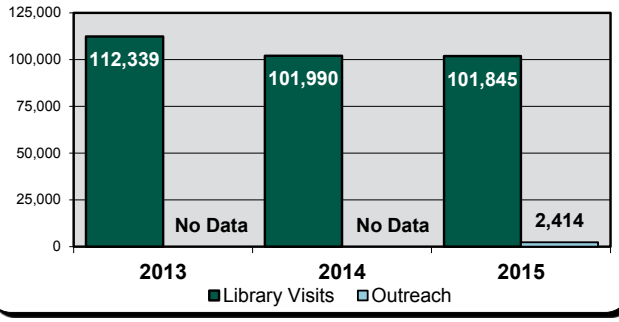

## BRANCH CHECK-OUTS BY RESIDENT



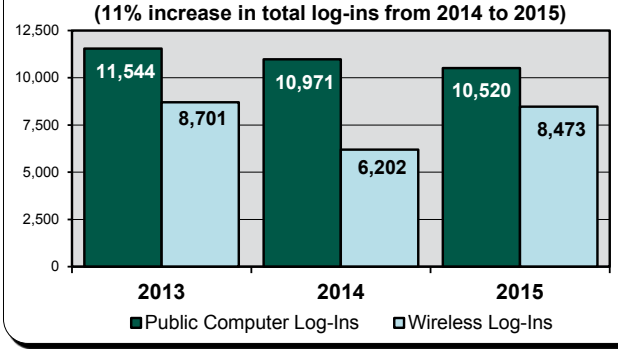

## TOTAL ITEMS CHECKED-OUT
(2% increase from 2014 to 2015)



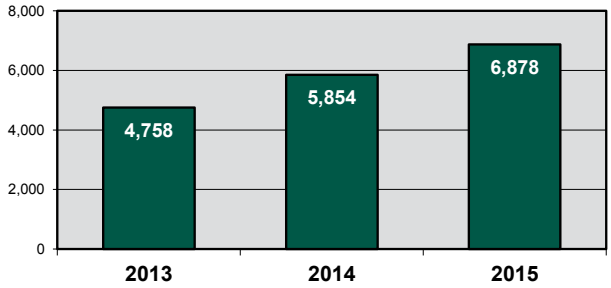

## TOTAL PEOPLE SERVED
(2% increase from 2014 to 2015)



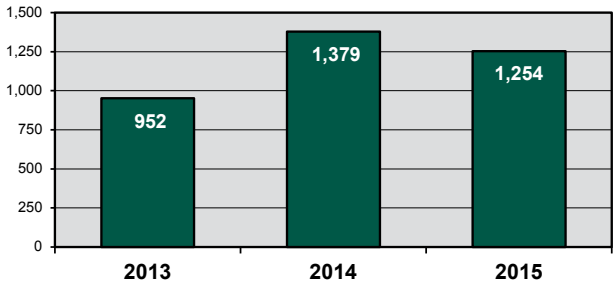

## TOTAL BRANCH COMPUTER LOG-INS
(11% increase in total log-ins from 2014 to 2015)




## TOTAL PROGRAM ATTENDANCE
(17% increase from 2014 to 2015)




## TOTAL SUMMER READING PARTICIPANTS
(9% decrease from 2014 to 2015)



KDL Information. Ideas. Excitement!
Kent District Library

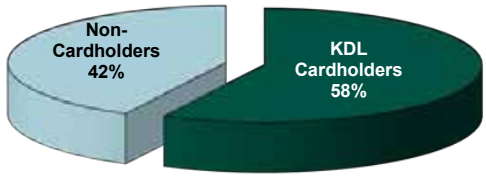
# Gaines Township Branch

*2015 Statistical Information*

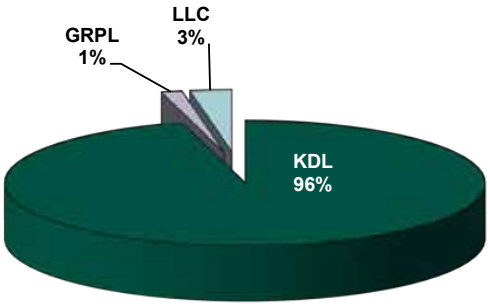
## BRANCH FACTS

**Branch Manager:** Cathy Neis
**Population of Service Area:** 25,146
**Building Size:** 10,400 square feet
**Public Computers:** 18
**Staff:** 7.35 FTEs
**Open Hours:** 54 hrs/wk

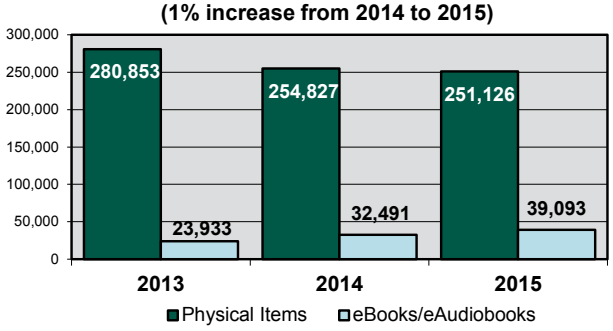
## PERCENTAGE OF POPULATION WITH A LIBRARY CARD



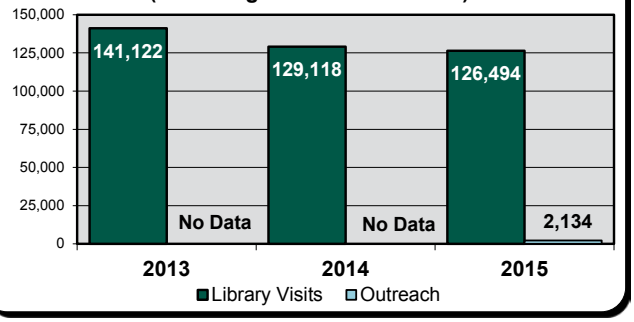

## BRANCH CHECK-OUTS BY RESIDENT



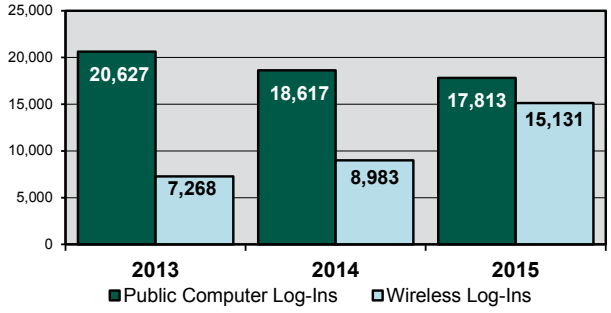

## TOTAL ITEMS CHECKED-OUT
(1% increase from 2014 to 2015)



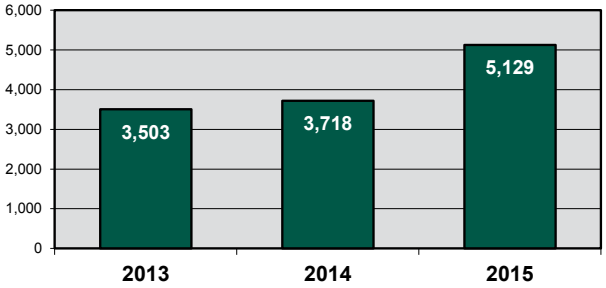

## TOTAL PEOPLE SERVED
(0% change from 2014 to 2015)



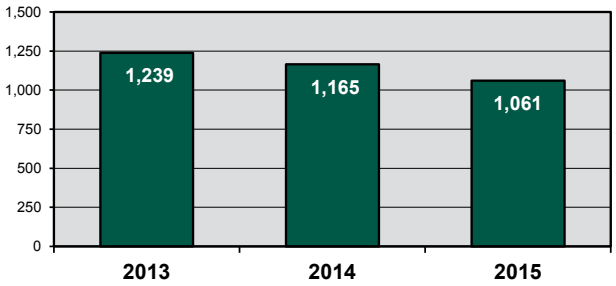

## TOTAL BRANCH COMPUTER LOG-INS
(19% increase in total log-ins from 2014 to 2015)




## TOTAL PROGRAM ATTENDANCE
(38% increase from 2014 to 2015)




## TOTAL SUMMER READING PARTICIPANTS
(9% decrease from 2014 to 2015)



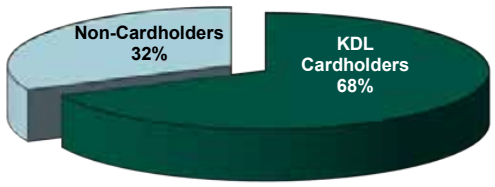
# Grandville Branch

## 2015 Statistical Information

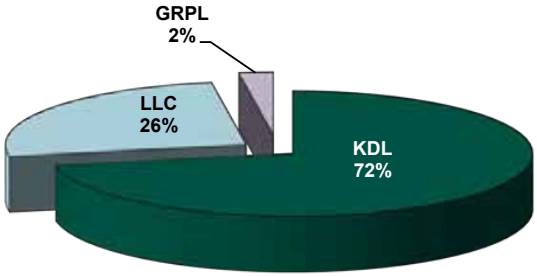
### BRANCH FACTS

**Branch Manager:** Patrice Vrona (Jan-Jun)
Josh Bernstein (Jul-Dec)
**Population of Service Area:** 15,378
**Building Size:** 18,672 square feet
**Public Computers:** 22
**Staff:** 14.825 FTEs
**Open Hours:** 58 hrs/wk (Jan-Mar)
62 hrs/wk (Apr-Dec)

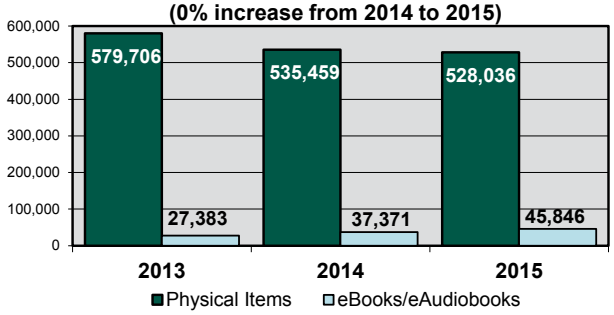
### PERCENTAGE OF POPULATION WITH A LIBRARY CARD



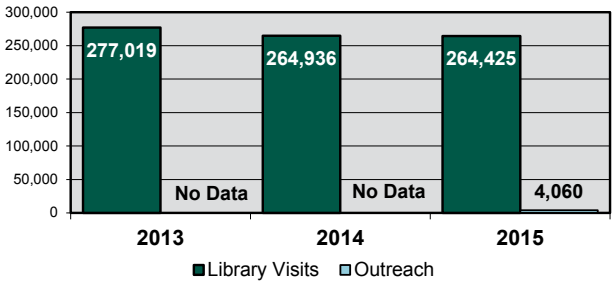

### BRANCH CHECK-OUTS BY RESIDENT



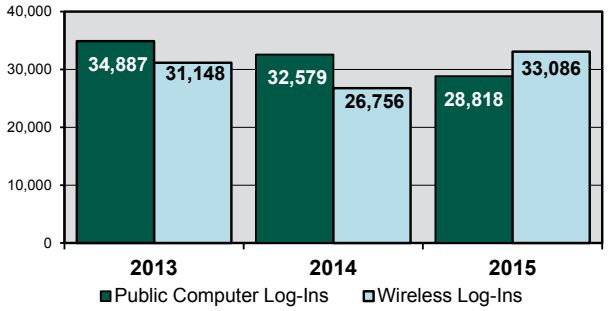

### TOTAL ITEMS CHECKED-OUT
(0% increase from 2014 to 2015)



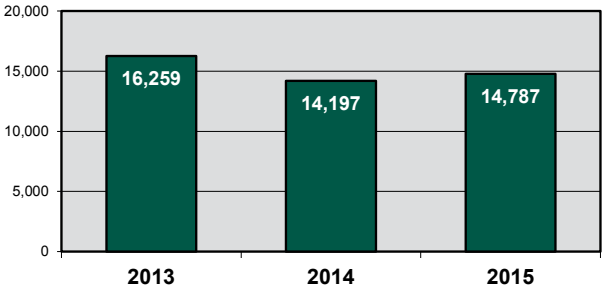

### TOTAL PEOPLE SERVED
(1% increase from 2014 to 2015)



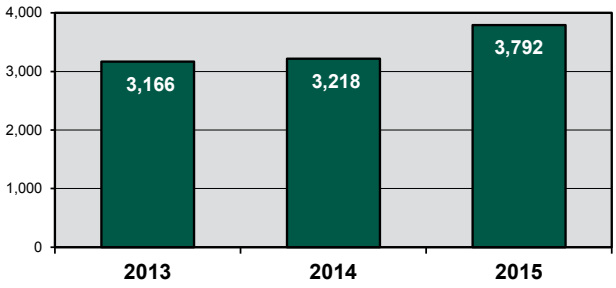

### TOTAL BRANCH COMPUTER LOG-INS
(4% increase in total log-ins from 2014 to 2015)




### TOTAL PROGRAM ATTENDANCE
(4% increase from 2014 to 2015)




### TOTAL SUMMER READING PARTICIPANTS
(18% increase from 2014 to 2015)



KDL Kent District Library Information. Ideas. Excitement!

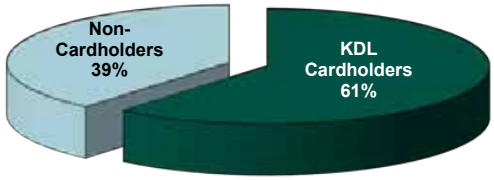
# Kentwood (Richard L. Root) Branch

*2015 Statistical Information*

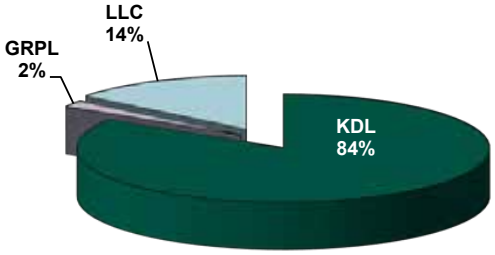
## BRANCH FACTS

**Branch Manager:** Cheryl Cammenga
**Population of Service Area:** 48,707
**Building Size:** 45,489 square feet
**Public Computers:** 42
**Staff:** 15.1 FTEs
**Open Hours:** 62 hrs/wk

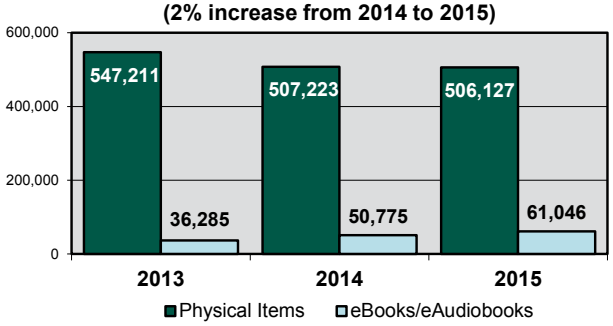
## PERCENTAGE OF POPULATION WITH A LIBRARY CARD



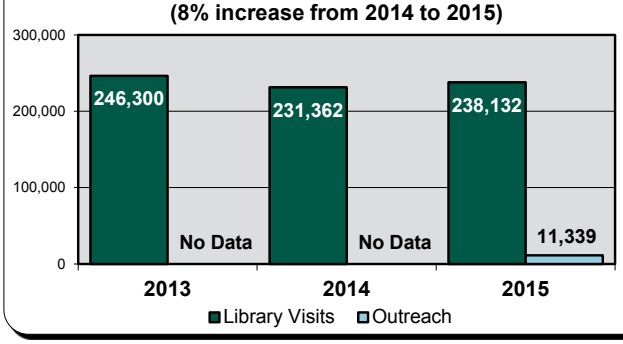

## BRANCH CHECK-OUTS BY RESIDENT



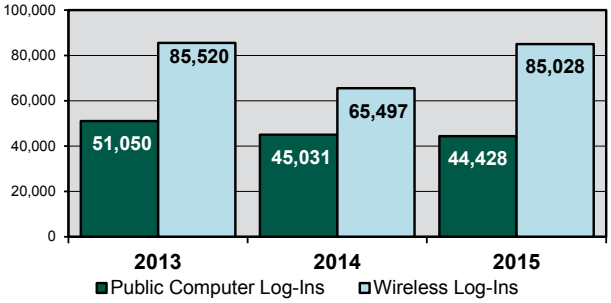

## TOTAL ITEMS CHECKED-OUT
(2% increase from 2014 to 2015)



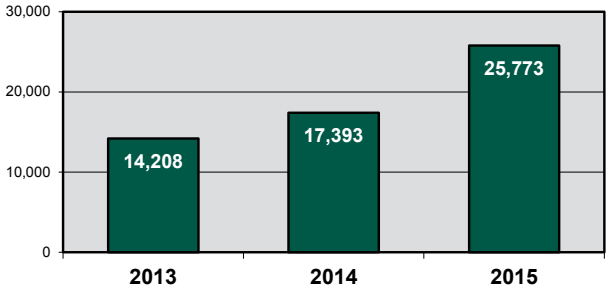

## TOTAL PEOPLE SERVED
(8% increase from 2014 to 2015)



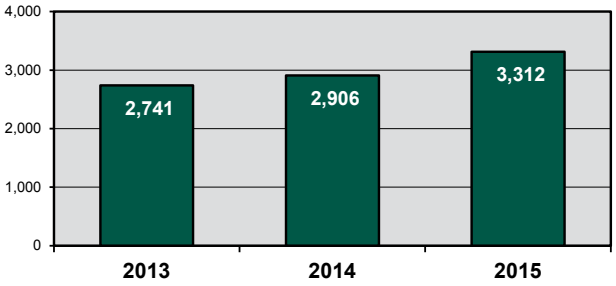

## TOTAL BRANCH COMPUTER LOG-INS
(17% increase in total log-ins from 2014 to 2015)




## TOTAL PROGRAM ATTENDANCE
(48% increase from 2014 to 2015)




## TOTAL SUMMER READING PARTICIPANTS
(14% increase from 2014 to 2015)



KDL Kent District Library Information. Ideas. *Excitement!*

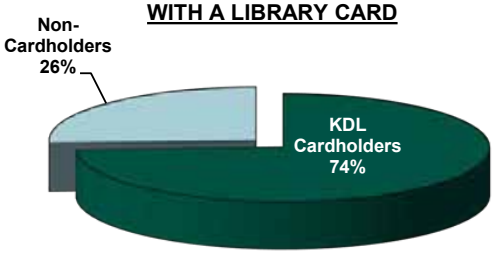
# Krause Memorial Branch

*2015 Statistical Information*

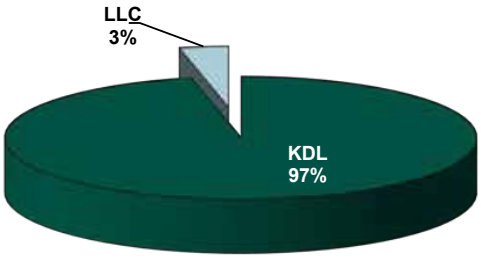
## BRANCH FACTS

**Branch Manager:** Jennifer German
**Pop. of Service Area:** 5,719 (City of Rockford)
**Building Size:** 9,500 square feet
**Public Computers:** 12
**Staff:** 8.55 FTEs
**Open Hours:** 54.5 hrs/wk

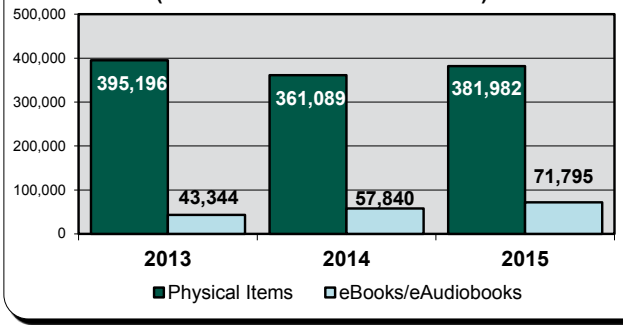
## PERCENTAGE OF POPULATION WITH A LIBRARY CARD



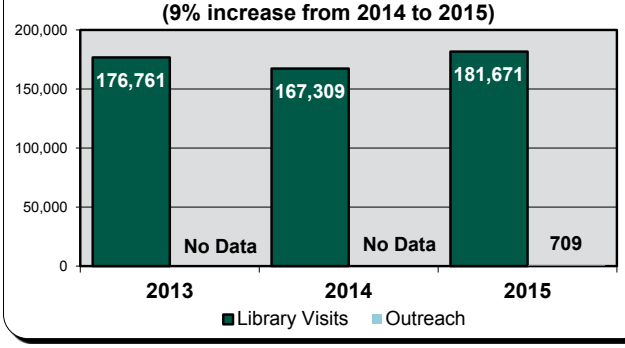

## BRANCH CHECK-OUTS BY RESIDENT



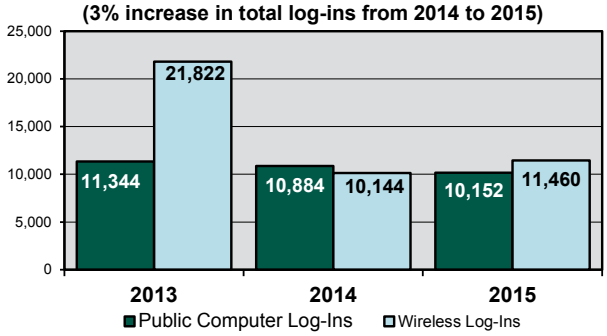

## TOTAL ITEMS CHECKED-OUT
(8% increase from 2014 to 2015)



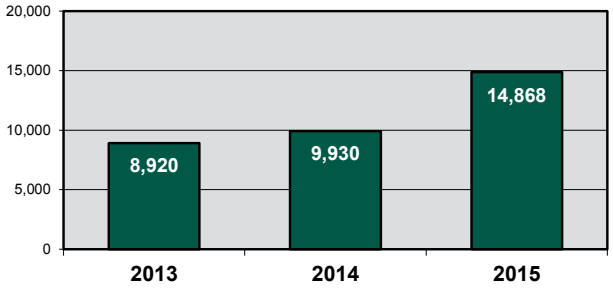

## TOTAL PEOPLE SERVED
(9% increase from 2014 to 2015)



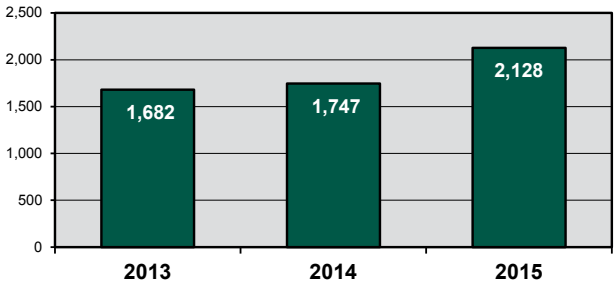

## TOTAL BRANCH COMPUTER LOG-INS
(3% increase in total log-ins from 2014 to 2015)




## TOTAL PROGRAM ATTENDANCE
(50% increase from 2014 to 2015)




## TOTAL SUMMER READING PARTICIPANTS
(22% increase from 2014 to 2015)



KDL Information. Ideas. Excitement!
Kent District Library

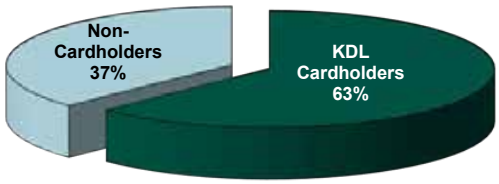
# Plainfield Township Branch

*2015 Statistical Information*

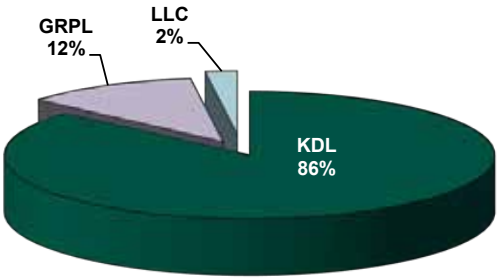
## BRANCH FACTS

**Branch Manager:** Liz Breed (Jan-Jun)
Zandra Blake (Aug-Dec)
**Population of Service Area:** 30,952
**Building Size:** 26,420 square feet
**Public Computers:** 22
**Staff:** 15.9 FTEs
**Open Hours:** 62 hrs/wk

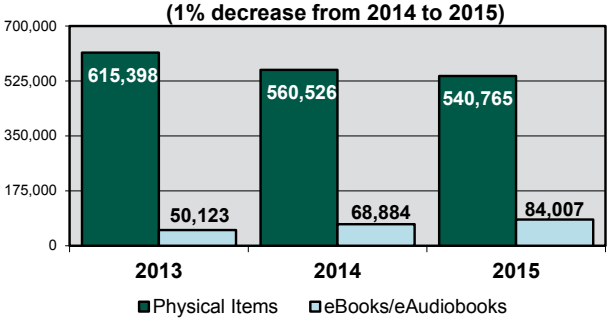
## PERCENTAGE OF POPULATION WITH A LIBRARY CARD



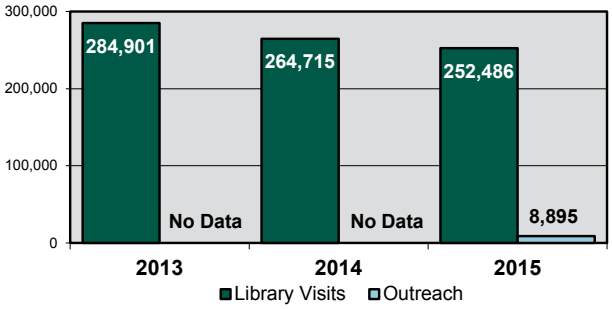

## BRANCH CHECK-OUTS BY RESIDENT



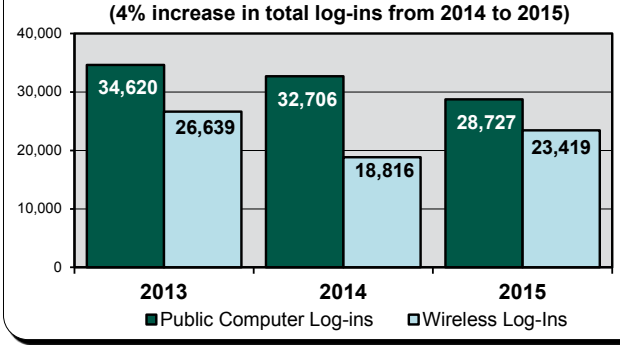

## TOTAL ITEMS CHECKED-OUT
(1% decrease from 2014 to 2015)



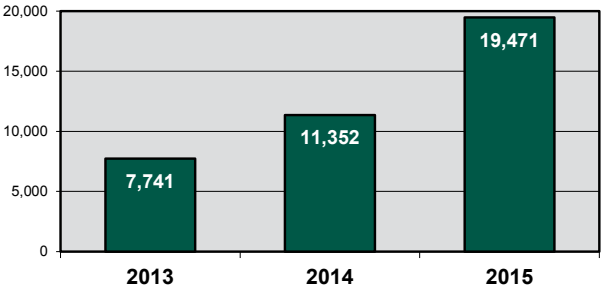

## TOTAL PEOPLE SERVED
(1% decrease from 2014 to 2015)



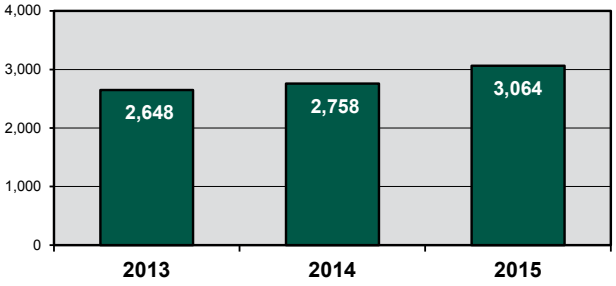

## TOTAL BRANCH COMPUTER LOG-INS
(4% increase in total log-ins from 2014 to 2015)




## TOTAL PROGRAM ATTENDANCE
(72% increase from 2014 to 2015)




## TOTAL SUMMER READING PARTICIPANTS
(11% increase from 2014 to 2015)



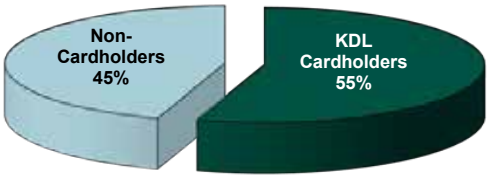
# Nelson Township/Sand Lake Branch

*2015 Statistical Information*

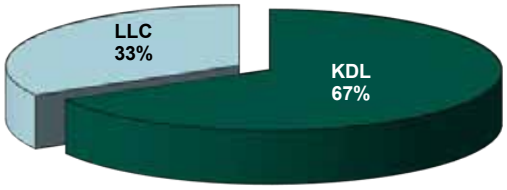
## BRANCH FACTS

**Branch Manager:** Craig Buno (Jan-Oct)
Kip Odell [Interim] (Oct-Dec)
**Pop. of Service Area:** 4,764
**Building Size:** 8,736 square feet
**Public Computers:** 15
**Staff:** 4.075 FTEs
**Open Hours:** 42 hrs/wk

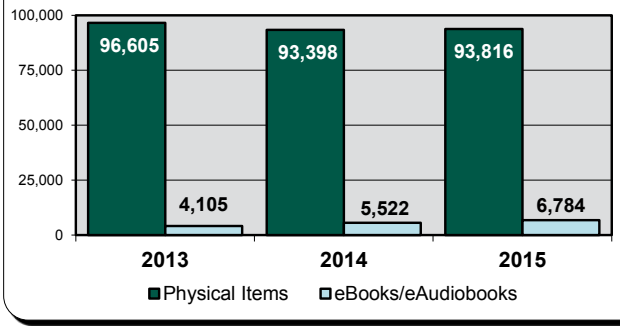
## PERCENTAGE OF POPULATION WITH A LIBRARY CARD



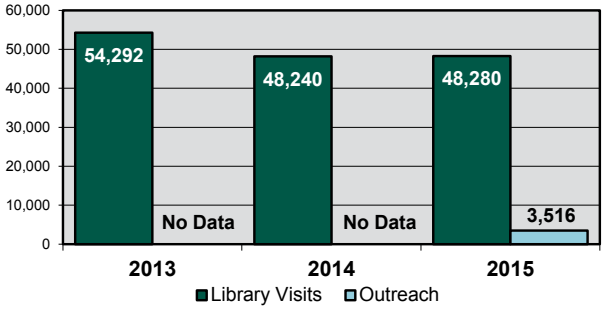

## BRANCH CHECK-OUTS BY RESIDENT



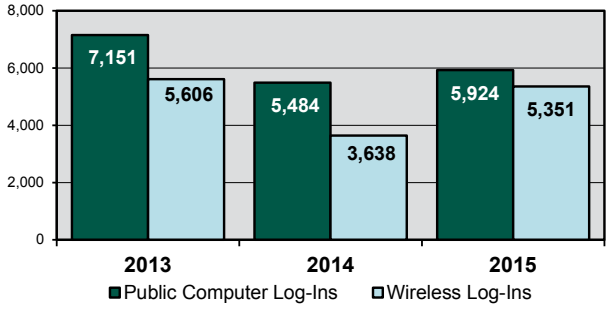

## TOTAL ITEMS CHECKED-OUT
(2% increase from 2014 to 2015)



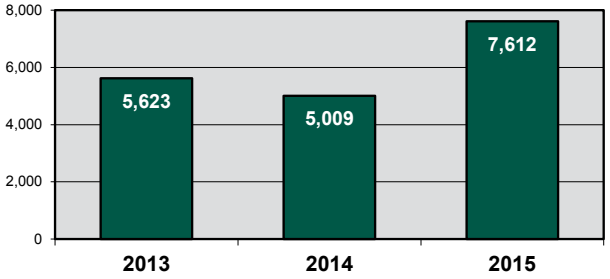

## TOTAL BRANCH VISITORS
(7% increase from 2014 to 2015)



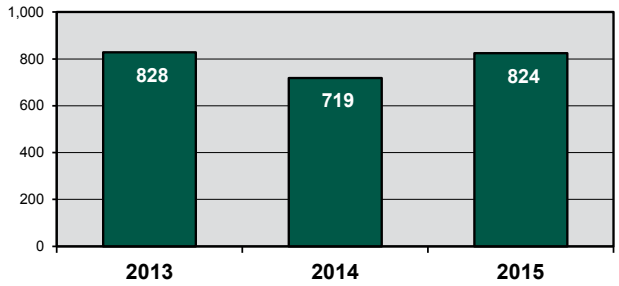

## TOTAL BRANCH COMPUTER LOG-INS
(24% increase in total log-ins from 2014 to 2015)




## TOTAL PROGRAM ATTENDANCE
(52% increase from 2014 to 2015)




## TOTAL SUMMER READING PARTICIPANTS
(15% increase from 2014 to 2015)



KDL Information. Ideas. Excitement!
Kent District Library

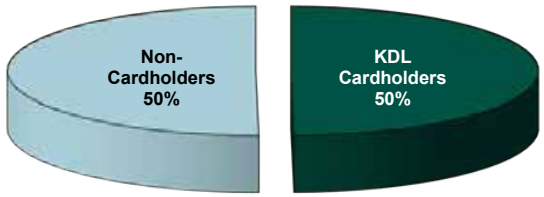
# Spencer Township Branch

*2015 Statistical Information*

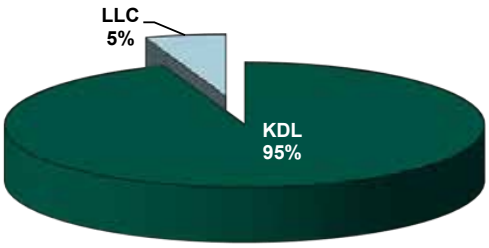
## BRANCH FACTS

**Branch Manager:**
Heather Wood-Gramza (Jan-Jul);
Kaitlin Tang (Aug-Dec)
**Population of Service Area:** 3,960
**Building Size:** 2,000 square feet
**Public Computers:** 8
**Staff:** 2.925 FTEs
**Open Hours:** 40 hrs/wk

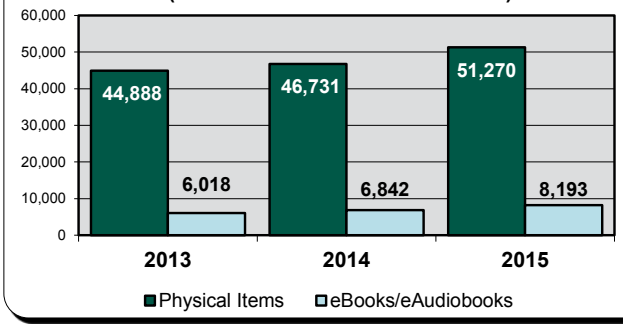
## PERCENTAGE OF POPULATION WITH A LIBRARY CARD



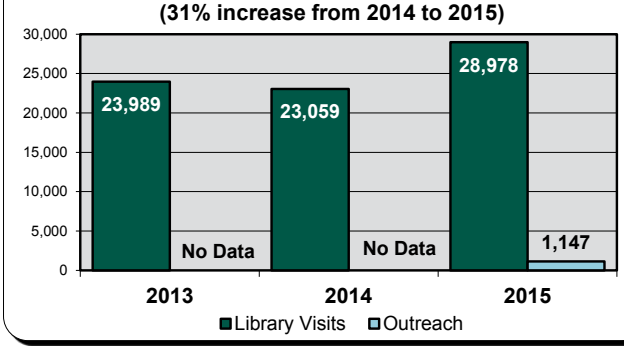

## BRANCH CHECK-OUTS BY RESIDENT



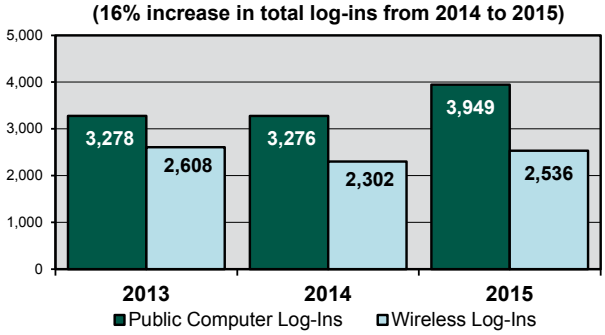

## TOTAL ITEMS CHECKED-OUT
(11% increase from 2014 to 2015)



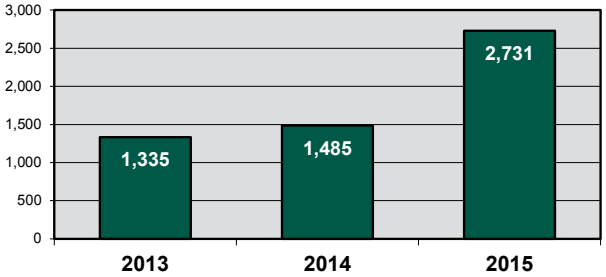

## TOTAL PEOPLE SERVED
(31% increase from 2014 to 2015)



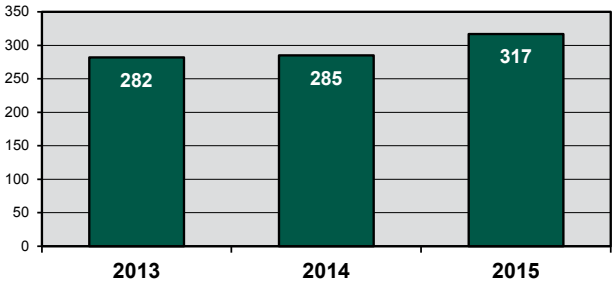

## TOTAL BRANCH COMPUTER LOG-INS
(16% increase in total log-ins from 2014 to 2015)




## TOTAL PROGRAM ATTENDANCE
(84% increase from 2014 to 2015)




## TOTAL SUMMER READING PARTICIPANTS
(11% increase from 2014 to 2015)



KDL Kent District Library Information. Ideas. *Excitement!*

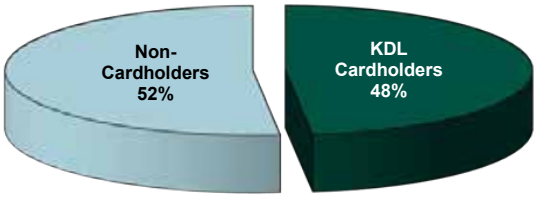
# Tyrone Township Branch

*2015 Statistical Information*

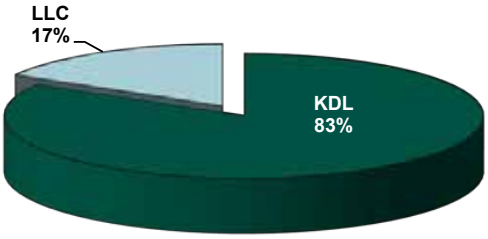
## BRANCH FACTS

**Branch Manager:** Liz Knapp
**Population of Service Area:** 4,731
**Building Size:** 4,239 square feet
**Public Computers:** 7
**Staff:** 2.875 FTEs
**Open Hours:** 35.5 hrs/wk

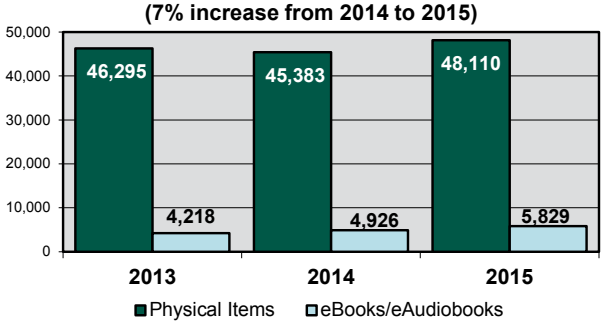
## PERCENTAGE OF POPULATION WITH A LIBRARY CARD



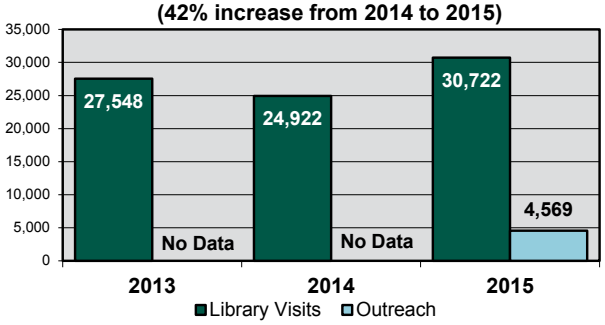

## BRANCH CHECK-OUTS BY RESIDENT



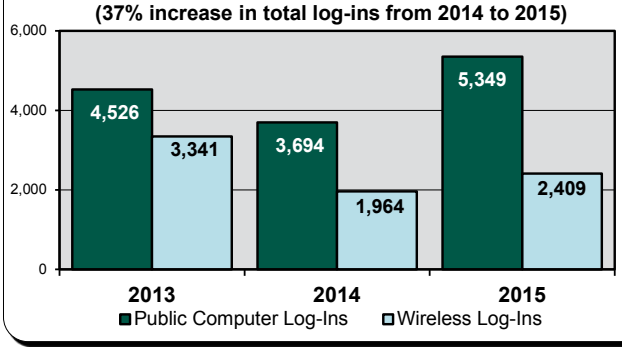

## TOTAL ITEMS CHECKED-OUT
(7% increase from 2014 to 2015)



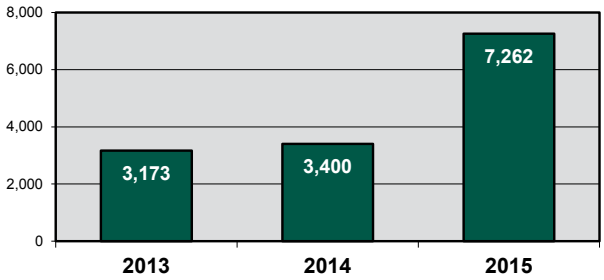

## TOTAL PEOPLE SERVED
(42% increase from 2014 to 2015)



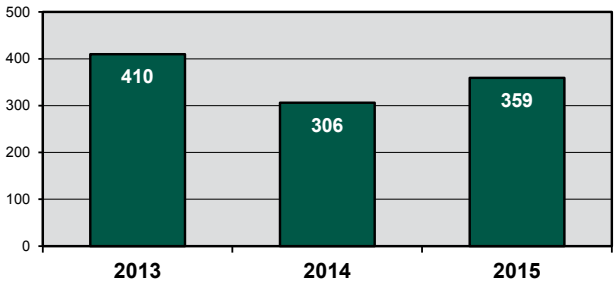

## TOTAL BRANCH COMPUTER LOG-INS
(37% increase in total log-ins from 2014 to 2015)




## TOTAL PROGRAM ATTENDANCE
(114% increase from 2014 to 2015)




## TOTAL SUMMER READING PARTICIPANTS
(17% increase from 2014 to 2015)



KDL Information. Ideas. Excitement!
Kent District Library

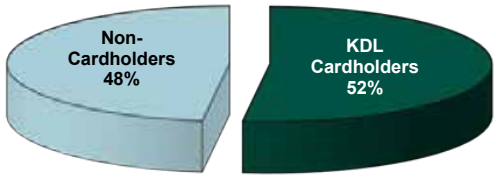
# Walker Branch

## 2015 Statistical Information

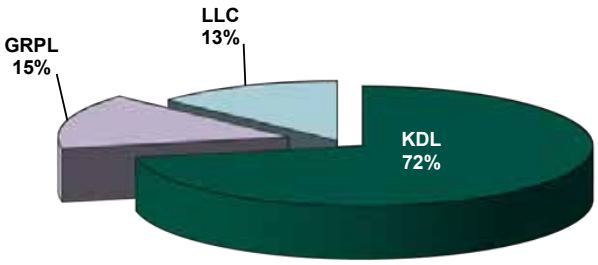
### BRANCH FACTS

**Branch Manager:** Chris Lohman
**Pop. of Service Area:** 23,537
**Building Size:** 8,000 square feet
**Public Computers:** 11
**Staff:** 8.325 FTEs
**Open Hours:** 57 hrs/wk

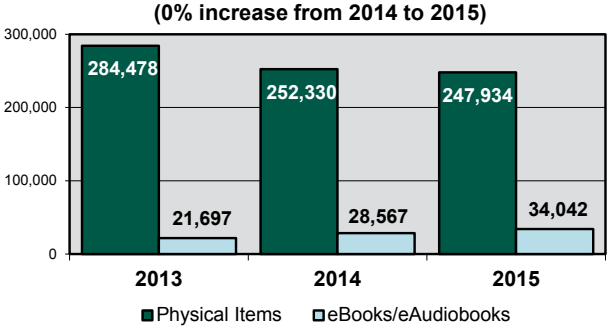
### PERCENTAGE OF POPULATION WITH A LIBRARY CARD



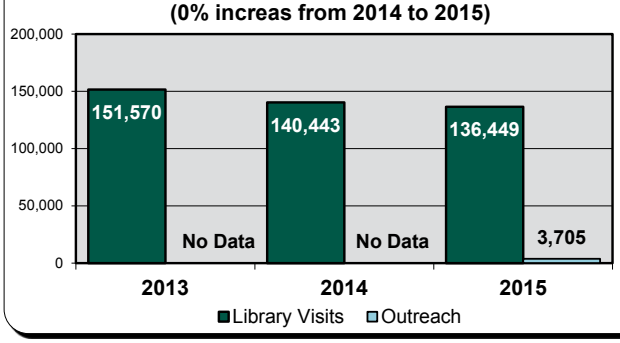

### BRANCH CHECK-OUTS BY RESIDENT



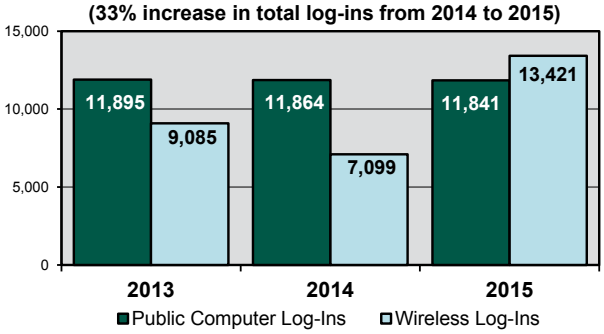

### TOTAL ITEMS CHECKED-OUT
(0% increase from 2014 to 2015)



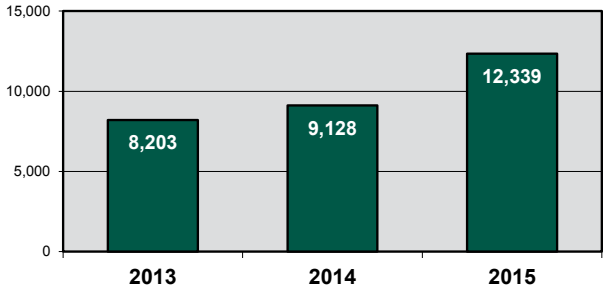

### TOTAL PEOPLE SERVED
(0% increas from 2014 to 2015)



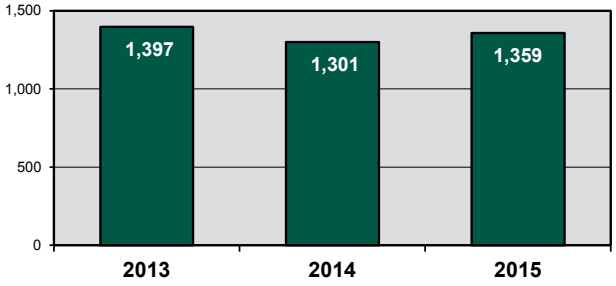

### TOTAL BRANCH COMPUTER LOG-INS
(33% increase in total log-ins from 2014 to 2015)




### TOTAL PROGRAM ATTENDANCE
(35% increase from 2014 to 2015)




### TOTAL SUMMER READING PARTICIPANTS
(4% increase from 2014 to 2015)



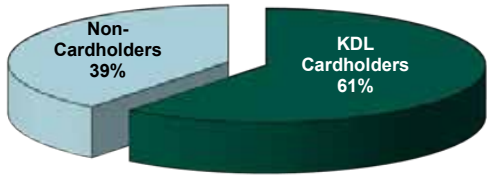
# Wyoming Branch

## 2015 Statistical Information

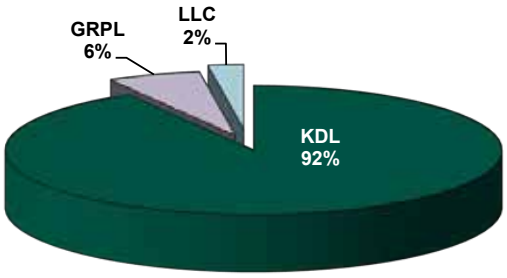
### BRANCH FACTS

**Branch Manager:** Lori Holland
**Population of Service Area:** 72,125
**Building Size:** 48,950 square feet
**Public Computers:** 47
**Staff:** 18.45 FTEs
**Open Hours:** 62 hrs/wk

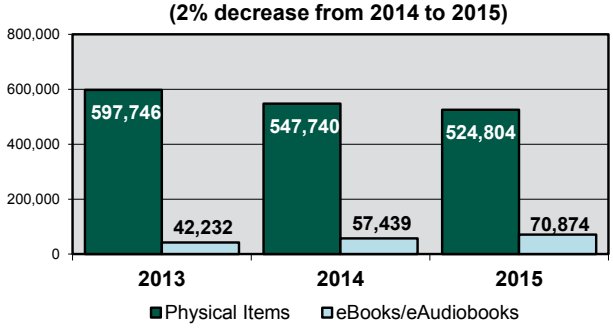
### PERCENTAGE OF POPULATION WITH A LIBRARY CARD



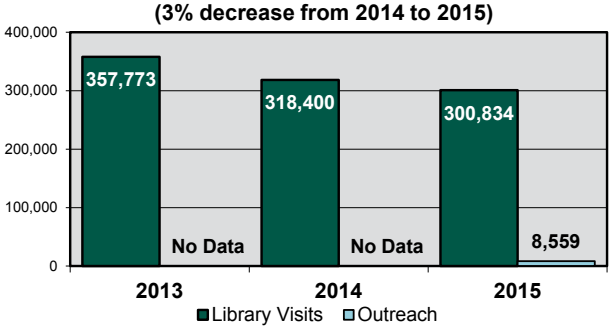

### BRANCH CHECK-OUTS BY RESIDENT



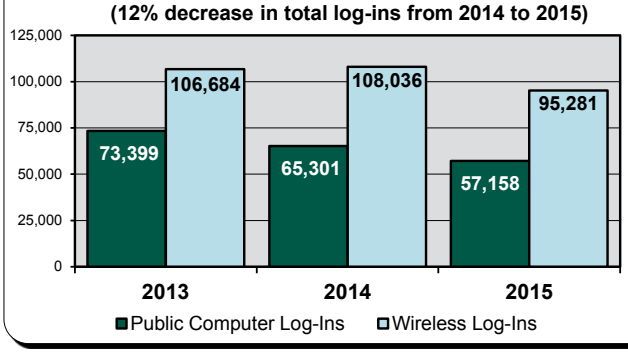

### TOTAL ITEMS CHECKED-OUT
(2% decrease from 2014 to 2015)



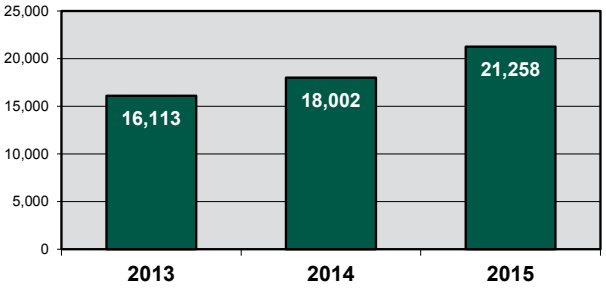

### TOTAL PEOPLE SERVED
(3% decrease from 2014 to 2015)



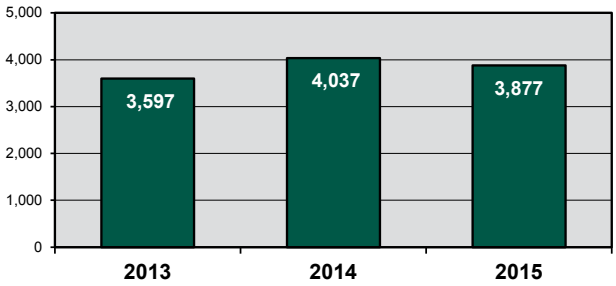

### TOTAL BRANCH COMPUTER LOG-INS
(12% decrease in total log-ins from 2014 to 2015)




### TOTAL PROGRAM ATTENDANCE
(18% increase from 2014 to 2015)




### TOTAL SUMMER READING PARTICIPANTS
(4% decrease from 2014 to 2015)

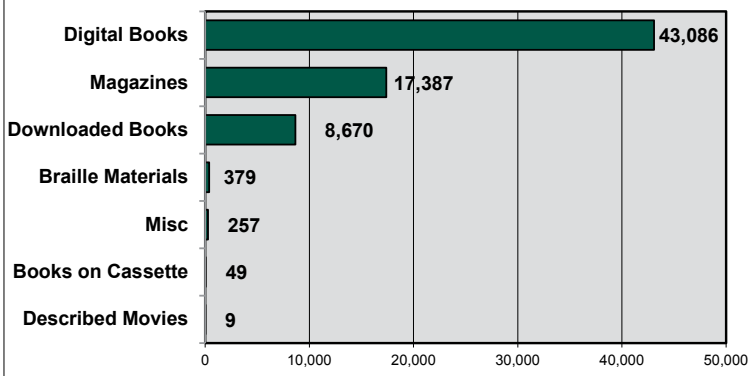


## OVERVIEW

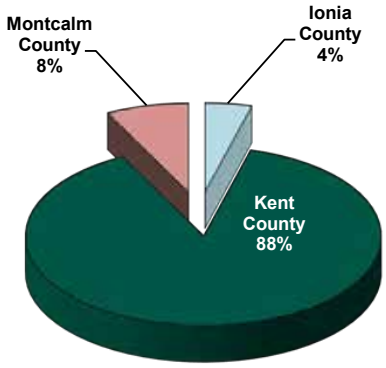
The Library for the Blind & Physically Handicapped (LBPH) is a national program that provides accessible reading material to anyone who cannot read standard print because of a visual or physical impairment. Kent District Library's LBPH service is offered through our Wyoming Branch and serves Kent, Ionia and Montcalm counties under the direction of the Library of Michigan. In addition to providing Braille and audio materials (including audiobooks, described movies and audio magazines) to LBPH patrons, KDL has a suite of adaptive technology located at the Wyoming Branch that is open to the public and includes a CCTV, a Braille embosser, a text-to-speech scanner and an accessible computer equipped with a large print keyboard, screen reading and Braille translation software packages.

**Wyoming Branch Manager:** Lori Holland
**LBPH Librarian:** Shelley Roossien
**Address:** 3350 Michael Ave., Wyoming, MI 49509
**Phone:** 616-647-3988
**Email:** lbphstaff@kdl.org

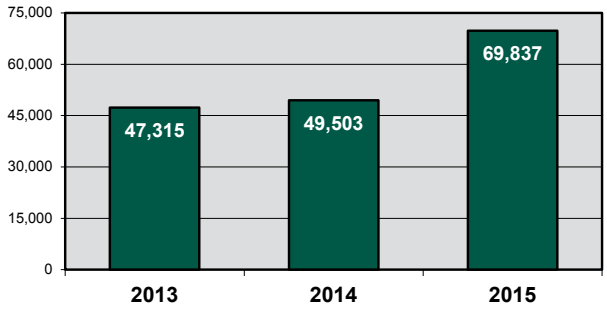
### 2015 CIRCULATION BY ITEM TYPE



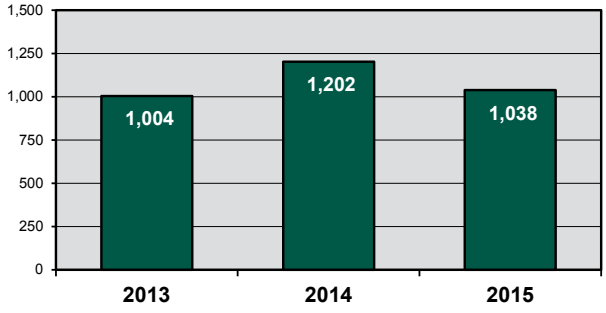

### Borrowers by residence




### TOTAL CIRCULATION
(41% increase from 2014 to 2015)

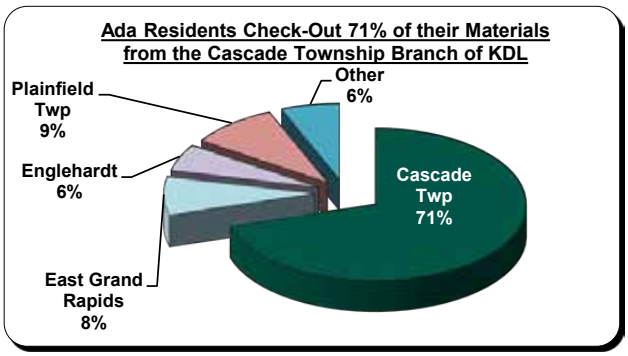


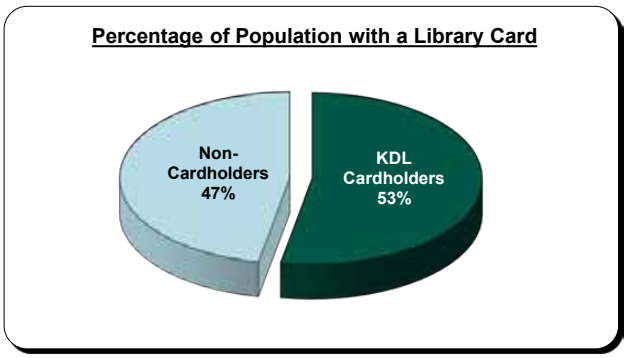

### TOTAL ACTIVE BORROWERS
(14% decrease from 2014 to 2015)

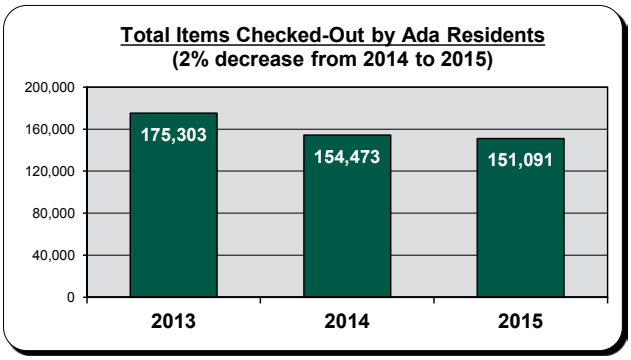


# 2015 Annual Report for Ada Township

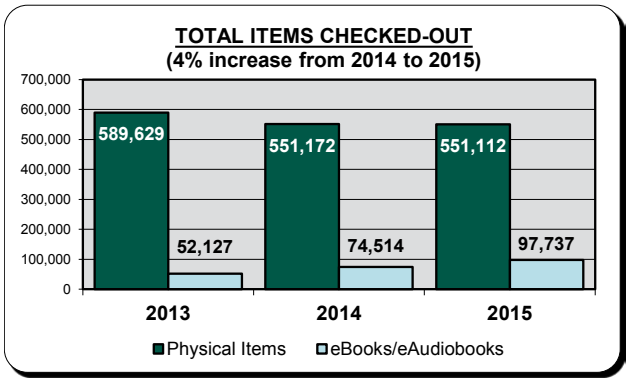
*A Municipality in the Kent District Library Service Area*

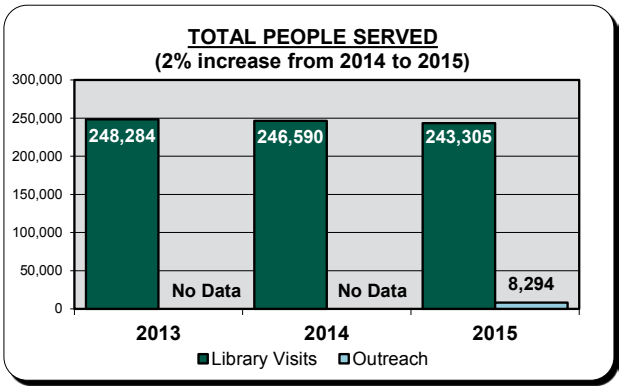


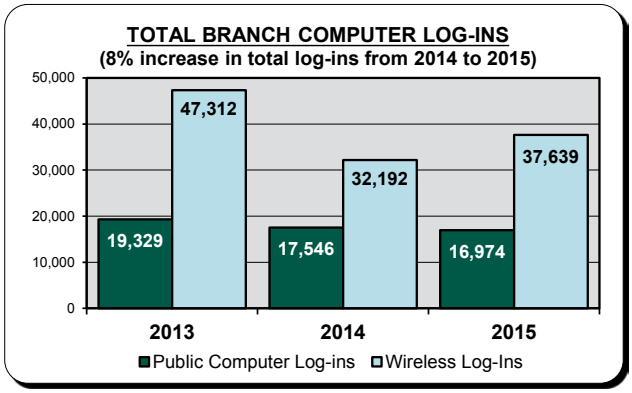



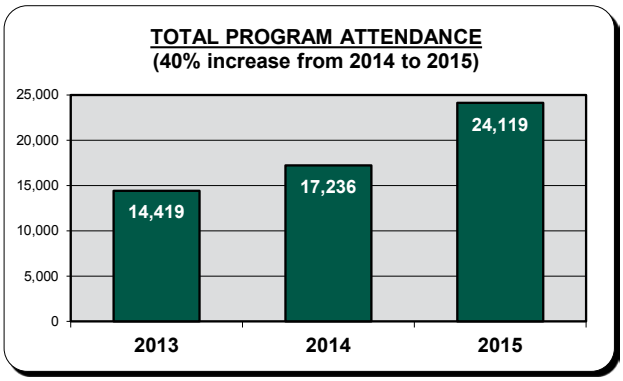




# Cascade Township Branch Statistics



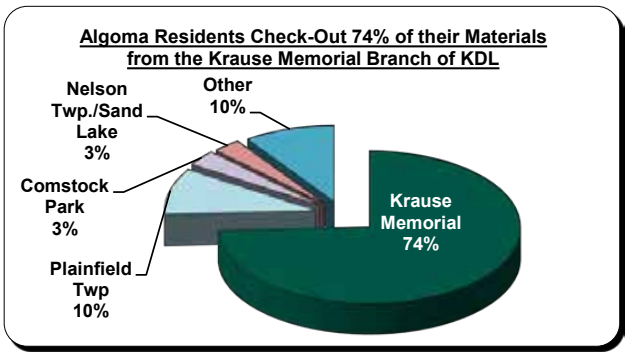



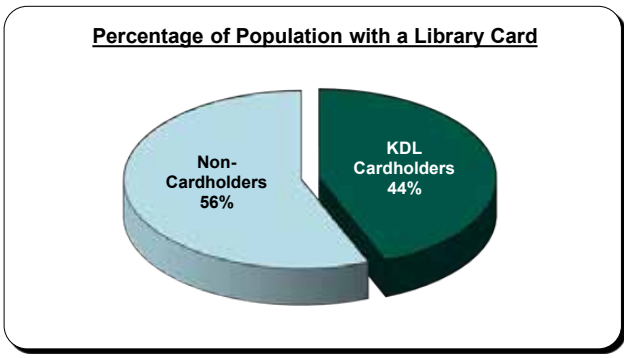



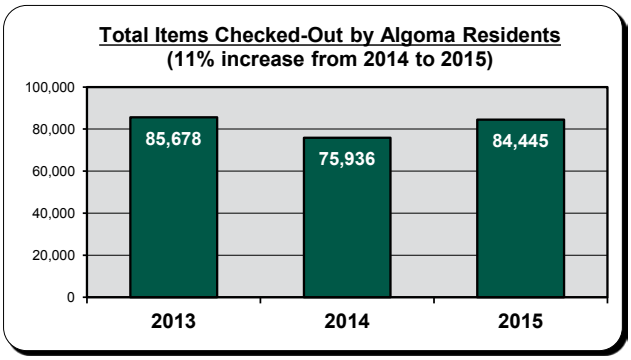



# 2015 Annual Report for Algoma Township

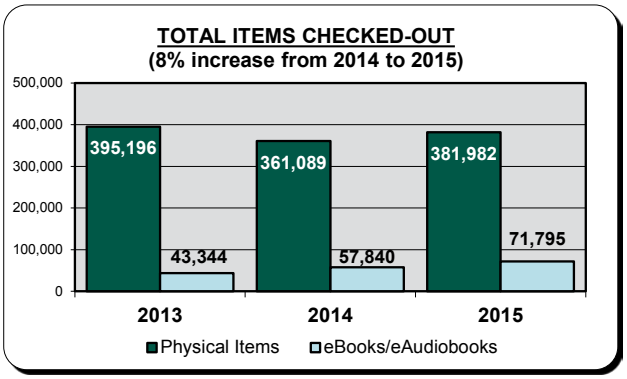
*A Municipality in the Kent District Library Service Area*

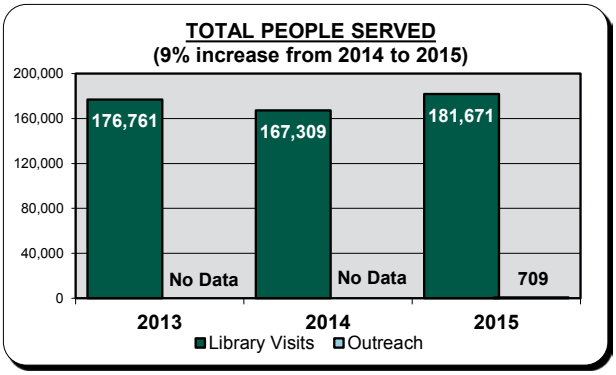


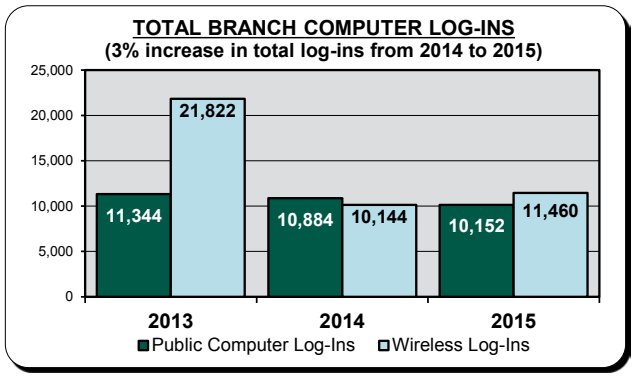



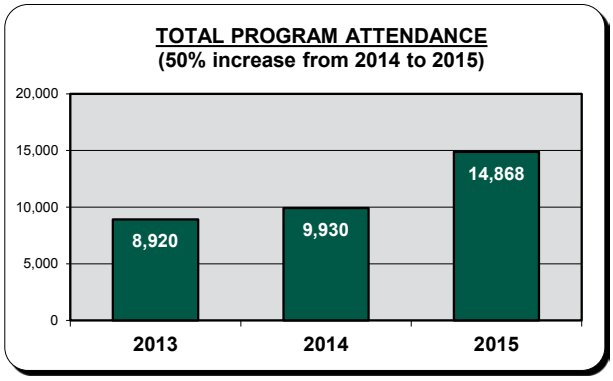




# Krause Memorial Branch Statistics



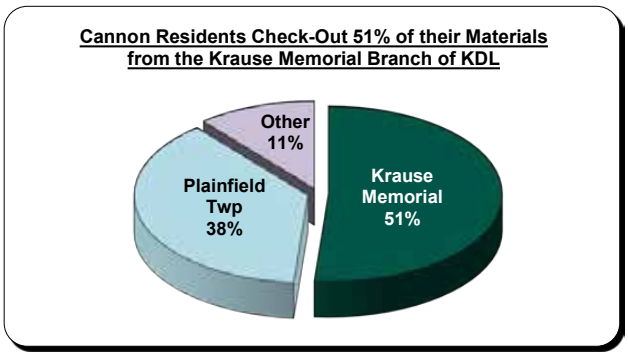



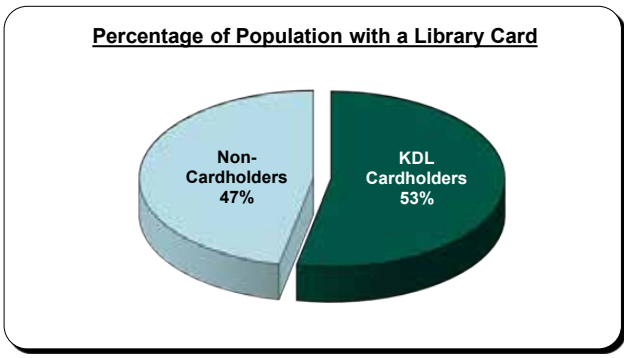



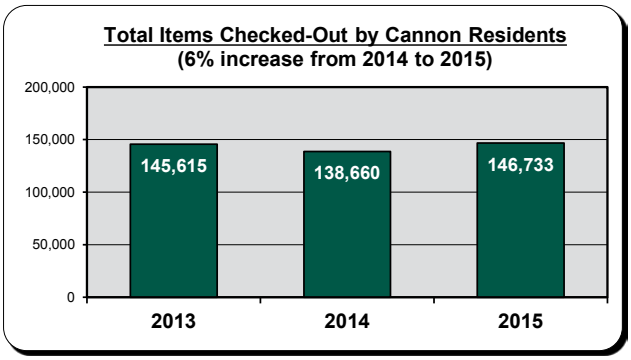



# 2015 Annual Report for Cannon Township

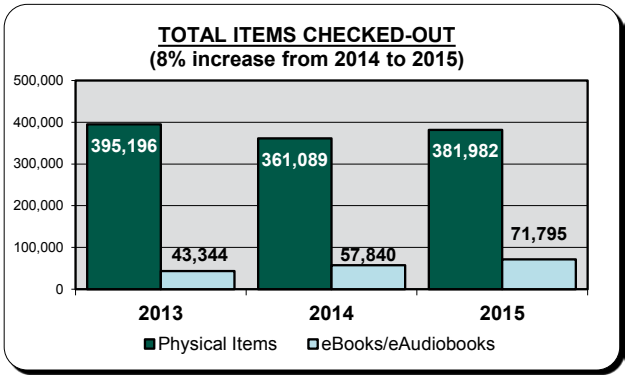
*A Municipality in the Kent District Library Service Area*

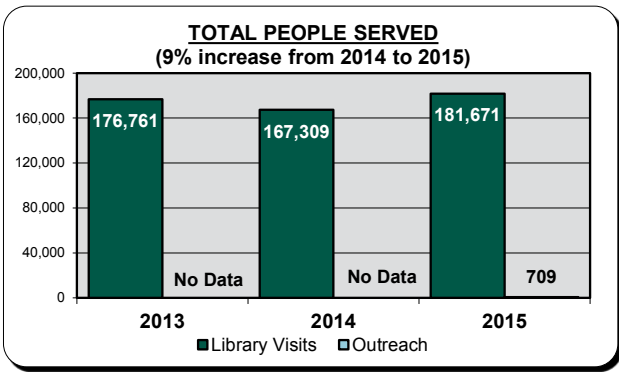


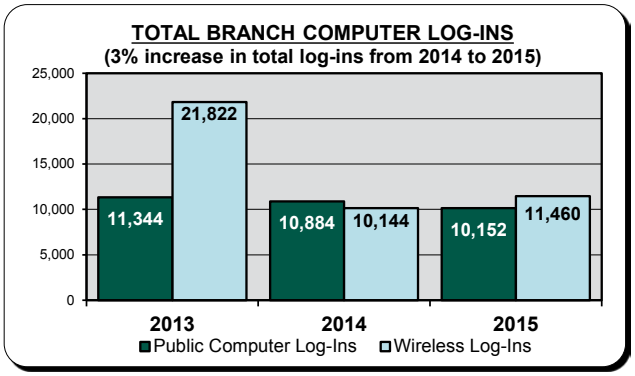



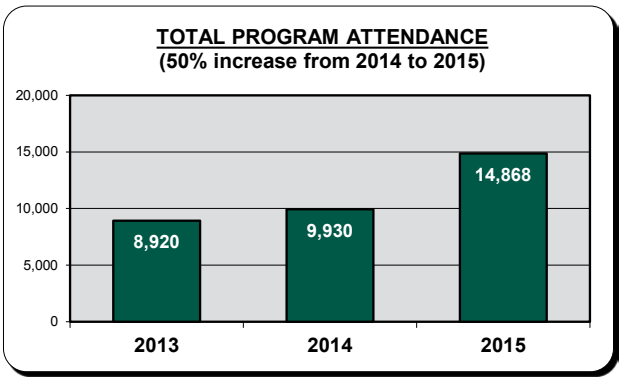




# Krause Memorial Branch Statistics



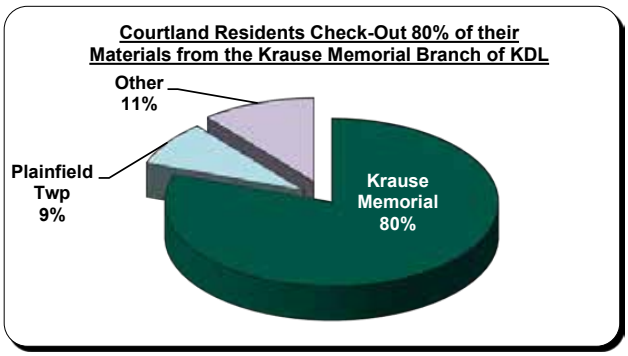



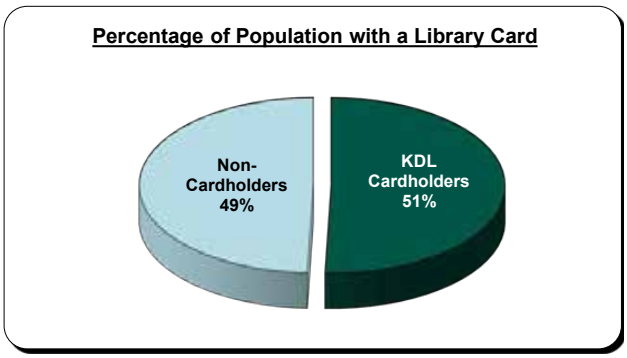



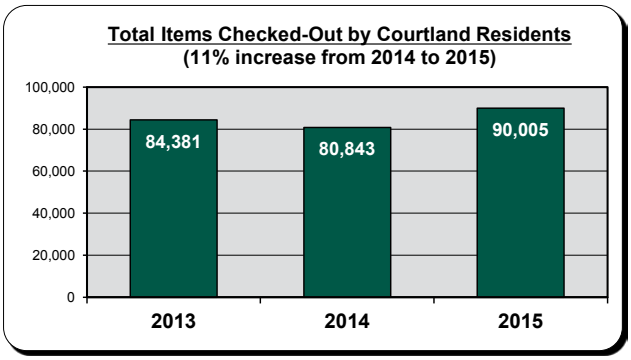



# 2015 Annual Report for Courtland Township

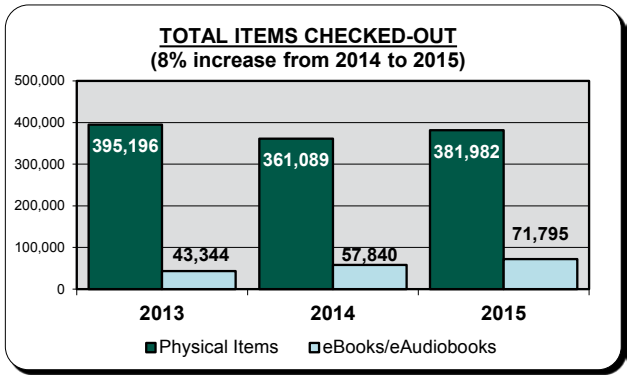
*A Municipality in the Kent District Library Service Area*

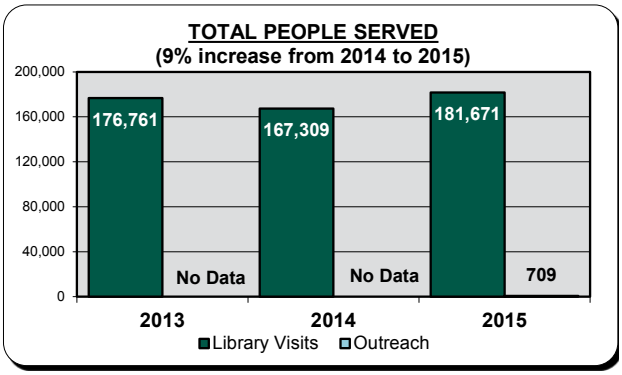


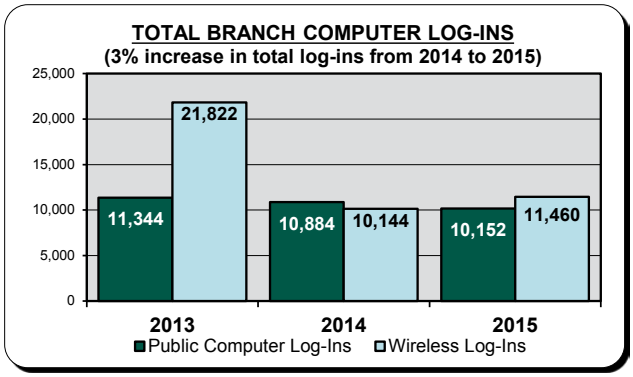



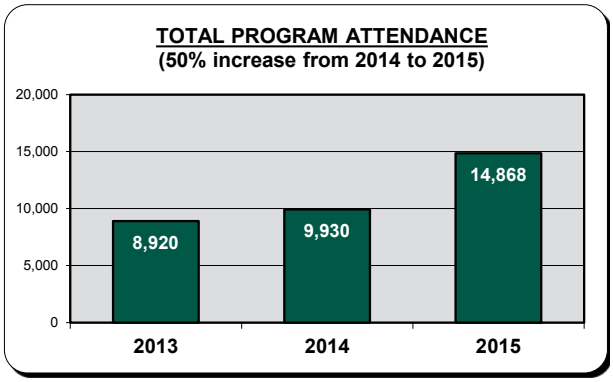




# Krause Memorial Branch Statistics



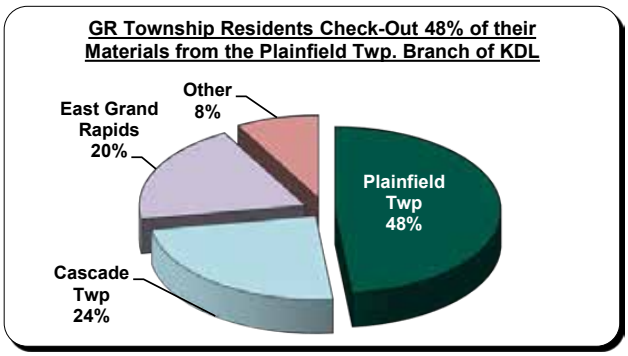



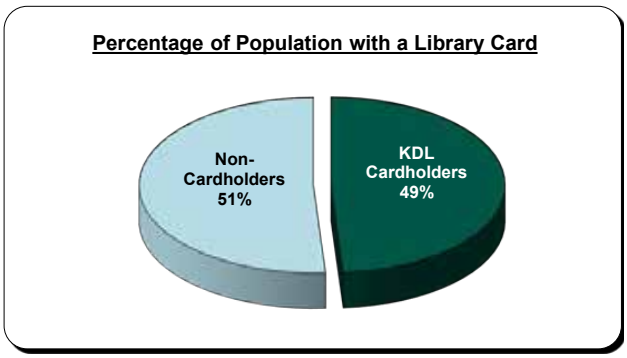



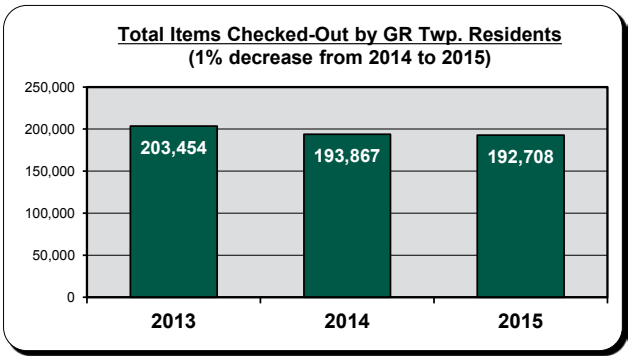



# 2015 Annual Report for Grand Rapids Township

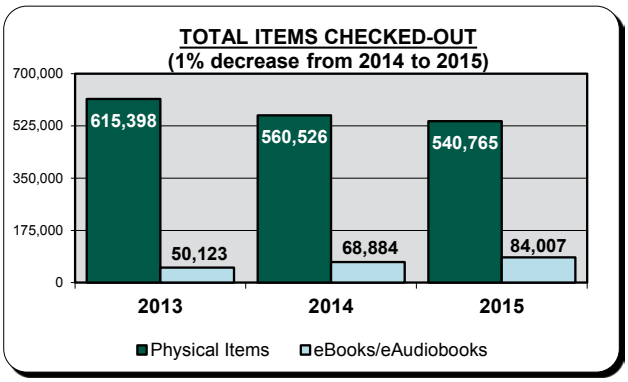
*A Municipality in the Kent District Library Service Area*

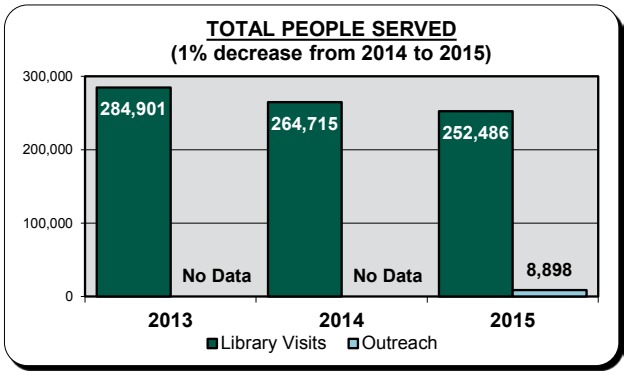


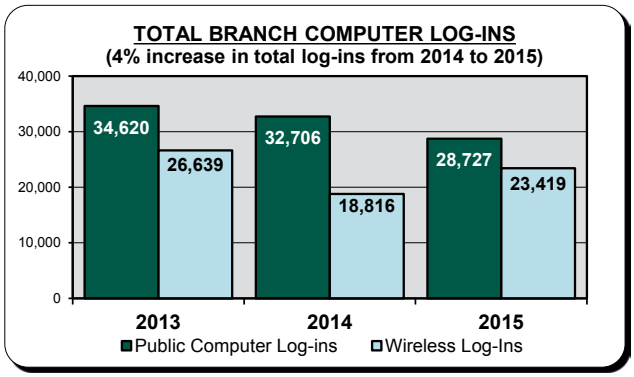



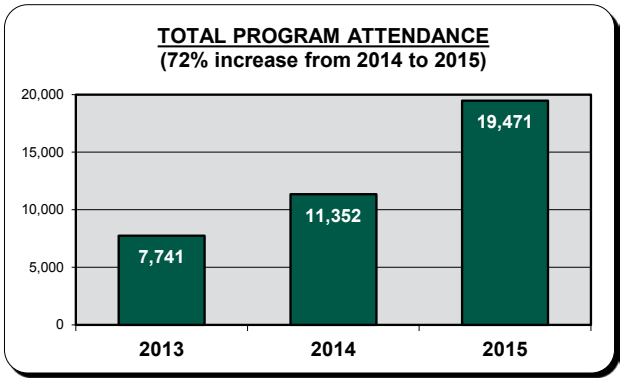




# Plainfield Township Branch Statistics



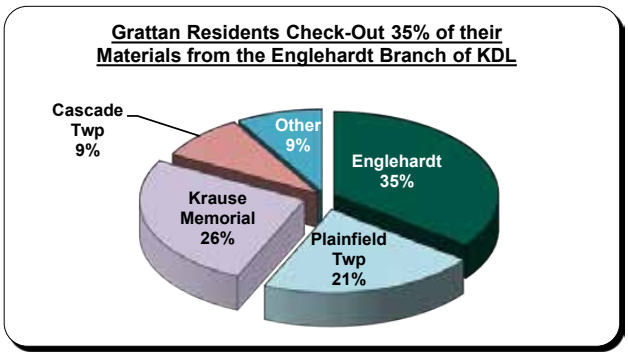



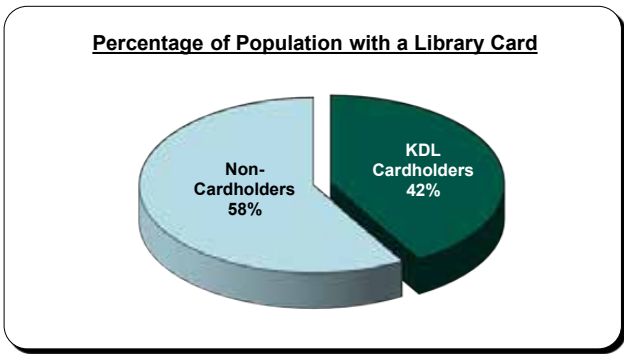



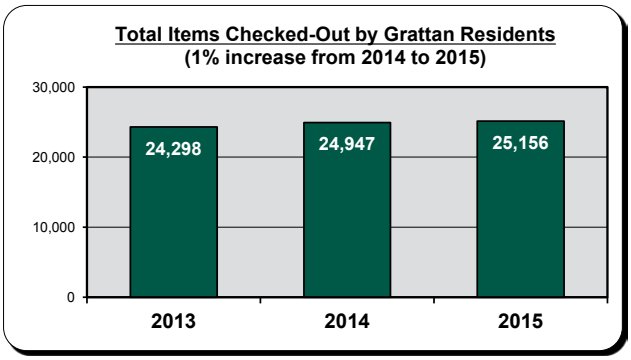



# 2015 Annual Report for Grattan Township

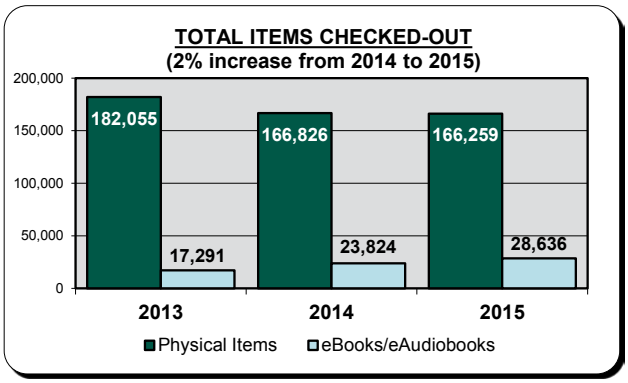
*A Municipality in the Kent District Library Service Area*

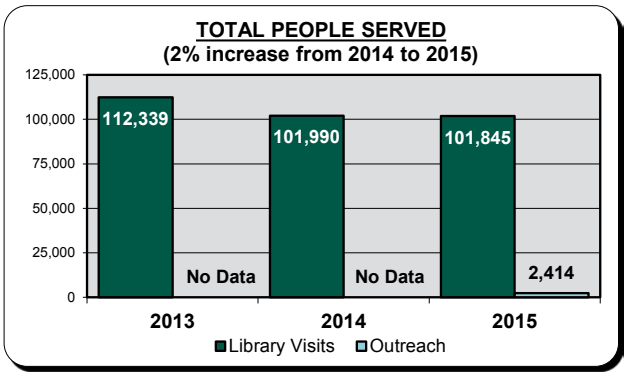


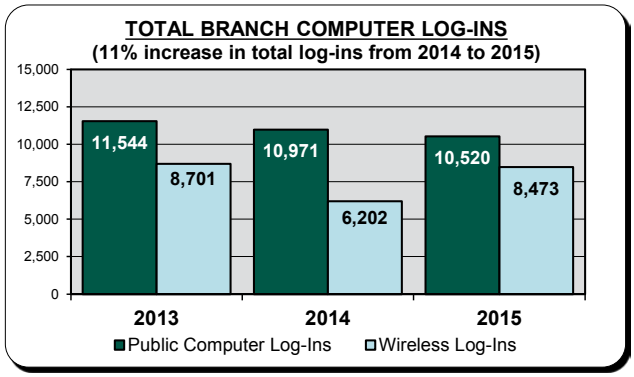



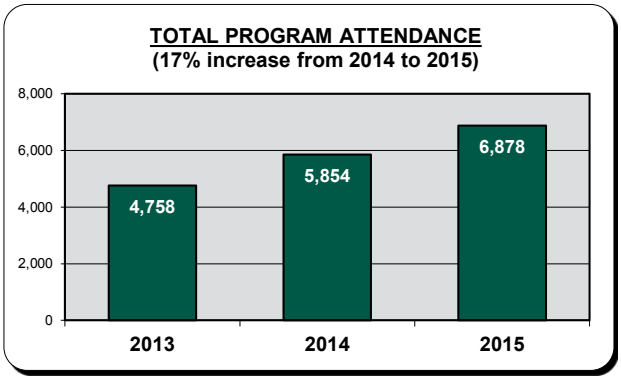




# Englehardt Branch Statistics



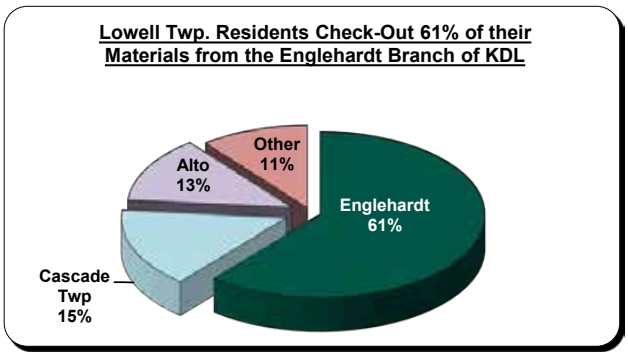



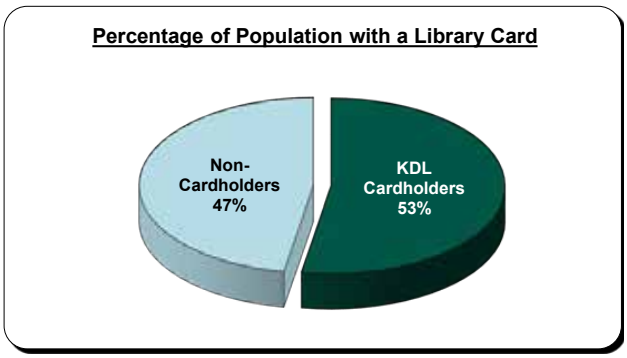



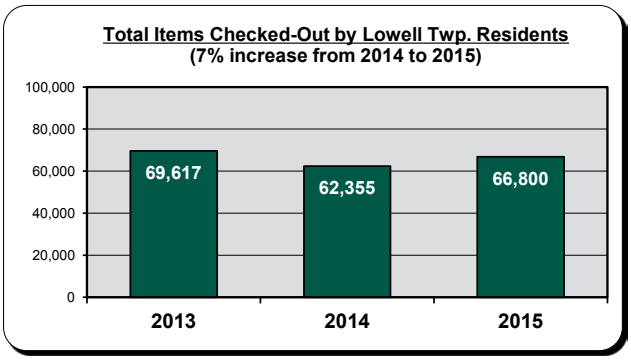



# 2015 Annual Report for Lowell Township

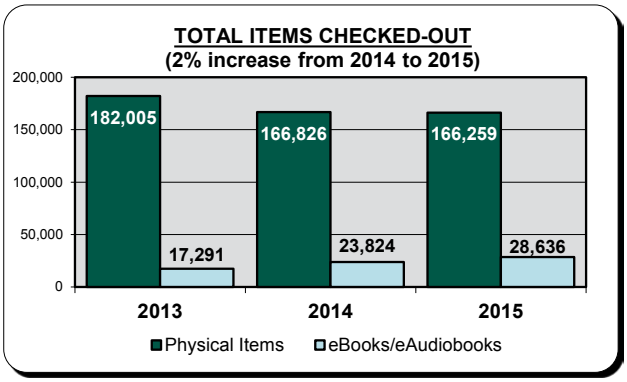
*A Municipality in the Kent District Library Service Area*

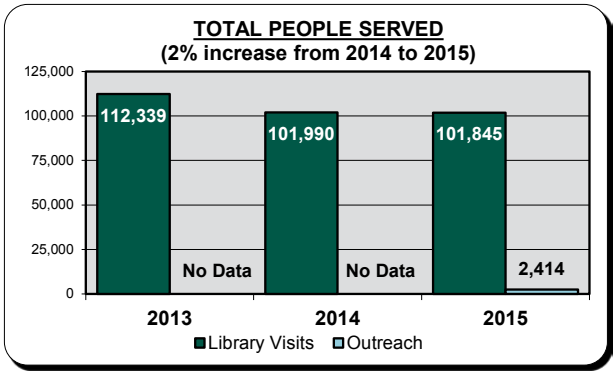


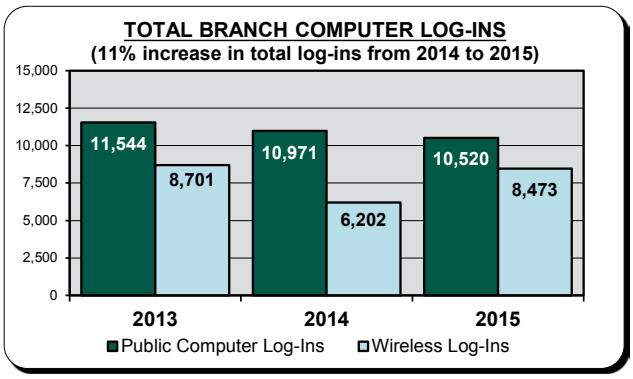



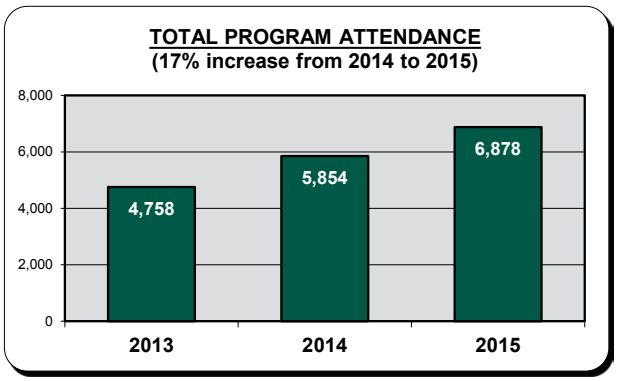




# Englehardt Branch Statistics



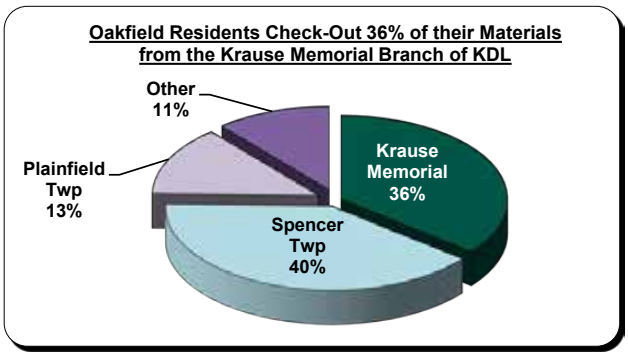



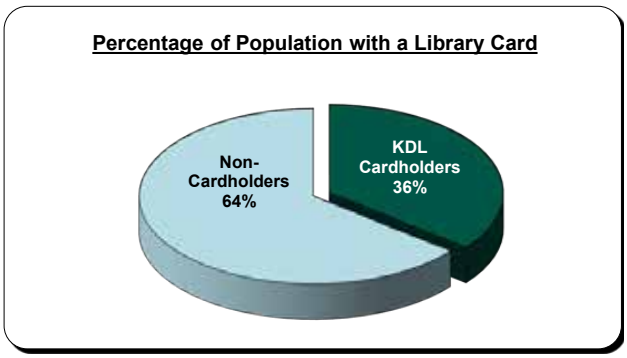



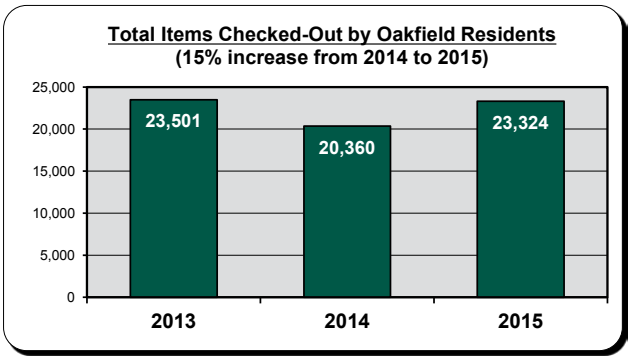



# 2015 Annual Report for Oakfield Township

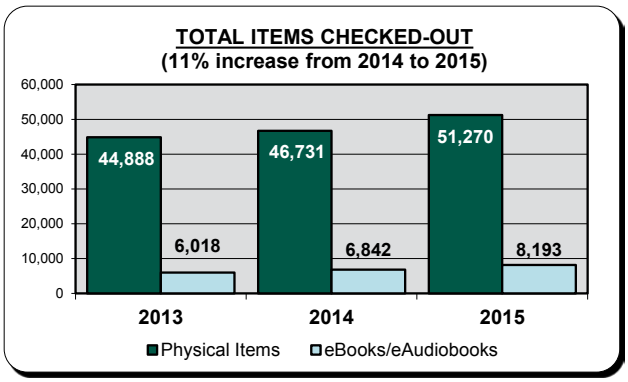
*A Municipality in the Kent District Library Service Area*

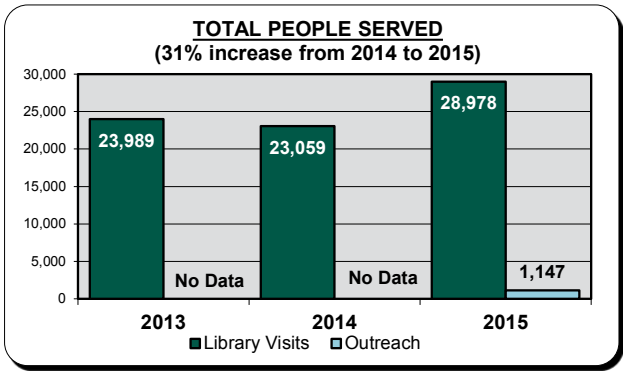


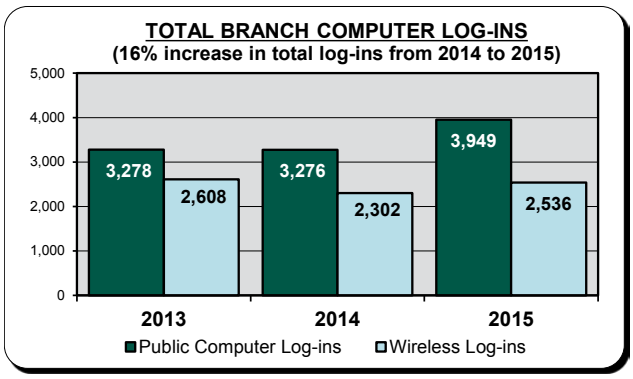



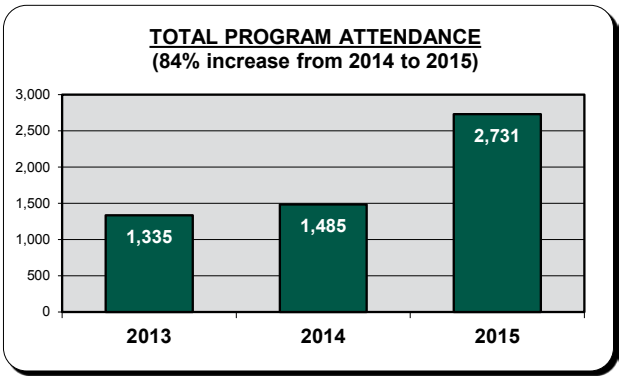




# Spencer Township Branch Statistics



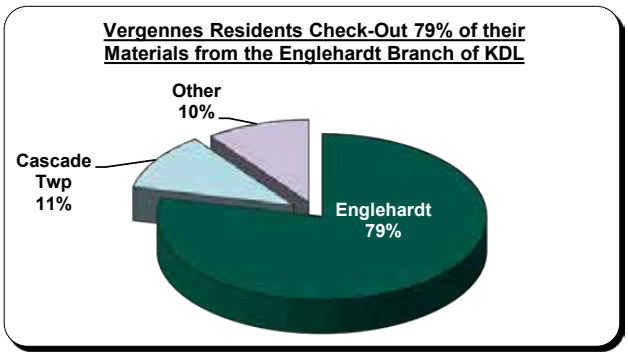



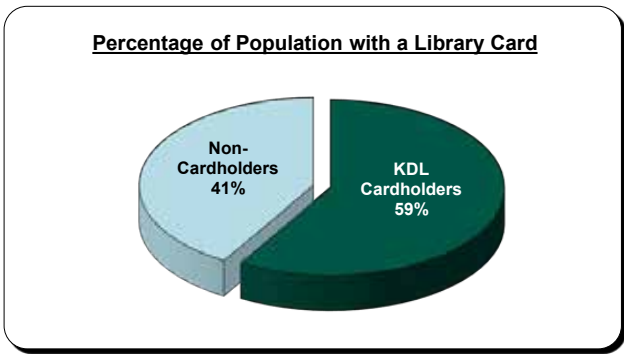



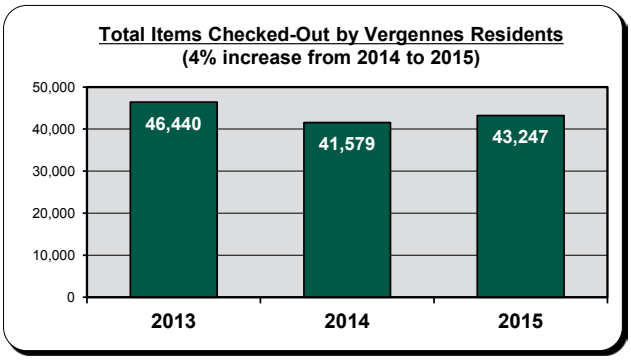



# 2015 Annual Report for Vergennes Township

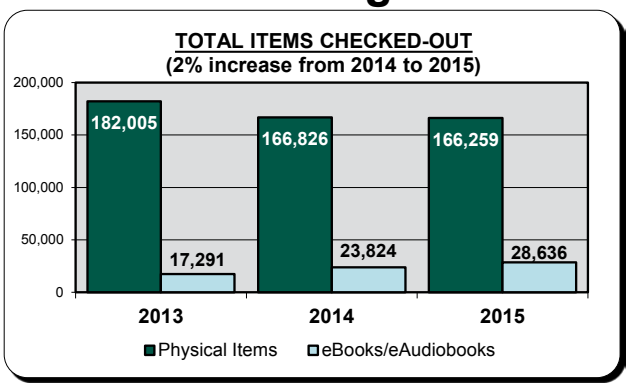
*A Municipality in the Kent District Library Service Area*

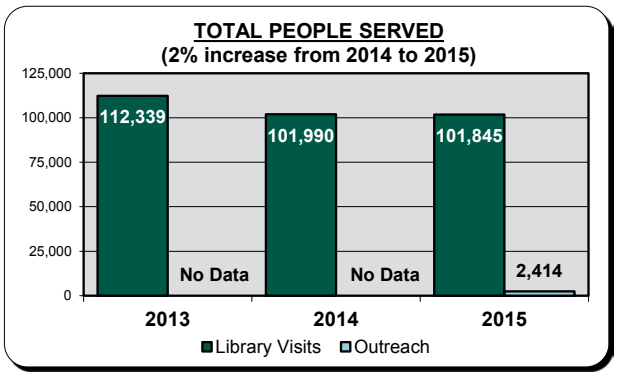


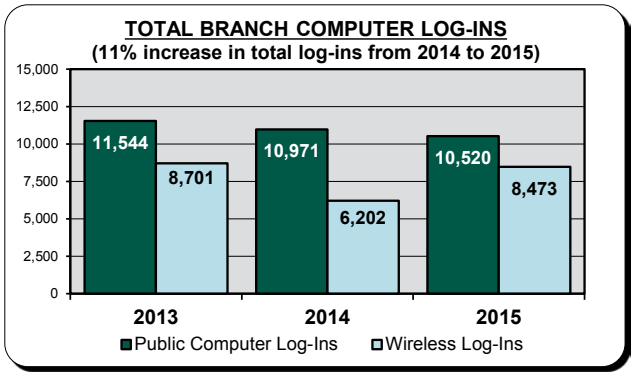



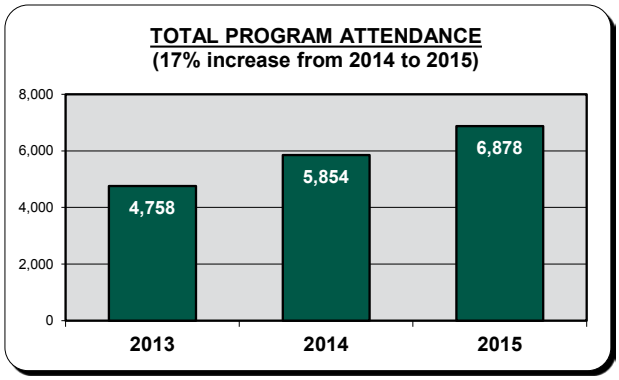




# Englehardt Branch Statistics



# 2015 Peer Comparison

## SUMMARY OF THE RANKINGS

### *National Comparison*

The national comparison included 22 peer libraries that have between 12-20 branch outlets and a service area population ranging from 250,000 to 500,000 people. A full statistical chart showing rankings and peer comparison data follows this summary.

The following table highlights KDL's area-specific ranking in relation to its peer libraries:

| Area | KDL 2015 Rank | KDL 2014 Rank |
|---|---|---|
| Collection turnover rate* | 1st | 1st |
| Total Circulation (downloadables) | 2nd | 1st |
| Reference transactions per capita | 3rd | 2nd |
| Salaries as a % of expenditures | 3rd | 6th |
| Circulation per capita | 4th | 4th |
| Total visits | 4th | 2nd |
| Total circulation (all materials) | 5th | 4th |
| Total expenditures for eBooks | 5th | 5th |
| Website visits per capita | 5th | 7th |
| Materials as a % of expenditures | 6th | 3rd |
| Visits per capita | 6th | 5th |
| Public service hours | 6th | 7th |

| Area | KDL 2015 Rank | KDL 2014 Rank |
|---|---|---|
| Population of service area | 9th | 10th |
| Total expenditures for all electronic materials | 9th | 8th |
| Registrations (cardholders) | 11th | 12th |
| Total program attendance | 11th | 11th |
| Registrations as a % of population | 12th | 12th |
| Collection size | 13th | 13th |
| Holdings per capita | 15th | 16th |
| Materials expenditures per capita | 15th | 11th |
| Staff expenditures per capita | 17th | 16th |
| Total operating expenditures | 17th | 17th |
| Expenditures per capita | 18th | 17th |
| Total operating income | 18th | 17th |

**Collection turnover rate measures the activity of a library's collection. It indicates the number of times each library item would have circulated during the year if circulation had been spread evenly throughout the entire collection. It is calculated by dividing the library's total annual circulation by total library holdings.*

## SUMMARY OF THE RANKINGS

### *State Comparison*

The only criteria for entry in the library peer group for the state comparison is that a library must be in the state of Michigan and serve a population of at least 75,000 people (as reported in the *Public Library Data Service Statistical Report 2015*[1]). This year's state comparison included 15 peer libraries. A full statistical chart showing rankings and peer comparison data follows this summary.

The following table highlights KDL's area-specific ranking in relation to its peer libraries in Michigan:

| Area | KDL 2015 Rank | KDL 2014 Rank |
|---|---|---|
| Public service hours | 1st | 1st |
| Total circulation (downloadables) | 1st | 1st |
| Total expenditures for all electronic materials | 1st | 1st |
| Total expenditures for eBooks | 1st | 1st |
| Collection size | 2nd | 2nd |
| Population of service area | 2nd | 2nd |
| Registrations (card holders) | 2nd | 2nd |
| Salaries as a % of expenditures | 2nd | 4th |
| Total operating expenditures | 2nd | 2nd |
| Total operating income | 2nd | 2nd |
| Total program attendance | 2nd | 2nd |
| Total visits | 2nd | 2nd |

| Area | KDL 2015 Rank | KDL 2014 Rank |
|---|---|---|
| Materials as a % of expenditures | 2nd | 2nd |
| Total circulation (all materials) | 2nd | 2nd |
| Visits per capita | 2nd | 2nd |
| Collection turnover rate | 3rd | 3rd |
| Reference transactions per capita | 3rd | 1st |
| Circulation per capita | 4th | 4th |
| Materials expenditures per capita | 6th | 5th |
| Registrations as a % of population | 6th | 8th |
| Website visits per capita | 6th | 6th |
| Expenditures per capita | 12th | 11th |
| Staff expenditures per capita | 12th | 13th |
| Holdings per capita | 13th | 12th |

[1]Public Library Data Service Statistical Report 2015, Public Library Association, June 2015 (Based on 2014 fiscal year data)

# 2015 National Peer Comparison Data

| Library | | | | | | | Annual Use | | | | | Current Salaries | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Registrations as % of Population | Circulation per Capita | Circulation Per Registered Borrower | Visits per Capita | Website Visits per Capita | Reference Trans. per Capita | Total Circulation (all materials) | Total Circulation (downloadable materials only) | Total Reference Transactions | Total Visits | Total Program Attendance | Director | Beginning Librarian | Total Salaries |
| Shreve Memorial Library (LA) | 66.5% | 4.2 | 6.3 | 5.3 | 5.0 | 2.2 | 1,070,082 | 95,691 | 562,588 | 1,353,408 | 114,791 | 126,984 | 41,850 | 6,577,936 |
| San Mateo County Library (CA) | 62.9% | 12.0 | 19.1 | 7.4 | 8.6 | 0.8 | 3,315,886 | 144,000 | 214,930 | 2,035,416 | 212,479 | 176,832 | 54,708 | 8,115,962 |
| Saint Paul Public Library (MN) | 101.9% | 9.1 | 8.9 | 6.8 | 5.1 | 1.3 | 2,584,219 | 313,818 | 381,647 | 1,951,938 | 118,703 | 130,451 | 51,087 | 8,098,499 |
| Saint Louis Public Library (MO) | 23.8% | 7.5 | 31.4 | 7.3 | 8.3 | 1.0 | 2,379,586 | 187,001 | 318,461 | 2,317,373 | 222,612 | 165,000 | 34,000 | 11,385,361 |
| Alachua County Library District (FL) | 65.7% | 14.2 | 21.6 | 6.2 | 5.2 | 1.1 | 3,562,732 | 614,982 | 283,416 | 1,560,918 | 143,986 | 120,577 | 41,663 | 7,322,192 |
| Central Arkansas Library System (AR) | 55.9% | 8.2 | 14.7 | 6.7 | 2.2 | 1.1 | 2,756,226 | 331,966 | 355,345 | 2,249,570 | 233,871 | 133,910 | 36,500 | 8,576,053 |
| Charleston County Public Library System (SC) | 75.1% | 9.4 | 12.6 | 5.2 | 0.0 | 1.8 | 3,301,695 | 349,823 | 615,009 | 1,834,352 | 209,965 | 129,787 | 36,733 | 7,634,912 |
| Allen County Public Library (IN) | 93.8% | 35.0 | 37.3 | 6.7 | 5.3 | 0.8 | 12,443,146 | 7,207,689 | 287,145 | 2,382,417 | 198,034 | 140,000 | 37,710 | 10,148,959 |
| St. Charles City-County Library District (MO) | 38.7% | 19.4 | 50.1 | 5.4 | 3.4 | 1.8 | 6,991,006 | 395,248 | 645,171 | 1,949,691 | 116,859 | 125,124 | 46,452 | 9,424,786 |
| New Orleans Public Library (LA) | 36.1% | 2.8 | 7.7 | 3.0 | 4.2 | 1.9 | 1,070,599 | 73,517 | 728,187 | 1,142,265 | 58,886 | 143,412 | 33,524 | 6,018,125 |
| Ventura County Library (CA) | 111.7% | 2.9 | 2.6 | 4.1 | 0.0 | 0.1 | 720,326 | 62,259 | 25,087 | 1036475 | 49,378 | 144,804 | 43,980 | 3,059,388 |
| Akron-Summit County Public Library (OH) | 81.5% | 13.9 | 17.0 | 7.4 | 6.0 | 1.2 | 5,241,713 | 252,369 | 452,348 | 2,784,756 | 244,679 | 115,507 | 37,206 | 11,404,460 |
| **Kent District Library (MI)** | **62.1%** | **14.9** | **24.0** | **6.7** | **7.9** | **2.0** | **5,905,865** | **750,704** | **776,376** | **2,667,808** | **181,935** | **133,875** | **41,226** | **7,902,322** |
| Fort Vancouver Regional Library District (WA) | 58.8% | 9.4 | 16.0 | 4.5 | 2.0 | 0.4 | 4,373,949 | 549,155 | 175,242 | 2,089,710 | 148,649 | 135,000 | 39,811 | 8,879,571 |
| Oakland Public Library (CA) | 68.2% | 6.0 | 8.7 | 5.1 | 5.1 | 0.9 | 2,534,678 | 118,198 | 369,017 | 2,174,567 | 183,452 | 156,480 | 58,128 | 12,700,755 |
| Johnson County Library (KS) | 65.0% | 14.4 | 22.1 | 6.0 | 0.0 | 0.4 | 6,244,164 | 198,197 | 162,711 | 2,614,208 | 138,760 | | | 9,995,017 |
| Jefferson Parish Library (LA) | 21.7% | 3.8 | 17.6 | 2.8 | 3.0 | 1.1 | 1,664,519 | 92,039 | 471,957 | 1,208,536 | 58,997 | 82,688 | 32,984 | 6,940,999 |
| Washoe County Library System (NV) | 0.0% | 4.9 | 0.0 | 2.7 | 2.6 | 0.7 | 2,106,197 | 96,808 | 288548 | 1,172,719 | 78,344 | 122,907 | 47,195 | 5,787,752 |
| East Baton Rouge Parish Library (LA) | 77.8% | 5.1 | 6.6 | 5.0 | 4.6 | 2.0 | 2,275,132 | 288,104 | 898,255 | 2,230,096 | 472,075 | 100,202 | 36,560 | 13,525,599 |
| Toledo-Lucas County Public Library (OH) | 69.2% | 15.2 | 21.9 | 7.0 | 33.4 | 1.8 | 6,699,498 | 579,616 | 780,572 | 3,097,328 | 182,973 | 195,417 | 43,080 | 16,006,609 |
| Carnegie Library of Pittsburgh (PA) | 46.2% | 8.1 | 17.5 | 6.5 | 7.9 | 0.9 | 3,608,582 | 294,001 | 419,415 | 2,900,850 | 297,978 | 188,880 | 40,000 | 13,717,401 |
| Lake County Library System (FL) | 25.3% | 6.0 | 23.7 | 5.8 | 2.0 | 1.0 | 1,857,583 | 136,371 | 306,554 | 1,797,954 | 122,338 | 77,501 | 30,400 | 3,600,510 |
| | | | | | | | | | | | | | | |
| **KDL Ranking (out of 22)** | **13** | **4** | **4** | **6** | **5** | **3** | 5 | 2 | 3 | 4 | 11 | 11 | 10 | 14 |

# 2015 State Peer Comparison Data

| Library | | | | | Annual Use | | | | | Current Salaries | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Circulation Per Registered Borrower | Visits per Capita | Website Visits per Capita | Reference Trans. per Capita | Total Circulation (all materials) | Total Circulation (downloadable materials only) | Total Reference Transactions | Total Visits | Total Program Attendance | Director | Beginning Librarian | Total Salaries |
| Ypsilanti District Library | 11.9 | **5.4** | **9.4** | **2.2** | 772,536 | 30,835 | 185,678 | 450,243 | 38,623 | 112,219 | 38,757 | 1,888,094 |
| Canton Public Library | 17.1 | **5.4** | **7.8** | **0.7** | 1,528,919 | 58,267 | 64,208 | 483,898 | 29,267 | 103,485 | 40,794 | 2,219,956 |
| Dearborn Public Library | - | **3.9** | **0.0** | **0.9** | 610,239 | 32,144 | 90,000 | 385,723 | 23,901 | | 50,184 | 2,040,660 |
| Rochester Hills Public Library | 26.2 | **5.5** | **1.5** | **0.0** | 1,836,358 | 116,999 | | 554,970 | 25,683 | 148,041 | 39,497 | 2,359,700 |
| Herrick District Library | - | **5.2** | **0.0** | **0.7** | 1,442,873 | 161,295 | 72,559 | 530,482 | 46,343 | | 54,059 | 1,924,002 |
| Flint Public Library | 5.0 | **1.8** | **14.6** | **0.5** | 171,022 | 9,988 | 46,200 | 187,680 | 23,956 | 99,000 | 39,696 | 1,567,337 |
| Kalamazoo Public Library | 23.4 | **6.3** | **15.9** | **2.4** | 1,780,113 | 86,173 | 297,089 | 780,585 | 79,858 | 129,487 | 47,348 | 4,699,395 |
| Sterling Heights Public Library | 10.8 | **3.0** | **7.1** | **0.5** | 536,485 | 38,346 | 68,052 | 384,063 | 15,712 | 111,820 | 26,744 | 1,233,095 |
| Monroe County Library System | 16.1 | **4.2** | **44.8** | **0.3** | 1,152,574 | 68,805 | 47,604 | 633,308 | 67,874 | 100,797 | 39,811 | 3,616,096 |
| Ann Arbor District Library | 69.2 | **9.7** | **29.6** | **0.2** | 8,528,270 | 362,961 | 27,065 | 1,593,844 | 82,838 | 147,408 | 46,200 | 5,775,008 |
| Clinton-Macomb Public Library | 12.1 | **3.2** | **0.0** | **0.0** | 1,586,210 | 24,297 | | 542,790 | | 102,871 | 41,896 | 2,147,022 |
| Grand Rapids Public Library | 25.2 | **4.8** | **2.9** | **1.2** | 1,620,854 | 84,967 | 233,064 | 896,755 | 24,128 | 130,511 | 51,226 | 4,602,893 |
| Capital Area District Library | - | **5.6** | **5.1** | **1.1** | 2,859,236 | 195,191 | 272,656 | 1,342,529 | 75,524 | 110,344 | 58,166 | 5,258,975 |
| Kent District Library | 24.0 | **6.7** | **7.9** | **2.0** | 5,905,865 | 750,704 | 776,376 | 2,667,808 | 181,935 | 133,875 | 41,226 | 7,902,322 |
| Detroit Public Library | 3.6 | **3.9** | **2.5** | **1.0** | 1,483,329 | | 746,278 | 2,772,148 | 219,059 | 156,063 | 36,000 | 12,810,103 |
| | | | | | | | | | | | | |
| KDL Ranking (out of 15) | 4 | **2** | **6** | **3** | 2 | 1 | 1 | 2 | 2 | 4 | 8 | 2 |

# Lakeland Library Cooperative Service Area

Kent District Library is a member of the Lakeland Library Cooperative (LLC) and participates in a shared online catalog and reciprocal borrowing privileges. There are 41 libraries in the Cooperative serving 1,294,094 residents. LLC customers have access, through a free delivery service, to the over 3 million items owned by these libraries. The Lakeland Library Cooperative covers the counties shown below.

Allegan County

Barry County

Ionia County

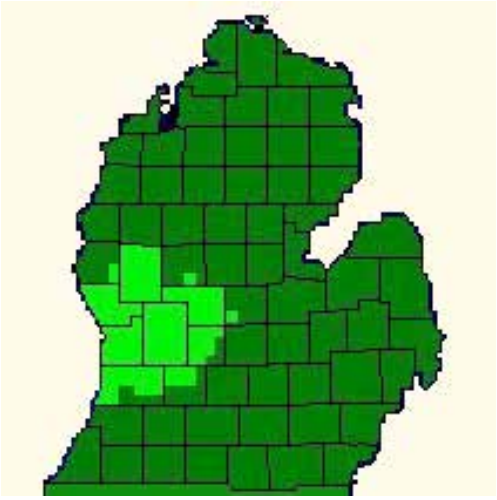
Kent County

Montcalm County

Muskegon County

Newaygo County

Ottawa County



Affiliated counties include Gratiot, Mecosta and Oceana.

The Cooperative is governed by a Board of Trustees. KDL has two seats on this board and shares decision-making with other members of the Cooperative.

The State of Michigan is divided into cooperatives for the purpose of the distribution of state aid. The LLC receives a portion of Kent District Library's share of state aid. State aid was appropriated by the state legislature on a basis of $0.32479 per capita in 2015. State aid funds underwrite Cooperative functions such as the inter-loan delivery system and the cooperative's shared integrated library system. Member libraries also pay additional fees for cooperative services. The Lakeland Library Cooperative's annual budget in 2015 was $1,072,076.

# Officials and Legislators (Representing KDL Service Area)

| KENT COUNTY | | | | | | |
|---|---|---|---|---|---|---|
| District | Last Name | First | Email | Party | Location | Phone |
| **Senate - Michigan** | | | | | | |
| **28** — Algoma Twp, Alpine Twp, Byron Twp, Cannon Twp, Comstock Park, Courtland Twp, Grandvillle, Grattan Twp, Nelson Twp, Oakfield Twp, Plainfield Twp, Rockford, Spencer Twp, Tyrone Twp, Vergennes Twp, Walker, Wyoming | *MacGregor | Peter | senpmacgregor@senate.michigan.gov | R | P.O. Box 30036<br>Lansing, MI 48909-7536 | 517-373-0797<br>866-305-2129 |
| | | | | | | |
| **26** — City of Kentwood and Gaines Twp. | Schuitmaker | Tonya | sentschuitmaker@senate.michigan.gov | R | P.O. Box 30036<br>Lansing, MI 48909-7536 | 517-373-0793 |
| | | | | | | |
| **29** — Ada Twp, Alto, Bowne Twp, Cascade Twp, Caledonia, East Grand Rapids, Grand Rapids Twp, Lowell City, Lowell Twp | Hildenbrand | Dave | sendhildenbrand@senate.michigan.gov | R | P.O. Box 30036<br>Lansing, MI 48909-7536 | 517-373-1801 |
| | | | | | | |
| **30** — City of Grandville | Meekhof | Arlan | senameekhof@senate.michigan.gov | R | P.O. Box 30036<br>Lansing, MI 48909-7536 | 517-373-6920<br>866-305-2130 |
| **House of Representatives - Michigan** | | | | | | |
| District | Last Name | First | Email | Party | Location | Phone |
| **072** — Gaines Twp., Kentwood | Yonker | Ken | kenyonker@house.mi.gov | R | N-1091 House Office Building<br>P.O. Box 30014<br>Lansing, MI 48909 | 517-373-0840<br>888-347-8072 |
| | | | | | | |
| **073** — Cannon Twp., Comstock Park, Courtland Twp., East Grand Rapids, Grand Rapids Charter Township, Nelson Twp., Oakfield Twp., Plainfield Twp., Spencer Twp., Tyrone Twp. | Afendoulis | Chris | chrisafendoulis@house.mi.gov | R | P.O. Box 30014<br>State Capitol,<br>Lansing, MI 48909 | 855-347-8073 |
| | | | | | | |
| **074** — Algoma Twp., Alpine Twp., Grandville, Rockford, Tyrone, Walker | VerHeulen | Rob | robverheulen@house.mi.gov | R | 374 Capitol Bldg.<br>P. O. Box 30014<br>Lansing, MI 48909 | 517-373-8900 |

# Officials and Legislators (cont.) (Representing KDL Service Area)

| | | | | | | |
|---|---|---|---|---|---|---|
| **077** — Byron Twp., Wyoming | Hooker | Thomas | thomashooker@house.mi.gov | R | N-1096 House Office Building<br>P.O. Box 30014<br>Lansing, MI 48909 | 517-373-2277<br>855-866-4077 |
| | | | | | | |
| **086** — Ada Twp., Bowne Twp., Caledonia, Cascade, Grattan, Lowell City, Lowell Twp., Vergennes Twp. | Lyons | Lisa Posthumus | lisalyons@house.mi.gov | R | S-1190 House Office Building<br>P.O. Box 30014<br>Lansing, MI 48909 | 517-373-0846<br>855-596-6786 |
| **UNITED STATES** | | | | | | |
| **District** | **Last Name** | **First** | **Email** | **Party** | **Location** | **Phone** |
| **US Senate** | | | | | | |
| | Peters | Gary | www.peters.senate.gov/contact/contact-gary | D | 2 Russell Courtyard<br>Washington, DC 20510 | 202-224-6221 |
| | Stabenow | Debbie | senator@stabenow.senate.gov | D | 133 Hart Senate Office Building,<br>Washington, DC 20510 | 202-224-4822<br>616-975-0052 |
| **U.S. House of Representatives** | | | | | | |
| **2nd District**<br>Alpine Township<br>Tyrone Township | Huizenga | Bill | https://huizenga.house.gov/contact-me/email-me | R | 1217 Longworth HOB<br>Washington, DC 20515 | 202-225-4401 |
| **3rd District**<br>Remainder of KDL Service Area | Amash | Justin | https://amash.house.gov/contact-me/email-me | R | 114 Cannon HOB<br>Washington, DC 20515 | 202-225-3831 |

*Incumbent

# Kent County Board of Commissioners (Representing KDL Service Area)

| District | | Last Name | First | Email | Party | Location | Phone |
|---|---|---|---|---|---|---|---|
| 1 | Plainfield Township (part)<br>City of Rockford | Vonk* | Ted | vonkcommish@comcast.net | R | 4122 Boulder Meadow<br>Belmont, MI 49306 | 616-874-2604 |
| 2 | Algoma Township<br>Alpine Township | Antor* | Tom | toma911@att.net | R | 9341 Laubach<br>Sparta, MI 49345 | 616-887-7210 |
| 3 | Courtland Township<br>Nelson Township<br>Spencer Township<br>Tyrone Township | Morgan* | Roger | roger@rockfordambulance.com | R | 10585 Tefft<br>Rockford, MI 49341 | 616-866-4264 |
| 4 | Cannon Township<br>Grattan Township<br>City of Lowell<br>Oakfield Township<br>Vergennes Township | Jones* | Diane | dianecjones2005@yahoo.com | R | 6561 Laguna Vista Drive<br>Rockford, MI 49341 | 616-874-8740 |
| 5 | Bowne Township<br>Caledonia Township (part)<br>Cascade Township<br>Lowell Township | Bolter* | Mandy | mandybolter@yahoo.com | R | 2097 Steketee Woods Lane<br>Grand Rapids, MI 49546 | 616-295-7909 |
| 6 | City of Walker | Stek | Stan | stanstek@gmail.com | R | 1274 Whitepine SW<br>Walker, MI 49534 | 616-776-6324 |
| 7 | City of Grandville<br>City of Wyoming (part) | Ponstein* | Stan | sjponstein@gmail.com | R | 3967 Edgewood<br>Grandville, MI 49418 | 616-726-2331 |
| 8 | City of Wyoming (part) | Voorhees* | Harold | hjvoorhees1@sbcglobal.net | R | 5380 Kenowa Ave.<br>Wyoming, MI 49418 | 616-534-1876 |
| 9 | Byron Township<br>City of Wyoming (part) | Kallman | Matt | matt@mattkallman.com | R | 4099 108th St. SW<br>Byron Center, MI 49315 | 616-915-5098 |
| 10 | Caledonia Township (part)<br>Gaines Township | Post Brieve | Emily | emilypostbrieve@gmail.com | R | 7438 Missoula Dr. SE<br>Caledonia, MI 49316 | 616-502-5010 |
| 11 | Ada Township<br>City of E. Grand Rapids (part)<br>Grand Rapids Township | Saalfeld* | Jim | jsaalfeld@att.net | R | 205 Morningside Dr. SE<br>Grand Rapids, MI 49506 | 616-464-1939 |
| 12 | City of Kentwood (part)<br>City of Wyoming (part) | Mast* | Harold | hamast@comcast.net | R | PO Box 8737<br>Kentwood, MI 49518 | 616-532-5686 |
| 13 | City of Kentwood (part) | Vander Molen* | Richard | rmolen@sbcglobal.net | R | 2171 Fawnwood<br>Kentwood, MI 49508 | 616-455-1562 |
| 18 | Plainfield Township (part) | Koorndyk* | Dan | dankoorndyk@yahoo.com | R | 35 Bel-Air Dr. NE<br>Grand Rapids, MI 49503 | 616-458-8934 |
| 19 | City of E. Grand Rapids (part) | Shroll* | Shana | shana.e.shroll@gmail.com | R | 1612 Woodward Ave. SE<br>Grand Rapids, MI 49506 | 616-292-4624 |

*INCUMBANT

KDL
Kent District Library
www.kdl.org

**MINUTES OF THE**
**CASCADE CHARTER TOWNSHIP**
**REGULAR BOARD MEETING**
Wednesday July 27, 2016
7:00 P.M.

**Article 1.** Supervisor Beahan called the meeting to order at 7:00 p.m.
Present: Supervisor Beahan, Treasurer Peirce, Trustee Koessel, Lewis, McDonald and Goldberg.
Absent: Clerk Bell
Also Present: Manager Swayze, DDA/ED Director Korhorn and those listed on Supplement #1.

**Article 2.** Supervisor Beahan led the Pledge of Allegiance to the Flag.

**Article 3.** Motion was made by Trustee Koessel and supported by Trustee Lewis to approve the Agenda as presented. Motion carried unanimously.

**Article 4.** **Presentations/Public Comments (limit comments to 3 minutes)**
Russ Ettinger, Mary Free Bed YMCA, have had no problems or issues with the public bus transportation system.

- **Birgit Klohs – Right Place President/CEO**
  Presented the Board with an overview of Economic Development on why we do it with the Right Place and some of the projects that we have done with Cascade Township in the past few years.

**Article 5.** **Approval of Consent Agenda**

a. Receive and File Various Meeting Minutes
   1. Regular Township Board Minutes of 7/13/16.
   2. Regular Planning Commission Board Minutes of 6/6/16.

b. Receive and File Reports
   1. Fire Department Monthly Report – June, 2016.
   2. Building Department Monthly Report – June, 2016.
   3. Treasurer's Department Monthly Report – May, 2016.

Motion was made by Trustee Goldberg and supported by Trustee McDonald to approve the Consent Agenda as presented. Motion carried unanimously.

**Article 6.** **Financial Actions**

**a. Consider Approval of June 2016, General/Special Funds Report.**
Motion was made by Trustee Koessel and supported by Trustee Goldberg to approve the June 2016, General/Special Funds Report. Motion carried unanimously.

**b. Consider Approval of Final Pay Draw #6 for the Village Improvements.**
Motion was made by Trustee Lewis and supported by Trustee McDonald to approve the Final Pay Draw #6 for the Village Improvements. Motion carried unanimously.

**Article 7.** **Unfinished Business**

Draft

**Article 8.** **New Business**

**057-2016** **a. Update on Public Transportation in Cascade Township.**
DDA/ED Director Korhorn provided the Board an update on what we are seeing and hearing regarding the public transportation service in Cascade Township.
Kevin Wisselink from the The Rapid was present to talk about the service in Cascade Township. Kevin also fielded questions from the Board.

**b. Public Hearing – Public Transportation in Cascade Township.**
Motion was made by Trustee McDonald and supported by Trustee Goldberg to move into public hearing.
Chris Schwandt, Meijer Store Director was present to let the Board know what it has meant to their business.
Frank Drew, 1730 Mont Rue, asked for rider statistics.
Roger Kraft, 2485 Kraft, driveway into Meijer way too small for the bus.
Diane Cutler, KDL Librarian stated while she was very pleased that Cascade Township offered bus service to our residents and to people who are coming into our community to spend money and use the services that we have here.
Miria Rabideau, 7147 Aqua Fria Ct., excited about the bus in Cascade Township.
Russ Ettinger, Mary Free Bed YMCA, love the bus service.
Motion was made by Trustee Koessel and supported by Trustee Lewis to reconvene into regular session.

**058-2016** **Consider Approval of Naming Application for Museum Gardens Sculpture Pad.**
DDA/ED Director Korhorn was present to recommend United Bank be given the naming application for the sculpture pad at the museum gardens. Motion was made by Trustee Goldberg and supported by Treasurer Peirce to approve the naming application for the museum gardens to United Bank. Motion carried unanimously.

**059-2016** **Consider Approval of Outdoor Gathering Permit for the Cascade Metro Cruise Warmup.**
DDA/ED Director Korhorn reviewed the application for the Outdoor Gathering Permit for Metro Cruise Warmup. Motion was made by Trustee Koessel and supported Trustee Goldberg to approve the Outdoor Gathering Permit for the Cascade Metro Cruise Warmup. Motion carried unanimously.

**Article 9.** **Public Comments on any other matters. (limit comments to 3 minutes)**
Roger Kraft, 2485 Kraft, Bike path by the YMCA has an issue with water over the pathway…concerned with ice in the winter time.

**Article 10.** **Manager Comments**
Manager Swayze offered the following comments:

- Tim Haagsma from the KCRC will be at our next mtg. to address the intersection at Thornapple River and Cascade Rd.

Draft

**Article 11.** **Board Member Comments**

Supervisor Beahan offered the following comment:

- Driving by the Drury Hotel and looks like the sign for the Cascade Entry has the masonry work done on it.
- Senior Luncheon is August 9th at the Wisner Center at Noon.

**Article 12.** **Adjournment**

Motion was made by Treasurer Peirce and supported by Trustee Lewis to adjourn. Motion carried unanimously.

Meeting adjourned at 8:19 p.m.

Respectfully submitted,

Denise M. Biegalle
Deputy Clerk

Approved by:

_____
Clem Bell, Clerk

_____
Robert S. Beahan, Supervisor

Draft

**MEETING MINUTES**
Cascade Charter Township
Downtown Development Authority Board of Directors
Tuesday, April 19, 2016
5:30 P.M.
Cascade Library - Wisner Center
2870 Jacksmith Ave SE

**ARTICLE 1. Call the Meeting to Order**

Vice Chairman Puplava called the meeting to order at 5:30 p.m.
Members Present DDA: Rob Beahan, Diana Kingsland, Jennifer Puplava, Kim Ridings, Richard Siegle, Steve Stephan.
Absent: David Huhn (Excused), Paula Rowland (Excused), Matt Smith (Excused)
Others Present: DDA/ED Director Sandra Korhorn and others listed on the sign in sheet.

**ARTICLE 2. Approve the Agenda**

**Motion was made by Member Beahan to approve the Agenda. Support by Member Ridings. Motion carried, 6-0.**

**ARTICLE 3. Approve the Minutes of the March 15, 2016 Meeting**

**Motion was made by Member Beahan to approve the minutes of the March 15, 2016 meeting as written. Support by Member Siegle. Motion carried 6-0.**

**ARTICLE 4. Acknowledge visitors and those wishing to speak to non-agenda items.** *(Comments are limited to five minutes per speaker)*

No visitors

**ARTICLE 5. Discuss and Consider Consult for Library Property Plan**

DDA/ED Director Sandra Korhorn presented. If you remember we sent out a RFP, request for proposal, to work on the plan for the Library property. We received five proposals and interviewed three. The interview committee was Rob Beahan, Steve Peterson and myself. M.C. Smith, Progressive and Viridis were the three finalists. Viridis was the best candidate for the job and I am looking for a recommendation from you to the Township Board to hire Viridis to develop a plan to create a gathering place on the Library Property.

Discussion followed.

**Member Kingsland made a motion to recommend Viridis as consultants for developing the Library Property. Support by Member Siegle. Motion carried 6-0**

**ARTICLE 6. Discuss and Consider Using Banner Arms for Metro Cruise Warmup Event**

DDA/ED Director Korhorn presented. We talked briefly at the March meeting and we did receive a sample. There was concern about scratching the street lights. The vendor stated we could put felt on the back side of the bracket and there would not be a problem. The banners would be up for approximately two (2) weeks. They are allowed in the Township as they do not promote any one business. The banners would be in the DDA District only. We would do either 8 double sided or 16 single sided. I think that 8 total would be sufficient as a test to see if this is something we would like to invest in for future events. The Metro Cruise will pay for the banners but the DDA will keep ownership of the banners.

Discussion followed.

**Member Ridings made a motion to approve the installation of the Banner Arms for the Metro Cruise Warmup Event. Support by Member Stephan. Motion carried 6-0**

**Article 7.** Any Other Business

**a) Update on Planning Activities:**

- **Grand Coney is going into the old Sleep Doctor Store**
- **Drury Hotel is set to open in June**
- **A Microbrew will be next to Subway**
- **Bus route feedback has been very favorable**
- **Landscaping is starting at the Museum Gardens**
- **The Township voted to continue with specific drawings for the new Township Hall to be able to bid the project.**

**b) Wrought Iron Fence**

State Farm has been in contact with us about the wrought iron fence in front of their building and in front of Bridal Elegance. The same fence is across the street as well. The fence is in really poor condition and has been hit by a car. Up close you can see that the fence is rusted and deteriorating. We can choose to repair/replace the fence but it will be very costly. We could replace with a plastic product or remove it all together.

**Discussion Followed.**

**Article 8. Adjournment**

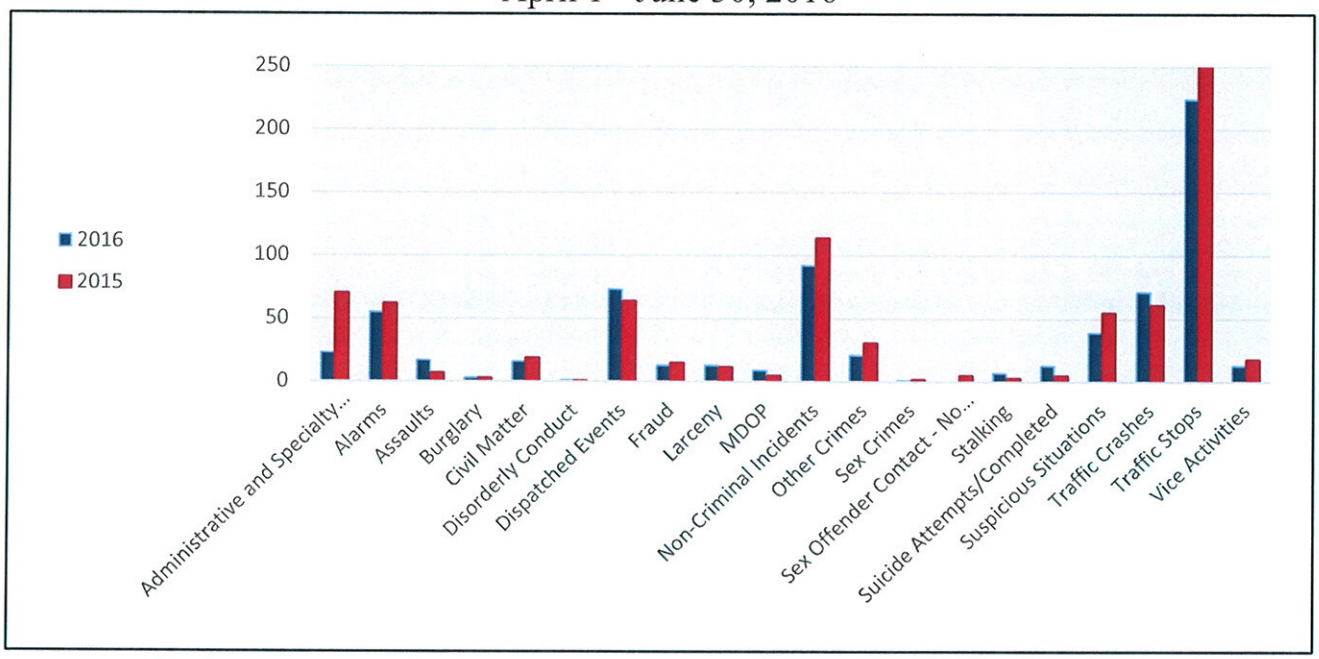
**Member Siegle made a motion to adjourn 6:10 PM. Support by Member Kingsland. Motion carried 6-0. Meeting Adjourned at 6:10 PM**

Respectfully submitted,

Diana Kingsland, Secretary
Ann Seykora, Planning Administrative Assistant
Julie Kutchins, Planning Administrative Assistant

# KENT COUNTY SHERIFF OFFICE
## EAST PRECINCT
### Serving Ada Township
*"A Partnership for Effective Policing"*
*2016 Quarterly Report*

2nd Quarter Report
April 1 - June 30, 2016

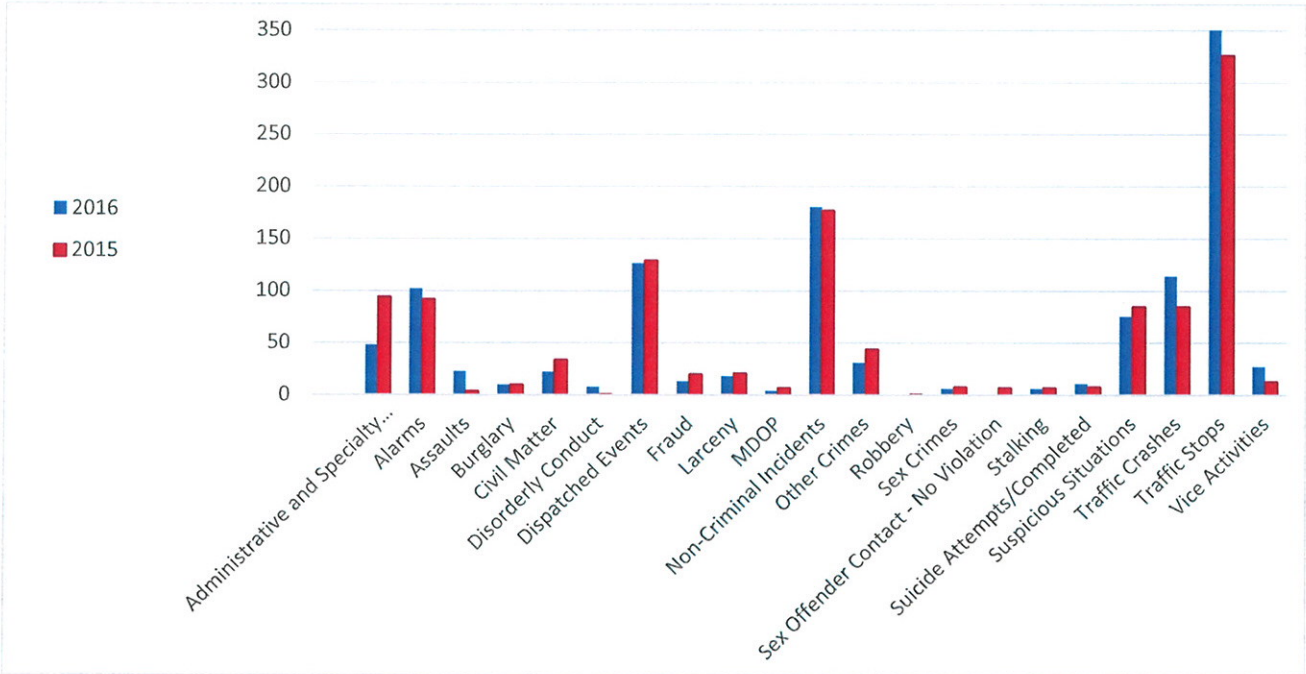



| | **2016** | 2015 |
|---|---|---|
| Administrative and Specialty | **23** | 70 |
| Alarms | **55** | 62 |
| Assaults | **17** | 7 |
| Burglary | **3** | 3 |
| Civil Matter | **16** | 19 |
| Disorderly Conduct | **1** | 1 |
| Dispatched Events | **73** | 64 |
| Fraud | **13** | 15 |
| Larceny | **13** | 12 |
| MDOP | **9** | 5 |
| Non-Criminal Incidents | **92** | 114 |
| Other Crimes | **21** | 31 |
| Sex Crimes | **1** | 2 |
| Sex Offender Contact - No Violation | **0** | 5 |
| Stalking | **7** | 3 |
| Suicide Attempts/Completed | **13** | 5 |
| Suspicious Situations | **39** | 55 |
| Traffic Crashes | **71** | 61 |
| Traffic Stops | **224** | 301 |
| Vice Activities | **13** | 18 |
| | | |
| TOTAL | **704** | 853 |

# KENT COUNTY SHERIFF OFFICE
## EAST PRECINCT
### Serving Grand Rapids Township
*"A Partnership for Effective Policing"*
*2016 Quarterly Report*

2nd Quarter Report

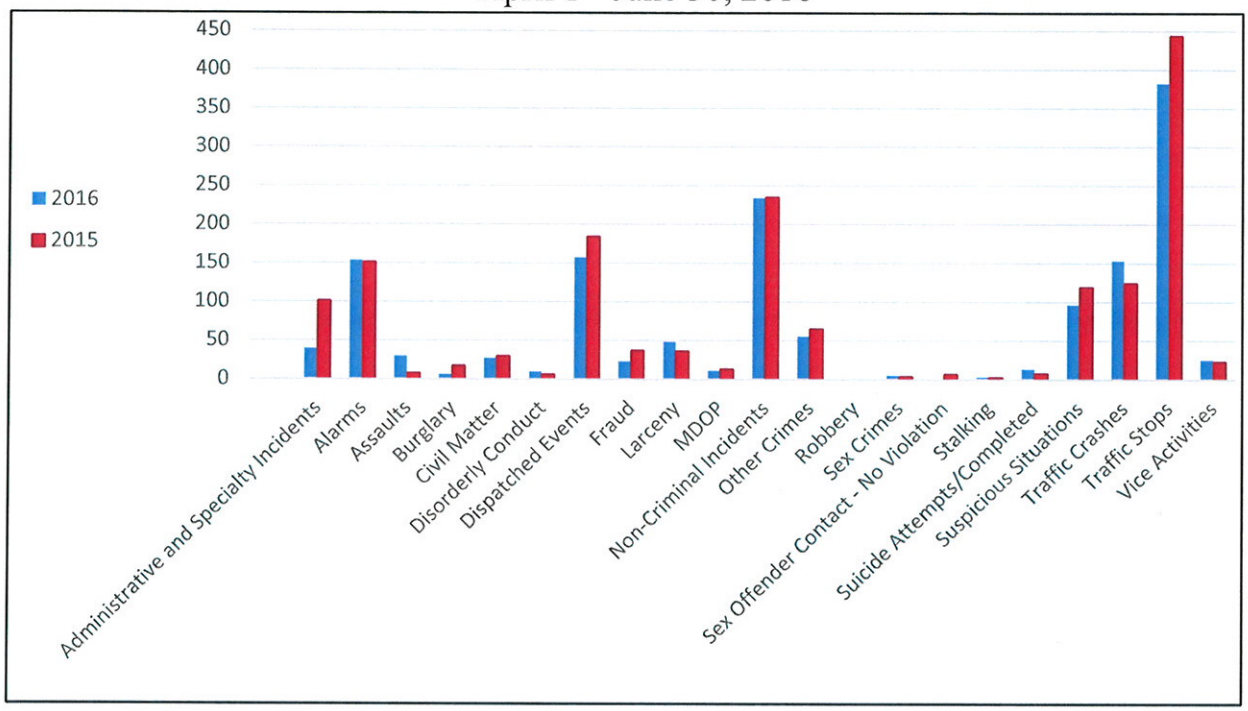
April 1 - June 30, 2016




| | 2016 | 2015 |
|---|---|---|
| | | |
| Administrative and Specialty Incidents | **48** | 94 |
| Alarms | **102** | 92 |
| Assaults | **23** | 4 |
| Burglary | **10** | 10 |
| Civil Matter | **22** | 34 |
| Disorderly Conduct | **8** | 1 |
| Dispatched Events | **126** | 129 |
| Fraud | **13** | 20 |
| Larceny | **18** | 21 |
| MDOP | **4** | 7 |
| Non-Criminal Incidents | **180** | 177 |
| Other Crimes | **31** | 44 |
| Robbery | **0** | 1 |
| Sex Crimes | **6** | 8 |
| Sex Offender Contact - No Violation | **0** | 7 |
| Stalking | **6** | 7 |
| Suicide Attempts/Completed | **11** | 8 |
| Suspicious Situations | **75** | 85 |
| Traffic Crashes | **114** | 85 |
| Traffic Stops | **363** | 326 |
| Vice Activities | **27** | 13 |
| | | |
| TOTAL | **1187** | 1173 |

# KENT COUNTY SHERIFF OFFICE
## EAST PRECINCT
### Serving Cascade Township
*"A Partnership for Effective Policing"*
*2016 Quarterly Report*

2nd Quarter Report
April 1 - June 30, 2016




| | **2016** | 2015 |
|---|---|---|
| | | |
| Administrative and Specialty Incidents | **39** | 101 |
| Alarms | **153** | 151 |
| Assaults | **30** | 8 |
| Burglary | **6** | 17 |
| Civil Matter | **27** | 30 |
| Disorderly Conduct | **10** | 6 |
| Dispatched Events | **157** | 184 |
| Fraud | **23** | 37 |
| Larceny | **48** | 36 |
| MDOP | **11** | 13 |
| Non-Criminal Incidents | **234** | 235 |
| Other Crimes | **55** | 65 |
| Robbery | **1** | 0 |
| Sex Crimes | **5** | 4 |
| Sex Offender Contact - No Violation | **0** | 7 |
| Stalking | **3** | 3 |
| Suicide Attempts/Completed | **13** | 8 |
| Suspicious Situations | **96** | 119 |
| Traffic Crashes | **153** | 124 |
| Traffic Stops | **382** | 444 |
| Vice Activities | **25** | 23 |
| | | |
| TOTAL | **1471** | 1615 |

**TREASURER'S DEPARTMENT**

*CASCADE CHARTER TOWNSHIP*
*TAX ACCOUNTS*
*JUNE 16*

***BANK BALANCES***

| BANK | AMOUNT |
|---|---|
| **CHEMICAL BANK** | |
| TAX CHECKING | $1,235.95 |
| **CHEMICAL BANK** | |
| DELINQUENT TAX | $35,729.31 |
| **CHEMICAL BANK** | |
| TAX WIRE ACCT | $29.01 |
| **GRAND TOTAL** | $36,994.27 |

***TOWNSHIP BALANCES***

| REGISTER | AMOUNT |
|---|---|
| **CHEMICAL BANK** | |
| TAX CHECKING | $1,235.95 |
| **CHEMICAL BANK** | |
| DELINQUENT TAX | $35,729.31 |
| **CHEMICAL BANK** | |
| TAX WIRE ACCT | $29.01 |
| **GRAND TOTAL** | $36,994.27 |

OSourine 7/26/2016

Submitted by — Date
*OXANA SOURINE*
DEPUTY TREASURER

Kenneth B. Peirce 7/27/2016

Reviewed by — Date
*KENNETH B. PEIRCE*
TREASURER

**CASCADE CHARTER TOWNSHIP**
**TREASURER'S OFFICE REPORT**
**June 2016**

| | FUND | INSTITUTION | DEMAND DEPOSIT | | CDs | | | SECURITIES | | | TOTALS | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | $ | % | $ | % | DATE | $ | % | DATE | $ | % |
| 101 | GENERAL FUND | CHEMICAL | 1,057,338.60 | 0.05 | | | | | | | | |
| | | KENT CTY POOL | 4,457,571.85 | 0.63 | | | | | | | | |
| | | INDEPENDENT | | | 300,000.00 | 1.35 | 9/27/2016 | | | | | |
| | | MERCANTILE | | | 510,599.72 | 0.90 | 7/20/2018 | | | | | |
| | | FLAGSTAR | | | 257,674.61 | 0.65 | 11/21/2016 | | | | | |
| | | HUNTINGTON | | | 514,670.13 | 0.91 | 9/13/2017 | | | | | |
| | | TALMER BANK | | | 500,000.00 | 1.00 | 6/16/2017 | | | | | |
| | | CONSUMERS CU | | | 250,000.00 | 1.50 | 7/8/2016 | | | | | |
| | | MACATAWA | | | 250,000.00 | 0.89 | 11/21/2016 | | | | | |
| | | BANK OF HOLLAND | | | | 0.75 | 5/27/2016 | | | | | |
| | | FLAGSTAR | | | 500,000.00 | 0.80 | 1/12/2017 | | | | | |
| | | COMERICA SECUR./WF | | | | | | 500,000.00 | 1.00 | 9/25/2017 | | |
| | **TOTAL GENERAL FUND** | | **5,514,910.45** | **0.52** | **3,082,944.46** | **0.97** | | **500,000.00** | **1.00** | | **9,097,854.91** | **0.70** |
| **151** | **CEMETERY** | **LMCU** | **97,134.17** | **0.40** | **-** | | | | | | **97,134.17** | **0.40** |
| 206 | FIRE FUND | CHEMICAL | 292,804.31 | 0.05 | | | | | | | | |
| | | LMCU | 1,110,284.14 | 0.50 | | | | | | | | |
| | | LMCU | | | 536,265.51 | 1.40 | 10/25/2017 | | | | | |
| | | COM CHOICE CU | | | 250,000.00 | 1.27 | 3/18/2017 | | | | | |
| | | FNBA | | | 531,427.61 | 1.50 | 7/24/2018 | | | | | |
| | | HUNTINGTON | | | 259,925.13 | 0.55 | 11/17/2017 | | | | | |
| | | OPTION1 | | | 250,005.00 | 0.75 | 3/24/2017 | | | | | |
| | | 5/3 BANK | | | 250,000.00 | 0.69 | 7/21/2016 | | | | | |
| | **TOTAL FIRE FUND** | | **1,403,088.45** | **0.41** | **2,077,623.25** | **1.14** | | **-** | | | **3,480,711.70** | **0.84** |
| 207 | POLICE FUND | FLAGSTAR | 870,030.46 | 0.50 | | | | | | | | |
| | | NORTHPOINTE BANK | | | 250,000.00 | 1.20 | 11/8/2016 | | | | | |
| | | BANK OF HOLLAND | | | 614,281.25 | 1.00 | 8/20/2016 | | | | | |
| | **TOTAL POLICE FUND** | | **870,030.46** | **0.50** | **864,281.25** | **1.06** | | **-** | | | **1,734,311.71** | **0.78** |
| **208** | **HAZMAT FUND** | **LMCU** | **45,092.46** | **0.35** | | | | | | | **45,092.46** | **0.35** |
| 209 | OPEN SPACE | CHEMICAL | 200,336.49 | 0.05 | | | | | | | | |
| | | LMCU (HOMEYER) | 352,749.02 | 0.50 | | | | | | | | |
| | | FLAGSTAR | | | - | 0.45 | 4/12/2016 | | | | | |
| | | CWCU | | | 250,001.00 | 0.75 | 10/15/2016 | | | | | |
| | **TOTAL OPEN SPACE** | | **553,085.51** | **0.34** | **250,001.00** | **0.75** | | | | | **803,086.51** | **0.47** |
| 211 | DAM REPAIR | LMCU | 247,744.88 | 0.50 | | | | | | | | |
| | | LMCU | | | 311,935.86 | 1.30 | 3/10/2017 | | | | | |
| | **TOTAL DAM REPAIR** | | **247,744.88** | **0.50** | **311,935.86** | **1.30** | | **-** | **-** | | **559,680.74** | **0.95** |
| 216 | PATHWAY FUND | MACATAWA | 731,986.99 | 0.25 | | | | | | | | |
| | | OPTON1 | | | 524,327.53 | 1.10 | 10/8/2018 | | | | | |
| | **TOTAL PATHWAY FUND** | | **731,986.99** | **0.25** | **524,327.53** | **1.10** | | **-** | | | **1,256,314.52** | **0.60** |
| 246 | PUBLIC UTILITY | CHEMICAL BANK | 115,555.27 | 0.05 | | | | | | | | |
| | IRF | LMCU | 301,980.23 | 0.50 | | | | | | | | |
| | | LMCU | | | 700,000.00 | 1.40 | 12/22/2016 | | | | | |
| | | TALMER | | | 500,000.00 | 0.95 | 6/29/2018 | | | | | |
| | **TOTAL PUBLIC UTILITY** | | **417,535.50** | **0.38** | **1,200,000.00** | **1.21** | | **-** | **-** | | **1,617,535.50** | **1.00** |
| 248 | DDA FUND | LMCU | 17,194.66 | 0.50 | | | | | | | | |
| | | CHEMICAL BANK | 196,377.34 | 0.05 | | | | | | | | |
| | | OPTION ONE | | | 200,005.00 | 0.75 | 3/24/2017 | | | | | |
| | | BANK OF HOLLAND | | | - | 0.75 | 5/26/2016 | | | | | |
| | **TOTAL DDA FUND** | | **213,572.00** | **0.09** | **200,005.00** | **0.75** | | **-** | **-** | | **413,577.00** | **0.41** |
| 249 | BLDG. INSPECTION | CHEMICAL BANK | 240,547.54 | 0.05 | | | | | | | | |
| | | CHEMICAL BANK R. | 45,554.25 | | | | | | | | | |
| | | CONSUMERS CU | | | 300,025.00 | 0.70 | 3/10/2017 | | | | | |
| | | TALMER BANK | | | 400,000.00 | 0.75 | 4/28/2017 | | | | | |
| | | FNB OF AMERICA | | | 100,879.52 | 1.40 | 12/18/2017 | | | | | |
| | | FNB OF AMERICA | | | 200,000.00 | 1.35 | 9/18/2016 | | | | | |
| | | FNB OF MI | | | 511,395.83 | 1.15 | 10/11/2018 | | | | | |
| | | FIRST COMMUNITY B. | | | 250,000.00 | 1.00 | 5/27/2018 | | | | | |
| | | INDEPENDENT BANK | | | 300,000.00 | 1.10 | 12/19/2016 | | | | | |
| | **TOTAL BLDG. INSPECT.** | CHEMICAL BANK | **286,101.79** | **0.04** | **2,062,300.35** | **1.01** | | | | | **2,348,402.14** | **0.89** |
| 270 | LIBRARY FUND | UNITED BANK | 439,081.08 | 0.40 | | | | | | | | |
| | | LMCU | | | 832,967.83 | 1.30 | 3/20/2017 | | | | | |
| | | WMCB | | | 254,471.21 | 0.85 | 6/1/2018 | | | | | |
| | | NORTHPOINTE BANK | | | 533,905.65 | 1.30 | 4/7/2018 | | | | | |
| | **TOTAL LIBRARY FUND** | | **439,081.08** | **0.40** | **1,621,344.69** | **1.23** | | **-** | | | **2,060,425.77** | **1.05** |
| 701 | T & A | CHEMICAL BANK | 118,535.79 | 0.05 | | | | | | | **118,535.79** | **0.05** |
| 701 | JAMES TIMMONS | CHEMICAL BANK | | | 12,400.00 | 1.60 | 3/21/2017 | | | | **12,400.00** | **1.60** |
| 701 | JACK SMITH INV. | CHEMICAL BANK | 22,812.12 | 0.05 | | | | | | | **22,812.12** | **0.05** |
| 701 | HENRY KRAMER | CHEMICAL BANK | 15,172.93 | 0.05 | | | | | | | **15,172.93** | **0.05** |
| | TOTAL | | **10,975,884.58** | **0.43** | **12,207,163.39** | **1.08** | | **500,000.00** | **1.00** | | **23,683,047.97** | **0.78** |

OSourine 8/2/16
Submitted by Date
Oxana Sourine Deputy Treasurer

Ken Peirce 8/2/2016
Reviewed by Date
Ken Peirce Treasurer

**Cascade Charter Township**
**Seminar/Conference Attendance Request Form**

This form must be filled out if the employee is requesting Township payment or reimbursement for the employee's attendance to a seminar or conference.

Conditions:

1. Cascade Charter Township will reimburse employees for approved registration for work related seminars and conferences. Individual seminars and conferences must be related to the employee's current job duties or a foreseeable-future position in the organization in order to be eligible for educational assistance.
2. Some seminars/conferences that an employee may attend may be unrelated to their particular job or government in general, and are therefore not covered by this assistance policy.
3. Any request that requires an overnight stay or expenditure over $200 requires Township Board approval before the seminar/conference is attended.
4. Under extenuating circumstances, the Township Manager may approve an overnight stay or expenditure over $200 for a conference or seminar prior to Township Board approval. The request must be made before attendance to a seminar/conference. The Township Board will be informed of request at their next scheduled meeting.

*This form must be completed by the employee and approved by the Township Manager and/or Township Board before the seminar/conference is attended.*

Name: PINDER, MILDRED

Application Date: 7/27/2016

Location of Seminar/Conference: BELLAIRE MI 9/18-9/21/2016

Name of Proposed Seminar/Conference: 67TH ANNUAL MGFOA FALL TRAINING ECONOMIC/LEGISLATIVE UPDATES, ACCOUNTING PROCEDURE, POLICIES, RULES

Description of Seminar/Conference: (may also be attached) SEE ATTACHED

_____

_____

_____

*(over)*

How will the Seminar/Conference benefit the employee and the township? SEMINAR IS A MEANS TO HELP STAFF KEEP IN COMPLIANT WITH STATE/FEDERAL LAW ASSOCIATED WITH GASB. CONFERENCE ALSO GOOD VENUE FOR NETWORKING WITH PEERS TO IMPROVE ON TOWNSHIP PRACTICES AND POLICIES IN FINANCE AREA.

Cost of the Seminar/Conference: (Registration) $ 295

(Lodging) $ 456 (Travel) $ 172.00

Account #: 101-295-724-000

Your Signature: Mildred Pender

Approvals:

Department Head: _____ Date: _____

Township Manager: _____ Date: _____

Clerk's Signature: _____ Date: _____

(Showing Township Board approval)

Original to personnel file

1 copy to applicant

1 copy to Accounting

# Events

## MGFOA 2016 Fall Training Institute

September 18-21, 2016
Shanty Creek Resort

Register Online

Draft At-A-Glance Agenda
**Attendee List** – Coming Soon
**Speaker Handouts** – Handouts will be available as they become available, for registered attendees only.

**Online Fees:**

| | If registered by August 22, 2016 | After August 22, 2016 |
|---|---|---|
| **Members** | $290 | $330 |
| **Non-Members** | $410 | $450 |
| **Guests*** | $40 | $40 |

**Includes Monday President's Reception and Tuesday Banquet, but does not include drink tickets*
*Note: Hard-copy registrations will incur a $5 service fee*

**Refund Policy:** Notice of cancellations must be received by **August 22, 2016.** No refunds will be made after that date.

**Lodging**

Shanty Creek Resort's room block for the group at the Lakeview Lodge will be held until **August 22, 2016.** Room types and rates are listed below. **To make a reservation, please call 231-533-8621 ext. 7300 or make your** reservation online, letting the reservations coordinator know that you are with MGFOA. Reservations must be canceled at least 14 days prior to arrival to receive full refund.

Check-in is at 5:00 pm; check-out is at 12:00 pm.

| Room Type | Room Rate |
|---|---|
| Standard Guest Room | $133.00 |
| Studio Parlor | $152.00 |

**Room rates do not include a 6% sales tax, 9% resort fee, and 5% CVB assessment.*

**Things to See and Do in Bellaire**

Shanty Creek Resort Activities
Downtown Bellaire
Short's Brewing Company

**Golf**

There is no organized golf outing scheduled through the MGFOA. For individuals interested in playing golf, please call 800-678-4111 to reserve a tee time. Group rates have been established. Please let reservations know that you are with MGFOA.

More Events

View Registrations

View Entire Calendar

**Upcoming Events:**

MGFOA Front Porch Forum
07/27/2016
Grand Rapids

Professional Development Committee Meeting
08/12/2016

MGFOA Board of Directors Meeting
08/19/2016

MGFOA 2016 Fall Training Institute
09/18/2016 - 09/21/2016
Shanty Creek Resort - Bellaire

MGFOA Back to Basics 2016 - Session III
10/05/2016
Okemos

MGFOA Front Porch Forum
10/26/2016
Kentwood

View entire calendar...

Register Online

Hard-Copy Registration Form

© 2016 VIKTOR. All rights reserved.

# MGFOA REGISTRATION

**Michigan Government Finance Officers Association**
**67th Annual Fall Training Institute**
**Shanty Creek Resort**
**Bellaire, Michigan**
**September 18-21, 2016**

**Online registration and complete details at www.MiGFOA.org**
***The MGFOA encourages registration online. Check payments are also accepted with online registration.***

*(One registration per form; please duplicate if additional forms are needed)*

Name Mildred Pinder First name or nick name for badge Mildred

Job Title SR Accountant Designation (CPA, CPFO, etc)

Organization Cascade Charter Township Email mildred@cascadetwp.com

Address 2865 Thornhills Ave SE

City Grand Rapids State MI Zip 49546

Phone (616) 949-1500 Fax (616) 949-3918

Where did you hear about this MGFOA event? last year conference

Special Requests / Needs (dietary, etc.): N/A

Is this your first MGFOA Fall Training Institute? ☐ YES ☒ NO

Do you plan on attending the Tuesday Banquet? ☒ YES ☐ NO

**Registration Fees:** *(note: a $5 per registration discount will apply when registering online)*

**Institute Registration: Members:** (Includes registration and all planned meal functions)
**By August 22, 2016: $295**
**After August 22, 2016: $335** $ 295

**Institute Registration: Non-Members:** (Includes registration and all planned meal functions)
**By August 22, 2016: $415**
**After August 22, 2016: $455** $

**Guest - Monday President's Reception & Tuesday Banquet** (does not include drink tickets)
**By August 22, 2016: $45**
**After August 22, 2016: $45** $

**Guest first and last name**

**Guest first name (nick name) for name badge**

**Total Enclosed:** $

**A limited block of hotel rooms will be held at Shanty Creek Resort through August 22, 2016.**
**Please visit www.MiGFOA.org for complete details or contact**
**Nicole Peterson with VIKTOR at info@MiGFOA.org or 231-947-0882.**

Make check payable to **MGFOA** and return with registration form no later than **August 22, 2016** to:
**MGFOA, 4020 Copper View, Ste. 130, Traverse City, MI 49684**

**Refund Policy:** Notice of cancellations must be received by **August 22, 2016.**
No refunds will be made after that date.

# MGFOA Fall Training Institute
## September 18 - 21, 2016
## Shanty Creek Resort

MGFOA
MICHIGAN GOVERNMENT FINANCE OFFICERS ASSOCIATION

**Sunday, September 18**

2:00–7:00 pm Early registration

3:00–7:00 pm Nominating Committee Interviews

**Monday, September 19**

7:50–8:30 am Registration/Breakfast Buffet

8:30–8:45 am President's Welcome

8:50–9:50 am General Session: Legislative Update
*Chris Hackbarth, Director - State Affairs, Michigan Municipal League*

10:00–10:50 am General Session: Election 2016 & Michigan Politics
*Tim Skubick*

11:00–11:50 am General Session: Economic Update
*Jesse Edgeton, JP Morgan Chase*

12:00–1:00 pm Luncheon

1:10–2:40 pm General Session: Lieutenant Governor Update
*Lt. Governor Brian Calley*

2:50–4:10 pm Concurrent Sessions:
Ethics
*Craig Lange, Kirk, Huth, Lange & Badalamenti, PLC*

Credit Card & NACHA Rules
*Rona Mehl, The Clearing House Payments Authority*

4:20–5:10 pm Concurrent Sessions:
Hot Topic

Investing Public Funds
*Brian Quinn*
*Ben Stone, Vice President, Relationships Manager, Flagstar Bank*

5:30–6:00 pm New Member Reception
Reception for new MGFOA members and MGFOA mentors.

6:00–7:00 pm President's Reception

**Tuesday, September 20**

7:45–8:20 am Breakfast Buffet

8:20–9:10 am Committee Reports
Sub-committee Reports
Executive Director Report

9:20–10:40 am General Session: GASB Update
*Scott Reeser, Supervising Project Manager, Government Accounting Standards Board*

MGFOA Fall Training Institute
September 18 - 21, 2016
Shanty Creek Resort

MGFOA
MICHIGAN GOVERNMENT FINANCE OFFICERS ASSOCIATION

10:50–11:50 am General Session: Detroit Post-Bankruptcy
*John Naglick Jr., Chief Deputy CFO/Finance Director, City of Detroit*
*David Szymanski*

11:50am–1:10pm Annual Business Meeting Luncheon
Presentation of CPFO Proclamations

1:10–2:00 pm Concurrent Sessions:
GASB 74/75-OPEB
*Scott Reeser, Supervising Project Manager, Government Accounting Standards Board*

Intermediate / Advanced Excel Tips
*Dan Block, Plante Moran*
*Justin Kolbow, Plante Moran*
*Billy Wright, Plante Moran*

2:10–3:00 pm Concurrent Sessions:
Continuing Disclosure / EMMA / MSRB
*Eugenia Song, MSRB*

Act 51 Annual Reporting Guidance
*Lori Cole, Financial Specialist, Michigan Department of Transportation*

3:10–4:00 pm Concurrent Sessions:
What's New with MERS
*Chris DeRose, CEO, Municipal Employees' Retirement System of Michigan*

Bond Financing
*Tom Colis, Principal, Miller, Canfield, Paddock and Stone, PLC*
*Paul Stauder, Managing Director, Public Financial Management*

4:10–5:00 pm Concurrent Sessions:
GASB 77 – Tax Abatement Disclosures
*Joe Heffernan, Partner, Plante Moran*

Associates Meeting

6:00–11:00 pm Banquet & Social Event

Wednesday, September 21

7:00–8:00 am Past Presidents/New Board Breakfast

7:00–8:00 am Breakfast Buffet

8:00–9:00 am General Session: Dealing with Difficult Employees
*Bonnie Toskey, Partner, Cohl, Stoker & Toskey, P.C.*

9:00–9:50 am Concurrent Sessions:
Innovate Government

MGFOA Fall Training Institute
September 18 - 21, 2016
Shanty Creek Resort

MGFOA
MICHIGAN GOVERNMENT FINANCE OFFICERS ASSOCIATION

OMB Supercircular – Uniform Guidance (part 1)
*Stephen Blann, CPA, CGFM, CGMA, Director of Governmental Audit Quality, Rehmann LLC*

10:10–11:00 am **Concurrent Sessions:**
Rating Agency
*Andrew Van Dyck Dobos, Standard & Poor's*

OMB Supercircular – Uniform Guidance (part 2)
*Stephen Blann, CPA, CGFM, CGMA, Director of Governmental Audit Quality, Rehmann LLC*

11:10–11:50 am General Session: Municipal Finance and MML
*Anthony Minghine, Associate Executive Director & COO, Michigan Municipal League*

08/01/2016

CHECK DISBURSEMENT REPORT FOR CASCADE CHARTER TOWNSHIP
CHECK DATE FROM 07/01/2016 - 07/31/2016
**JULY 2016 PAYABLES, PAYROLL, AND TRANSFERS**

| Check Date | Bank | Check # | Invoice | Payee | Description | Account | Dept | Amount |
|---|---|---|---|---|---|---|---|---|
| **FUND 101 - GENERAL FUND** | | | | | | | | |
| 07/21/2016 | GENS | 64354 | LOST CHK 62596 | ROBERT J NORRIS | REIMBURSEMENTS/NORRIS LOST CHK 62596 | 671-683 | 000 | 201.25 |
| 07/28/2016 | GENS | 64376*# | KLEINHEKSEL | FIRST BANKCARD | REIMB- KLEINHEKSEL FLOWERS (EMPLY CONTI | 671-683 | 000 | 55.00 |
| 07/28/2016 | GENS | 64385*# | 000549671815 | MUTUAL OF OMAHA INSURANCE | DEPENDENT LIFE W/H BLDG AUG | 231-220 | 000 | 3.90 |
| 07/28/2016 | GENS | 64385 | 000549671815 | MUTUAL OF OMAHA INSURANCE | DEPENDENT LIFE W/H GF AUG | 231-220 | 000 | 15.60 |
| 07/28/2016 | GENS | 64385 | 000549671815 | MUTUAL OF OMAHA INSURANCE | DEPENDENT LIFE W/H FIRE AUG | 231-220 | 000 | 23.40 |
| 07/28/2016 | GENS | 64385 | 000549671815 | MUTUAL OF OMAHA INSURANCE | ADDITIONAL LIFE W/H VLIFE FIRE AUG | 231-221 | 000 | 30.00 |
| 07/28/2016 | GENS | 64385 | 000549671815 | MUTUAL OF OMAHA INSURANCE | ADDITIONAL LIFE W/H FIRE AUG | 231-221 | 000 | 337.60 |
| 07/28/2016 | GENS | 64385 | 000549671815 | MUTUAL OF OMAHA INSURANCE | ADDITIONAL LIFE W/H GF AUG | 231-221 | 000 | 145.60 |
| 07/28/2016 | GENS | 64385 | 000549671815 | MUTUAL OF OMAHA INSURANCE | ADDITIONAL LIFE W/H BLDG AUG | 231-221 | 000 | 50.00 |
| 07/28/2016 | GENS | 64385 | 000549671815 | MUTUAL OF OMAHA INSURANCE | ADDITIONAL LIFE W/HVLIFE E 2X GENERAL AU | 231-221 | 000 | 11.00 |
| 07/28/2016 | GENS | 64385 | 000549671815 | MUTUAL OF OMAHA INSURANCE | SHORT TERM DISABILITY W/H GF AUG | 231-222 | 000 | 52.01 |
| 07/28/2016 | GENS | 64385 | 000549671815 | MUTUAL OF OMAHA INSURANCE | SHORT TERM DISABILITY W/H FIRE AUG | 231-222 | 000 | 140.13 |
| | | | | CHECK GENS 64385 TOTAL FOR FUND 101: | | | | 809.24 |
| | | | | | Total for department 000: | | | 1,065.49 |
| **Department: 101 TOWNSHIP BOARD** | | | | | | | | |
| 07/14/2016 | GENS | 64322*# | 9767976851 | VERIZON WIRELESS | TRUSTEE CELL PHONES TABLETS JULY | 924-100 | 101 | 64.13 |
| | | | | | Total for department 101: | | | 64.13 |
| **Department: 171 SUPERVISOR/MANAGER** | | | | | | | | |
| 07/14/2016 | GENS | 64290 | MILG 6/2-6/24& CELL | ROBERT S BEAHAN | SUP/MGR/DEPT MILEAGE BEAHAN 69 MILES | 860-000 | 171 | 37.26 |
| 07/14/2016 | GENS | 64290 | MILG 6/2-6/24& CELL | ROBERT S BEAHAN | MANAGER CELL PHONE BEAHAN CELL ALLOW/ | 925-000 | 171 | 50.00 |
| | | | | CHECK GENS 64290 TOTAL FOR FUND 101: | | | | 87.26 |
| 07/14/2016 | GENS | 64322*# | 9767976851 | VERIZON WIRELESS | MANAGERS CELL PHONE TABLETS JULY | 925-000 | 171 | 32.07 |
| 07/14/2016 | GENS | 64322 | 9767790662 | VERIZON WIRELESS | MANAGERS CELL PHONE JULY | 925-000 | 171 | 62.97 |
| | | | | CHECK GENS 64322 TOTAL FOR FUND 101: | | | | 95.04 |
| 07/28/2016 | GENS | 64376*# | PARKING 6/24/2016 | FIRST BANKCARD | SUP/MGR/DEPT MILEAGE SWAYZE PARKING R | 860-000 | 171 | 8.00 |
| 07/28/2016 | GENS | 64376 | 4/40010 | FIRST BANKCARD | SUPERVISOR EXP ACCT SWAYZE LUNCHEON M | 862-500 | 171 | 54.64 |
| | | | | CHECK GENS 64376 TOTAL FOR FUND 101: | | | | 62.64 |
| | | | | | Total for department 171: | | | 244.94 |
| **Department: 215 CLERK** | | | | | | | | |
| 07/14/2016 | GENS | 64322*# | 9767976851 | VERIZON WIRELESS | CLERK CELL PHONE TABLETS JULY | 925-000 | 215 | 32.07 |
| 07/28/2016 | GENS | 64368 | PASSPORT CONF | AMOS, DEBBIE | EDUCATION AMOS PASSPORT CONF 7/19 | 724-000 | 215 | 10.99 |
| 07/28/2016 | GENS | 64376*# | 165 | FIRST BANKCARD | CLERK MILEAGE BIEGALLE PARKING | 860-000 | 215 | 12.00 |
| 07/28/2016 | GENS | 64376 | 1696412 | FIRST BANKCARD | CLERK'S EXPENSE ACCOUNT BELL SUPPLIES | 862-500 | 215 | 10.59 |
| | | | | CHECK GENS 64376 TOTAL FOR FUND 101: | | | | 22.59 |
| | | | | | Total for department 215: | | | 65.65 |
| **Department: 253 TREASURER** | | | | | | | | |
| 07/14/2016 | GENS | 64322*# | 9767976851 | VERIZON WIRELESS | TREASURER'S CELL PHONES TABLETS JULY | 924-100 | 253 | 16.03 |
| 07/21/2016 | GENS | 64360 | MILG 4/28-6/30 | SOURINE, OXANA | TREASURER MILEAGE SOURINE 74 MILES | 860-000 | 253 | 39.96 |
| | | | | | Total for department 253: | | | 55.99 |
| **Department: 257 ASSESSING** | | | | | | | | |
| 07/07/2016 | GENS | 64273 | MILG 6/01-6/22 | HOLZHEI, SHAWN | ASSESSING MILEAGE HOLZHEI 74 MILES | 860-000 | 257 | 39.96 |
| 07/07/2016 | GENS | 64280 | MILG 6/03-6/23 | ROGER MC CARTY | ASSESSING MILEAGE MCCARTY 74 MILES | 860-000 | 257 | 39.96 |
| 07/14/2016 | GENS | 64322*# | 9767976851 | VERIZON WIRELESS | CELL PHONES/DATA JULY | 924-100 | 257 | 16.03 |
| 07/21/2016 | GENS | 64346 | 121037/2016 | MARSHALL & SWIFT | YEARLY SUB RENEWAL MARSHALL COST MANU | 939-000 | 257 | 634.20 |
| | | | | | Total for department 257: | | | 730.15 |

| Check Date | Bank | Check # | Invoice | Payee | Description | Account | Dept | Amount |
|---|---|---|---|---|---|---|---|---|
| Department: 262 ELECTIONS | | | | | | | | |
| 07/14/2016 | GENS | 64313 | 96573 | PSI PRINTING SYSTEMS INC | ELECTION SUPPLIES AV SECRECY BALLOTS | 756-000 | 262 | 150.42 |
| 07/14/2016 | GENS | 64322*# | 9767987844 | VERIZON WIRELESS | ELECTION MISC EXPENSES TELEPHONES JULY | 788-000 | 262 | 7.74 |
| 07/28/2016 | GENS | 64376*# | 59740C0893 | FIRST BANKCARD | ELECTION MISC EXPENSES SUPPLIES | 788-000 | 262 | 39.96 |
| | | | | | Total for department 262: | | | 198.12 |
| Department: 265 BUILDING AND GROUNDS | | | | | | | | |
| 07/07/2016 | GENS | 3404(A)*# | JUNE 2016 | CONSUMERS ENERGY | 100000285161 2865 THORNHILLS AVE JUN | 921-000 | 265 | 1,871.35 |
| 07/07/2016 | GENS | 3404(A) | JUNE 2016 | CONSUMERS ENERGY | 103019008525 2800 THORNAPPLE RIV DR | 921-000 | 265 | 7.98 |
| 07/07/2016 | GENS | 3404(A) | JUNE 2016 | CONSUMERS ENERGY | 100012762959 2990 BUTTRICK AVE SE | 921-000 | 265 | 304.62 |
| 07/07/2016 | GENS | 3404(A) | JUNE 2016 | CONSUMERS ENERGY | 100012052419 6569 THORNBROOK ST SE | 921-000 | 265 | 22.59 |
| | | | | CHECK GENS 3404(A) TOTAL FOR FUND 101: | | | | 2,206.54 |
| 07/07/2016 | GENS | 3408(A)*# | 194673 | KINGSLAND'S ACE HARDWARE | BLDG & GROUNDS UNIFORMS WORK GLOVES | 768-000 | 265 | 14.39 |
| 07/07/2016 | GENS | 3408(A) | 194705 | KINGSLAND'S ACE HARDWARE | BLDG & GRDS VEHICLE MAINT ENGINE SPRAY | 863-000 | 265 | 7.90 |
| 07/07/2016 | GENS | 3408(A) | 194733 | KINGSLAND'S ACE HARDWARE | BLDG & GRDS VEH MAINT CHAIN SAW BAR | 863-000 | 265 | 9.44 |
| 07/07/2016 | GENS | 3408(A) | 194739 | KINGSLAND'S ACE HARDWARE | BLDG & GRDS VEHICLE MAINT NUTS & BOLTS | 863-000 | 265 | 5.38 |
| 07/07/2016 | GENS | 3408(A) | 194833 | KINGSLAND'S ACE HARDWARE | BLDG & GRDS VEHICLE MAINT TRIMMER LINES | 863-000 | 265 | 52.15 |
| 07/07/2016 | GENS | 3408(A) | 194924 | KINGSLAND'S ACE HARDWARE | BLDG & GRDS VEHICLE MAINT CHAIN/CABLE | 863-000 | 265 | 25.14 |
| 07/07/2016 | GENS | 3408(A) | 194558 | KINGSLAND'S ACE HARDWARE | COMPLEX MAINTENANCE FLY TRAPS | 931-000 | 265 | 2.69 |
| 07/07/2016 | GENS | 3408(A) | 194566 | KINGSLAND'S ACE HARDWARE | COMPLEX MAINT-BACKPACK SPRAYER | 931-000 | 265 | 107.95 |
| | | | | CHECK GENS 3408(A) TOTAL FOR FUND 101: | | | | 225.04 |
| 07/07/2016 | GENS | 3410(A)*# | 193233 | QUALITY AIR | MONTHLY MAINTENANCE- B&G | 931-000 | 265 | 50.97 |
| 07/07/2016 | GENS | 3410(A) | 193233 | QUALITY AIR | MONTHLY MAINTENANCE- BUILDING | 931-000 | 265 | 78.78 |
| 07/07/2016 | GENS | 3410(A) | 193233 | QUALITY AIR | MONTHLY MAINTENANCE- COMPLEX | 931-000 | 265 | 157.54 |
| | | | | CHECK GENS 3410(A) TOTAL FOR FUND 101: | | | | 287.29 |
| 07/07/2016 | GENS | 3411(A)*# | 20148544 | I T RIGHT | ANNUAL SERVICE CONTRACT - GENERAL | 932-000 | 265 | 7,500.00 |
| 07/07/2016 | GENS | 3412(A)*# | CLIP41725 | THORNAPPLE RIVER NURSERY, INC. | MAIN OFFICE WEED & FEED APPL# 2 | 931-000 | 265 | 95.00 |
| 07/07/2016 | GENS | 3412(A) | CLIP41711 | THORNAPPLE RIVER NURSERY, INC. | B&G WEED & FEE 1/3 APPL# 2 | 931-000 | 265 | 53.00 |
| | | | | CHECK GENS 3412(A) TOTAL FOR FUND 101: | | | | 148.00 |
| 07/07/2016 | GENS | 3413(A)*# | 46026041 | WEX BANK | BLDG & GRDS VEHICLE FUEL JUNE | 864-000 | 265 | 1,615.50 |
| 07/07/2016 | GENS | 64268*# | 457268600022 6/2016 | DTE ENERGY | COMPLEX HEATING JUNE 2016 | 923-000 | 265 | 38.76 |
| 07/07/2016 | GENS | 64268 | 457268600048 6/2016 | DTE ENERGY | COMPLEX HEATING B&G JUNE | 923-000 | 265 | 15.10 |
| | | | | CHECK GENS 64268 TOTAL FOR FUND 101: | | | | 53.86 |
| 07/07/2016 | GENS | 64269*# | 2636/3 | FRUIT BASKET FLOWERLAND | LANDSCAPE MATERIAL | 931-000 | 265 | 430.42 |
| 07/07/2016 | GENS | 64269 | 2640/3 | FRUIT BASKET FLOWERLAND | COMPLEX MAINTENANCE- LANDSCAPE MATEF | 931-000 | 265 | 349.86 |
| | | | | CHECK GENS 64269 TOTAL FOR FUND 101: | | | | 780.28 |
| 07/14/2016 | GENS | 3415(A)*# | 81783 | ENVIRO-CLEAN | CLEANING TOWNSHIP HALL JUNE | 802-200 | 265 | 462.00 |
| 07/14/2016 | GENS | 3418(A)*# | 274388 | NAPA AUTO PARTS | BLDG & GRDS VEHICLE MAINT OIL FILTERS | 863-000 | 265 | 44.07 |
| 07/14/2016 | GENS | 3418(A) | 274319 | NAPA AUTO PARTS | BLDG & GRDS VEH MAINT EVOLUTION BLADES | 863-000 | 265 | 17.99 |
| | | | | CHECK GENS 3418(A) TOTAL FOR FUND 101: | | | | 62.06 |
| 07/14/2016 | GENS | 3419(A)*# | 194926 | KINGSLAND'S ACE HARDWARE | BLDG & GRDS VEHICLE MAINT SMALL TOOLS | 863-000 | 265 | 111.27 |
| 07/14/2016 | GENS | 64297*# | 301-02736 6/2016 | CINTAS CORP #301 | 2016 RUG CLEANING SERVICE COMPLEX/BLDG | 931-000 | 265 | 72.86 |
| 07/14/2016 | GENS | 64297 | 301-02736 6/2016 | CINTAS CORP #301 | 2016 RUG CLEANING SERVICE BLDG | 931-000 | 265 | 49.55 |
| | | | | CHECK GENS 64297 TOTAL FOR FUND 101: | | | | 122.41 |
| 07/14/2016 | GENS | 64298*# | 01720517386011 7/16 | COMCAST | COMPLEX PHONES CABLE/INTERNET JULY | 924-000 | 265 | 206.97 |

| Check Date | Bank | Check # | Invoice | Payee | Description | Account | Dept | Amount |
|---|---|---|---|---|---|---|---|---|
| 07/14/2016 | GENS | 64311*# | 59497887 | PAETEC | COMPLEX PHONES ADMIN | 924-000 | 265 | 126.00 |
| 07/14/2016 | GENS | 64311 | 59497887 | PAETEC | COMPLEX PHONES B&G | 924-000 | 265 | 50.35 |
| | | | | CHECK GENS 64311 TOTAL FOR FUND 101: | | | | 176.35 |
| 07/14/2016 | GENS | 64322*# | 9767976851 | VERIZON WIRELESS | BLDG AND GROUNDS CELL PHONES TABLETS JI | 924-100 | 265 | 16.03 |
| 07/14/2016 | GENS | 64322 | 9767790662 | VERIZON WIRELESS | BLDG AND GROUNDS CELL PHONES JULY | 924-100 | 265 | 132.44 |
| | | | | CHECK GENS 64322 TOTAL FOR FUND 101: | | | | 148.47 |
| 07/21/2016 | GENS | 64326 | 2013134 | B & B TRUCK EQUIPMENT INC | BLDG & GRDS VEHICLE MAINTENANCE BELT | 863-000 | 265 | 66.95 |
| 07/21/2016 | GENS | 64337 | 93933 | FOX FORD MAZDA | BLDG & GRDS VEHICLE MAINT LENS TRUCK 3 | 863-000 | 265 | 176.12 |
| 07/21/2016 | GENS | 64349# | 465147 | MINER SUPPLY COMPANY | CLEANING SUPPLIES/PAPER PRODUCTS COMP | 931-000 | 265 | 152.32 |
| 07/28/2016 | GENS | 3441(A) | 193022 | QUALITY AIR | REAPIRED SPADE CONNECTOR & LABOR | 931-000 | 265 | 227.06 |
| 07/28/2016 | GENS | 64369 | 669570847 6/17-7/16 | AT&T | COMPLEX PHONES POTS LINES | 924-000 | 265 | 191.72 |
| 07/28/2016 | GENS | 64373*# | 44580467 | COMCAST | COMPLEX PHONES B&G | 924-000 | 265 | 28.51 |
| 07/28/2016 | GENS | 64373 | 44580467 | COMCAST | COMPLEX PHONES | 924-000 | 265 | 149.55 |
| | | | | CHECK GENS 64373 TOTAL FOR FUND 101: | | | | 178.06 |
| 07/28/2016 | GENS | 64376*# | 279511 | FIRST BANKCARD | BLDG & GRDS VEHICLE FUEL | 864-000 | 265 | 61.00 |
| 07/28/2016 | GENS | 64377 | FOCS193745 | FOX FORD MAZDA | F7TZ-6675-BBB | 863-000 | 265 | 240.66 |
| 07/28/2016 | GENS | 64377 | FOCS193745 | FOX FORD MAZDA | F7TZ-6626-AAA | 863-000 | 265 | 6.10 |
| 07/28/2016 | GENS | 64377 | FOCS193745 | FOX FORD MAZDA | TA-31 | 863-000 | 265 | 17.38 |
| 07/28/2016 | GENS | 64377 | FOCS193745 | FOX FORD MAZDA | LABOR | 863-000 | 265 | 1,606.80 |
| 07/28/2016 | GENS | 64377 | FOCS193745 | FOX FORD MAZDA | F4TZ-6701-A | 863-000 | 265 | 58.04 |
| 07/28/2016 | GENS | 64377 | FOCS193745 | FOX FORD MAZDA | SHOP SUPPLIES | 863-000 | 265 | 20.95 |
| 07/28/2016 | GENS | 64377 | FOCS193745 | FOX FORD MAZDA | F81Z-6754-AA | 863-000 | 265 | 45.87 |
| 07/28/2016 | GENS | 64377 | FOCS193745 | FOX FORD MAZDA | F6TZ-6375-AAA | 863-000 | 265 | 158.40 |
| | | | | CHECK GENS 64377 TOTAL FOR FUND 101: | | | | 2,154.20 |
| 07/28/2016 | GENS | 64386*# | 59579292 | PAETEC | COMPLEX PHONES ADMIN | 924-000 | 265 | 132.07 |
| 07/28/2016 | GENS | 64386 | 59579292 | PAETEC | COMPLEX PHONES B&G | 924-000 | 265 | 52.70 |
| | | | | CHECK GENS 64386 TOTAL FOR FUND 101: | | | | 184.77 |
| | | | | | Total for department 265: | | | 17,498.24 |
| Department: 276 CEMETERY | | | | | | | | |
| 07/07/2016 | GENS | 3404(A)*# | JUNE 2016 | CONSUMERS ENERGY | 100012957591 7200 30TH ST SE JUNE | 921-000 | 276 | 29.59 |
| 07/07/2016 | GENS | 3404(A) | JUNE 2016 | CONSUMERS ENERGY | 100012548051 5601 WHITNEYVILLE AVE | 921-000 | 276 | 24.38 |
| | | | | CHECK GENS 3404(A) TOTAL FOR FUND 101: | | | | 53.97 |
| | | | | | Total for department 276: | | | 53.97 |
| Department: 295 ADMINISTRATIVE | | | | | | | | |
| 07/07/2016 | GENS | 3406(A)*# | 352215 | FISHBECK THOMPSON CARR & HUBER | ENGINEERING COSTS 30TH CEMETERY STUDY | 821-000 | 295 | 360.00 |
| 07/07/2016 | GENS | 3409(A) | 3300716417 | PITNEY BOWES GLOBAL | 2016 POSTAGE MACHINE LEASE PAYMENT | 941-000 | 295 | 675.00 |
| 07/07/2016 | GENS | 64266 | 615700005745 | CAPITAL ONE COMMERICAL | OTHER EXP- PLAYGROUND COMMUITY BUILD | 787-000 | 295 | 131.31 |
| 07/07/2016 | GENS | 64277 | 253611 | KENT COMMUNICATIONS INC. | PRINTING AND MAILING OF THE TAX BILLS | 814-000 | 295 | 1,964.30 |
| 07/14/2016 | GENS | 3416(A)*# | 417252 | FIRST CHOICE COFFEE SERVICE | COFFEE SERVICE FOR TWP. HALL | 787-000 | 295 | 177.82 |
| 07/14/2016 | GENS | 3417(A)*# | 353796 | FISHBECK THOMPSON CARR & HUBER | ENGINEERING COSTS SITE PLANS JUNE | 821-000 | 295 | 741.10 |
| 07/14/2016 | GENS | 3417(A) | 353797 | FISHBECK THOMPSON CARR & HUBER | ENGINEERING COSTS 2015 REC PARK IMPROV | 821-000 | 295 | 270.00 |
| | | | | CHECK GENS 3417(A) TOTAL FOR FUND 101: | | | | 1,011.10 |

| Check Date | Bank | Check # | Invoice | Payee | Description | Account | Dept | Amount |
|---|---|---|---|---|---|---|---|---|
| 07/14/2016 | GENS | 3421(A) | 52089 | MUNICIPAL WEB SERVICES | WEBSITE HOSTING | 815-000 | 295 | 130.00 |
| 07/14/2016 | GENS | 64292*# | 48967 | CASCADE PRINTING & GRAPHICS | FOURTH OF JULY SPONSOR SIGNS | 881-000 | 295 | 123.00 |
| 07/14/2016 | GENS | 64304 | 01-092256-05 | HAVIT SUPPLIES | FOURTH OF JULY- DUNK TANK | 881-000 | 295 | 160.00 |
| 07/14/2016 | GENS | 64314*# | POSTAGE 7/14/2016 | RESERVE ACCOUNT | POSTAGE - GENERAL | 730-000 | 295 | 2,700.00 |
| 07/14/2016 | GENS | 64317*# | 498367-0 | SUPPLYGEEKS.BIZ | GENERAL FUND OFFICE SUPPLIES | 727-000 | 295 | 179.46 |
| 07/14/2016 | GENS | 64319 | 978187 | VARNUM | LEGAL FEES - TAX JUNE | 826-000 | 295 | 1,365.00 |
| 07/14/2016 | GENS | 64319 | 978185 | VARNUM | LEGAL FEES GENERAL JUNE | 826-000 | 295 | 273.00 |
| 07/14/2016 | GENS | 64319 | 978186 | VARNUM | LEGAL FEES DRIVEWAY SPACING | 826-000 | 295 | 145.60 |
| | | | | CHECK GENS 64319 TOTAL FOR FUND 101: | | | | 1,783.60 |
| 07/14/2016 | GENS | 64322*# | 9767976851 | VERIZON WIRELESS | CELL PHONES/DATA TABLETS JULY | 924-100 | 295 | 16.03 |
| 07/21/2016 | GENS | 3423(A)*# | 417252-2 | FIRST CHOICE COFFEE SERVICE | COFFEE SERVICE FOR TWP CORRECTION 41725 | 787-000 | 295 | 4.20 |
| 07/21/2016 | GENS | 64325 | 46820 | ASTRO WOOD STAKE INC | FOURTH OF JULY 60" 1X1 HUB 25/BUNDLE | 881-000 | 295 | 83.80 |
| 07/21/2016 | GENS | 64333 | JULY 4TH SUPPLIES | KREIGH DEERING | FOURTH OF JULY DEERING- SUPPLIES | 881-000 | 295 | 16.47 |
| 07/21/2016 | GENS | 64335 | 69409 | ELLIS SALES INC | GOLF CART RENTAL JULY 4 2016 | 881-000 | 295 | 550.00 |
| 07/21/2016 | GENS | 64355 | 328315 | OFFICE MAX | OFFICE SUPPLIES 10 REAM CASE PAPER | 727-000 | 295 | 129.95 |
| 07/21/2016 | GENS | 64356 | PASSPORT 7/19/2016 | MILDRED PINDER | EDUCATION- PINDER PASSPORT TRAINING | 724-000 | 295 | 9.09 |
| 07/21/2016 | GENS | 64363 | 499190-0 | SUPPLYGEEKS.BIZ | GENERAL FUND OFFICE SUPPLIES | 727-000 | 295 | 71.28 |
| 07/21/2016 | GENS | 64363 | C 493229-0 | SUPPLYGEEKS.BIZ | OFFICE SUPPLIES CR INV 493229-0 | 727-000 | 295 | (63.00) |
| | | | | CHECK GENS 64363 TOTAL FOR FUND 101: | | | | 8.28 |
| 07/28/2016 | GENS | 3438(A) | 831331 | APPLIED IMAGING | SERVICE CONTRACTS CANNON COIPIER COPIES | 939-000 | 295 | 96.43 |
| 07/28/2016 | GENS | 64376*# | 570100000 | FIRST BANKCARD | OFFICE SUPPLIES- ADF PAD-SCANNER | 727-000 | 295 | 47.98 |
| 07/28/2016 | GENS | 64376 | KLEINHEKSEL | FIRST BANKCARD | OTHER EXPENSES KLEINHEKSEL FLOWERS | 787-000 | 295 | 62.65 |
| 07/28/2016 | GENS | 64376 | 1042000314 | FIRST BANKCARD | OTHER EXPENSES KITCHEN SUPPLIES | 787-000 | 295 | 12.64 |
| | | | | CHECK GENS 64376 TOTAL FOR FUND 101: | | | | 123.27 |
| 07/28/2016 | GENS | 64387 | 490406 | SHMG OCCUPATIONAL HEALTH | GENERAL FUND PHYSICAL EXAMS HIGGINS | 957-000 | 295 | 103.00 |
| 07/28/2016 | GENS | 64387 | 489765 | SHMG OCCUPATIONAL HEALTH | GENERAL FUND PHYSICAL EXAMS HIGGINS | 957-000 | 295 | 163.00 |
| | | | | CHECK GENS 64387 TOTAL FOR FUND 101: | | | | 266.00 |
| 07/28/2016 | GENS | 64389*# | 499623-0 | SUPPLYGEEKS.BIZ | GENERAL FUND OFFICE SUPPLIES | 727-000 | 295 | 74.30 |
| 07/28/2016 | GENS | 64389 | 499744-0 | SUPPLYGEEKS.BIZ | GENERAL FUND OFFICE SUPPLIES | 727-000 | 295 | 16.01 |
| | | | | CHECK GENS 64389 TOTAL FOR FUND 101: | | | | 90.31 |
| | | | | | Total for department 295: | | | 10,789.42 |
| Department: 445 DRAIN | | | | | | | | |
| 07/07/2016 | GENS | 3406(A)*# | 351439 | FISHBECK THOMPSON CARR & HUBER | STORM WATER/SAW GRANT CONTR SERVICE | 818-010 | 445 | 2,735.00 |
| 07/07/2016 | GENS | 3406(A) | 352220 | FISHBECK THOMPSON CARR & HUBER | DRAIN ENGINEERING STORMWATER ORDINAN | 821-000 | 445 | 82.50 |
| | | | | CHECK GENS 3406(A) TOTAL FOR FUND 101: | | | | 2,817.50 |
| 07/14/2016 | GENS | 3417(A)*# | 353803 | FISHBECK THOMPSON CARR & HUBER | DRAIN ENGINEERING WATER MAIN CASC/SPA | 821-000 | 445 | 58.50 |
| 07/14/2016 | GENS | 3417(A) | 353803 | FISHBECK THOMPSON CARR & HUBER | DRAIN ENGINEERING STORMWATER ORD | 821-000 | 445 | 1,661.00 |
| | | | | CHECK GENS 3417(A) TOTAL FOR FUND 101: | | | | 1,719.50 |
| | | | | | Total for department 445: | | | 4,537.00 |
| Department: 446 ROADS | | | | | | | | |

| Check Date | Bank | Check # | Invoice | Payee | Description | Account | Dept | Amount |
|---|---|---|---|---|---|---|---|---|
| 07/07/2016 | GENS | 3406(A)*# | 351439 | FISHBECK THOMPSON CARR & HUBER | DUST CONTROL LAYER - SAW | 818-000 | 446 | 304.00 |
| 07/07/2016 | GENS | 64276 | 27428 | KENT COUNTY ROAD COMMISSION | ROAD OVERLAYS MAY 2016 | 821-000 | 446 | 102.86 |
| 07/28/2016 | GENS | 64382 | 27460 | KENT COUNTY ROAD COMMISSION | ROAD OVERLAYS KILMER DR/GLADYS DR | 821-000 | 446 | 112.92 |
| 07/28/2016 | GENS | 64382 | 27462 | KENT COUNTY ROAD COMMISSION | ROAD OVERLAYS ADA & CASCADE TWP-HALL S | 821-000 | 446 | 23,681.51 |
| | | | | CHECK GENS 64382 TOTAL FOR FUND 101: | | | | 23,794.43 |
| | | | | | Total for department 446: | | | 24,201.29 |
| Department: 447 YARD WASTE REMOVAL | | | | | | | | |
| 07/21/2016 | GENS | 64324 | 166 | ADA TOWNSHIP | CLEAN UP DAY MAY 7, 2016 | 820-000 | 447 | 16,639.76 |
| | | | | | Total for department 447: | | | 16,639.76 |
| Department: 448 STREET LIGHTS | | | | | | | | |
| 07/07/2016 | GENS | 3404(A)*# | JUNE 2016 | CONSUMERS ENERGY | 100011965082 2870 JACK SMITH AVE SE | 926-000 | 448 | 92.52 |
| 07/07/2016 | GENS | 64271 | 16000338 | GR CITY TREASURER | TRAFFIC SIGNALS MAY 2016 | 927-100 | 448 | 147.12 |
| 07/14/2016 | GENS | 64296 | 100000373306 6/2016 | CONSUMERS ENERGY | STREETLIGHTING JUNE 2016 | 926-000 | 448 | 8,562.47 |
| 07/14/2016 | GENS | 64302 | 17000001 | GRAND RAPIDS CITY TREASURER | TRAFFIC SIGNALS JUNE 2016 | 927-100 | 448 | 64.14 |
| 07/21/2016 | GENS | 64344 | 409894 | KENT COUNTY ROAD COMMISSION | TRAFFIC SIGNALS JUNE | 927-100 | 448 | 9.40 |
| | | | | | Total for department 448: | | | 8,875.65 |
| Department: 652 TRANSPORTATION | | | | | | | | |
| 07/07/2016 | GENS | 64275 | 087089 | INTERURBAN TRANSIT PARTNERSHIP | TRANSPORTATION SERVICE-GO BUS TICKETS | 859-100 | 652 | 3,500.00 |
| 07/28/2016 | GENS | 64380*# | 087250 | INTERURBAN TRANSIT PARTNERSHIP | LINEHAUL SERVICE - 36TH STREET JUNE | 861-000 | 652 | 2,386.71 |
| 07/28/2016 | GENS | 64380 | 087250-1 | INTERURBAN TRANSIT PARTNERSHIP | 28TH STREET LINEHAUL SERVICE MAY | 861-100 | 652 | 23,975.70 |
| | | | | CHECK GENS 64380 TOTAL FOR FUND 101: | | | | 26,362.41 |
| | | | | | Total for department 652: | | | 29,862.41 |
| Department: 721 PLANNING | | | | | | | | |
| 07/07/2016 | GENS | 3405(A) | 201417-04 | CORNELISSE DESIGN ASSOC INC | DESIGN FOR SIGN | 967-000 | 721 | 1,772.14 |
| 07/14/2016 | GENS | 64299 | REIMB-SHADOW BOX | FAST, STEPHANIE | COMM DEV SUPPLIES- FAST SHADOW BOX | 727-000 | 721 | 48.63 |
| 07/14/2016 | GENS | 64299 | MILG 6/1-6/29 | FAST, STEPHANIE | PLANNING MILEAGE- FAST 205 MILES | 860-000 | 721 | 110.70 |
| | | | | CHECK GENS 64299 TOTAL FOR FUND 101: | | | | 159.33 |
| 07/14/2016 | GENS | 64308 | 1000015084 6/2016 | MLIVE MEDIA GROUP | PRINTING & PUBLISHING JUNE 2016 ADV | 900-000 | 721 | 840.00 |
| 07/14/2016 | GENS | 64322*# | 9767976851 | VERIZON WIRELESS | COMM DEV CELL/DATA JULY | 925-000 | 721 | 32.07 |
| 07/14/2016 | GENS | 64322 | 9767790662 | VERIZON WIRELESS | COMM DEV CELL/JULY | 925-000 | 721 | 101.28 |
| | | | | CHECK GENS 64322 TOTAL FOR FUND 101: | | | | 133.35 |
| 07/28/2016 | GENS | 64388 | 5170118 | SNELLING STAFFING SERVICES | PLANING MINUTES - MAALOWSKI | 787-000 | 721 | 134.85 |
| | | | | | Total for department 721: | | | 3,039.67 |
| Department: 756 PARKS | | | | | | | | |
| 07/07/2016 | GENS | 3404(A)*# | JUNE 2016 | CONSUMERS ENERGY | 100012592265 2900 THORNAPPLE RIV DR | 921-000 | 756 | 160.32 |
| 07/07/2016 | GENS | 3404(A) | JUNE 2016 | CONSUMERS ENERGY | 100014570889 3820 THORNAPPLE RIV DR | 921-000 | 756 | 47.12 |
| 07/07/2016 | GENS | 3404(A) | JUNE 2016 | CONSUMERS ENERGY | 100014570673 3804 THORNAPPLE RIV DR | 921-000 | 756 | 205.20 |
| | | | | CHECK GENS 3404(A) TOTAL FOR FUND 101: | | | | 412.64 |
| 07/07/2016 | GENS | 3408(A)*# | 194527 | KINGSLAND'S ACE HARDWARE | PARK MAINTENANCE- SUPPLIES | 935-000 | 756 | 23.76 |
| 07/07/2016 | GENS | 3408(A) | 164619 | KINGSLAND'S ACE HARDWARE | PARK MAINTENANCE CAUTION TAPE | 935-000 | 756 | 17.98 |
| 07/07/2016 | GENS | 3408(A) | 194641 | KINGSLAND'S ACE HARDWARE | PARK MAINTENANCE POST & TIES | 935-000 | 756 | 32.35 |
| 07/07/2016 | GENS | 3408(A) | 194661 | KINGSLAND'S ACE HARDWARE | PARK MAINTENANCE NUTS & BOLTS | 935-000 | 756 | 12.92 |

| Check Date | Bank | Check # | Invoice | Payee | Description | Account | Dept | Amount |
|---|---|---|---|---|---|---|---|---|
| 07/07/2016 | GENS | 3408(A) | 194692 | KINGSLAND'S ACE HARDWARE | PARK MAINTENANCE POLLEN MASKS | 935-000 | 756 | 4.04 |
| 07/07/2016 | GENS | 3408(A) | 1 | KINGSLAND'S ACE HARDWARE | PARK MAINTENANCE EARPLUGS | 935-000 | 756 | 15.29 |
| 07/07/2016 | GENS | 3408(A) | 194906 | KINGSLAND'S ACE HARDWARE | PARK MAINTENANCE POLY CONNECTORS | 935-000 | 756 | 3.59 |
| 07/07/2016 | GENS | 3408(A) | 194941 | KINGSLAND'S ACE HARDWARE | PARK MAINTENANCE POLY CONNECTORS | 935-000 | 756 | 7.18 |
| | | | | CHECK GENS 3408(A) TOTAL FOR FUND 101: | | | | 117.11 |
| 07/07/2016 | GENS | 3410(A)*# | 193233 | QUALITY AIR | MONTHLY MAINTENANCE- PARKS | 935-000 | 756 | 13.90 |
| 07/07/2016 | GENS | 3412(A)*# | CLIP41966 | THORNAPPLE RIVER NURSERY, INC. | TASSELL PARK WEED & FEED APPL# 2 | 935-000 | 756 | 200.00 |
| 07/07/2016 | GENS | 64269*# | 2648/3 | FRUIT BASKET FLOWERLAND | PARK MAINTENANCE FLOWERS & PLANTS | 935-000 | 756 | 157.66 |
| 07/07/2016 | GENS | 64269 | 2666/3 | FRUIT BASKET FLOWERLAND | FLOWERS - TASSELL PARK | 935-000 | 756 | 291.99 |
| | | | | CHECK GENS 64269 TOTAL FOR FUND 101: | | | | 449.65 |
| 07/14/2016 | GENS | 3419(A)*# | 194949 | KINGSLAND'S ACE HARDWARE | PARK MAINTENANCE HOSE & PARTS | 935-000 | 756 | 55.75 |
| 07/14/2016 | GENS | 64301 | 2672/3 | FRUIT BASKET FLOWERLAND | PARK MAINTENANCE FLOWERS | 935-000 | 756 | 161.24 |
| 07/14/2016 | GENS | 64311*# | 59497887 | PAETEC | PARK PHONES | 924-000 | 756 | 37.76 |
| 07/14/2016 | GENS | 64315 | 76451188 | SITE ONE LANSCAPE CO | PARK MAINTENANCE LANSCAPE SUPPLIES | 935-000 | 756 | ** VOIDED ** |
| Void Reason: VENDOR NAME SPELLING | | | | | | | | |
| 07/21/2016 | GENS | 3426(A) | 94283 | KERKSTRA PORTABLE RESTROOM SERV | PORTABLE TOILETS FOR PEACE AND MCGRAW | 935-000 | 756 | 110.00 |
| 07/21/2016 | GENS | 64343 | EH063016-3774 | KENT COUNTY - HEALTH DEPT | PARK MAINTENANCE WATER TESTING | 935-000 | 756 | 104.00 |
| 07/21/2016 | GENS | 64349# | 464849 | MINER SUPPLY COMPANY | PARK OPERATING SUPPLIES RESTROOM SUPPL | 756-000 | 756 | 362.08 |
| 07/21/2016 | GENS | 64359*# | 76451188 | SITEONE LANDSCAPE SUPPLY LLC | PARK MAINT LANDSCAPE SUPPLIES | 935-000 | 756 | 40.91 |
| 07/28/2016 | GENS | 64373*# | 44580467 | COMCAST | PARK PHONES | 924-000 | 756 | 21.36 |
| 07/28/2016 | GENS | 64376*# | 00216303597553 | FIRST BANKCARD | PARK OPERATING SUPPLIES- RIBBON FOR REC | 756-000 | 756 | 10.59 |
| 07/28/2016 | GENS | 64381 | EH042916-3774 | KENT COUNTY - HEALTH DEPT | PARK MAINTENANCE WATER TESTING 3810 TH | 935-000 | 756 | 80.00 |
| 07/28/2016 | GENS | 64384 | 465649 | MINER SUPPLY COMPANY | CLEANING SUPPLIES/PARK MAINTENANCE | 935-000 | 756 | 377.70 |
| 07/28/2016 | GENS | 64386*# | 59579292 | PAETEC | PARK PHONES | 924-000 | 756 | 39.52 |
| 07/28/2016 | GENS | 64390 | REFUND BOOT SCRUBBER | VANDERMEULEN, CHARLES | PARK MAINT- VANDERJEULEN REIMB BOOT SC | 935-000 | 756 | 55.98 |
| | | | | | Total for department 756: | | | 2,650.19 |
| Department: 803 HISTORICAL | | | | | | | | |
| 07/07/2016 | GENS | 3404(A)*# | JUNE 2016 | CONSUMERS ENERGY | 100012592398 2839 THORNAPPLE RIV DR | 921-000 | 803 | 43.29 |
| 07/07/2016 | GENS | 3410(A)*# | 193233 | QUALITY AIR | MONTHLY MAINTENANCE- MUSEUM | 961-000 | 803 | 27.81 |
| 07/07/2016 | GENS | 64268*# | 457268600030 6/2016 | DTE ENERGY | MUSEUM - HEATING/UTILITY JUNE | 923-000 | 803 | 34.72 |
| 07/28/2016 | GENS | 3442(A) | 9400 | THORNAPPLE RIVER NURSERY, INC. | MUSEUM MAINTENANCE WOOD CHIPS | 961-000 | 803 | 13.00 |
| | | | | | Total for department 803: | | | 118.82 |
| Department: 850 BENEFITS/INSURANCE | | | | | | | | |
| 07/21/2016 | GENS | 64334* | RIS0001169370 | DELTA DENTAL | DENTAL INSURANCE BENEFITS AUG | 721-000 | 850 | 1,093.76 |

| Check Date | Bank | Check # | Invoice | Payee | Description | Account | Dept | Amount |
|---|---|---|---|---|---|---|---|---|
| 07/21/2016 | GENS | 64334 | RIS0001169370 | DELTA DENTAL | MI CLAIMS TAX - DENTAL AUG | 721-200 | 850 | 6.67 |
| | | | | CHECK GENS 64334 TOTAL FOR FUND 101: | | | | 1,100.43 |
| 07/28/2016 | GENS | 64375* | 2499778 | FIDELITY SECURITY LIFE INS | VISION INSURANCE BENEFITS JULY | 718-000 | 850 | 199.07 |
| 07/28/2016 | GENS | 64385*# | 000549671815 | MUTUAL OF OMAHA INSURANCE | LIFE & DIS INSURANCE BENEFITS ADD AUG | 720-000 | 850 | 23.45 |
| 07/28/2016 | GENS | 64385 | 000549671815 | MUTUAL OF OMAHA INSURANCE | LIFE & DIS INSURANCE BENEFITS LIF AUG | 720-000 | 850 | 154.25 |
| 07/28/2016 | GENS | 64385 | 000549671815 | MUTUAL OF OMAHA INSURANCE | LIFE & DIS INSURANCE BENEFITS LTD AUG | 720-000 | 850 | 377.41 |
| | | | | CHECK GENS 64385 TOTAL FOR FUND 101: | | | | 555.11 |
| | | | | | Total for department 850: | | | 1,854.61 |
| Department: 901 CAPITAL OUTLAY | | | | | | | | |
| 07/07/2016 | GENS | 64270 | MG16086 | GAMETIME | PLAYGROUND | 974-000 | 901 | 280,000.00 |
| 07/14/2016 | GENS | 64291 | TORO 455D | BOONENBERG, BRET | MOWER 455D GROUNDMASTER | 970-000 | 901 | 7,500.00 |
| 07/14/2016 | GENS | 64300 | APPL# 3 | FLIER BROTHERS INDEPENDENT | CAPITAL OUTLAY - LANDIMP REC PARK APPL 3 | 974-000 | 901 | 32,806.00 |
| 07/21/2016 | GENS | 64345 | FORECLOSURE | KENT COUNTY TREASURER | CAPITAL OUT- LANDIMP 3500 THORNAPPLE RI | 974-000 | 901 | 1,715.29 |
| 07/28/2016 | GENS | 3439(A) | 354065 | FISHBECK THOMPSON CARR & HUBER | CAPITAL OUT - LANDIMP 3500 THORNAPPLE E | 974-000 | 901 | 2,200.00 |
| | | | | | Total for department 901: | | | 324,221.29 |
| Department: 965 TRANSFERS OUT | | | | | | | | |
| 07/14/2016 | GENS | 64294 | JULY 2016 G ALLOC | CASCADE CHARTER TOWNSHIP | TRANSFER TO FIRE FUND JULY | 999-006 | 965 | 33,333.33 |
| | | | | | Total for department 965: | | | 33,333.33 |
| | | | | | Total for fund 101 GENERAL FUND | | | 480,100.12 |
| FUND 151 - CEMETERY TRUST FUND | | | | | | | | |
| 07/07/2016 | GENS | 3408(A)*# | 194870 | KINGSLAND'S ACE HARDWARE | CASH-CEMETERY TRUST FUND WORK GLOVES | 001-000 | 000 | 47.68 |
| | | | | | Total for department 000: | | | 47.68 |
| | | | | | Total for fund 151 CEMETERY TRUST FUND | | | 47.68 |
| FUND 206 - FIRE FUND | | | | | | | | |
| 07/07/2016 | GENS | 3404(A)*# | JUNE 2016 | CONSUMERS ENERGY | 100012762959 2990 BUTTRICK AVE SE | 921-002 | 336 | 609.24 |
| 07/07/2016 | GENS | 3407(A) | 1618201 | FUEL MANAGEMENT SYSTEM | FIRE FUELS DISCOUNT | 745-000 | 336 | (15.32) |
| 07/07/2016 | GENS | 3407(A) | 1618201 | FUEL MANAGEMENT SYSTEM | FIRE FUELS | 745-000 | 336 | 400.84 |
| | | | | CHECK GENS 3407(A) TOTAL FOR FUND 206: | | | | 385.52 |
| 07/07/2016 | GENS | 3408(A)*# | 194610 | KINGSLAND'S ACE HARDWARE | FIRE STA MAINT SPRAY PAINT & KITCHEN SUP | 936-000 | 336 | 35.22 |
| 07/07/2016 | GENS | 3408(A) | 194838 | KINGSLAND'S ACE HARDWARE | FIRE STATION MAINT LP TANK FILL | 936-000 | 336 | 13.58 |
| 07/07/2016 | GENS | 3408(A) | 194840 | KINGSLAND'S ACE HARDWARE | FIRE STA MAINT LP TANK FILL & KITCHEN | 936-000 | 336 | 23.56 |
| 07/07/2016 | GENS | 3408(A) | 194953 | KINGSLAND'S ACE HARDWARE | FIRE STATION MAINT PAINTING SUPPLIES | 936-000 | 336 | 26.24 |
| 07/07/2016 | GENS | 3408(A) | 194839 | KINGSLAND'S ACE HARDWARE | FIRE STATION MAINT CR ON INV 194383 | 936-000 | 336 | (13.58) |
| 07/07/2016 | GENS | 3408(A) | 194603 | KINGSLAND'S ACE HARDWARE | FIRE STA MAINT/BUTTRICK KITCHEN SUPPLIES | 936-002 | 336 | 25.96 |
| 07/07/2016 | GENS | 3408(A) | 194918 | KINGSLAND'S ACE HARDWARE | FIRE EQUIPMENT MAINT PREMIX GAS/OIL | 938-000 | 336 | 21.57 |
| | | | | CHECK GENS 3408(A) TOTAL FOR FUND 206: | | | | 132.55 |
| 07/07/2016 | GENS | 3410(A)*# | 193233 | QUALITY AIR | MONTLY MAINTENANCE- FIRE | 936-000 | 336 | 139.08 |
| 07/07/2016 | GENS | 3410(A) | 193233 | QUALITY AIR | MONTHLY MAINTENANCE- FIRE BUTTRICK | 936-002 | 336 | 101.94 |
| | | | | CHECK GENS 3410(A) TOTAL FOR FUND 206: | | | | 241.02 |
| 07/07/2016 | GENS | 3411(A)*# | 20148544 | I T RIGHT | ANNUAL SERVICE CONTRACT - FIRE | 932-000 | 336 | 2,000.00 |
| 07/07/2016 | GENS | 3412(A)*# | CLIP41711 | THORNAPPLE RIVER NURSERY, INC. | BUTTRICK FIRE STA. WEED & FEED 2/3 #2 | 936-002 | 336 | 107.00 |
| 07/07/2016 | GENS | 3413(A)*# | 46026041 | WEX BANK | FIRE FUELS JUNE | 745-000 | 336 | 450.18 |

CHECK DISBURSEMENT REPORT FOR CASCADE CHARTER TOWNSHIP
CHECK DATE FROM 07/01/2016 - 07/31/2016
**JULY 2016 PAYABLES, PAYROLL, AND TRANSFERS**

| Check Date | Bank | Check # | Invoice | Payee | Description | Account | Dept | Amount |
|---|---|---|---|---|---|---|---|---|
| 07/07/2016 | GENS | 64268*# | 457268600048 6/2016 | DTE ENERGY | FIRE HEATING/BUTTRICK JUNE | 923-002 | 336 | 30.20 |
| 07/07/2016 | GENS | 64279 | AR146091 | KRAFT BUSINESS SYSTEM | FIRE COPIER/LEASE/SERVICE SHARP/MX-M362 | 939-000 | 336 | 54.30 |
| 07/07/2016 | GENS | 64283 | 5003113 | SERVPO SW GRAND RAPIDS #2705 | MOLD REMEDIATION FROM STATION 2 KITCHI | 936-002 | 336 | 4,149.88 |
| 07/07/2016 | GENS | 64284 | EDUCATION REIMB | STEVENSON, TODD ROY | FIRE TUITION STEVENSON FIRE RESCUE | 725-000 | 336 | 840.00 |
| 07/07/2016 | GENS | 64285 | 28256567 | VALLEY CITY LINEN INC | FIRE STATION MAINT-RUG & TOWEL CLEANIN | 936-000 | 336 | 39.95 |
| 07/07/2016 | GENS | 64285 | 28261679 | VALLEY CITY LINEN INC | FIRE STATION MAINT-RUG & TOWEL CLEANIN | 936-000 | 336 | 39.95 |
| 07/07/2016 | GENS | 64285 | 28266818 | VALLEY CITY LINEN INC | FIRE STATION MAINT-RUG & TOWEL CLEANIN | 936-000 | 336 | 39.95 |
| 07/07/2016 | GENS | 64285 | 28271960 | VALLEY CITY LINEN INC | FIRE STATION MAINT-RUG & TOWEL CLEANIN | 936-000 | 336 | 39.95 |
| | | | | CHECK GENS 64285 TOTAL FOR FUND 206: | | | | 159.80 |
| 07/07/2016 | GENS | 64286 | 9766858785 | VERIZON WIRELESS | FIRE PHONES MOBILE COMPUTER MODEM | 924-000 | 336 | 521.44 |
| 07/07/2016 | GENS | 64288 | 5581287 | WORLDPOINT EC, INC. | FIRE TRAINING AHA BLS PROVIDER MANUAL | 726-000 | 336 | 47.70 |
| 07/14/2016 | GENS | 3416(A)*# | 417251 | FIRST CHOICE COFFEE SERVICE | FIRE OTHER EXPENSES COFFEE SERVICE | 787-000 | 336 | 112.01 |
| 07/14/2016 | GENS | 3418(A)*# | 274356 | NAPA AUTO PARTS | FIRE EQUIP MAINT FILLER NECK HOSE& CLAMI | 938-000 | 336 | 109.95 |
| 07/14/2016 | GENS | 3419(A)*# | 194922 | KINGSLAND'S ACE HARDWARE | FIRE STATION MAINT PAINTING SUPPLIES | 936-000 | 336 | 17.42 |
| 07/14/2016 | GENS | 64297*# | 301-02736 6/2016 | CINTAS CORP #301 | 2016 RUG CLEANING SERVICE FIRE | 936-000 | 336 | 119.65 |
| 07/14/2016 | GENS | 64297 | 301-02736 6/2016 | CINTAS CORP #301 | 2016 RUG CLEANING SERVICE S.C. | 936-000 | 336 | 38.25 |
| | | | | CHECK GENS 64297 TOTAL FOR FUND 206: | | | | 157.90 |
| 07/14/2016 | GENS | 64298*# | 01720517386011 7/16 | COMCAST | FIRE PHONES CABLE JULY | 924-000 | 336 | 119.75 |
| 07/14/2016 | GENS | 64298 | 01720575391010 7/16 | COMCAST | FIRE PHONES/BUTTRICK XFINITY JULY | 924-002 | 336 | 49.03 |
| 07/14/2016 | GENS | 64298 | 01720206159018 7/16 | COMCAST | FIRE PHONES/BUTTRICK INTERNET JULY | 924-002 | 336 | 94.90 |
| | | | | CHECK GENS 64298 TOTAL FOR FUND 206: | | | | 263.68 |
| 07/14/2016 | GENS | 64309 | 45425 | NATIONAL HOSE TESTING SPECIALTIES | ANNUAL LADDER TESTING | 938-000 | 336 | 309.00 |
| 07/14/2016 | GENS | 64310 | 562361 | NYE UNIFORM COMPANY | FIRE UNIFORMS SHORTS FOR JULY 4 | 768-000 | 336 | 112.75 |
| 07/14/2016 | GENS | 64311*# | 59497887 | PAETEC | FIRE PHONES | 924-000 | 336 | 62.94 |
| 07/14/2016 | GENS | 64311 | 59497887 | PAETEC | FIRE PHONES/BUTTRICK | 924-002 | 336 | 37.76 |
| | | | | CHECK GENS 64311 TOTAL FOR FUND 206: | | | | 100.70 |
| 07/14/2016 | GENS | 64312 | PETTY CASH 7/14/2016 | CASH - GENERAL FUND | FIRE OTHER EXP FIRE DEPT INTERVIEWS | 787-000 | 336 | 68.78 |
| 07/14/2016 | GENS | 64314*# | POSTAGE 7/14/2016 | RESERVE ACCOUNT | FIRE POSTAGE & MACHINE LEASE | 941-000 | 336 | 150.00 |
| 07/14/2016 | GENS | 64318 | 117398 | TIME EMERGENCY EQUIPMENT | FIRE EQUIPMENT MAINT STRAP FOR HOSES | 938-000 | 336 | 195.13 |
| 07/14/2016 | GENS | 64320 | CLOTH ALLOW 7/12 | DOUG VENEMA | FIRE UNIFORMS VENEMA - WORK BOOTS | 768-000 | 336 | 60.00 |
| 07/14/2016 | GENS | 64322*# | 9767987844 | VERIZON WIRELESS | FIRE PHONES MODEMS JULY | 924-000 | 336 | 118.60 |
| 07/14/2016 | GENS | 64322 | 9767976851 | VERIZON WIRELESS | FIRE PHONES TABLETS JULY | 924-000 | 336 | 16.03 |
| 07/14/2016 | GENS | 64322 | 9767790662 | VERIZON WIRELESS | FIRE PHONES JULY | 924-000 | 336 | 111.28 |
| | | | | CHECK GENS 64322 TOTAL FOR FUND 206: | | | | 245.91 |
| 07/21/2016 | GENS | 3423(A)*# | 417251-2 | FIRST CHOICE COFFEE SERVICE | FIRE OTHER EXPENSES CORRECTION INV 41725 | 787-000 | 336 | 38.50 |
| 07/21/2016 | GENS | 3423(A) | 422444 | FIRST CHOICE COFFEE SERVICE | FIRE OTHER EXPENSES COFFEE | 787-000 | 336 | 53.50 |

| Check Date | Bank | Check # | Invoice | Payee | Description | Account | Dept | Amount |
|---|---|---|---|---|---|---|---|---|
| | | | | CHECK GENS 3423(A) TOTAL FOR FUND 206: | | | | 92.00 |
| 07/21/2016 | GENS | 3424(A) | 1619701 | FUEL MANAGEMENT SYSTEM | FIRE FUELS | 745-000 | 336 | 246.91 |
| 07/21/2016 | GENS | 3424(A) | 1619701 | FUEL MANAGEMENT SYSTEM | FIRE FUELS DISCOUNT | 745-000 | 336 | (10.20) |
| | | | | CHECK GENS 3424(A) TOTAL FOR FUND 206: | | | | 236.71 |
| 07/21/2016 | GENS | 3427(A) | 123303 | RAPID FIRE PROTECTION INC | FIRE EQUIP MAINT DRY CHEMICAL EXTINGUISI | 938-000 | 336 | 50.00 |
| 07/21/2016 | GENS | 64330 | 46304 | CASCADE AUTOMOTIVE SERVICE | REPAIRS OIL CHNAGE, AIR BAG, CHARGING SY | 938-000 | 336 | 555.16 |
| 07/21/2016 | GENS | 64340 | 57020 | INTERNATIONAL SOCIETY OF | FIRE MEMBERSHIP AND DUES SIGG ISFSI | 723-000 | 336 | 125.00 |
| 07/21/2016 | GENS | 64341 | 456838010 | JEMS | FIRE PUBLICATIONS JEMS | 901-000 | 336 | 16.00 |
| 07/21/2016 | GENS | 64342 | 54772 | KENT COUNTY EMERGENCY | QUARTERLY ASSESSMENT JULY 1 SEPT 30 | 802-000 | 336 | 297.18 |
| 07/21/2016 | GENS | 64352 | 45485 | NATIONAL HOSE TESTING SPECIALTIES | ANNUAL FIRE HOSE TESTING | 938-000 | 336 | 2,350.00 |
| 07/21/2016 | GENS | 64352 | 45485 | NATIONAL HOSE TESTING SPECIALTIES | ANNUAL FIRE HOSE TESTING | 938-000 | 336 | 107.00 |
| | | | | CHECK GENS 64352 TOTAL FOR FUND 206: | | | | 2,457.00 |
| 07/21/2016 | GENS | 64353 | 11724191-00 | NICHOLS PAPER & SUPPLY CO | SUPPLIES FOR STATION 1 | 936-000 | 336 | 499.84 |
| 07/21/2016 | GENS | 64353 | 11724189-00 | NICHOLS PAPER & SUPPLY CO | SUPPLIES FOR STATION 2 | 936-002 | 336 | 546.43 |
| | | | | CHECK GENS 64353 TOTAL FOR FUND 206: | | | | 1,046.27 |
| 07/21/2016 | GENS | 64365 | 117445 | TIME EMERGENCY EQUIPMENT | HIGH RISE HOSE PACK BAG | 938-000 | 336 | 248.77 |
| 07/28/2016 | GENS | 3437(A) | 159183-1 | 5 ALARM | SHIPPING ON INV 159183-1 | 959-000 | 336 | 12.03 |
| 07/28/2016 | GENS | 3437(A) | 159183-1 | 5 ALARM | PPE HOODS | 959-000 | 336 | 195.00 |
| | | | | CHECK GENS 3437(A) TOTAL FOR FUND 206: | | | | 207.03 |
| 07/28/2016 | GENS | 64373*# | 44580467 | COMCAST | FIRE PHONES | 924-000 | 336 | 56.97 |
| 07/28/2016 | GENS | 64373 | 44580467 | COMCAST | FIRE PHONES/BUTTRICK | 924-002 | 336 | 21.36 |
| | | | | CHECK GENS 64373 TOTAL FOR FUND 206: | | | | 78.33 |
| 07/28/2016 | GENS | 64376*# | 112013188065355450 | FIRST BANKCARD | FIRE EQUIPMENT MAINT- USB GPS RECEIVER | 938-000 | 336 | 117.04 |
| 07/28/2016 | GENS | 64386*# | 59579292 | PAETEC | FIRE PHONES | 924-000 | 336 | 65.92 |
| 07/28/2016 | GENS | 64386 | 59579292 | PAETEC | FIRE PHONES/BUTTRICK | 924-002 | 336 | 39.52 |
| | | | | CHECK GENS 64386 TOTAL FOR FUND 206: | | | | 105.44 |
| 07/28/2016 | GENS | 64389*# | 499744-0 | SUPPLYGEEKS.BIZ | FIRE FUND OFFICE SUPPLIES | 727-000 | 336 | 112.59 |
| 07/28/2016 | GENS | 64391 | 9768498566 | VERIZON WIRELESS | FIRE PHONES MOBILE COMPUTER MODEM | 924-000 | 336 | 841.52 |
| | | | | | Total for department 336: | | | 18,218.10 |
| Department: 850 BENEFITS/INSURANCE | | | | | | | | |
| 07/21/2016 | GENS | 64334* | RIS0001169370 | DELTA DENTAL | DENTAL INSURANCE BENEFITS AUG | 721-000 | 850 | 1,834.30 |
| 07/21/2016 | GENS | 64334 | RIS0001169370 | DELTA DENTAL | MI CLAIMS TAX - DENTAL AUG | 721-200 | 850 | 11.19 |
| | | | | CHECK GENS 64334 TOTAL FOR FUND 206: | | | | 1,845.49 |
| 07/28/2016 | GENS | 64375* | 2499778 | FIDELITY SECURITY LIFE INS | VISION INSURANCE BENEFITS JULY | 718-000 | 850 | 194.82 |
| 07/28/2016 | GENS | 64385*# | 000549671815 | MUTUAL OF OMAHA INSURANCE | LIFE & DISABILITY INSURANCE AD&D AUG | 720-000 | 850 | 29.34 |
| 07/28/2016 | GENS | 64385 | 000549671815 | MUTUAL OF OMAHA INSURANCE | LIFE & DISABILITY INSURANCE LTD AUG | 720-000 | 850 | 458.96 |
| 07/28/2016 | GENS | 64385 | 000549671815 | MUTUAL OF OMAHA INSURANCE | LIFE & DIS INSURANCE BENEFITS LIF AUG | 720-000 | 850 | 193.00 |
| | | | | CHECK GENS 64385 TOTAL FOR FUND 206: | | | | 681.30 |
| | | | | | Total for department 850: | | | 2,721.61 |
| Department: 901 CAPITAL OUTLAY | | | | | | | | |

| Check Date | Bank | Check # | Invoice | Payee | Description | Account | Dept | Amount |
|---|---|---|---|---|---|---|---|---|
| 07/07/2016 | GENS | 64264 | 125000025-1 | CHROUCH COMMUNICATIONS INC | MOUNTS, ANTENNAS FOR MOBILE COMPUTEI | 980-000 | 901 | 698.20 |
| 07/28/2016 | GENS | 64383 | 106235 | MARK'S BODY SHOP | EMERGENCY EQUIPMENT INSTALLED BRUSH T | 981-000 | 901 | 4,697.50 |
| | | | | | Total for department 901: | | | 5,395.70 |
| | | | | | Total for fund 206 FIRE FUND | | | 26,335.41 |
| **FUND 207 - POLICE FUND** | | | | | | | | |
| 07/21/2016 | GENS | 3425(A) | 16071400066 | KENT COUNTY TREASURER | SHERIFF PROTECTION- APRIL | 801-000 | 301 | 47,393.97 |
| 07/21/2016 | GENS | 3425(A) | 16071400069 | KENT COUNTY TREASURER | SHERIFF PROTECTION- MAY | 801-000 | 301 | 48,106.19 |
| | | | | CHECK GENS 3425(A) TOTAL FOR FUND 207: | | | | 95,500.16 |
| | | | | | Total for department 301: | | | 95,500.16 |
| | | | | | Total for fund 207 POLICE FUND | | | 95,500.16 |
| **FUND 209 - CCT OPEN SPACE FUND** | | | | | | | | |
| 07/07/2016 | GENS | 3404(A)*# | JUNE 2016 | CONSUMERS ENERGY | 100061096465 6803 BURTON ST SE JUNE | 921-000 | 751 | 22.59 |
| 07/07/2016 | GENS | 3404(A) | JUNE 2016 | CONSUMERS ENERGY | 100041772151 6803 BURTON ST SE JUNE | 921-000 | 751 | 79.62 |
| | | | | CHECK GENS 3404(A) TOTAL FOR FUND 209: | | | | 102.21 |
| 07/07/2016 | GENS | 3410(A)*# | 193233 | QUALITY AIR | MONTHLY MAINTENANCE- BURTON PARK | 935-000 | 751 | 13.90 |
| | | | | | Total for department 751: | | | 116.11 |
| | | | | | Total for fund 209 CCT OPEN SPACE | | | 116.11 |
| **FUND 216 - PATHWAYS FUND** | | | | | | | | |
| 07/07/2016 | GENS | 3408(A)*# | 194852 | KINGSLAND'S ACE HARDWARE | OPERATING SUPPLIES INSECT REPELLENTS | 728-000 | 758 | 48.53 |
| 07/07/2016 | GENS | 3408(A) | 194611 | KINGSLAND'S ACE HARDWARE | MAINT & REPAIR- ROUNDUP | 931-000 | 758 | 200.16 |
| 07/07/2016 | GENS | 3408(A) | 194715 | KINGSLAND'S ACE HARDWARE | MAINT & REPAIR SCRUB SPONGE& PAPER PUI | 931-000 | 758 | 5.11 |
| 07/07/2016 | GENS | 3408(A) | 194812 | KINGSLAND'S ACE HARDWARE | MAINT & REPAIR ROUNDUP | 931-000 | 758 | 99.98 |
| 07/07/2016 | GENS | 3408(A) | 194612 | KINGSLAND'S ACE HARDWARE | MAINT & REPAIR CR ON INV 194611 | 931-000 | 758 | (49.99) |
| | | | | CHECK GENS 3408(A) TOTAL FOR FUND 216: | | | | 303.79 |
| 07/14/2016 | GENS | 3419(A)*# | 194826 | KINGSLAND'S ACE HARDWARE | MAINT & REPAIR RESPIRATOR | 931-000 | 758 | 38.69 |
| | | | | | Total for department 758: | | | 342.48 |
| | | | | | Total for fund 216 PATHWAYS FUND | | | 342.48 |
| **FUND 246 - IRF FUND** | | | | | | | | |
| 07/07/2016 | GENS | 3406(A)*# | 352220 | FISHBECK THOMPSON CARR & HUBER | ADMIN ENGINEERING COST 60TH , HILLSBORC | 821-000 | 295 | 495.00 |
| 07/07/2016 | GENS | 3406(A) | 352222 | FISHBECK THOMPSON CARR & HUBER | ADMIN ENGINEERING COSTS- TRD UTILITY EXT | 821-000 | 295 | 1,260.00 |
| | | | | CHECK GENS 3406(A) TOTAL FOR FUND 246: | | | | 1,755.00 |
| 07/14/2016 | GENS | 3417(A)*# | 353806 | FISHBECK THOMPSON CARR & HUBER | ADMIN ENGINEERING COSTS- TRD UTILITY EXT | 821-000 | 295 | 5,541.00 |
| 07/14/2016 | GENS | 3417(A) | 353800 | FISHBECK THOMPSON CARR & HUBER | ADMIN ENGINEERING COSTS CASC/BURTON P | 821-000 | 295 | 1,424.93 |
| 07/14/2016 | GENS | 3417(A) | 353803 | FISHBECK THOMPSON CARR & HUBER | ADMIN ENGINEERING COSTS 60TH ST UTILITIE | 821-000 | 295 | 381.00 |
| | | | | CHECK GENS 3417(A) TOTAL FOR FUND 246: | | | | 7,346.93 |
| | | | | | Total for department 295: | | | 9,101.93 |
| | | | | | Total for fund 246 IRF | | | 9,101.93 |
| **FUND 248 - DDA FUND** | | | | | | | | |
| 07/07/2016 | GENS | 3404(A)*# | JUNE 2016 | CONSUMERS ENERGY | 100012213862 6658 28TH ST SE JUNE | 921-000 | 170 | 23.69 |
| 07/07/2016 | GENS | 3404(A) | JUNE 2016 | CONSUMERS ENERGY | 100041081355 5613 28TH ST SE JUNE | 921-000 | 170 | 67.86 |
| 07/07/2016 | GENS | 3404(A) | JUNE 2016 | CONSUMERS ENERGY | 100012017305 6610 28TH ST SE JUNE | 921-000 | 170 | 138.97 |
| 07/07/2016 | GENS | 3404(A) | JUNE 2016 | CONSUMERS ENERGY | 100054379084 5196 28TH ST SE JUNE | 921-000 | 170 | 161.71 |
| 07/07/2016 | GENS | 3404(A) | JUNE 2016 | CONSUMERS ENERGY | 100041059278 5905 28TH ST SE JUNE | 921-000 | 170 | 77.55 |
| 07/07/2016 | GENS | 3404(A) | JUNE 2016 | CONSUMERS ENERGY | 100041058650 6116 28TH ST SE JUNE | 921-000 | 170 | 70.15 |
| 07/07/2016 | GENS | 3404(A) | JUNE 2016 | CONSUMERS ENERGY | 100063460503 5770 FOREMOST DR SE | 921-000 | 170 | 125.27 |
| 07/07/2016 | GENS | 3404(A) | JUNE 2016 | CONSUMERS ENERGY | 100054393572 5434 28TH ST SE JUNE | 921-000 | 170 | 63.72 |
| 07/07/2016 | GENS | 3404(A) | JUNE 2016 | CONSUMERS ENERGY | 100011901814 6811 CASCADE RD SE JUNE | 921-000 | 170 | 114.04 |
| 07/07/2016 | GENS | 3404(A) | JUNE 2016 | CONSUMERS ENERGY | 100012017115 6753 OLD 28TH ST JUNE | 921-000 | 170 | 149.35 |
| 07/07/2016 | GENS | 3404(A) | JUNE 2016 | CONSUMERS ENERGY | 100011901541 6800 CASCADE RD SE JUNE | 921-000 | 170 | 231.48 |
| 07/07/2016 | GENS | 3404(A) | JUNE 2016 | CONSUMERS ENERGY | 100066874924 2990 LUCERNE DR SE | 921-000 | 170 | 170.75 |

| Check Date | Bank | Check # | Invoice | Payee | Description | Account | Dept | Amount |
|---|---|---|---|---|---|---|---|---|
| 07/07/2016 | GENS | 3404(A) | JUNE 2016 | CONSUMERS ENERGY | 100041059393 6282 28TH ST SE JUNE | 921-000 | 170 | 95.67 |
| | | | | CHECK GENS 3404(A) TOTAL FOR FUND 248: | | | | 1,490.21 |
| 07/07/2016 | GENS | 3408(A)*# | 194523 | KINGSLAND'S ACE HARDWARE | MAINT & REPAIR/IMPROV-- TREE SUPPLIES | 931-000 | 170 | 7.51 |
| 07/07/2016 | GENS | 3408(A) | 194940 | KINGSLAND'S ACE HARDWARE | MAINT & REPAIR/IMPROVEMENTS POTTING S | 931-000 | 170 | 43.17 |
| 07/07/2016 | GENS | 3408(A) | 194735 | KINGSLAND'S ACE HARDWARE | MAINT & REPAIR/IMPROVEMENTS TARP CLIPS | 931-000 | 170 | 7.00 |
| 07/07/2016 | GENS | 3408(A) | 194798 | KINGSLAND'S ACE HARDWARE | MAINT & REPAIR/IMPROV CABLE TIES | 931-000 | 170 | 4.49 |
| | | | | CHECK GENS 3408(A) TOTAL FOR FUND 248: | | | | 62.17 |
| 07/07/2016 | GENS | 3412(A)*# | CLIP41902 | THORNAPPLE RIVER NURSERY, INC. | OLD 28TH ST. WEED & FEED APPL# 2 | 931-000 | 170 | 156.00 |
| 07/07/2016 | GENS | 3412(A) | CLIKP41657 | THORNAPPLE RIVER NURSERY, INC. | 28TH ST. WEED & FEED APPL#2 | 931-000 | 170 | 55.00 |
| | | | | CHECK GENS 3412(A) TOTAL FOR FUND 248: | | | | 211.00 |
| 07/07/2016 | GENS | 64263 | 48965 | CASCADE PRINTING & GRAPHICS | METRO CRUISE WARMUP FLYERS/POSTERS | 931-300 | 170 | 337.46 |
| 07/07/2016 | GENS | 64269*# | 2649/3 | FRUIT BASKET FLOWERLAND | FLOWERS | 931-000 | 170 | 447.76 |
| 07/07/2016 | GENS | 64269 | 2669/3 | FRUIT BASKET FLOWERLAND | FLOWERS | 931-000 | 170 | 357.80 |
| | | | | CHECK GENS 64269 TOTAL FOR FUND 248: | | | | 805.56 |
| 07/14/2016 | GENS | 64292*# | 49007 | CASCADE PRINTING & GRAPHICS | DDA REP & MAINT- METRO CRUISE WU FLYER: | 931-300 | 170 | 189.56 |
| 07/14/2016 | GENS | 64316 | METRO CRUISE FINAL | SUN RENTALS | DUNK TANK & BOUNCE HOUSE, METRO CRUIS | 931-300 | 170 | 251.25 |
| 07/14/2016 | GENS | 64322*# | 9767976851 | VERIZON WIRELESS | CELL PHONES TABLETS JULY | 924-100 | 170 | 16.03 |
| 07/14/2016 | GENS | 64322 | 9767790662 | VERIZON WIRELESS | CELL PHONES JULY | 924-100 | 170 | 50.05 |
| | | | | CHECK GENS 64322 TOTAL FOR FUND 248: | | | | 66.08 |
| 07/14/2016 | GENS | 64323 | 1616-2 | VIRIDIS DESIGN GROUP | DESIGN PLAN FOR COMMUNITY SPACE- LIBRA | 967-000 | 170 | 2,915.00 |
| 07/21/2016 | GENS | 3432(A) | 9347 | THORNAPPLE RIVER NURSERY, INC. | MAINT & REPAIR/IMPROVEMENTS WOOD CHI | 931-000 | 170 | 25.50 |
| 07/21/2016 | GENS | 3432(A) | 9306 | THORNAPPLE RIVER NURSERY, INC. | MAINT & REPAIR/IMPROV TOPSOI, PROMIX. | 931-000 | 170 | 163.00 |
| | | | | CHECK GENS 3432(A) TOTAL FOR FUND 248: | | | | 188.50 |
| 07/21/2016 | GENS | 64362 | WARMUP BAND PARTIAL | STEVE AZAR TOURING | METRO CRUISE WARMUP BAND PARTIAL PYM | 931-300 | 170 | 3,000.00 |
| 07/28/2016 | GENS | 64370 | 128638 | BUIST ELECTRIC INC | EQUIPMENT | 931-000 | 170 | 108.00 |
| 07/28/2016 | GENS | 64370 | 128638 | BUIST ELECTRIC INC | LABOR TRACE STREET LT WIRING CASCADE RD | 931-000 | 170 | 160.00 |
| | | | | CHECK GENS 64370 TOTAL FOR FUND 248: | | | | 268.00 |
| 07/28/2016 | GENS | 64376*# | DDA MATG 6/14 | FIRST BANKCARD | OTHER EXPENSES DDA PUBLIC MTG SUPPLIES | 787-000 | 170 | 27.27 |
| 07/28/2016 | GENS | 64380*# | 087250-1 | INTERURBAN TRANSIT PARTNERSHIP | 28TH STREET LINEHAUL SERVICE MAY | 861-100 | 170 | 7,991.90 |
| Department: 901 CAPITAL OUTLAY | | | | | Total for department 170: | | | 17,803.96 |
| 07/28/2016 | GENS | 3440(A) | APPL# 6 FINAL | KAMMINGA AND ROODVOETS INC | CAP OUT-ENHANCED INTERSECTION APPL 6 | 974-054 | 901 | 10,000.00 |
| 07/28/2016 | GENS | 64378*# | 17000201 | G R CITY TREASURER | CAPITAL OUTLAY- ENHANCED INTERSECTION | 974-054 | 901 | 3,000.00 |
| | | | | | Total for department 901: | | | 13,000.00 |
| | | | | | Total for fund 248 DDA | | | 30,803.96 |
| FUND 249 - BUILDING FUND | | | | | | | | |
| 07/07/2016 | GENS | 64265 | P# 2578 | CASCADE CHARTER TOWNSHIP | S/W CONNECT 5730 MANCHESTER HILLS DR | 237-000 | 000 | 2,200.00 |
| 07/07/2016 | GENS | 64265 | P# 2579 | CASCADE CHARTER TOWNSHIP | S/W CONNECT 2820-2880 OVERLOOK SUMMIT | 237-000 | 000 | 13,200.00 |
| | | | | CHECK GENS 64265 TOTAL FOR FUND 249: | | | | 15,400.00 |
| 07/14/2016 | GENS | 64295 | P# 2580 | CASCADE CHARTER TOWNSHIP | S/W CONNECT 2439 HIGHRIDGE HILL LN | 237-000 | 000 | 2,200.00 |
| 07/14/2016 | GENS | 64295 | P# 2577 | CASCADE CHARTER TOWNSHIP | S/W CONNECT 2485 HIGHRIDGE HILL LN | 237-000 | 000 | 2,200.00 |
| 07/14/2016 | GENS | 64295 | P# 2576 | CASCADE CHARTER TOWNSHIP | S/W CONNECT 2489 HIGHRIDGE HILL LN | 237-000 | 000 | 2,200.00 |

| Check Date | Bank | Check # | Invoice | Payee | Description | Account | Dept | Amount |
|---|---|---|---|---|---|---|---|---|
| | | | | CHECK GENS 64295 TOTAL FOR FUND 249: | | | | 6,600.00 |
| | | | | | Total for department 000: | | | 22,000.00 |
| Department: 371 BUILDING DEPARTMENT | | | | | | | | |
| 07/07/2016 | GENS | 64261 | MILG 6/20-7/01 | BENOIT, BILL | MILEAGE - BENOIT 581 MILES | 860-000 | 371 | 313.74 |
| 07/07/2016 | GENS | 64262 | MILG 6/20-7/1 | BIEGALLE, JEFFREY | MILEAGE- BIEGALLE,J 602 MILES | 860-000 | 371 | 325.08 |
| 07/07/2016 | GENS | 64267 | MILG 6/20-7/0116 | KEN DAVIS | MILEAGE DAVIS 488 MILES | 860-000 | 371 | 263.52 |
| 07/07/2016 | GENS | 64272 | MILG 6/20-7/01 | DANIEL L HEYER | MILEAGE HEYER 445 MILES | 860-000 | 371 | 240.30 |
| 07/07/2016 | GENS | 64274 | MILG 6/20-6/30 | HUYSER, DANIEL A. | MILEAGE- HUYSER 545 MILES | 860-000 | 371 | 294.30 |
| 07/07/2016 | GENS | 64278 | MILG 6/23-6/24 | KLOOTE, DAVE | MILEAGE KLOOTE 70 MILES | 860-000 | 371 | 37.80 |
| 07/07/2016 | GENS | 64281 | MILG 6/20-7/01 | VINCENT MILITO | MILEAGE MILITO- 570 MILES | 860-000 | 371 | 307.80 |
| 07/07/2016 | GENS | 64282 | MILG 6/20-7/01 | RON SABIN | MILEAGE SABIN 397 MILES | 860-000 | 371 | 214.38 |
| 07/07/2016 | GENS | 64287 | MILG 6/20-7/01/16 | BRIAN WILSON | MILEAGE WILSON 371 MILES | 860-000 | 371 | 200.34 |
| 07/14/2016 | GENS | 64305 | HUYSER,DAN 2016 | INTERNATIONAL ASSOCIATION OF | MEMBERSHIPS AND DUE HUYSER IAEI 2016 | 723-000 | 371 | 120.00 |
| 07/14/2016 | GENS | 64306 | 9002528590 | KONICA MINOLTA ALBIN | C454 PRINTER/COPIER 5/28-6/27 | 939-000 | 371 | 48.80 |
| 07/14/2016 | GENS | 64311*# | 59497887 | PAETEC | PHONES BLDG | 924-000 | 371 | 26.06 |
| 07/14/2016 | GENS | 64314*# | POSTAGE 7/14/2016 | RESERVE ACCOUNT | BLDG POSTAGE & MACHINE LEASE | 941-000 | 371 | 150.00 |
| 07/14/2016 | GENS | 64317*# | 498367-0 | SUPPLYGEEKS.BIZ | BUILDING FUND OFFICE SUPPLIES | 727-000 | 371 | 35.82 |
| 07/14/2016 | GENS | 64322*# | 9767976851 | VERIZON WIRELESS | CELL PHONES TABLETS JULY | 924-100 | 371 | 128.26 |
| 07/14/2016 | GENS | 64322 | 9767790662 | VERIZON WIRELESS | CELL PHONES JULY | 924-100 | 371 | 402.27 |
| | | | | CHECK GENS 64322 TOTAL FOR FUND 249: | | | | 530.53 |
| 07/21/2016 | GENS | 64328 | MILG 7/5-7/15 | BENOIT, BILL | MILEAGE - BENOIT 670 MILES | 860-000 | 371 | 361.80 |
| 07/21/2016 | GENS | 64329 | MILG 7/5-7/14 | BIEGALLE, JEFFREY | MILEAGE- BIEGALLE,J 432 MIKLES | 860-000 | 371 | 233.28 |
| 07/21/2016 | GENS | 64332 | MILG 7/6-7/15 | KEN DAVIS | SMILEAGE DAVIS 482 MILES | 860-000 | 371 | 260.28 |
| 07/21/2016 | GENS | 64338 | MILG 7/507/15 | DANIEL L HEYER | MILEAGE HEYER 462 MILES | 860-000 | 371 | 244.08 |
| 07/21/2016 | GENS | 64339 | MILG 7/5-7/15 | HUYSER, DANIEL A. | MILEAGE- HUYSER 486 MILES | 860-000 | 371 | 262.44 |
| 07/21/2016 | GENS | 64348 | MILG 7/5-7/15 | VINCENT MILITO | MILEAGE MILITO- 385 MILES | 860-000 | 371 | 207.90 |
| 07/21/2016 | GENS | 64358 | MILG 7/6-7/15 | RON SABIN | MILEAGE SABIN 5385 MILES | 860-000 | 371 | 290.52 |
| 07/21/2016 | GENS | 64361 | MILG 7/8-7/15 | JIM SPAAK | MILEAGE SABIN 105 MILES | 860-000 | 371 | 56.70 |
| 07/21/2016 | GENS | 64367 | MILG 7/11-7/15 | BRIAN WILSON | MILEAGE WILSON 162 MILES | 860-000 | 371 | 87.48 |

| Check Date | Bank | Check # | Invoice | Payee | Description | Account | Dept | Amount |
|---|---|---|---|---|---|---|---|---|
| 07/28/2016 | GENS | 3443(A) | 62688 | WOLVERINE PRINT SOLOUTIONS | FORMS PART 2 INSPECTION REQUEST | 727-000 | 371 | 1,614.55 |
| 07/28/2016 | GENS | 3443(A) | 62687 | WOLVERINE PRINT SOLOUTIONS | FORMS PERMIT POST CARDS | 727-000 | 371 | 412.50 |
| | | | | CHECK GENS 3443(A) TOTAL FOR FUND 249: | | | | 2,027.05 |
| 07/28/2016 | GENS | 64373*# | 44580467 | COMCAST | PHONES | 924-000 | 371 | 49.85 |
| 07/28/2016 | GENS | 64386*# | 59579292 | PAETEC | PHONES BLDG | 924-000 | 371 | 27.56 |
| 07/28/2016 | GENS | 64389*# | 499754-0 | SUPPLYGEEKS.BIZ | BUILDING FUND OFFICE SUPPLIES | 727-000 | 371 | 118.76 |
| | | | | | Total for department 371: | | | 7,336.17 |
| Department: 850 BENEFITS/INSURANCE | | | | | | | | |
| 07/21/2016 | GENS | 64334* | RIS0001169370 | DELTA DENTAL | DENTAL INSURANCE BENEFITS AUG | 721-000 | 850 | 650.37 |
| 07/21/2016 | GENS | 64334 | RIS0001169370 | DELTA DENTAL | MI CLAIMS TAX - DENTAL AUG | 721-200 | 850 | 3.97 |
| | | | | CHECK GENS 64334 TOTAL FOR FUND 249: | | | | 654.34 |
| 07/28/2016 | GENS | 64375* | 2499778 | FIDELITY SECURITY LIFE INS | VISION INSURANCE BENEFITS JULY | 718-000 | 850 | 101.20 |
| 07/28/2016 | GENS | 64385*# | 000549671815 | MUTUAL OF OMAHA INSURANCE | LIFE & DISB INSURANCE BENEFITS LIF AUG | 720-000 | 850 | 95.25 |
| 07/28/2016 | GENS | 64385 | 000549671815 | MUTUAL OF OMAHA INSURANCE | LIFE & DISABILITY INSURANCE LTD AUG | 720-000 | 850 | 224.75 |
| 07/28/2016 | GENS | 64385 | 000549671815 | MUTUAL OF OMAHA INSURANCE | LIFE & DISABILITY INSURANCE AD&D AUG | 720-000 | 850 | 14.48 |
| | | | | CHECK GENS 64385 TOTAL FOR FUND 249: | | | | 334.48 |
| | | | | | Total for department 850: | | | 1,090.02 |
| Department: 964 PAYMENTS TO OTHER TOWNSHIPS | | | | | | | | |
| 07/14/2016 | GENS | 3414(A) | JUNE 2016 PERMITS | EAST GRAND RAPIDS/CITY OF | PERMITS DUE TO EAST GR JUNE | 964-500 | 964 | 2,926.00 |
| 07/14/2016 | GENS | 3420(A) | JUNE 2016 PERMITS | LOWELL TOWNSHIP | PERMITS DUE TO LOWELL TWP JUNE | 964-100 | 964 | 932.25 |
| 07/14/2016 | GENS | 3422(A) | JUNE 2016 PERMITS | PLAINFIELD CHARTER TOWNSHIP | PERMITS DUE PLAINFIELD JUNE | 964-600 | 964 | 3,927.85 |
| 07/14/2016 | GENS | 64289 | JUNE 2016 PERMITS | ADA TOWNSHIP | PERMITS DUE TO ADA TWP JUNE | 964-400 | 964 | 5,053.95 |
| 07/14/2016 | GENS | 64293 | JUNE 2016 PERMITS | CASCADE CHARTER TOWNSHIP | PERMITS DUE CASCADE TWP JUNE | 964-800 | 964 | 8,417.55 |
| 07/14/2016 | GENS | 64303 | JUNE 2016 PERMTIS | GRAND RAPIDS CHARTER TOWNSHIP | PERMITS DUE TO GR TWP JUNE 2016 | 964-300 | 964 | 4,914.10 |
| 07/14/2016 | GENS | 64307 | JUNE 2016 PERMITS | LOWELL MI, CITY OF | PERMITS DUE CITY OF LOWELL JUNE | 964-700 | 964 | 745.60 |
| 07/14/2016 | GENS | 64321 | JUNE 2016 PERMITS | VERGENNES TOWNSHIP | PERMITS DUE TO VERGENNES TWP JUNE | 964-200 | 964 | 584.40 |
| | | | | | Total for department 964: | | | 27,501.70 |
| | | | | | Total for fund 249 BUILDING FUND | | | 57,927.89 |
| FUND 270 - LIBRARY FUND | | | | | | | | |
| 07/07/2016 | GENS | 3404(A)*# | JUNE 2016 | CONSUMERS ENERGY | 100000284784 2870 JACKSMITH AVE JUNE | 921-000 | 790 | 4,822.91 |
| 07/07/2016 | GENS | 3408(A)*# | 194823 | KINGSLAND'S ACE HARDWARE | LIBRARY MAINT POLY FOLD CHAIR RENTALS | 931-000 | 790 | 44.55 |
| 07/07/2016 | GENS | 3410(A)*# | 193233 | QUALITY AIR | MONTHLY MAINTENANCE- LIBRARY | 931-000 | 790 | 806.16 |
| 07/07/2016 | GENS | 3412(A)*# | CLIP41724 | THORNAPPLE RIVER NURSERY, INC. | LIBRARY WEED & FEED APPL# 2 | 931-000 | 790 | 638.00 |
| 07/07/2016 | GENS | 64268*# | 457271900013 6/2016 | DTE ENERGY | LIBRARY HEATING JUNE | 923-000 | 790 | 151.75 |
| 07/07/2016 | GENS | 64269*# | 2656/3 | FRUIT BASKET FLOWERLAND | LIBRARY MAINTENANCE PLANTS | 931-000 | 790 | 9.98 |

| Check Date | Bank | Check # | Invoice | Payee | Description | Account | Dept | Amount |
|---|---|---|---|---|---|---|---|---|
| 07/07/2016 | GENS | 64269 | 2657/3 | FRUIT BASKET FLOWERLAND | LIBRARY MAINTENANCE PLANTS | 931-000 | 790 | 4.99 |
| | | | | CHECK GENS 64269 TOTAL FOR FUND 270: | | | | 14.97 |
| 07/14/2016 | GENS | 3415(A)*# | 81783 | ENVIRO-CLEAN | CLEANING LIBRARY JUNE | 802-200 | 790 | 1,487.00 |
| 07/14/2016 | GENS | 3415(A) | 81783 | ENVIRO-CLEAN | CLEANING LIBRARY (WEEKEND) JUNE | 802-200 | 790 | 180.00 |
| 07/14/2016 | GENS | 3415(A) | 81783 | ENVIRO-CLEAN | CLEANING WISNER JUNE | 802-200 | 790 | 330.00 |
| | | | | CHECK GENS 3415(A) TOTAL FOR FUND 270: | | | | 1,997.00 |
| 07/14/2016 | GENS | 3419(A)*# | 194789 | KINGSLAND'S ACE HARDWARE | LIBRARY MAINTENANCE RENTAL DEPOSIT | 931-000 | 790 | 49.50 |
| 07/14/2016 | GENS | 64297*# | 301-02737 JUNE 2016 | CINTAS CORP #301 | 2016 RUG CLEANING SERVICE LIBRARY JUNE | 931-000 | 790 | 561.99 |
| 07/14/2016 | GENS | 64311*# | 59497887 | PAETEC | LIBRARY PHONES | 924-000 | 790 | 37.76 |
| 07/21/2016 | GENS | 64327 | 36696242-0 | BARTLETT TREE EXPERTS | LIBRARY FOLIAGE TREATMENT 7/2 | 931-000 | 790 | 132.00 |
| 07/21/2016 | GENS | 64336 | 5875641 | EVANCED SOLUTIONS, LLC | ROOM RESERVE SUBSCRIPTION RENEWAL 300 | 729-000 | 790 | 882.00 |
| 07/21/2016 | GENS | 64347 | 347129 | MIDSTATE SECURITY CO. | LIBRARY MAINT-TEST AND REPLACE BATTERIES | 931-000 | 790 | 196.00 |
| 07/21/2016 | GENS | 64359*# | 76643156 | SITEONE LANDSCAPE SUPPLY LLC | LIBRARY MAINTENANCE TURF SPRINKLER | 931-000 | 790 | 132.57 |
| 07/28/2016 | GENS | 64373*# | 44580467 | COMCAST | LIBRARY PHONES | 924-000 | 790 | 21.36 |
| 07/28/2016 | GENS | 64374 | HORNETS NEST 7/18 | DEN BOER, KEVIN | LIBRARY MAINTENANCE- REMOVE HORNETS N | 931-000 | 790 | 75.00 |
| 07/28/2016 | GENS | 64376*# | K0691094 | FIRST BANKCARD | LIBRARY MAINT- POISON OAKE CLEANSER | 931-000 | 790 | 179.95 |
| 07/28/2016 | GENS | 64379 | 23678 | HOOGERHYDE SAFE & LOCK, INC | LIBRARY MAINTENANCE DOOR LOCKS | 931-000 | 790 | 116.00 |
| 07/28/2016 | GENS | 64386*# | 59579292 | PAETEC | LIBRARY PHONES | 924-000 | 790 | 39.52 |
| | | | | | Total for department 790: | | | 10,898.99 |
| | | | | | Total for fund 270 LIBRARY FUND | | | 10,898.99 |
| **FUND 701 - TRUST AND AGENCY FUND** | | | | | | | | |
| 07/14/2016 | GENS | 3417(A)*# | 353804 | FISHBECK THOMPSON CARR & HUBER | LACKS TRIM DIV S/W 1/2016 | 252-236 | 000 | 1,228.50 |
| 07/21/2016 | GENS | 64331 | REFUND 16-3299 | CASCADE CHARTER TOWNSHIP | DANIEL KAMPHUIS 16-3299 REZONING ESCRO | 253-353 | 000 | 500.00 |
| 07/21/2016 | GENS | 64357 | REFUND PATHWAY BOND | ROCKFORD CONSTRUCTION CO. | YMCA PATHWAY BOND 11/2014 REFUND DEPI | 250-016 | 000 | 13,760.00 |
| 07/28/2016 | GENS | 64371 | REFUND 16-3303 | CASCADE THORNAPPLE RIVER ASSOC | CUSTOMER DEPOSIT - SIGN VARIANCE CASC TI | 255-000 | 000 | 50.00 |
| 07/28/2016 | GENS | 64372 | REFUND 15-3303 | CASCADE CHARTER TOWNSHIP | CUSTOMER DEPOSIT -CASC THORNAPPLE RIV / | 255-000 | 000 | 450.00 |
| 07/28/2016 | GENS | 64378*# | 17000250 | G R CITY TREASURER | GROOTERS PROJECT APRIL 2016 | 252-235 | 000 | 4,427.58 |
| 07/28/2016 | GENS | 64378 | 17000076 | G R CITY TREASURER | LACKS TRIM DIV S/W 1/2016 JUNE 2016 | 252-236 | 000 | 1,083.75 |
| | | | | CHECK GENS 64378 TOTAL FOR FUND 701: | | | | 5,511.33 |
| | | | | | Total for department 000: | | | 21,499.83 |
| | | | | | Total for fund 701 TRUST AND AGENCY | | | 21,499.83 |
| **FUND 703 - CURRENT TAX COLLECTION FUND** | | | | | | | | |
| 07/21/2016 | GENS | 3428(A) | CAL 1601 | CALEDONIA COMMUNITY SCHOOLS | CALEDONIA - OPERATING | 225-410 | 000 | 25,773.97 |

08/01/2016

CHECK DISBURSEMENT REPORT FOR CASCADE CHARTER TOWNSHIP
CHECK DATE FROM 07/01/2016 - 07/31/2016
**JULY 2016 PAYABLES, PAYROLL, AND TRANSFERS**

| Check Date | Bank | Check # | Invoice | Payee | Description | Account | Dept | Amount |
|---|---|---|---|---|---|---|---|---|
| 07/21/2016 | GENS | 3429(A) | CALD 1601 | CALEDONIA COMMUNITY SCHOOLS | CALEDONIA - DEBT | 225-420 | 000 | 24,455.68 |
| 07/21/2016 | GENS | 3429(A) | CALD 1601 | CALEDONIA COMMUNITY SCHOOLS | CALEDONIA - IFT DEBT | 225-520 | 000 | 1,601.42 |
| | | | | CHECK GENS 3429(A) TOTAL FOR FUND 703: | | | | 26,057.10 |
| 07/21/2016 | GENS | 3430(A) | FHPS 1601 | FOREST HILLS PUBLIC SCHOOLS | FHPS - OPERATING | 225-110 | 000 | 78,737.96 |
| 07/21/2016 | GENS | 3430(A) | FHPS 1601 | FOREST HILLS PUBLIC SCHOOLS | FHPS - DEBT | 225-120 | 000 | 217,350.62 |
| 07/21/2016 | GENS | 3430(A) | FHPS 1601 | FOREST HILLS PUBLIC SCHOOLS | FHPS - RECREATION | 225-130 | 000 | 28,597.49 |
| | | | | CHECK GENS 3430(A) TOTAL FOR FUND 703: | | | | 324,686.07 |
| 07/21/2016 | GENS | 3431(A) | GRCC 1601 | GRAND RAPIDS COMMUNITY COLLEGE | GRCC - TAXES | 235-110 | 000 | 118,028.94 |
| 07/21/2016 | GENS | 3431(A) | GRCC 1601 | GRAND RAPIDS COMMUNITY COLLEGE | GRCC - IFT TAX | 235-210 | 000 | 817.40 |
| | | | | CHECK GENS 3431(A) TOTAL FOR FUND 703: | | | | 118,846.34 |
| 07/21/2016 | GENS | 3433(A) | KC 1601 | KENT COUNTY TREASURER | KENT COUNTY - OPERATING | 222-110 | 000 | 282,790.18 |
| 07/21/2016 | GENS | 3433(A) | KC 1601 | KENT COUNTY TREASURER | KENT COUNTY - IFT OPERATING | 222-210 | 000 | 1,958.44 |
| | | | | CHECK GENS 3433(A) TOTAL FOR FUND 703: | | | | 284,748.62 |
| 07/21/2016 | GENS | 3434(A) | SET 1601 | KENT COUNTY TREASURER-SET | CALEDONIA SET & OPERATING TAX (COUNTY) | 228-001 | 000 | 37,099.56 |
| 07/21/2016 | GENS | 3434(A) | SET 1601 | KENT COUNTY TREASURER-SET | FHPS SET & OPERATING TAX (COUNTY) | 228-001 | 000 | 343,186.38 |
| 07/21/2016 | GENS | 3434(A) | SET 1601 | KENT COUNTY TREASURER-SET | LOWELL SET & OPERATING TAX (COUNTY) | 228-001 | 000 | 11,298.14 |
| | | | | CHECK GENS 3434(A) TOTAL FOR FUND 703: | | | | 391,584.08 |
| 07/21/2016 | GENS | 3435(A) | KISD 1601 | KENT INTERMEDIATE SCHOOLS | KENT ISD - TAXES | 234-110 | 000 | 316,484.97 |
| 07/21/2016 | GENS | 3435(A) | KISD 1601 | KENT INTERMEDIATE SCHOOLS | KENT ISD - IFT TAXES | 234-210 | 000 | 2,191.79 |
| | | | | CHECK GENS 3435(A) TOTAL FOR FUND 703: | | | | 318,676.76 |
| 07/21/2016 | GENS | 3436(A) | LOW 1601 | LOWELL AREA SCHOOLS | LOWELL - OPERATING | 226-110 | 000 | 3,360.66 |
| 07/21/2016 | GENS | 3436(A) | LOW 1601 | LOWELL AREA SCHOOLS | LOWELL - DEBT | 226-120 | 000 | 6,590.55 |
| 07/21/2016 | GENS | 3436(A) | LOW 1601 | LOWELL AREA SCHOOLS | LOWELL BLDG/SITE | 226-130 | 000 | 938.61 |
| | | | | CHECK GENS 3436(A) TOTAL FOR FUND 703: | | | | 10,889.82 |
| 07/21/2016 | GENS | 64350 | RFD26103001 | FIRST AMERICAN TITLE INSURANCE CO | DUE TO 41-19-26-103-001 | 275-000 | 000 | 349.19 |
| 07/21/2016 | GENS | 64351 | RFD17228005 | HUANG DANHONG & TIAN JIA | DUE TO 41-19-17-228-005 | 275-000 | 000 | 200.00 |
| 07/21/2016 | GENS | 64364 | GF 1601 | CASCADE CHARTER TWP | CCT - OVER/SHORT | 214-112 | 000 | (0.30) |
| 07/21/2016 | GENS | 64364 | GF 1601 | CASCADE CHARTER TWP | CCT - ADMIN | 214-155 | 000 | 15,027.76 |
| | | | | CHECK GENS 64364 TOTAL FOR FUND 703: | | | | 15,027.46 |
| 07/21/2016 | GENS | 64366 | MI 1601 | STATE OF MICHIGAN | IFT SET & OPER TAX CALED SET | 228-201 | 000 | 1,725.90 |
| | | | | | Total for department 000: | | | 1,518,565.31 |
| | | | | | Total for fund 703 CURRENT TAX COLLECTION FUND | | | 1,518,565.31 |
| | | | | TOTAL - ALL FUNDS | | | | 2,251,239.87 |

'*'-INDICATES CHECK DISTRIBUTED TO MORE THAN ONE FUND
'#'-INDICATES CHECK DISTRIBUTED TO MORE THAN ONE DEPARTMENT

Transactions Log for Payroll Deductions
MONTH ENDING: JULY 2016

**Direct Deposit**

| | | | | | |
|---|---|---|---|---|---|
| Date Submitted | 7.12.16 | Transaction# | 1147556 | Amount | 58,023.21 |
| Date Submitted | 7.26.16 | Transaction# | 1158020 | Amount | 63,175.04 |
| Date Submitted | | Transaction# | | Amount | |

**Deferred Comp**

| | | | | | |
|---|---|---|---|---|---|
| Date Submitted | 7.12.16 | Transaction# | G9GZ1 | Amount | 1229.10 |
| Date Submitted | 7.26.16 | Transaction# | G9mEV | Amount | 1229.10 |
| Date Submitted | | Transaction# | | Amount | |

**Payroll Taxes**

| | | | | | |
|---|---|---|---|---|---|
| Date Submitted | 7.12.16 | Transaction# | 83095634 | Amount | 28,480.03 |
| Date Submitted | 7.26.16 | Transaction# | 00197345 | Amount | 31,191.38 |
| Date Submitted | | Transaction# | | Amount | |

**HSA**

| | | | | | |
|---|---|---|---|---|---|
| Date Submitted | 7.12.16 | Transaction# | 1147570 | Amount | 2863.00 |
| Date Submitted | 7.26.16 | Transaction# | 1158030 | Amount | 2888.00 |
| Date Submitted | | Transaction# | | Amount | |

**ICMA RC**

| | | | | | |
|---|---|---|---|---|---|
| Date Submitted | 7.12.16 | Transaction# | 1147560 | Amount | 498.00 |
| Date Submitted | 7.26.16 | Transaction# | 1158023 | Amount | 498.00 |
| Date Submitted | | Transaction# | | Amount | |

**MERS**

| | | | | | |
|---|---|---|---|---|---|
| Date Submitted | 7.29.16 | Transaction# | 60393-2 | Amount | 28,659.22 |

**Monthly Check Register – Gross**

Date Submitted 7.30.16 Amount 340,000.14

Clerk's Office
Date 7.30.16

# TOWNSHIP BOARD MEMORANDUM

To: Cascade Charter Township Board

From: Sandra Korhorn, DDA/Economic Development Director SKK

Subject: Discuss and Consider 28th St. Sidewalk – Hotel Ave. to Drury Hotel

Meeting Date: August 10, 2016

---

We placed the extension of the 28th St. sidewalk from Hotel Ave. to Drury Hotel in the CIP for 2016, which was approved along with the budget last winter.

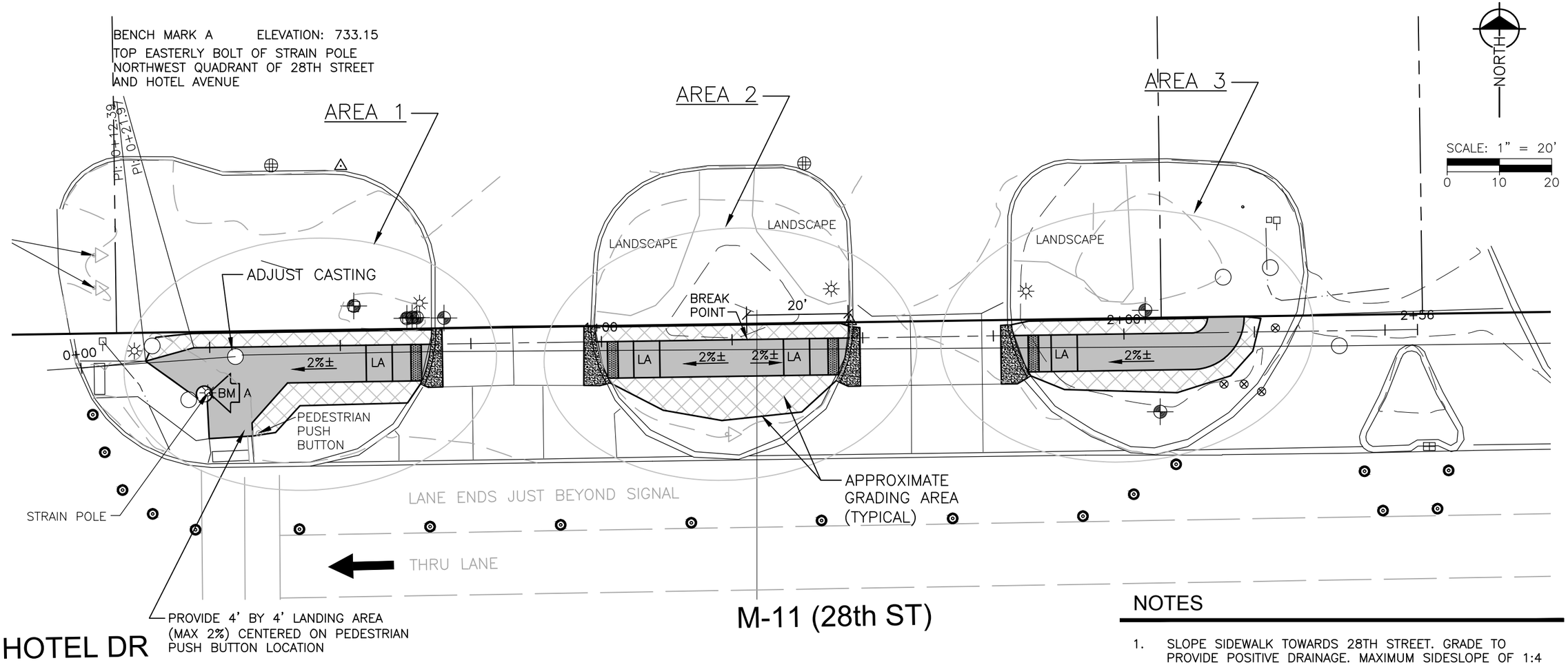
Mike Berrevoets, FTCH, has been working on the sidewalk plans and we have received a construction quote from Kamminga & Roodvoets (K&R) and Lawns of Distinction for this work. Flier's schedule was booked for the rest of the year so he did not submit a price.

The prices came in as follows:

| | |
|---|---|
| K&R - | $25,025.00 |
| Lawns of Distinction - | $24,125.00 |

Staff is recommending K&R for the sidewalk work. K&R recently completed the Cascade Village road projects and also construction of a portion of the sidewalk along 28th St., west of the interchange in 2013. They have their own concrete crews as well as traffic control crews. Also, with their experience, they should need little supervision from FTCH for this project.

If approved, K&R would schedule this construction sometime in September or October.

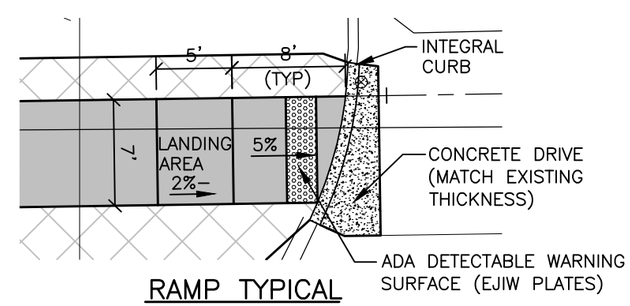



## NOTES

1. SLOPE SIDEWALK TOWARDS 28TH STREET. GRADE TO PROVIDE POSITIVE DRAINAGE. MAXIMUM SIDESLOPE OF 1:4
2. MAINTAIN DRIVEWAY ACCESS TO AT LEAST ONE OF THE TWO DRIVEWAYS FOR THE GAS STATION AT ALL TIMES.
3. QUANTITIES ARE TAKEN FROM CAD WITH NO ROUNDING OR INCREASES. PLAN ACCORDINGLY.

| APPROXIMATE QUANTITIES BY WORK AREA | | | | |
|---|---|---|---|---|
| WORK ITEM | UNITS | AREA 1 | AREA 2 | AREA 3 |
| SIDEWALK, 4-INC | SFT | 422 | 234 | 256 |
| SIDEWALK RAMP, 6-INCH | SFT | 46 | 92 | 46 |
| ADA DETECTABLE PLATES | SFT | 14 | 28 | 14 |
| INTEGRAL CURB & DRIVE | SFT | 31 | 36 | 41 |
| GRADING AREA * | SYDS | 33 | 45 | 29 |
| ADJUST CASTING | EA | 1 | 0 | 0 |

GRADING AREA * INCLUDES AT LEAST 3' ALONG EDGE OF WALK PLUS ADDITIONAL AREA WHERE IT IS ANTICIPATED THE SLOPE NEEDS TO BE ADJUSTED TO MAINTAIN POSITIVE DRAINAGE. SMALLER AREAS MAY BE POSSIBLE.




RAMP TYPICAL
SCALE: 1" = 10'

# PROPOSED WALK

fic&h
engineers
scientists
architects
constructors

fishbeck, thompson, carr & huber, inc.

Hard copy is intended to be 11"x17" when plotted. Scale(s) indicated and graphic quality may not be accurate for any other size.

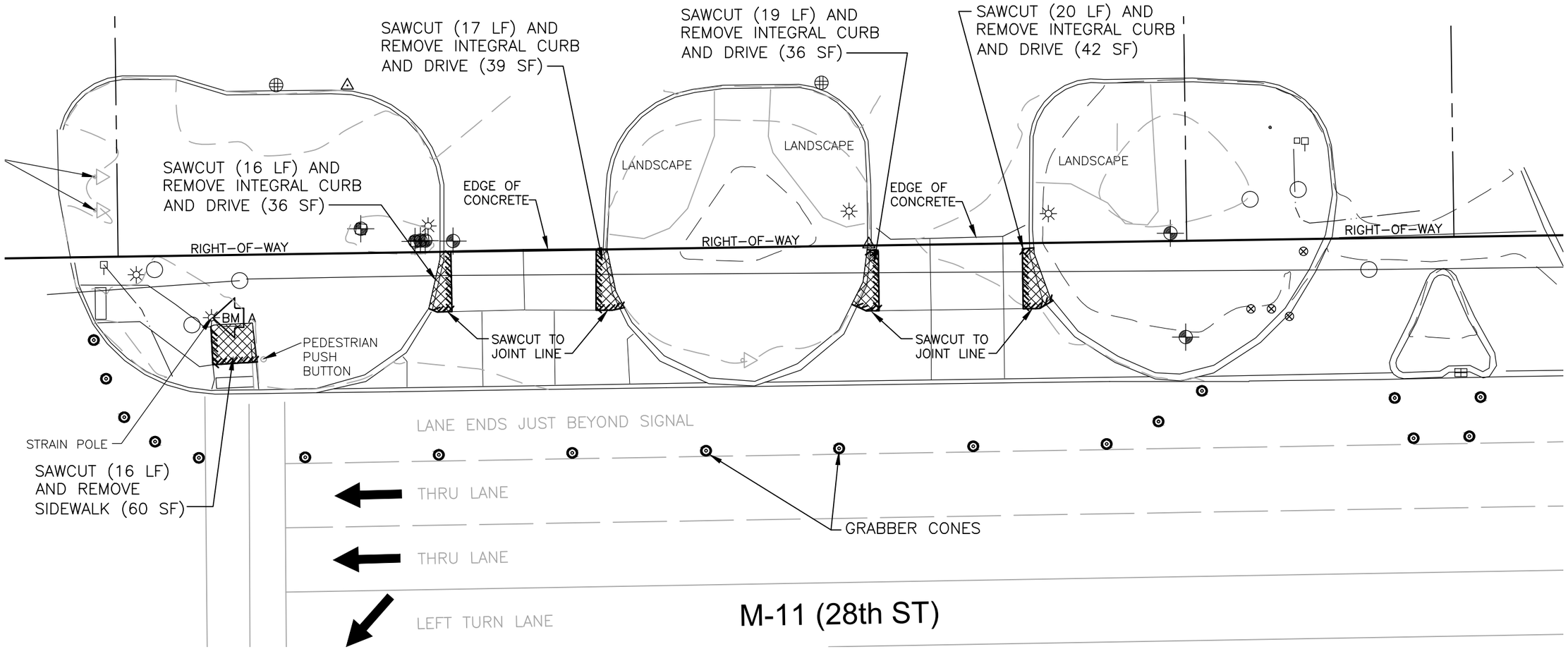
**Cascade Charter Township**
Cascade Twp, MI
**2016 DDA Sidewalk - 28th St**

PROJECT NO.
G160322

FIGURE NO.
2

PLOT INFO: Z:\2016\160322\CAD\CD\2_PROPOSED.DWG LAYOUT: LAYOUT1 DATE: 5/27/2016 TIME: 11:04:28 AM USER: MLB

©Copyright 2016 All Rights Reserved




## MAINTAINING TRAFFIC NOTES

1. AUXILIARY LANE CAN BE UTILIZED FOR WORKING AREA. MAINTAIN BOTH THROUGH LANES AT ALL TIMES.
2. GRABBER CONE SPACING IS 25'
3. GRABBER CONES TO BE CONTINUED EAST TO EASTBOUND I-96 RAMP LOCATION.
4. REMOVE CONES AND LAY DOWN SIGNS DURING NON-WORKING HOURS.
5. MAINTAIN ONE DRIVEWAY ACCESS TO GAS STATION AT ALL TIMES. PROVIDE GAP IN CONES FOR ACCESS TO HOTEL DRIVE AT ALL TIMES
6. IMPLEMENT MDOT WORK ZONE SIGNING SEQUENCE M0050a ON WEST BOUND M-11 (28TH ST) AHEAD OF WORK ZONE.
7. IMPLEMENT MDOT WORK ZONE SIGNING SEQUENCE M0110a (SHOULDER CLOSURE) ON WEST BOUND M-11 (28TH ST) AHEAD OF WORK ZONE.
8. PLACE WORK ZONE AHEAD SIGN ON EASTBOUND I-96 EXIT RAMP.

NORTH

SCALE: 1" = 20'

0 10 20

# REMOVALS AND MAINTAINING TRAFFIC

PLOT INFO: Z:\2016\160322\CAD\CD1_REMOVAL.DWG LAYOUT: LAYOUT1 DATE: 5/27/2016 TIME: 11:05:02 AM USER: MLB

©Copyright 2016 All Rights Reserved

fic&h

engineers
scientists
architects
constructors

fishbeck, thompson, carr & huber, inc.

Hard copy is intended to be 11"x17" when plotted. Scale(s) indicated and graphic quality may not be accurate for any other size.

**Cascade Charter Township**
Cascade Twp, MI

**2016 DDA Sidewalk - 28th St**

PROJECT NO.
G160322

FIGURE NO.
1

# TITLE

© 2013 REGIS All Rights Reserved

This map does not represent a legal document. It is intended to serve as an aid in graphic representation only. Information shown on this map is not warranted for accuracy and should be verified through other means. Any duplication is restricted under copyright laws and the Enhanced Access to Public Records Act, PA 462 of 1996, as amended.

Printed 7/15/2016 9:16:31 AM

# CASCADE CHARTER TOWNSHIP

2865 Thornhills SE Grand Rapids, Michigan 49546-7140


**Date:** August 10th, 2016
**To:** Supervisor Beahan & Cascade Township Board
**From:** Benjamin Swayze, Township Manager
**Subject:** Thornapple Hills Drain Rehabilitation Project

---

**FACTS:**

Since early 2014 the Township has been working on a potential rehabilitation project on the Thornapple Hills Drain. The project originated through our process of working through the areas of concern listed in the Storm Water Management Plan. The initial investigation of the Thornapple Hills Drain in 2013 revealed several areas of eroded banks that posed a threat to property and infrastructure. At that time the Township Board authorized Phase I of a services agreement with Fishbeck to design rehabilitation activities on the drain.

Throughout 2014 Fishbeck worked on the proposed project with the Kent County Drain Commissioner, as Thornapple Hills Drain is a designated County drain. During that process, it was discovered that the County did not hold all of the appropriate easements for this section of the drain in order to eventually move forward with the work. At that time the project slowed down, and the Township agreed to an additional scope of services with Fishbeck to assist in the preparation and collection of easement documents. That work took place in late 2014 and early 2015, and all but one required easement was obtained.

Fishbeck completed preliminary design of the project in early 2015 and scheduled the necessary pre-permit application meeting with the Michigan Department of Environmental Quality (MDEQ). The full day meeting took place in late April 2015 and involved the Cascade project team walking the entire project site with the MDEQ to review the project. During that time, it was noted that there had been significant further deterioration of the Drain since the initial inspection was held in 2013. Additionally, there were new project designs that needed to be incorporated based on comments from the MDEQ and the fact that we were not able to obtain one of the needed easements.

The project was noticed for public comment by the MDEQ in late fall 2015 and the Township received a permit for the project in December 2015. Among the regulations in the permit, the Township is not able to cut any trees larger than 3" in diameter between April 1st and September 30th. The Township had originally anticipated the project would be completed in 2016, but staff had concerns that if the project was done after September 30th to comply with the permit regulations, the restoration may not have time to establish prior to winter, and we may see the work erode out if we had a large spring thaw or an otherwise wet spring. Therefore, the decision was made to schedule the project for later 2016/early 2017 with substantial completion in April 2017.

Attached for your review is:

- Thornapple Hills Drain Project Permit and Plans

- Thornapple Hills Drain Bid Documents
- Thornapple Hills Drain Proposed Schedule

## ANALYSIS & CONCLUSIONS:

The rehabilitation work on the Thornapple Drain is needed in order to maintain the integrity of the drain. Without the proposed work the drain will continue to deteriorate, eventually encroaching on essential infrastructure and private property. Additionally, further deterioration of the drain will cause increased sediment loading to the Thornapple River and increased localized flooding.

The Infrastructure Committee reviewed the project most recently at their March meeting and has recommended that the Township Board authorize the letting of bids for the project.

The Finance Committee reviewed several funding alternatives at their March meeting as well. The current engineers estimate for the project, inclusive of engineering fees, is $287,000. Of that amount, approximately $50,000 has already been spent per an engineering contract for the project that was approved in 2014 and amended in 2015.

The Township has budgeted $300,000 in the FY2016 budget for storm drain improvements. This was originally intended to be match money for potential grants for both the Thornapple Hills Drain project and the Schoolhouse Creek project as part of the Resiliency Grant, but the County was not successful in obtaining that grant.

The Finance Committee reviewed several funding alternatives, including seeking Chapter 20 Drain funding status, a Township initiated Special Assessment District for the project area or the Township funding the project on its own. After consideration of all the scenarios. The Finance Committee has recommended that the Township fund the project through the General Fund and not pursue a Special Assessment District or Chapter 20 Drain funding.

## FINANCIAL CONSIDERATIONS:

The Township has budgeted $300,000 for drain improvements this year and, given the engineers estimate, that amount should be adequate to cover the cost of the project. Some funds will need to be reappropriated into the FY17 budget to pay for the completion of the project.

## RECOMMENDED ACTION:

To authorize FTC&H to let the bids for the Thornapple Hills Drain Project.

# MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY
## WATER RESOURCES DIVISION
## PERMIT

**Permit No.: 15-41-0016-P**
**Submission No: 15-41-0016-P**
**Issued:** December 14, 2015
**Extended:**
**Revised:**
**Expires:** December 14, 2020

---

**Issued To:**

Attn: Mr. Ben Swayze, Supervisor
2865 Thornhills Avenue SE
Grand Rapids, MI 49503

**This permit is being issued by the Michigan Department of Environmental Quality (MDEQ), Water Resources Division, under the provisions of the Natural Resources and Environmental Protection Act, 1994 PA 451, as amended (NREPA), and specifically:**

☐ **Part 31, Water Resources Protection (Floodplain Regulatory Authority)**

☑ **Part 301, Inland Lakes and Streams**

☑ **Part 303, Wetlands Protection**

☐ **Part 315, Dam Safety**

☐ **Part 323, Shorelands Protection and Management**

☐ **Part 325, Great Lakes Submerged Lands**

☐ **Part 353, Sand Dunes Protection and Management**

**Permission is hereby granted, based on permittee assurance of adherence to State of Michigan requirements and permit conditions, to:**

Excavate approximately 390 cubic yards of material and place approximately 431 cubic yards of fill below the ordinary high-water mark (OHWM) of the Thornapple Hills Drain and an unnamed tributary to reconstruct eroded banks, install riprap bank protection, install one catch basin, remove accumulated materials, construct 202 linear feet of flood benches, two riffles, one plunge pool, and two armored spillways with pools. Place temporary construction mats in regulated wetland for construction access purpose. All work shall be completed in accordance with the approved plans and specifications of this permit.

Watercourse Affected: Thornapple Hills County Drain and unnamed tributary
Property Location: KentCounty, Cascade Township
Town/Range/Section(s) 06N 10W 16 and 17, Property Tax No. see approved plans

**Authority granted by this permit is subject to the following limitations:**

A. Initiation of any work on the permitted project confirms the permittee's acceptance and agreement to comply with all terms and conditions of this permit.
B. The permittee, in exercising the authority granted by this permit, shall not cause unlawful pollution as defined by Part 31, Water Resources Protection, of the NREPA.
C. This permit shall be kept at the site of the work and available for inspection at all times during the duration of the project or until its date of expiration.
D. All work shall be completed in accordance with the approved plans and specifications submitted with the application and/or plans and specifications attached to this permit.
E. No attempt shall be made by the permittee to forbid the full and free use by the public of public waters at or adjacent to the structure or work approved.
F. It is made a requirement of this permit that the permittee give notice to public utilities in accordance with Act No. 174 of the Public Acts of 2013 and comply with each of the requirements of Act 174.
G. This permit does not convey property rights in either real estate or material, nor does it authorize any injury to private property or invasion of public or private rights, nor does it waive the necessity of seeking federal assent, all local permits, or complying with other state statutes.
H. This permit does not prejudice or limit the right of a riparian owner or other person to institute proceedings in any circuit court of this state when necessary to protect his rights.
I. Permittee shall notify the MDEQ within one week after the completion of the activity authorized by this permit, by completing and forwarding the

attached preaddressed postcard to the office addressed thereon.

J. This permit shall not be assigned or transferred without the written approval of the MDEQ.

K. Failure to comply with conditions of this permit may subject the permittee to revocation of permit and criminal and/or civil action as cited by the specific state act, federal act, and/or rule under which this permit is granted.

L. All dredged or excavated materials shall be disposed of in an upland site (outside of floodplains, unless exempt under Part 31 of the NREPA, and wetlands).

M. In issuing this permit, the MDEQ has relied on the information and data that the permittee has provided in connection with the submitted application for permit. If, subsequent to the issuance of a permit, such information and data prove to be false, incomplete, or inaccurate, the MDEQ may modify, revoke, or suspend the permit, in whole or in part, in accordance with the new information.

N. The permittee shall indemnify and hold harmless the State of Michigan and its departments, agencies, officials, employees, agents, and representatives for any and all claims or causes of action arising from acts or omissions of the permittee, or employees, agents, or representative of the permittee, undertaken in connection with this permit. The permittee's obligation to indemnify the State of Michigan applies only if the state: (1) provides the permittee or its designated representative written notice of the claim or cause of action within 30 days after it is received by the state, and (2) consents to the permittee's participation in the proceeding on the claim or cause of action. It does not apply to contested case proceedings under the Administrative Procedures Act, 1969 PA 306, as amended, challenging the permit. This permit shall not be construed as an indemnity by the State of Michigan for the benefit of the permittee or any other person.

O. Noncompliance with these terms and conditions and/or the initiation of other regulated activities not specifically authorized shall be cause for the modification, suspension, or revocation of this permit, in whole or in part. Further, the MDEQ may initiate criminal and/or civil proceedings as may be deemed necessary to correct project deficiencies, protect natural resource values, and secure compliance with statutes.

P. If any change or deviation from the permitted activity becomes necessary, the permittee shall request, in writing, a revision of the permitted activity from the MDEQ. Such revision request shall include complete documentation supporting the modification and revised plans detailing the proposed modification. Proposed modifications must be approved, in writing, by the MDEQ prior to being implemented.

Q. This permit may be transferred to another person upon written approval of the MDEQ. The permittee must submit a written request to the MDEQ to transfer the permit to the new owner. The new owner must also submit a written request to the MDEQ to accept transfer. The new owner must agree, in writing, to accept all conditions of the permit. A single letter signed by both parties that includes all of the above information may be provided to the MDEQ. The MDEQ will review the request and, if approved, will provide written notification to the new owner.

R. Prior to initiating permitted construction, the permittee is required to provide a copy of the permit to the contractor(s) for review. The property owner, contractor(s), and any agent involved in exercising the permit are held responsible to ensure that the project is constructed in accordance with all drawings and specifications. The contractor is required to provide a copy of the permit to all subcontractors doing work authorized by the permit.

S. Construction must be undertaken and completed during the dry period of the wetland. If the area does not dry out, construction shall be done on equipment mats to prevent compaction of the soil.

T. Authority granted by this permit does not waive permit requirements under Part 91, Soil Erosion and Sedimentation Control, of the NREPA, or the need to acquire applicable permits from the County Enforcing Agent..

U. Authority granted by this permit does not waive permit requirements under the authority of Part 305, Natural Rivers, of the NREPA. A Natural Rivers Zoning Permit may be required for construction, land alteration, streambank stabilization, or vegetation removal along or near a natural river.

V. The permittee is cautioned that grade changes resulting in increased runoff onto adjacent property is subject to civil damage litigation.

W. Unless specifically stated in this permit, construction pads, haul roads, temporary structures, or other structural appurtenances to be placed in a wetland or on bottomland of the water body are not authorized and shall not be constructed unless authorized by a separate permit or permit revision granted in accordance with the applicable law.

X. For projects with potential impacts to fish spawning or migration, no work shall occur within fish spawning or migration timelines (i.e., windows) unless otherwise approved in writing by the Michigan Department of Natural Resources, Fisheries Division.

Y. Work to be done under authority of this permit is further subject to the following special instructions and specifications:

The authority to conduct the activity as authorized by this permit is granted solely under the provisions of the governing act as identified above. This permit does not convey, provide, or otherwise imply approval of any other governing act, ordinance, or regulation, nor does it waive the permittee's obligation to acquire any local, county, state or federal approval or authorization, necessary to conduct the activity.

No fill, excess soil, or other material shall be placed in any wetland or surface water area not specifically authorized by this permit, its plans, and specifications.

This permit does not authorize or sanction work that has been completed in violation of applicable federal, state, or local statutes.

The permittee is responsible for acquiring all necessary easements or rights-of-way before commencing any work authorized by this permit. All construction operations relating to or part of this project shall be confined to the existing right-of-way limits or other acquired easements.

The permit placard shall be kept posted at the work site, in a prominent location at all times for the duration of the project, or until permit expiration.

This permit is being issued for the maximum time allowed and no extensions of this permit will be granted. Initiation of the construction work authorized by this permit indicates the permittee's acceptance of this condition. The permit, when signed by the MDEQ, will be for a five-year period beginning at the date of issuance. If the project is not completed by the expiration date, a new permit must be sought.

Prior to the start of construction, all adjacent non-work wetland areas shall be protected by properly trenched sedimentation barrier to prevent sediment from entering the wetland. Orange construction fencing shall be installed as needed to prohibit construction personnel and equipment from entering or performing work in these areas. Fence shall be maintained daily throughout the construction process. Upon project completion, the accumulated materials shall be removed and disposed of at an upland site, the sedimentation barrier shall

then be removed in its entirety and the area restored to its original configuration and cover.

Construction must be undertaken and completed during the dry period of the wetland, or when frozen. If the area does not dry out or freeze, construction shall be done on equipment mats to prevent compaction of the soil.

Upon completion of the project, the disturbed wetland areas shall be restored to the original contour elevation, revegetated and reseeded with species native to Michigan appropriate to the site, and mulched to prevent erosion.

All raw areas in uplands resulting from the permitted construction activity shall be effectively stabilized with sod and/or seed and mulch (or other technology specified by this permit or project plans) in a sufficient quantity and manner to prevent erosion and any potential siltation to surface waters or wetlands. Temporary stabilization measures shall be installed before or upon commencement of the permitted activity, and shall be maintained until permanent measures are in place. Permanent measures shall be in place within five (5) days of achieving final grade.

All raw earth within 100 feet of a lake, stream, or wetland that is not brought to final stabilization by the end of the active growing season shall be temporarily stabilized with mulch blankets in accordance with the following dates: September 20th for the Upper Peninsula, October 1st for the Lower Peninsula north of US-10, and October 10th for the Lower Peninsula south of US-10.

All dredge/excavated spoils including organic and inorganic soils, vegetation, and other material removed shall be placed on upland (non-wetland, non-floodplain or non-bottomland), prepared for stabilization, and stabilized with sod and/or seed and mulch in such a manner to prevent and ensure against erosion of any material into any waterbody, wetland, or floodplain.

All fill/backfill shall consist of clean inert material that will not cause siltation nor contain soluble chemicals, organic matter, pollutants, or contaminants. All fill shall be contained in such a manner so as not to erode into any surface water, floodplain, or wetland. All raw areas associated with the permitted activity shall be stabilized with sod and/or seed and mulch, riprap, or other technically effective methods as necessary to prevent erosion.

All riprap shall be properly sized and graded based on wave action and velocity, and shall consist of natural field stone or rock (free of paint, soil or other fines, asphalt, soluble chemicals, or organic material). Broken concrete is not allowed.

Exposed streambanks resulting from this construction shall be stabilized with temporary measures in accordance with appropriate Best Management Practices based on site conditions, and if necessary, may be riprapped extending above the ordinary high water mark, to provide adequate erosion protection. Temporary stabilization measures shall be maintained until permanent measures are in place.

All other exposed slopes, ditches, and other raw areas draining directly to the stream may be protected with riprap, sod and/or seed and mulch as may be necessary to provide effective erosion protection. The placement of riprap shall be limited to the minimum necessary to ensure proper stabilization of the side slopes and fill in the immediate vicinity of the structure.

Mulch blankets that will remain permanently on the bank shall consist of biodegradable materials so as not to negatively impact aquatic and terrestrial wildlife accessing the stream channel.

Riffles shall be constructed in the center of the channel and keyed into banks and floodbench using a minimum of two rocks deep.

To avoid take of Northern long-eared bat, which is federally listed as a threatened species, and Indiana bat, which is federally listed as an endangered species, any trees larger than 3 inches in diameter shall not be cut between April 1st and September 30th in any permit year.

If the project, or any portion of the project, is stopped and lies incomplete for any length of time other than that encountered in a normal work week, every precaution shall be taken to protect the incomplete work from erosion.

No work shall be done in the stream during periods of above-normal flows except as necessary to prevent erosion.

Issued By: Amanda Whitscell

Amanda Whitscell,
Water Resources Division
Grand Rapids District Office

cc: Cascade Township Clerk
Kent County Drain Commissioner
Kent CEA
FTCH, Inc., Cheryl Pitchford, agent

PLOT INFO: Z:\2013\130842\CAD\PRECD\PERMIT\P001130842.DWG LAYOUT: LAYOUT1 DATE: 9/30/2015 TIME: 1:26:30 PM USER: MB2

©Copyright 2015 All Rights Reserved

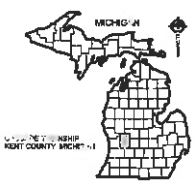
# Cascade Township

## Thornapple Hills Drain Restoration

Cascade Township, Kent County, Mi

September 30, 2015
Project Number G130842

VICINITY MAP




UTILITY INFORMATION

RECEIVED
September 30, 2015
Water Resources Division
Grand Rapids

ftc&h

**Fishbeck, Thompson, Carr & Huber, Inc.**
Engineers • Scientists • Architects • Constructors
1515 Arboretum Drive, Grand Rapids, Michigan 49546
(800) 456-3824 www.ftch.com

DEQ - WRD Approved Plans
File #15-41-0016-P
Date: Decemeber 14, 2015
Page 1 of 28

LOCATION MAP

**Cascade Township**
Cascade Township, Kent County, Michigan

**Thornapple Hills Drain Restoration**

Hard copy is intended to be 8.5"x11" when plotted. Scale(s) indicated and graphic quality may not be accurate for any other size.

fishbeck, thompson, carr & huber, inc.
www.ftch.com

ftc&h
engineers
scientists
architects
constructors

9/30/2015
MDEQ
PERMIT

PROJECT NO.
G130842

FIGURE NO.
1

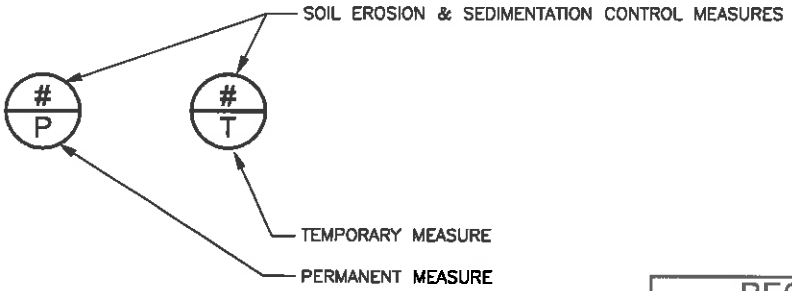
©Copyright 2015 All Rights Reserved

## MACDC EROSION CONTROL MEASURES

| KEY | SESC MEASURE | SYMBOL | WHERE USED |
|---|---|---|---|
| 1 | SEEDING | | When bare soil is exposed, temporarily or permanently, to erosive forces from wind and or water on flat areas, mild slopes, grassed waterways and spillways, diversion ditches and dikes, borrow and stockpile areas, and spoil piles. |
| 2 | MULCH | | On flat areas, mild slopes, grassed waterways and spillways, diversion ditches and dikes, borrow and stockpile areas, and spoil piles when areas are subject to raindrop impact, and erosive forces from wind or water. |
| 7 | RIPRAP | | Along drain banks, shorelines, or where concentrated flows occur. Slows velocity, reduces erosion and sediment load. |
| 9 | OUTFALL STABILIZATION | | In the stream or drain bank usually above the ordinary high water mark where an enclosed drain or tile discharges to an open drain. |
| 10 | SIDE DITCH OUTLET | | In a ditch or drain just upgradient from the discharge into a stream or open drain to prevent erosive velocities. |
| 15 | ARMORED SPILLWAY | | When concentrated flow must be conveyed down a drain bank or slope or discharge into another drain. Where slope failure or channel scour is observed or is likely to occur, or when runoff must be redirected around work in the drain. |
| 40 | CHECK DAM | | In constructed and existing flow corridors to reduce flow velocities. |

## MACDC MAINTENANCE/CONSTRUCTION/RESTORATION ACTIVITIES

| KEY | ACTIVITY | WHERE USED |
|---|---|---|
| 80 | DEBRIS REMOVAL | In county drains when deadfall, and other objects, such as shopping carts, tires, appliances, and mattresses have accumulated in the drain. |
| 84 | VEGETATION REMOVAL WITH SELECTIVE GRUBBING | In drain easements, drain banks, or within the channel when vegetation roots pose a threat to channel and bank stability or access is required. |
| 85 | SLOPE AND STREAMBANK STABILIZATION | Where existing slope or drain bank is failing and erosion is occurring. Runoff inflows must be redirected within the drain easements. |
| 101 | DRAIN RELOCATION | In a new location with consideration for the topography and to minimize environmental disturbances. |
| 108 | RIFFLE ZONES | Within the channel where the stream bottom is higher relative to streambed elevation immediately upstream or downstream. |
| 111 | ROCK CROSS VANES | Reduces near bank shear stress, centralizes flow, grade control and stabilizes eroding banks. |
| 112 | VANES | Reduces near bank shear stress, and stabilizes banks on the outer bend of meanders. |
| 113 | ROCK WEIR STEP–POOL | Within channel to stabilize channel bottom head–cut. |
| 114 | ROCK SPILLWAY | Stabilize banks by preventing erosion of the bottom of waterways |



RECEIVED
September 30, 2015
Water Resources Division
Grand Rapids

DEQ - WRD Approved Plans
File #15-41-0016-P
Date: Decemeber 14, 2015
Page 2 of 28

# Cascade Township

Cascade Township, Kent County, Michigan

**Thornapple Hills Drain Restoration**

Hard copy is intended to be 8.5"x11" when plotted. Scale(s) indicated and graphic quality may not be accurate for any other size.

fitch, thompson, carr & huber, inc.
www.fitch.com

fitch
engineers
scientists
architects
constructors

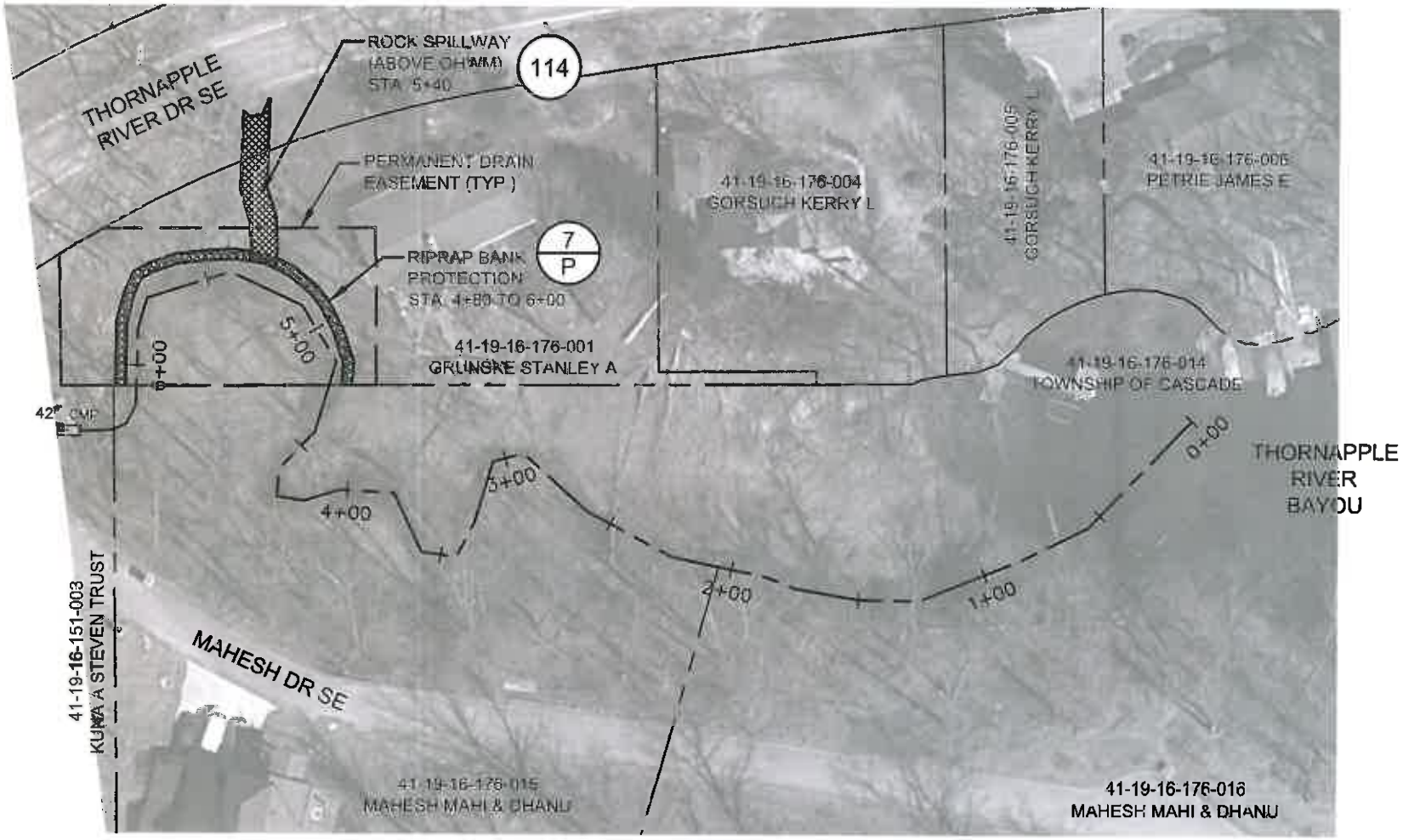
9/30/2015
MDEQ
PERMIT

PROJECT NO. G130842

FIGURE NO. 2

PLOT INFO: Z:\2013\130842\CAD\PRECD\PERMIT\P003130842.DWG LAYOUT: LAYOUT1 DATE: 9/30/2015 TIME: 11:37:35 AM USER: MB2

©Copyright 2015 All Rights Reserved




RECEIVED
September 30, 2015
Water Resources Division
Grand Rapids

DEQ - WRD Approved Plans
File #15-41-0016-P
Date: Decemeber 14, 2015
Page 3 of 28

NORTH

PLAN
STA 0+00 - 6+50
SCALE: 1" = 60'
0 30 60

fitch engineers scientists architects constructors
fishbeck, thompson, carr & huber, inc.
www.fitch.com

Hard copy is intended to be 8.5"x11" when plotted. Scale(s) indicated and graphic quality may not be accurate for any other size.

# Cascade Township
Cascade Township, Kent County, Michigan

**Thornapple Hills Drain Restoration**

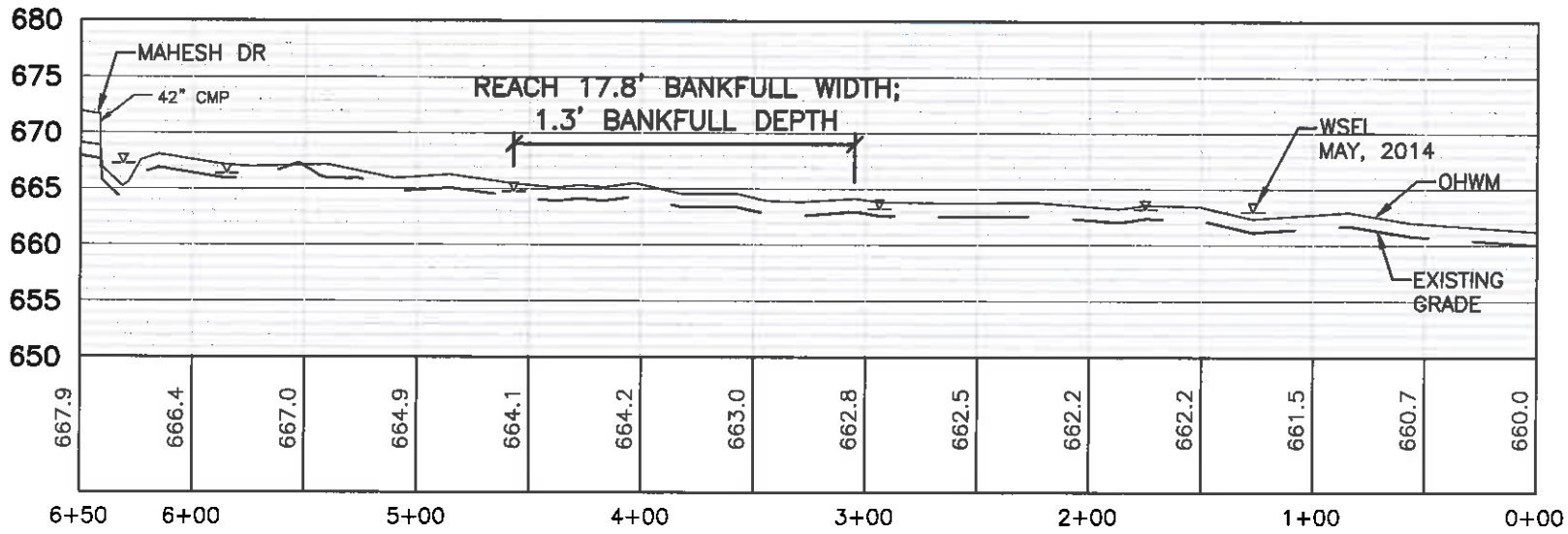
9/30/2015
MDEQ
PERMIT

PROJECT NO. G130842

FIGURE NO. 3

©Copyright 2015 All Rights Reserved

RECEIVED
September 30, 2015
Water Resources Division
Grand Rapids




DEQ - WRD Approved Plans
File #15-41-0016-P
Date: Decemeber 14, 2015
Page 4 of 28

**PROFILE**

STA 0+00 - 6+50

SCALE: 1" = 80'

0 40 80

VERT SCALE: 1" = 16'

# Cascade Township

Cascade Township, Kent County, Michigan

**Thornapple Hills Drain Restoration**

Hard copy is intended to be 8.5"X11" when plotted. Scale(s) indicated and graphic quality may not be accurate for any other size.

fitch
engineers
scientists
architects
constructors
fishbeck, thompson, carr & huber, inc.
www.fitch.com

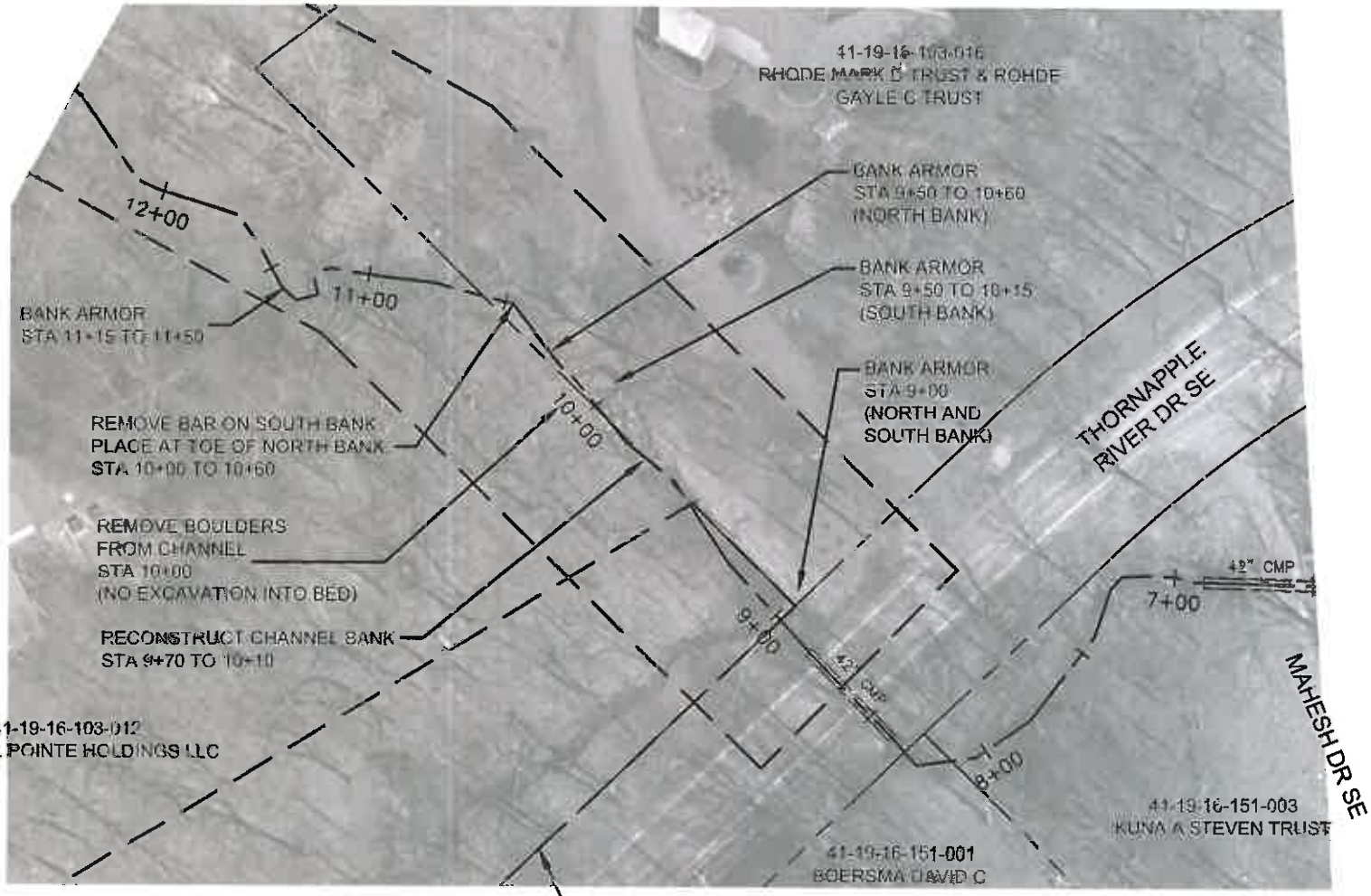
9/30/2015
MDEQ
PERMIT

PROJECT NO.
G130842

FIGURE NO.
4

PLOT INFO: Z:\2013\130842\CAD\PRECD\PERMIT\P005130842.DWG LAYOUT: LAYOUT1 DATE: 9/30/2015 TIME: 11:38:34 AM USER: MB2

©Copyright 2015 All Rights Reserved




RECEIVED
September 30, 2015
Water Resources Division
Grand Rapids

DEQ - WRD Approved Plans
File #15-41-0016-P
Date: Decemeber 14, 2015
Page 5 of 28

NORTH

**PLAN**

## STA 6+50 - 12+50

SCALE: 1" = 60'

0 30 60

# Cascade Township

Cascade Township, Kent County, Michigan

**Thornapple Hills Drain Restoration**

Hard copy is intended to be 8.5"x11" when plotted. Scale(s) indicated and graphic quality may not be accurate for any other size.

www.fteh.com

fishbeck, thompson, carr & huber, inc.

fteh

engineers
scientists
architects
constructors

9/30/2015
MDEQ
PERMIT

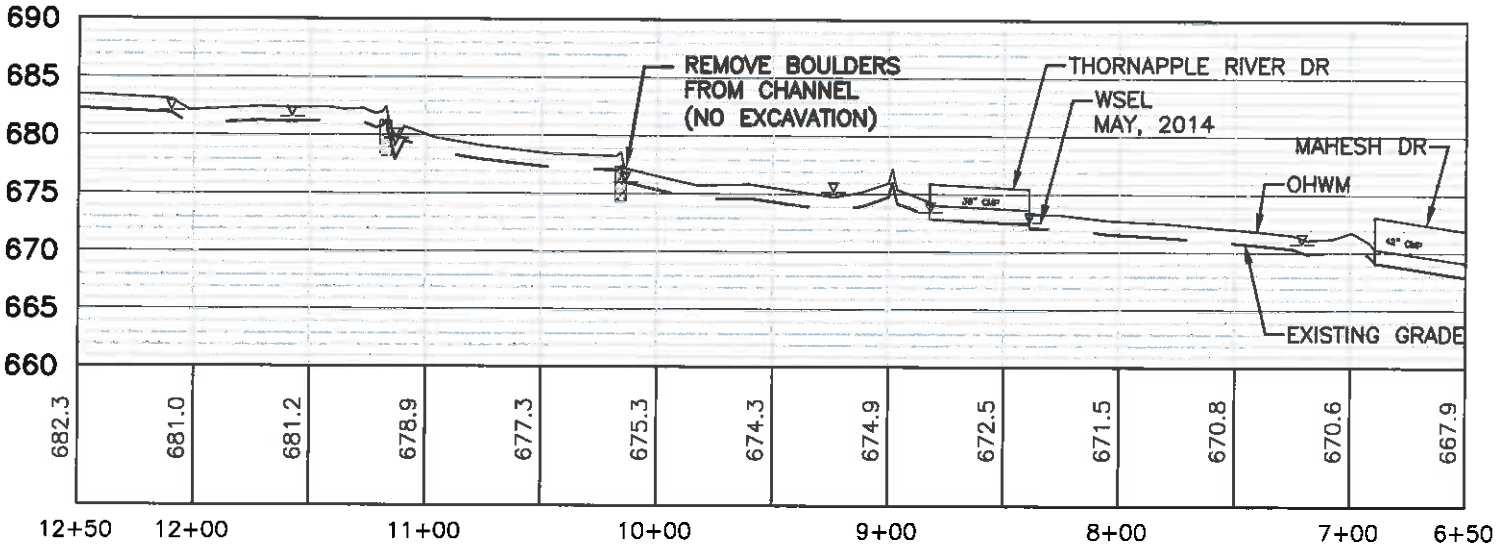
PROJECT NO.
G130842

FIGURE NO.
5

PLOT INFO: Z:\2013\130842\CAD\PRECD\PERMIT\P006130842.DWG LAYOUT: LAYOUT1 DATE: 9/30/2015 TIME: 11:39:03 AM USER: MB2

©Copyright 2015 All Rights Reserved

RECEIVED
September 30, 2015
Water Resources Division
Grand Rapids




DEQ - WRD Approved Plans
File #15-41-0016-P
Date: Decemeber 14, 2015
Page 6 of 28

**PROFILE**

## STA 6+50 - 12+50

SCALE: 1" = 80'

0 40 80

VERT SCALE: 1" = 16'

fitch engineers scientists architects constructors

fishbeck, thompson, carr & huber, inc.
www.fitch.com

Hard copy is intended to be 8.5"x11" when plotted. Scale(s) indicated and graphic quality may not be accurate for any other size.

# Cascade Township

Cascade Township, Kent County, Michigan

**Thornapple Hills Drain Restoration**

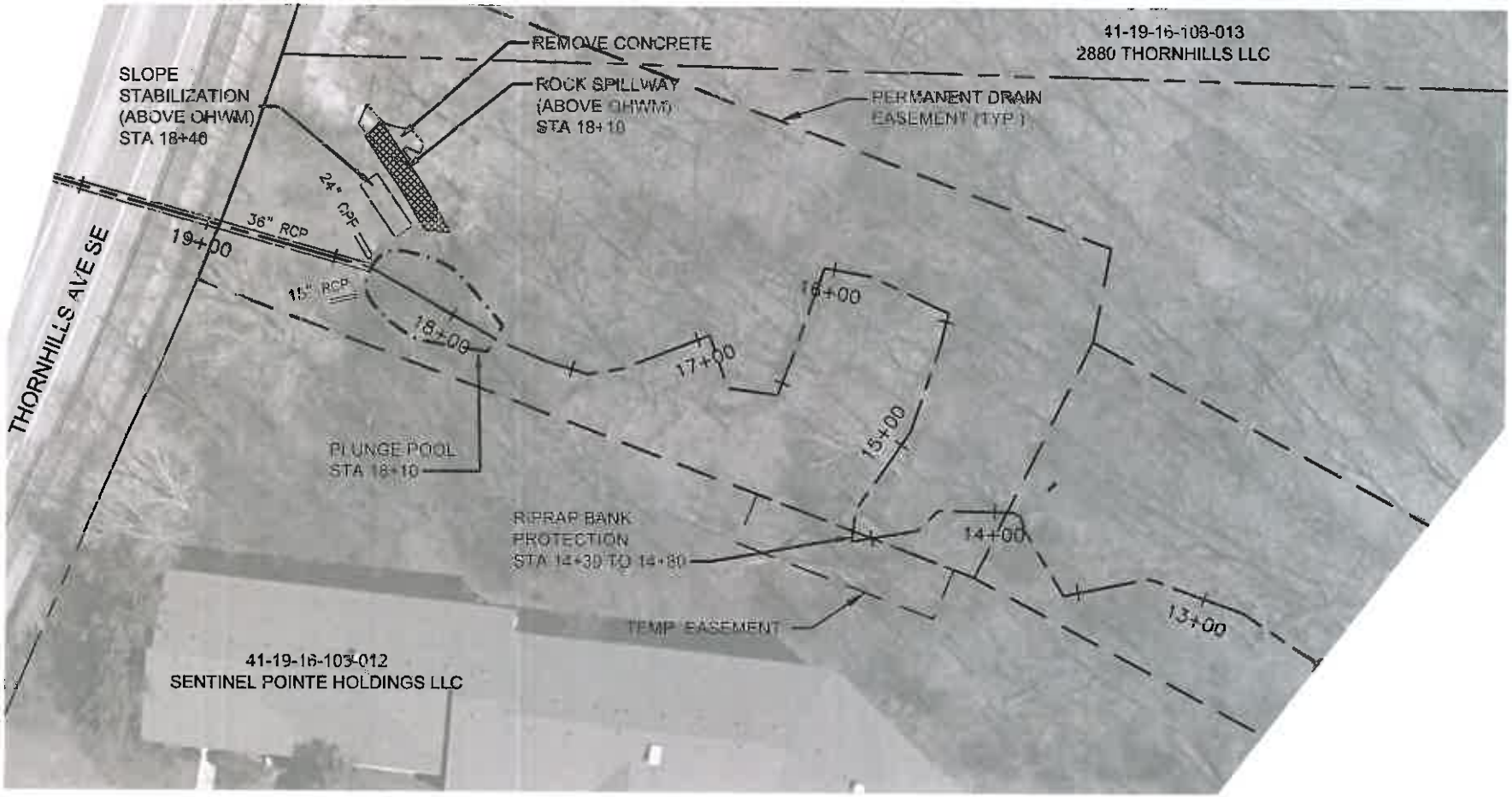
9/30/2015
MDEQ
PERMIT

PROJECT NO.
G130842

FIGURE NO.
6

PLOT INFO: Z:\2013\130842\CAD\PRECD\PERMIT\P007130842.DWG LAYOUT: LAYOUT1 DATE: 9/30/2015 TIME: 11:39:34 AM USER: MB2

©Copyright 2015 All Rights Reserved




DEQ - WRD Approved Plans
File #15-41-0016-P
Date: Decemeber 14, 2015
Page 7 of 28

RECEIVED
September 30, 2015
Water Resources Division
Grand Rapids

NORTH

**PLAN**

## STA 12+50 - 19+50

SCALE: 1" = 60'

0 30 60

# Cascade Township

Cascade Township, Kent County, Michigan

**Thornapple Hills Drain Restoration**

Hard copy is intended to be 8.5"x11" when plotted. Scale(s) indicated and graphic quality may not be accurate for any other size.

fitch, thompson, carr & huber, inc.
www.fitch.com

fitch
engineers
scientists
architects
constructors

9/30/2015
MDEQ
PERMIT

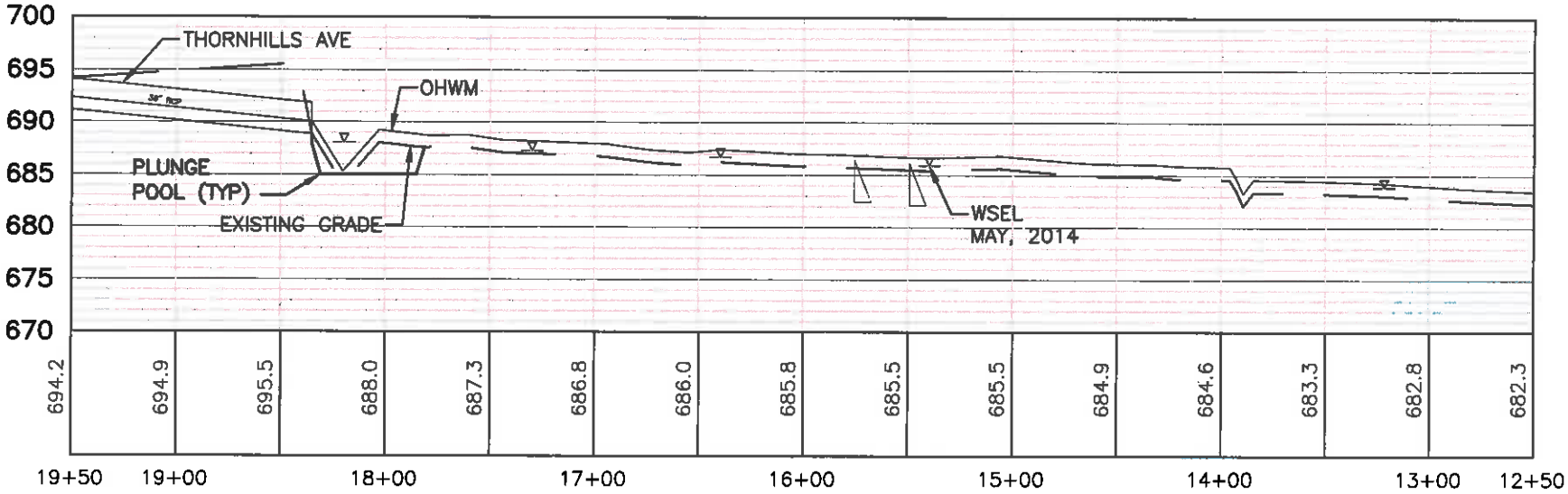
PROJECT NO.
G130842

FIGURE NO.
7

PLOT INFO: Z:\2013\130842\CAD\PRECD\PERMIT\P008130842.DWG LAYOUT: LAYOUT1 DATE: 9/30/2015 TIME: 11:40:03 AM USER: MB2

©Copyright 2015 All Rights Reserved

RECEIVED
September 30, 2015
Water Resources Division
Grand Rapids




DEQ - WRD Approved Plans
File #15-41-0016-P
Date: Decemeber 14, 2015
Page 8 of 28

**PROFILE**

## STA 12+50 - 19+50

SCALE: 1" = 80'

0 40 80

VERT SCALE: 1" = 16"

fTC&h
engineers
scientists
architects
constructors

fishbeck, thompson, carr & huber, inc.
www.ftch.com

Hard copy is intended to be 8.5"x11" when plotted. Scale(s) indicated and graphic quality may not be accurate for any other size.

# Cascade Township

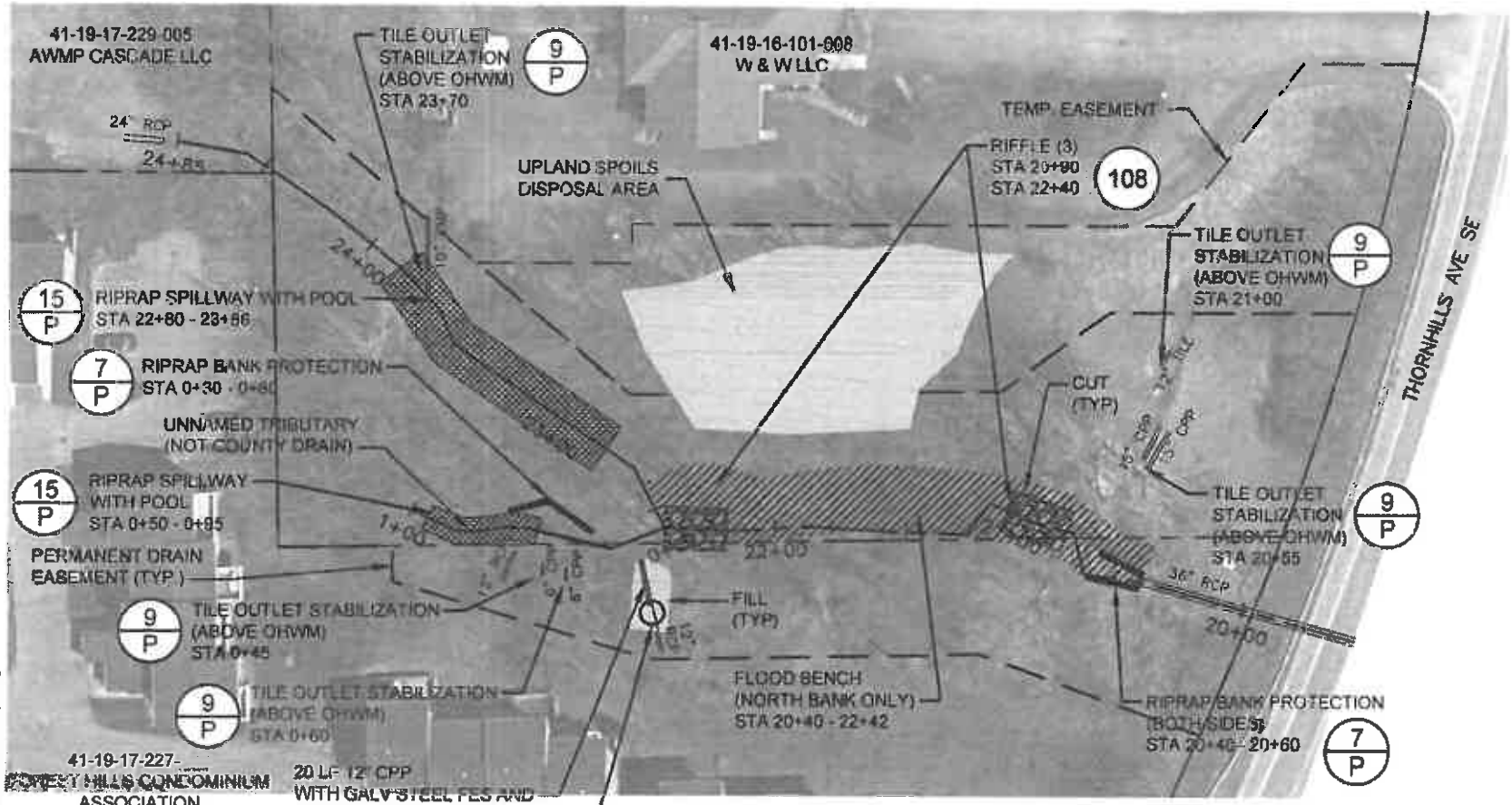
Cascade Township, Kent County, Michigan

**Thornapple Hills Drain Restoration**

9/30/2015
MDEQ
PERMIT

PROJECT NO.
G130842

FIGURE NO.
8




DEQ - WRD Approved Plans
File #15-41-0016-P
Date: Decemeber 14, 2015
Page 9 of 28

NORTH

PLAN
STA 19+50 - 24+85
SCALE: 1" = 60'
0 30 60

RECEIVED
December 14, 2015
WRD - Grand Rapids

fitch engineers scientists architects constructors

Cascade Township
Cascade Township, Kent County, Michigan

Thornapple Hills Drain Restoration

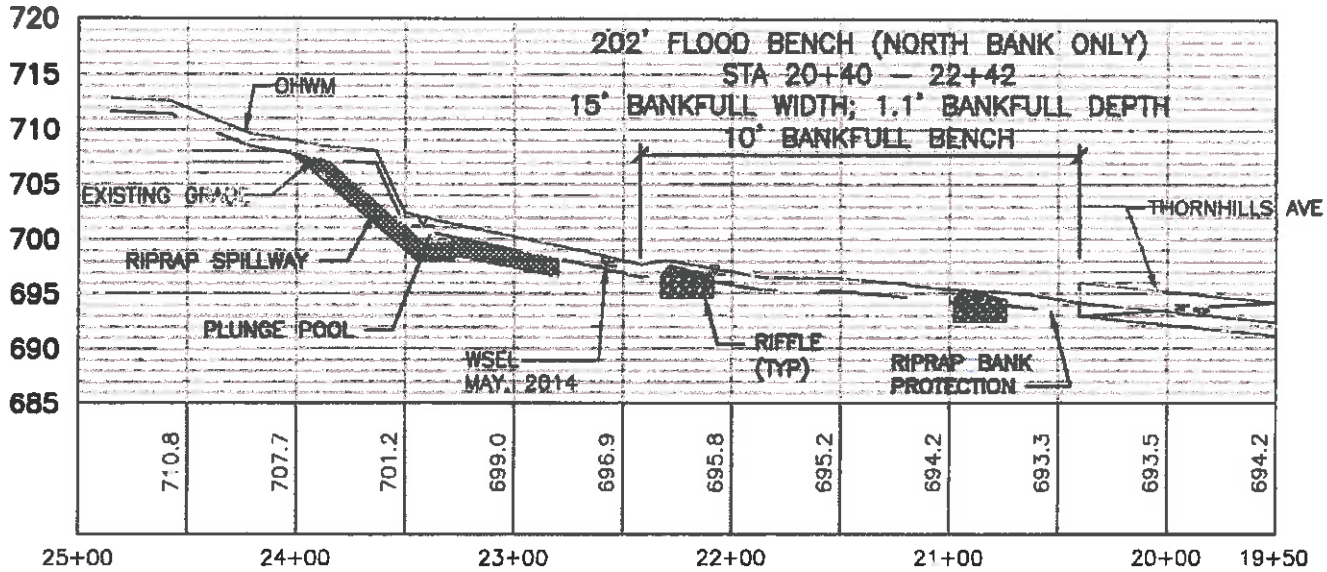
9/30/2015
MDEQ PERMIT

PROJECT NO. G130842

FIGURE NO 9

PLOT INFO: Z:\2013\130842\CAD\PRECD\PERMIT\PC10130842.DWG LAYOUT: LAYOUT1 DATE: 12/14/2015 TIME: 11:20:33 AM USER: MB2

Copyright 2015 All Rights Reserved




RECEIVED
December 14, 2015
WRD - Grand Rapids

DEQ - WRD Approved Plans
File #15-41-0016-P
Date: Decemeber 14, 2015
Page 10 of 28

**PROFILE**

## STA 19+50 - 24+85

SCALE: 1" = 80'

0 40 80

**Cascade Township**

Cascade Township, Kent County, Michigan

**Thornapple Hills Drain Restoration**

fitch engineers scientists architects constructors

Hardcopy is intended to be 8.5"x11" when plotted. Scale(s) indicated and graphic quality may not be accurate for any other size.

9/30/2015
MDEQ
PERMIT

PROJECT NO. G130842

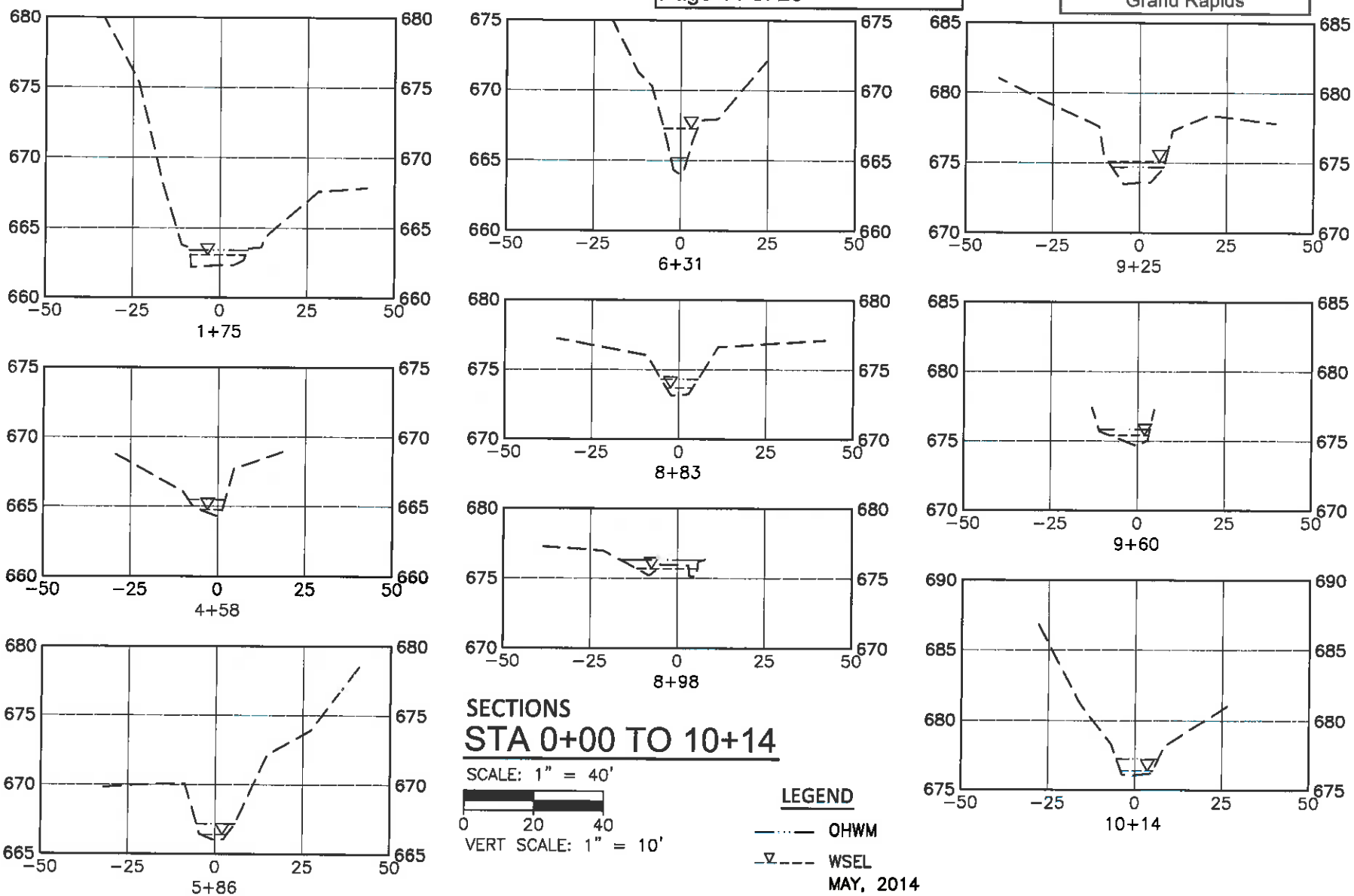
FIGURE NO. 10

PLOT INFO: Z:\2013\130842\CAD\PRECD\PERMIT\P011130842.DWG LAYOUT: LAYOUT1 DATE: 9/30/2015 TIME: 11:41:39 AM USER: MB2

©Copyright 2015 All Rights Reserved

DEQ - WRD Approved Plans
File #15-41-0016-P
Date: Decemeber 14, 2015
Page 11 of 28

RECEIVED
September 30, 2015
Water Resources Division
Grand Rapids




## SECTIONS
## STA 0+00 TO 10+14

SCALE: 1" = 40'

0 20 40

VERT SCALE: 1" = 10'

**LEGEND**

OHWM

WSEL

MAY, 2014

# Cascade Township

Cascade Township, Kent County, Michigan

**Thornapple Hills Drain Restoration**

fitch engineers scientists architects constructors

fishbeck, thompson, carr & huber, inc.
www.fitch.com

Hard copy is intended to be 8.5"x11" when plotted. Scale(s) indicated and graphic quality may not be accurate for any other size.

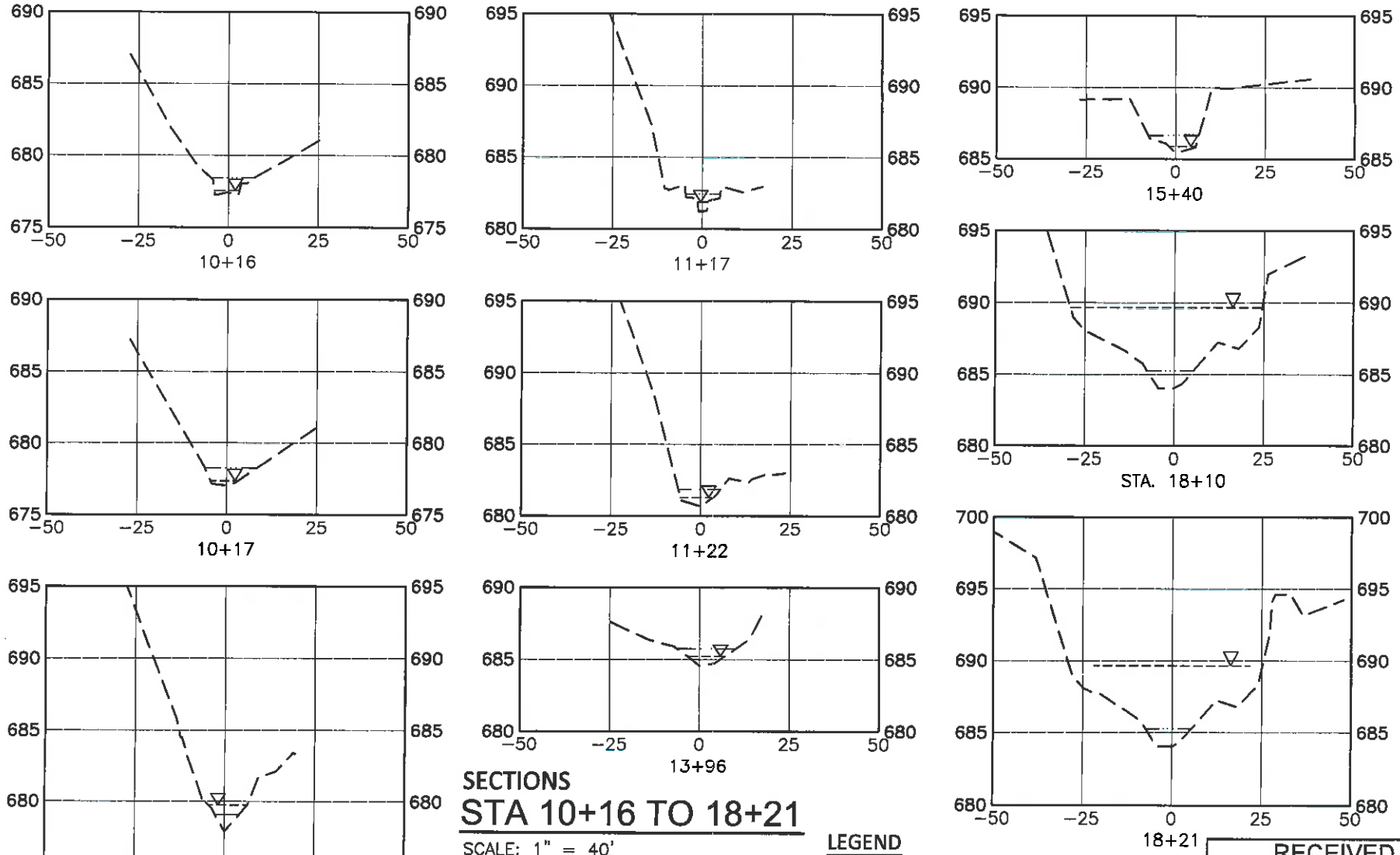
9/30/2015
MDEQ
PERMIT

PROJECT NO. G130842

FIGURE NO. 11

PLOT INFO: Z:\2013\130842\CAD\PRECD\PERMIT\P012130842.DWG LAYOUT: LAYOUT1 DATE: 9/30/2015 TIME: 11:42:14 AM USER: MB2

©Copyright 2015 All Rights Reserved




## SECTIONS
## STA 10+16 TO 18+21

SCALE: 1" = 40'

0 20 40

VERT SCALE: 1" =10'

**LEGEND**

OHWM

WSEL

MAY, 2014

RECEIVED
September 30, 2015
Water Resources Division
Grand Rapids

DEQ - WRD Approved Plans
File #15-41-0016-P
Date: Decemeber 14, 2015
Page 12 of 28

# Cascade Township

Cascade Township, Kent County, Michigan

**Thornapple Hills Drain Restoration**

Hard copy is intended to be 8.5"x11" when plotted. Scale(s) indicated and graphic quality may not be accurate for any other size.

fishbeck, thompson, carr & huber, inc.
www.ftch.com

ftch
engineers
scientists
architects
constructors

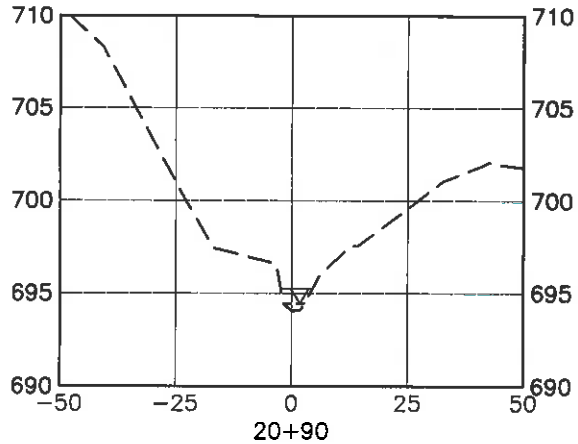
PROJECT NO. G130842

FIGURE NO. 12

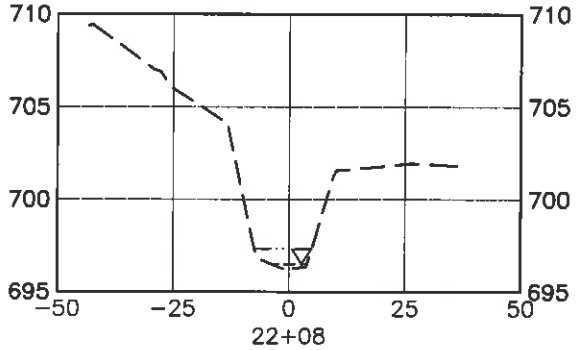
9/30/2015
MDEQ
PERMIT

PLOT INFO: Z:\2013\130842\CAD\PRECD\PERMIT\P013130842.DWG LAYOUT: LAYOUT1 DATE: 9/30/2015 TIME: 11:42:48 AM USER: MB2

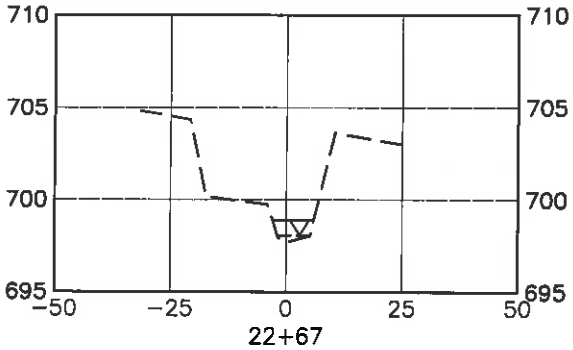
©Copyright 2015 All Rights Reserved



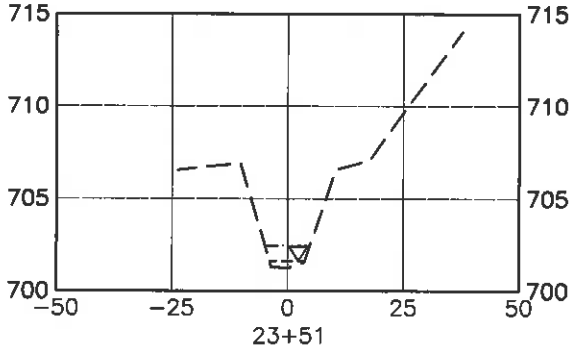

20+90



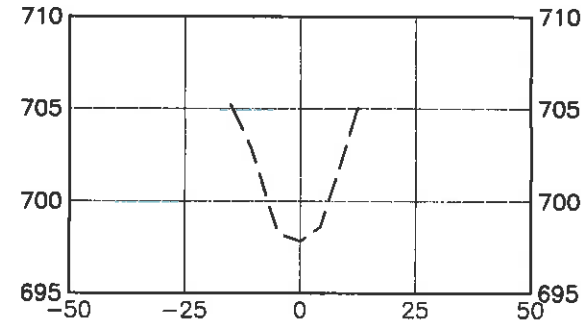

22+08



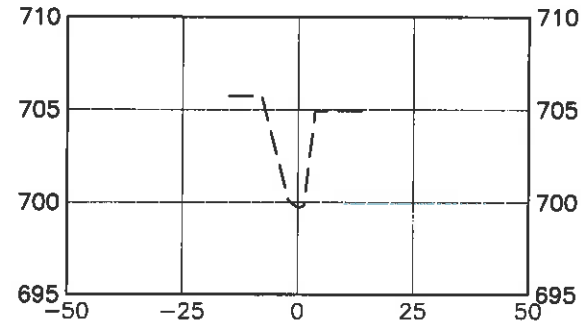

22+67



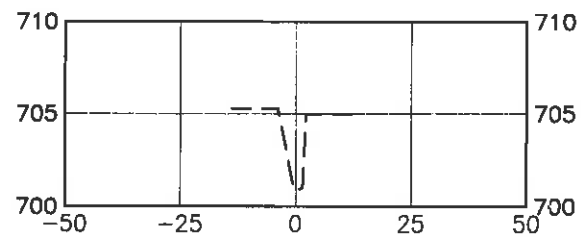

23+51




UNNAMED TRIB – STA. 0+66




UNNAMED TRIB – STA. 0+78




UNNAMED TRIB – STA. 0+92

# STA 20+90 TO 23+51 AND UNNAMED TRIBUTARY

SCALE: 1" = 40'

0 20 40

VERT SCALE: 1" = 10'

LEGEND

OHWM

WSEL

MAY, 2014

RECEIVED
September 30, 2015
Water Resources Division
Grand Rapids

DEQ - WRD Approved Plans
File #15-41-0016-P
Date: Decemeber 14, 2015
Page 13 of 28

**Cascade Township**
Cascade Township, Kent County, Michigan

**Thornapple Hills Drain Restoration**

Hard copy is intended to be 8.5"x11" when plotted. Scale(s) indicated and graphic quality may not be accurate for any other size.

fitch
engineers
scientists
architects
constructors
fishbeck, thompson, carr & huber, inc.
www.fitch.com

9/30/2015
MDEQ
PERMIT

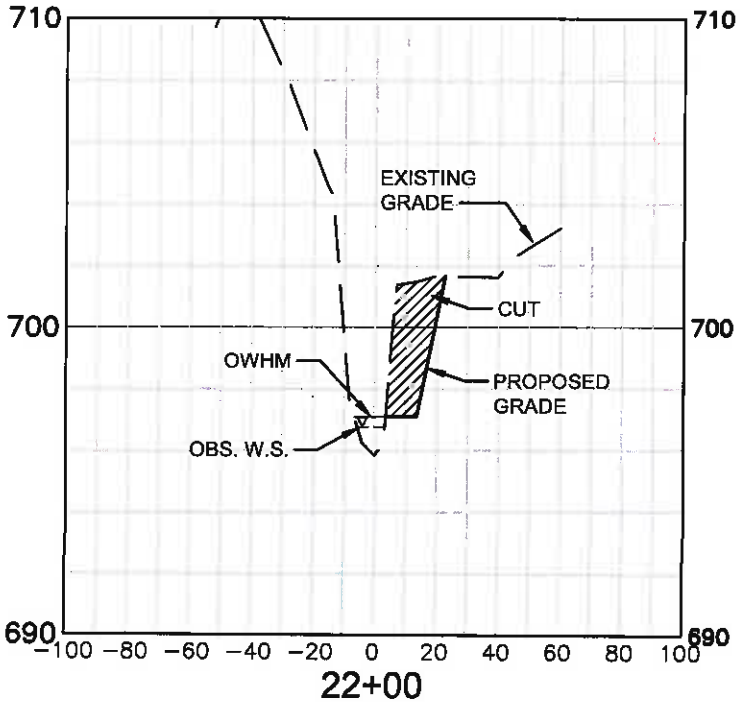
PROJECT NO.
G130842

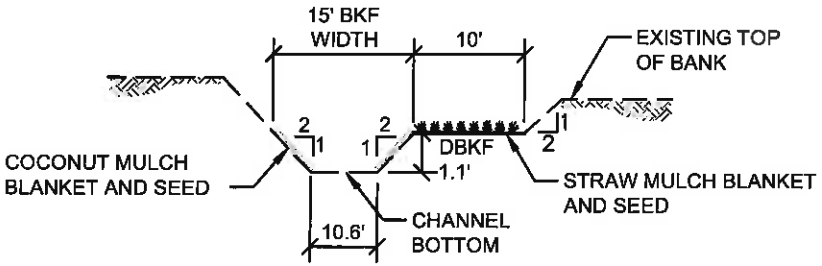
FIGURE NO.
13

©Copyright 2015 All Rights Reserved

DEQ - WRD Approved Plans
File #15-41-0016-P
Date: Decemeber 14, 2015
Page 14 of 28

RECEIVED
September 30, 2015
Water Resources Division
Grand Rapids




EXISTING ENTRENCHMENT RATIO: 1.4
PROPOSED ENTRENCHMENT RATIO: 2.0
EXISTING WIDTH/DEPTH: 9.6
PROPOSED WIDTH/DEPTH: 13.6

STA. 20+40 TO 22+42

## FLOODBENCH CREATION (NORTH BANK ONLY)

NO SCALE

STA 20+40 - 22+42

## FLOOD BENCH DETAIL

NORTH

SCALE: 1" = 60'

0 30 60

VERT SCALE: 1" = 12'

fitch engineers scientists architects constructors

fishbeck, thompson, carr & huber, inc.
www.fitch.com

Hard copy is intended to be 8.5"x11" when plotted. Scale(s) indicated and graphic quality may not be accurate for any other size.

**Cascade Township**
Cascade Township, Kent County, Michigan

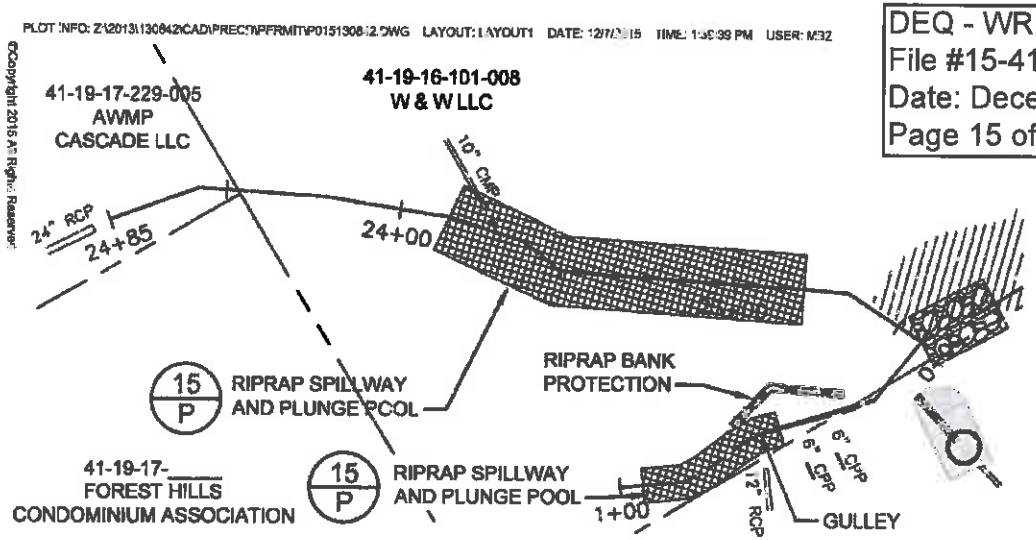
**Thornapple Hills Drain Restoration**

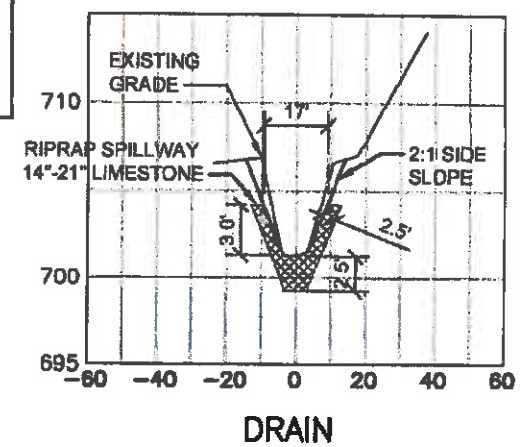
9/30/2015
MDEQ
PERMIT

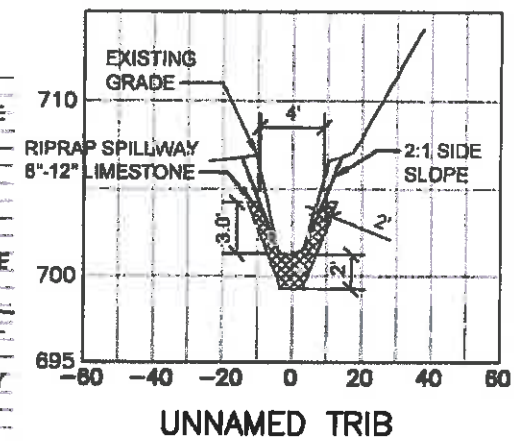
PROJECT NO.
G130842

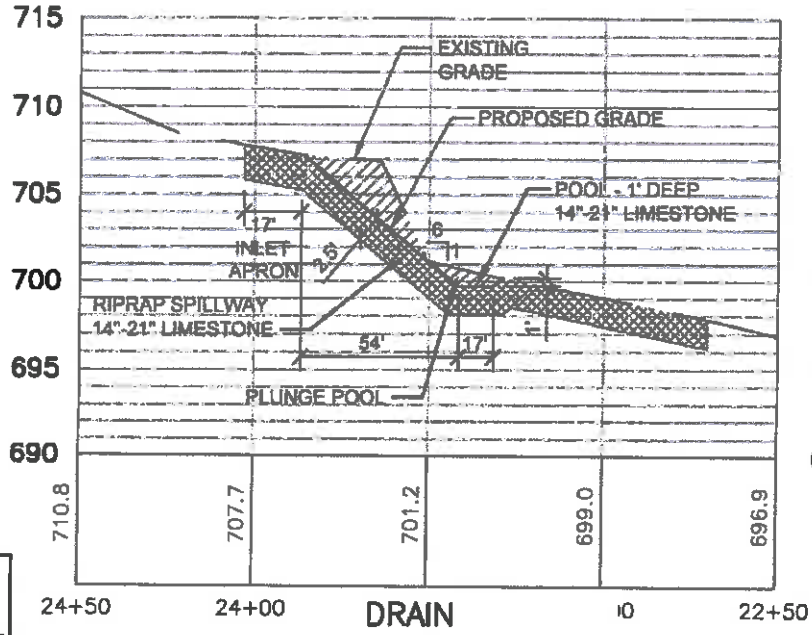
FIGURE NO.
14

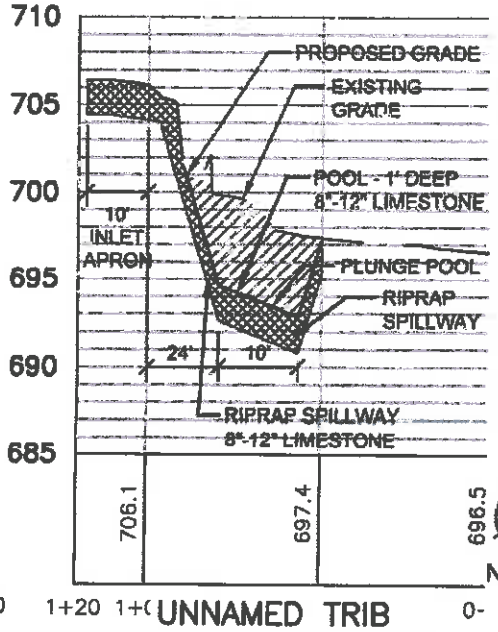
DEQ - WRD Approved Plans
File #15-41-0016-P
Date: Decemeber 14, 2015
Page 15 of 28



## RIPRAP SPILLWAY DETAIL

SCALE: 1" = 50'

0 25 50

VERT SCALE: 1" = 10'

RECEIVED
December 7, 2015
WRD - Grand Rapids

FIGURE NO. 15

PROJECT NO. G130842

9/30/2015
MDEQ
PERMIT

**Cascade Township**
Cascade Township, Kent County, Michigan

**Thornapple Hills Drain Restoration**

fitch engineers scientists architects constructors

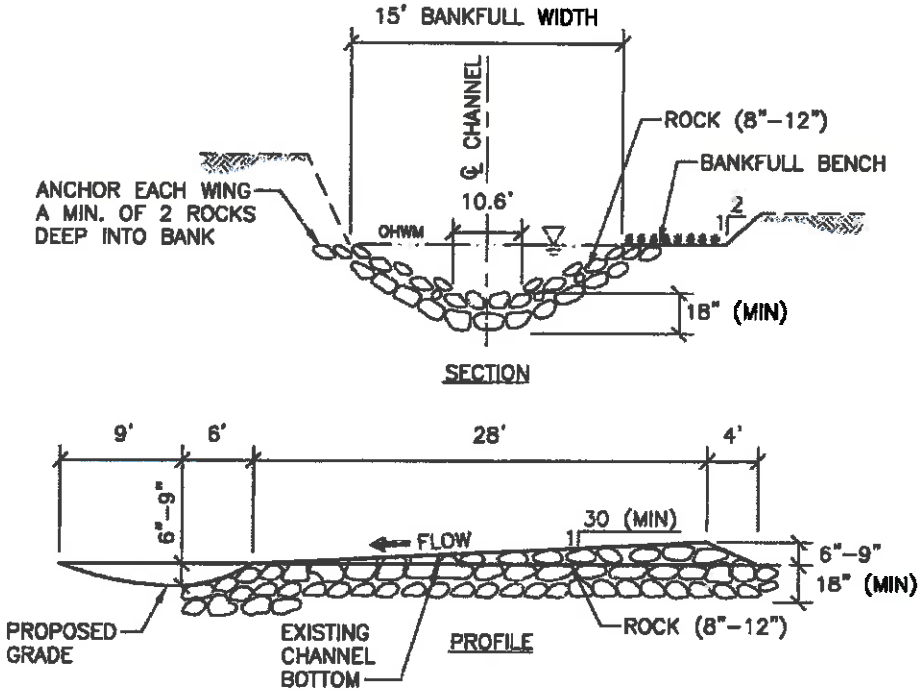
fishbeck, thompson, carr & huber, inc.
www.fitch.com

Hard copy is intended to be 8.5"x11" when plotted. Scale(s) indicated and graphic quality may not be accurate for any other size.

PLOT INFO: Z:\2015\130842\CAD\PRECD\PERMIT\P016130842.DWG LAYOUT: LAYOUT1 DATE: 12/7/2015 TIME: 9:06:12 AM USER: MB2

©Copyright 2015 All Rights Reserved

DEQ - WRD Approved Plans
File #15-41-0016-P
Date: Decemeber 14, 2015
Page 16 of 28




SPOILS SHALL BE PLACED, LEVELED AND SEEDED ON THE TOP OF THE CHANNEL BANK

ESTIMATED 42 CY ROCK PER ROCK RIFFLE

THE SLOPE UPSTREAM OF THE CREST SHALL NOT BE GREATER THAN 1(V):8(H) AND THE SLOPE DOWNSTREAM OF THE CREST SHALL NOT BE GREATER THAN 1(V):20(H)

108 / P ROCK RIFFLE
NO SCALE

DETAILS
NO SCALE

RECEIVED
December 7, 2015
WRD - Grand Rapids

fitch
engineers
scientists
architects
constructors
fishbeck, thompson, carr & huber, inc.
www.fitch.com

Hard copy is intended to be 8.5"x11" when plotted. Scale(s) indicated and graphic quality may not be accurate for any other size

**Cascade Township**
Cascade Township, Kent County, Michigan

**Thornapple Hills Drain Restoration**

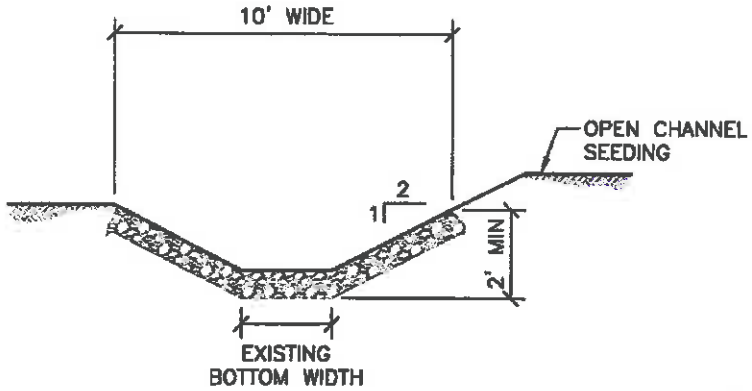
9/30/2015
MDEQ
PERMIT

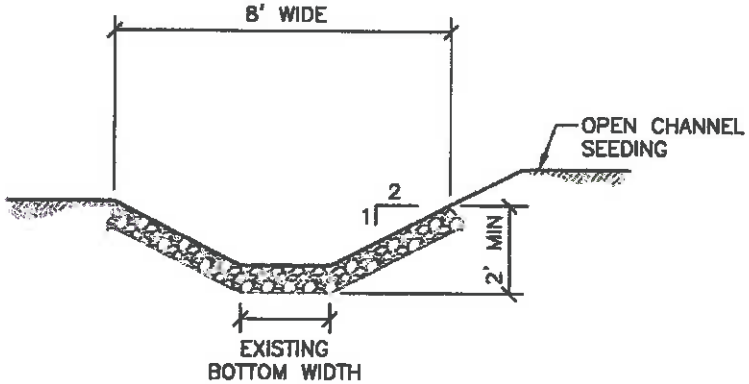
PROJECT NO.
G130842

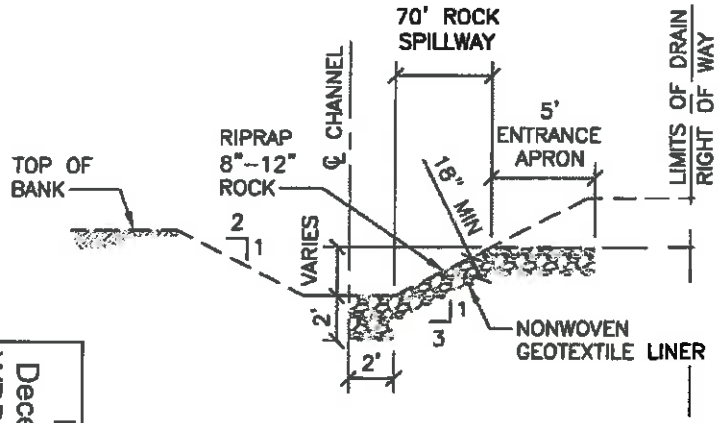
FIGURE NO.
16

DEQ - WRD Approved Plans
File #15-41-0016-P
Date: Decemeber 14, 2015
Page 17 of 28

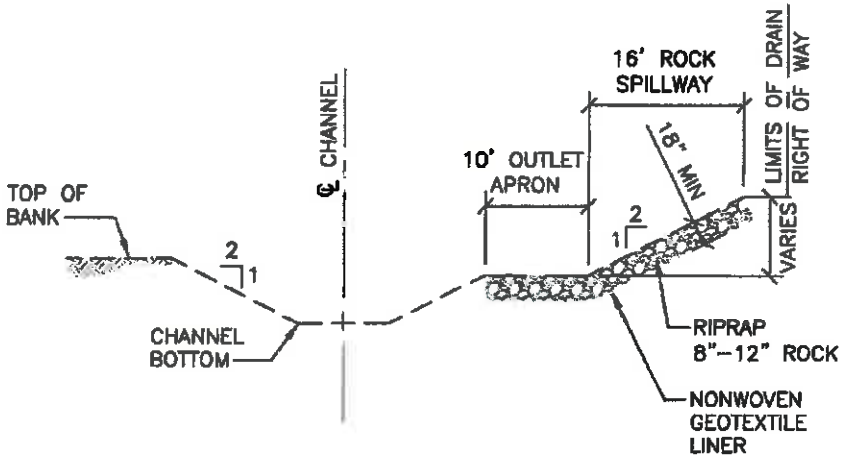
PLOT INFO: Z:\2013\130842\CAD\RECD\PERMIT P017130842.DWG LAYOUT: LAYOUT1 DATE: 12/14/2015 TIME: 11:22:00 AM USER: MB2
©Copyright 2015 All Rights Reserved




114 ROCK SPILLWAY STA. 5+40
NO SCALE




114 ROCK SPILLWAY STA. 18+10
NO SCALE

RECEIVED
December 14, 2015
WRD - Grand Rapids

## DETAILS
NO SCALE

**Cascade Township**
Cascade Township, Kent County, Michigan

**Thornapple Hills Drain Restoration**

fitch engineers scientists architects constructors

Hard copy is intended to be 8.5"x11" when plotted. Scale(s) indicated and graphic quality may not be accurate for any other size.

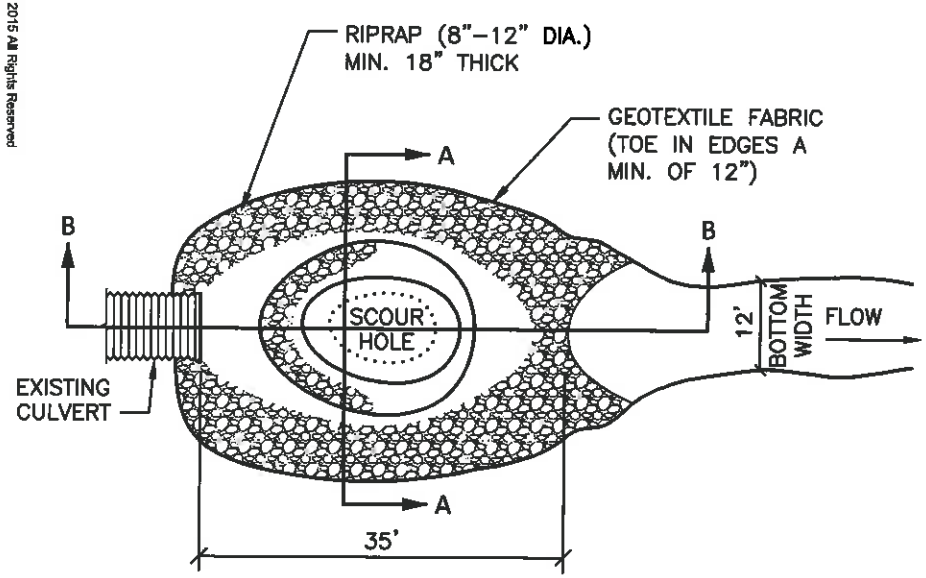
fishbeck, thompson, carr & huber, inc.
www.fitch.com

9/30/2015
MDEQ
PERMIT

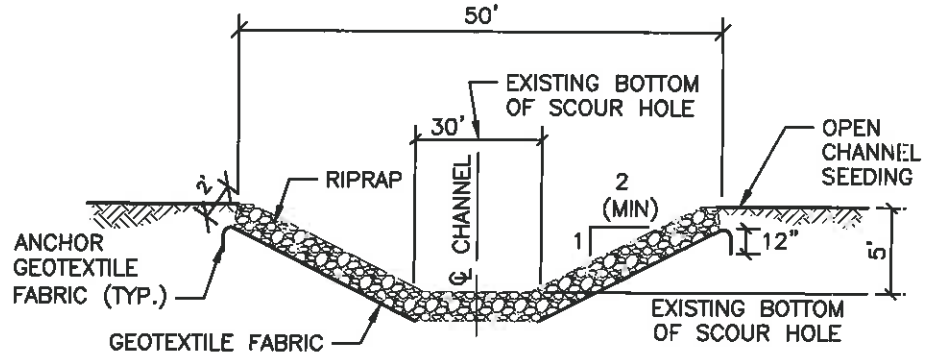
PROJECT NO. G130842

FIGURE NO. 17

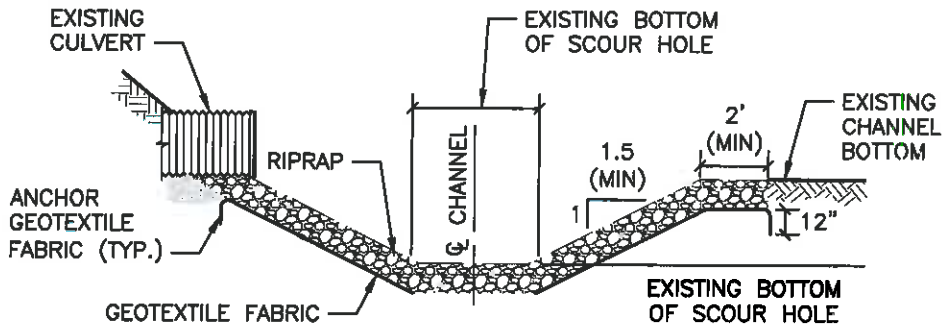
©Copyright 2015 All Rights Reserved




PLAN




CROSS SECTION A–A




CROSS SECTION B–B

DEQ - WRD Approved Plans
File #15-41-0016-P
Date: Decemeber 14, 2015
Page 18 of 28

PLUNGE POOL
NO SCALE

RECEIVED
September 30, 2015
Water Resources Division
Grand Rapids

DETAILS
NO SCALE

fitch
engineers
scientists
architects
constructors

fishback, thompson, carr & huber, inc.
www.fitch.com

Hard copy is intended to be 8.5"x11" when plotted. Scale(s) indicated and graphic quality may not be accurate for any other size.

**Cascade Township**
Cascade Township, Kent County, Michigan

**Thornapple Hills Drain Restoration**

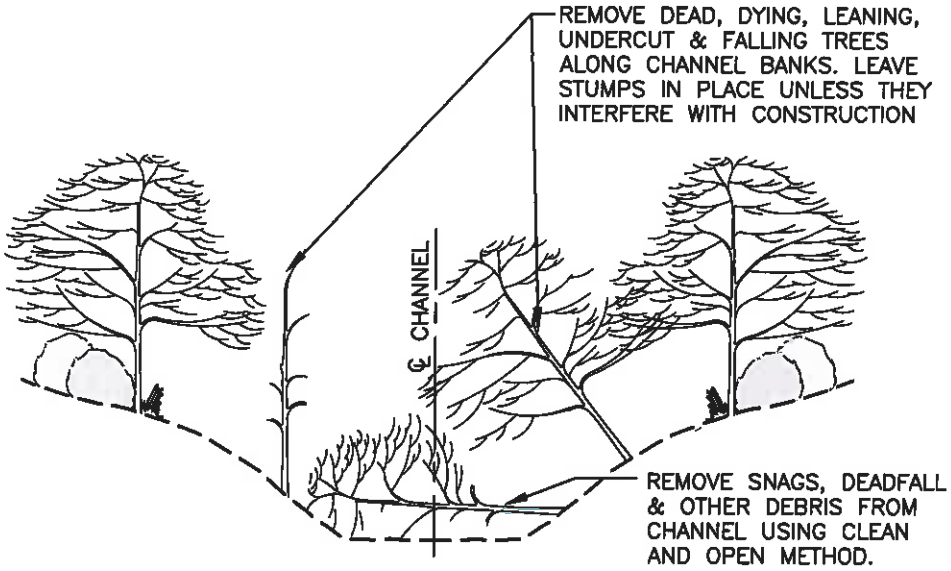
9/30/2015
MDEQ
PERMIT

PROJECT NO.
G130842

FIGURE NO.
18

©Copyright 2015 All Rights Reserved

RECEIVED
September 30, 2015
Water Resources Division
Grand Rapids




ALL ASH TREES WITHIN 10' OF TOP OF BANK SHALL BE REMOVED.

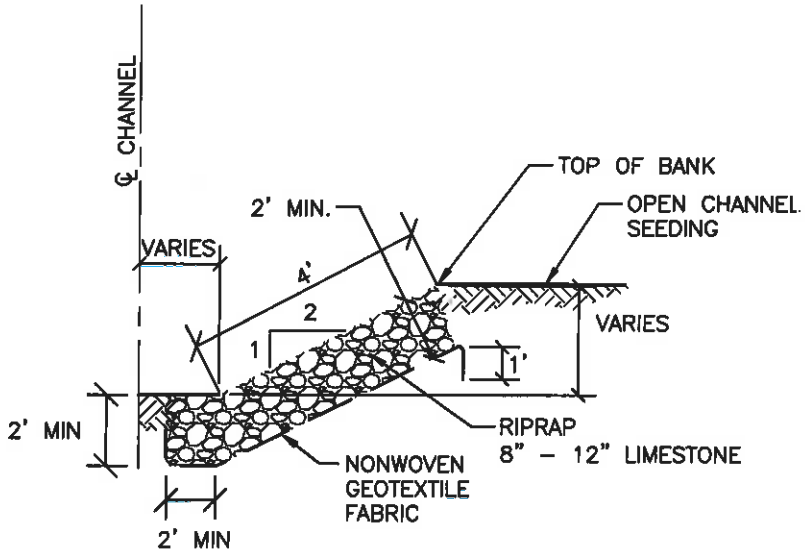
STUMPS SHALL NOT BE GRUBBED UNLESS THEY INTERFERE WITH CONSTRUCTION

WOODY DEBRIS SHALL BE WIND-ROWED ALONG EDGE OF EASEMENT, CHIPPED OR BURNED AT DISCRETION OF PROPERTY OWNER

NO TREE CUTTING FROM APRIL 1 THRU OCTOBER 30.

## WOODY DEBRIS MANAGEMENT

NO SCALE




SEE PLANS FOR LENGTH OF RIPRAP BANK PROTECTION

## 7/P RIPRAP BANK PROTECTION

NO SCALE

DEQ - WRD Approved Plans
File #15-41-0016-P
Date: Decemeber 14, 2015
Page 19 of 28

# DETAILS

NO SCALE

fitch
engineers
scientists
architects
constructors
fishbeck, thompson, carr & huber, inc.
www.fitch.com

Hard copy is intended to be 8.5"x11" when plotted. Scale(s) indicated and graphic quality may not be accurate for any other size.

**Cascade Township**
Cascade Township, Kent County, Michigan

**Thornapple Hills Drain Restoration**

9/30/2015
MDEQ
PERMIT

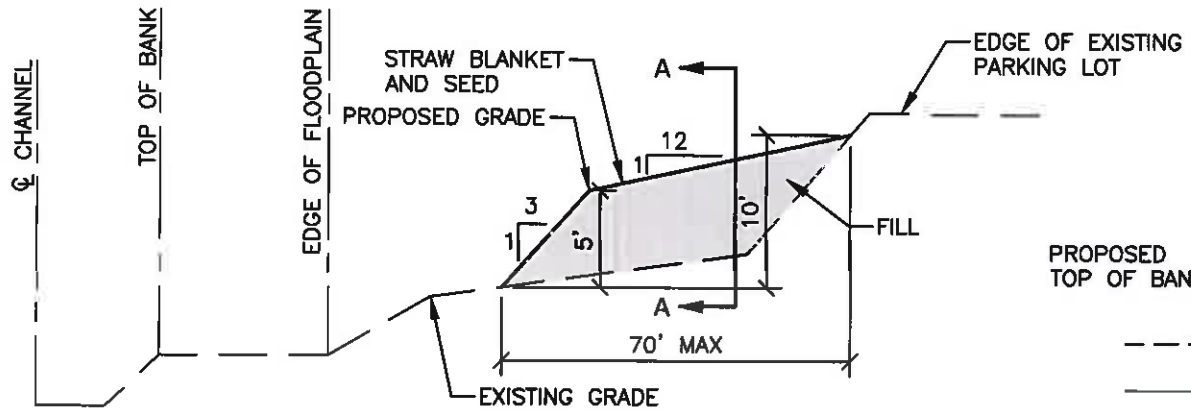
PROJECT NO. G130842

FIGURE NO. 19

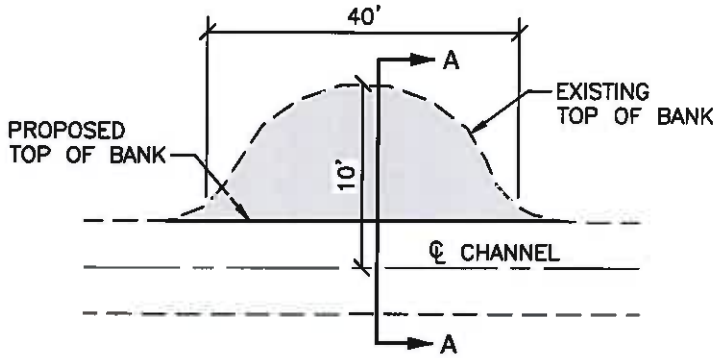
PLOT INFO: Z:\2013\130842\CAD\PRECD\PERMIT\P020130842.DWG LAYOUT: LAYOUT1 DATE: 9/30/2015 TIME: 11:46:51 AM USER: MB2

©Copyright 2015 All Rights Reserved

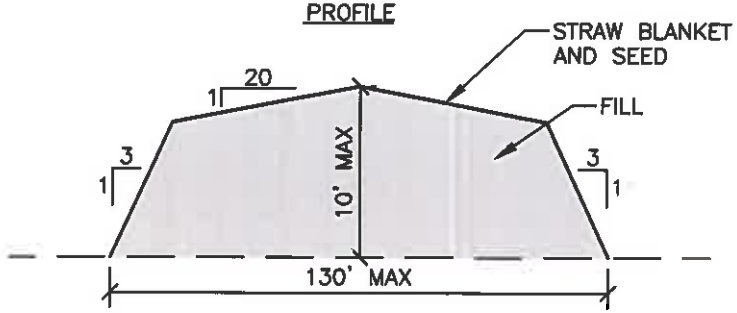
RECEIVED
September 30, 2015
Water Resources Division
Grand Rapids




PROFILE



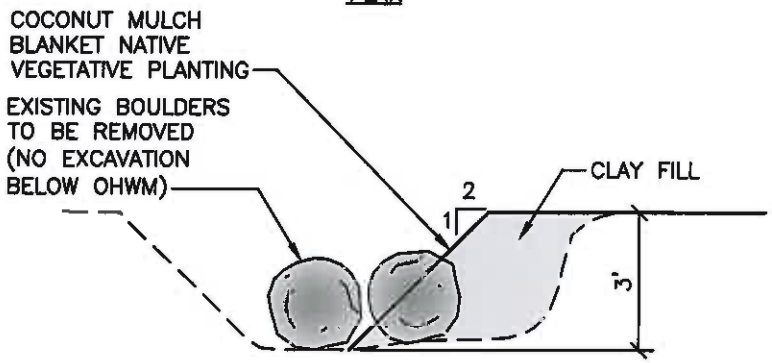

PLAN




SECTION AA

## SPOIL PILE LEVELING

NO SCALE




SECTION AA

## RECONSTRUCT CHANNEL BANK
## STA. 9+10 TO 10+10

NO SCALE

DEQ - WRD Approved Plans
File #15-41-0016-P
Date: Decemeber 14, 2015
Page 20 of 28

# DETAILS

NO SCALE

**Cascade Township**
Cascade Township, Kent County, Michigan

**Thornapple Hills Drain Restoration**

Hard copy is intended to be 8.5"x11" when plotted. Scale(s) indicated and graphic quality may not be accurate for any other size.

fishbeck, thompson, carr & huber, inc.
www.ftch.com

ftc&h
engineers
scientists
architects
constructors

9/30/2015
MDEQ
PERMIT

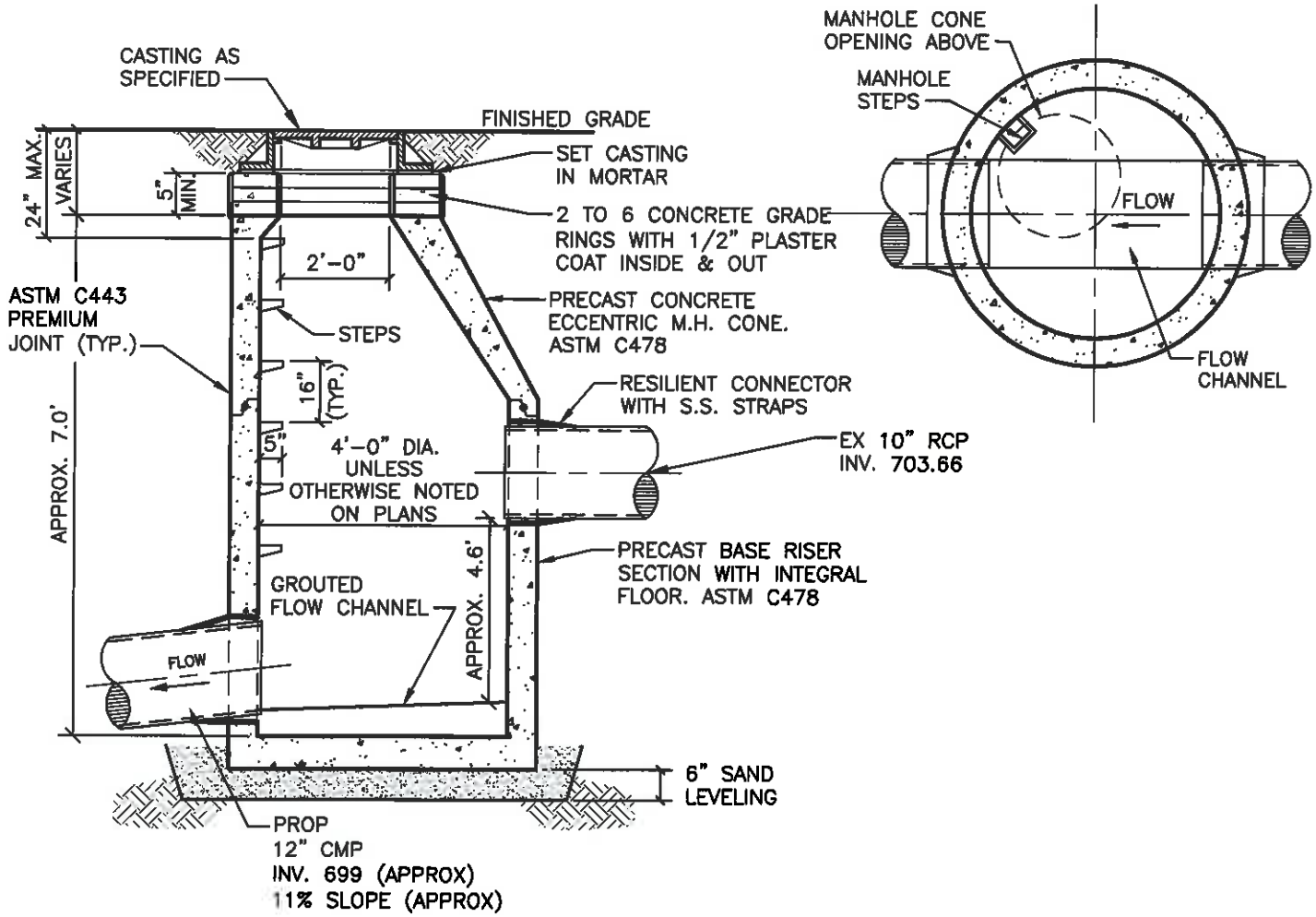
PROJECT NO.
G130842

FIGURE NO.
20

PLOT INFO: Z:\2013\130842\CAD\PRECD\PERMIT\P021130842.DWG LAYOUT: LAYOUT1 DATE: 9/30/2015 TIME: 11:36:32 AM USER: MB2

©Copyright 2015 All Rights Reserved

RECEIVED
September 30, 2015
Water Resources Division
Grand Rapids




CATCH BASIN
NO SCALE

DEQ - WRD Approved Plans
File #15-41-0016-P
Date: Decemeber 14, 2015
Page 21 of 28

DETAILS
NO SCALE

fitch engineers scientists architects constructors
fishbeck, thompson, carr & huber, inc.
www.fitch.com

Hard copy is intended to be 8.5"x11" when plotted. Scale(s) indicated and graphic quality may not be accurate for any other size.

**Cascade Township**
Cascade Township, Kent County, Michigan

**Thornapple Hills Drain Restoration**

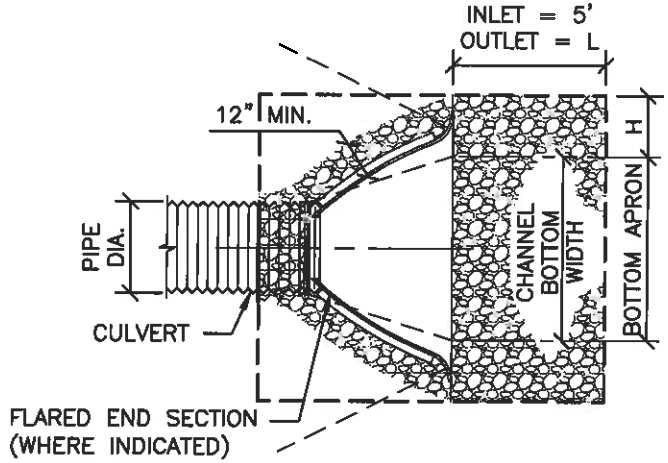
9/30/2015
MDEQ
PERMIT

PROJECT NO.
G130842

FIGURE NO.
21

©Copyright 2015 All Rights Reserved

RECEIVED
September 30, 2015
Water Resources Division
Grand Rapids

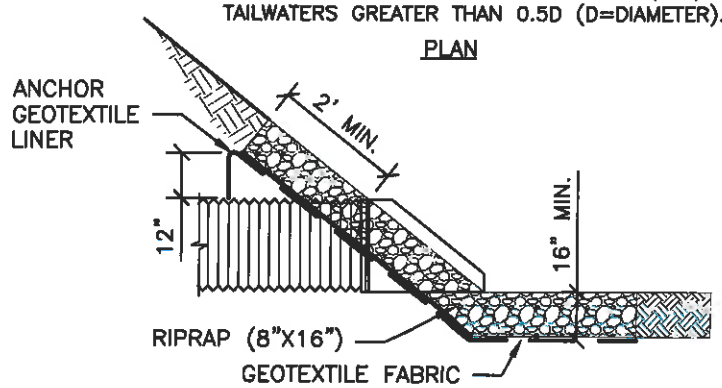



| PIPE DIA (IN) | L (FEET) | H (FEET) |
|---|---|---|
| 12 | 5 | 2 |
| 15 | | |
| 18 | | |
| 21 | 10 | 4 |
| 24 | | |
| 30 | | |
| 36 | | |
| 42 | 15 | 6 |
| 48 | | |
| 54 | | |
| 60 | | |
| 66 | 20 | 8 |
| 72 | | |
| 78 | | |
| 84 | | |

NOTE:
"H" PROVIDES FOR RIP RAP UP TO THE MIDPOINT OF THE AVERAGE PIPE DIAMETER IN THE GROUPING.

"L" FOLLOWS MINIMUM APRON LENGTHS BASED ON EMPIRICAL FORMULA US EPA 1976 L=3Q/D3/2 FOR TAILWATERS GREATER THAN 0.5D (D=DIAMETER).

PLAN




PROFILE

7/P RIPRAP END TREATMENT DETAIL
NO SCALE
SEE QUANTITY TABLE FOR DIMENSIONS

DETAILS
NO SCALE

DEQ - WRD Approved Plans
File #15-41-0016-P
Date: Decemeber 14, 2015
Page 22 of 28

**Cascade Township**
Cascade Township, Kent County, Michigan

**Thornapple Hills Drain Restoration**

Hard copy is intended to be 8.5"x11" when plotted. Scale(s) indicated and graphic quality may not be accurate for any other size.

fitch
engineers
scientists
architects
constructors
fishbeck, thompson, carr & huber, inc.
www.ftch.com

9/30/2015
MDEQ
PERMIT

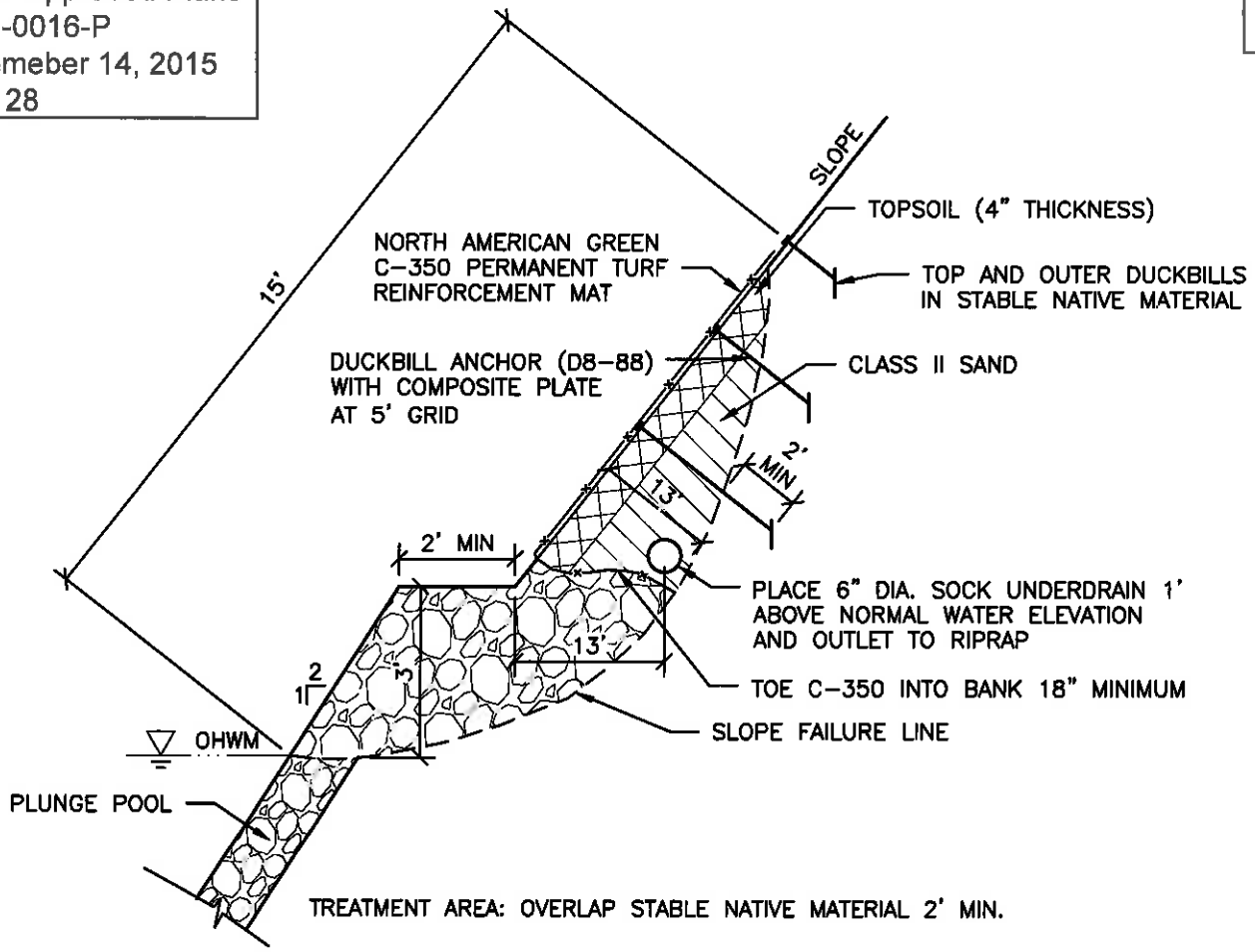
PROJECT NO. G130842

FIGURE NO. 22

©Copyright 2015 All Rights Reserved

DEQ - WRD Approved Plans
File #15-41-0016-P
Date: Decemeber 14, 2015
Page 23 of 28

RECEIVED
September 30, 2015
Water Resources Division
Grand Rapids




# SLOPE STABILIZATION DETAIL

NO SCALE

fitch engineers scientists architects constructors

fishbeck, thompson, carr & huber, inc.
www.fitch.com

Hard copy is intended to be 8.5"x11" when plotted. Scale(s) indicated and graphic quality may not be accurate for any other size.

**Cascade Township**
Cascade Township, Kent County, Michigan

**Thornapple Hills Drain Restoration**

9/30/2015
MDEQ
PERMIT

PROJECT NO.
G130842

FIGURE NO.
23

DEQ - WRD Approved Plans
File #15-41-0016-P
Date: Decemeber 14, 2015
Page 24 of 28

Rock_Chute.xls
for construction plan

# Rock Chute Design - Cut/Paste Plan

(Version WI-July-2010, Based on Design of Rock Chutes by Robinson, Rice, Kadavy, ASAE, 1998)

**Project:** Thornapple Hills Drain - Sta 23+50
**Designer:** rjh
**Date:** 11/19/2015

**County:** Kent
**Checked by:**
**Date:**

**Design Values**

$D_{50}$ dia. = 13.8 in.
$Rock_{chute}$ thickness = 28.0 in.
Inlet apron length = 17 ft.
Outlet apron length = 17 ft.
Radius = 38 ft.
Will bedding be used? No

**Rock Gradation Envelope**

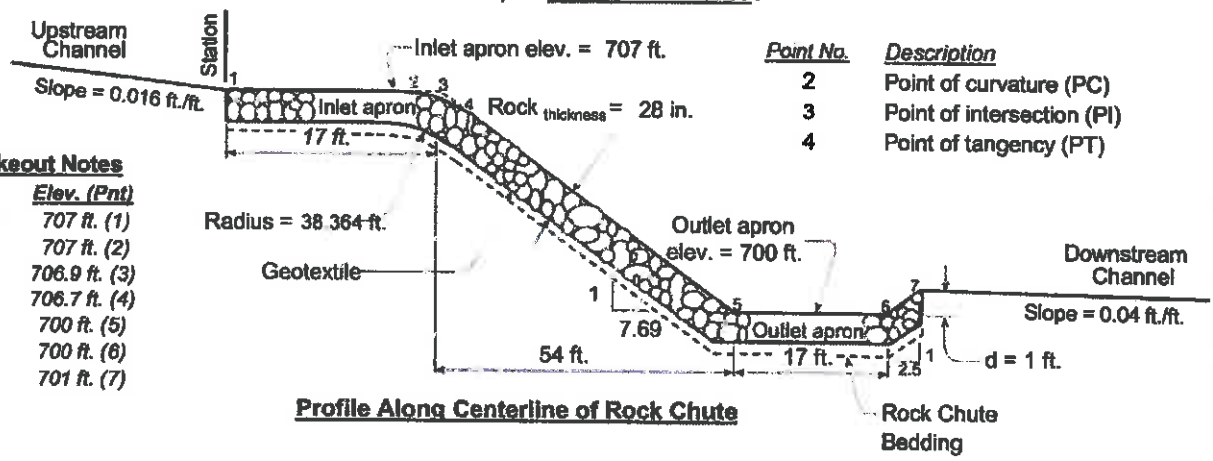
| % Passing | Diameter, in. (weight, lbs.) |
|---|---|
| $D_{100}$ | 21 - 28 (628 - 1488) |
| $D_{85}$ | 18 - 25 (409 - 1085) |
| $D_{50}$ | 14 - 21 (186 - 628) |
| $D_{10}$ | 11 - 18 (95 - 409) |

*Coefficient of Uniformity, $(D_{60})/(D_{10}) < 1.7$*

**Quantities**[a]

Rock = 188 $yd^3$
Geotextile (WCS-13)[b] = 300 $yd^2$
Bedding = 0 $yd^3$
Excavation = 0 $yd^3$
Earthfill = 0 $yd^3$
Seeding = 0.0 acres

**Notes**: [a] *Rock, bedding, and geotextile quantities are determined from x-section below (neglect radius).*
[b] *Geotextile Class I (Non-woven) shall be overlapped and anchored (18-in. minimum along sides and 24-in. minimum on the ends) --- quantity not included.*

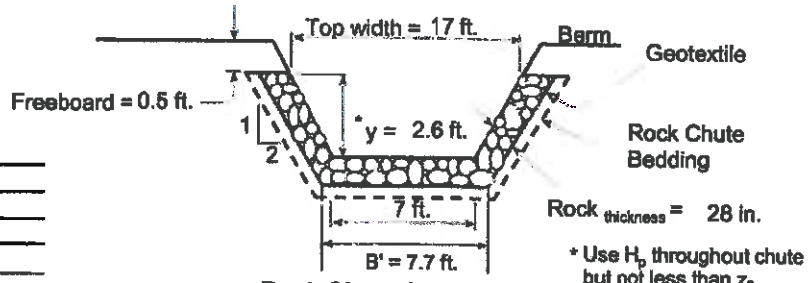



| Point No. | Description |
|---|---|
| 2 | Point of curvature (PC) |
| 3 | Point of intersection (PI) |
| 4 | Point of tangency (PT) |

**Stakeout Notes**

| Sta. | Elev. (Pnt) |
|---|---|
| 0+00.0 | 707 ft. (1) |
| 0+14.5 | 707 ft. (2) |
| 0+17.0 | 706.9 ft. (3) |
| 0+19.5 | 706.7 ft. (4) |
| 0+70.8 | 700 ft. (5) |
| 0+87.8 | 700 ft. (6) |
| 0+90.3 | 701 ft. (7) |

**Profile Along Centerline of Rock Chute**




**Rock Chute Cross Section**

Notes:
Rock gradation envelope can be met with
Gradation printed

## Profile, Cross Sections, and Quantities

NRCS
Natural Resources Conservation Service
United States Department of Agriculture

Thornapple Hills Drain - Sta 23+50
Kent County

| | | Date |
|---|---|---|
| Designed | rjh | |
| Drawn | | |
| Checked | | |
| Approved | | |

File Name
Drawing Name
Sheet ___ of ___

RECEIVED
December 7, 2015
WRD - Grand Rapids

You created this PDF from an application that is not licensed to print to novaPDF printer (http://www.novapdf.com)

DEQ - WRD Approved Plans
File #15-41-0016-P
Date: Decemeber 14, 2015
Page 25 of 28

Rock_Chute.xls
for construction plan

# Rock Chute Design - Cut/Paste Plan

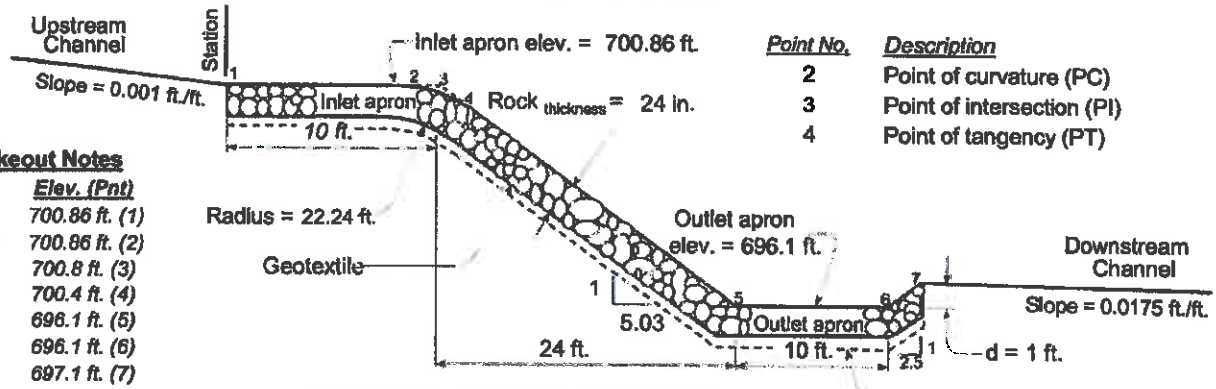
(Version WI-July-2010, Based on Design of Rock Chutes by Robinson, Rice, Kadavy, ASAE, 1998)

**Project:** Thornapple Hills Drain - unamed trib
**Designer:** rjh
**Date:** 11/19/2015

**County:** Kent
**Checked by:** _____
**Date:** _____

| Design Values | | Rock Gradation Envelope | | Quantities[a] | |
|---|---|---|---|---|---|
| $D_{50}$ dia. = 8.0 | in. | % Passing | Diameter, in. (weight, lbs.) | Rock = 32 | $yd^3$ |
| $Rock_{chute}$ thickness = 24.0 | in. | $D_{100}$ ——— | 12 - 16 (122 - 290) | Geotextile (WCS-13)[b] = 74 | $yd^2$ |
| Inlet apron length = 10 | ft. | $D_{85}$ ——— | 10 - 14 (80 - 211) | Bedding = 0 | $yd^3$ |
| Outlet apron length = 10 | ft. | $D_{50}$ ——— | 8 - 12 (36 - 122) | Excavation = 0 | $yd^3$ |
| Radius = 22 | ft. | $D_{10}$ ——— | 6 - 10 (19 - 80) | Earthfill = 0 | $yd^3$ |
| Will bedding be used? No | | *Coefficient of Uniformity, $(D_{60})/(D_{10}) < 1.7$* | | Seeding = 0.0 | acres |

**Notes:** [a] *Rock, bedding, and geotextile quantities are determined from x-section below (neglect radius).*
[b] *Geotextile Class I (Non-woven) shall be overlapped and anchored (18-in. minimum along sides and 24-in. minimum on the ends) --- quantity not included.*

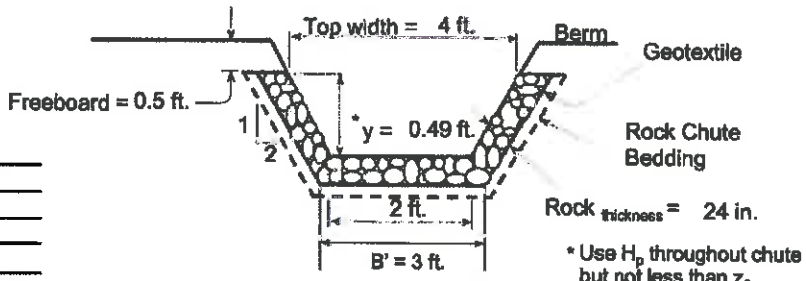



| Point No. | Description |
|---|---|
| 2 | Point of curvature (PC) |
| 3 | Point of intersection (PI) |
| 4 | Point of tangency (PT) |

**Stakeout Notes**

| Sta. | Elev. (Pnt) |
|---|---|
| 0+00.0 | 700.86 ft. (1) |
| 0+07.8 | 700.86 ft. (2) |
| 0+10.0 | 700.8 ft. (3) |
| 0+12.1 | 700.4 ft. (4) |
| 0+33.9 | 696.1 ft. (5) |
| 0+43.9 | 696.1 ft. (6) |
| 0+46.4 | 697.1 ft. (7) |

**Profile Along Centerline of Rock Chute**




**Rock Chute Cross Section**

Notes:
Rock gradation envelope can be met with
DOT Medium riprap Gradation

## Profile, Cross Sections, and Quantities

NRCS
Natural Resources Conservation Service
United States Department of Agriculture

Thornapple Hills Drain - unamed trib
Kent County

| | | Date |
|---|---|---|
| Designed | rjh | |
| Drawn | | |
| Checked | | |
| Approved | | |

File Name
Drawing Name
Sheet ___ of ___

RECEIVED
December 7, 2015
WRD - Grand Rapids

You created this PDF from an application that is not licensed to print to novaPDF printer (http://www.novapdf.com)

## Thornapple Hills Drain - Quantity Calculations

### Section 10A - Projects Requiring Fill

| Station | Description | Fill Below OHWM | | | | Fill Above OHWM | | | | Total Volume (cy) | Area of Fill |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Distance (ft) | Avg. Width (ft) | Avg. Depth (ft) | Subtotal Volume (cy) | Distance (ft) | Avg. Width (ft) | Avg. Depth (ft) | Subtotal Volume (cy) | | Fill Area (sf) |
| Designated County Drain | | | | | | | | | | | |
| 9+70-10+10 | reconstruct bank | 40 | 10 | 3 | 44 | | | | | 44 | 400 |
| 10+60-11+00 | bar removal | 60 | 6 | 2 | 20 | | | | | 20 | 360 |
| Gully | | | | | | | | | | | |
| 0+00 | catch basin and 17 LF 12" CMP w/ FES | 20 | 6 | 1 | 3 | 20 | 9 | 3 | 29 | 32 | 390 |
| | **Total Fill** | | | | **67** | | | | **29** | **96** | **1150** |

RECEIVED
September 30, 2015
Water Resources Division
Grand Rapids

DEQ - WRD Approved Plans
File #15-41-0016-P
Date: Decemeber 14, 2015
Page 26 of 28

## Thornapple Hills Drain - Quantity Calculations

### Section 10B - Projects Requiring Dredge

| Station | Description | Cut Below OHWM | | | | Cut Above OHWM | | | | Total Volume (cy) |
|---|---|---|---|---|---|---|---|---|---|---|
| | | Distance (FT) | Avg. Width (ft) | Avg. Depth (ft) | Subtotal Volume (cy) | Distance (FT) | Avg. Width (ft) | Avg. Depth (ft) | Subtotal Volume (cy) | |
| Designated County Drain | | | | | | | | | | |
| 4+80-6+00 | riprap bank protection - north bank | 120 | 3 | 2 | 27 | 120 | 3 | 2.0 | 27 | 54 |
| 8+84-9+00 | riprap bank protection - both banks | 20 | 3 | 2.0 | 4 | 20 | 3 | 2.0 | 4 | 8 |
| 9+50-10+15 | riprap bank protection - south bank | 65 | 2 | 2 | 10 | | | | | 10 |
| 9+50-10+60 | riprap bank protection - north bank | 110 | 2 | 2.0 | 16 | | | | | 16 |
| 10+60-11+00 | Bar removal | 60 | 6 | 1.5 | 20 | | | | | 20 |
| 11+10-11+50 | riprap bak protection - south bank | 40 | 2 | 2.0 | 6 | | | | | 6 |
| 14+30-14+80 | rirap bank protection - south bank | 50 | 2 | 2 | 7 | | | | | 7 |
| 20+40 - 22+42 | flood bench | 202 | 15 | 1.0 | 112 | 202 | 13 | 4.2 | 411 | 524 |
| 20+40 - 20+60 | riprap bank protection - both banks | 40 | 2 | 2.0 | 6 | | | | | 6 |
| 20+90 | riffle | 38 | 15 | 1.5 | 32 | | | | | 32 |
| 21+65 | riffle | | | | 0 | | | | | 0 |
| 22+40 | riffle | 38 | 15 | 1.5 | 32 | | | | | 32 |
| 22+80-23+86 | riprap spillway | 106 | 10.0 | 3.0 | 118 | | | | | 118 |
| Gully | | | | | | | | | | |
| | | | | | | | | | | |
| | Total Dredge/Excavation = | | | | 390 | | | | 443 | 864 |

DEQ - WRD Approved Plans
File #15-41-0016-P
Date: Decemeber 14, 2015
Page 27 of 28

RECEIVED
December 14, 2015
WRD - Grand Rapids

## Thornapple Hills Drain - Quantity Calculations

### Section 10C - Projects Requiring Rock

| Station | Description | Waterward of OHWM | | | | Landward of OHWM | | | | Total |
|---|---|---|---|---|---|---|---|---|---|---|
| | | Length (ft) | Avg. Width (ft) | Avg. Depth (ft) | Subtotal Volume (cy) | Length (ft) | Avg. Width (ft) | Avg. Depth (ft) | Subtotal Volume (cy) | Total Volume (cy) |
| Designated County Drain | | | | | | | | | | |
| 5+40 | rock spillway | | | | | 70 | 10 | 2 | 52 | 52 |
| 4+80-6+00 | riprap bank protection - north bank | 120 | 3 | 2 | 27 | 120 | 3 | 3 | 40 | 67 |
| 8+84-9+00 | riprap bank protection - both banks | 20 | 3 | 2.0 | 4 | 20 | 3 | 2.0 | 4 | 8 |
| 9+50-10+15 | riprap bank protection - south bank | 65 | 2 | 3 | 14 | 65 | 2 | 3 | 14 | 28 |
| 9+50-10+60 | riprap bank protection - north bank | 110 | 3 | 2.0 | 24 | 110 | 3 | 2 | 24 | 48 |
| 11+10-11+50 | riprap bak protection - south bank | 40 | 2 | 3.0 | 9 | 40 | 3 | 3 | 13 | 22 |
| 14+30-14+80 | rirap bank protection - south bank | 50 | 2 | 3 | 11 | 50 | 3 | 3 | 17 | 28 |
| 18+10 | plunge pool | 35 | 50 | 2 | 130 | | | | | 130 |
| 18+10 | rock spillway | | | | | 16 | 8 | 2 | 9 | 9 |
| 18+10 | slope stabilization | | | | | 10 | 15 | 3 | 17 | 17 |
| 20+40 - 20+60 | riprap bank protection - both banks | 40 | 2 | 3 | 9 | 40 | 3 | 2.0 | 9 | 18 |
| 20+55 | tile outlet stabilization | | | | | 30 | 6 | 2 | 13 | 13 |
| 20+90 | riffle | 38 | 15 | 2 | 42 | | | | | 42 |
| 21+00 | tile outlet stabilization | | | | | 74 | 6 | 2 | 33 | 33 |
| 21+65 | riffle | | | | 0 | | | | | 0 |
| 22+40 | riffle | 38 | 15 | 2 | 42 | | | | | 42 |
| 22+80-23+86 | riprap spillway | 106 | 10 | 3 | 118 | | | | | 118 |
| 23+70 | tile outlet stabilization | | | | | 8 | 6 | 2 | 4 | 4 |
| Gully | | | | | | | | | | |
| 0+00 | riprap end treatment | | | | | 14 | 10 | 1.50 | 8 | 8 |
| 0+60 | tile outlet stabilization | | | | | 8 | 6 | 2 | 4 | 4 |
| 0+45 | tile outlet stabilization | | | | | 8 | 6 | 2 | 4 | 4 |
| 0+30-0+60 | riprap bank protection - north bank | | | | | 30 | 6 | 2 | 13 | 13 |
| 0+50-0+95 | riprap spillway with pool | | | | | 50 | 15 | 2 | 56 | 56 |
| | **Total Riprap** | | | | **431** | | | | **334** | **807** |

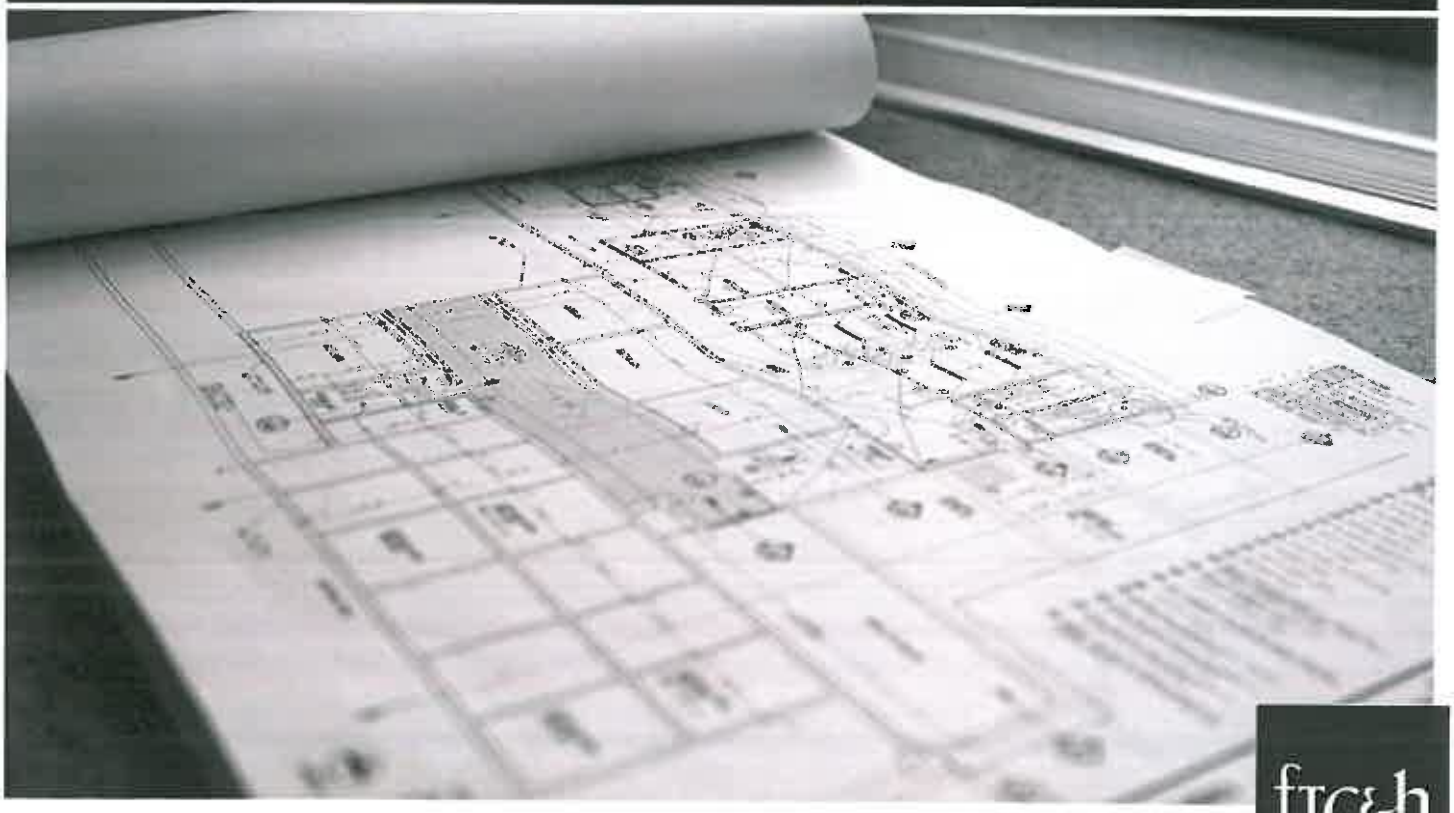
DEQ - WRD Approved Plans
File #15-41-0016-P
Date: Decemeber 14, 2015
Page 28 of 28

RECEIVED
December 14, 2015
WRD - Grand Rapids

# Cascade Charter Township
# Thornapple Hills Drain Maintenance

**REVIEW DRAFT**

Project Manual
Project Number G130842



Fishbeck, Thompson, Carr & Huber, Inc.
engineers | scientists | architects | constructors

PROJECT MANUAL
FOR
CASCADE CHARTER TOWNSHIP

# THORNAPPLE HILLS DRAIN MAINTENANCE

SEPTEMBER 2, 2016
G130842

ENGINEER

FISHBECK, THOMPSON, CARR & HUBER, INC.
1515 Arboretum Drive, SE
Grand Rapids, Michigan 49546
Phone: (616) 575-3824

Copyright 2016
Fishbeck, Thompson, Carr & Huber, Inc.
All rights reserved.

THIS PAGE INTENTIONALLY LEFT BLANK

SECTION 00 01 10 – TABLE OF CONTENTS


| | |
|---|---|
| DIVISION 00 | BIDDING AND CONTRACTING REQUIREMENTS |
| 00 11 16 | Invitation to Bid |
| 00 21 13 | Instructions to Bidders |
| 00 41 43 | Bid - Unit Price |
| 00 43 13 | Bid Security Form |
| 00 51 00 | Notice of Award |
| 00 52 00 | Agreement Form |
| 00 61 14 | Performance Bond Form |
| 00 61 15 | Payment Bond Form |
| 00 72 00 | General Conditions |
| 00 73 00 | Supplementary Conditions |
| | |
| DIVISION 01 | GENERAL REQUIREMENTS |
| 01 11 00 | Summary of Work |
| 01 12 23 | Staking and Inspection Services |
| 01 18 13 | Protection, Restoration and Notification |
| 01 21 13 | Cash Allowances |
| 01 22 00 | Unit Prices – Measurement and Payment |
| 01 41 00 | Regulatory Requirements |
| 01 77 00 | Closeout Procedures |
| | |
| DIVISION 31 | EARTHWORK |
| 31 11 00 | Clearing, Grubbing and Snagging |
| 31 22 00 | Grading |
| 31 23 11 | Open Channel Excavation |
| 31 25 00 | Erosion and Sedimentation Controls |
| 31 37 00 | Rock |
| | |
| DIVISION 32 | EXTERIOR IMPROVEMENTS |
| 32 92 29 | Open Channel Seeding |
| 32 92 33 | Native Seeding |
| | |
| DIVISION 33 | UTILITIES |
| 33 40 00 | Storm Drainage Utilities |


END OF TABLE OF CONTENTS

THIS PAGE INTENTIONALLY LEFT BLANK

SECTION 00 11 16 - INVITATION TO BID

Cascade Charter Township
**THORNAPPLE HILLS DRAIN MAINTENANCE**

1. INVITATION ONLY

Bids will be received from the following selected Bidders only:

A. Busscher Development
B. Jackson Dirt Works
C. Pavlak Excavation
D. Quantum Construction
E. Volker Crane Services

2. RECEIPT OF BIDS

Cascade Charter Township, the Owner, will receive sealed Bids for construction of the Thornapple Hills Drain Maintenance project at the office of Cascade Charter Township, 2865 Thornhills Avenue, SE, Grand Rapids, MI, 49546, until September 19, 2016 at 10 a.m., local time. No Bids will be received after that time. Bids will be publicly opened and read aloud at that time and place.

3. SCOPE OF PROJECT

Said drain is divided into three (3) sections of varying length, each section having the average depth and width as set forth:

Section No. 1 – Upstream Thornhills Avenue SE: beginning at station 24+85 at the upper end of Thornapple Hills Drain and extending to station 20+00 a distance of 485 feet, and having an average depth of 1 foot, and width of bottom ranging from 10 to 15 feet, and 202 lineal feet of floodbench creation for an estimated 600 cubic yards of excavation. Excavated material to be graded and seeded in spoil disposal area. Construction of said section also includes woody debris management, 1 rock spillway, 2 rock riffles, and 45 square yards of riprap bank armor. In addition, work on the unnamed tributary in said section includes: 1 rock spillway, approximately 20 square yards riprap bank armor, catch basin with 12-inch CPP, and bank reconstruction (fill).

Section No. 2 – Downstream Thornhills Avenue SE to Thornapple River Drive: beginning at station 19+00, the middle section of Thornapple Hills Drain and extending to station 9+00 a distance of 900 feet, and having an average depth of 1 foot, and width of bottom ranging from 10 to 30 feet, and 60 feet of channel re-alignment, 60 feet of bar removal, for an estimated 30 cubic yards of excavation. Excavated material to be sidecast within the channel. Construction of said section will also include woody debris management, construction of 1 plunge pool, 40 feet of channel bank reconstruction, approximately 181 square yards of riprap bank armor, 1 rockspillway, and 20 feet of slope stabilization.

Section No. 3 – Downstream Thornapple River Drive to Thornapple River: beginning at station 6+00 to 4+80 a distance of 120 feet, and having an average depth of 1 foot, and width of bottom ranging from 10 to 15 feet and no excavation. Construction of said drain include woody debris management, 1 rockspillway, and approximately 80 square yards of riprap bank armor.

4. FINANCING

The Project will be financed with local funds provided by Cascade Charter Township and the Contract Documents reflect requirements by that agency.

5. ISSUING OFFICE

Bidding Documents are being issued by FTCH's Lansing office. Bidders should direct questions and correspondence to that office.

6. EXAMINATION OF DOCUMENTS

Bidding Documents may be examined at the following locations after September 2, 2016, 1:00 p.m., local time.

Fishbeck, Thompson, Carr & Huber, Inc., 1515 Arboretum Drive, SE, Grand Rapids, MI 49546.

Cascade Charter Township, 2865 Thornhills Avenue, SE, Grand Rapids, MI 49546.

Builder's Exchange: Grand Rapids, MI.

McGraw-Hill Dodge: Grand Rapids, MI.

A list of entities to whom the Bidding Documents have been issued will be available online at www.ftch.com. Click on "Bid Sets and Bidders Lists."

7. OBTAIN BIDDING DOCUMENTS

Bidding Documents will be released only to prospective Bidders who have been selected by Cascade Charter Township. Bidding Documents may be obtained (ordered) online, go to www.ftch.com, click on "Bid Sets/Bidders Lists." Cost for Bidding Documents is $30, plus shipping (if applicable). Obtaining Bidding Documents from any source not identified herein may result in failure to receive addenda, corrections, or other revisions that may be issued.

8. BID SECURITY

Bid security in the amount, form, and subject to the conditions provided in the Instructions to Bidders must be submitted with each Bid.

9. WITHDRAWAL OF BIDS

Bids may not be withdrawn for a period of 60 days after the actual date of opening thereof. This time period may be extended by mutual agreement of the Owner and any Bidder or Bidders.

10. RIGHT TO REJECT BIDS

The Owner reserves the right to waive any irregularities and to reject any and all Bids.

11. PREBID CONFERENCE

A pre-bid conference will be held on Friday, September 9, 2016 at 9:00 a.m., local time at Cascade Charter Township Office, located at 2865 Thornhills Avenue, SE, Grand Rapids, MI, 49546. Prospective Bidders are required to attend and participate in the conference.

END OF SECTION 00 11 16

SECTION 00 21 13 - INSTRUCTIONS TO BIDDERS

ARTICLE 1 - DEFINED TERMS

1.01 Terms used in these Instructions to Bidders will have the meanings indicated in the General Conditions (Standard General Conditions of the Construction Contract, EJCDC, No. C-200, 2007 edition) and the Supplementary Conditions. Additional terms used in these Instructions to Bidders have the meanings indicated below which are applicable to both the singular and plural thereof:

A. Issuing office – the office identified in the Advertisement for Bids, from which the Bidding Documents are to be issued and where the bidding procedures are to be administered.

ARTICLE 2 - COPIES OF BIDDING DOCUMENTS

2.01 Complete sets of the Bidding Documents in the number and for the cost stated in the Advertisement for Bids may be obtained as indicated in the Advertisement for Bids.

2.02 Complete sets of Bidding Documents must be used in preparing Bids; neither Owner nor Engineer assumes any responsibility for errors or misinterpretation resulting from the use of incomplete sets of Bidding Documents.

2.03 Owner and Engineer, in making copies of Bidding Documents available on the above terms, do so only for the purpose of obtaining Bids on the Work and do not authorize or confer a license or grant for any other use.

ARTICLE 3 - QUALIFICATIONS OF BIDDERS

3.01 Each Bid shall contain evidence of Bidder's qualification to do business in the state where the Project is located or Bidder must covenant to obtain such qualification prior to award of the Contract.

3.02 Bidder is advised to carefully review those portions of the Bid Form requiring Bidder's representations and certifications.

3.03 To demonstrate Bidder's qualifications to perform the Work, within 5 days of Owner's request Bidder shall submit written evidence of:

A. Financial data, previous experience, present commitments, workers' compensation experience modification rating (EMR) and other such data as may be requested by Owner.

B. Previous experience in constructing at least 3 projects of a similar type, comparable size and comparable complexity within the past 5 years.

3.04 When so requested, Bidder shall meet with Owner's representatives and give further information in order to determine Bidder's qualifications, responsibility, and ability to perform and complete the Work in accordance with the Contract Documents.

3.05 Owner reserves the right to reject any Bid if the evidence submitted by, or investigation of, a Bidder fails to satisfy Owner that the Bidder is properly qualified to carry out the obligations of the Contract and to complete the work contemplated therein.

ARTICLE 4 - EXAMINATION OF BIDDING DOCUMENTS, OTHER RELATED DATA, AND SITE

4.01 Subsurface and Physical Conditions

A. The supplementary Conditions identify:

1. Those reports known to Owner of explorations and tests of subsurface conditions at or contiguous to the Site.

2. Those drawings known to Owner of physical conditions relating to existing surface or subsurface structures at the Site (except Underground Facilities).

B. Copies of reports and drawings referenced in Paragraph 4.01.A will be made available by Owner to any Bidder on request at the cost of preparation, reproduction and shipping. Those reports and drawings are not part of the Contract Documents, but the "technical data" contained therein upon which Bidder is entitled to rely as provided in Paragraph 4.02 of the General Conditions. Bidder is responsible for any interpretation or conclusion Bidder draws from any "technical data" or any other data, interpretations, opinions, or information contained in such reports or shown or indicated in such drawings.

4.02 Underground Facilities

A. Information and data indicated in the Bidding Documents with respect to existing Underground Facilities at or contiguous to the Site are based upon information and data furnished to Owner and Engineer by owners of such Underground Facilities, including Owner, or others.

4.03 Hazardous Environmental Condition

A. The Supplementary Conditions identify any reports and drawings known to Owner relating to a Hazardous Environmental Condition identified at the Site.

B. Copies of reports and drawings referenced in Paragraph 4.03.A will be made available by Owner to any Bidder on request at the cost of preparation, reproduction and shipping. Those reports and drawings are not part of the Contract Documents, but the "technical data" contained therein upon which Bidder is entitled to rely as provided in Paragraph 4.06 of the General Conditions. Bidder is responsible for any interpretation or conclusion Bidder draws from any "technical data" or any other data, interpretations, opinions, or information contained in such reports or shown or indicated in such drawings.

4.04 Provisions concerning responsibilities for the adequacy of data, if any, furnished to prospective Bidders with respect to subsurface conditions, other physical conditions and Underground Facilities, and possible changes in the Bidding Documents due to differing or unanticipated subsurface or physical conditions appear in Paragraphs 4.02, 4.03, and 4.04 of the General Conditions. Provisions concerning responsibilities for the adequacy of data furnished to prospective Bidders with respect to a Hazardous Environmental Condition at the Site, if any, and possible changes in the Contract Documents due to any Hazardous Environmental Condition uncovered or revealed at the Site which was not shown or indicated in the Drawings or Specifications or identified in the Contract Documents to be within the scope of the Work appear in Paragraph 4.06 of the General Conditions.

4.05 On request, Owner will provide Bidder access to the Site to conduct such examinations, investigations, explorations, tests and studies as Bidder deems necessary for submission of a Bid. Bidder shall fill all holes, clean up and restore the Site to its former condition upon completion of such explorations, investigations, tests and studies. Bidder shall comply with all applicable Laws and Regulations relative to excavation and utility locates.

4.06 Reference is made to the Supplementary Conditions and Division 01 Section "Summary of Work," for the identification of the general nature of other work that is to be performed at the Site by Owner or others (such as utilities and other prime contractors) that relates to the Work contemplated by these Bidding Documents. On request, Owner will provide to each Bidder for examination access to or copies of contract documents, if any, (other than portions thereof related to price) for such other work.

4.07 Paragraph 6.13.C of the General Conditions indicates that if an Owner safety program exists, it will be noted in the Supplementary Conditions.

4.08 It is the responsibility of each Bidder before submitting a Bid to:

A. examine and carefully study the Bidding Documents, and the other related data identified in the Bidding Documents;

B. visit the Site and become familiar with and satisfy Bidder as to the general, local and Site conditions that may affect cost, progress, and performance of the Work;

C. become familiar with and satisfy Bidder as to all federal, state and local Laws and Regulations that may affect cost, progress, or performance of the Work;

D. consider the information known to Bidder; information commonly known to contractors doing business in the locality of the Site; information and observations obtained from visits to the Site; the Bidding Documents; and the Site-related reports and drawings identified in the Bidding Documents, with respect to the effect of such information, observations, and documents on (1) the cost, progress, and performance of the Work; (2) the means, methods, techniques, sequences, and procedures of construction to be employed by Bidder, including applying any specific means, methods, techniques, sequences, and procedures of construction expressly required by the Bidding Documents; and (3) Bidder's safety precautions and programs;

E. agree at the time of submitting its Bid that no further examinations, investigations, explorations, tests, studies, or data are necessary for the determination of its Bid for performance of the Work at the price(s) bid and within the times required, and in accordance with the other terms and conditions of the Bidding Documents;

F. become aware of the general nature of the work to be performed by Owner and others at the Site that relates to the Work as indicated in the Bidding Documents;

G. promptly give Engineer written notice of all conflicts, errors, ambiguities or discrepancies that Bidder discovers in the Bidding Documents and confirm that the written resolution thereof by Engineer is acceptable to Bidder; and

H. determine that the Bidding Documents are generally sufficient to indicate and convey understanding of all terms and conditions for the performance of the Work.

4.09 The submission of a Bid will constitute an incontrovertible representation by Bidder that Bidder has complied with every requirement of this Article 4, that without exception the Bid is premised upon performing and furnishing the Work required by the Bidding Documents and applying any specific means, methods, techniques, sequences and procedures of construction that may be shown or indicated or expressly required by the Bidding Documents, that Bidder has given Engineer written notice of all conflicts, errors, ambiguities and discrepancies that Bidder has discovered in the Bidding Documents and the written resolutions thereof by Engineer are acceptable to Bidder, and that the Bidding Documents are generally sufficient to indicate and convey understanding of all terms and conditions for performing and furnishing the Work.

## ARTICLE 5 - PREBID CONFERENCE

5.01 A Pre-bid Conference will be on Friday, September 9, 2016 at 9:00 a.m. local time at Cascade Charter Township Offices, 2865 Thornhills Avenue, SE, Grand Rapids, MI, 49546. Representatives of Owner and Engineer will be present to discuss the Project. Bidders are required to attend and participate in the conference. Engineer will transmit to all prospective Bidders of record such Addenda as Engineer considers necessary in response to questions arising at the conference. Oral statements may not be relied upon and will not be binding or legally effective.

## ARTICLE 6 - SITE AND OTHER AREAS

6.01 The Site is identified in the Bidding Documents. Easements for permanent structures or permanent changes in existing facilities are to be obtained and paid for by Owner unless otherwise provided in the Bidding Documents. All additional lands, access, and restoration thereto required for temporary construction facilities, construction equipment, or storage of materials and equipment to be incorporated in the Work are to be obtained and paid for by Contractor.

## ARTICLE 7 -INTERPRETATIONS AND ADDENDA

7.01 All questions about the meaning or intent of the Bidding Documents are to be directed to Engineer in writing. Interpretations or clarification considered necessary by Engineer in response to such questions will be issued by Addenda mailed or delivered to all parties recorded by Engineer as having received the Bidding Documents. Questions received less than 10 days prior to the date for opening of Bids may not be answered. Only questions answered by Addenda will be binding. Oral and other interpretations or clarifications will be without legal effect.

7.02 Addenda may be issued to clarify, correct, or change the Bidding Documents as deemed advisable by Owner or Engineer.

## ARTICLE 8 - BID SECURITY

8.01 A Bid must be accompanied by an original Bid security (with affixed seal) made payable to Owner in an amount of 5% of Bidder's maximum Bid price and in the form of a certified check, bank money order, or a Bid bond (optional form attached) issued by a surety meeting the requirements of paragraphs 5.01 and 5.02 of the General Conditions. Facsimile, telegraphic, or other electronically transmitted Bid Security or Bid bonds submitted with the Bid will be considered provided that, within 48 hours after the time for receipt of Bids, the original Bid bond form with the original signature and original required attachments are received by Engineer. Attorneys-in-fact who execute the Bid Security or Bid bond on behalf of the Surety shall affix to the bond a certified and current copy of the power of attorney.

8.02 The Bid security of the Successful Bidder will be retained until such Bidder has executed the Contract Documents, furnished the required contract security and met the other conditions of the Notice of Award, whereupon the Bid security will be returned. If the Successful Bidder fails to execute and deliver the Contract Documents and furnish the required contract security within 15 days after the Notice of Award, Owner may consider Bidder to be in default, annul the Notice of Award, and the Bid security of that Bidder will be forfeited. Such forfeiture shall be Owner's exclusive remedy if Bidder defaults. The Bid security of other Bidders whom Owner believes to have a reasonable chance of receiving the award may be retained by Owner until the earlier of 7 days after the Effective Date of the Agreement or 61 days after the Bid opening, whereupon Bid security furnished by such Bidders will be returned.

8.03 Bid security of other Bidders whom Owner believes do not have a reasonable chance of receiving the award will be returned within 7 days after the Bid opening.

## ARTICLE 9 - CONTRACT TIMES

9.01 The dates by which the Work is to be substantially completed and ready for final payment are set forth in the Agreement.

## ARTICLE 10 - LIQUIDATED DAMAGES

10.01 Provisions for liquidated damages, if any, are set forth in the Agreement.

## ARTICLE 11 - SUBSTITUTE AND "OR EQUAL" ITEMS

11.01 The Contract, if awarded, will be on the basis of materials and equipment specified or described in the Bidding Documents without consideration of possible substitute or "or equal" items.

11.02 Whenever materials or equipment are specified or described in the Bidding Documents by using the name of one or more Suppliers, the Bid shall be based on providing the materials or equipment of one of the Suppliers named.

11.03 Whenever it is specified or described in the Bidding Documents that a substitute or "or equal" item of material or equipment may be furnished or used by Contractor if acceptable to Engineer, application for such acceptance will not be considered by Engineer until after the Effective Date of the Agreement. The procedure for submission of any such application by Contractor and consideration by Engineer is set forth in paragraph 6.05 of the General Conditions and may be supplemented in Division 01 - General Requirements.

## ARTICLE 12 - SUBCONTRACTORS, SUPPLIERS AND OTHERS

12.01 If the Supplementary Conditions require, or if Owner requests, the identity of certain Subcontractors, Suppliers, individuals, or entities to be submitted to Owner in advance of a specified date prior to the Effective Date of the Agreement, the apparent Successful Bidder, and any other Bidder so requested, shall within 5 days after Bid opening, submit to Owner a list of all such Subcontractors, Suppliers, individuals, or entities proposed for those portions of the Work for which such identification is required. Such list shall be accompanied by an experience statement with pertinent information regarding similar projects and other evidence of qualifications for each such Subcontractor, Supplier, individual or entity if requested by Owner. If Owner or Engineer, after due investigation, has reasonable objection to any proposed Subcontractor, Supplier, individual, or entity, Owner may, before the Notice of Award is given, request apparent Successful Bidder to submit an acceptable substitute, in which case the apparent Successful Bidder shall submit an acceptable substitute, Bidder's Bid price will be increased (or decreased) by the difference in cost occasioned by such substitution, and Owner may consider such price adjustment in evaluating Bids and making the Contract award.

12.02 If apparent Successful Bidder declines to make any such substitution, Owner may award the Contract to the next lowest Bidder that proposes to use acceptable Subcontractors, Suppliers, individuals, or entities. Declining to make requested substitutions will not constitute grounds for forfeiture of the Bid security of any Bidder. Any Subcontractor, Supplier, individual, or entity so listed and against which Owner or Engineer makes no written objection prior to the giving of the Notice of Award will be deemed acceptable to Owner and Engineer subject to revocation of such acceptance after the Effective Date of the Agreement as provided in paragraph 6.06 of the General Conditions.

12.03 Contractor shall not be required to employ any Subcontractor, Supplier, individual, or entity against whom Contractor has reasonable objection.

## ARTICLE 13 - PREPARATION OF BID

13.01 The Bid form is included with the Bidding Documents. Additional copies may be obtained from Engineer.

13.02 All blanks on the Bid form shall be completed by printing in ink or by typewriter and the Bid signed in ink. Erasures or alterations shall be initialed in ink by the person signing the Bid form. A Bid price shall be indicated for each section, Bid item, and unit price item listed therein. In the case of optional alternatives the words "No Bid", "No Change", or "Not Applicable" may be entered.

13.03 A Bid by a corporation shall be executed in the corporate name by the president, vice president, or other corporate officer accompanied by evidence of authority to sign. The corporate seal shall be affixed, if required by state law, and attested by the secretary or an assistant secretary. The corporate address and state of incorporation shall be indicated below the signature.

13.04 A Bid by a partnership shall be executed in the partnership name and signed by a partner (whose title must appear under the signature), accompanied by evidence of authority to sign. The official address of the partnership shall be indicated below the signature.

13.05 A Bid by a limited liability company shall be executed in the name of the firm by a member and accompanied by evidence of authority to sign. The state of formation of the firm and the official address of the firm shall be indicated below the signature.

13.06 A Bid by an individual shall indicate the Bidder's name and official address.

13.07 A Bid by a joint venture shall be executed by each joint venturer in the manner indicated on the Bid form. The official address of the joint venture shall be indicated below the signature.

13.08 All names shall be typed or printed in ink below the signatures.

13.09 The Bid shall contain an acknowledgment of receipt of all Addenda, the numbers of which shall be filled in on the Bid form.

13.10 Postal and email addresses and telephone number for communications regarding the Bid shall be indicated.

13.11 The Bid shall contain evidence of Bidder's authority and qualification to do business in the state where the Project is located or Bidder shall covenant in writing to obtain such authority and qualification prior to award of the Contract and attach such covenant to the Bid. Bidder's state contractor license number for the state the Project, if any, shall also be indicated on the Bid form.

## ARTICLE 14 - BASIS OF BID; COMPARISON OF BIDS

14.01 Basis of Bid

A. Bidders shall submit a Bid on a unit price basis for each item of Work listed in the Bid schedule.

B. The total of all estimated prices will be determined as the sum of the products of the estimated quantity of each item and the unit price Bid for the item. The final quantities and Contract Price will be determined in accordance with Paragraph 11.03 of the General Conditions.

14.02 The Bid price shall include such amounts as the Bidder deems proper for Contractor's overhead, costs, profit and other expenses on account of cash allowances, if any, named in the Contract Documents, in accordance with Paragraph 11.02 B. of the General Conditions.

14.03 Discrepancies between the multiplication of units of Work and unit prices will be resolved in favor of the unit prices. Discrepancies between the indicated sum of any column of figures and the correct sum thereof will be resolved in favor of the correct sum. Discrepancies between words and figures will be resolved in favor of the words.

## ARTICLE 15 - SUBMITTAL OF BID

15.01 Blank copies of the Bid form and the Bid bond form are available online. (Go to www.ftch.com, click on "Bid Sets/Bidders Lists") The Bid form is to be completed and submitted with the Bid security.

15.02 A Bid shall be submitted no later than the date and time prescribed and at the place indicated in the Advertisement for Bids and shall be enclosed in an opaque, sealed package, plainly marked with the Project title and name and address of the Bidder and shall be accompanied by the Bid security and other required documents. If a Bid is sent by mail or other delivery system, the sealed envelope containing the Bid shall be enclosed in a separate package plainly marked on the outside with the notation "BID ENCLOSED".

15.03 Bid forms with facsimile or other electronically transmitted signatures will not be considered.

## ARTICLE 16 - MODIFICATION AND WITHDRAWAL OF BIDS

16.01 A Bid may be modified or withdrawn by an appropriate document duly executed in the manner that a Bid must be executed and delivered to the place where Bids are to be submitted prior to the date and time for the opening of Bids.

16.02 If, within 24 hours after Bids are opened, any Bidder files a duly signed, written notice with Owner and promptly thereafter demonstrates to the reasonable satisfaction of Owner that there was a material and substantial mistake in the preparation of its Bid, that Bidder may withdraw its Bid and the Bid security will be returned. Thereafter, if the Work is rebid, that Bidder will be disqualified from further bidding on the Work.

16.03 No withdrawal of a Bid shall be permitted on account of mistake or any other reason after the expiration of this 24 hour period.

## ARTICLE 17 - OPENING OF BIDS

17.01 Bids will be opened at the time and place indicated in the Advertisement for Bids and, unless obviously nonresponsive, read aloud publicly. An abstract of the amounts of the Bids and major alternates, if any, will be made available to Bidders after the opening of Bids.

## ARTICLE 18 - BIDS TO REMAIN SUBJECT TO ACCEPTANCE

18.01 All Bids will remain subject to acceptance for the period of time stated in the Bid form, but Owner may, in its sole discretion, release any Bid and return the Bid security prior to the end of this period.

## ARTICLE 19 - AWARD OF CONTRACT

19.01 Owner reserves the right to reject any or all Bids, including without limitation, nonconforming, nonresponsive, unbalanced or conditional Bids. Owner further reserves the right to reject the Bid of any Bidder whom it finds, after reasonable inquiry and evaluation, to not be responsible. Owner may also reject the Bid of any Bidder if Owner believes that it would not be in the best interest of the Project to make an award to that Bidder. Owner also reserves the right to waive all informalities not involving price, time or changes in the Work and to negotiate contract terms with the Successful Bidder.

19.02 More than one Bid for the same Work from an individual or entity under the same or different names will not be considered. Reasonable grounds for believing that any Bidder has an interest in more than one Bid for the Work may be cause for disqualification of that Bidder and the rejection of all Bids in which that Bidder has an interest.

19.03 In evaluating Bids, Owner will consider whether or not the Bids comply with the prescribed requirements, and such alternates, unit prices, and other data as may be requested in the Bid form or prior to the Notice of Award.

19.04 In evaluating Bidders, Owner will consider the qualifications of Bidders and may consider the qualifications and experience of Subcontractors, Suppliers and other individuals or entities proposed for those portions of the Work for which the identity of Subcontractors, Suppliers, and other individuals or entities must be submitted as provided in the Supplementary Conditions.

19.05 Owner also may consider the operating costs, maintenance considerations, performance data and guarantees of materials and equipment proposed for incorporation in the Work when such data is required to be submitted prior to the Notice of Award.

19.06 Owner may conduct such investigations as Owner deems necessary to establish the responsibility, qualifications and financial ability of Bidders, proposed Subcontractors, Suppliers, individuals or entities proposed for those portions of the Work in accordance with the Contract Documents.

19.07 If the Contract is to be awarded, Owner will award the Contract to the Bidder whose Bid is in the best interests of the Project.

19.08 If the Contract is to be awarded, Owner will give Successful Bidder a Notice of Award within 35 days after the day of the Bid opening.

If Owner does not issue the Notice of Award within 21 days after the day of the Bid opening, the dates for Substantial Completion and final completion will each be extended by one day for each day that the Notice of Award date exceeds the 21 days.

## ARTICLE 20 - CONTRACT SECURITY AND INSURANCE

20.01 Article 5 of the General Conditions, as may be modified by the Supplementary Conditions, sets forth Owner's requirements as to insurance. When the Successful Bidder delivers the executed Agreement to Owner, it shall be accompanied by the required certificates of insurance (and other evidence of insurance requested by Owner).

20.02 Article 5 of the General Conditions, as may be modified by the Supplementary Conditions, sets forth Owner's requirements as to bonds. When Successful Bidder delivers the executed Agreement to Owner, it shall be accompanied by the required bonds.

## ARTICLE 21 - SIGNING OF AGREEMENT

21.01 When Owner issues a Notice of Award to the Successful Bidder, it will be accompanied by the required number of unsigned counterparts of the Agreement bound into the Project Manual with the other Contract Documents which are identified in the Agreement as attached thereto. Within 15 days thereafter, Successful Bidder shall sign and deliver the required number of counterparts of the Agreement and attached documents to Owner. Within 10 days thereafter, Owner will deliver one fully signed counterpart to Successful Bidder.

## ARTICLE 22 - RETAINAGE AND PROGRESS PAYMENTS

22.01 Provisions concerning retainage and progress payments are set forth in the Agreement.

22.02 Retainages and progress payments will be in accordance with State of Michigan Act 524 of the Public Acts of 1980.

END OF SECTION 00 21 13

SECTION 00 41 43 - BID - UNIT PRICE

Bid of _____ hereinafter called Bidder, organized and existing under the laws of or a resident of the State of _____, doing business as _____.*

*Insert as applicable: "a corporation", "a partnership" or "an individual".

To Cascade Charter Township, hereinafter called Owner.

ARTICLE 1 – BID RECIPIENT

1.01 The undersigned Bidder proposes and agrees, if this Bid is accepted, to enter into an Agreement with Owner in the form included in the Bidding Documents to perform all Work as specified or indicated in the Bidding Documents for the prices and within the times indicated in this Bid and in accordance with the other terms and conditions of the Bidding Documents.

ARTICLE 2 – BIDDER'S ACKNOWLEDGEMENTS

2.01 Bidder accepts all of the terms and conditions of the Advertisement for Bids and Instructions to Bidders, including without limitation those dealing with the disposition of Bid security. This Bid will remain subject to acceptance for 60 days after the Bid opening, or for such longer period of time that Bidder may agree to in writing upon request of Owner.

ARTICLE 3 – BIDDER'S REPRESENTATIONS

3.01 In submitting this Bid, Bidder represents that:

A. Bidder has examined and carefully studied the Bidding Documents, other related data identified in the Bidding Documents, and the following Addenda, receipt of all which is hereby acknowledged:

| Addendum Number | Addendum Date |
|---|---|
| _____ | _____ |
| _____ | _____ |
| _____ | _____ |
| _____ | _____ |

B. Bidder has visited the Site and become familiar with and is satisfied as to the general, local, and Site conditions that may affect cost, progress, and performance of the Work.

C. Bidder is familiar with and is satisfied as to Laws and Regulations that may affect cost, progress, and performance of the Work.

D. Bidder has carefully studied all:

(1) reports of explorations and tests of subsurface conditions at or contiguous to the Site and all drawings of physical conditions in or relating to existing surface or subsurface structures at or contiguous to the Site (except Underground Facilities) that have been identified in the Supplementary Conditions as provided in paragraph 4.02 of the General Conditions, as containing reliable "technical data," and

(2) reports and drawings of Hazardous Environmental Conditions, if any, at the Site that have been identified in the Supplementary Conditions as provided in paragraph 4.06 of the General Conditions as containing reliable "technical data."

E. Bidder has considered the information known to Bidder; information commonly known to contractors doing business in the locality of the Site; information and observations obtained from visits to the Site; the Bidding Documents; and the Site-related reports and drawings identified in the Bidding Documents, with respect to the effect of such information, observations, and documents on:

(1) the cost, progress, and performance of the Work;

(2) the means, methods, techniques, sequences, and procedures of construction to be employed by Bidder, including applying the specific means, methods, techniques, sequences, and procedures of construction expressly required by the Bidding Documents; and

(3) Bidder's safety precautions and programs.

F. Based on the information and observations referred to in Paragraph 3.01.E above, Bidder does not consider that further examinations, investigations, explorations, tests, studies or data are necessary for the determination of this Bid for performance of the Work at the price(s) bid and within the times required, and in accordance with the other terms and conditions of the Bidding Documents.

G. Bidder is aware of the general nature of work to be performed by Owner and others at the Site that relates to the Work as indicated in the Bidding Documents.

H. Bidder has given Engineer written notice of all conflicts, errors, ambiguities or discrepancies that Bidder has discovered in the Bidding Documents, and the written resolution thereof by Engineer is acceptable to Bidder.

I. The Bidding Documents are generally sufficient to indicate and convey understanding of all terms and conditions for the performance of the Work for which this Bid is submitted.

ARTICLE 4 – BIDDER'S CERTIFICATION

4.01 Bidder certifies that:

A. This Bid is genuine and not made in the interest of or on behalf of any undisclosed individual or entity and is not submitted in conformity with any collusive agreement or rules of any group, association, organization or corporation;

B. Bidder has not directly or indirectly induced or solicited any other Bidder to submit a false or sham Bid;

C. Bidder has not solicited or induced any individual or entity to refrain from bidding; and

D. Bidder has not engaged in corrupt, fraudulent, collusive, or coercive practices in competing for the Contract. For the purposes of this Paragraph 4.01.D:

(1) "corrupt practice" means the offering, giving, receiving, or soliciting of anything of value likely to influence the action of a public official in the bidding process;

(2) "fraudulent practice" means an intentional misrepresentation of facts made

(a) to influence the bidding process to the detriment of Owner,

(b) to establish bid prices at artificial non-competitive levels, or

(c) to deprive Owner of the benefits of free and open competition;

(3) "collusive practice" means a scheme or arrangement between two or more Bidders, with or without the knowledge of Owner, a purpose of which to establish bid prices at artificial non-competitive levels; and

(4) "coercive practice" means harming or threatening to harm, directly or indirectly, persons or their property to influence their participation in the bidding process or affect the execution of the Contract.

ARTICLE 5 – BASIS OF BID

5.01 Bidder will complete the Work in accordance with the Contract Documents for the following unit prices:

| Unit Bid Price Schedule | | | | | |
|---|---|---|---|---|---|
| Item No. | Item Description | Unit | Total Estimated Quantity | Unit Price | Bid Price |
| 1 | Mobilization | LS | 1 | | |
| 2 | Cash Allowances | Dollars | 1 | - | $15,000 |
| 3 | Maintaining Traffic | LS | 1 | | |
| 4 | Woody Debris Management | LS | 1 | | |
| 5 | Remove and Dispose of Concrete and Debris | LS | 1 | | |
| 6 | Channel Re-alignment | LF | 160 | | |
| 7 | Bar Removal | LF | 160 | | |
| 8 | Bank Reconstruction | LS | 1 | | |
| 9 | Floodbench Creation | LF | 210 | | |
| 10 | Slope Stabilization | LS | 1 | | |
| 11 | Catch Basin, 24-inch diameter | EA | 1 | | |
| 12 | Storm Sewer, 12-inch CPP | LF | 20 | | |
| 13 | Riffle | EA | 2 | | |
| 14 | Plunge Pool | EA | 1 | | |
| 15 | Rock Spillway (sta 22+80 and 0+50 tributary) | EA | 2 | | |
| 16 | Rock Spillway (sta 5+40 and 18+10) | EA | 2 | | |
| 17 | Riprap Bank Protection | SY | 431 | | |
| 18 | Riprap End Treatment | EA | 1 | | |
| 19 | Tile Outlet Stabilization | EA | 6 | | |
| 20 | Haul and Level Spoils | LS | 1 | | |
| 21 | Soil Erosion and Sediment Controls | LS | 1 | | |
| 22 | Coconut Mulch Blanket and Seed | SY | 505 | | |
| 23 | Straw Mulch Blanket and Seed | SY | 2,100 | | |
| 24 | Native Seeding | Acre | 0.344 | | |
| 25 | Site Restoration | LS | 1 | | |
| | | | **Total Bid:** | **$_____** | |

_____
Bidder (Firm or Corporation Name)

Unit Prices have been computed in accordance with Paragraph 11.03.B of the General Conditions.

Bidder acknowledges that estimated quantities are not guaranteed, and are solely for the purpose of comparison of Bids, and final payment for all unit price Bid items will be based on actual quantities, determined as provided in the Contract Documents.

ARTICLE 6 – TIME OF COMPLETION

6.01 Bidder agrees that the Work will be substantially complete on or before April 30, 2017 and completed and ready for final payment in accordance with paragraph 14.07 of the General Conditions on or before June 30, 2017.

6.02 Bidder accepts the provisions of the Agreement as to liquidated damages.

ARTICLE 7 – ATTACHMENTS TO THIS BID

7.01 The following documents are submitted with and made a condition of this Bid: List of Proposed Subcontractors;

ARTICLE 8 – DEFINED TERMS

8.01 The terms used in this Bid with initial capital letters have the meanings indicated in the Instructions to Bidders, the General Conditions, and the Supplementary Conditions.

ARTICLE 9 – BID SUBMITTAL

9.01 This Bid is submitted by:

SUBMITTED on_____, 20___
Date*

BY: _____
Name of Bidder*

_____
Business Street Address*

_____
Signature

_____
City, State, and Zip*

_____
Name and Title of Signatory*

_____
Telephone Number*

_____
Facsimile Number*

_____
E-mail Address*

*Typed or printed in ink.

END OF SECTION 00 41 43

SECTION 00 43 13 – BID SECURITY FORM

Owner:
Cascade Charter Township
2865 Thornhills Avenue, SE
Grand Rapids, MI 49546

Bid:
Bid Due Date: September 19, 2016
Project: Thornapple Hills Drain Maintenance
Grand Rapids, MI

Surety and Bidder, intending to be legally bound hereby, subject to the terms set forth below, do each cause this Bid bond to be duly executed by an authorized officer, agent, or representative.

Surety (Principal Place of Business):

_____
Surety's Name of and Corporate Seal*

_____
Business Street Address*

_____
City, State, Zip *

By:_____
Signature
(Attach Power of Attorney)

By:_____
(Print Name*)

Attest:_____
Signature

_____
Title*

Bidder:

_____
Bidder's Name and Corporate Seal*

_____
Business Street Address*

_____
City, State, Zip *

By:_____
Signature

By:_____
(Print Name*)

Attest:_____
Signature

_____
Title*

* Typed or printed in ink.

Bond:

Bond Number:_____
Date (Not later than Bid due date):_____
Penal Sum:_____ $_____
(Words) (Figures)

Note:
(1) Above addresses are to be used for giving required notice.
(2) Any singular reference to Bidder, Surety, Owner or other party shall be considered plural where applicable.

1. Bidder and Surety, jointly and severally, bind themselves, their heirs, executors, administrators, successors and assigns to pay to Owner upon default of Bidder the penal sum set forth on the face of this bond. Payment of the penal sum is the extent of Bidder's and Surety's liability. Recovery of such penal sum under the terms of this bond shall be Owner's sole and exclusive remedy upon default of Bidder.

2. Default of Bidder shall occur upon the failure of Bidder to deliver within the time required by the Bidding Documents (or any extension thereof agreed to in writing by Owner) the executed Agreement required by the Bidding Documents and any performance and payment bonds required by the Bidding Documents.

3. This obligation shall be null and void if:

3.1. Owner accepts Bidder's Bid and Bidder delivers within the time required by the Bidding Documents (or any extension thereof agreed to in writing by Owner) the executed Agreement required by the Bidding Documents and any performance and payment bonds required by the Bidding Documents, or

3.2. All Bids are rejected by Owner, or

3.3. Owner fails to issue a Notice of Award to Bidder within the time specified in the Bidding Documents (or any extension thereof agreed to in writing by Bidder and, if applicable, consented to by Surety when required by paragraph 5 hereof).

4. Payment under this bond will be due and payable upon default of Bidder and within 30 calendar days after receipt by Bidder and Surety of written notice of default from Owner, which notice will be given with reasonable promptness, identifying this bond and the Project and including a statement of the amount due.

5. Surety waives notice of and any and all defenses based on or arising out of any time extension to issue Notice of Award agreed to in writing by Owner and Bidder, provided that the total time for issuing Notice of Award including extensions shall not in the aggregate exceed 120 days from Bid due date without Surety's written consent.

6. No suit or action shall be commenced under this bond prior to 30 calendar days after the notice of default required in Paragraph 4 above is received by Bidder and Surety, and in no case later than one year after Bid due date.

7. Any suit or action under this bond shall be commenced only in a court of competent jurisdiction located in the state in which the Project is located.

8. Notices required hereunder shall be in writing and sent to Bidder and Surety at their respective addresses indicated on the face of this bond. Such notices may be sent by personal delivery, commercial courier or by United States Registered or Certified Mail, return receipt requested, postage pre-paid, and shall be deemed to be effective upon receipt by the party concerned.

9. Surety shall cause to be attached to this bond a current and effective Power of Attorney evidencing the authority of the officer, agent or representative who executed this bond on behalf of Surety to execute, seal and deliver such bond and bind the Surety thereby.

10. This bond is intended to conform to all applicable statutory requirements. Any applicable requirement of any applicable statute that has been omitted from this bond shall be deemed to be included herein as if set forth at length. If any provision of this bond conflicts with any applicable statute, then the provision of said statute shall govern and the remainder of this bond that is not in conflict therewith shall continue in full force and effect.

11. The term "Bid" as used herein includes a Bid, offer or proposal as applicable.

END OF SECTION 00 43 13

SECTION 00 51 00 - NOTICE OF AWARD

Dated _____, 20____

TO:_____
(Bidder)

ADDRESS:_____

_____

_____

CONTRACT: Thornapple Hills Drain Maintenance
Cascade Charter Township, MI
G130842

You are notified that your Bid dated _____, 20____ for the above Contract has been considered. You are the Successful Bidder and are awarded a Contract for the Thornapple Hills Drain Maintenance Project.

The Contract Price of your Contract is _____

_____ Dollars ($_____). Two copies of the proposed Contract Documents as identified in the Agreement accompany this Notice of Award.

You must comply with the following conditions precedent within 15 days of the date of this Notice of Award, that is by _____, 20____.

1. Deliver to the Owner two fully executed counterparts of the Contract Documents which accompany this Notice of Award, each of which must bear your signature at the designated location.
2. Deliver with the Executed Contract Documents the Contract security (bonds) as specified in the Instructions to Bidders (Article 20), the General Conditions (Paragraph 5.01), and the Supplementary Conditions (Paragraph SC-5.02).
3. Deliver with the Executed Contract Documents the insurance documents as specified in the General Conditions (Article 5) and the Supplementary Conditions (Article SC-5).
4. List other conditions precedent

_____

_____

_____

_____

_____

_____

_____

_____

Failure to comply with these conditions within the time specified will entitle Owner to consider you in default, annul this Notice of Award, and declare your Bid security forfeited.

Within 10 days after you comply with the above conditions, Owner will return to you one fully executed counterpart of the Contract Documents.

Cascade Charter Township

By: _____
(Authorized Signature)

_____
(Name and Title)

*Typed or printed in ink

Copy to Engineer

END OF SECTION 00 51 00

SECTION 00 52 00 – AGREEMENT FORM

THIS AGREEMENT is by and between _____ ("Owner") and _____ ("Contractor").

Owner and Contractor hereby agree as follows:

ARTICLE 1 - WORK

1.01 Contractor shall complete all Work as specified or indicated in the Contract Documents. The Work is generally described as follows: Thornapple Hills Drain Maintenance.

ARTICLE 2 - THE PROJECT

2.01 The Project for which the Work under the Contract Documents may be the whole or only a part is generally described as follows: Thornapple Hills Drain Maintenance.

ARTICLE 3 - ENGINEER

3.01 The Project has been designed by Fishbeck, Thompson, Carr & Huber, Inc., Grand Rapids, Michigan, ("Engineer,") which is to act as Owner's representative, assume all duties and responsibilities, and have the rights and authority assigned to Engineer in the Contract Documents in connection with completion of the Work in accordance with the Contract Documents.

ARTICLE 4 - CONTRACT TIME

4.01 TIME OF THE ESSENCE

A. All time limits for Milestones, if any, Substantial Completion, and completion and readiness for final payment as stated in the Contract Documents are of the essence of the Contract.

4.02 DATES FOR SUBSTANTIAL COMPLETION AND FINAL PAYMENT

A. The Work will be substantially completed on or before April 30, 2017 and completed and ready for final payment in accordance with Paragraph 14.07 of the General Conditions on or before June 30, 2017. Substantial completion includes all work items complete and ready for use. Time extensions will not be granted for failure of the contractor to submit shop drawings for review in a timely manner.

4.03 LIQUIDATED DAMAGES

A. Contractor and Owner recognize that time is of the essence as stated in Paragraph 4.01 above and that Owner will suffer financial loss if the Work is not completed within the times specified in Paragraph 4.02 above, plus any extensions thereof allowed in accordance with Article 12 of the General Conditions. The parties also recognize the delays, expense and difficulties involved in proving in a legal or arbitration proceeding the actual loss suffered by Owner if the Work is not completed on time. Accordingly, instead of requiring any such proof, Owner and Contractor agree that as liquidated damages for delay (but not as a penalty) Contractor shall pay Owner Five Hundred Dollars ($500.00) for each day that expires after the time specified in Paragraph 4.02 above for Substantial Completion until the Work is substantially complete.

B. After Substantial Completion, if Contractor shall neglect, refuse or fail to complete the remaining Work within the Contract Time or any proper extension thereof granted by Owner, Contractor shall pay Owner Five Hundred Dollars ($500.00) for each day that expires after the time specified in Paragraph 4.02 above for completion and readiness for final payment until the Work is completed and ready for final payment.

ARTICLE 5 - CONTRACT PRICE

5.01 Owner shall pay Contractor for completion of the Work in accordance with the Contract Documents, in current funds, at the unit prices stated in Contractor's Bid.

ARTICLE 6 - PAYMENT PROCEDURES

6.01 SUBMITTAL AND PROCESSING OF PAYMENTS

A. Payments and retainage of payments shall be in accordance with State of Michigan Act No. 524 of the Public Acts of 1980. Contractor shall submit applications for payment in accordance with Article 14 of the General Conditions. The person representing Contractor who shall submit Application for Payment will be _____.

Applications for Payment will be processed by Engineer as provided in the General Conditions.

6.02 PROGRESS PAYMENTS; RETAINAGE

A. Owner shall make progress payments on account of the Contract Price on the basis of Contractor's Applications for Payment during performance of the Work as provided in Paragraphs 6.02. A.1 and 6.02.A.2 below. All such payments will be based on unit prices and number of units completed

1. Prior to Substantial Completion, progress payments will be in an amount equal to: 100% of the Work completed and 100% of materials and equipment not incorporated in the Work but delivered, suitably stored and accompanied by documentation satisfactory to Owner as provided in Paragraph 14.02 of the General Conditions less the aggregate of payments previously made and less such amounts as Engineer may determine, or Owner may withhold, including but not limited to liquidated damages, in accordance with Paragraph 14.02 of the General Conditions, except that Owner will retain a portion of each progress payment limited to:

a. Not more than 10% of the dollar value of the Work completed until 50% of the Work has been completed as determined by Engineer.

b. After the Work has been 50% completed as determined by Engineer, additional retainage will not be withheld unless Owner determines that Contractor is not making satisfactory progress, or for other specific cause relating to Contractor's performance under the Contract. If Owner so determines, Owner may retain not more than 10% of the dollar value of the Work more than 50% completed.

2. Upon Substantial Completion, Owner shall pay an amount sufficient to increase total payments to Contractor to 95% of the Contract Price, less such amounts as Engineer shall determine, or Owner may withhold, in accordance with Paragraph 14.02.B.5 of the General Conditions.

3. Owner may deduct from progress payments amounts which are due to Owner from Contractor in accordance with the Contract Documents.

4. After Substantial Completion, Owner may, at Owner's sole discretion, pay an amount sufficient to increase total payments to Contractor to more than 95% of the Contract Price if Owner has received consent of surety in a form acceptable to Owner.

5. Progress payments shall not be due until 15 days after Owner has received the funds with which to make the progress payment from a department or agency of the federal or state government, if any funds are to come from either of these sources.

B. The retained funds will not be commingled with other funds of Owner and will be deposited in an interest bearing account in a regulated financial institution in this state wherein all such retained funds are kept by Owner which will account for both retainage and interest on each construction contract separately.

C. Owner is not required to deposit retained funds in an interest bearing account if the retained funds are to be provided under a state or federal grant and the retained funds have not been paid to Owner.

D. Owner, at any time after 94% of work under the contract has been completed as determined by Engineer and at the request of Contractor, will release the retainage plus interest to Contractor only if Contractor provides to Owner an irrevocable letter of credit in the amount of the retainage plus interest, issued by a bank authorized to do business in this state, containing terms mutually acceptable to Contractor and Owner.

E. Unresolved disputes between Owner and Contractor regarding retained funds and interest on retained funds shall be submitted to an agent in accordance with the dispute resolution process described in Section 4 of State of Michigan Act 524 of P.A. of 1980.

6.03 FINAL PAYMENT

A. Upon final completion and acceptance of the Work in accordance with Paragraph 14.07 of the General Conditions, Owner shall pay the remainder of the Contract Price as recommended by Engineer as provided in said Paragraph 14.07.

ARTICLE 7 - INTEREST

7.01 All moneys not paid when due as provided in Article 14 of the General Conditions shall bear interest at the rate of 0.25% per month.

ARTICLE 9 - CONTRACT DOCUMENTS

9.01 CONTENTS

A. The Contract Documents consist of the following:
1. Contractor's Bid dated _____.
2. Addenda _____ to _____, inclusive.
3. Notice of Award.
4. This Agreement.
5. Performance Bond.
6. Payment Bond.
7. General Conditions.
8. Supplementary Conditions.
9. Specifications as listed in the table of contents of the Project Manual.
10. Drawings, consisting of sheets as listed on the cover sheet with each sheet bearing the following general title: Thornapple Hills Drain Maintenance dated September 2, 2016 (not included in the executed Contract Documents).
11. The following which may be delivered or issued on or after the Effective Date of the Agreement and are not attached hereto:
    a. Work Change Directives;
    b. Change Orders.

B. The documents listed in Paragraph 9.01.A are attached to this Agreement (except as expressly noted otherwise above).

C. There are no Contract Documents other than those listed above in this Article 9.

D. The Contract Documents may only be amended, modified or supplemented as provided in Paragraph 3.04 of the General Conditions.

ARTICLE 10 - MISCELLANEOUS

10.01 TERMS

A. Terms used in this Agreement will have the meanings indicated in the General Conditions and the Supplementary Conditions.

10.02 ASSIGNMENT OF CONTRACT

A. No assignment by a party hereto of any rights under or interests in the Contract will be binding on another party hereto without the written consent of the party sought to be bound; and, specifically but without limitation, moneys that may become due and moneys that are due may not be assigned without such consent (except to the extent that the effect of this restriction may be limited by law), and unless specifically stated to the contrary in any written consent to an assignment, no assignment will release or discharge the assignor from any duty or responsibility under the Contract Documents.

10.03 SUCCESSORS AND ASSIGNS

A. Owner and Contractor each binds itself, its partners, successors, assigns and legal representatives to the other party hereto, its partners, successors, assigns and legal representatives in respect to all covenants, agreements and obligations contained in the Contract Documents.

10.04 SEVERABILITY

A. Any provision or part of the Contract Documents held to be void or unenforceable under any Law or Regulation shall be deemed stricken, and all remaining provisions shall continue to be valid and binding upon Owner and Contractor, who agree that the Contract Documents shall be reformed to replace such stricken provision or part thereof with a valid and enforceable provision that comes as close as possible to expressing the intention of the stricken provision.

IN WITNESS WHEREOF, Owner and Contractor have signed this Agreement. Counterparts have been delivered to Owner, Contractor and Engineer. All portions of the Contract Documents have been signed or identified by Owner and Contractor or on their behalf.

Contractor:

_____
Name of Contractor*

By:_____
Signature

_____
(Name and Title of Signatory*)

Attest:_____

_____
(Name and Title of Signatory*)

Signed on:_____, 20___
(Date*)

Address for giving notices:

_____
(Street*)

_____
(City, State and Zip*)

License No. _____ (Where applicable)

Agent for service of process: _____

(If Contractor is a corporation or a partnership, attach evidence of authority to sign.)

Designated Representative:

_____
(Name*)

_____
(Title*)

_____
(Street*)

_____
(City, State and Zip*)

_____
(Telephone Number*)

_____
(Facsimile*)

Owner:
Cascade Charter Township

By:_____
Signature

_____
(Name and Title of Signatory*)

Attest:_____

_____
(Name and Title of Signatory*)

Signed on:_____, 20___
(Effective Date of Agreement*)

Address for giving notices:

_____
(Street*)

_____
(City, State and Zip*)

(If Owner is a corporation, attach evidence of authority to sign. If Owner is a public body, attach evidence of authority to sign and resolution or other documents authorizing execution of this Agreement.)

Designated Representative:

_____
(Name*)

_____
(Title*)

_____
(Street*)

_____
(City, State and Zip*)

_____
(Telephone Number*)

_____
(Facsimile*)

* Typed or printed in ink.

END OF SECTION 00 52 00

THIS PAGE INTENTIONALLY LEFT BLANK

SECTION 00 61 14 – PERFORMANCE BOND FORM

Any singular reference to Contractor, Surety, Owner or other party shall be considered plural where applicable.

Contractor (Name and Address):

_____

_____

Surety (Name and Address of Principal Place of Business):

_____

_____

Owner

Cascade Charter Township
2865 Thornhills Avenue, SE
Grand Rapids, MI 49546

CONTRACT

Date (Date of Notice of Award): _____
Amount: _____
Description: Thornapple Hills Drain Maintenance
Cascade Charter Township
Grand Rapids, MI

BOND

Bond Number: _____
Date (Not earlier than Contract Date): _____
Amount: _____
Modifications to this Bond form: _____

Surety and Contractor, intending to be legally bound hereby, subject to the terms set forth below, do each cause this Performance Bond to be duly executed by an authorized officer, agent, or representative.

Contractor AS PRINCIPAL

_____ (Seal)
Contractor's Name and Corporate Seal

By: _____
Signature

_____
Print Name

_____
Title

Attest: _____
Signature

_____
Title

SURETY

_____ (Seal)
Surety's Name and Corporate Seal

By: _____
Signature (Attach Power of Attorney)

_____
Print Name

_____
Title

Attest: _____
Signature

_____
Title

IMPORTANT: Surety companies executing Bonds must appear on the Treasury Department's most current list (Circular 570 as amended) and be authorized to transact business in Michigan. Attach Power of Attorney for those signatures executing for Surety, certifying authority to bind the Surety as of the date of the Bond:

1. Contractor and the Surety, jointly and severally, bind themselves, their heirs, executors, administrators, successors and assigns to Owner for the performance of the Contract, which is incorporated herein by reference.

2. If Contractor performs the Contract, the Surety and Contractor have no obligation under this Bond, except to participate in conferences as provided in paragraph 3.1.

3. If there is no Owner Default, the Surety's obligation under this Bond shall arise after:

3.1. Owner has notified Contractor and Surety at the addresses described in Paragraph 10 below, that Owner is considering declaring a Contractor Default and has requested and attempted to arrange a conference with Contractor and Surety to be held not later than 15 days after receipt of such notice to discuss methods of performing the Contract. If Owner, Contractor and Surety agree, Contractor shall be allowed a reasonable time to perform the Contract, but such an agreement shall not waive Owner's right, if any, subsequently to declare a Contractor Default; and

3.2. Owner has declared a Contractor Default and formally terminated Contractor's right to complete the Contract. Such Contractor Default shall not be declared earlier than 20 days after Contractor and Surety have received notice as provided in paragraph 3.1; and

3.3. Owner has agreed to pay the Balance of the Contract Price to:

3.3.1. Surety in accordance with the terms of the Contract; or

3.3.2. Another contractor selected pursuant to paragraph 4.3 to perform the Contract.

4. When Owner has satisfied the conditions of Paragraph 3, Surety shall promptly and at Surety's expense take one of the following actions:

4.1. Arrange for Contractor, with consent of Owner, to perform and complete the Contract; or

4.2. Undertake to perform and complete the Contract itself, through its agents or through independent contractors; or

4.3. Obtain bids or negotiated proposals from qualified contractors acceptable to Owner for a contract for performance and completion of the Contract, arrange for a contract to be prepared for execution by Owner and contractor selected with Owner's concurrence, to be secured with performance and payment bonds executed by a qualified surety equivalent to the bonds issued on the Contract, and pay to Owner the amount of damages as described in Paragraph 6 in excess of the Balance of the Contract Price incurred by Owner resulting from Contractor Default; or

4.4. Waive its right to perform and complete, arrange for completion, or obtain a new contractor, and with reasonable promptness under the circumstances:

4.4.1. After investigation, determine the amount for which it may be liable to Owner and, as soon as practicable after the amount is determined, tender payment therefor to Owner; or

4.4.2. Deny liability in whole or in part and notify Owner citing reasons therefor.

5. If Surety does not proceed as provided in paragraph 4 with reasonable promptness, Surety shall be deemed to be in default on this Bond 15 days after receipt of an additional written notice from Owner to Surety demanding that Surety perform its obligations under this Bond, and Owner shall be entitled to enforce any remedy available to Owner. If Surety proceeds as provided in Subparagraph 4.4, and Owner refuses the payment tendered or Surety has denied liability, in whole or in part, without further notice Owner shall be entitled to enforce any remedy available to Owner.

6. After Owner has terminated Contractor's right to complete the Contract, and if Surety elects to act under paragraph 4.1, 4.2, or 4.3 above, then the responsibilities of Surety to Owner shall not be greater than those of Contractor under the Contract, and the responsibilities of Owner to Surety shall not be greater than those of Owner under the Contract. To the limit of the amount of this Bond, but subject to commitment by Owner of the Balance of the Contract Price to mitigation of costs and damages on the Contract, the Surety is obligated without duplication for:

6.1. The responsibilities of Contractor for correction of defective Work and completion of the Contract;

6.2. Additional legal, design professional and delay costs resulting from Contractor's Default, and resulting from the actions of or failure to act of Surety under Paragraph 4; and

6.3. Liquidated damages, or if no liquidated damages are specified in the Contract, actual damages caused by delayed performance or non-performance of Contractor.

7. Surety shall not be liable to Owner or others for obligations of Contractor that are unrelated to the Contract, and the Balance of the Contract Price shall not be reduced or set off on account of any such unrelated obligations. No right of action shall accrue on this Bond to any person or entity other than Owner or its heirs, executors, administrators or successors.

8. Surety hereby waives notice of any change, including changes of time, to the Contract or to related subcontracts, purchase orders and other obligations.

9. Any proceeding, legal or equitable, under this Bond may be instituted in any court of competent jurisdiction in the location in which the Work or part of the Work is located and shall be instituted within 2 years after Contractor Default or within 2 years after Contractor ceased working or within 2 years after Surety refuses or fails to perform its obligations under this Bond, whichever occurs first. If the provisions of this paragraph are void or prohibited by law, the minimum period of limitation available to sureties as a defense in the jurisdiction of the suit shall be applicable.

10. Notice to Surety, Owner or Contractor shall be mailed or delivered to the address indicated on the signature page.

11. When this Bond has been furnished to comply with a statutory requirement in the location where the Contract was to be performed, any provision in this Bond conflicting with said statutory requirement shall be deemed deleted herefrom and provisions conforming to such statutory requirement shall be deemed incorporated herein. The intent is that this Bond shall be construed as a statutory bond and not as a common law bond.

12. Definitions:

12.1. Balance of the Contract Price: The total amount payable by Owner to Contractor under the Contract after all proper adjustments have been made, including allowance to Contractor of any amounts received or to be received by Owner in settlement of insurance or other Claims for damages to which Contractor is entitled, reduced by all valid and proper payments made to or on behalf of Contractor under the Contract.

12.2. Contract: The agreement between Owner and Contractor identified on the signature page, including all Contract Documents and changes thereto.

12.3. Contractor Default: Failure of Contractor, which has neither been remedied nor waived, to perform or otherwise to comply with the terms of the Contract.

12.4. Owner Default: Failure of Owner, which has neither been remedied nor waived, to pay Contractor as required by the Contract or to perform and complete or comply with the other terms thereof.

END OF SECTION 00 61 14

THIS PAGE INTENTIONALLY LEFT BLANK

SECTION 00 61 15 – PAYMENT BOND FORM

Any singular reference to Contractor, Surety, Owner or other party shall be considered plural where applicable.

Contractor (Name and Address):

_____

_____

Surety (Name and Address of Principal Place of Business):

_____

_____

Owner

Cascade Charter Township
2865 Thornhills Avenue, SE
Grand Rapids, MI 49546

CONTRACT

Date (Date of Notice of Award): _____
Amount: _____
Description: Thornapple Hills Drain Maintenance
Cascade Charter Township
Grand Rapids, MI

BOND

Bond Number: _____
Date (Not earlier than Contract Date): _____
Amount: _____
Modifications to this Bond Form: _____

Surety and Contractor, intending to be legally bound hereby, subject to the following terms set forth below, do each cause this Payment Bond to be duly executed by an authorized officer, agent, or representative.

Contractor AS PRINCIPAL

_____ (Seal)
Contractor's Name and Corporate Seal

By: _____
Signature

_____
Print Name

_____
Title

Attest: _____
Signature

_____
Title

SURETY

_____ (Seal)
Surety's Name and Corporate Seal

By: _____
Signature (Attach Power of Attorney)

_____
Print Name

_____
Title

Attest: _____
Signature

_____
Title

IMPORTANT: Surety companies executing Bonds must appear on the Treasury Department's most current list (Circular 570 as amended) and be authorized to transact business in Michigan. Attach Power of Attorney for those signatures executing for Surety, certifying authority to bind Surety as of the date of the Bond.

1. Contractor and Surety, jointly and severally, bind themselves, their heirs, executors, administrators, successors and assigns to Owner to pay for labor, materials and equipment furnished by Claimants for use in the performance of the Contract, which is incorporated herein by reference.

2. With respect to Owner, this obligation shall be null and void if Contractor:

   2.1. promptly makes payment, directly or indirectly, for all sums due Claimants, and

   2.2. defends, indemnifies and holds harmless Owner from all claims, demands, liens or suits alleging non-payment by Contractor by any person or entity who furnished labor, materials or equipment for use in the performance of the Contract, provided Owner has promptly notified Contractor and Surety (at the addresses described in Paragraph 12) of any claims, demands, liens or suits and tendered defense of such claims, demands, liens or suits to Contractor and Surety, and provided there is no Owner Default.

3. With respect to Claimants, this obligation shall be null and void if Contractor promptly makes payment, directly or indirectly, for all sums due.

4. Surety shall have no obligation to Claimants under this Bond until:

   4.1. Claimants who are employed by or have a direct contract with Contractor have given notice to Surety (at the addresses described in paragraph 12) and sent a copy, or notice thereof, to Owner, stating that a claim is being made under this Bond and, with substantial accuracy, the amount of the claim.

   4.2. Claimants who do not have a direct contract with Contractor:

      4.2.1. Have furnished written notice to Contractor and sent a copy, or notice thereof, to Owner, within 90 days after having last performed labor or last furnished materials or equipment included in the claim stating, with substantial accuracy, the amount of the claim and the name of the party to whom the materials were furnished or supplied or for whom the labor was done or performed; and

      4.2.2. Have either received a rejection in whole or in part from Contractor, or not received within 30 days of furnishing the above notice any communication from Contractor by which Contractor had indicated the claim will be paid directly or indirectly; and

      4.2.3. Not having been paid within the above 30 days, have sent a written notice to Surety (at the address described in Paragraph 12) and sent a copy, or notice thereof, to Owner, stating that a claim is being made under this Bond and enclosing a copy of the previous written notice furnished to Contractor.

5. If a notice required by Paragraph 4 is given by Owner to Contractor or to Surety, that is sufficient compliance.

6. Reserved.

7. Surety's total obligation shall not exceed the amount of this Bond, and the amount of this Bond shall be credited for any payments made in good faith by the Surety.

8. Amounts owed by Owner to Contractor under the Contract shall be used for the performance of the Contract and to satisfy claims, if any, under any performance bond. By Contractor furnishing and Owner accepting this Bond, they agree that all funds earned by Contractor in the performance of the Contract are dedicated to satisfy obligations of Contractor and Surety under this Bond, subject to Owner's priority to use the funds for the completion of the Work.

9. Surety shall not be liable to Owner, Claimants or others for obligations of Contractor that are unrelated to the Contract. Owner shall not be liable for payment of any costs or expenses of any Claimant under this Bond, and shall have under this Bond no obligation to make payments to, give notices on behalf of, or otherwise have obligations to Claimants under this Bond.

10. Surety hereby waives notice of any change, including changes of time, to the Contract or to related subcontracts, purchase orders and other obligations.

11. No suit or action shall be commenced by a Claimant under this Bond other than in a court of competent jurisdiction in the location in which the Work or part of the Work is located or after the expiration of one year from the date (1) on which the Claimant give the notice required by paragraph 4.1 or paragraph 4.2.3, or (2) on which the last labor or service was performed by anyone or the last materials or equipment were furnished by anyone under the Contract, whichever of (1) or (2) first occurs. If the provisions of this paragraph are void or prohibited by law, the minimum period of limitation available to sureties as a defense in the jurisdiction of the suit shall be applicable.

12. Notice to Surety, Owner or Contractor shall be mailed or delivered to the addresses indicated on the signature page. Actual receipt of notice by Surety, Owner or Contractor, however accomplished, shall be sufficient compliance as of the date received at the address indicated on the signature page.

13. When this Bond has been furnished to comply with a statutory requirement in the location where the Contract was to be performed, any provision in this Bond conflicting with said statutory requirement shall be deemed deleted herefrom and provisions conforming to such statutory requirement shall be deemed incorporated herein. The intent is that this Bond shall be construed as a statutory Bond and not as a common law bond.

14. Upon request of any person or entity appearing to be a potential beneficiary of this Bond, Contractor shall promptly furnish a copy of this Bond or shall permit a copy to be made.

15. DEFINITIONS:

15.1. Claimant: An individual or entity having a direct contract with Contractor or with a first-tier Subcontractor of Contractor, to furnish labor, materials or equipment for use in the performance of the Contract. The intent of this Bond shall be to include without limitation in the terms "labor, materials or equipment" that part of water, gas, power, light, heat, oil, gasoline, telephone service or rental equipment used in the Contract, architectural and engineering services required for performance of the Work of Contractor and Contractor's Subcontractors, and all other items for which a mechanic's lien may be asserted in the jurisdiction where the labor, materials or equipment were furnished.

15.2. Contract: The agreement between Owner and Contractor identified on the signature page, including all Contract Documents and changes thereto.

15.3. Owner Default: Failure of Owner, which has neither been remedied nor waived, to pay Contractor as required by the Contract, or to perform and complete or comply with the other terms thereof.

END OF SECTION 00 61 15

THIS PAGE INTENTIONALLY LEFT BLANK

**THORNAPPLE HILLS DRAIN**
**PROJECT SCHEDULE**
**Revised: APRIL 2016**

| | | 2016 | | | | | | | | | | | 2017 | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Month | February | March | April | May | June | July | Aug | Sept | Oct | Nov | Dec | Jan | Feb | March | April | May | June |
| **Task Description** | | | | | | | | | | | | | | | | | | |
| Final project cost estimates | | | | | | | | | | | | | | | | | | |
| Infrastructure meeting to review project (March 2) | | | | | | | | | | | | | | | | | | |
| Funding authorization - Board Meeting | | | | | | | | | | | | | | | | | | |
| Final bid documents and construction drawings | | | | | | | | | | | | | | | | | | |
| Issue bids | | | | | | | | | | | | | | | | | | |
| Pre-bid meeting | | | | | | | | | | | | | | | | | | |
| Bid opening | | | | | | | | | | | | | | | | | | |
| Contract Award Docs | | | | | | | | | | | | | | | | | | |
| Property Owner Letter | | | | | | | | | | | | | | | | | | |
| **Construction:** | | | | | | | | | | | | | | | | | | |
| ***Woody debris*** | | | | | | | | | | | | | | | | | | |
| ***Channel work^*** | | | | | | | | | | | | | | | | | | |
| Substantial Complete | | | | | | | | | | | | | | | | | | |
| Final Inspection and Project Close Out | | | | | | | | | | | | | | | | | | |
| Prepare record drawings - submit to KCDC & Township | | | | | | | | | | | | | | | | | | |

TASK COMPLETE

**October 1 thru March 30

^weather and site conditions permitting

5 week construction project

# CASCADE CHARTER TOWNSHIP

2865 Thornhills SE Grand Rapids, Michigan 49546-7140

**Date:** August 10th, 2016
**To:** Supervisor Beahan and Township Board Members
**From:** Ben Swayze, Township Manager
**Subject:** Hope Network Transportation Services Contract

## FACTS:

Cascade Township contracts with Hope Network West Michigan to provide door-to-door and door-through-door specialized transportation service to senior citizens aged 60 years and above and individuals with disabilities to Cascade Township residents. Funding for this service comes from two sources, an allocation from the CDBG funds available to the Township, and general fund support. Attached for your review is:

- Proposed contract between Cascade Charter Township and Hope Network West Michigan (with highlighted changes)
- Most recent year end fiscal report from Hope Network

## ANALYSIS & CONCLUSIONS:

The proposed contract is essentially the same as the previous year contract. Changes that are proposed include:

- Language clarification that trips are for residents with either an origin or destination within the Township.
- Change in compensation from $16.25 to $16.50 (previously approved by the Township Board)

## FINANCIAL CONSIDERATIONS:

The cost to the riders ($3.00 each way) remains the same and the cost to the Township ($16.50 each way) increases $0.25 as previously agreed by the Township Board. Additionally, the Township receives a CDBG allocation of $7,158 that is utilized for the bus service prior to any General Fund dollars being spent. For FY 2016, the Township has budgeted $77,000 for this service. Based on the most recent fiscal report from the Hope Network, the Township cost for this service will be significantly lower than this budgeted amount. This is due to the fact that all residents that live within ¾ of a mile of The Rapid service are now eligible to take the Go!Bus rather than the Hope Network service. Through June the Township estimates we have saved approximately $7,000 due to the availability of the Go!Bus service.

## RECOMMENDED ACTION:

Approve the ***Contract between Cascade Charter Township and Hope Network West Michigan*** and authorize the Township Manager to execute the contract on behalf of the Township.

# CONTRACT BETWEEN
# CASCADE CHARTER TOWNSHIP
# AND
# HOPE NETWORK WEST MICHIGAN

**THIS CONTRACT** entered into this____ _____ day of _____, 2016, effective from July 1, 2016, through June 30, 2017, by and between Cascade Charter Township (hereinafter called the "Township"), and Hope Network West Michigan, d/b/a Hope Network Developmental and Community Services, (hereinafter called the "Agency").

**WITNESSETH THAT:**

**WHEREAS,** the Township, desires to engage the Agency to perform certain Services and Activities; and

**WHEREAS,** the Agency agrees to perform such Services and Activities in a lawful, satisfactory, and proper manner, and in accordance with all policies, procedures, and requirements which have been or, from time to time, may be prescribed by the Township;

**NOW, THEREFORE**, the Township, and the Agency do mutually agree as follows:

**ARTICLE I - PROJECT OBJECTIVES**
The project objectives of this Contract are herein established as the standards to be used by the Township to determine the impact and effectiveness of the Services and Activities to be performed by the Agency under Article 2 below. The objectives are:

The Township desires to provide door-to-door and door-through-door specialized transportation service to senior citizens aged 60 years and above and individuals with disabilities during the period covered by this contract. The Agency shall arrange for the desired service to be provided to eligible Township residents under the terms and conditions of this Contract. The Township shall compensate the Agency for the desired Services and Activities as specified herein.

**ARTICLE II- SCOPE OF SERVICES AND ACTIVITIES**
In order to accomplish the project objectives defined in Article 1 above, the Agency shall perform in a lawful, satisfactory, and proper manner, the following Services and Activities:

a.) Advance reservation door-to-door and door-through-door transportation service shall be furnished to individuals meeting the Agency's eligibility criteria. The service will be offered solely to eligible township residents in which the origin or destination is to or from the township. Trips requested by eligible Cascade residents which do not have an origin or destination in the Township are considered a special case and will need approval by the township manager or supervisor. Eligible Cascade Township residents may travel to and from any point within the Grand Rapids metropolitan area including the cities of Grand Rapids, East Grand Rapids, Grandville, Kentwood, Walker, Wyoming, Ada Township, Cascade Township and Grand Rapids Township.

b.) Any Cascade resident living in the Go!Bus geographical boundaries (within 3/4 miles from The Rapid's city bus line), will be referred to the Go!Bus service and will be required to schedule their rides with them with the exception of trips to areas in which Go!Bus does not travel (Grand Rapids Township, Ada Township and parts of Cascade Township) but is part of this contract. Hope Network will provide trips to these areas.

c.) These transportation services will be furnished from 5:15 a.m. to 11:15 p.m., Monday through Friday, 6:30 a.m. to 9:30 p.m. on Saturday, and 8:00 a.m. to 7:00 p.m. on Sunday. The beginning time of service is the earliest time at which passengers will be scheduled to be picked up. The ending time of

service is the latest time at which passengers will be scheduled to be picked up for return trips. No transportation service will be provided on, New Year's Day, Memorial Day, Independence Day, Labor Day, Thanksgiving Day, and Christmas Day.

d.) Passenger eligibility shall be limited to Cascade Charter Township residents. Persons desiring to use the service shall be required to complete a registration procedure to verify eligibility as a nondisabled senior citizen aged 60 years or more. Registration of eligible individuals shall be carried out by the Agency using Agency's procedures and operational requirements.

e.) A passenger fare of $3.00 per one-way trip shall be charged to eligible persons. These fares shall apply to all service provided under this contract. Fare revenues shall be retained by the Agency as partial reimbursement for service expenses.

f.) Wheelchair-accessible vehicles with lifts or ramps plus wheelchair securement equipment shall be made available and operated as needed to meet the travel needs of persons using wheelchairs who request service.

g.) The Agency shall provide, at no charge, copies of public information brochures and other materials developed for purposes of marketing Agency service. Agency personnel shall assist the Township in developing appropriate public information for Services and Activities under this Contract. The Agency and the Township shall coordinate an effective public information program.

h.) The Agency shall prepare and submit to the Township a quarterly report on the Services and Activities undertaken to fulfill its obligations under the contract.

**ARTICLE III - TIME OF PERFORMANCE**

a.) On July 1, 2016, the Agency shall commence performance of the Services and Activities required under this Contract.

b.) The Agency shall continue to perform such Services and Activities until the expiration of this Contract on June 30, 2017, unless otherwise terminated pursuant to the terms of this Contract.

**ARTICLE IV - COMPENSATION AND METHOD OF PAYMENT**

a.) As full compensation for the Contractor's satisfactory performance under, and completion of, this contract, the Township hereby agrees to pay the Agency the amount of $16.50 per one-way trip for all trips performed under this contract. It is agreed that the above-specified amounts shall be the maximum amounts to be charged by the Agency during the term of the contract. Should the Agency's net cost of providing the specified Services and Activities be reduced due to an increase in the fare(s) paid by passengers, the above-specified amounts shall be adjusted as of the effective date(s) of any such changes.

b.) At the end of each month of service, the Agency shall prepare and provide to the Township a statement of charges due for service provided during the prior month, supported and accompanied by detailed documentation of the basis for the charges shown. The Township shall determine whether or not the charges are acceptable for processing and payment. Invoices shall be due and payable within thirty (30) days of the date of the invoice.

**ARTICLE V - CONTINUED FUNDING**

The Township makes no implied or explicit guarantee, offer, or representation of future funding from the Township beyond the termination of this Contract.

**ARTICLE VI - CONTRACT MODIFICATIONS**

The Township, from time to time, may expand, diminish, or otherwise modify the Project Objectives, the Scope of Services and Activities, or any other Contract provisions related thereto, which the Agency is required to perform pursuant to Articles I and II of this Contract; provided, however, such modifications are mutually agreed upon by the Township, and the Agency. The Township and the Agency agree that this Contract sets forth, in the entirety, all agreements between the parties hereto.

**ARTICLE VII - TERMINATION OF CONTRACT**

a.) If, through any cause, the Agency fails to fulfill its obligations under this Contract or if Agency violates any of the covenants, agreements, or stipulations of this contract, the Township shall have the right to terminate this Contract in whole, or in part, by giving (60) calendar days written notice by certified United States mail to Agency specifying the effective termination date.
b.) In the event the Agency fails to perform, in a timely and proper manner, any of the Services or Activities required under this Contract, the Township shall notify the Agency and allow the Agency ten (10) days to cure any such failure to perform the Services or Activities in a timely manner.
c.) In the event the Agency fails to cure the unsatisfactory or untimely work or performance pursuant to this Contract, the Township may take any other action permitted by law or this Contract, including but not limited to termination of the contract.
d.) In the event this Contract is terminated, the Agency shall receive just and equitable compensation for any work which the Agency satisfactorily completed pursuant to this Contract.
e.) The Agency, for adequate cause, may terminate this Contract at any time by giving written notice by United States certified mail at least sixty (60) calendar days before the effective date of such termination and specifying the effective date.

**ARTICLE VIII - ELIGIBLE COSTS OF THE AGENCY**

Under this Contract, a cost incurred or expenditure made by or pursuant to this Contract shall be fully documented and shall be in conformance with any limitations or exclusions of applicable federal, state, and local laws, rules, and regulations, and conditions mandated by the Township, including OMB Circular A-122, entitled "Cost Principles for Nonprofit Organizations".

**ARTICLE IX - RECORDS AND DOCUMENTATION**

a.) The Agency shall establish and maintain all necessary records concerning any matter covered by this Contract which, from time to time, may be required by the Township.
b.) Unless otherwise expressly authorized by the Township, the Agency shall maintain all records related to this Contract, including financial records and accounts, for a period of six (6) years after receipt of final payment under this Contract.
c.) If any litigation, claim, or audit regarding the services described in this Contract is started before the expiration of the six (6) year period, the records shall be retained by the Agency until all litigation, claims, or audit findings involving the records have been resolved.

**ARTICLE X - AUDITS AND INSPECTIONS**

At anytime during normal business hours and as often as the Township may deem necessary to ensure proper accounting for all project funds, the Agency shall:

a.) Make available to the Township all checks, payrolls, time records, invoices, contracts, vouchers, orders and other data, information, and material concerning any matter covered by this Contract.
b.) Permit the Township to audit, examine, excerpt, or transcribe all checks, payrolls, time records, invoices, contracts, vouchers, orders, or other data, information, and material concerning any matter covered by this Contract.
c.) Allow the Township to review such documents that are considered as backup to the operation of the Agency, related to this Contract.

**ARTICLE XI - CONFLICT OF INTEREST**

a.) The Agency covenants that no conflict of interest exists and no person having any conflicting interest in this Contract shall be employed for the purpose of performing the Services and Activities set forth in the Scope of Services and Activities (Article II) of this Contract or fulfilling the terms, conditions, obligations, covenants, agreements, or stipulations herein.
b.) The Agency shall establish safeguards to prohibit employees from using positions for a purpose that is or gives the appearance of being motivated by a desire for private gain for themselves or others, particularly those with whom they have family, business, or other ties.

**ARTICLE XII - ASSIGNMENT AND TRANSFER OF INTEREST; SUBCONTRACTING**

The Agency shall not assign or transfer, whether by assignment or novation any interest in this Contract, or subcontract any performance or portion hereof pursuant to the Contract without the prior written consent of the Township; provided, however, that claims for money due or to become due the Agency from the Township pursuant to this Contract may be assigned or transferred to a bank, trust company, or other financial institution without such consent, and the Agency shall promptly notify the Township of any such assignment or transfer.

**ARTICLE XIII - INDEMNIFICATION**

To the extent permitted by law, the Agency will indemnify and save harmless the Township against any and all damages to property or injuries to or death of any person or persons, including the property and employees or agents of the Township, and the Agency shall defend, indemnify and save harmless the Township from any and all claims, demands, suits, liabilities and/or payments, actions or proceedings of any kind or nature, including workers compensation claims, of or by anyone whomsoever, in any way resulting from or arising out of the Agency's operations in connection with this Contract, including the operations of the Agency's subcontractors, and the acts or omissions of employees or agents of the Agency or its subcontractors. To the extent permitted by law, the Township will indemnify and save harmless the Agency against any and all damages to property or injuries to or death of any person or persons, including the property and employees or agents of the Agency, and the Township shall defend, indemnify and save harmless the Agency from any and all claims, demands, suits, liabilities and/or payments, actions or proceedings of any kind or nature, including workers compensation claims, of or by anyone whomsoever, in any way resulting from or arising out of the Township's operations in connection with this Contract, including the operations of the Township's subcontractors, and the acts or omissions of employees or agents of the Township or its subcontractors.
In the event of a suit or action filed to enforce this Contract or with respect to this Contract, the prevailing party shall be reimbursed by the other party for all costs and expenses incurred in connection with the suit or action, including without limitation reasonable attorneys' fees.

**ARTICLE XIV - INSURANCE**

The Agency will procure and maintain, at its own cost and expense, and as long as it is providing services to the Township, the following insurance coverage:

a.) Commercial General Liability: per occurrence form, minimum limits of $1,000,000 per occurrence.
b.) Automobile Liability: Michigan no-fault coverage, and residual Liability for bodily injury and property damage, minimum limits $1,000,000.
c.) Worker's Compensation and Employer's Liability: Statutory coverage or proof acceptable to the Township of approval as a self-insurer by the State of Michigan. Employer's Liability $500,000.

**ARTICLE XV - CIVIL RIGHTS**

a.) The Agency agrees that it will not discriminate as to provision of Services and Activities pursuant to this Contract or as to hiring or terms or conditions of employment based on race, color, religion, national origin , sex, disability, marital status, height, weight, age or other protected class against whom discrimination is prohibited by law.
b.) The Agency shall, in all solicitations or advertisements for employees placed by or on behalf of the Agency, state that all qualified applicants will receive consideration for employment without regard to race, color, religion, national origin, sex, disability, marital status, height, weight, age or other protected class against whom discrimination is prohibited by law.
c.) In the event of the Agency's noncompliance with the nondiscrimination clauses of this Contract or with any of such rules, regulations or orders, this Contract may be cancelled, terminated, or suspended in whole or in part.

**ARTICLE XVI - COMPLIANCE WITH LAW**

In performing the Services and Activities required under this Contract and in fulfilling the terms, conditions, obligations, covenants, agreements and stipulations of this Contract, the Agency will comply with all

applicable Federal, State and local laws, including but not limited to the following: the Architectural Barrier Act of 1968, as amended, 42 USC § 4151 *et seq.*; the Barrier Free Design Act, 1966 PA 1, as amended, MCL 125.1351 *et seq.*; the Davis-Bacon Act, as amended, 40 USC § 3141 *et seq.*; the Copeland Anti-Kickback Act, as amended, 18 USC § 874, 40 USC § 3145, and as supplemented by 29 CFR Part 3; and the Federal Fair Labor Standards Act of 1938, as amended, 29 USC § 201 *et seq.*

**ARTICLE XVII - SEVERABILITY**

If any clauses, sections, provisions, or parts of this Contract are held invalid, or if any portion of any clause, section, provision or part of this Contract is held invalid, the remainder of this Contract shall not be affected thereby, if such remainder of this Contract would then continue to conform to the terms and requirements of applicable law. Unless otherwise specified in this Contract, all notices, duties, or rights of the Township shall be exercised by and through this Contract as specified herein.

**ARTICLE VIII - WAIVER**

The failure of the Township to demand compliance with any term of this Contract, or to take action when this Contract is breached in any way, shall not be considered a waiver of that contractual requirement thereafter, nor of the Township's right of action for the breach of that term.

**ARTICLE XIX - DISCLOSURE OF CONFIDENTIAL MATERIAL**

The parties agree not to disclose any information regarding this Contract or services provided pursuant to this Contract except as required by law or regulation.

**IN WITNESS WHEREOF,** the Agency and the Township have executed this Contract as of the date first above written.

**CASCADE CHARTER TOWNSHIP**

By:_____ Date:_____

**ATTEST:**

By:_____ Date:_____

**HOPE NETWORK WEST MICHIGAN**

By:_____ Date:_____

Steven Hartman, Executive Director

# North Kent Transit 2015-2016

| City / Township | Budget | Funds Used to date | Current Budgeted amount | Under / (Over) | July | Aug | Sept | Oct | Nov | Dec | Jan | Feb | March | April | May | June |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Ada Township | $6,618.00 | $6,613.75 | $6,618.00 | $4.25 | $1,300.00 | $1,478.75 | $1,673.75 | $1,365.00 | $796.25 | $0.00 | $0.00 | $0.00 | $0.00 | $0.00 | $0.00 | $0.00 |
| Algoma Twp | $2,914.00 | $1,313.00 | $2,914.00 | $1,601.00 | $12.50 | $25.00 | $175.50 | $200.00 | $200.00 | $200.00 | $0.00 | $0.00 | $75.00 | $200.00 | $212.50 | $12.50 |
| Alpine Twp | $18,500.00 | $15,168.00 | $18,500.00 | $3,332.00 | $1,264.00 | $1,360.00 | $1,280.00 | $1,552.00 | $1,456.00 | $1,456.00 | $1,280.00 | $1,248.00 | $1,424.00 | $1,104.00 | $912.00 | $832.00 |
| Byron Twp | $25,000.00 | $11,257.50 | $25,000.00 | $13,742.50 | $1,083.00 | $840.75 | $812.25 | $940.50 | $897.75 | $897.75 | $1,068.75 | $940.50 | $1,168.50 | $926.25 | $926.25 | $755.25 |
| Cannon Twp | $5,700.00 | $4,175.00 | $5,700.00 | $1,525.00 | $262.50 | $350.00 | $387.50 | $387.50 | $300.00 | $337.50 | $350.00 | $375.00 | $375.00 | $350.00 | $375.00 | $325.00 |
| Cascade Twp | $7,158.48 | $7,150.00 | $596.50 | ($6,553.50) | $6,695.00 | $455.00 | $0.00 | $0.00 | $0.00 | $0.00 | $0.00 | $0.00 | $0.00 | $0.00 | $0.00 | $0.00 |
| Courtland Twp | $4,158.00 | $1,071.00 | $4,158.00 | $3,087.00 | $165.75 | $76.50 | $127.50 | $0.00 | $25.50 | $51.00 | $51.00 | $102.00 | $280.50 | $127.50 | $25.50 | $38.25 |
| Gaines Twp | $20,000.00 | $11,428.50 | $20,000.00 | $8,571.50 | $798.00 | $869.25 | $826.50 | $1,097.25 | $954.75 | $1,040.25 | $912.00 | $883.50 | $1,054.50 | $1,011.75 | $1,083.00 | $897.75 |
| Grattan Twp | $4,481.00 | $3,265.50 | $4,481.00 | $1,215.50 | $32.50 | $32.50 | $97.50 | $97.50 | $422.50 | $390.00 | $422.50 | $373.00 | $325.00 | $357.50 | $357.50 | $357.50 |
| Plainfield Twp | $16,000.00 | $15,762.50 | $16,000.00 | $237.50 | $787.50 | $687.50 | $1,275.00 | $1,425.00 | $1,612.50 | $1,575.00 | $1,175.00 | $1,337.50 | $1,275.00 | $1,737.50 | $1,462.50 | $1,412.50 |
| City of Rockford | $6,961.50 | $6,961.50 | $6,961.50 | $0.00 | $956.25 | $816.00 | $637.50 | $599.25 | $586.50 | $612.00 | $548.25 | $612.00 | $956.25 | $637.50 | $0.00 | $0.00 |
| Rockford Shoppers | $1,037.50 | $1,037.50 | $1,037.50 | $0.00 | $100.00 | $67.50 | $95.00 | $120.00 | $55.00 | $95.00 | $115.00 | $135.00 | $202.50 | $52.50 | $0.00 | $0.00 |
| Spencer Twp | $1,000.00 | $519.70 | $1,000.00 | $480.30 | $65.00 | $32.50 | $0.00 | $65.00 | $32.20 | $97.50 | $65.00 | $32.50 | $97.50 | $0.00 | $0.00 | $32.50 |
| Vergennes Twp | $4,373.00 | $4,288.00 | $4,373.00 | $85.00 | $400.00 | $544.00 | $464.00 | $320.00 | $320.00 | $256.00 | $288.00 | $320.00 | $304.00 | $368.00 | $352.00 | $352.00 |
| **Total** | **$123,901.48** | **$90,011.45** | **$117,339.50** | **$27,328.05** | **$13,922.00** | **$7,635.25** | **$7,852.00** | **$8,169.00** | **$7,658.95** | **$7,008.00** | **$6,275.50** | **$6,359.00** | **$7,537.75** | **$6,872.50** | **$5,706.25** | **$5,015.25** |

| Non CDBG | | | | | July | Aug | Sept | Oct | Nov | Dec | Jan | Feb | March | April | May | June |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Oakfield Twp (non CDBG) | $1,000.00 | $942.50 | $1,000.00 | $57.50 | $0.00 | $0.00 | $81.25 | $81.25 | $97.50 | $113.75 | $81.25 | $260.00 | $130.00 | $32.50 | $32.50 | $32.50 |
| City of Lowell (non CDBG) | $4,000.00 | $4,160.00 | $4,000.00 | ($160.00) | $352.00 | $320.00 | $336.00 | $320.00 | $320.00 | $480.00 | $320.00 | $304.00 | $320.00 | $272.00 | $224.00 | $592.00 |
| Ada Twp (General Fund) | | $9,636.25 | $0.00 | | $0.00 | $0.00 | $0.00 | $0.00 | $130.00 | $1,235.00 | $1,235.00 | $1,397.50 | $1,446.25 | $1,625.00 | $1,283.75 | $1,283.75 |
| Cascade Twp (General Fund) | | $54,177.50 | $0.00 | | $0.00 | $5,963.75 | $5,785.00 | $6,548.75 | $5,833.75 | $5,801.25 | $4,338.75 | $3,883.75 | $3,981.25 | $3,412.50 | $4,143.75 | $4,485.00 |
| City of Rockford (GF) | $1.00 | | | | | | | | | | | | | $112.50 | $583.50 | $586.50 |
| Total non-CDBG | $5,001.00 | $68,916.25 | $5,000.00 | ($102.50) | $352.00 | $6,283.75 | $6,202.25 | $6,950.00 | $6,381.25 | $7,630.00 | $5,975.00 | $5,845.25 | $5,877.50 | $5,342.00 | $5,684.00 | $6,393.25 |

| | |
|---|---|
| Number of months | 12 |
| Total Budget | $123,901.48 |
| Total CDBG Funds Used | $90,011.45 |
| Remaining Funds | $33,890.03 |
| Percent used | 73% |
| Allocated | 100% |

# North Kent Transit-2015-16

## Passenger Fares Collected

| City / Township | July | August | Sept | October | Nov | Dec | January | Feb | March | April | May | June | Total |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Ada Twp | $240.00 | $273.00 | $309.00 | $252.00 | $147.00 | $0.00 | $0.00 | $0.00 | $0.00 | $0.00 | $0.00 | $0.00 | **$1,221.00** |
| Alpine Twp | $276.00 | $295.50 | $253.50 | $315.25 | $295.75 | $295.75 | $260.00 | $253.50 | $289.25 | $224.25 | $185.25 | $169.00 | **$3,113.00** |
| Algoma Twp | $4.25 | $8.50 | $98.50 | $116.00 | $116.00 | $116.00 | $0.00 | $0.00 | $43.50 | $116.00 | $120.25 | $4.25 | **$743.25** |
| Byron Twp | $380.00 | $295.00 | $285.00 | $330.00 | $315.00 | $315.00 | $375.00 | $330.00 | $410.00 | $335.00 | $325.00 | $265.00 | **$3,960.00** |
| Cannon Twp | $89.25 | $119.00 | $131.75 | $131.75 | $102.00 | $114.75 | $119.00 | $127.50 | $127.50 | $125.00 | $127.50 | $116.50 | **$1,431.50** |
| Cascade | $1,236.00 | $84.00 | $0.00 | $0.00 | $0.00 | $0.00 | $0.00 | $0.00 | $0.00 | $0.00 | $0.00 | $0.00 | **$1,320.00** |
| Courtland Twp | $91.00 | $42.00 | $70.00 | $0.00 | $14.00 | $28.00 | $28.00 | $50.00 | $154.00 | $70.00 | $14.00 | $12.00 | **$573.00** |
| Gaines Twp | $280.00 | $305.00 | $290.00 | $385.00 | $335.00 | $365.00 | $320.00 | $310.00 | $370.00 | $355.00 | $380.00 | $310.00 | **$4,005.00** |
| Grattan Twp | $14.00 | $14.00 | $36.00 | $42.00 | $182.00 | $168.00 | $182.00 | $161.00 | $154.00 | $154.00 | $154.00 | $154.00 | **$1,415.00** |
| Plainfield Twp | $403.25 | $350.75 | $673.50 | $760.50 | $851.75 | $799.50 | $633.50 | $733.75 | $703.50 | $923.75 | $749.25 | $747.25 | **$8,330.25** |
| Rockford | $396.00 | $331.00 | $260.00 | $266.00 | $256.00 | $261.00 | $259.00 | $270.00 | $425.00 | $266.00 | $184.00 | $198.00 | **$3,372.00** |
| Rockford Shoppers | $120.00 | $81.00 | $114.00 | $144.00 | $66.00 | $114.00 | $138.00 | $162.00 | $243.00 | $198.00 | $180.00 | $180.00 | **$1,740.00** |
| Spencer Twp | $28.00 | $14.00 | $0.00 | $28.00 | $14.00 | $42.00 | $28.00 | $14.00 | $42.00 | $0.00 | $0.00 | $14.00 | **$224.00** |
| Vergennes Twp | $133.25 | $186.50 | $153.25 | $85.00 | $85.00 | $68.00 | $76.50 | $85.00 | $80.75 | $106.75 | $99.50 | $99.50 | **$1,259.00** |
| Total | **$3,691.00** | **$2,399.25** | **$2,674.50** | **$2,855.50** | **$2,779.50** | **$2,687.00** | **$2,419.00** | **$2,496.75** | **$3,042.50** | **$2,873.75** | **$2,518.75** | **$2,269.50** | **$32,707.00** |

**Non CDBG**

| | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Oakfield Twp (non CDBG) | $0.00 | $0.00 | $35.00 | $35.00 | $42.00 | $49.00 | $29.00 | $74.00 | $56.00 | $14.00 | $14.00 | $14.00 | **$362.00** |
| City of Lowell (non CDBG) | $159.50 | $145.00 | $152.25 | $145.00 | $145.00 | $217.50 | $145.00 | $137.75 | $145.00 | $123.25 | $101.50 | $268.25 | **$1,885.00** |
| Ada Twp (GF) | $0.00 | | | | $24.00 | $228.00 | $228.00 | $258.00 | $267.00 | $300.00 | $237.00 | $237.00 | **$1,779.00** |
| Cascade Twp (GF) | $0.00 | $1,101.00 | $1,068.00 | $1,209.00 | $1,077.00 | $1,071.00 | $801.00 | $717.00 | $735.00 | $630.00 | $768.00 | $828.00 | **$10,005.00** |
| Total non-CDBG | $159.50 | $1,246.00 | $1,255.25 | $1,389.00 | $1,288.00 | $1,565.50 | $1,203.00 | $1,186.75 | $1,203.00 | $1,067.25 | $1,120.50 | $1,347.25 | $14,031.00 |
| Total all services | $3,850.50 | $3,645.25 | $3,929.75 | $4,244.50 | $4,067.50 | $4,252.50 | $3,622.00 | $3,683.50 | $4,245.50 | $3,941.00 | $3,639.25 | $3,616.75 | $46,738.00 |

# North Kent Transit 2015-2016
## # of Rides

| City / Township | July | Aug | Sep | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | June | Total | Ride limits/month |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Ada Twp | 80 | 91 | 103 | 84 | 49 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **407** | None |
| Algoma Twp | 1 | 2 | 14 | 16 | 16 | 16 | 0 | 0 | 6 | 16 | 17 | 1 | **105** | 16 |
| Alpine Twp | 80 | 86 | 80 | 97 | 91 | 91 | 80 | 78 | 89 | 69 | 57 | 52 | **950** | 20 |
| Byron Twp | 78 | 59 | 57 | 66 | 63 | 63 | 75 | 66 | 82 | 67 | 65 | 53 | **794** | 16 |
| Cannon Twp | 21 | 28 | 31 | 31 | 24 | 27 | 28 | 30 | 30 | 28 | 20 | 26 | **324** | 20 |
| Cascade | 412 | 28 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **440** | None |
| Courtland Twp | 13 | 6 | 10 | 0 | 2 | 4 | 4 | 8 | 22 | 10 | 2 | 3 | **84** | 20 |
| Gaines Twp | 56 | 61 | 58 | 77 | 67 | 73 | 64 | 62 | 74 | 71 | **76** | 63 | **802** | 16 |
| Grattan Twp | 2 | 2 | 6 | 6 | 26 | 24 | 26 | 23 | 22 | 22 | 22 | 22 | **203** | 20 |
| Plainfield Twp | 65 | 55 | 102 | 114 | 129 | 126 | 94 | 107 | 102 | 139 | 117 | 113 | **1263** | 16 |
| Rockford | 75 | 64 | 50 | 47 | 46 | 48 | 43 | 48 | 74 | 50 | 34 | 36 | **615** | 20 |
| Rockford Shoppers | 40 | 27 | 38 | 48 | 22 | 38 | 46 | 54 | 81 | 66 | 60 | 60 | **580** | 20 |
| Spencer Twp | 4 | 2 | 0 | 4 | 2 | 6 | 4 | 2 | 6 | 0 | 0 | 2 | **32** | 20 |
| Vergennes Twp | 25 | 34 | 29 | 20 | 20 | 16 | 18 | 20 | 19 | 23 | 22 | 22 | **268** | 20 |
| **Total** | **952** | **545** | **578** | **610** | **557** | **532** | **482** | **498** | **607** | **561** | **492** | **453** | **6867** | |

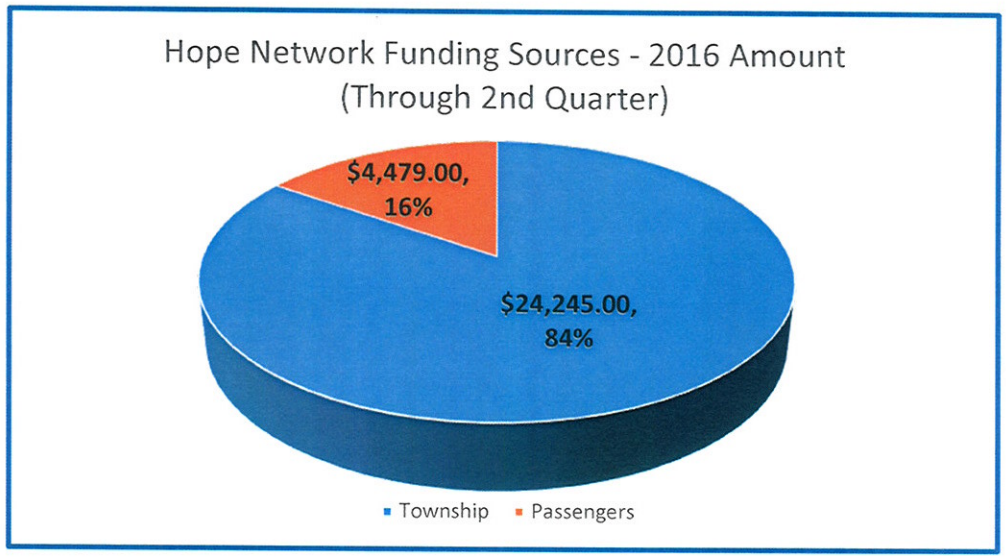
**Non CDBG**

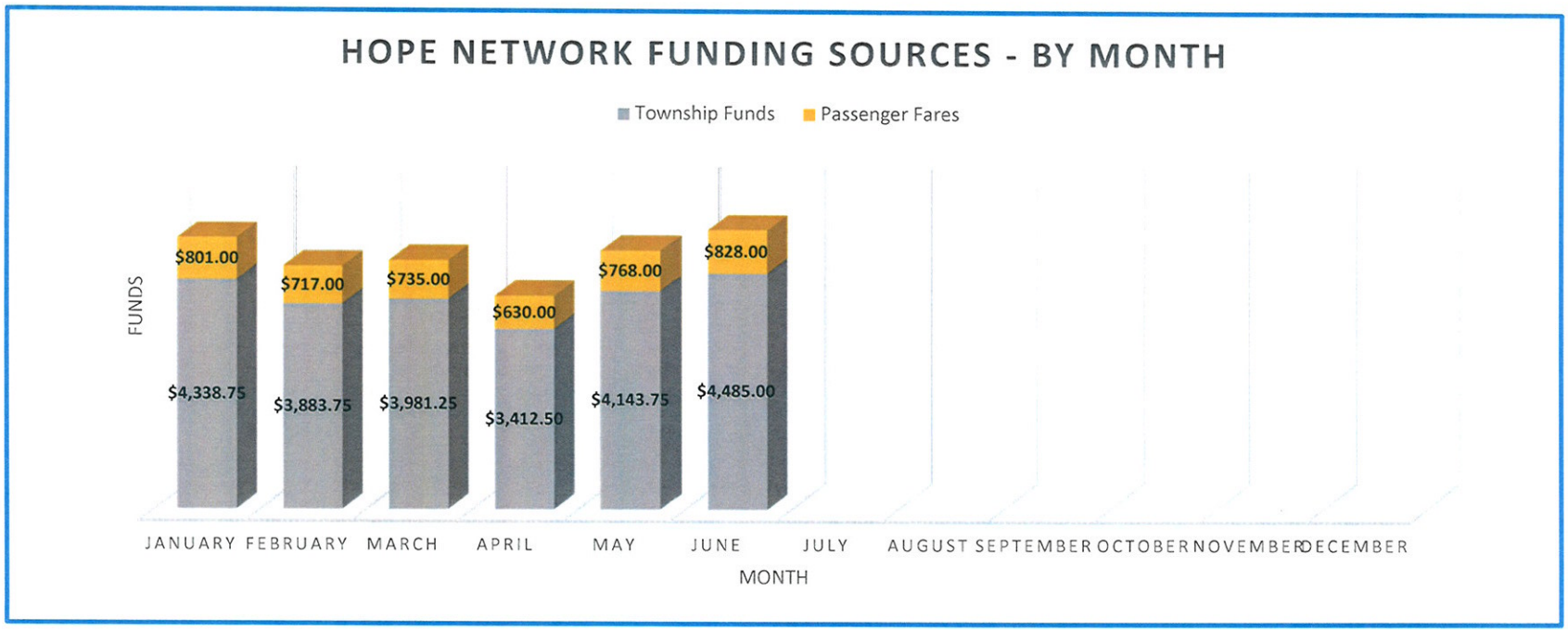
| | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Oakfield Twp (non CDBG) | 0 | 0 | 5 | 5 | 6 | 7 | 5 | 16 | 8 | 2 | 2 | 2 | **58** | 20 |
| City of Lowell (non CDBG) | 22 | 20 | 21 | 20 | 20 | 30 | 20 | 19 | 20 | 17 | 14 | 37 | **260** | 20 |
| Ada Twp (gen fund) | | | | | 8 | 76 | 76 | 86 | 89 | 100 | 79 | 79 | **593** | None |
| Cascade Twp (gen fund) | | 367 | 356 | 403 | 359 | 357 | 267 | 239 | 245 | 210 | 255 | 276 | **3334** | None |
| Total non CDBG | 22 | 387 | 382 | 428 | 393 | 470 | 368 | 360 | 362 | 329 | 350 | 394 | 4245 | |
| Grand Total | 974 | 932 | 960 | 1038 | 950 | 1002 | 850 | 858 | 969 | 890 | 842 | 847 | 11112 | |

# Hope Network - FY2016 2nd Quarter Financial Data

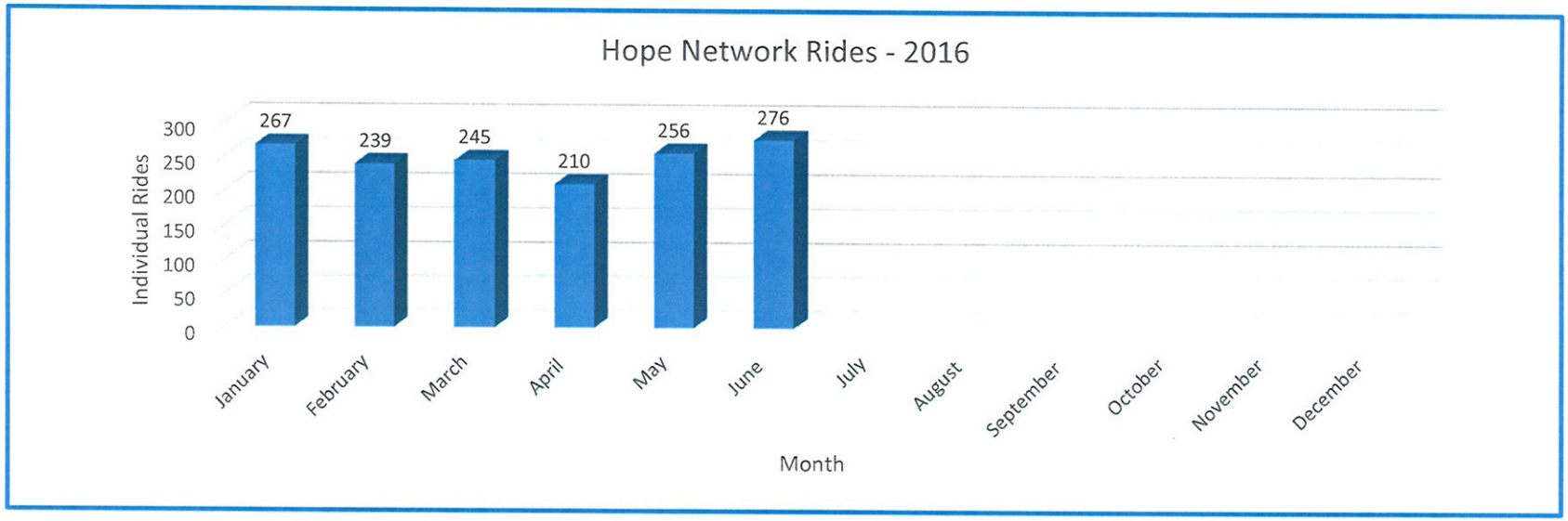
The Hope Network Transportation Services provides specialized transportation for Cascade residents who live outside of The Rapid 3/4 mile service area. Through an agreement with the Hope Network, rides are provided at a cost of $19.25 per ride, each way. The Township covers $16.25 and the passenger is responsible for $3.00.

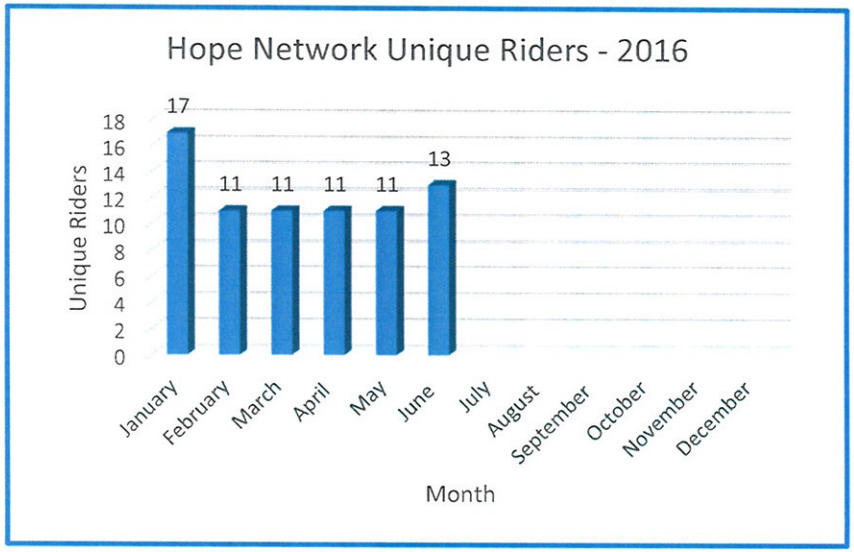
Through 2nd Quarter of FY 2016, the Township has spent $24,245 with Hope Network, while passengers have contributed $4,479. Ridership fell from January to February, as residents living in The Rapid area began taking the Go!Bus on January 20th. Overall, the Township provides 84% of the funding for this service.



# Hope Network - FY16 2nd Quarter Ridership Data




Through FY2016 2nd Quarter, there have been 1493 rides to Township residents provided by the Hope Network. The Township saw an initial decrease in rides between January and February as riders in The Rapid service area were moved to the Go!Bus service. Since then we have seen rides remain relatively steady with a low of 210 rides in April and a high of 276 rides in June.

Each month the Township is given a report that details the residents that utilize the system, as well as the rides that are taken. The Hope Network initially saw a decrease in unique riders in February as Go!Bus riders were removed from the system. Since then we have consistently seen 11 unique riders, with an uptick to 13 in June.

# MEMO

**TO:** Mr. Ben Swayze – Cascade Charter Township

**FROM:** Michael L. Berrevoets, PE

**DATE:** August 4, 2016 **PROJECT NO.:** G04058

**RE:** Storm Water Ordinance Revisions Board Update

The State of Michigan is requiring that all municipalities with MS4 permits submit a revised Storm Water Ordinance (SWO) that meets the new requirements. The Township is part of the surrounding group of Grand Valley Metro Council communities working together on a Model SWO and Manual to be adopted by each community.

Each community in the group has the opportunity to use the model ordinance and manual with some modifications to suit their specific goals provided minimum State requirements are met. We have met with the Infrastructure Committee previously to review the State requirements and also get their direction on items which can be modified by each community.

At this time we would like to present the new design requirements to the Township Board for discussion purposes. The ordinance and corresponding design manual will need to be submitted to the State for review and approval before the Board can adopt the revised ordinance. The State review process could take a year or more.

Included with this memo is the Draft Ordinance Language, Draft Stormwater Standards manual and a short presentation outlining the design standard differences between the current SWO and the proposed SWO.

It is our understanding that at this time there is no official action to be taken by the Board. However, what is presented will be sent to the State for review and approval and we prefer that the Board be aware of the new requirements before adoption of the ordinance is required.

# Storm Water Ordinance Revisions

Cascade Charter Township

FISHBECK, THOMPSON, CARR, & HUBER INC.

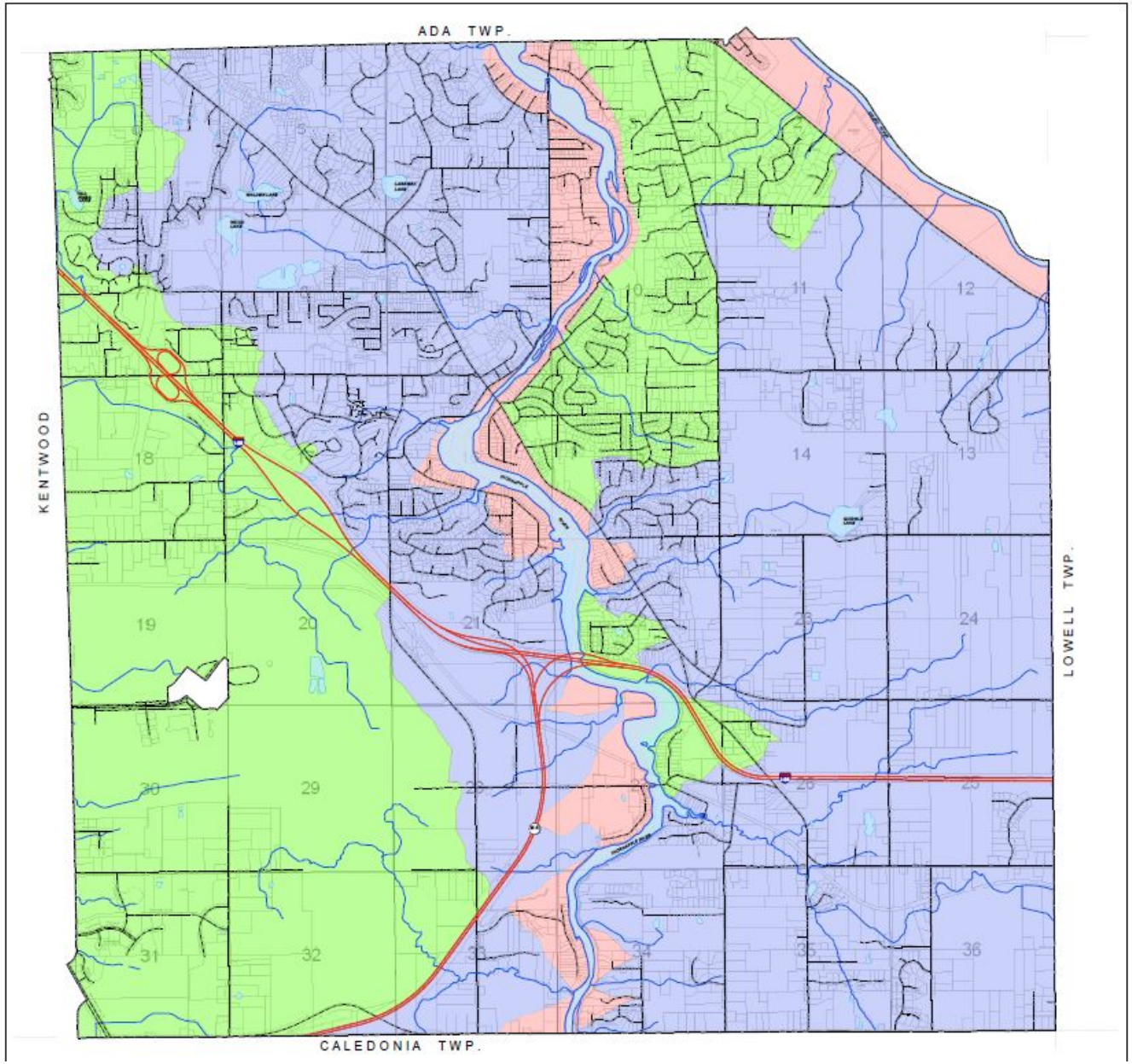
- First SWO adopted in 2002
  - Required by the State for metropolitan areas. Model Ordinance developed with surrounding communities.
- Revised slightly in 2008
  - Changed slightly to place more emphasis on infiltration
  - Storm Zone Management Zones and Map changed
- 2016 – 2017 Revisions required by EPA and State

# SWO History

- Currently Three Zones (A, B, C)
  - “A” is the most restrictive
  - “B” is less restrictive than “A”
  - “C” is the least restrictive.
  - Water quality requirements become less restrictive from Zone A to Zone C.
  - Bank Erosion/Channel protection requirements differ for each Zone.

| | Zone A | Zone B | Zone C |
|---|---|---|---|
| Storm Water Management Standards | Use infiltration basins, infiltration trenches, extended detention basins, and/or constructed wetlands. Maintain and enhance buffer strips. | Use detention ponds; maintain and enhance buffer strips, and reduce directly connected impervious area. | Use sediment basins, maintain and enhance buffer strips, and reduce directly connected impervious area. |
| Water Quality Control | Detain the first 0.5" of runoff from the contributing watershed, with infiltration where conditions permit, with 24 hours of detention, or provide equivalent treatment | Detain the first 0.5" of runoff from the contributing watershed for 24 hours or provide equivalent treatment. | Provide sedimentation control within the drainage system. |
| Bank Erosion Control | Rate of release shall be limited to 0.05 cfs/acre for a 2-year storm event. | Storm water runoff shall not exceed the capacity of the downstream conveyance system. | Storm water runoff shall not exceed the capacity of the downstream conveyance system. |
| Flood Control | Detention with infiltration when conditions permit.<br>Release rate of 0.13 cfs/acre per KCDC rules. | Release rate of 0.13 cfs/acre per KCDC rules. | Direct conveyance of storm water runoff within the capacity of downstream system. |

# Current Ordinance Design Standards




**CASCADE CHARTER TOWNSHIP**

**KENT COUNTY, MICHIGAN**

STORM WATER ORDINANCE
MAY 14, 2008

APPENDIX A
STORM WATER
MANAGEMENT ZONES

Legend

Storm Water Management Zones

- Zone A
- Zone B
- Zone C

REGIS

- Zones A, B, and C are eliminated.
- Water Quality treatment required for all sites.
  - Treat runoff from 1-inch (instead of the first ½-inch) of rain through BMPs (filtration, infiltration, absorption, chemical/mechanical treatment)
- Channel Protection measures required for all sites.
  - Retain the increase between pre-development and post-development runoff rate and volume for 2-year event.
  - Alternative approaches available in poor soil conditions.
- Flood Control
  - Detention or Retention (Infiltration) of 25-year or 100-year storm event.

- Water Quality Requirement
  - Required on all sites
  - Goal is to reduce downstream pollution.
  - Specific reduction must be met (80% reduction in Total Suspended Solids)
  - Manual provides options and associated reductions.

- Channel Protection Requirement
  - What is Channel Protection?
    - First choice is retain onsite
    - Low Impact Development (LID) Combination of BMPs
    - Alternative Approach (Extended Detention)
    - Off-Site mitigation
  - Pre-Development versus Pre-Settlement
    - Impaired Watershed Approach
    - Stormwater Management Plan

- Flood Control Requirements
  - What is Flood Control?
  - Similar approach to current requirements.
  - Zone 1 (Current Zone A) requires 100-year infiltration or 100-year detention with restricted release.
  - Zone 2 (Current Zone B) requires 25-year detention with restricted release
  - Zone 3 (Current Zone C) no detention requirements but must prove there is adequate outlet capacity to the river.

- Summary
  - Water Quality Requirements
    - Uniform requirements across the Township
    - More restrictive
  - Channel Protection requirements
    - Required everywhere in the Township
    - Flexibility to adjust for particular watershed needs
  - Flood Control Requirements
    - Similar to current requirements with minor improvements
    - Slightly more restrictive then neighboring communities

# Proposed Model Stormwater Ordinance for Kent County and Ottawa County Local Governments

**Prepared by the Ordinance and Strategy Committee of the Lower Grand River Watershed**

Month, 20__

Z:\2015\150800\WORK\REPT\MODELORDINANCE_DRAFT_2016.DOC

## ACKNOWLEDGEMENTS

Acknowledge that the Kent County Model Ordinance was used as the foundation of this ordinance recommendation. Acknowledge the individuals contributing to the 2001 model. Acknowledge the individuals on the O&S Committee.

# PROPOSED MODEL STORMWATER ORDINANCE
# FOR
# KENT COUNTY AND OTTAWA COUNTY LOCAL GOVERNMENTS

**CONTENTS**


ARTICLE I - GENERAL ..... 1
- Sec. 1.01 Statutory Authority and Title ..... 1
- Sec. 1.02 Findings ..... 2
- Sec. 1.03 Purpose ..... 4
- Sec. 1.04 Applicability, Exemptions and General Provisions ..... 5
- Sec. 1.05 Definitions ..... 5

ARTICLE II – STORMWATER PERMITS ..... 1
- Sec. 2.01 Permit Required. ..... 1
- Sec. 2.02 Stormwater Permit Review Procedures ..... 1
- Sec. 2.03 Drainage Plan. ..... 2
- Sec. 2.04 Stormwater Permit Review Fees. ..... 2
- Sec. 2.05 Construction Site Runoff Controls ..... 3
- Sec. 2.06 Financial Guarantee ..... 3
- Sec. 2.07 Certificate of Occupancy ..... 4
- Sec. 2.08 No Change in Approved Facilities ..... 4
- Sec. 2.09 Terms and Conditions of Permits ..... 4

ARTICLE III – STORMWATER SYSTEM, FLOODPLAIN AND OTHER STANDARDS, SOIL EROSION CONTROL ..... 1
- Sec. 3.01 Management of and Responsibility for Stormwater System ..... 1
- Sec. 3.02 Stormwater System ..... 1
- Sec. 3.03 Stormwater Discharge Rates and Volumes ..... 1
- Sec. 3.04 Floodplain Standards ..... 1
- Sec. 3.05 Soil Erosion and Sedimentation Control ..... 2
- Sec. 3.06 Building Openings ..... 3
- Sec. 3.07 Sump Pump Discharge [OPTIONAL] ..... 4
- Sec. 3.08 Public Health, Safety and Welfare ..... 4

ARTICLE IV – PROHIBITIONS AND EXEMPTIONS ..... 1
- Sec. 4.01 Prohibited Discharges ..... 1
- Sec. 4.02 Exempted Discharges ..... 1
- Sec. 4.03 Interference with Natural or Artificial Drains ..... 1
- Sec. 4.04 Storage of Hazardous or Toxic Materials in Drainageway ..... 2

ARTICLE V – INSPECTION, MONITORING, REPORTING, AND RECORDKEEPING. . 1
- Sec. 5.01 Inspection and Sampling ..... 1
- Sec. 5.02 Stormwater Monitoring Facilities ..... 1
- Sec. 5.03 Accidental Discharges ..... 1
- Sec. 5.04 Record Keeping Requirement ..... 2

ARTICLE VI – ENFORCEMENT ..... 1

Sec. 6.01 Sanctions for Violation ..... 1
Sec. 6.02 Stop Work Order ..... 1
Sec. 6.03 Failure to Comply; Completion ..... 2
Sec. 6.04 Emergency Measures ..... 2
Sec. 6.05 Cost Recovery for Damage to Storm Drain System ..... 2
Sec. 6.06 Collection of Costs; Lien ..... 2
Sec. 6.07 Appeals ..... 3

ARTICLE VII – STORMWATER EASEMENTS AND MAINTENANCE AGREEMENTS ..... 1
Sec. 7.01 Applicability of Requirements ..... 1
Sec. 7.02 Stormwater Management Easements ..... 1
Sec. 7.03 Maintenance Agreements ..... 1
Sec. 7.04 Establishment of County Drains ..... 2

ARTICLE VIII – PERFORMANCE AND DESIGN STANDARDS ..... 1
Sec. 8.01 Performance Standards ..... 1
Sec. 8.02 Design Standards ..... 3
Sec. 8.03 Alternative Approach for Channel Protection ..... 3
Sec. 8.04 Off-site Mitigation and Payment-in-Lieu Programs for Redevelopment Projects [OPTIONAL] ..... 4
Sec. 8.05 Resolution to Implement Performance and Design Standards ..... 5

ARTICLE IX – OTHER MATTERS ..... 1
Sec. 9.01 Interpretation ..... 1
Sec. 9.02 Catch-Line Headings ..... 1
Sec. 9.03 Severability ..... 1
Sec. 9.04 Other Ordinances ..... 1
Sec. 9.05 Effective Date ..... 1
Sec. 9.06 Repeal [if applicable] ..... 1

_____ of _____

COUNTY OF_____, MICHIGAN

**AN ORDINANCE** to provide for the regulation and control of stormwater runoff; to provide for stormwater permits and the procedures and standards for the issuance thereof; to provide for payment or reimbursement of costs and expenses incurred by the **Local Government** associated with stormwater permits and the consideration thereof; to establish standards and requirements for the protection of floodways and for the control of soil erosion and sedimentation; to adopt other provisions for the establishing, maintaining and protection of drains and drainageways; to provide regulations for the inspection, sampling and monitoring of stormwater and other discharges; to establish performance and design standards for stormwater management in specified zones of the **Local Government**; and to provide penalties for violations of the ordinance.

THE _____ OF _____ ORDAINS:

## Article I - General

### Sec. 1.01 Statutory Authority and Title

***[For a Charter Township:]***

This ordinance is adopted in accordance with the Charter Township Act, as amended, being MCL 42.1, et seq.; the Township and Village Public Improvement Act, as amended, being MCL 41.721, et seq.; the Drain Code of 1956, as amended, being MCL 280.1, et seq.; the Land Division Act, as amended, being MCL 560.1, et seq.; the Revenue Bond Act, as amended, being MCL 141.101, et seq.; and the Natural Resources and Environmental Protection Act, as amended, being MCL 324.101, et seq.; Section 401(p) of the Federal Water Pollution Control Act (also known as the Clean Water Act), as amended, being 33 USC 1342(p) and 40 CFR Parts 9, 122, 123 and 124; and other applicable state and federal laws.

This ordinance shall be known and may be cited as the _____ of _____ Stormwater Ordinance.

## Sec. 1.02 Findings

The **Local Government** finds that:

(1) Water bodies, roadways, structures, and other property within, and downstream of the **Local Government** are at times subjected to flooding;

(2) Flooding is a danger to the lives and property of the public and is also a danger to the natural resources of the **Local Government** and the region;

(3) Land development alters the hydrologic response of watersheds, resulting in increased stormwater runoff rates and volumes, increased flooding, increased stream channel erosion, and increased sediment transport and deposition;

(4) Stormwater runoff produced by land development contributes to increased quantities of water-borne pollutants;

(5) Increases of stormwater runoff, soil erosion, and non-point source pollution have occurred as a result of land development, and cause deterioration of the water resources of the **Local Government** and downstream municipalities;

(6) Stormwater runoff, soil erosion, and non-point source pollution, due to land development within the **Local Government**, have resulted in a deterioration of the water resources of the **Local Government** and downstream municipalities;

(7) Increased stormwater runoff rates and volumes, and the sediments and pollutants associated with stormwater runoff from future development projects within the **Local Government** will, absent reasonable regulation and control, adversely affect the **Local Government's** water bodies and water resources, and those of downstream municipalities;

(8) Stormwater runoff, soil erosion, and non-point source pollution can be controlled and minimized by the regulation of stormwater runoff from development;

(9) Post-Construction Stormwater Runoff Program requirements for new and redevelopments within the **Local Government** are set forth in the 2013 Michigan Department of Environmental Quality (DEQ) *Permit Application for Discharge of Storm Water to Surface Waters of the State from a Municipal Separate Storm Sewer System* (MS4) under the NPDES program (Rev 10/2014).

(10) Adopting the standards, criteria and procedures contained in this ordinance and implementing the same will address many of the deleterious effects of stormwater runoff;

(11) Adopting these standards is necessary for the preservation of the public health, safety and welfare.

(12) Adopting these standards is necessary to comply with the NPDES MS4 General Permit.

**Sec. 1.03 Purpose**

It is the purpose of this ordinance to establish minimum stormwater management requirements and controls to accomplish, among others, the following objectives:

(1) To reduce artificially induced flood damage;

(2) To minimize increased stormwater runoff rates and volumes from identified new land development;

(3) To minimize the deterioration of existing watercourses, culverts and bridges, and other structures;

(4) To encourage water recharge into the ground where geologically favorable conditions exist;

(5) To prevent an increase in non-point source pollution;

(6) To maintain the integrity of stream channels for their biological functions, as well as for drainage and other purposes;

(7) To minimize the impact of development upon stream bank and streambed stability;

(8) To reduce erosion from development or construction projects;

(9) To preserve and protect water supply facilities and water resources by means of controlling increased flood discharges, stream erosion, and runoff pollution; and,

(10) To reduce stormwater runoff rates and volumes, soil erosion, and non-point source pollution, wherever practicable, from lands that were developed without stormwater management controls meeting the purposes and standards of this ordinance.

(11) To reduce the adverse impact of changing land use on water bodies and, to that end, this ordinance establishes minimum standards to protect water bodies from degradation resulting from changing land use where there are insufficient stormwater management controls.

## Sec. 1.04 Applicability, Exemptions and General Provisions

(1) This ordinance shall apply to all new development and all redevelopment projects, including private, commercial and public projects that disturb one (1) acre or more, and projects less than one (1) acre that are part of a larger common plan of development or sale that would disturb one (1) acre or more.

(2) This ordinance shall apply to sites less than one (1) acre as set forth in [cite ordinance section].

(3) This ordinance shall not apply to the following:

(a) The installation or removal of individual mobile homes within a mobile home park. This exemption shall not be construed to apply to the construction, expansion, or modification of a mobile home park.

(b) Farm operations and buildings, except dwellings, directly related to farm operations. This exemption shall not apply to greenhouses and other similar structures.

(c) Plats with preliminary plat approval and other developments with final land use approval prior to the effective date of this ordinance, where such approvals remain in effect.

## Sec. 1.05 Definitions

For the purpose of this ordinance, the following words and phrases shall have the meanings respectively ascribed to them by this Section unless the context in which they are used specifically indicates otherwise:

(1) Base Flood – A flood having a one (1) percent chance of being equaled or exceeded in any given year.

(2) Base Flood Elevation – The high water elevation of the Base Flood, commonly referred to as the "100-year flood elevation".

(3) Base Flood Plain – The area inundated by the Base Flood.

(4) Best Management Practices (BMPs) – A practice, or combination of practices and design criteria that accomplish the purposes of this ordinance (including, but not limited to reducing stormwater runoff rates, reducing stormwater runoff volume, and reducing the amount of pollutants in stormwater) as determined by the **Local Government** , and, where appropriate, the standards of the County Drain Commissioner.

(5) Building Opening – Any opening of a solid wall such as a window or door, through which floodwaters could penetrate.

(6) Clean Water Act – The Federal Water Pollution Control Act, 33 USC Sec 1251 et seq., as amended, and the applicable regulations promulgated thereunder.

(7) Construction Site Stormwater Runoff – Stormwater runoff from a development site following an earth change and before final site stabilization.

(8) Detention – A system which is designed to capture stormwater and release it over a given period of time through an outlet structure at a controlled rate.

(9) Development –The installation or construction of buildings, structures or other impervious surfaces on a site that disturbs one (1) acre of land or more, including projects less than one (1) acre that are part of a larger common plan or sale that would disturb one (1) acre or more. A development may include a land division, plat, site condominium, planned unit development, mobile home park, private road or other special land use.

(10) Developer – Any person or entity proposing or implementing the development of land.

(11) Development Site – Any land that is being or has been developed, or that a developer proposes for development.

(12) Discharger – Any person or entity who directly or indirectly discharges stormwater from any property.

(13) Drain – Any drain as defined in the Drain Code of 1956, as amended, being MCL 280.1, et. seq.

(14) Drainage – The collection or conveyance of stormwater, ground water and/or surface water.

(15) Drainageway – The area within which surface water or ground water is conveyed from one part of a lot or parcel to another part of the lot or parcel or to adjacent land or to a watercourse.

(16) (Earth Change – Any human activity which removes ground cover, changes the slope or contours of the land, or exposes the soil surface to the actions of wind and rain. Earth change includes, but is not limited to, any excavating, surface grading, filling, landscaping, or removal of vegetative roots.

(17) EPA – The United States Environmental Protection Agency.

(18) Erosion – The process by which the ground surface is worn away by action of wind, water, gravity or a combination thereof.

(19) Federal Emergency Management Agency (FEMA) – The agency of the federal government charged with emergency management.

(20) Flood or Flooding – A general and temporary condition of partial or complete inundation of normally dry land areas resulting from the overflow of water bodies or the unusual and rapid accumulation of surface water runoff from any source.

(21) Local Floodplain – Any land area subject to periodic flooding as determined by the local government.

(22) State-Regulated Floodplain – Any area of land adjoining a river or stream that will be inundated by a base flood that has a drainage area of 2 square miles or more when measured at the downstream limits of the proposed development site.

(23) Flood-Proofing – Any structural and/or non-structural additions, changes, or adjustments to structures or property that reduce or eliminate flood damage to land, improvements, utilities or structures.

(24) Flood Protection Elevation (FPE) – The Base Flood Elevation plus one (1) foot at any given location.

(25) Floodway – The channel of a river or stream and the portions of the floodplain adjoining the channel that are reasonably required to carry and discharge a 100-year flood.

(26) Grading – Any stripping, excavating, filling, and stockpiling of soil or any combination thereof.

(27) Illicit Connection – Any method or means for conveying an illicit discharge into water bodies or the **Local Government's** stormwater system.

(28) Illicit Discharge – Any discharge to water bodies or stormwater systems that does not consist entirely of stormwater, discharges pursuant to the terms of an NPDES permit, or exempted discharges as defined in this ordinance.

(29) Impervious Surface – Any surface that does not allow stormwater to percolate into the ground.

(30) Lowest Floor – The lowest floor or the lowest enclosed area (including a basement), but not including an unfinished or flood-resistant enclosure which is usable solely for parking of vehicles or building access.

(31) MDNRE – Michigan Department of Natural Resources and Environment.

(32) NPDES – National Pollution Discharge Elimination System.

(33) Overland flow-way – Surface area that conveys a concentrated flow of stormwater runoff.

(34) Person – An individual, firm, partnership, association, public or private corporation, public agency, instrumentality, or any other legal entity.

(35) Plan – Written narratives, specifications, drawings, sketches, written standards, operating procedures, or any combination of these.

(36) Pollutant – A substance discharged which includes, but is not limited to the following: any dredged spoil, solid waste, vehicle fluids, yard wastes, animal wastes, agricultural waste products, sediment, incinerator residue, sewage, garbage, sewage sludge, munitions, chemical wastes, biological wastes, radioactive materials, heat, wrecked or discharged equipment, rock, sand, cellar dirt, and industrial, municipal, commercial and agricultural waste, or any other contaminant or other substance defined as a pollutant under the Clean Water Act.

(37) Property Owner – Any person having legal or equitable title to property or any person having or exercising care, custody, or control over any property.

(38) Retention – A system which is designed to capture stormwater and contain it until it infiltrates the soil or evaporates.

(39) State of Michigan Water Quality Standards – All applicable State rules, regulations, and laws pertaining to water quality, including the provisions of Section 3106 of Part 31 of 1994 PA 451, as amended.

(40) Storm Drain – A system of open or enclosed conduits and appurtenant structures intended to convey or manage stormwater runoff, ground water and drainage.

(41) Stormwater Permit – A permit issued pursuant to this ordinance.

(42) Stormwater Runoff – Water that originates during precipitation events or with snowmelt. Stormwater that does not soak into the ground or evaporate becomes stormwater runoff, which either flows directly into surface waters or is channeled into storm drainage systems.

(43) Stormwater Management Facility – The method, structure, area, system, or other equipment or measures which are designed to receive, control, store, convey, infiltrate, or treat stormwater.

(44) Stream – A river, stream or creek which may or may not be serving as a drain, or any other water body that has definite banks, a bed, and visible evidence of a continued flow or continued occurrence of water.

(45) **Local Government** – The [City][Township][Charter Township][Village] of _____, or a properly delegated official.

(46) Water Body – A river, lake, stream, creek or other watercourse or wetlands.

(47) Watershed – A land area draining into a water body.

(48) Wetlands – Land characterized by the presence of water at a frequency and duration sufficient to support wetland vegetation or aquatic life.

## Article II – Stormwater Permits

### Sec. 2.01 Permit Required.

(1) No person shall engage in any development activity without first receiving a stormwater permit from the **Local Government** pursuant to Section 2.02.

(2) The granting of a stormwater permit only authorizes the discharge of stormwater from the development for which the permit is required, subject to the terms of the permit. It shall not be deemed to approve other development, other land use activities, or replace other required permits.

### Sec. 2.02 Stormwater Permit Review Procedures

The **Local Government** shall grant a stormwater permit, which may impose terms and conditions in accordance with Section 2.09, only upon compliance with each of the following requirements:

(1) The developer has submitted a site (drainage) plan complying with Section 2.03 for the approval of post-construction stormwater runoff BMPs.

(2) The developer has paid or deposited the stormwater permit review fee pursuant to Section 2.04.

(3) The developer has paid or posted the applicable financial guarantee pursuant to Section 2.06.

(4) The developer agrees to provide all easements necessary to implement the approved drainage plan and to otherwise comply with this Ordinance including, but not limited to, Section 7.02. All easements shall be acceptable to the **Local Government** in form and substance and shall be recorded with the County Register of Deeds. At the discretion of the local government the final easement may be required prior to permit issuance.

(5) The developer provides the required maintenance agreement for routine, emergency, and long-term maintenance of all structural and vegetative BMPs installed and implemented to meet the performance standards, and in compliance with the approved drainage plan and this Ordinance including, but not limited to, Section 7.03 (Maintenance Agreements). The maintenance agreement shall be acceptable to the **Local Government** in form and substance, shall be binding on all future property owners, and shall be recorded with the County Register of Deeds.

## Sec. 2.03 Drainage Plan.

The developer shall provide adequate stormwater management facilities for the development site. Adequate facilities reduce the exposure of people to drainage-related inconvenience and to health and safety hazards. They reduce the exposure of real and personal property to damage through stormwater inundation. The stormwater management system and stormwater best management practices (BMPs) shall be designed in accordance with the latest version of the document "Stormwater Standards, Procedures and Design Criteria for Stormwater Management" (aka "Stormwater Standards" manual) published by the **Local Government**.

The developer shall provide a drainage plan to the **Local Government** for review and approval by the **Local Government**. The drainage plan shall identify and contain all of the information required in the "Stormwater Standards" manual, including an implementation plan.

The implementation plan for construction and inspection of all stormwater management facilities necessary to the overall drainage plan shall include a schedule of the estimated dates of completing construction of the stormwater management facilities shown on the plan and an identification of the proposed inspection procedures to ensure that the stormwater management facilities are constructed in accordance with the approved drainage plan.

## Sec. 2.04 Stormwater Permit Review Fees.

(1) All expenses and costs incurred by the **Local Government** directly associated with processing, reviewing and approving or denying a stormwater permit application shall be paid (or reimbursed) to the **Local Government** from the funds in a separate escrow account established by the developer, as provided in subsection (2). The **Local Government** may draw funds from a developer's escrow account to reimburse the **Local Government** for out-of-pocket expenses incurred by the **Local Government** relating to the application. Such reimbursable expenses include, but are not limited to, expenses related to the following:

(a) Services of the **Local Government** Attorney directly related to the application.

(b) (b) Services of the **Local Government** Engineer directly related to the application.

(c) (c) Services of other independent contractors working for the **Local Government** which are directly related to the application.

(d) (d) Any additional public hearings, required mailings and legal notice requirements necessitated by the application.

(2) At the time a developer applies for a stormwater permit, the developer shall deposit with the **Local Government** clerk, as an escrow deposit, an initial amount as determined by resolution of the **[legislative body]** for such matters and shall provide additional amounts as requested by the **Local Government** in such increments as are specified in said resolution. Any excess funds remaining in the escrow account after the application has been fully processed, reviewed, and the final **Local Government** approval and acceptance of the development has occurred will be refunded to the developer with no interest to be paid on those funds. At no time prior to the **Local Government's** final decision on an application shall the balance in the escrow account fall below the required initial amount. If the funds in the account are reduced to less than the required initial amount, the developer shall deposit into the account an additional amount as determined by **[Legislative Body]** resolution, before the application review process will be continued. Additional amounts may be required to be placed in the escrow account by the developer, at the discretion of the **Local Government**.

## Sec. 2.05 Construction Site Runoff Controls

Prior to making any earth change on a development site regulated by this ordinance, the developer shall first obtain a soil erosion permit issued in accordance with Part 91 of Act No. 451 of the Public Acts of 1994, as amended, if one is required. The developer shall install stormwater management facilities and shall phase the development activities so as to prevent construction site stormwater runoff and off-site sedimentation. During all construction activities on the development site, the **Local Government** may inspect the development site to ensure compliance with the approved construction site runoff controls.

## Sec. 2.06 Financial Guarantee

(1) The **Local Government** shall not approve a stormwater permit until the developer submits to the **Local Government**, in a form and amount satisfactory to the **Local Government**, a letter of credit or other financial guarantee for the timely and satisfactory construction of all stormwater management facilities and site grading in accordance with the approved drainage plan. Upon 1) certification by a registered professional engineer that the stormwater management facilities have been completed in accordance with the approved drainage plan including, but not limited to, the implementation plan required to be submitted in Section2.03, and 2) receipt of construction record drawings meeting the minimum requirements of Local Government or the County Drain Commissioner, the **Local Government** may release the letter of credit, or other financial guarantee subject to final **Local Government** acceptance and approval.

(2) Except as provided in subsection (3), the amount of the financial guarantee shall be $_____, unless the **Local Government** determines that a greater amount is appropriate, in which case the basis

for such determination shall be provided to the developer in writing. In determining whether an amount greater than $_____ is appropriate, the **Local Government** shall consider the size and type of the development, the size and type of the on-site stormwater system, and the nature of the off-site stormwater management facilities the development will utilize.

(3) **The Local Government** [planner][zoning administrator][_____] may reduce or waive the amount of the financial guarantee for a development that will not increase the percentage of impervious surface of the development site by more than ten percent (10%).

(4) This ordinance shall not be construed or interpreted as relieving a developer of its obligation to pay all costs associated with on-site private stormwater management facilities as well as those costs arising from the need to make other drainage improvements in order to reduce a development's impact on a drain consistent with adopted design standards.

## Sec. 2.07 Certificate of Occupancy

No certificate of occupancy shall be issued until stormwater management facilities have been completed in accordance with the approved drainage plan; provided, however, the **Local Government** may issue a certificate of occupancy if an acceptable letter of credit or other financial guarantee has been submitted to the **Local Government**, for the timely and satisfactory construction of all stormwater management facilities and site grading in accordance with the approved drainage plan.

## Sec. 2.08 No Change in Approved Facilities

Stormwater management facilities, after construction and approval, shall be maintained in good condition, in accordance with the approved drainage plan, and shall not be subsequently altered, revised or replaced except in accordance with the approved drainage plan, or in accordance with approved amendments or revisions in the plan.

## Sec. 2.09 Terms and Conditions of Permits

In granting a stormwater permit, the **Local Government** may impose such terms and conditions as are reasonably necessary to effectuate the purposes of this ordinance. A developer shall comply with such terms and conditions.

## Article III – Stormwater System, Floodplain and Other Standards, Soil Erosion Control

### Sec. 3.01 Management of and Responsibility for Stormwater System

The **Local Government** is not responsible for providing drainage facilities on private property for the management of stormwater on said property. It shall be the responsibility of the property owner to provide for, and maintain, private stormwater management facilities serving the property and to prevent or correct the accumulation of debris that interferes with the drainage function of a water body.

### Sec. 3.02 Stormwater System

All stormwater management facilities shall be constructed and maintained in accordance with all applicable federal, state and local ordinances, and rules and regulations.

### Sec. 3.03 Stormwater Discharge Rates and Volumes

The **Local Government** is authorized to establish minimum design standards for stormwater discharge release rates and to require dischargers to implement on-site retention, detention or other methods necessary to control the rate and volume of surface water runoff discharged into the stormwater drainage system. These have been published by the **Local Government** in the document "Stormwater Standards, Procedures & Design Criteria for Stormwater Management" (aka "Stormwater Standards" manual). The standards to address post-construction stormwater runoff apply to all new development and redevelopment projects, including preventing or minimizing water quality impacts. Specific exemptions are listed in the "Stormwater Standards" manual.

### Sec. 3.04 Floodplain Standards

(1) All new buildings and substantial improvements to existing buildings shall be protected from flood damage up to the Flood Protection Elevation (FPE) and shall be in accordance with all applicable federal, state and local ordinances, and rules and regulations. Floodway alteration in a local floodplain shall be permitted only upon review and approval by the **Local Government**, in accordance with an approved drainage plan.

(2) A drainage plan providing for the filling or alteration of a floodway within a local floodplain shall include provisions for maintaining stability of the banks of streams or other water bodies. Establishing buffer zones is one means of providing protection of the slopes and banks of water bodies.

(3) Within any required buffer zone, no earth change shall take place except in accordance with the approved drainage plan. Such a plan may also include provisions for the replacement of local flood plain storage volume,

where such storage volume is lost or diminished as a result of approved development.

(4) Any earth change within a state-regulated floodplain shall only be undertaken in accordance with any required state or federal permit.

**Sec. 3.05 Soil Erosion and Sedimentation Control**

(1) All persons who cause, in whole or in part, any earth change to occur shall provide soil erosion and sedimentation control so as to adequately prevent soils from being eroded and discharged or deposited onto adjacent properties or into a stormwater drainage system, a public street or right of way, wetland, creek, stream, water body, or floodplain. All development shall be in accordance with all applicable federal, state and local ordinances, rules and regulations.

(2) During any earth change which exposes soil to an increased risk of erosion or sediment track-out, the property owner and other persons causing or participating in the earth change shall do the following:

(a) Comply with the stormwater management standards of this ordinance.

(b) Obtain and comply with the terms of a soil erosion and sedimentation control permit if required by law.

(c) Prevent damage to any public utilities or services within the limits of grading and within any routes of travel or areas of work of construction equipment.

(d) Prevent damage to or impairment of any water body on or near the location of the earth change or affected thereby.

(e) Prevent damage to adjacent or nearby land.

(f) Apply for all required approvals or permits prior to the commencement of work.

(g) Proceed with the proposed work only in accordance with the approved plans and in compliance with this ordinance.

(h) Maintain all required soil erosion and sedimentation control measures, including but not limited to, measures required for compliance with the terms of this ordinance.

(i) Promptly remove all soil, sediment, debris, or other materials applied, dumped, tracked, or otherwise deposited on any lands, public streets, sidewalks, or other public ways or facilities, including

catch basins, storm sewers, ditches, drainage swales, or water bodies. Removal of all such soil, sediment, debris or other materials within twenty-four (24) hours shall be considered prima facie compliance with this requirement, unless such materials present an immediate hazard to public health and safety.

(j) Refrain from grading lands at locations near or adjoining lands, public streets, sidewalks, alleys, or other public or private property without providing adequate support or other measures so as to protect such other lands, streets, sidewalks or other property from settling, cracking or sustaining other damage.

(k) Request and obtain inspection of soil erosion and sedimentation control facilities, by the **Local Government** at such frequency as required by the **Local Government.**

**Sec. 3.06 Building Openings**

(1) No building opening or Lowest Floor shall be constructed below the following elevations:

(a) One foot above the Base Flood Elevation.

(b) One foot above the 100-year water surface hydraulic grade line of the stormwater system.

(c) One foot above the highest know ground water elevation.

(d) The building opening established at the time of plat or development approval and on file with the Local Government.

(2) A waiver from elevations stated in Section 3.05(1) may be granted by the **Local Government** following receipt of a certification from a registered professional engineer demonstrating that the proposed elevation does not pose a risk of flooding.

(3) Upon completion of construction of the structure's foundation and or slab on grade, a registered land surveyor shall certify any minimum building opening or Lowest Floor elevation specified by this ordinance. This certificate shall attest that the building opening or Lowest Floor elevation complies with the standards of this ordinance. The permittee for the building permit shall submit the certificate to the **Township/Municipal** Building Inspections official prior to the commencement of framing and/or structural steel placement. If the surveyor should find that the minimum building opening or Lowest Floor elevation is below the elevation specified in Section 3.06(1) (a) through (d), that opening must be raised using a method that meets with the approval of the **Local Government**. After reconstruction, a registered land surveyor or engineer shall re-certify that

the minimum building opening or Lowest Floor elevation complies with the standards of this ordinance prior to the commencement of framing and or structural steel placement.

**Sec. 3.07 Sump Pump Discharge [OPTIONAL]**

(1) Whenever building footing drains are required or utilized, a direct connection between the footing drains and the storm sewer through a sump pump-check valve system, or a gravity pipe with a double flap gate valve for backflow prevention is required.

(2) A stormwater lateral shall be provided for each parcel at the time of storm sewer construction. If no lateral is provided, the lot owner shall discharge said water in such a manner as to not impact neighboring land or public streets.

(3) Water discharged to the storm sewer system via a lateral is not exempted from meeting water quality and channel protection discharge requirements.

**Sec. 3.08 Public Health, Safety and Welfare**

Protection of the public health, safety and welfare shall be a primary consideration in the design of all stormwater management facilities.

## Article IV – Prohibitions and Exemptions

### Sec. 4.01 Prohibited Discharges

(1) No person shall discharge to a water body, directly or indirectly, any substance other than stormwater or an exempted discharge. Any person discharging stormwater shall effectively prevent pollutants from being discharged with the stormwater, except in accordance with best management practices.

(2) The **Local Government** is authorized to require dischargers to implement pollution prevention measures, utilizing BMPs, necessary to prevent or reduce the discharge of pollutants into the **Local Government's** stormwater drainage system.

### Sec. 4.02 Exempted Discharges

The following non-stormwater discharges shall be permissible, provided that they do not result in a violation of State of Michigan water quality standards:

Water supply line flushing
Landscape irrigation
Diverted stream flows
Rising ground water
Uncontaminated ground water infiltration to storm drains
Uncontaminated pumped ground water
Discharges from potable water sources
Foundation drains
Air conditioning condensate
Individual residential car washing
Dechlorinated swimming pool water
Street washwater
Discharges or flows from emergency fire fighting activities
Discharges for which a specific federal or state permit has been issued.

### Sec. 4.03 Interference with Natural or Artificial Drains

(1) It shall be unlawful for any person to stop, fill, dam, confine, pave, alter the course of, or otherwise interfere with any natural or constructed drain, or drainageway without first submitting a drainage plan to the **Local Government** and receiving approval of that plan. Any deviation from the approved plan is a violation of this ordinance. This section shall not prohibit, however, necessary emergency action so as to prevent or mitigate drainage that would be injurious to the environment, the public health, safety, or welfare.

(2) No filling, blocking, fencing or above-surface vegetation planting shall take place within a floodway.

(3) For an overland flow-way:

(a) Silt screen fences shall not be permitted below the top of the bank of a water body.

(b) Chain link fences shall be permitted if the **Local Government** determines that the fence will not obstruct or divert the flow of water.

(c) If a fence is removed by the **Local Government** for drain access or drain maintenance, the fence shall be replaced by the owner of the fence at the owner's expense.

(d) No shrubs or trees shall be planted below the top of the bank of a water body.

(4) Shrubs, trees or other above-ground vegetation shall not be planted over the top of an underground storm sewer or over the top of the easement within which the storm sewer has been installed.

## Sec. 4.04 Storage of Hazardous or Toxic Materials in Drainageway

Except as permitted by law, it shall be unlawful for any person to store or stockpile within a drainageway any hazardous or toxic materials unless adequate protection and/or containment has been provided so as to prevent any such materials from entering a drainageway.

## Article V – Inspection, Monitoring, Reporting, and Recordkeeping.

### Sec. 5.01 Inspection and Sampling

To assure compliance with the standards, the **Local Government** may inspect and/or obtain stormwater samples from stormwater management facilities of any discharger to determine compliance with the requirements of this ordinance. Upon request, the discharger shall allow the **Local Government's** properly identified representative to enter upon the premises of the discharger at all hours necessary for the purposes of such inspection or sampling. The **Local Government** shall provide the discharger reasonable advance notice of such inspection and/or sampling. The **Local Government** or its properly identified representative may place on the discharger's property the equipment or devices used for such sampling or inspection.

### Sec. 5.02 Stormwater Monitoring Facilities

A discharger of stormwater runoff shall provide and operate equipment or devices for the monitoring of stormwater runoff, so as to provide for inspection, sampling, and flow measurement of each discharge to a water body or a stormwater management facility, when directed in writing to do so by the **Local Government**. The **Local Government** may require a discharger to provide and operate such equipment and devices if it is necessary or appropriate for the inspection, sampling and flow measurement of discharges in order to determine whether adverse effects from or as a result of such discharges may occur. All such equipment and devices for the inspection, sampling and flow measurement of discharges shall be installed and maintained in accordance with applicable laws, ordinances and regulations.

### Sec. 5.03 Accidental Discharges

(1) Any discharger who accidentally discharges into a water body any substance other than stormwater or an exempted discharge shall immediately inform the **Local Government** concerning the discharge. If such information is given orally, a written report concerning the discharge shall be filed with the **Local Government** within five (5) days. The written report shall specify:

(a) The composition of the discharge and the cause thereof.

(b) The exact date, time, and estimated volume of the discharge.

(c) All measures taken to clean up the accidental discharge, and all measures proposed to be taken to reduce and prevent any recurrence.

(d) The name and telephone number of the person making the report, and the name of a person who may be contacted for additional information on the matter.

(2) A properly-reported accidental discharge shall be an affirmative defense to a civil infraction proceeding brought under this ordinance against a discharger for such discharge. It shall not, however, be a defense to a legal action brought to obtain an injunction, to obtain recovery of costs or to obtain other relief as a result of or arising out of the discharge. A discharge shall be considered properly reported only if the discharger complies with all the requirements of Section 5.03(1).

**Sec. 5.04 Record Keeping Requirement**

Any person subject to this ordinance shall retain and preserve for no less than three (3) years any and all books, drawings, plans, prints, documents, memoranda, reports, correspondence and records, including records on magnetic or electronic media and any and all summaries of such records, relating to monitoring, sampling and chemical analysis of any discharge or stormwater runoff from any property.

## Article VI – Enforcement

### Sec. 6.01 Sanctions for Violation

(1) Any person violating any provision of this ordinance shall be responsible for a municipal civil infraction and subject to a fine of not less than $_____ for a first offense, and not less than $ _____ for a subsequent offense, plus costs, damages, expenses, and other sanctions as authorized under Chapter 87 of the Revised Judicature Act of 1961 and other applicable laws, including, without limitation, equitable relief; provided, however, that the violation stated in Section 6.01(2) shall be a misdemeanor. Each day such violation occurs or continues shall be deemed a separate offense and shall make the violator liable for the imposition of a fine for each day. The rights and remedies provided for in this section are cumulative and in addition to any other remedies provided by law. An admission or determination of responsibility shall not exempt the offender from compliance with the requirements of this ordinance.

For purposes of this section, "subsequent offense" means a violation of the provisions of this ordinance committed by the same person within 12 months of a previous violation of the same provision of this ordinance for which said person admitted responsibility or was adjudicated to be responsible.

The **Local Government** [zoning administrator, building inspector, enforcement officer, etc.] is authorized to issue municipal civil infraction citations to any person alleged to be violating any provision of this ordinance.

(2) Any person who neglects or fails to comply with a stop work order issued under Section 6.02 shall, upon conviction, be guilty of a misdemeanor, punishable by a fine of not more than $500 or imprisonment in the county jail for not more than 93 days, or both such fine and imprisonment, and such person shall also pay such costs as may be imposed in the discretion of the court.

(3) Any person who aids or abets a person in a violation of this ordinance shall be subject to the sanctions provided in this section.

### Sec. 6.02 Stop Work Order

Where there is work in progress that causes or constitutes in whole or in part, a violation of any provision of this ordinance, the **Local Government** is authorized to issue a Stop Work Order so as to prevent further or continuing violations or adverse effects. All persons to whom the stop work order is directed, or who are involved in any way with the work or matter described in the stop work order shall fully and promptly comply therewith. The **Local Government** may also undertake or cause to be undertaken, any necessary or advisable protective

measures so as to prevent violations of this ordinance or to avoid or reduce the effects of noncompliance herewith. The cost of any such protective measures shall be the responsibility of the owner of the property upon which the work is being done and the responsibility of any person carrying out or participating in the work, and such cost shall be a lien upon the property.

**Sec. 6.03 Failure to Comply; Completion**

In addition to any other remedies, should any owner fail to comply with the provisions of this ordinance, the **Local Government** may, after the giving of reasonable notice and opportunity for compliance, have the necessary work done, and the owner shall be obligated to promptly reimburse the **Local Government** for all costs of such work.

**Sec. 6.04 Emergency Measures**

When emergency measures are necessary to moderate a nuisance, to protect public safety, health and welfare, and/or to prevent loss of life, injury or damage to property, the **Local Government** is authorized to carry out or arrange for all such emergency measures. Property owners shall be responsible for the cost of such measures made necessary as a result of a violation of this ordinance, and shall promptly reimburse the **Local Government** for all of such costs.

**Sec. 6.05 Cost Recovery for Damage to Storm Drain System**

A discharger shall be liable for all costs incurred by the **Local Government** as the result of causing a discharge that produces a deposit or obstruction, or causes damage to, or impairs a storm drain, or violates any of the provisions of this ordinance. Costs include, but are not limited to, those penalties levied by the EPA or MDNRE for violation of an NPDES permit, attorney fees, and other costs and expenses.

**Sec. 6.06 Collection of Costs; Lien**

Costs incurred by the **Local Government** and the Drain Commissioner pursuant to Sections 6.02, 6.03, 6.04 and 6.05 shall be a lien on the premises which shall be enforceable in accordance with Act No. 94 of the Public Acts of 1933, as amended from time to time. Any such charges which are delinquent for six (6) months or more may be certified annually to the **Local Government** Treasurer who shall enter the lien on the next tax roll against the premises and the costs shall be collected and the lien shall be enforced in the same manner as provided for in the collection of taxes assessed upon the roll and the enforcement of a lien for taxes. In addition to any other lawful enforcement methods, the **Local Government** or the Drain Commissioner shall have all remedies authorized by Act No. 94 of the Public Acts of 1933, as amended.

**Sec. 6.07 Appeals**

Any person as to whom any provision of this ordinance has been applied may appeal in writing, not later than 30 days after the action or decision being appealed from, to the **Local Government [legislative body or other board]** the action or decision whereby any such provision was so applied. Such appeal shall identify the matter being appealed, and the basis for the appeal. The **Local Government [legislative body or other board]** shall consider the appeal and make a decision whereby it affirms, rejects or modifies the action being appealed. In considering any such appeal, the **Local Government** [**legislative body or other board]** may consider the recommendations of the **Local Government** Engineer and the comments of other persons having knowledge of the matter. In considering any such appeal, the **Local Government [legislative body or other board]** may grant a variance from the terms of this ordinance so as to provide relief, in whole or in part, from the action being appealed, but only upon finding that the following requirements are satisfied:

(1) The application of the ordinance provisions being appealed will present or cause practical difficulties for a development or development site; provided, however, that practical difficulties shall not include the need for the developer to incur additional reasonable expenses in order to comply with the ordinance; and

(2) The granting of the relief requested will not substantially prevent the goals and purposes sought to be accomplished by this ordinance, nor result in less effective management of stormwater runoff.

## Article VII – Stormwater Easements and Maintenance Agreements

### Sec. 7.01 Applicability of Requirements

The requirements of this Article concerning stormwater easements and maintenance agreements shall apply to all persons required to submit a drainage plan to the **Local Government** for review and approval.

### Sec. 7.02 Stormwater Management Easements

The developer shall provide all stormwater management easements necessary to implement the approved drainage plan and to otherwise comply with this ordinance in form and substance required by the **Local Government** and shall record such easements as directed by the **Local Government**. The easements shall assure access for proper inspection and maintenance of stormwater management facilities and shall provide adequate emergency overland flow-ways.

### Sec. 7.03 Maintenance Agreements

(1) Maintenance Agreement Required. The developer shall provide all stormwater maintenance agreements necessary to implement the approved drainage plan and to otherwise comply with this ordinance in form and substance as required by the **Local Government**, and shall record such agreements as directed by the **Local Government**. The maintenance agreements shall, among other matters, assure access for proper inspection and maintenance or corrective actions of stormwater BMPs, including emergency overland flow-ways, and include provisions for tracking the transfer of operation and maintenance responsibility to ensure the performance standards are met in perpetuity.

(2) Maintenance Agreement Provisions.

(a) The maintenance agreement shall include a maintenance plan and schedule for routine, emergency and long-term maintenance of all structural and vegetative stormwater BMPs installed and implemented to meet the performance standards, with a detailed annual estimated budget for the initial three years, and a clear statement that only future maintenance activities in accordance with the maintenance agreement plan shall be permitted without the necessity of securing new permits.

(b) Written notice and submittal of maintenance documentation shall be provided to the Local Government by the property owner at the interval set forth in the maintenance agreement and subject to the provisions of Sections 5-01 through 6-07.

(c) If it has been found by the Local Government, following notice and an opportunity to be heard by the property owner, that there has been a material failure or refusal to undertake maintenance as required under this ordinance and/or as required in the approved maintenance agreement as required hereunder, the Local Government shall then be authorized, but not required, to hire an entity with qualifications and experience in the subject matter to undertake the monitoring and maintenance as so required, in which event the property owner shall be obligated to advance or reimburse payment for all costs and expenses associated with such monitoring and maintenance, together with a reasonable administrative fee. The maintenance agreement required under this Ordinance shall contain a provision spelling out the requirements and, if the applicant objects in any respect to such provision or the underlying rights and obligations, such objection shall be resolved prior to the commencement of construction of the proposed development on the property.

## Sec. 7.04 Establishment of County Drains

Prior to final approval, all stormwater management facilities for platted subdivisions shall be established as county drains, as authorized in Section 433, Chapter 18 of the Michigan Drain Code (P.A. 40 of 1956, as amended) for long-term maintenance.

## Article VIII – Performance and Design Standards

### Sec. 8.01 Performance Standards

In order to achieve the goals and purposes of this ordinance, the following stormwater management performance standards are hereby established.

(1) Water Quality Treatment. Treat the calculated site runoff for the entire project site from the 90 percent annual non-exceedance storm, which is approximately equal to 1-inch of rain (i.e. on average, 90 percent of the storms in a given year produce 1-inch of rainfall or less). The treatment volume specified is based on capturing and treating the volume of stormwater that is the first to runoff in a storm and expected to contain the majority of pollutants. This volume of runoff is often referred to as the "first flush." The water quality treatment standard is required for all sites.

(a) Total Suspended Solids (TSS). The methods selected to treat the volume of water calculated for the Water Quality Treatment performance standard shall be designed on a site-specific basis to achieve either a minimum of 80 percent removal of TSS, as compared with uncontrolled runoff, or a discharge concentration of TSS that does not exceed 80 milligrams per liter (mg/l). This performance standard is based on TSS as a surrogate for other pollutants normally found in stormwater runoff. Control of TSS to meet this standard is expected to achieve control of other pollutants to an acceptable level that protects water quality.

(2) Channel Protection. Maintain the post-development project site runoff volume and peak flow rate at or below pre-development levels for all storms up to the 2-year, 24-hour event. At a minimum, pre-development is defined as the last land use prior to the planned new development or redevelopment. The channel protection standard is required for stormwater discharges to surface waters or the MS4.

(a) Extended Detention. Detain the portion of the channel protection volume unable to be retained onsite for a minimum of 24-hours with a maximum release rate no greater than the existing 2-year peak discharge, and a drawdown time no greater than 72 hours. A waiver from the Local Government must be granted to use this alternative approach (refer to Section 8.03).

(3) Flood Control. Control the volume of site runoff from the flood control rainfall event with a maximum allowable release rate to reduce the potential for property damage from overbank flooding and preserve existing floodplains. The flood control event and maximum allowable release rate shall be determined by the **Local Government**. The flood control standard is required for all sites.

(a) Overflow Routes. Acceptable overflow routes for the 100-year flood shall be identified for the site and for downstream areas between the site and the nearest acceptable floodway or outlet. Stormwater conveyance systems are usually designed to handle flows generated by the 10-year storm. When larger storms generate higher flows, the conveyance system is expected to surcharge resulting in stormwater accumulating on the surface of the ground. Gravity will cause such stormwater to flow overland to lower elevations. By carefully managing the shape of the land surface such overland stormwater flow can be directed to locations that will not cause property damage. Adequate emergency overland flow-ways will direct stormwater flows generated by the 100-year storm to avoid damage to structures and facilities.

(4) Site-Specific Requirements.

(a) Pretreatment. Pretreatment of site runoff is required on a site specific basis prior to discharging to certain stormwater BMPs. Pretreatment provides for the removal of fine sediment, trash and debris, and preserves the longevity and function of the BMP.

(b) Hot Spots and Groundwater Contamination. Some land use activities have a potentially greater risk of polluted runoff than others. Project sites with these types of activities are referred to as “hot spots” and include used such as gas stations, commercial vehicle maintenance and repair, auto recyclers, recycling centers, and scrap yards. Hot spots also include areas with the potential for contaminating public water supply intakes. Pretreatment of stormwater runoff to address pollutants associated with hot spots is required for the site. Stormwater management strategies and BMPs that reduce the potential to mobilize existing soil and groundwater contaminants, or that capture and treat stormwater runoff and/or accidental spills to protect groundwater or nearby surface waters are required.

(c) Coldwater Streams. Stormwater management strategies and BMPs that minimize thermal impacts from site runoff and maximize groundwater recharge are required for sites with a surface water discharge to a coldwater stream as determined by the Michigan Department of Natural Resources.

## Sec. 8.02 Design Standards

Stormwater BMPs shall be designed to manage stormwater flow within the available capacity of the downstream conveyance system as determined by the **Local Government**.

In addition, stormwater BMPs shall be designed to meet Performance Standards as described in Section 8.01. Stormwater system design shall be in accordance with the latest version the "Stormwater Standards" manual published by the **Local Government**.

## Sec. 8.03 Alternative Approach for Channel Protection

In many cases, infiltration will likely be used as the primary means of retention. It is not, however, the sole means of providing onsite retention, and the developer must include consideration of stormwater reuse, interception, evapo-transpiration, and other vegetative (non-structural) BMPs at the project site. Site constraints that limit the use of infiltration may include:

(1) Poorly draining soils (<0.24 inches per hour; typically hydrologic soil groups C and D).

(2) Bedrock.

(3) High groundwater, or the potential of mounded groundwater to impair other uses.

(4) Wellhead protection areas.

(5) Stormwater hot spots.

(6) Part 201 and Part 213 sites, and areas of soil or groundwater contamination.

The **Local Government** may grant a waiver of the on-site retention criteria for channel protection described in Section 8.01(2), and allow an alternative approach to meet the channel protect performance standard if the developer demonstrates that site constraints preclude sufficient retention onsite. If a waiver is granted, the developer must meet the extended detention criteria in Section 8.01(2)(a) for channel protection.

## Sec. 8.04 Off-site Mitigation and Payment-in-Lieu Programs for Redevelopment Projects

The water quality treatment and channel protection performance standards focus on maintaining or restoring stable hydrology. However, potential physical constraints may limit the ability to fully meet the post-construction requirement at

the project site. When physical constraints limit the feasibility of maintaining or restoring hydrology, offsite mitigation and/or payment-in-lieu may be approved by the **Local Government.**

Off-site Mitigation refers to BMPs implemented at a location different from the original project site.

Payment-in-Lieu refers to the developer paying a fee to the **Local Government** that is applied to a public stormwater management project. The stormwater management project may be either a new BMP or a retrofit to an existing BMP and developed in accordance with the “Stormwater Standards” manual.

The location for off-site mitigation and payment-in-lieu projects shall be within the same watershed and sewershed as the original project. The watershed is the area represented by the State of Michigan, DEQ, 10-digit Hydrologic Unit Code. The sewershed is the area where stormwater is conveyed by an MS4 to a common outfall or point of discharge.

The determination to approve off-site mitigation or payment-in-lieu will be based on multiple criteria and not solely on the difficulty or cost of implementing BMPs on site. Conditions under which the option to move off site would become available may include:

(1) Limited size of the lot outside of the building footprint to create the necessary infiltration capacity even with amended soils.

(2) Soil instability as documented by a thorough geotechnical analysis.

(3) A site use that is inconsistent with capture and reuse of stormwater.

(4) Too much shade or other physical conditions that preclude adequate use of plants.

(5) The potential water quality impact from the original project site and the benefits realized at the offsite location.

The **Local Government** may approve off-site mitigation or payment-in-lieu if the developer demonstrates that site constraints preclude sufficient treatment and restoration of hydrology onsite. At a minimum, the **Local Government** requires:

(1) Offset ratio. The offset ratio for the amount of stormwater not managed onsite in relation to the amount of stormwater required to be mitigated at antoher site, or for which in-lieu payments will be made is as follows:

(a) First Tier: Manage a minimum of 0.4 inches of stormwater runoff onsite, and provide a 1 to 1.5 offset ratio for the remaining amount of stormwater managed offsite.

(b) Second Tier: If it completely infeasible to manage the minimum onsite, provide a 1 to 2 offset ratio for the amount of stormwater managed offsite.

(2) Schedule. Offsite mitigation and payment-in-lieu projects shall be completed within 24 months after the start of the original site construction.

(3) Assurances. Offset and in-lieu projects shall be preserved and maintained in perpetuity through the procedures and tracking system administered by the **Local Government**.

## Sec. 8.05 Resolution to Implement Performance and Design Standards

The **[legislative body]** of the **Local Government** may adopt a resolution establishing more detailed design and performance standards for stormwater management facilities, consistent with the terms of this ordinance, and in order to further implement its goals and purposes.

## Article IX – Other Matters

### Sec. 9.01 Interpretation

Words and phrases in this ordinance shall be construed according to their common and accepted meanings, except that words and phrases defined in Section 1.05 shall be construed according to the respective definitions given in that section. Technical words and technical phrases that are not defined in this ordinance but which have acquired particular meanings in law or in technical usage shall be construed according to such meanings.

### Sec. 9.02 Catch-Line Headings

The catch-line headings of the articles and sections of this ordinance are intended for convenience only, and shall not be construed as affecting the meaning or interpretation of the text of the articles or sections to which they may refer.

### Sec. 9.03 Severability

The provisions of this ordinance are hereby declared to be severable, and if any part or provision of this ordinance should be declared invalid or unenforceable by any court of competent jurisdiction, such invalidity or unenforceability shall not affect any other part or provision of the ordinance.

### Sec. 9.04 Other Ordinances

This ordinance shall be in addition to other ordinances of the **Local Government**, and shall not be deemed to repeal or replace other ordinances or parts thereof except to the extent that such repeal is specifically provided for in this Article.

### Sec. 9.05 Effective Date

This ordinance shall become effective _____, following its publication or following the publication of a summary of its provisions in a local newspaper of general circulation.

### Sec. 9.06 Repeal [if applicable]

Ordinance No. ___, titled _____, is hereby repealed, as of the effective date of this ordinance.

This ordinance was adopted _____, by the **[Township Board, City Council or City Commission, Village Council]** and made effective _____.

_____

**Local Government Clerk**

# Stormwater Standards

## Procedures & Design Criteria for Stormwater Management

Logo or Photo

**CASCADE CHARTER TOWNSHIP of MICHIGAN**
**[address]< > County**
**[address]**

**Version 1**
**[Month] 2016**

DRAFT

## Prepared By:

**Fishbeck, Thompson, Carr & Huber, Inc.**
1515 Arboretum Drive, SE
Grand Rapids, MI 49546
616.575.3824
www.ftch.com
Project No. G150800

## In Collaboration With:

**Grand Valley Metropolitan Council (GVMC)**
678 Front Ave NW, Suite 200
Grand Rapids, Michigan 49504
(616) 776 -3876
www.gvmc.org

# Table of Contents


PART I – GENERAL PROVISIONS ..... 1

I. Purpose ..... 1
- A. Compliance with State and Federal Stormwater Mandates ..... 1
- B. Preferred Stormwater Management Strategies ..... 2

II. Authority ..... 6
- A. State Law and Code of City Ordinances ..... 6
- B. Provisions for Requirements in Addition to Minimum Standards ..... 6

III. Applicability ..... 6
- A. Review Required ..... 6
- B. Exemptions ..... 6
- C. Redevelopment ..... 6

IV. Severability Clause ..... 7

V. Fees ..... 7

PART II – PROCEDURES FOR PLAN SUBMISSION AND APPROVAL ..... 8

I. Submission and Approval ..... 8
- A. Submission ..... 8
- B. Staged Development ..... 8
- C. Submission of Construction Record Drawings (“As-builts”) ..... 8

II. Stormwater Drainage Requirements ..... 9
- A. Site Plan ..... 9
- B. Regional Stormwater Management Facility and Off-site Mitigation ..... 9
- C. Restrictive Covenants ..... 10
- D. Maintenance Plan and Agreement ..... 13

PART III – STORMWATER MANAGEMENT REQUIREMENTS ..... 14

I. SUMMARY ..... 14

II. DESIGN PROCESS ..... 16
- A. Identify Sensitive Areas ..... 16
- B. Minimize Stormwater Runoff ..... 17
- C. Determine Standards ..... 17
- D. Confirm an Adequate Outlet ..... 17
- E. Select Best Management Practices (BMPs) ..... 17

III. STANDARDS ..... 17
- A. Water Quality ..... 17
- B. Channel Protection ..... 18
- C. Flood Control ..... 20
- D. Pretreatment ..... 21
- E. Hot Spots ..... 22
- F. Coldwater Streams ..... 23
- G. Watershed Policy Statements ..... 23

PART IV – STORMWATER DESIGN CRITERA ..... 26

I. SOILS INVESTIGATION ..... 26

# Table of Contents

A. Qualifications ..... 26
B. Background Evaluation ..... 26
C. Test Pit/Soil Boring Requirements ..... 26
D. Highest Known Groundwater Elevation ..... 27
E. Field Permeability Testing ..... 27
F. Design Infiltration Rates ..... 29
G. Minimum Allowable Infiltration Rate ..... 30

II. CALCULATION METHODOLOGY ..... 32
A. Calculating Runoff ..... 32
B. Rainfall ..... 38
C. Calculating Storage Volumes and Release Rates ..... 39
D. GVMC Stormwater Calculator ..... 44

## List of Tables

Table 1 – Minimum Required Stormwater Standards ..... 15
Table 2 – Stormwater Hot Spots ..... 23
Table 3 – Stormwater BMP Matrix ..... 25
Table 4 – Minimum Number of Soil Tests Required ..... 26
Table 5 – Design Infiltration Rates by USDA Soil Texture Class ..... 30
Table 6 – Rational Method Runoff Coefficients (5 to 10-year rainfall frequencies) ..... 32
Table 7 – Surface Retardants Coefficients ..... 33
Table 8 – Curve Numbers (CNs) from TR-55 ..... 35
Table 9 – Runoff Coefficients for Small Storm Hydrology Method ..... 37
Table 10 – Rainfall Amounts (inches) ..... 38
Table 11 – Rational Method Runoff Coefficients (10- to 100-year rainfall frequencies) ..... 41

## List of Figures

Figure 1 – USDA Soil Textural Triangle ..... 31
Figure 2 – Extended Detention Hydrograph ..... 40

# Table of Contents

## List of Appendices

**Appendix 1 Application and Checklists**

Site Plan Review Application
Stormwater Worksheet
Site Plan Review Checklist
Submittal Checklist

**Appendix 2 BMP Sheets**

Non-Structural Best Management Practices
Minimize Soil Compaction and Total Disturbed Area
Protect Natural Flow Pathways
Protect Sensitive Areas (including Riparian Buffers)
Native Revegetation
Stormwater Disconnection

Structural Best Management Practices
Storm Sewer
Culvert or Bridge
Open Channel
Detention Basins
Retention Basins
Infiltration Practices
Bioretention/Rain Garden
Constructed Filter
Planter Box
Pervious Pavement
Capture Reuse
Vegetation Roof
Water Quality Device
Sediment Forebay
Spill Containment Cell
Water Quality Swale
Vegetated Swale
Vegetated Filter Strip
Level Spreader

**Appendix 3 Watershed Policy Statements**

Listing of watersheds developed from the Storm Water Management Plan

# Table of Contents

## List of Abbreviations

### Acronyms

| | |
|---|---|
| AASHTO | American Association of State Highway and Transportation Officials |
| ASTM | American Society for Testing and Materials |
| BMP | Best Management Practice |
| CN | Curve Number |
| EPA | United States Environmental Protection Agency |
| GIS | Geographic Information System |
| GVMC | Grand Valley Metropolitan Council |
| HSG | Hydrologic Soil Group |
| LID | Low Impact Development |
| MDOT | Michigan Department of Transportation |
| MS4 | Municipal Separate Storm Sewer |
| NAVD 88 | North American Vertical Datum of 1988 |
| NOAA | National Oceanic and Atmospheric Administration |
| NPDES | National Pollutant Discharge Elimination System |
| NRCS | Natural Resource Conservation Service |
| O&M | Operation and Maintenance |
| SEMCOG | Southeast Michigan Council of Governments |
| SESC | Soil Erosion and Sedimentation Control |
| TR-55 | Technical Release 55 |
| TSS | Total Suspended Solids |
| USDA | United States Department of Agriculture |

## List of Units

| | |
|---|---|
| ft ( ’ ) | feet |
| in ( ” ) | inches |
| ac | acre |
| cfs | cubic feet per second |
| cft | cubic feet |
| hr | hour |
| H:V | horizontal to vertical |
| in/hr | inches per hour |
| mg/L | milligrams per liter |
| min | minute |

# Table of Contents

## Definitions

| | |
|---|---|
| Municipality | Municipality of Cascade Charter Township, Kent County, State of Michigan |
| Design Engineer | The civil engineer who is a professional engineer licensed under Article 20 of the Occupational Code (Act 299, PA 1980) retained by the Proprietor to design the site plan for a plat or any other land development, including stormwater management and drainage |
| Proprietor | Any person, landowner, firm, association, partnership, corporation, or combination of any of them that holds an ownership interest in land, and who submits a site plan for drainage (may also be referred to as the Developer) |
| Register of Deeds | The Kent County Register of Deeds |
| Review Engineer | The engineer appointed by the Municipality to review the stormwater management and drainage elements of a plat or any other land development |

# I. PURPOSE

The Municipality of Cascade Charter Township (Municipality) maintains a storm sewer infrastructure that serves a majority of its jurisdictional area. As the Municipality continues to grow and redevelop, stormwater drainage systems will be necessary to provide for public safety, convenience, and the protection of property. The future of the Municipality's surface water and groundwater resources also depends to a great extent on the management of storm water runoff. The Municipality takes an active role in protecting these resources through effective stormwater management planning and practices.

It is the purpose of this design criteria manual to establish a uniform set of minimum stormwater standards to meet the following objectives in accordance with the Stormwater Ordinance (reference):

1. Reduce artificially induced flood damage.
2. Minimize increased storm water runoff rates and volumes from identified new land development.
3. Minimize the deterioration of existing watercourses, culverts and bridges, and other structures.
4. Encourage water recharge into the ground where geologically favorable conditions exist.
5. Prevent an increase in non-point source pollution.
6. Maintain the integrity of stream channels for their biological functions, as well as for drainage and other purposes.
7. Minimize the impact of development upon stream bank and streambed stability.
8. Reduce erosion from development or construction projects.
9. Preserve and protect water supply facilities and water resources by means of controlling increased flood discharges, stream erosion, and runoff pollution.
10. Reduce storm water runoff rates and volumes, soil erosion, and non-point source pollution, wherever practicable, from lands that were developed without storm water management controls meeting the purposes of these standards.
11. Reduce the adverse impact of changing land use on water bodies.

## A. Compliance with State and Federal Stormwater Mandates

The National Pollutant Discharge Elimination System (NPDES) Municipal Separate Storm Sewer System (MS4) General Permit requires the Municipality to adopt an ordinance or other regulatory mechanism to address post-construction stormwater runoff from private, commercial, and public development and redevelopment projects, including preventing or minimizing water quality impacts. The Municipality is required to obtain a General Permit under Section 402 of the Federal Clean Water Act, as amended, and under Water Resources Protection (Part 31, Act 451, PA 1994) of the Michigan Natural Resource and Environmental Protection Act (NREPA), as amended. The MS4 General Permit requires among other things:

1. A water quality treatment performance standard to ensure specified reductions in total suspended solids.
2. A channel protection performance standard to address resource impairments resulting from increases in bankfull flow rates and volumes.
3. A review procedure for the evaluation of infiltration BMPs to meet water quality and channel protection standards in areas of soil or groundwater contamination.
4. Measures to address associated pollutants in identified "hot spots," which include land uses with the potential for significant pollutant loading that could result in the contamination of surface water or groundwater, including public water supplies.
5. A long-term operation and maintenance (O&M) plan and agreement allowing for the inspection of the BMP, including a mechanism for tracking the transfer of O&M responsibility and compliance.

The minimum standards in this manual adhere to the Post-Construction Storm Water Runoff Program requirements for new and redevelopments set forth in the 2013 Michigan Department of Environmental Quality (MDEQ) *Permit Application for Discharge of Storm Water to Surface Waters of the State from a Municipal Separate Storm Sewer System* under the NPDES program (Rev 10/2014).

## B. Preferred Stormwater Management Strategies

It is the position of the Municipality to promote the following stormwater management strategies:

### Low Impact Development

The *Low Impact Development Manual for Michigan* (SEMCOG, 2008) was used to develop this manual. Further documentation of the impacts of development on land and water resources and the importance of stormwater management can be found in Chapter 2 of the *Low Impact Development Manual for Michigan* (SEMCOG, 2008).

A Low Impact Development (LID) approach provides multiple benefits in terms of preservation of natural areas and greenspace, meeting multiple stormwater objectives (listed on the previous page), and doing so in a manner that often leads to increased property value and offers a potential cost savings.[1] Proprietors can reduce the size of storage facilities and stormwater infrastructure by incorporating LID principles into a site design up front. This manual provides rules for the stormwater "credits" allowed through the use of specific LID best management practices (BMPs).

### Alternative Approach for Channel Protection

An alternative approach using extended detention was preferred by the Municipality over payment-in-lieu programs when the full channel protection volume cannot be retained onsite. These standards provide specific criteria for determining the conditions under which the alternative approach will be approved for use. A flow chart is outlining this process is shown on the following page. Payment-in-lieu programs are allowed in the MS4 General Permit, but have not been adopted by the Municipality.

### Regional Stormwater Management (Off-site Mitigation)

The management of stormwater on a regional basis is encouraged, particularly where site constraints preclude effective onsite treatment of stormwater. Regional stormwater management allows for the use of superior performing BMPs that require more space, and provides more flexibility for BMPs to be sited strategically to address a known water quality issue.[2]

Offsite mitigation for channel protection is allowed in the MS4 General Permit where physical constraints of individual sites may preclude effective onsite treatment. Offsite mitigation may be provided in a regional stormwater management facility, but in all cases must be provided downstream of the site and be protective of the same watercourse. Specific requirements are provided in Part 2 section "Regional Stormwater Management Facility and Off-site Mitigation."

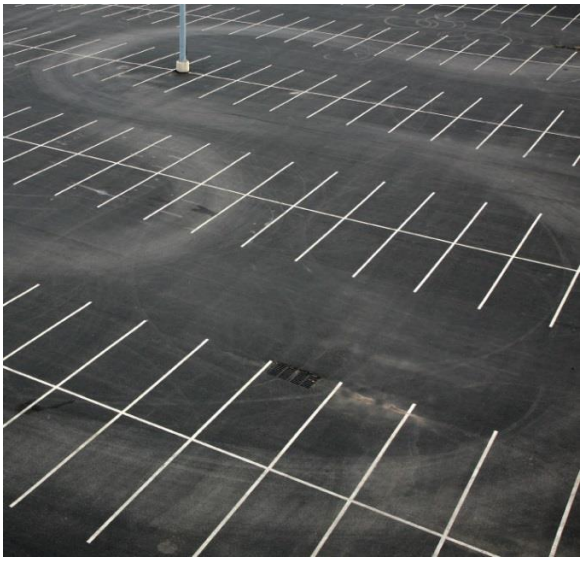
---

[1] United States Environmental Protection Agency (December 2007). *Reducing Stormwater Costs through Low Impact Development (LID) Strategies and Practices*, EPA 841-F-07-006.

[2] Maupin, Miranda, and Wagner, Theresa (2003). *Regional Facility vs. On-site Development Regulations: Increasing Flexibility and Effectiveness in Development Regulation Implementation*, City of Seattle, Seattle, Washington.

[insert GVMC Channel Protection flow chart]

## Stormwater Management
## Preferred Approach Incorporates Low Impact Development (LID)



Traditional Parking Lot Design

Preferred: LID Parking Lot Design

Traditional "Big Box" Site Layout

Preferred: Equivalent LID Site Layout

# II. AUTHORITY

## A. State Law and Code of City Ordinances

Under state law (MCL 117.3(k)), the Municipality Commission has the power to enact, amend and repeal all ordinances that may be necessary or proper for carrying out the powers conferred and the duties imposed upon the Municipality by the charter and by the laws of the State.

The Code of Municipality Ordinances, Chapter_____ and Chapter _____, establish the site plan review procedure under the Land Division Act (MCL 560.101 et seq.); Condominium Act (MCL 559.101 et seq.) and local regulation of condominiums (MCL 559.241); the Mobile Home Commission Act (MCL 125.2301 et seq.); and the Michigan Zoning Enabling Act (MCL 125.3101 et seq.). Chapter _____ (Stormwater Ordinance) provides for the regulation and control of stormwater runoff and establishes the stormwater permit process. These published Stormwater Standards are incorporated by reference into the Stormwater Ordinance.

## B. Provisions for Requirements in Addition to Minimum Standards

These rules provide minimum standards to be complied with by Developers and in no way limit the authority of the Municipality in which the development is situated to adopt or publish and enforce higher standards as a condition of approval of the final plat or site plan.

The Municipality reserves the right to determine site-specific requirements other than those herein, based upon review of the plans. Any deviations from these standards shall be subject to approval by the Municipality.

# III. APPLICABILITY

## A. Review Required

These standards apply to private and public development projects.

The following types of developments shall be subject to review under these standards:

1. Sites that disturb at least one or more acres, including projects less than an acre that are part of a larger common plan of development or sale, and discharge directly or indirectly into a regulated Municipality MS4.
2. Other developments requiring site plan review (may be less than 1 acre) per Section [_____] of the Municipality ordinance.

## B. Exemptions

The following development activities are exempt from these standards:

1. Construction of individual single and two-family residential structures.
2. Additions or modifications to existing single and two-family residential structures.
3. Construction, development or redevelopment associated with aeronautical facilities at the Gerald R. Ford International Airport.

## C. Redevelopment

Redevelopment and additions requiring site plan review shall comply with the current standards for the redeveloped or newly constructed portion of the site.

The Municipality reserves the right to require that the entire site be brought up to the current standards.

# IV. SEVERABILITY CLAUSE

If any part of these rules is found to be invalid, such invalidity shall not affect the remaining portions of the rules which can be given effect without the invalid portion, and to this end the rules are declared to be severable.

# V. FEES

The fees for reviewing a plat or site development under the provisions of the Stormwater Standards are set forth in the Schedule of Fees.

**Schedule of Fees**

| **Review** | |
|---|---|
| Pre-application Meeting/Requested Site Evaluation: | $75 up to 2 hours<br>$45 each additional hour |
| Submittal Fee -Transportation Facilities:<br>(streets, highways, roadways) | $175 up to 1/2 mile<br>$50 each additional 1/2 mile or fraction |
| Submittal Fee – Subdivisions (plats, condos, mobile home parks, apts), Industrial/Commercial, Service | $175 up to 1 acre<br>$50 each additional acre or fraction |
| Submittal Fee – Recreational Facilities:<br>(parks, campgrounds) | $175 up to 1 acre<br>$35 each additional acre or fraction |
| Resubmittal Fee: | 25% of original fee |
| Engineering Review Fee: | Actual cost for review* |
| Deposit for Engineering Review (if required): | [$1,000] [as determined by Municipality at submittal] |
| Inspection Fee | $75 per inspection |
| Submittal fees for administrative review and the deposit for engineering review shall be paid at the time plan submittal is made to the Municipality. Inspection fee shall be paid prior to issuance of a grading (SESC) permit and construction.<br>*Engineering services will be based on current hourly billing rates for actual time and reimbursable expenses. Charges are to be paid by the Proprietor within thirty (30) days of invoice by the Municipality. Payment of all fees is prerequisite to approval. Failure to make timely payment constitutes a violation, permits will be revoked, and the deposit will be forfeited. Deposits will be returned to Proprietors of good standing upon receipt of construction record drawings (as-builts). No interest will be paid on deposit funds. | |

# I. SUBMISSION AND APPROVAL

## A. Submission

The following submittals are required for Municipality review and approval:

**Site Plan Review**

1. Application for Stormwater Review in **Appendix 1**.
2. Stormwater Worksheet included in **Appendix 1** and calculations prepared by a professional engineer licensed in the State of Michigan.
3. Drawings. Two (2) prints and one (1) electronic file (.pdf) of the preliminary plat, site plan, or construction drawings containing the information on the Site Plan Review Checklist in **Appendix 1**.
   a. Preliminary plat: Prepared by a professional engineer or surveyor licensed in the State of Michigan.
   b. Construction drawings: Sealed by a professional engineer licensed in the State of Michigan.
4. Applicable fee (refer to Part 1 section "Fees").
5. Other required documentation on the Submittal Checklist included in **Appendix 1**.

## B. Staged Development

Should the Proprietor plan to develop a given area but wish to begin with only a portion of the total area, the original preliminary plat or site plan shall include the proposed general layout for the entire area. The first phase of the development shall be clearly superimposed upon the overall plat or site plan in order to illustrate clearly the method of development that the Proprietor intends to follow. Each subsequent plat or site plan shall follow the same procedure until the entire area controlled by the Proprietor is developed.

Final acceptance by the Municipality of only one portion or phase of a development does not ensure final acceptance of any subsequent phases or the overall general plat or site plan for the entire area; nor does it mandate that the overall general plat or site plan be followed as originally proposed, if deviations or modifications acceptable to the Municipality are proposed.

## C. Submission of Construction Record Drawings ("As-builts")

One (1) paper copy and one (1) electronic file meeting GIS digital submission requirements (refer to Site Plan Review Checklist in **Appendix 1**) shall be submitted to the Municipality with a letter of certification by the Design Engineer for all developments reviewed under these rules. Construction record drawings must be submitted prior to release of any review deposit.

At a minimum, construction record drawings shall contain the information listed on the Site Plan Review Checklist in **Appendix 1**. The Municipality shall have thirty (30) days to review construction record drawings.

# II. STORMWATER DRAINAGE REQUIREMENTS

## A. Site Plan

### Drainage Patterns

Proposed drainage for the development shall conform to existing watershed boundaries, natural drainage patterns within the site, or any established county drainage districts.

### Staged Development

Each phase shall be self-sufficient from the standpoint of drainage.

### Location of Stormwater Facilities

Stormwater facilities for private drainage systems with multiple land ownership shall be located on dedicated outlots, within road rights-of-way, or have separate easements granted to the appropriate governing body.

### Stormwater Discharge

The rate, volume, concentration, or constitution of stormwater discharged from a site shall not create adverse impacts to downstream property owners and watercourses.

1. Post-development discharge shall not exceed the capacity of the existing infrastructure.
2. Post-development discharge shall not cause adverse impact to offsite property due to concentrated runoff or ponded water of greater height, area, and duration.
3. Discharge shall not cause downstream erosion.
4. For a downstream drainage system that is inadequate to handle the proposed design discharge from the site development, it is the Proprietor's responsibility to:
    a. Stabilize or upsize the existing conveyance system, or establish a county drain to provide the needed design level of flood protection.
    b. Obtain flooding easements for measurable increases in water levels determined to cause an adverse impact.
    c. Provide additional onsite stormwater controls.
5. Additional impacts (such as pollutant loads, increased water temperature, groundwater mounding) may also need to be addressed as specified in these rules.

It is the Proprietor's obligation to meet this standard. Should a stormwater system, as built, fail to comply with the rules herein, it is the Proprietor's responsibility to have constructed at their expense, any necessary additional and/or alternative stormwater management facilities. Such additional facilities will be subject to the Municipality CIPALITY's review and approval.

## B. Regional Stormwater Management Facility and Off-site Mitigation

Regional stormwater management facilities are designed to serve multiple developments or parcels and can provide water quality treatment, channel protection and flood control. Regional facilities shall be sited and designed to serve an identified area defined as a regional stormwater management district.

The Municipality may pursue projects to construct facilities to serve a particular stormwater management district, or may approve facilities proposed to be constructed by individual Developers.

The regional facility should be constructed first. Written approval is required from the Municipality if construction is to be delayed.

When development or redevelopment occurs in a stormwater management district prior to construction of the regional facility, temporary onsite measures must be installed and financial surety provided to ensure that the regional facility will be constructed within 24 months of the original project site construction.

A regional facility serving two or more individual parcels may be private or public, but must have associated easements granted to allow for operation and maintenance in perpetuity. Refer to Part 3 section "Watershed Policy Statements" for the identification of regional stormwater management districts, including any specific design and financial requirements.

### Off-site Mitigation

Sites located within a regional stormwater management district could be approved for off-site mitigation to meet the channel protection standard. The MS4 General Permit requires that offsite mitigation is provided within the same jurisdiction and watershed/sewershed. The Municipality also requires that the offsite mitigation is protective of the same watercourse or waterbody to which the site discharges. To be approved for offsite mitigation, the developer must first demonstrate that site constraints preclude sufficient treatment and restoration of hydrology onsite. The determination to approve off-site mitigation or payment-in-lieu will be based on multiple criteria and not solely on the difficulty or cost of implementing BMPs on site. Conditions under which the option to move off site would become available may include:

1. Limited size of the lot outside of the building footprint to create the necessary infiltration capacity even with amended soils.
2. Soil instability as documented by a thorough geotechnical analysis.
3. A site use that is inconsistent with capture and reuse of stormwater.
4. Too much shade or other physical conditions that preclude adequate use of plants.
5. The potential water quality impact from the original project site and the benefits realized at the offsite location.

The size of the regional facility shall provide for a 2:1 (offsite:onsite) treatment ratio, or a 1.5:1 ratio if a minimum of 0.4 inch of stormwater is retained onsite, in accordance with MS4 General Permit requirements for channel protection if offsite mitigation is being provided.

## C. Restrictive Covenants

For plats and site condominiums, a copy of restrictive covenants or master deed language related to drainage shall be provided to the Municipality along with construction drawings for approval. Covenants and deeds shall be recorded prior to release of posted surety.

### Block Grading Plan

A block grading plan shall be incorporated in the restrictive covenants of the plat or master deed to ensure proper drainage of individual lots. In addition, the Proprietor shall provide a copy of the block grading plan to the Municipality for their permanent files. The block grading plan shall include the Lowest Allowable Floor Elevation and Lowest Allowable Opening Elevation for each lot, and include the "basement type" for each lot (e.g. walkout, daylight, or standard basement) as indicated by the topography of each site and according to the approved design plans. The block grading plan shall state:

> *The block grading plan shows the direction of flow for the surface drainage for all lots. It is the lot owner's responsibility to ensure that the final grading of the lot is in accordance with the block grading plan. During the final lot grading and landscaping, the owner shall take care to ensure that the installation of fences, planting, trees, and shrubs do not interfere with nor concentrate the flow of surface drainage. No changes will be made in the grading of any lot areas used for drainage which would later affect surface runoff drainage patterns without the*

*prior written consent of the Municipality of XYZ for all portions of the drainage system. Finish grading for home construction shall be completed in conformance with the master drainage plan for the development and in such a manner so as not to create the excessive ponding of stormwater on the sites within the development.*

### Minimum Floor and Opening Elevations

Minimum building floor and opening elevations shall be established to eliminate the potential of structural damage and flooding of building interiors. Minimum floor and opening elevations shall be incorporated in the restrictive covenants of the plat or master deed, including bench mark references. Lots not impacted by high groundwater or potential flooding from a 100-year storm event as determined by the Design Engineer shall be so noted as well. A certification by the Design Engineer that the minimum floor and opening elevations do not pose a risk of flooding for up to the 100-year storm shall be provided for each development or phase of development prior to approval. Documentation to support allowable minimum floor and opening elevations shall be submitted with construction drawings.

<u>Criteria for determining the Lowest Allowable Floor Elevation</u>

1. Proximity to detention/retention facilities due to groundwater mounding (which may not be apparent until after construction).
2. Groundwater elevations from monitor wells, test pits and/or soil borings including any soil mottling noted in the soil profile.
3. Regional and cyclical groundwater levels available online.
4. Hydrogeologic studies and groundwater modeling.

<u>Criteria for determining the Lowest Allowable Opening Elevation</u>

1. Proximity to open drain or natural watercourse, pond or wetland and the 100-year flood elevation.
2. Proximity to detention/retention basin and design high water level.
3. Proximity to drainage swales and/or flood routes designed to convey the 100-year storm event runoff including overflows from detention/retention basins.
4. Proximity to an enclosed storm sewer system with open ends or catch basins that could surcharge during the 100-year storm event.
5. Type of building foundation (e.g. walkout, daylight, or standard basement) as dictated by the topography of each site.

It is the responsibility of the Proprietor to provide a sufficient number of bench marks (NAVD 88 datum) to use as a reference for establishment of minimum floor and opening elevations for all lots. The restrictive covenant shall state:

*The lowest allowable floor elevations are set at 1-foot or more above the highest known ground water elevation. The lowest allowable floor and/or opening elevations are set 1-foot or more above the 100-year floodplain or design hydraulic grade line of the storm system. These elevations are set to reduce the risk of structural damage and the flooding of building interiors. A waiver from the set elevations may be granted by the Municipality of XYZ following receipt of a certification for a professional engineer licensed in the State of Michigan demonstrating that the proposed elevation does not pose a risk of flooding. Minimum building floor and opening elevations and bench mark locations and elevations are indicated on the Block Grading Plan.*

### Footing Drains and Sump Pumps

Provide direction in the restrictive covenants of the plat or condominium master deed for footing drain and sump pump outlets. If proposed to be directed to the storm sewer system, the restrictive covenant shall state:

*Water from such sources as eave troughs and footing drains shall be directed to footing drain laterals provided for the lots. Water from footing drains shall be discharged to the lateral via a sump pump with check valve system, or a gravity system with a double flap gate valve for backflow prevention. If no lateral is provided, the lot owner shall discharge said water in such a manner as to not impact neighboring land or public streets.*

*Floor drains, laundry facilities or other similar features shall not be connected to a footing drain or sump pump system discharging to footing laterals and the storm sewer system. Laundry facilities and sewage lift pumps must discharge into the sanitary sewage disposal system.*

### Easements for Side Yard and Surface Drainage

Private easements for enclosed yard drains and surface drainage are for the benefit of upland lots within the development or upland sites that currently drain across the proposed plat or site. Language shall be included within the restrictive covenants of the plat or condominium master deed that clearly notifies property owners of the location and purpose of private easements for side yard and surface drainage, as well as restrictions on use or modification of these areas. A separate, recordable easement form is not required. The restrictive covenant shall state:

*Private easements for side yard and surface drainage are for the benefit of upland lots within the subdivision and any improper construction, development, or grading that occurs within these easements will interfere with the drainage rights of those upland lots. Private easements for surface drainage are for the continuous passage of surface water and each lot owner will be responsible for maintaining the surface drainage system across their property. No construction is permitted within a private easement for side yard and surface drainage. This includes fences, swimming pools, sheds, garages, patios, decks, or any other permanent structure or landscaping features. No dumping of grass clippings, leaves, brush or other refuse is allowed within a drainage easement. These items obstruct drainage, restrict flow and plug culverts. This can lead to higher maintenance costs and cause flooding situations.*

### Soil Erosion and Sedimentation Control Permits

It is the responsibility of the Proprietor to contact the Kent County Road Commission to determine which lots if any need Soil Erosion and Sedimentation Control Permits. The restrictive covenant shall state:

*Each individual lot owner will be responsible for the erosion control measures necessary on their lot to keep loose soil from their construction activities out of the street, catch basins, and off of adjacent property. If any sedimentation in the street, catch basins, or adjacent lots results from construction for a particular site, it is the responsibility of that lot owner to have this cleaned up. This applies to ALL lot owners.*

*A Soil Erosion and Sedimentation Control Permit must be obtained from the Kent County Road Commission prior to excavation for lots _____ through _____. All conditions set forth by permit shall be met throughout construction activity until permit is allowed to expire.*

### Responsibility for Maintenance of Open Water Bodies

The restrictive covenant shall state:

*Lot owners are responsible for the management and maintenance of open water bodies for aesthetics, aquatic habitat, recreation and water quality, including liability and costs.*

## D. Maintenance Plan and Agreement

A legally binding maintenance agreement between the Proprietor and the Municipality shall be required before approval is granted within the urbanized area. The maintenance agreement shall include a maintenance plan and schedule, and requires tracking of compliance. Contact the Municipality for necessary forms, documents and compliance process. A copy of the recorded maintenance agreement must be presented to the Municipality prior to construction drawing approval and release of any review deposit.

A maintenance agreement will also be required for site developments located outside of an urbanized area.

# I. SUMMARY

The following stormwater management requirements comply with the Municipality's NPDES MS4 General Permit and shall apply to all new and redevelopments in the Municipality of XYZ:

1. Protection. The design process shall begin by identifying environmentally sensitive areas located on the site and laying out the site to maximize protection of the sensitive areas.
2. Runoff Reduction. Non-structural BMPs are required for protection of environmental sensitive areas on the site, and may also be used to reduce the amount of stormwater runoff routed to a collection system.
3. Stormwater Management. Stormwater shall be managed onsite using minimum standards to protect both water resources and real property. Stormwater standards are summarized in **Table 1**.
4. Regional Stormwater Management Facilities. Regional stormwater management facilities are encouraged, particularly where site constraints preclude effective onsite treatment of stormwater. Regional facilities may be used to provide off-site mitigation to meet channel protection performance standards at a higher mitigation ratio.
5. Watershed Policy Statements. Specific stormwater management criteria (e.g. regional stormwater management districts, no-detention zones) have been determined beneficial for certain identified watersheds, and are required to be met in addition to these minimum standards, as identified in the Watershed Policy Statements.
6. BMP Design. BMPs must be designed to meet the minimum criteria provided. BMPs selected to meet the water quality treatment standard must also be shown to reduce total suspended solids (TSS) in stormwater runoff by at least 80% or to a concentration of no greater than 80 mg/L (refer to **Table 3**).
7. Groundwater. The highest known groundwater elevation and extent of mounding from infiltration BMPs shall be determined to ensure no adverse impacts internal and external to the development.
8. Soils. Soil borings are required for most structural BMPs to determine soil classification, depth to groundwater and the presence of other site constraints. Field permeability testing is not generally required, but may be conducted to allow the use of a higher infiltration rate for design, or may be required in certain cases to confirm field infiltration rates.
9. Restrictive Covenants. Plats and site condominium developments must incorporate specific drainage requirements for lot grading, minimum floor and opening elevations, footing drains, and private easements for side yard drainage.
10. Maintenance Agreement. A maintenance agreement between the Developer and the Municipality is required for private stormwater management systems in urbanized areas that discharge to an MS4.

**Table 1 – Minimum Required Stormwater Standards**

| Standard/Where Required | Criteria |
|---|---|
| **Water Quality**<br>"first flush"<br><br>All sites. | Treat the runoff generated from 1 inch of rain over the project site (i.e. the 90% annual nonexeedance storm) through BMPs designed to reduce post-development TSS loadings by 80%, or a achieve a discharge concentration not to exceed 80 mg/L.<br><br>Treatment may be provided through settling (permanent pool or extended detention), filtration or infiltration, absorption, or chemical/mechanical treatment. |
| **Channel Protection**<br>Surface water discharges | Retain onsite the increase between the pre-development and post-development runoff volume and rate for all storms up to and including the 2-year, 24-hour rainfall event; OR<br><br>Where site conditions preclude infiltration, an alternative approach may be allowed after all other onsite retention options are exhausted: Extended Detention of runoff from the 2-year, 24-hour storm for a period of 24 hours with a drawdown time no greater than 72 hours.<br><br>Channel Protection requirements for areas with a specific Watershed Policy Statement are identified in Appendix 3. |
| **Flood Control**<br>All sites; unless exception is allowed. | Collection and Conveyance: Design storm sewers and swales for the 10-year storm, and open channels for the 25-year storm.<br><br>Detention and Retention: Provide Retention or Detention for specified storm according to Flood Control Zone Figure 3 Flood Control Zone Map.<br><br>Zone 1:<br><br>Retention for the 100-year storm when the Field Permeability Test results average for the basin location equal or exceed 3-inches per hour and the highest known Groundwater Level is more than 3 feet below the proposed basin bottom.<br><br>Detention for the 100-year storm with a maximum release rate of 0.13 cfs/acre when the Field Permeability Test Results average for the basin location are less than 3-inches per hour or the highest known Groundwater Level is less than 4 feet below the proposed basin bottom.<br><br>Zone 2:<br><br>Detention for the 25-year storm with a maximum release rate of 0.13 cfs/acre.<br><br>Zone 3:<br><br>Flood Control is not required provided there is a suitable outlet for the 100-year storm runoff to the open water of the river that will not exceed the runoff rate from the proposed development. It is the applicant's responsibility to prove outlet capacity adequacy. Flood Control requirements shall be met if the adequacy of the outlet cannot be confirmed by the applicant. |

**Table 1 – Minimum Required Stormwater Standards**

| Standard/Where Required | Criteria |
|---|---|
| | Overflow Routes for Extreme Flood: Identify overflow routes and the extent of high water levels for the 100-year flood to ensure no adverse impacts offsite or internal to the site. Where overland flow routes do not exist, [storm sewers shall be upsized to a 100-year design, and] detention/retention basins shall be increased in size to store a total of 2 times the flood control volume.<br><br>Adequate Outlet: The design maximum release rate, volume or concentration of stormwater discharged from a site shall not exceed the capacity of the downstream stormwater infrastructure or cause impairment to the offsite receiving area. |
| **Pretreatment**<br>Refer to **Table 3**. | Forebay volume equal to 15% of water quality volume (required for detention/retention basins); Vegetated Filter Strip; Vegetated Swale; Water Quality Device. |
| **Hotspot**<br>Industrial and commercial land uses in **Table 2**; Part 201 and Part 213 sites. | Isolate transfer and storage areas to minimize need for treatment.<br><br>Pretreatment BMP with impermeable barrier above groundwater and provisions for the capture of oil, grease, and sediments. Minimum spill containment volume: 400 gallons. |
| **Coldwater Streams** | Incorporate strategies to promote groundwater recharge and/or reduce temperature of surface discharge water. |

# II. DESIGN PROCESS

The stormwater site design process is summarized in the steps below. This process is intended to minimize negative impacts from development sites that could be avoided through proper planning.

## A. Identify Sensitive Areas

Identify existing environmentally sensitive areas on the site plan that may require special consideration or pose a challenge for stormwater management. For the purpose of these rules, sensitive areas include:

1. Waterbodies (lakes and ponds)
2. Rivers and streams
3. Floodplains (and flood prone areas)
4. Riparian areas
5. Wetlands
6. Woodlands
7. Sand dunes
8. Natural drainageways
9. Soils and topography (erodible, steep)
10. Susceptible groundwater supplies
11. Threatened and endangered species habitat

Sensitive areas are determined on a site-specific basis through survey, delineation, aerial photographs, or maps. Sensitive areas must be shown on the site map or drawings. The total acreage of protected areas must also be indicated. The Developer must demonstrate a good faith effort to maximize protection of sensitive areas.

## B. Minimize Stormwater Runoff

Nonstructural BMPs are required to meet sensitive area protection requirements, and may be used to reduce the size of the collection and conveyance system and other stormwater controls necessary for the site.

## C. Determine Standards

Adequate stormwater runoff controls are required to meet pollutant removal goals, reduce channel erosion, prevent overbank flooding, and protect groundwater aquifers and coldwater streams. Minimum standards are given in **Table 1**. Identify any additional standards required in Stormwater Policy Statements.

## D. Confirm an Adequate Outlet

The design criteria specified in this manual is generally protective of the receiving waterbody. However, the Developer must always demonstrate an adequate outlet exists downstream of the development to receive the design rate, volume, and concentration of the post-development site runoff. Discharge from the site, including discharge from emergency overflow spillways and pipes, must not cause adverse impact to downstream properties or infrastructure (refer to Part 2 section "Stormwater Discharge Requirements").

## E. Select Best Management Practices (BMPs)

Select appropriate stormwater BMPs to meet minimum required pollutant reduction, volume, and peak rate requirements. A list of common BMPs and their treatment ability is given in **Table 3**. The BMPs selected must be designed in accordance with the calculation methods and design criteria provided in **Appendix 2** of this manual. BMPs proposed for use, but not included in this manual will be evaluated on an individual basis.

# III. STANDARDS

## A. Water Quality

### Where Required

Treatment of the water quality volume is required for all sites to capture and treat the "first flush" of stormwater runoff that typically carries with it the highest concentration of pollutants.[3]

### Standard

Capture and treatment of the runoff from the 90% annual nonexceedance storm is required for the project site. This storm is approximately equivalent to 1 inch of rain (1.00 inch for Michigan Climatic Zone 8 per MDEQ memo "90 Percent Annual Nonexceedance Storms" dated March 24, 2006).

Treatment of the runoff volume from the 90% annual nonexceedeance storm with properly designed BMPs to reduce TSS loading by 80%, or achieve TSS discharge concentrations not to exceed 80 mg/L, is required by the MS4 General Permit.

*Note:* TSS is a surrogate for other pollutants normally found in stormwater runoff. Control of TSS to meet this requirement is expected to achieve control of other pollutants to an acceptable level that protects water quality.

Natural areas of the site left undisturbed and BMPs that provide water quality treatment need not be included in the calculations. This effectively results in the directly connected impervious areas and disturbed pervious areas of the site being used to calculate the water quality volume.

---

[3] Stenstrom, Michael K. and Kayhanian, Masoud (2005). *First Flush Phenomenon Characterization*. California Department of Transportation, Sacramento, California.

### Treatment BMPs

Selected BMPs must meet the 80% TSS reduction target either alone or in combination. Pollutant (TSS) removal efficiencies for BMPs are provided in **Table 3**. Water quality volume can be provided through one of the following methods:

1. Settling (Permanent Pool or Extended Detention)
2. Filtration
3. Infiltration
4. Absorption
5. Chemical/Mechanical Treatment

Permanent Pool. The volume of a permanent pool incorporated into a stormwater BMP and sized at 2.5 times the water quality volume.[4] This is the volume below the ordinary static water level (also known as dead storage).

Extended Detention. The storage volume provided by extended detention. Extended detention is defined as holding the stormwater runoff volume and releasing it gradually over a period of 24 hours with a drawdown time no greater than 72 hours.

Filtration. The volume of stormwater runoff routed through a BMP that provides filtration (i.e. an underdrained BMP). In the case of a vegetated filter strip or vegetated swale, the filtering area must meet minimum standards for slope, length, drainage area and vegetative cover.

Infiltration. The volume of stormwater runoff infiltrated into the ground through a stormwater BMP.

Absorption and Chemical/Mechanical Treatment. The volume of stormwater runoff routed through a proprietary water quality device.

## B. Channel Protection

### Where Required

Channel protection is required for surface water discharges.

### Standard

The post-development runoff rate and volume shall not exceed the pre-development rate and volume for all storms up to and including the 2-year, 24-hour storm. Onsite retention of the volume increase is required.

Retention can be provided through infiltration, or interception and evapotranspiration or reuse.

Pre-development is defined as the last land use prior to the planned new development or redevelopment.

### Alternative Approach

Where site constraints limit infiltration, an alternative approach may be allowed after all other onsite retention options are exhausted. A Stormwater Worksheet signed by the Design Engineer must be submitted for approval before the alternative approach can be used. Site constraints that limit the use of infiltration may include:

1. Poorly draining soils (<0.24 inches per hour; typically hydrologic soil groups C and D).
2. Bedrock.
3. High groundwater, or the potential of mounded groundwater to impair other uses.
4. Wellhead protection areas.
5. Stormwater hot spots.
6. Part 201 and Part 213 sites, and areas of soil or groundwater contamination.

---

[4] Barrett, Michael (2005). *BMP Performance Comparisons: Examples from the International Stormwater BMP Database*, Center for Research in Water Resources, PRC#119, University of Texas, 2005 Water Environment Federation.

The alternative approach shall consist of extended detention of the 2-year, 24-hour storm for a period of 24 hours with a maximum release rate no greater than the existing 2-year peak discharge, and a drawdown time no greater than 72 hours.

*Note:* An extended detention discharge no greater than the existing 2-year discharge will meet the MS4 general permit requirement of not exceeding the pre-development discharge rate for all storms up to and including the 2-year storm.

If the allowable opening size from an extended detention basin becomes too small for practical design, an underdrained bioretention BMP (e.g. bioretention/rain garden, planter box, water quality swale) may be used to protect the orifice.

*Note:* Various studies have shown that underdrained biofiltration BMPs provide a significant percentage of volume reduction (23% to 73% for 25$^{th}$ and 75$^{th}$ percentiles),[5] and a large percentage of rate reduction (80% or more).[6]

[5] Geosyntec Consultants and Wright Water Engineers, Inc. (May 2012). *International Stormwater Best Management Practices (BMP) Database, Addendum 1 to Volume Reduction Technical Summary (January 2011), Expanded Analysis of Volume Reduction in Bioretention BMPs.*

[6] University of New Hampshire Stormwater Center (2007). *2007Annual Report*.

# C. Flood Control

### Where Required

Flood control is required for all sites according to the Flood Control Zone map.

### Standard

Retention or detention of the25-year or 100-year storm with a maximum release rate of 0.13 cfs per acre is required. The Flood Control Zone map identifies the different zones for the Township.

*Note:* The 25-year and100-year storm is selected to further decrease flood risk when reviewed against the economics from federal studies comparing the cost of flood damage to storm return interval.[7] The release rate of 0.13 cfs per acre is selected to be generally protective of floodplains in downstream watercourses and is based on result found in previous hydrologic studies on West Michigan streams.[8] Where volume control is not provided, an extremely low release rate is required to prevent an increase in peak flow rates in downstream watercourses or storm sewers. The increased volume and prolonged duration of runoff from multiple detention basins can have a cumulative effect to increase peak flow rate and duration in downstream reaches.

Zone 1:

Retention for the 100-year storm when the Field Permeability Test results average for the basin location equal or exceed 3-inches per hour and the highest known Groundwater Level is more than 3 feet below the proposed basin bottom.

Detention for the 100-year storm with a maximum release rate of 0.13 cfs/acre when the Field Permeability Test Results average for the basin location are less than 3-inches per hour or the highest known Groundwater Level is less than 4 feet below the proposed basin bottom.

Zone 2:

Detention for the 25-year storm with a maximum release rate of 0.13 cfs/acre.

Zone 3:

Flood Control is not required provided there is a suitable outlet for the 100-year storm runoff to the open water of the river that will not exceed the runoff rate from the proposed development. It is the applicant's responsibility to prove outlet capacity adequacy. Flood Control requirements for Zone 2 shall be met if the adequacy of the outlet cannot be confirmed by the applicant.

### Overflow Routes for Extreme Flood

Overflow routes and the extent of high water levels for the 100-year flood shall be identified for the site and for downstream areas between the site and the nearest acceptable floodway or outlet. Provisions shall be made to ensure no adverse impacts offsite or internal to the site. Where acceptable overflow routes do not exist, storm sewers shall be upsized for a 100-year design and detention/retention basins shall be increased in size to store a total of 2 times the flood control volume.

*Note:* The intent of the extreme flood criteria is to prevent flood damage from large but infrequent storm events by identifying and/or designing overland flow paths that are clear of structures and have grades below the lowest openings of structures. Overflow routes may include floodplains along open channels, overbank areas

---

[7] Johnson, William K. (January 1985). *Significance of Location in Computing Flood Damage*. ASCE Journal of Water Resource Planning and Management.

[8] Camp, Dresser and McKee, Inc. (1991). *Buck and Plaster Creek Stormwater Management Masterplan*, prepared for the Kent County Drain Commissioner.

along vegetated swales, curb jumps in drives and parking lots, and other flow paths flood waters will take to reach an outlet, whether overland or underground.

## D. Pretreatment

### Where Required

Pretreatment is required prior to discharging stormwater runoff to the following structural BMPs to preserve the longevity and function of the BMP:

1. Detention and retention basins
2. Infiltration practices
3. Bio-retention/rain gardens
4. Constructed filters
5. Stormwater reuse
6. Water Quality Swales

### Treatment BMPs

Pretreatment provides for the removal of fine sediment, trash, and debris. Methods of pretreatment include:

1. Forebays (including spill containment cells and level spreaders)
2. Vegetated filter strips (including buffers and green roofs)
3. Vegetated swales (including natural flow paths)
4. Water quality devices

### Standard

<u>Sediment Forebay</u>

A minimum pretreatment volume equivalent to 15% of the water quality volume is required for sediment forebays using gravity.

*Note:* This is a conservative approximation of results given by the Hazen Equation for sediment basin sizing using a 50% settling efficiency for a 50-micron particle (silt) with a 1-year peak inflow, consistent with recommendations in the *Low Impact Development Manual for Michigan* (SEMCOG 2008).

<u>Vegetated Filter Strip</u>

Provide a 5-foot minimum sheet-flow length at a maximum slope of 2% with an upstream impervious length no greater than 6 times the filter strip length.

<u>Vegetated Swale</u>

Provide a 20-foot minimum length at a maximum slope of 2% with a 1-foot high check dam at the downstream end, and a maximum upstream drainage area of 0.13 acre per 2-foot of bottom width.

*Note:* Minimum lengths for vegetated filter strips and vegetated swales are selected to provide a workable length for small sites and right-of-way constraints, while providing an area for sediment to drop out of suspension. Vegetated filter strip upstream length ratio from *Low Impact Development Manual for Michigan* (SEMCOG) 2008. Vegetated swale upstream area ratio assumes a 1-year peak inflow (rainfall intensity of 2.16 inches per hour for a time-of-concentration of 15 minutes) from an impervious area, with a settling efficiency of 50% for a 50-micron particle (silt).

<u>Water Quality Device</u>

Configured to trap floatables and sediment. Follow manufacturer's guidelines.

# E. Hot Spots

### Where Required

Sites considered to be stormwater hot spots are identified in **Table 2**. Industrial and commercial land use activities on these sites involve the production, transfer, and/or storage of hazardous materials in quantities that pose a high risk to surface and groundwater quality (those exceeding 55 gallons aggregate for liquids and 440 pounds aggregate for dry weights), as defined in Part 5 Rules: Spillage of Oil and Polluting Materials, under Water Resources Protection (Part 31, Act 451, PA 1994). Sites of soil or groundwater contamination under Part 201 Environmental Remediation and Part 213 Leaking Underground Storage Tanks (Act 451, PA 1994) are also included in **Table 2**.

### Standard

Pretreatment volume with a minimum of 400 gallons required for spill containment.

*Note:* The minimum volume provides a reasonable capture size (e.g. a standard liquid propane truck has a hauling capacity of 1,000 gallons) that can be accommodated with a 6-foot diameter water quality device.

Pretreatment BMPs must have an impermeable barrier between the treated material and the groundwater and have provisions for the capture of oil, grease, and sediments.

### Treatment BMPs

Infiltration BMPs will be reviewed to meet performance standards in areas of soil or groundwater contamination to ensure a site design that does not exacerbate existing conditions. Specific stormwater management strategies for areas of existing contamination and hotspots include the following:

1. Isolate transfer and storage areas from permeable surfaces and reduce exposure to stormwater.
2. Identify opportunities for use of infiltration BMPs in other areas of the site.
3. Where storage and transfer areas exposed to stormwater cannot be avoided:
   a. Infiltration of runoff from parking lots and road surfaces is discouraged in favor of a surface water discharge.
   b. Pervious pavements that infiltrate into the groundwater are not permitted because they do not allow for any pretreatment or spill containment.
   c. Perforated pipes for infiltration are not permitted due to the difficulty in isolating an accidental spill.

**Table 2 – Stormwater Hot Spots**

| 2012 North American Industry Classification System (NAICS) | |
|---|---|
| 31 – 33 | Manufacturing |
| 44 – 45 | Retail Trade (441 Motor Vehicle and Parts Dealers, 444 Building Material and Garden Equipment and Supplies Dealers, 447 Gasoline Stations, 454 Non-store Retailers (e.g. fuel dealers)) |
| 48 – 49 | Transportation and Warehousing |
| 71 | Arts, Entertainment, and Recreation (79393 Marinas) |
| 81 | Other Services (8111 Automotive Repair and Maintenance, 8113 Commercial and Industrial Machinery and Equipment Repair and Maintenance, 8123 Dry Cleaning and Laundry Services, 8129 Other Personal Services (e.g. photofinishing laboratory)) |
| | Salvage Yards and Recycling Facilities |
| | Sites classified under Part 201 Environmental Remediation and Part 213 Leaking Underground Storage Tanks (Act 451, PA 1994) of the Michigan compiled laws |
| | Areas with the potential for contaminating public water supply intakes |
| | Other land uses and activities where petroleum products, chemicals or other polluting materials have a high probability of polluting surface or groundwater due to quantity of use, storage or waste products generated, as determined by the Municipality. |
| Many of these sites will also be regulated under the EPA NPDES Industrial Stormwater Program. A detailed list of NAICS industries can be found at: http://www.census.gov/cgi-bin/sssd/naics/naicsrch?chart=2012 | |

## F. Coldwater Streams

### Where Required

Coldwater streams require an adequate and stable base flow to maintain their designation and support a cold-water fishery. Designated trout stream maps are available on the Michigan Department of Natural Resources (MDNR) website.

### Treatment BMPs

Development practices that increase surface water temperature or eliminate groundwater recharge should be avoided. The following strategies apply to developments located within a watershed of a designated trout stream that also propose a surface water discharge to the coldwater stream. Strategies must be identified on the site plan and/or submittal package.

1. Protect riparian buffers.
2. Stormwater disconnection.
3. Incorporate heat-reducing BMPs such as green roofs and re-forestation.
4. Implement structural BMPs that control volume through infiltration.
5. If detention ponds are used, detention times must be limited to a maximum of 12 hours.
6. Wet ponds should draw water from near the pond bottom to maintain a cooler discharge water temperature.

## G. Watershed Policy Statements

Specific stormwater policies have been adopted by the Municipality for the following watersheds:

1. (List of watersheds identified in the Stormwater Management Plan that would require different standards that those listed in the Standards)

Regional management zones for water quality and/or channel protection have been identified in the following watersheds:

1. [List]

These policy recommendations have resulted from hydrologic and hydraulic analysis and/or monitoring performed during engineering studies. The policy statements identify specific stormwater management standards and the areas where these standards must be used to meet resource protection goals.

If the site is located within one of the identified watersheds, the stormwater management plan for the site must also comply with the policy statements included in **Appendix 3**

.

**Table 3 – Stormwater BMP Matrix**

| Stormwater BMP | Treatment | | | |
|---|---|---|---|---|
| | Requires Pretreatment | Provides Water Quality | Provides Pretreatment | Provides Spill Containment |
| **Non-Structural BMPs** | | | | |
| Minimize Soil Compaction | | | | |
| Protect Natural Flow Paths | | | X | |
| Protect Sensitive Areas | | | | |
| Native Revegetation | | | X | |
| Stormwater Disconnection | | | | |
| **Structural BMPs – Conveyance and Storage** | | | | |
| Storm Sewer | | (22) | | X |
| Culvert or Bridge | | | | |
| Open Channel | | | | |
| Detention Basin (dry) | X | (49) | | |
| Detention Basin (wet) | X | (80) | | |
| Detention Basin (extd/wetland) | X | (72) | | |
| Retention Basins | X | (89) | | |
| **Structural BMPs – LID and Small Site** | | | | |
| Infiltration Practices | X | (89) | | |
| Bioretention/Rain Garden | X | (86) | | |
| Constructed Filter | X | (86) | | X |
| Planter Box* | | (59) | | |
| Pervious Pavement | | (84) | | |
| Pervious Pavement* (roof discharge to stone) | | (50) | | |
| Capture Reuse | | (*) | | X |
| Vegetated Roof | | (*) | X | |
| Water Quality Device | | (*) | X | X |
| Sediment Forebay | | (50) | X | |
| Spill Containment Cell | | (50) | X | X |
| Vegetated BMP (sized for pretreatment) | | (50) | X | |
| Water Quality Swale | X | (81) | X | X |
| Vegetated Swale | | (81) | X | |
| Vegetated Filter Strip | | (81) | X | |
| Level Spreader | | | X | |

Blank Cell BMP does not provide treatment.
X BMP requires pre-treatment of stormwater, or BMP may be used to meet treatment criteria.
( ) BMP may be used to meet water quality treatment criteria.
Number in parenthesis is median TSS Removal Efficiency in percent. Source: Fraley-McNeal, L. (September 2007). *National Pollutant Removal Performance Database, Version 3*, Center for Watershed Protection. Bioretention same as Constructed Filter.
Pervious Pavement number in parenthesis is average TSS Removal. Source: Rowe, Amy A., Borst, Michael, and O'Connor, Thomas P. (2007). *Pervious Pavement System Evaluation*, EPA, Office of Research and Development.

Storm Sewer number in parenthesis is average TSS removal for standard catch basin. Source: Pitt, R. and Field, R. (1998). *An Evaluation of Storm Drainage Inlet Devices for Stormwater Quality Treatment,* WEFTEC'98 Water Environment Federation 71st Annual Conference & Exposition, Proceedings Volume 6, Facility Operations I&II.
Sediment Forebay, Spill Containment Cell and Vegetated BMP (sized for pretreatment): 50% settling efficiency used in calculations.
(*) Submit manufacturer's certified test results.
* TSS removal efficiency assumes underdrained BMP, use value for Infiltration Practice, if applicable.
Notes: Design criteria in **Appendix 2** of this manual is provided to meet or exceed the median TSS removal efficiency.

# I. SOILS INVESTIGATION

## A. Qualifications

Soils investigation by a qualified geotechnical consultant is required for retention and detention basins, infiltration practices, bioretention/rain gardens, constructed filters, planter boxes, and pervious pavement to determine the site soil infiltration characteristics and groundwater level. The geotechnical consultant shall be a professional engineer, soil scientist, or professional geologist.

## B. Background Evaluation

An initial feasibility investigation shall be conducted to screen proposed BMP sites. The investigation involves review of the following resources:

1. County Soil Survey prepared by the NRCS and USDA Hydrologic Soil Group (HSG) classifications.
2. Existing soil borings, wells, or geotechnical report on the site.
3. Onsite septic percolation testing.
4. Cyclical groundwater levels http://waterdata.usgs.gov/mi/nwis/gw

## C. Test Pit/Soil Boring Requirements

A test pit (excavated hole) or soil boring shall be used for geotechnical investigation. Test pits may typically be selected for shallower investigations in locations where groundwater is sufficiently low. The minimum number of test pits or soil borings shall be determined from **Table 4**.

A test pit is an excavated trench with a depth necessary to encounter saturated conditions or to the bottom of the proposed BMP. Infiltration systems that are significantly deeper than the existing topography will result in reduced infiltration rates.

The number of test pits will vary depending on site conditions and the proposed development. In general test pits shall be evenly distributed at the rate of 6 to 8 pits per acre of BMP area.

Additional test should be conducted if local conditions indicate a large variability in soil type, groundwater table, etc.

**Table 4 – Minimum Number of Soil Tests Required**

| Type of BMP | Test Pit/Soil Boring | Depth of Test Pit/ Soil Boring | Field Permeability Test |
|---|---|---|---|
| Retention basin<br>Infiltration bed<br>Rain garden<br>Pervious pavement | 1 soil boring per 5,000 square feet of bottom area; 2 minimum | 10 feet below proposed bottom | 1 test per soil boring |
| Infiltration trench<br>Bioswale | 1 soil boring per 100 linear feet of BMP; 2 minimum | 10 feet below proposed bottom | 1 test per soil boring |
| Dry well<br>Planter box | 1 soil boring minimum | 5 feet below proposed bottom | 1 test per soil boring |
| Detention basin | 1 soil boring per 10,000 square feet of bottom area; 1 minimum | 5 feet below proposed bottom | Not Applicable |

Excavate a test pit or soil boring in the location of the proposed BMP. The following conditions shall be noted and described, referenced from a top-of-ground elevation:

1. Depth to groundwater recorded during initial digging or drilling, and again upon completion of the excavation.
2. Depth to bedrock or hardpan.
3. Depth and thickness of each soil horizon including the presence of mottling.
4. USDA soil texture classification for all soil horizons.

Test pit reports and soil boring logs shall include the date(s) data was collected and the location referenced to a site plan.

## D. Highest Known Groundwater Elevation

The highest known groundwater elevation shall be determined by adjusting the measured groundwater elevation using indicators such as soil mottling and regional water level data. It should also take into consideration local conditions that may be temporarily altering water levels at the time of measurement. Such conditions could include, but not be limited to: dewatering, irrigation well or large quantity withdrawals in the area, or areas of groundwater infiltration (such as a nearby retention basin).

## E. Field Permeability Testing

Field permeability testing shall be required. Laboratory tests are not allowed. The Municipality reserves the right to request additional field permeability testing be performed on questionable sites. Acceptable field tests include:

1. Infiltration Rate of Soils in Field Using Double-Ring Infiltrometers (ASTM D3385).
2. Percolation tests (similar to wastewater systems).

The minimum number of field permeability tests shall be determined from **Table 4**.

Tests shall be conducted in the location of the proposed BMP at the proposed bottom elevation. An alternate testing depth may be allowed if material is identical and groundwater is not an issue.

Tests shall not be conducted in the rain or within 24 hours of significant rainfall events (>0.5 inch) or when the ground is frozen.

Field permeability testing reports shall include the date(s) data was collected and the location referenced to a site plan.

### Methodology for Double-ring Infiltrometer Field Test

A double-ring infiltrometer consists of two concentric metal rings. These rings are driven into the ground and filled with water. The outer ring prevents divergent flow. The drop in water level or volume within the inner ring is used to calculate an infiltration rate. The diameter of the inner ring should be approximately 50-70% of the diameter of the outer ring, with a minimum inner ring size of 4 inches.

Equipment for double-ring infiltrometer test:

1. Two concentric rings six inches high or greater.
2. Water Supply.
3. Stopwatch or Timer.
4. Ruler or measuring tape.
5. Flat board for driving the cylinders uniformly into the soil.
6. Log sheets for recording data.

Procedure for double-ring infiltrometer test:

1. Prepare a level testing area.
2. Place the outer ring and use a flat board to drive the ring into the soil a minimum of 2 inches.
3. Place the inner ring in the center of the outer ring and use a flat board to drive the ring into the soil a minimum of 2 inches. The bottom of both rings should be at the same elevation.
4. The test area should be presoaked immediately prior to testing. Fill both rings with water to the rim at 30 minute intervals for 1 hour. The maximum water depth in the rings should be 4 inches. The drop in water level during the last 30 minutes of the presoaking period should be applied to the following standard to determine the interval between readings:
    a. If the water level drop is 2 inches or more, use 10 minute intervals.
    b. If the water level drop is less than 2 inches, use 30-minute intervals.
5. Obtain a measurement of the drop in water level in the center ring at appropriate intervals. After each reading, refill both rings to the rim. Measure the water level in the center ring from a fixed reference point and continue at the interval determined until a minimum of 8 readings are made or until a stabilized rate of drop is obtained. A stabile drop rate is a difference of ¼ inch or less between the highest and lowest readings of four consecutive readings.
6. The water level drop that occurs in the center ring during the final period of the average stabilized rate represents the infiltration rate for the test location.

### Methodology for Percolation Test

Equipment for percolation test:

1. Post hole digger or auger.
2. Water supply.
3. Stopwatch or timer.
4. Ruler or measuring tape.
5. Log sheets for recording data.
6. Tool for soil scarification.
7. Course sand or fine gravel.
8. A fixed reference point during measurement.

Procedure for percolation test:

The percolation test methods are based on the criteria for onsite sewage investigation of soils. A 24-hour presoak is generally not required since infiltration systems will not be continuously saturated.

1. Prepare a level testing area.
2. Prepare a hole with a uniform diameter of 6 to 10 inches and a depth of 8 to 12 inches. Scarify the bottom and sides of the hole to remove any smeared soil surfaces and to provide a natural soil interface for percolation. Remove loose material from the hole.
3. Place 2 inches of coarse sand or gravel in the bottom of the hole to protect the soil from scouring or clogging.
4. Presoak the hole immediately prior to testing. Place water in the hole to a minimum depth of 6 inches over the bottom and readjust every 30 minutes for 1 hour.

5. Apply the following standard to the drop in water level during the last 30 minutes of the final presoaking period.
    a. If water remains in the hole, the interval for readings during the percolation test is 30 minutes.
    b. If no water remains in the hole, the interval for readings during the percolation test is reduced to 10 minutes.
6. After the final presoaking period, adjust the water in the hole to a minimum depth of 6 inches and readjust when necessary. Record the water level depth and hole diameter.
7. Make water level measurements from a fixed reference point and continue measurements at the predetermined interval until a minimum of 8 readings are completed or until a stabile rate of drop in water level is obtained. A stabile water level drop is a difference of ¼ inch or less between the highest and lowest readings of 4 consecutive readings.
8. The water level drop that occurs in the center ring during the final period of the average stabilized rate represents the infiltration rate for the test location.
9. The average measured rate must be adjusted to account for the discharge of water from both the sides and bottom of the hole and to develop a representative infiltration rate. Adjust the final percolation rate according to the following formula:

    Infiltration Rate = (Percolation Rate)/(Reduction Factor)

    Where the reduction factor is given by:

$$Rf = \frac{2d1 - \Delta d}{DIA}$$

$d1$=$Initial\ Water\ Depth\ in.$

$$\Delta d = \frac{Average}{Final} Water\ Level\ Drop\ (in.)$$

$$DIA = Diameter\ of\ Percolation\ Hole\ (in.)$$

The percolation rate is simply divided by the reduction factor as calculated above to yield the representative infiltration rate. In most cases, the reduction factor varies from 2 to 4 depending on the percolation hole dimensions and water level drop. (Wider shallower tests have lower reduction factors because proportionately less water exfiltrates through the sides.)

*Note:* The area reduction factor accounts for the exfiltration occurring through the sides of the percolation hole. It assumes the rate is affected by the depth of water in the hole and that the percolating surface of the hole is uniform soil. If these assumptions are not true, then other adjustments may be necessary.

## F. Design Infiltration Rates

A conservative value for the infiltration rate is used to calculate the storage volume of infiltration BMPs due to the uncertainty the soil will infiltrate at the design rate during the time the basin is filling.

The infiltration rate determined from field permeability testing shall be divided by a factor of 2 to calculate the design infiltration rate, up to a maximum design infiltration rate of 6 inches per hour.

Where field permeability testing is not performed, the design infiltration rates provided in **Table 5** shall be used to calculate the storage volume and minimum infiltration area of the BMP necessary to drain in the allotted drawdown time.

The least permeable soil horizon within 4 feet below the proposed BMP bottom elevation shall be used to select the design infiltration rate.

**Table 5** provides design values of the infiltration rate and effective water capacity (void ratio) for soils based on their textural classification. The soil textural classes shown in **Table 5** correspond to the soil textures of the USDA Soil Textural Triangle shown in **Figure 1**.

*Note*: Infiltration is the process by which water on the ground surface enters the soil. Infiltration rate is a measure of the rate at which soil is able to absorb rainfall or irrigation in inches per hour. The rate decreases as the soil becomes saturated. The design infiltration rate assumes saturated conditions and closely approximates the hydraulic conductivity (typically given in feet per day) of the near-surface soil.

*Note*: The effective water capacity of a soil is the fraction of the void spaces available for water storage measured in inches per inch.

**Table 5 – Design Infiltration Rates by USDA Soil Texture Class**

| Soil Texture Class | Effective Water Capacity (inches per inch) | Design Infiltration Rate[1] (inches per hour) | HSG[2] |
|---|---|---|---|
| Gravel | 0.40 | 3.60 | A |
| Sand | 0.35 | 3.60 | A |
| Loamy Sand | 0.31 | 1.63 | A |
| Sandy Loam | 0.25 | 0.50 | A |
| (Medium) Loam | 0.19 | 0.24 | B |
| Silty Loam / (Silt) | 0.17 | 0.13 | B |
| Sandy Clay Loam | 0.14 | 0.11 | C |
| Clay Loam | 0.14 | 0.03 | D |
| Silty Clay Loam | 0.11 | 0.04 | D |
| Sandy Clay | 0.09 | 0.04 | D |
| Silty Clay | 0.09 | 0.07 | D |
| Clay | 0.08 | 0.07 | D |

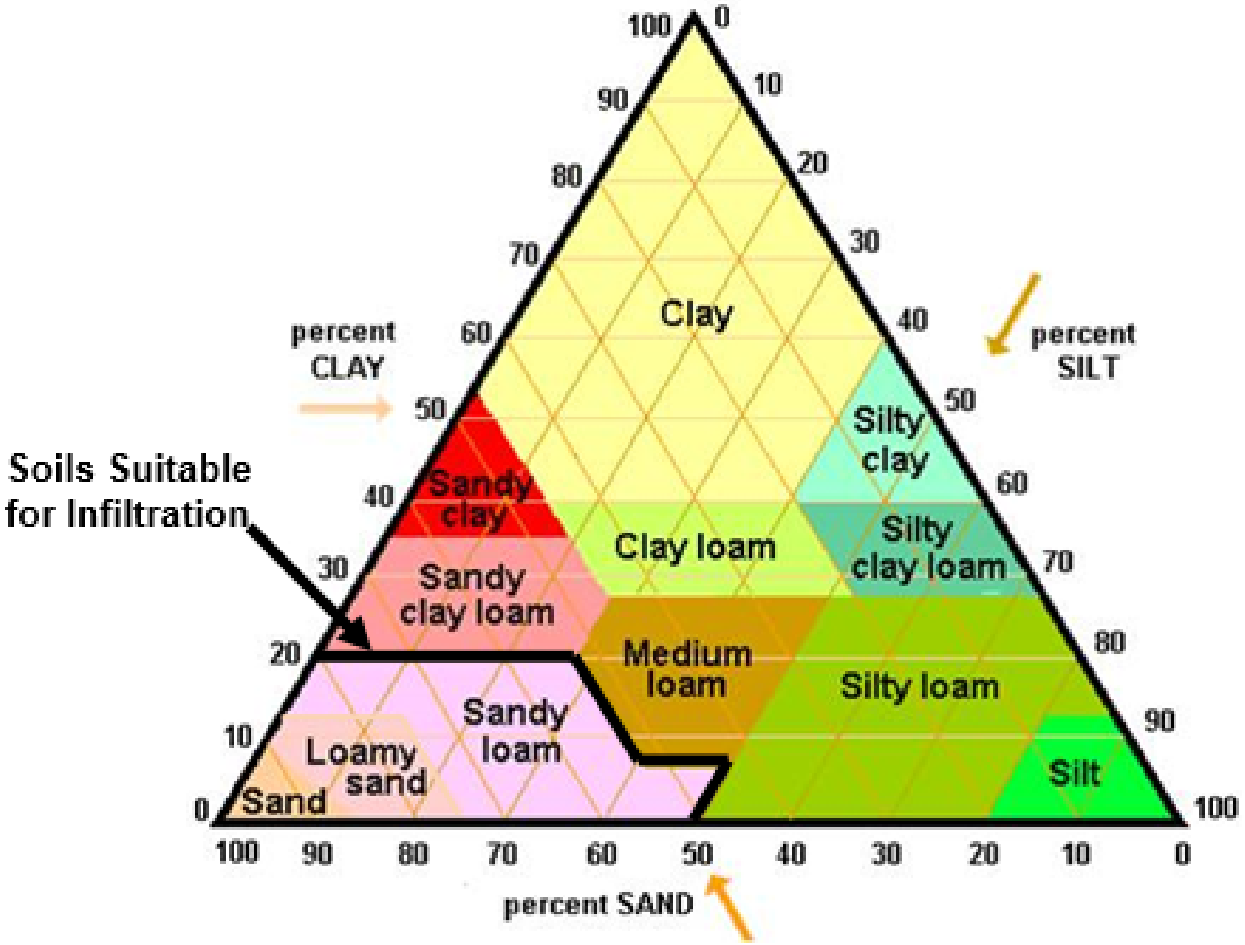
[1]Source: Maryland Department of Environment (2000). *Maryland Stormwater Design Manual*, Appendix D.13, Table D.13.1 (Rawls, Brakensiek and Saxton, 1982).
[2]Source: Wisconsin Department of Natural Resources (2004). *Site Evaluation for Stormwater Infiltration (1002)*, Table 2 (Rawls, 1998). *Note*: Values are reduced by approximately a factor of 2 from those given in Table D.13.1.

## G. Minimum Allowable Infiltration Rate

Soil textures with design infiltration rates less than 0.50 inches per hour are deemed not suitable for infiltration BMPs.

Soils with design infiltration rates as low as 0.24 inches per hour may be used for LID and Small Site BMPs if suitable supplemental measures are included in the design. Supplemental measures may include subsoil amendment, or underdrain placed at the top of the storage bed layer.

**Figure 1 – USDA Soil Textural Triangle**



# II. CALCULATION METHODOLOGY

The Rational Method and the NRCS Runoff Curve Number Method are typically used to calculate stormwater runoff, peak discharges and runoff volumes for design of stormwater conveyance and storage systems. The NRCS method is presently the only acceptable method to calculate the channel protection volume. The Small Storm Hydrology Method is used to calculate runoff volumes from the smaller rainfall amounts used for water quality treatment.

## A. Calculating Runoff

### 1. Rational Method

The Rational Method may be used to calculate stormwater runoff volumes and peak discharges to size conveyance and storage systems for contributing drainage areas of 40 acres or less. The peak runoff rate is given by the equation:

$$Q = CIA \tag{4.1}$$

where:

*Q* = peak runoff rate (cubic feet per second).

*C* = weighted runoff coefficient of the drainage area.

*I* = average rainfall intensity for a storm with a duration equal to the time of-concentration of the drainage area (inches per hour). Use rainfall amounts from **Table 10** and divide by the duration in hours to obtain the average rainfall intensity (I).

*A* = drainage area (acres).

Runoff coefficients sizing conveyance systems shall be selected from **Table 6**.

**Table 6 – Rational Method Runoff Coefficients (5 to 10-year rainfall frequencies)**

| Character of Surface | Runoff Coefficients |
|---|---|
| Asphalt and Concrete Pavement | 0.70 to 0.95 |
| Brick Pavement and Gravel Surface | 0.70 to 0.85 |
| Roofs | 0.75 to 0.95 |
| Lawns, Sandy Soil Flat 2% | 0.05 to 0.10 |
| Lawns, Sandy Soil Average 2% to 7% | 0.10 to 0.15 |
| Lawns, Sandy Soil Steep 7% | 0.15 to 0.20 |
| Lawns, Heavy Soil Flat 2% | 0.13 to 0.17 |
| Lawns, Heavy Soil Average 2% to 7% | 0.18 to 0.22 |
| Lawns, Heavy Soil Steep 7% | 0.25 to 0.35 |
| Source: American Society of Civil Engineers and the Water Pollution Control Federation (1969). *Design and Construction of Sanitary and Storm Sewers*. *Note*: Gravel Surface added. | |

Runoff coefficient for sizing detention/retention basins, which are designed for higher rainfall frequencies, shall be selected from **Table 11**.

Time-of-concentration for the Rational Method is the sum of overland flow and channel flow. A minimum of 15 minutes shall be used.

Overland flow time may be calculated using the following formula:

$$t_o = \left(\frac{2Ln}{3\sqrt{s}}\right)^{0.4673} \tag{4.2}$$

where:

$t_o$ = time of overland flow (minutes)

$L$ = length (feet); the distance from the extremity of the subcatchment area in a direction parallel to the slope until a defined channel is reached. Overland flow will become channel flow within 1,200 feet in almost all cases*

$n$ = surface retardants coefficient (from **Table 7**)

$s$ = slope (feet per foot); the difference in elevation between the extremity of the subcatchment area and the point in question divided by the horizontal distance

**Table 7 – Surface Retardants Coefficients**

| Type of Surface | Coefficient (n value) |
|---|---|
| Smooth impervious surface | 0.02 |
| Smooth bare packed soil | 0.10 |
| Poor grass, cultivated row crops, or moderately rough bare surface | 0.20 |
| Pasture or average grass | 0.40 |
| Deciduous timberland | 0.60 |
| Conifer timberland, deciduous timberland with deep forest litter, or dense grass | 0.80 |
| *Source: Formula, coefficients and empirical observations from W.S. Kerby, J.M. Asce. Servis, Van Doren & Hazard Engineers, Topeka, Kansas. "Time of Concentration for Overland Flow" as included in ENGINEER'S NOTEBOOK. | |

Channel flow shall be calculated using Manning's equation:

$$V = \frac{An}{1.49R^{\frac{2}{3}}S^{\frac{1}{2}}} \tag{4.3}$$

where:

$V$ = velocity (feet per second)

$A$ = wetted area (square feet)

$n$ = Manning's roughness coefficient (from **Table 12**)

$R$ = hydraulic radius (feet)

$S$ = slope (feet per foot)

The time-of-concentration is then:

$$Tc = t_o + \frac{L_c}{60V} \tag{4.4}$$

where:
*Tc* = time-of-concentration (minutes)
$t_o$ = time of overland flow (minutes)
$L_c$ = length of channelized flow (feet)
*V* = velocity of channelized flow (feet per second)
*60* = factor to convert seconds to minutes

**2. Runoff Curve Number Method**

The Runoff Curve Number Method developed by the NRCS may be used to calculate stormwater runoff volumes and peak discharges to size conveyance and storage systems. This method must be used when it is necessary to calculate runoff volumes for channel protection. The formulas are as follows:

$$Qv = \frac{(P - 0.2S)^2}{(P + 0.8S)} \tag{4.5}$$

where:
$Q_v$ = surface runoff (inches). *Note*: Qv=0 if P ≤ 0.2S
*P* = rainfall (inches)
*S* = potential maximum retention after runoff begins (inches)
and where:

$$S = \frac{1000}{CN} - 10 \tag{4.6}$$

Surface runoff (Qv) is calculated separately for impervious and pervious areas. Total runoff volume can then be calculated by the formula:

$$Vt = (Qv_{perv} A_{perv} + Qv_{imp} A_{imp}) \times 3630 \tag{4.7}$$

where:
*Vt* = runoff volume of the design storm (cubic feet)
*Qv* = surface runoff (inches); separate for pervious and impervious surface
*A* = contributing site area (acres)
*3630* = factor to convert acre-inches to cubic feet

Curve Number (CN) values are taken from Technical Release No. 55 (TR-55), and provided in **Table 8**.

The GVMC Stormwater Calculator, or NRCS computer software such as WinTR-55 may be used to calculate peak stormwater runoff rates. A Michigan Unit Hydrograph is used in the GVMC Stormwater Calculator and can be input into WinTR-55.

*Note:* Using the standard NRCS unit hydrograph will overestimate peak runoff rates by 30 to 50 percent or more.

**Table 8 – Curve Numbers (CNs) from TR-55**

| Land Use Description | | Curve Number[1] | | | |
|---|---|---|---|---|---|
| | | Hydrologic Soil Group | | | |
| Cover Type | Condition[2] | A | B | C | D |
| Cultivated land | Poor | 72 | 81 | 88 | 91 |
| | Good | 62 | 71 | 78 | 81 |
| Pasture or range land | Poor | 68 | 79 | 86 | 89 |
| | Fair* | 49 | 69 | 79 | 84 |
| | Good | 39 | 61 | 74 | 80 |
| Meadow | Good | 30 | 58 | 71 | 78 |
| Orchard or tree farm (50% woods /50% pasture) | Poor* | 57 | 73 | 82 | 86 |
| | Fair* | 43 | 65 | 76 | 82 |
| | Good* | 32 | 58 | 72 | 79 |
| Woods | Poor | 45 | 66 | 77 | 83 |
| | Fair* | 36 | 60 | 73 | 79 |
| | Good | 30* | 55 | 70 | 77 |
| Open spaces (grass cover) | Poor* | 68 | 79 | 86 | 89 |
| | Fair | 49 | 69 | 79 | 84 |
| | Good | 39 | 61 | 74 | 80 |
| Paved parking lot, roof, driveway | | 98 | 98 | 98 | 98 |
| Gravel | | 76 | 85 | 89 | 91 |
| Dirt | | 72 | 82 | 87 | 89 |

Source: U.S. Department of Agriculture Soil Conservation Service (1986). *Urban Hydrology for Small Watersheds*, *Technical Release No. 55*.

[1]Antecedent moisture condition II and $I_a = 0.2S$

[2]Good Condition: cultivated land with conservation treatment; pasture, meadow or open space with 75% or more grass cover; woods with good cover of trees protected from grazing with litter and brush over soil

Fair Condition: pasture or open space with 50% to 75% grass cover; woods are grazed with some litter over soil

Poor Condition: cultivated land without conservation treatment; pasture or open space with less than 50% grass cover; woods with litter and brush destroyed by heavy grazing or burning

* SEMCOG (2008). *Low Impact Development Manual for Michigan.*

Time-of-concentration for the Runoff Curve Number Method shall be calculated using NRCS TR-55 methodology as outlined below. A minimum of 0.1 hour (6 minutes) shall be used.

The flow path is split into three sections – sheet flow, shallow concentrated flow, and open channel flow. The travel time is computed for each flow regime. The time-of-concentration is then the sum of the travel times:

$$Tc = t_1 + t_2 + t_3 \tag{4.8}$$

(1) For sheet flow the travel time ($t_1$) in hours is given as:

$$t_1 = \frac{0.007(nL)^{0.8}}{P_2^{0.5} s^{0.4}} \tag{4.9}$$

where:
*n* = Manning's roughness coefficient from **Table 12**
*L* = flow length (feet)
$P_2$ = 2-year, 24-hourprecipitation depth from **Table 10**
*s* = slope (feet/foot)

(2) Shallow concentrated flow velocities are calculated for paved and unpaved surfaces. The velocities are given as:

$$v = \begin{matrix} 16.1345 s^{0.5} & Unpaved \\ 20.3282 s^{0.5} & Paved \end{matrix} \tag{4.10}$$

where:
*s* = slope (feet/foot)
*v* = velocity in feet per second

The flow length (feet) is then divided by the velocity (feet per second) and a conversion factor of 3600 to obtain travel time ($t_2$) in hours:

$$t_2 = \frac{L}{3600v} \tag{4.11}$$

(3) Open channel flow uses Manning's equation to calculate the velocity based on slope, flow area, and wetted perimeter (refer to Equation 4.3). The flow length (feet) is then divided by the velocity (feet per second) to obtain travel time ($t_3$) in hours (refer to Equation 4.11).

<u>BMP Residence Time</u>

BMP residence time shall be calculated as the storage volume divided by the 10-year peak inflow rate.

### 3. Small Storm Hydrology Method

The Small Storm Hydrology Method is used to calculate the water quality treatment volume. The method was developed to estimate the runoff volume from urban land uses for relatively small storm events where the Rational and NRCS Methods prove less accurate. Water quality volume is calculated by the formula:

$$Vwq = ARv(1)(3630) \tag{4.12}$$

where:

*Vwq* = minimum required water quality volume (cubic feet)
*A* = area (acres); the developed portion of the site, both impervious and pervious, not receiving treatment with a non-structural BMP
*Rv* = area-weighted volumetric runoff coefficient (from **Table 9**)
*1* = 90% non-exceedance storm rainfall amount (inches)
*3630* = factor to convert acre-inches to cubic feet

The Volumetric Runoff Coefficients (Rv) provided in **Table 9** are similar to the Rational runoff coefficient, but are exclusive to the rainfall amount (1-inch).

**Table 9 – Runoff Coefficients for Small Storm Hydrology Method**

| | Volumetric Runoff Coefficient, Rv | | | | | |
|---|---|---|---|---|---|---|
| | Directly Connected Impervious Area | | | Disturbed Pervious Area | | |
| Rainfall Amount (inches) | Flat Roofs/ Unpaved | Pitched Roofs | Paved | Sandy Soils (HSG A) | Silty Soils (HSG B) | Clayey Soils (HSG C&D) |
| 1.0 | 0.815 | 0.965 | 0.980 | 0.035 | 0.120 | 0.2015 |

Source: Adapted from SEMCOG (2008). *Low Impact Development Manual for Michigan*, Table 9.3.
(R. Pitt (2003). *The Source Loading and Management Model (WinSLAMM): Introduction and Basic Uses)*.

## B. Rainfall

The rainfall duration-frequency table provided in **Table 10** shall be used with the Rational Method to determine rainfall intensity for rainfall duration equal to the time-of-concentration. Divide the rainfall amount by the duration in hours to obtain the rainfall intensity.

The 24-hour rainfall amounts provided in **Table 10** shall be used with the Runoff Curve Number Method.

An MSE4 rainfall distribution shall be used when a unit hydrograph approach is used (e.g. WinTR-55 computer program).

**Table 10 – Rainfall Amounts (inches)**

| Duration | 1-Year | 2-Year | 5-Year | 10-Year | 25-Year | 50-Year | 100-Year |
|---|---|---|---|---|---|---|---|
| 24-hr | 2.22 | 2.56 | 3.18 | 3.77 | 4.66 | 5.43 | 6.27 |
| 12-hr | 1.95 | 2.25 | 2.81 | 3.33 | 4.13 | 4.82 | 5.56 |
| 6-hr | 1.69 | 1.96 | 2.45 | 2.91 | 3.60 | 4.19 | 4.82 |
| 3-hr | 1.45 | 1.69 | 2.11 | 2.50 | 3.08 | 3.57 | 4.09 |
| 2-hr | 1.31 | 1.53 | 1.92 | 2.26 | 2.78 | 3.21 | 3.66 |
| 1-hr | 1.05 | 1.24 | 1.55 | 1.83 | 2.24 | 2.58 | 2.94 |
| 30-min | 0.80 | 0.94 | 1.18 | 1.39 | 1.70 | 1.95 | 2.21 |
| 15-min | 0.54 | 0.63 | 0.79 | 0.93 | 1.14 | 1.31 | 1.49 |
| 10-min | 0.44 | 0.52 | 0.65 | 0.76 | 0.93 | 1.07 | 1.22 |
| 5-min | 0.30 | 0.35 | 0.44 | 0.52 | 0.64 | 0.73 | 0.83 |

Source: NOAA (2013). *Atlas 14, Precipitation-Frequency Atlas of the United States, Volume 8, Version 2.0*.
Rainfall amounts from: GRAND RAPIDS INTL AP. Station ID 20-3333.

# C. Calculating Storage Volumes and Release Rates

## 1. Water Quality

Treatment of the runoff generated from 1 inch of rain (the 90% annual nonexceedance storm) over the developed portion of the site is required. Water quality volume is calculated using the Small Storm Hydrology Method.

Treatment can be provided by settling (permanent pool or extended detention), filtration or infiltration, absorption, or chemical/mechanical treatment using BMPs from **Table 3** to meet the 80% TSS removal efficiency standard.

## 2. Pretreatment

Pretreatment volume may be included in the total water quality volume, and is calculated as:

$$Vpt = 0.15(Vwq) \tag{4.13}$$

where:
*Vpt* = minimum required pretreatment volume (cubic feet)
*Vwq* = water quality volume (cubic feet)

## 3. Channel Protection

a. Retention

Channel protection consists of retaining onsite the net increase in runoff volume between pre-development and post-development conditions for a 2-year, 24-hour storm using the Runoff Curve Number Method. Channel protection volume is calculated with the following equation:

$$Vcp = Vt_{post} - Vt_{pre} \tag{4.14}$$

where:
*Vcp* = minimum required channel protection volume (cubic feet)
$Vt_{post}$ = runoff volume of the 2-year, 24-hour storm for post-development conditions
$Vt_{pre}$ = runoff volume of the 2-year, 24-hour storm for pre-development conditions

Pre-development is defined as the last land use prior to the planned new development or redevelopment.

The "Open Spaces" cover type in "fair" hydrologic condition shall be used for post-development pervious areas that are not receiving non-structural BMP credits.

b. Extended Detention

If retention of the total channel protection volume is not possible due to site constraints, an alternative approach using extended detention may be allowed.

The storage volume of an extended detention basin shall be sized for that part of the 2-year volume difference not met by retention, with a maximum release rate that results in a 24-hour detention time. The peak discharge for a 24-hour detention time may be calculated assuming triangular inflow and outflow hydrographs with a lag between the peaks of 24 hours. If the inflow peak occurs 12 hours into the 24-hour inflow hydrograph, the outflow peak should occur 36 hours into a 72-hour outflow hydrograph as shown in **Figure 2**. The extended detention peak discharge can then be computed with the following equation:

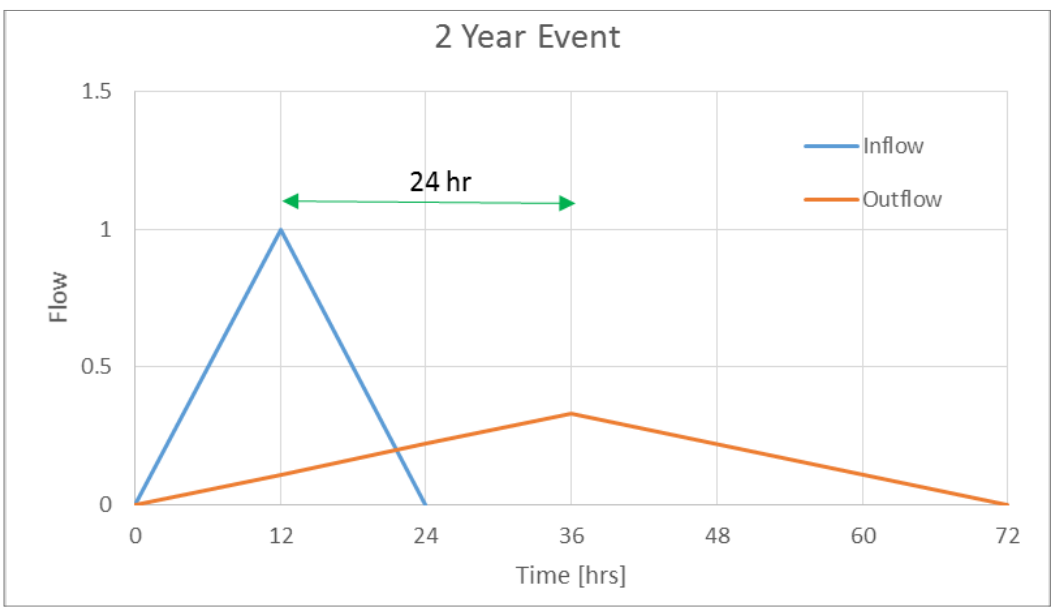
$$Q_{ED} = (Vcp - Vret)/(36*3600) \tag{4.15}$$

where:

| | | |
|---|---|---|
| $Q_{ED}$ | = | peak extended detention release rate (cubic feet per second) |
| *Vcp* | = | total channel protection volume required (cubic feet) |
| *Vret* | = | channel protection volume met by retention (cubic feet) |
| *36*3600* | = | half of the base time of outflow hydrograph (seconds) |

The 2-year peak discharge after extended detention ($Q_{ED}$) must be equal to or less than the existing 2-year peak discharge. (Exceptions may be made for HSG A, where extended detention has been approved due to site constraints, but existing runoff is zero.) Reduce the required treatment volume and recalculate until this requirement is met. Simply selecting the lower existing release rate will violate the 72-hour drawdown time.

**Figure 2 – Extended Detention Hydrograph**



## 4. Flood Control

a. Detention

Detention of the 25 or100 -year rainfall event with a maximum allowable release rate of 0.13 cfs per acre is required depending on Flood Control zone

(1) Rational Method for Detention

If the Rational Method is used, the minimum required storage volume shall be calculated by the "Modified Chicago" Method. A Microsoft Excel spreadsheet application (Rational Method spreadsheet) is provided with this manual. Runoff Coefficients for use in detention storage calculations shall be selected from **Table 11** to account for rainfalls exceeding a 10-year frequency. Frequency adjustment of factors of 1.1 and 1.25 have been applied for the 25- and 100-year frequencies respectively, with a maximum value of 1.00.

**Table 11 – Rational Method Runoff Coefficients (10- to 100-year rainfall frequencies)**

| Character of Surface | Runoff Coefficients | | |
|---|---|---|---|
| | 10-year | 25-year | 100-year |
| Asphalt and Concrete Pavement | 0.95 | 1.00 | 1.00 |
| Gravel Surface | 0.75 | 0.82 | 0.94 |
| Roofs | 0.95 | 1.00 | 1.00 |
| Lawns and Open (HSG A) | 0.10 | 0.11 | 0.12 |
| Lawns and Open (HSG B) | 0.32 | 0.35 | 0.40 |
| Lawns and Open (HSG C) | 0.48 | 0.53 | 0.60 |
| Lawns and Open (HSG D) | 0.57 | 0.63 | 0.71 |
| Sources: 10-year frequency runoff coefficients from **Table 6** with coefficients for "Lawns and Open" calculated to match runoff volumes from CN method for "Open Spaces, Fair Condition" by HSG. Adjustment factors from Mays (2001). *Stormwater Collection Systems Design Handbook.* | | | |

An additional adjustment factor of 1.25 shall be applied to the calculated storage volume since this method tends to underestimate the storage volume when compared to pond routing, particularly for short times-of-concentrations (15 to 30 minutes)[9].

[9] Stahre, Peter and Urbonas, Ben (1990). Stormwater Detention For Drainage, Water Quality and CSO Management, pp. 268 274.

(2) Runoff Curve Number Method for Detention

If the Runoff Curve Number Method is used, the minimum required storage volume shall be determined through routing, or may be calculated by the formula:

$$V_{fc} = \frac{(Qp - Qout)}{Qp} Vt - Vbmp \tag{4.16}$$

where:

| | | |
|---|---|---|
| $V_{fc}$ | = | minimum required storage volume for flood control (cubic feet) |
| *Qp* | = | peak runoff rate (cubic feet per second) |
| *Qout* | = | maximum allowable peak discharge (cubic feet per second) |
| *Vt* | = | post-development runoff volume for the 25-year or 100-year, 24-hour storm (cubic feet) |
| *Vbmp* | = | total volume (storage + infiltration) provided by BMPs used to meet water quality and/or channel protection volume standards |

*Note*: This formula provides a conservative approximation of the required storage volume. Therefore, the volume of any upstream BMPs can be subtracted from the storage volume versus the total runoff volume.

b. Retention

Retention basins and other infiltration practices shall be sized for the 100-year, 24-hour rainfall event.

(1) Rational Method for Retention

If the Rational Method is used, the minimum required storage volume shall be calculated by the formula:

$$V_{fc} = 0.85(3630CAP - Vbmp) \tag{4.17}$$

where:

| | | |
|---|---|---|
| $V_{fc}$ | = | minimum required storage volume for flood control (cubic feet) |
| *0.85* | = | ratio of storage volume to total runoff volume |
| *C* | = | runoff coefficient for post-development conditions from **Table 11** |
| *A* | = | area (acres) |
| *P* | = | 100-year, 24-hour rainfall amount from **Table 10** (6.27 inches) |
| *3630* | = | factor to convert acre-inches to cubic feet |
| *Vbmp* | = | total volume (storage + infiltration) provided by BMPs used to meet water quality and/or channel protection volume standards |

*Note*: This simplified formula approximates the storage volume that results from inflow-outflow calculations for multiple spreadsheet runs with varying percent impervious and times-of-concentration, assuming a conservative infiltration rate of 0.5 inches per hour and adjusting the basin bottom area to achieve a 72-hour drain time. A conservative value for infiltration is used regardless of soil type based on the observation that retention basins fail most often due to the infiltration capacity of the *insitu* soil being compromised by sedimentation (even with properly sized sediment forebays) and/or overcompaction.

(2) Runoff Curve Number Method for Retention

If the Runoff Curve Number Method is used, the minimum required storage volume shall be calculated by the formula:

$$V_{fc} = 0.85(Vt - Vbmp) \tag{4.18}$$

where:

$V_{fc}$ = minimum required storage volume for flood control (cubic feet)

*Vt* = runoff volume of the 25-year, 24-hour storm for post-development (cubic feet)

*Vbmp* = total volume (storage + infiltration) provided by BMPs used to meet water quality and/or channel protection volume standards

(3) SEMCOG Method

This method may be used for LID and small site BMPs that provide infiltration.

Subtract the volume infiltrated by the BMP during the infiltration period (Vi) from the total runoff volume (Vt) to determine the required storage volume of the BMP (Vs).

$$Vs = Vt - Vi \tag{4.19}$$

The infiltration volume is calculated as:

$$Vi = \frac{6iA}{12} \tag{4.20}$$

where:

*Vi* = volume infiltrated (cubic feet)

*6* = infiltration period (hours); time when the bed is receiving runoff and is capable of infiltrating at the design rate, conservatively estimated as 6 hours (SEMCOG, 2008)

*i* = design infiltration rate of underlying soil from **Table 5** (inches per hour)

*A* = infiltration area (square feet)

*12* = factor to convert inches to feet

*Note*: This method is more conservative than the above methods for infiltration rates between 0.5 and 2 inches per hour. However, it allows for practical sizing of small site BMPs in highly permeable soils (sands and gravels) based on the observation that the BMPs in this category are typically more effective at protecting the infiltration capacity of *insitu* soils (versus a retention basin), due to the use of stone and filter fabric in the design.

## D. GVMC Stormwater Calculator

The GVMC Stormwater Calculator is a Microsoft Excel spreadsheet application that uses the Runoff Curve Number Method with a Michigan Unit Hydrograph to compute required water quality and channel protection volumes, detention release rates and storage volumes for the site. The 24-hour rainfall amounts and rainfall distribution specified in Part 4 section "Rainfall" are incorporated into the spreadsheet. Time-of-concentration formulas from NRCS TR-55 are also incorporated into the spreadsheet to calculate peak discharges.

The GVMC Stormwater Calculator can be used to calculate the TSS reduction for a single treatment train on the site. (A single treatment train consists of one or more water quality and/or channel protection BMPs in series.) A site with multiple treatment trains requires one spreadsheet for each treatment train.

The spreadsheet allows the user to select non-structural and structural BMPs to meet required runoff rates and volumes, and accounts for protected areas on the site.

Output is graphed as hydrographs and summarized in tabular form for a range of rainfall frequencies.

A copy of the spreadsheet including a tutorial is provided on the Municipality's website.

### Pond Routing

Flood control volume is computed by numerically routing the hydrograph for the developed site through a detention basin (pond). The steps in the process are as follows:

1. The inflow hydrograph is interpolated from a collection of scaled hydrographs computed using TR-20 for various times-of-concentration and the ratio of initial abstract to total rainfall (Ia/P) values. This is similar to the tabular TR-55 approach. The hydrograph collection was generated using the Michigan specific dimensionless unit hydrograph.

2. Structural BMP volumes are removed from the front of the hydrograph, effectively reducing the required flood control volume. The resulting hydrograph does not start until all retention volume is satisfied. If pervious pavement is selected as a structural BMP, the available storage volume in excess of the 2-year rainfall (used to compute the channel protection volume) is used to reduce the required flood control volume.

3. The inflow hydrograph adjusted for structural BMPs is routed through a detention pond model using the Modified Puls Method (see Section 8.4.8 of the MDOT Drainage Manual). The pond is assumed to be prismatic and defined by a bottom area, side slope, and orifice diameter. Pond routing is the calculation of the outflow hydrograph given the inflow hydrograph and pond characteristics. This calculation is based on the continuity equation written in differential form:

$$\frac{dV}{dt} = I - Q$$

where *V* is the volume of water in storage in the pond at time *t*, *I* is the inflow at time t, and *Q* is the outflow at time t. To calculate the outflow hydrograph, a finite difference method approximation of the continuity equation is used. This allows Q to be calculated as a time series:

$$\left(V_{i+1} + Q_{i+1}\frac{\Delta t}{2}\right) = \left(I_{i+1} + I_i - Q_i\right)\frac{\Delta t}{2} + V_i$$

where *Δt* is the time step, *i+1* refers to the present time and *i* refers to a time *Δt* earlier. At time *i+1* everything on the right hand side of the equation is known, allowing the value of the left hand side to be determined. Since V and Q are both functions of the pond depth, *H*, given the pond characteristics a table that relates values of pond depth, *H*, to values of $\left(V + Q\frac{\Delta t}{2}\right)$ can be constructed. This table is then used to find the pond depth at time i+1. Given this pond depth, the storage volume, V, and outflow, Q, can also be computed at time i+1. The calculation can then proceed to the remaining time steps resulting in the outflow hydrograph.

4. The pond model characteristics include bottom area, side slope, and orifice diameter. The calculator computes the required orifice diameter to produce the desired peak discharge at an arbitrary depth of 5 feet. The sides are conservatively assumed to be vertical.
5. The spreadsheet runs a macro that iteratively adjusts the bottom area until the desired peak discharge and storage depth are met.

### Advantages

The GVMC Stormwater Calculator can assist the Design Engineer in applying the correct land uses and Curve Numbers in calculating channel protection volume, accounting for travel time through BMPs, accounting for total TSS reduction from a series of BMPs, and evaluating a variety of stormwater management options quickly.

Design calculations submitted using the GVMC Stormwater Calculator will help to expedite the review process because reviewing engineers are familiar with the spreadsheet and can more quickly check that sizing requirements are being met.