CRANBERRY
• TOWNSHIP •

POLLUTION REDUCTION PLAN

National Pollutant Discharge Elimination System Stormwater Discharge From Small Municipal Separate Storm Sewer System (MS4s)



September 2017



ENGINEERING AND ENVIRONMENTAL SERVICES

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and Environmental Services

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INTRODUCTION

Cranberry Township is located in the Southwest section of Butler County. The Township is divided into three local watersheds (Brush Creek, Breakneck Creek, and Big Sewickley Creek). Within the three watersheds are waterways named, Coal Run, Brush Creek, Liken Run, Wolfe Run, Kaufman Run, and unnamed tributaries. The Pennsylvania Department of Environmental Protection (DEP) has determined that various waterways within Cranberry Township or five miles downstream of the Township have impaired waters. Cranberry Township is required to develop and implement a Pollution Reduction Plan (PRP) under the National Pollutant Discharge Elimination System (NPDES) General Permit For Stormwater Discharges From Small Municipal Separate Storm Sewer System (MS4).

The development of an "Impaired Waters PRPs" is required by the NPDES 2018 PAG-13 General Permit for discharges to local waters that are impaired for nutrients and/or sediment where there is no waste load allocation (WLA) in a Total Maximum Daily Load (TMDL). The requirements are that permittees estimate their existing sediment, Total Phosphorus (TP), and Total Nitrogen (TN) load to the impaired waters, and that the PRP identify BMPs that will reduce the loads by 10%, 5% and 3% respectively within 5 years following DEP's approval of coverage (Appendix D of 2018 PAG-13 General Permit). Permittees may propose a presumptive approach in which a 10% sediment reduction is assumed to also result in a 5% TP reduction and a 3% TN reduction.

PERMIT REQUIREMENTS

The DEP has developed instructions to assist MS4 applicants and permittees in the preparation of PRP for stormwater discharges of nutrients and sediment to local surface waters impaired for nutrients and/or sediment. Existing loading must be calculated and reported for the portion of the Planning Area which drains to impaired waters as of the date of the development of the PRP. MS4s may not claim credit for street sweeping and other non-structural BMPs implemented in the past. If structural BMPs were implemented prior to development of the PRP and continue to be operated and maintained, the MS4 may claim pollutant reduction credit in the form of reduced existing loading.

The PRP must include the following elements:

- Public Participation
- Map
- Pollutants of Concern
- Determine Existing Loading for Pollutants of Concern
- BMPs to Achieve the Minimum Required Reductions in Pollutant Loading
- Identify Funding Mechanism(s)
- Identify Responsible Parties for Operation and Maintenance (O&M) of BMPs

A. PUBLIC PARTICIPATION

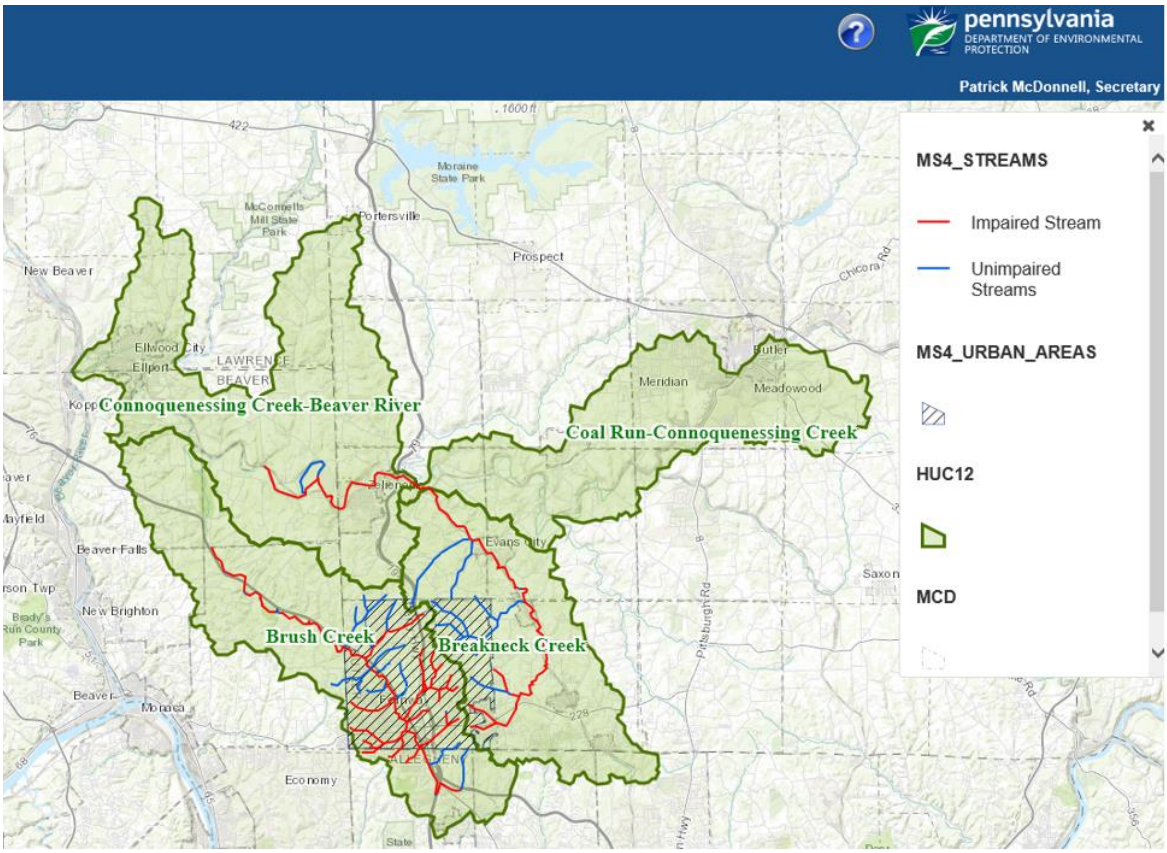
The DEP guidelines require the PRP to include public participation within the plan. Below is a list of public participation measures that is required with this plan:

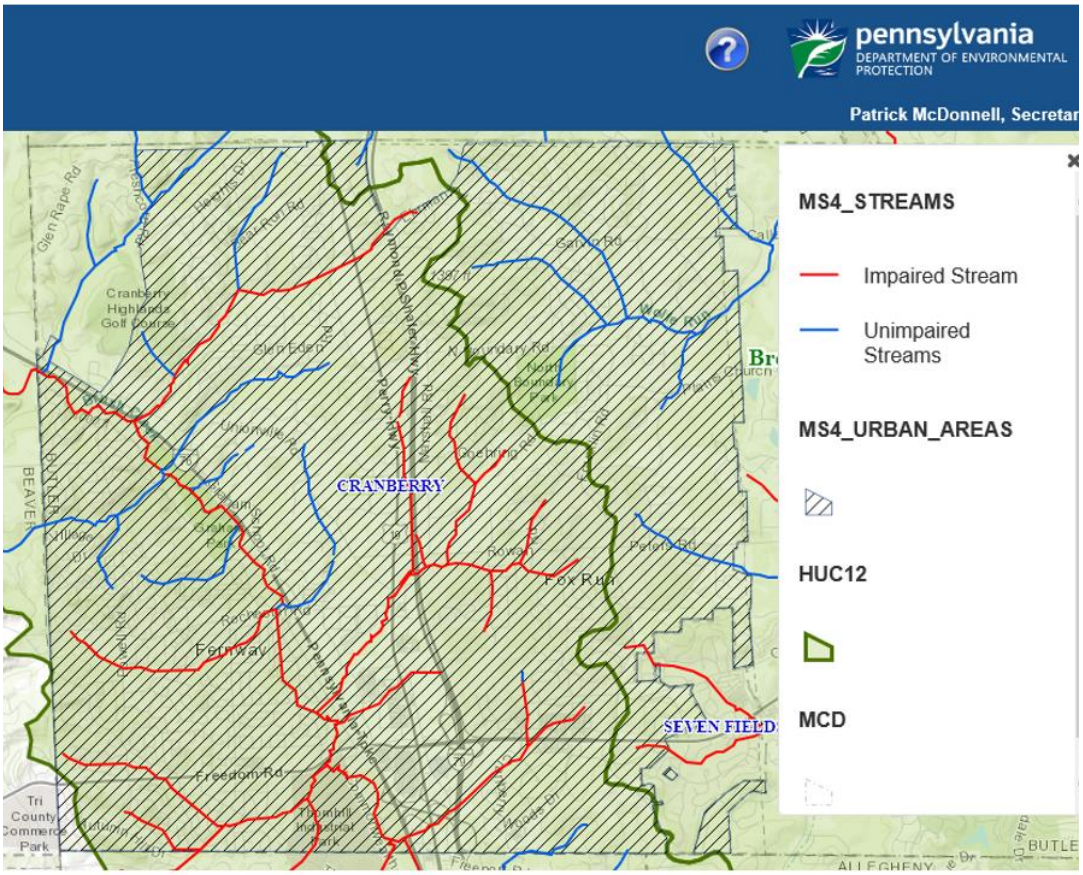
- The applicant shall make a complete copy of the PRP available for public review.
  - PRP available for the public to review and comment July 28 through August 29
- The applicant shall publish, in a newspaper of general circulation in the area, a public notice containing a statement describing the plan, where it may be reviewed by the public, and the length of time the permittee will provide for the receipt of comments. The public notice must be published at least 45 days prior to the deadline for submission of the PRP to DEP.
  - Public notice and proof of advertisement. (See Appendix “1”)
  - PRP public notice was published in Butler Eagle on July 30, 2017
- The applicant shall accept written comments for a minimum of 30 days from the date of public notice.
  - Written comments received from the public to the PRP. (See Appendix “1”)
  - PRP available for the public to review and comment July 28 through August 29
- The applicant shall accept comments from any interested member of the public at a public meeting or hearing, which may include a regularly scheduled meeting of the governing body of the municipality or municipal authority that is the permittee.
  - Meeting notice and power point presentation provided in Appendix “1”.
  - Public Meeting to Present PRP held July 27, 2017 at Township Building
- The applicant shall consider and make a record of the consideration of each timely comment received from the public during the public comment period concerning the plan, identifying any changes made to the plan in response to the comment.
  - A copy of the permittee’s record of consideration of all timely comment received in the public comment period to the PRP. (No comments received.)

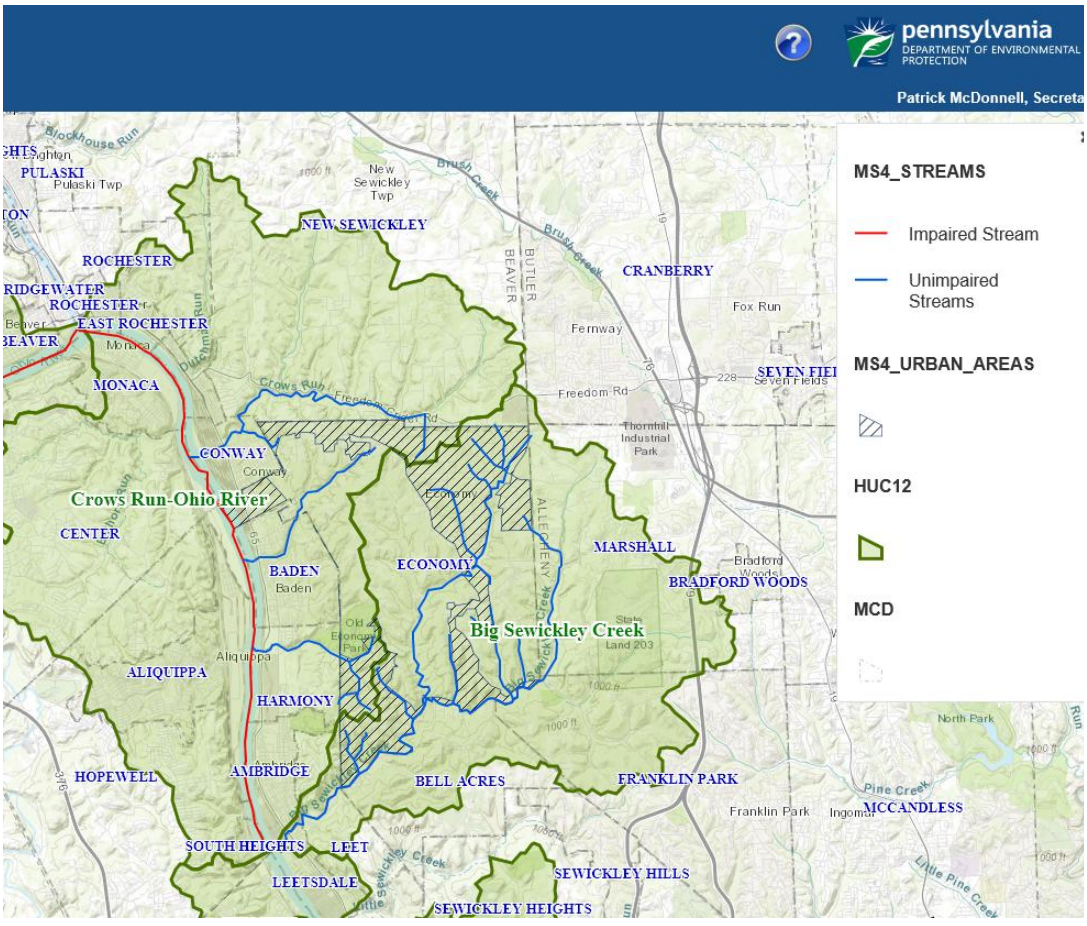
B. MAPPING

Cranberry Township is located within the Brush Creek, Breakneck Creek, and Big Sewickley Creek Watersheds. As indicated on the Pennsylvania Department of Environmental Protection (DEP) web-based GIS application images below, there are impaired streams within the Brush Creek and Breakneck Creek watersheds.

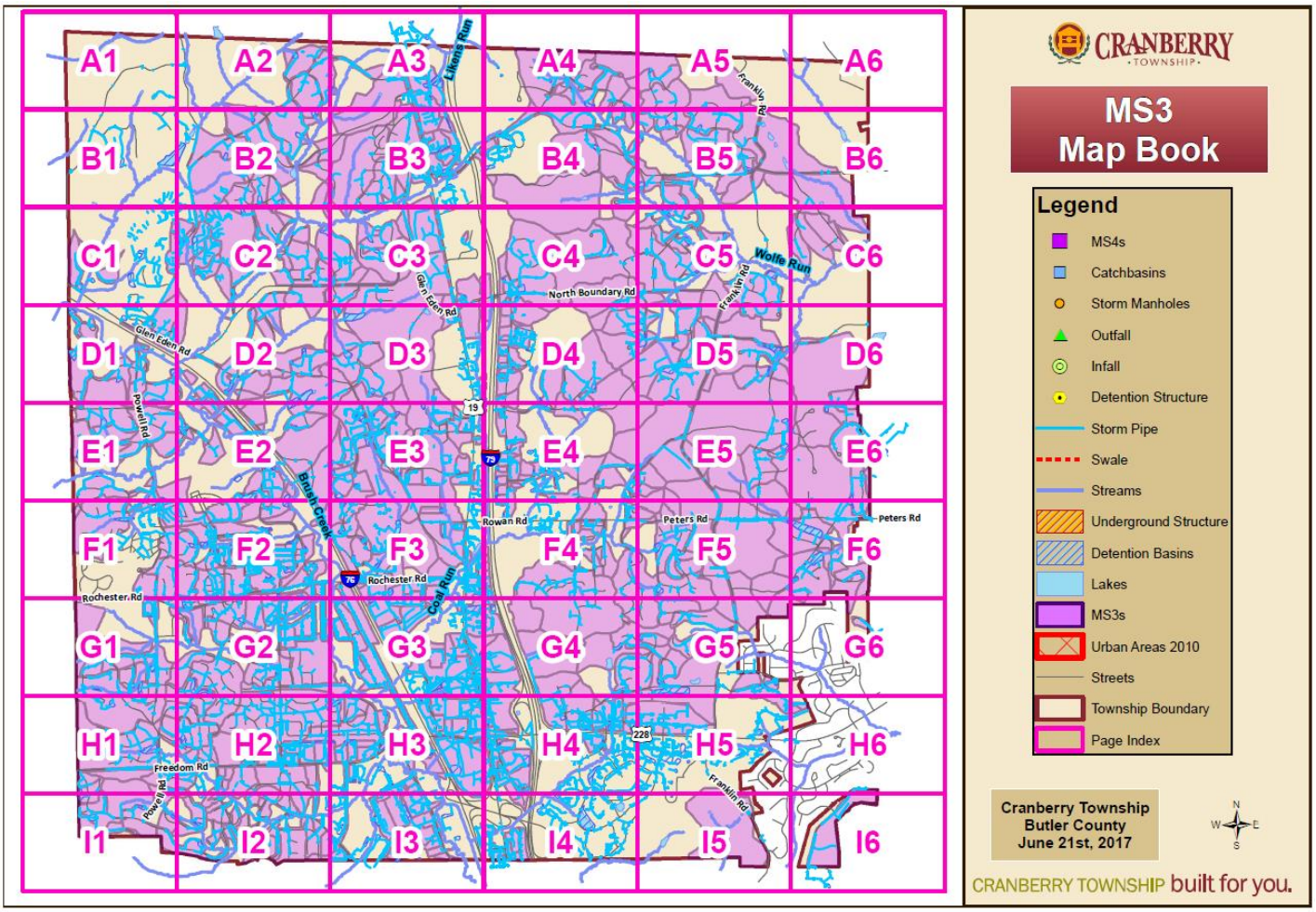
DEP recommends delineation of municipal storm sewersheds (MS3) associated with individual MS4 outfalls in order to determine the combined MS3. To comply with DEP recommendation, Cranberry Township created a map book identifying the drainage areas to the impaired streams. The Cranberry Township MS3 Map Book was created using ESRI ArcGIS 10.5 software for its GIS. Our feature classes are kept in an SDE Enterprise database stored on SQL server 2014. The data is stored in the State Plane PA South NAD 1983 (feet) coordinate system and datum. The point data was collected using a trimble R8 survey grade gps unit. The polygon and polyline data was digitized based off asbuilt plans, field checks, and raster data. The background image is from the 2016 aerial provided by the Southwestern Pennsylvania Commission.




pennsylvania
DEPARTMENT OF ENVIRONMENTAL PROTECTION
Patrick McDonnell, Secretar
MS4_STREAMS
Impaired Stream
Unimpaired Streams
MS4_URBAN_AREAS
HUC12
MCD
CRANBERRY
Fox Run
Fernway
Freedom Rd
SEVEN FIELD
Cranberry Highlands Golf Course
Tri County Commerce Park
Thornhill Industrial Park
BEAVER
BUTLER
ALLEGHENY


pennsylvania
DEPARTMENT OF ENVIRONMENTAL PROTECTION
Patrick McDonnell, Secreta
MS4_STREAMS
Impaired Stream
Unimpaired Streams
MS4_URBAN_AREAS
HUC12
MCD
PULASKI
Pulaski Twp
New Sewickley Twp
NEW SEWICKLEY
ROCHESTER
RIDGEWATER
ROCHESTER
EAST ROCHESTER
MONACA
CONWAY
Crows Run-Ohio River
CENTER
BADEN
Baden
ECONOMY
Big Sewickley Creek
MARSHALL
BRADFORD WOODS
ALIQUIPPA
HARMONY
HOPEWELL
AMBRIDGE
BELL ACRES
FRANKLIN PARK
MCCANDLESS
SOUTH HEIGHTS
LEET
LEETSDALE
SEWICKLEY HILLS
SEWICKLEY HEIGHTS
CRANBERRY
Fox Run
Fernway
Freedom Rd
SEVEN FIEL
Thornhill Industrial Park
Franklin Park
North Park
BEAVER
BUTLER
ALLEGHENY

Cranberry Township has developed maps that identify land uses, surfaces and the storm sewershed boundary associated with each MS4 outfall that discharges to impaired surface waters, and calculate the MS3 area that is subject to Appendix D and/or Appendix E of the PAG-13. This simplified method is used to estimate existing loading that is acceptable to DEP in determine the percentage of impervious and pervious surfaces within the urbanized area of the MS3 and calculate existing loading by multiplying the developed impervious and developed pervious land areas (acres) by pollutant loading rates (lbs/acre/year) provided by DEP. Outside of the urbanized area, the MS4 may use loading rates for undeveloped land. Where structural BMPs are currently in place and are functioning, the existing loading estimate may be adjusted to account for pollutant reduction from those BMPs. The maps identify the existing and proposed location(s) of structural BMP(s) that will be implemented to achieve the required pollutant load reductions. To provide the sufficient detailed information the Pollution Reduction Plan Map Book consists of 56 sheets.



The map identifies areas that are to be "parsed" from the PRP Planning Area. In other words, at the MS4's discretion (subject to DEP rules), certain areas may be shown on the map that are within the Planning Area but are not included in the calculation of land area and existing pollutant loading. Guidance used on parsing out an area is outlined below. Parsing is defined as a process in which land area is removed from a Planning Area to calculate the actual or target pollutant loads that are applicable to an MS4. Parsing provides the opportunity for an MS4 permittee to eliminate the areas within the storm sewershed that does not drain to the MS4 and areas that are already covered by an NPDES permit for the control of stormwater. Storm Sewershed Maps identifying the parsed area can be found in Appendix "2".

Below are guidelines followed for parsing out areas.

- Parsing is not required by NPDES permits and is therefore optional; however, the Township found benefit from parsing. The Township acknowledges when parsing is done, best management practices (BMPs) implemented within the land area that is parsed may not be considered for meeting pollutant loading reductions
- MS4s must identify the target pollutant loadings (existing pollutant loading minus loading reduced by existing BMPs). To estimate existing pollutant loading, MS4s may parse out appropriate land areas.
- All parsing must be supported by a map and a determination of the area being parsed and/or appropriate calculations demonstrating how the parsing was done.
- Parse land area associated with non-municipal stormwater NPDES permit coverage that exists within the urbanized area of a municipality.
- Land area associated with PennDOT roadways and the Pennsylvania Turnpike was parsed.
- Land associated with the production area of a Concentrated Animal Feeding Operation that is covered by an NPDES permit
- Land areas in which the stormwater runoff does not enter the MS4. If an accurate storm sewershed map is developed, these lands may be parsed or excluded as part of that process.

MS4s may claim "credit" for non-parsed areas structural BMPs implemented prior to development of the PRP to reduce existing loading estimates. To claim credit, the Township has identified the existing structural BMPs in Appendix "3" of the PRP with the following information:

- A detailed description of the BMP
- Latitude and longitude coordinates for the BMP
- Location of the BMP on the storm sewershed map
- The permit number, if any, that authorized installation of the BMP
- Calculations demonstrating the pollutant reductions achieved by the BMP
- The date the BMP was installed and a statement that the BMP continues to serve the function(s) it was designed for
- The operation and maintenance (O&M) activities and O&M frequencies associated with the BMP.

C. POLLUTANTS OF CONCERN

The PA DEP has identified the pollutants of concern for streams located within Cranberry Township as shown on the chart below.

Pennsylvania Department of Environmental Protection - MS4 Requirements Table (Municipal)
Anticipated Obligations for Subsequent NPDES Permit Term

MS4 Name	NPDES ID	Individual Permit Required?	Reason	Impaired Downstream Waters or Applicable TMDL Name	Requirement(s)	Other Cause(s) of Impairment
Butler County						
CRANBERRY TWP	PAG138318	No		Kaufman Run	Appendix E-Siltation (5)	
				Connoquenessing Creek	Appendix E-Organic Enrichment/Low D.O. (5)	
				Brush Creek	Appendix E-Organic Enrichment/Low D.O. (4a), Appendix B-Pathogens (5), Appendix E-Siltation (5)	Cause Unknown (5), Water/Flow Variability (4c)
				Breakneck Creek	Appendix E-Siltation (5)	Cause Unknown (5)
				Unnamed Tributaries to Brush Creek	Appendix E-Nutrients (5)	

D. DETERMINE EXISTING LOADING FOR POLLUTANT OF CONCERN

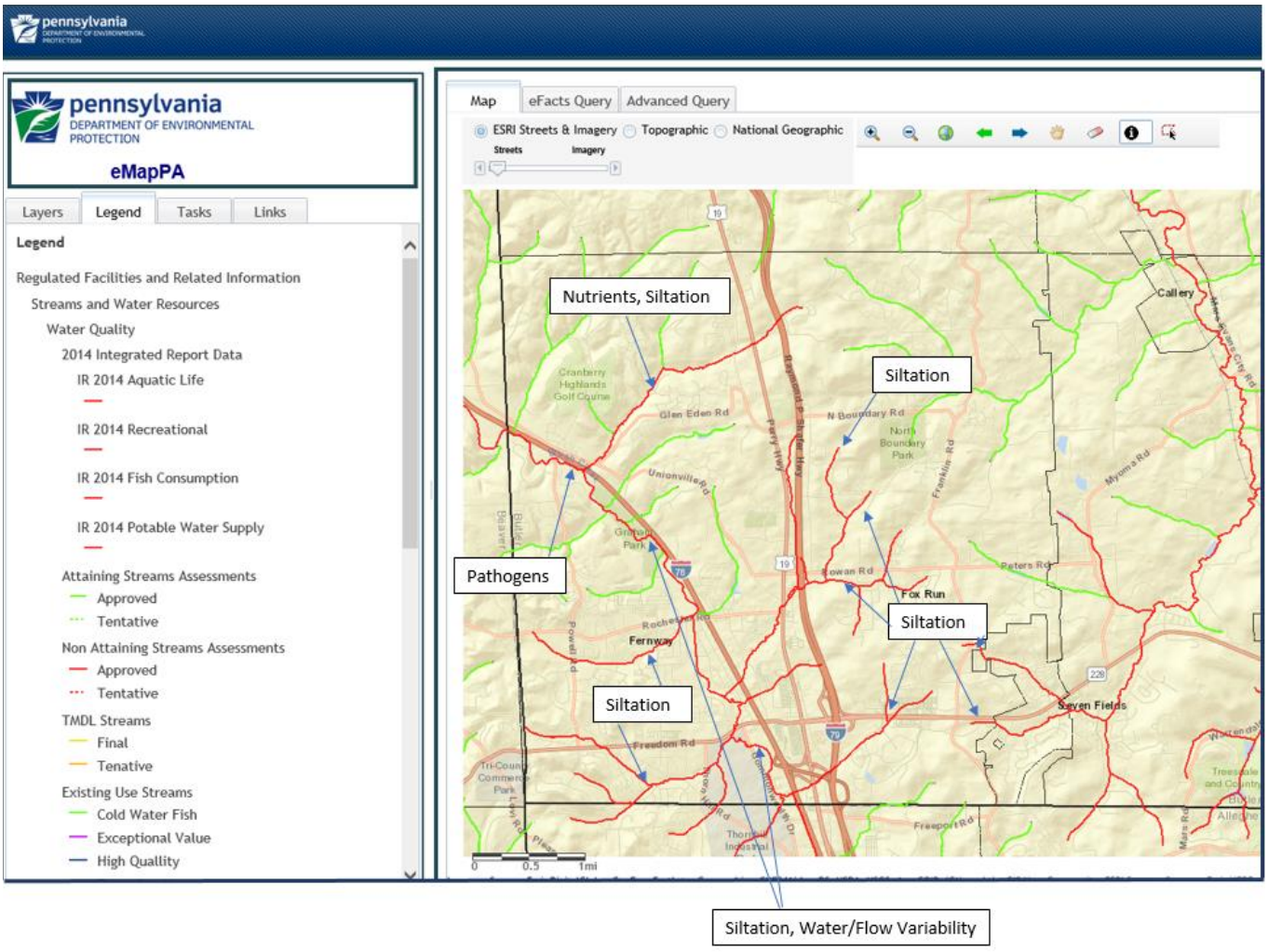
Cranberry has estimated the existing impervious and pervious area loading calculations based off the Township GIS system using a background photograph image obtained from the 2016 aerial provided by the Southwestern Pennsylvania Commission. Impervious and pervious surface within the urbanized area of the storm sewershed were calculated using existing loading by multiplying the developed impervious and developed pervious land areas (acres) by pollutant loading rates (lbs./acre/year) provided in the below PA DEP chart below. Outside of the urbanized area, the MS4 may use loading rates for undeveloped land. Where structural BMPs are currently in place and are functioning, the existing loading estimate may be adjusted to account for pollutant reduction from those BMPs.

3800-PM-BCW0100k 3/2017
PRP Instructions

ATTACHMENT B

DEVELOPED LAND LOADING RATES FOR PA COUNTIES[1,2,3]

County	Category	Acres	TN lbs/acre/yr	TP lbs/acre/yr	TSS (Sediment) lbs/acre/yr
All Other Counties	impervious developed	-	23.06	2.28	1,839
	pervious developed	-	20.72	0.84	264.96



The Township has estimated the parsed watershed area within the urbanized area, consist of a total of 9,234 acres. As identified on the above map, most of the municipal storm sewershed (MS3) shows an impairment for siltation, which requires a minimum 10% reduction over the 5-year permit cycle. A detailed analysis of each MS3 was performed and it is estimated that the total development loading of 5,464,982 lbs/yr of Total Suspended Solids (sediment) is being discharged from the MS3s. The reduction due to existing BMPs was calculated at 2,008,332 lbs/yr, which results in a required total reduction of 345,014 lb/yr of sediment that will need to be addressed with this PRP.

Parsing With BMPs						Acres	lbs/acre/yr	lbs/acre/yr	lbs/yr	lbs/acre/yr	lbs/yr
	Urban Area % Impervious =	21%	x	9,233.62	=	1,914	23	2	4,363	1,839	3,518,940
	Urban Area % pervious =	79%	x	9,233.62	=	7,320	21	1	6,149	265	1,939,536
	Total Developed Load =										5,458,476
	TSS Removed through BMPs (See Sediment Loading and Reduction Chart) =										2,008,332
	Reduction due to BMPs (See Attached Sheets)										3,450,144
	Required Reduction % =										10%
	Required Reduction (lb/yr)=										345,014

A section of the Brush Creek located below the turnpike culvert crossing near the intersection of Unionville Road and Glen Eden Road has registered as impaired due to pathogens. The eMapPA data file indicates the Source Unknow and it appears to have been determined around 2003. Reviewing the history of this area with Township Staff, this area along Glen Eden Road and along the Brush Creek was part of the Graham family dairy farm. The dairy operation consisted of barn/milk parlor, barn yard, feed crops, and pasture. The unnamed tributary to the Brush Creek that flows through the Graham Farm has also registered for the impairment due to Nutrients from agriculture. This creek was used for access to the pastures by the cattle, through the Turnpike culvert and unnamed tributary to Brush Creek. Riparian buffers were not maintained to contain the sediment, nutrients or pathogens associate with the dairy operation from entering the stream. Manure and nutrient management were effective on the crop land but not controlled from entering the streams. The dairy and farming operation has ended with the surrounding area being developed with residential housing and these streams no longer requires a BMPs to mitigate the impairment for Nutrients and Pathogens.

E. BEST MANAGEMENT PRACTICES (BMPS) SELECTION

The Township currently estimates there are 378 above ground detention basins, 39 below ground detention basins, vegetative swales and wetlands located within the Township. Existing BMPs located within the storm sewer shed will be used to reduce the pollutant load reductions. The reporting of the existing BMPs inspection and maintenance program is part of the PRP. BMP owners will be notified that they are required to submit annual reports to the Township for the inspection and work performed on their BMP to make sure it is functioning properly.

The PA DEP has established BMP Effectiveness Values Table to assist in developing and implementing Pollutant Reduction Plans. The values used in the table generally consider pollutant reductions for both overland flow and reduced downstream erosion. The BMP Effectiveness Values Tables can be found in Appendix “4”. The recommendation from the expert panel reports approved by the Chesapeake Bay Program in determining pollutant load reductions in the PRP was also considered. These values have been used to determine additional sediment reduction. Cranberry Township is reviewing options to achieve the sediment reduction over the next five years by considering installing and performing:

- Stream bank restoration along Brush Creek
- Requiring Future Developers to overdesign BMPs within MS3
- Storm Sewer System Solid Removal
- Tree Planting
- Raingarden Installation
- Improvements Existing Storm Basins
- Filtering Practices
- Vegetative Open Channels
- Street Sweeping

The following table conceptual plan of the proposed PRP strategy for installation of the BMPs to accomplish the required sediment reduction over the next five years. This plan is subject to change based off of proposed private development projects and partnering programs with local businesses. Cranberry Township will revise the plan accordingly, to document how the required sediment reduction is achieved.

Option #1 Cranberry Township Pollution Reduction Plan Proposed BMPs

BMP Effectiveness Values (EV) provided from DEP

Proposed BMP #	Proposed BMP Location	Proposed BMP	BMP EV	Proposed Limits (Acres)	Proposed Reduction (lbs/yr)
1	Brush Creek	Stream bank restoration along the Brush Creek	44.88 Ind/ft/yr	6,000 lf	269,280
2	Twp. Inlets	Storm Sewer System Solid Removal	Weight * PCF	---	2,500
3	Twp. Parks	Tree Planting	20%	2	610
4	Along Twp Roads	Vegetative Open Channels	50%	95	72,400
5	Twp. Streets	Street Sweeping (25 Times Annually)	9%	2	274
		Total Proposed TSS Reduction (lb/yr) =			345,064
		Required Reduction (lb/yr) =			345,014
		Excess TSS reduction (lb/yr)=			**50**

F. FUNDING MECHANISM

Identify Funding Mechanism(s). Prior to approving coverage DEP will evaluate the feasibility of implementation of an applicant's PRP. Part of this analysis includes a review of the applicant's proposed method(s) by which BMPs will be funded. Cranberry Township must identify all project sponsors and partners and probable funding sources for each BMP. DEP does not expect that guaranteed sources are identified in the PRP, but does expect that applicants propose their preferred funding options with alternatives in the event the preferred options do not materialize.

Cranberry Township will research funding sources within and outside the Township to locate possible funding. We estimate the total cost to address the impaired stream to be approximately $500,000 over the 5-year permit cycle. The Proposed BMP projects is projected to be funded by the following source:

- Home Owners Associations
- General Funds
- Developers
- Local Businesses
- Grants

G. OPERATION AND MAINTENANCE (O&M) OF BMPS

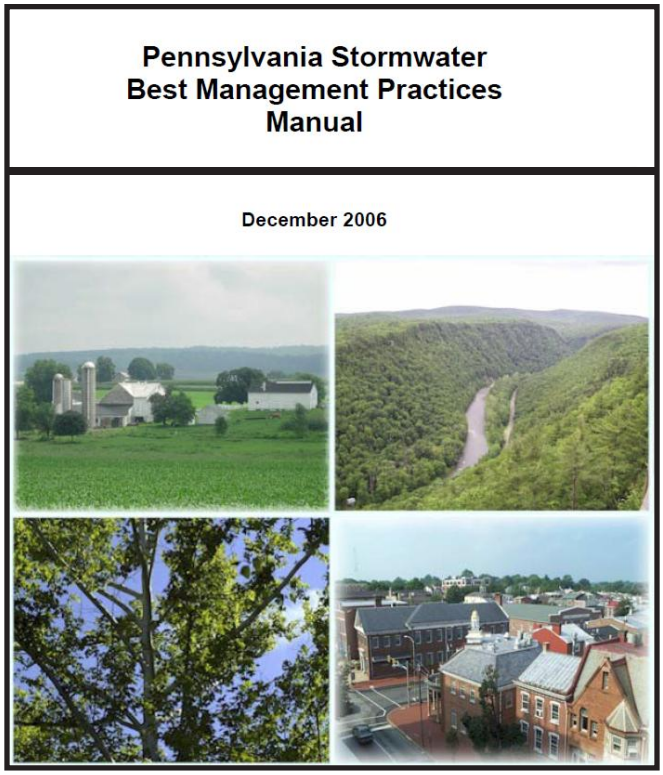
Identify Responsible Parties for Operation and Maintenance (O&M) of BMPs. Cranberry Township has identified the owners of the BMPs in Appendix "6".

Once implemented the BMPs must be maintained to continue producing the expected pollutant reductions. MS4 permittees will need to identify actual O&M activities in Annual MS4 Status Reports submitted under the General Permit.

Pennsylvania DEP has provided guidance for maintaining BMPs through the 2006 manual. The manual is intended to provide guidelines and are not an adjudication or a regulation. The Department reserves the discretion to vary from this guidance as circumstances warrant. The purpose of this guidance manual is to ensure effective stormwater management to minimize the adverse impacts of stormwater on ground water and surface water resources to support and sustain the social, economic and environmental quality of the Commonwealth.

The owner will be responsible for the maintenance of existing BMPs and the design of proposed BMPs within their developments. Cranberry Township will direct the owner to follow the guidelines presented within the Pennsylvania Stormwater Best Management Practice Manual.

Establishing the O&M and reporting criteria, Cranberry Township has reviewed the guidelines provided in the PA NPDES Stormwater Discharge from Small Municipal Separate Storm Sewer Systems (MS4) 2022 Model Stormwater Management Ordinance. These guidelines will be incorporated with the Township PRP to remain consistent with the proposed future requirements to O&M and frequencies Inspection of BMPs throughout the Township. These guidelines are shown below under Sections 501, 502, 503 and 802. The below listed reporting criteria does not relieve the owner of their responsibility to maintain the existing BMPs as shown on the approved O&M plan approved by the Butler County Conservation District.



3800-PM-BCW0100j 5/2016
Model Ordinance

ARTICLE V – OPERATION AND MAINTENANCE

Section 501. Responsibilities of Developers and Landowners

A. The Municipality shall make the final determination on the continuing maintenance responsibilities prior to final approval of the SWM Site Plan. The municipality may require a dedication of such facilities as part of the requirements for approval of the SWM Site Plan. Such a requirement is not an indication that the municipality will accept the facilities. The municipality reserves the right to accept or reject the ownership and operating responsibility for any portion of the stormwater management controls.

B. Facilities, areas, or structures used as SWM BMPs shall be enumerated as permanent real estate appurtenances and recorded as deed restrictions or conservation easements that run with the land.

C. The O&M Plan shall be recorded as a restrictive deed covenant that runs with the land.

D. The Municipality may take enforcement actions against an owner for any failure to satisfy the provisions of this Article.

ARTICLE V – OPERATION AND MAINTENANCE

Section 502. Operation and Maintenance Agreements

A. Prior to final approval of the SWM Site Plan, the property owner shall sign and record an Operation and Maintenance (O&M) Agreement (see Appendix A) covering all stormwater control facilities which are to be privately owned.

1. The owner, successor and assigns shall maintain all facilities in accordance with the approved maintenance schedule in the O&M Agreement.

2. The owner shall convey to the Municipality conservation easements to assure access for periodic inspections by the Municipality and maintenance, as necessary.

3. The owner shall keep on file with the Municipality the name, address, and telephone number of the person or company responsible for maintenance activities; in the event of a change, new information shall be submitted by the owner to the Municipality within ten (10) working days of the change.

B. The owner is responsible for operation and maintenance (O&M) of the SWM BMPs. If the owner fails to adhere to the O&M Agreement, the Municipality may perform the services required and charge the owner appropriate fees. Nonpayment of fees may result in a lien against the property.

Section 503. Performance Guarantee

For SWM Site Plans that involve subdivision and land development, the applicant shall provide a financial guarantee to the Municipality for the timely installation and proper construction of all stormwater management controls as required by the approved SWM Site Plan and this Ordinance in accordance with the provisions of Sections 509, 510, and 511 of the Pennsylvania Municipalities Planning Code.

Section 802. Inspection

The landowner or the owner's designee (including the Municipality for dedicated and owned facilities) shall inspect SWM BMPs, facilities and/or structures installed under this Ordinance according to the following frequencies, at a minimum, to ensure the BMPs, facilities and/or structures continue to function as intended:

1. Annually ~~for the first 5 years~~.

2. ~~Once every 3 years thereafter.~~

3. During or immediately after the cessation of a 10-year or greater storm.

Inspections should be conducted during or immediately following precipitation events. A written inspection report shall be created to document each inspection. The inspection report shall contain the date and time of the inspection, the individual(s) who completed the inspection, the location of the BMP, facility or structure inspected, observations on performance, and recommendations for improving performance, if applicable. Inspection reports shall be submitted to the Municipality within 30 days following completion of the inspection.

Cranberry Township has developed a list of responsible parties, additional BMP maintenance guidelines, and frequency schedule as part of requirements. The Township believes it is in the best interest of all parties to exceed the minimum inspection period of the BMPs for structural BMPs facilities beyond the 5 years from construction to once a year with a report submitted annually no later than 30 days after the inspection. These guidelines and more are found in the Appendix section of the plan.

Applicants must identify the following for each selected BMP:

- The party(ies) responsible for ongoing O&M
  - List of responsible parties shown in Appendix "6"

- The activities involved with O&M for each BMP
  - Follow PA Stormwater Best Management Practice Manual (December 2006)
  - Inspection Guidelines shown in Appendix "5"

- The frequency at which O&M activities will occur.
  - Frequency requirements identified in Appendix "5"

H. CONCLUSIONS

Cranberry Township established release rates requirements for developments in the 90s to control surface water runoff rate and minimize pollutant load eroding the downstream areas. By exceeding state and federal stormwater requirements prior to the development boom that has occurred within the Township, the stormwater facilities are in place to aid in the load reduction. Cranberry Township has recognized the importance of maintaining the Township owned stormwater facilities and working with the Homeowners Association (HOA) to provide guidance. The MS3 maps and guidelines will provide the HOA and Business Owners an understanding of how to inspect and maintain their BMPs. The required annual inspection submittals will serve as a tracking tool to make sure the BMPs are being inspected.

With the annual inspection submittals confirming the BMPs are functioning properly, the Township will be able to the decrease the required reduction of sediment from existing loading. Under the PAG-13 General Permit, the permittee must achieve the required pollutant load reductions within 5 years following DEP's approval of coverage under the General Permit, and must submit a report demonstrating compliance with the minimum pollutant load reductions as an attachment to the first Annual MS4 Status Report that is due following completion of the 5th year of General Permit coverage.

Cranberry Township proposes to install various BMPs to achieve the TSS load reduction requirement which will also assume to result in the requirements to satisfy the total phosphorus and nutrient reduction. The proposed BMPs are subject to change based off of proposed private development projects and partnering programs with local businesses. Cranberry Township will revise the plan accordingly, to document how the required sediment reduction is achieved over the five-year period.

I. SUBMITTAL

The PRP plan along with the NOI permit application will be submitted to the regional office of DEP responsible for reviewing the NOI or application. In addition, one copy of the PRP (not the NOI or application) must be submitted to DEP's Bureau of Clean Water (BCW). BCW prefers electronic copies of PRPs, if possible. Email the electronic version of the PRP, including map(s) (if feasible), to RA-EPPAMS4@pa.gov. If the MS4 determines that submission of an electronic copy is not possible, submit a hard copy to: PA Department of Environmental Protection, Bureau of Clean Water, 400 Market Street, PO Box 8774, Harrisburg, PA 17105-8774.

APPENDIX 1

PUBLIC COMMENTS AND RESPONSES

SUMMARY OF APPENDIX 1 INFORMATION

- Publication in Butler Eagle
- Email sent out to Township Employee through One-Stop system
- Notice of public meeting placed on Township Website under the Agenda items
- Public Presentation
- Public notice placed on the bill board outside of Cranberry Township Administration Building

Proof of Publication of Notice in Butler Eagle

Under Act No. 587, Approved May 16, 1929

State of Pennsylvania,
County of Butler.

Julie A. Wilczynski Of the Eagle Printing Company, Inc., of the County and State aforesaid, being duly sworn, deposes and says that the BUTLER EAGLE, a newspaper of general circulation published at 114 West Diamond Street, City of Butler, County and State aforesaid, was established 1869, since which date the BUTLER EAGLE has been regularly issued in said County, and that the printed notice or publication attached hereto is exactly the same as was printed and published in the regular editions and issues of the said BUTLER EAGLE on the following dates, viz.

_____ and the

30th Day of July A.D. 2017

Affiant further deposes that the Ad Taker is duly authorized by the EAGLE PRINTING COMPANY, a corporation, publisher of said BUTLER EAGLE, a newspaper of general circulation, to verify the foregoing statement under oath, and Affiant is not interested in the subject matter of the aforesaid notice or advertisement, and that all allegations in the foregoing statement as to time, place and character of publication are true.

Julie A. Wilczynski

Butler Eagle

Copy of Notice or Publication

PUBLIC NOTICE

Notice is hereby given that the Cranberry Township, Butler County, 2525 Rochester Road, Suite 400, Cranberry Township, PA 16066-6499, will be submitting to the Pennsylvania Department of Environmental Protection a Notice of Intent to Renew its PAG-13 (Municipal Separate Storm Sewer System – MS4) General Permit. Under the PAG-13 guidelines, Cranberry Township is required to develop a Pollutant Reduction Plan (PRP) to identify and reduce nutrients and sediment discharge into local waterways.

The public is invited to review the draft PRP and provide written comments. Comments on the draft PRP must be filed in writing no later than thirty (30) days after the publication of this Public Notice. Comments should be mailed or hand delivered to the attention of Tim Schutzman, Waterworks Coordinator, at the above address.

A copy of the PRP will be available for public viewing at the Administration Offices located at the above address from July 28, 2017 through August 29, 2017, Monday through Friday from 8:00 A.M. to 5:00 P.M.

Jason M. Kratsas, P.E.,
Director
Engineering & Environmental Services

Sworn to and subscribed before me this 30th

Day of July 2017

Jessica Smith

Notary Public

My Commission Expires:

COMMONWEALTH OF PENNSYLVANIA
NOTARIAL SEAL
Jessica Smith, Notary Public
Butler Twp., Butler County
My Commission Expires March 25, 2020
MEMBER, PENNSYLVANIA ASSOCIATION OF NOTARIES

Rec'd Cranberry Township AUG 03 2017 Finance Dept.

Statement of Advertising Costs

Cranberry Township Municipal Center

2525 Rochester Road

Suite 400

Cranberry Township, PA 16066

TO BUTLER EAGLE, Dr.

For publishing the notice or publication attached Hereto on the above stated dates	$ 104.00
Probating same	$ 2.00
Total	$ 106.00

Publisher's Receipt for Advertising Costs

The EAGLE P[illegible]Y, publisher of the **BUTLER EAGLE**, a newspaper of general circulation, hereby acknowledge receipt of the a[illegible] publication costs and certifies that the same have been duly paid.

EAGLE PRINTING CO., a Corporation, Publisher
Of BUTLER EAGLE, a Newspaper of General Circulation.

By _____

PROOF OF PUB SPEC 2011

From: Employee One-Stop [DoNotReply@cranberrytownship.org]
Sent: Friday, July 28, 2017 9:16 AM
To: Everyone E-mail Group
Subject: Employee Message Board - Look what you missed at July's Supervisors'...

Employee One-Stop

Look what you missed at July's Supervisors'... has been added

Modify my alert settings | View Look what you missed at July's Supervisors'... | View Employee Message Board

Title: Look what you missed at July's Supervisors' meeting...

Body:

BOS Actions, July 27, 2017

Fire Company beefs up its police unit
Two highly experienced safety veterans sworn in as fire police officers

Two new fire police officers – both intimately familiar with Cranberry's emergency services – were sworn in by Cranberry's Board of Supervisors on July 27. In the mid-2000's, and then again the following decade, Todd Rice served as the Fire Company's elected Chief. Jeff Schueler, a 30-year veteran of the Township's police force, later served as Director of Public Safety until his retirement earlier this year. Both took an oath in their new capacity as Fire Police Officers to direct traffic safely around and away from the scene of wrecks, fires, and other incidents involving Fire Company operations.

Cranberry C.U.P. lays out plans for 2017 weekend

Fundraiser preps for 17th year of golf, softball and celebration

Cranberry C.U.P. President Anthony Bertolino and members of his organization's board briefed the Township's Supervisors on upcoming activities associated with its weekend-long fundraising event. C.U.P. activities, in addition to a communitywide softball tournament, include a Golf Classic, a 5K Run and Walk, a Kickoff Party, and an Opening Ceremony. Since 2000, Cranberry C.U.P. has raised more than $1 million to support families experiencing distress. According to its website, the organization's mission is to promote volunteerism, community spirit, and goodwill towards people or families in need.

New retirement community approved

Village of Cranberry Woods master plan revised to include senior living units

An independent, assisted and continuing care community for seniors featuring a number of amenities and a unit for dement a care will be included in the mix of uses at the Village of Cranberry Woods, a 57-acre development along Franklin Road. Following a public hearing at its July 27 meeting, Cranberry's Board of Supervisors approved the conditional use application of Atlanta-based Formation Development Group to develop a 235,000 square foot, 183-unit, four-story facility to be known as Solana at Cranberry. The developer operates more than a dozen other senior living communities at locations across the country.

Township returns to bond market
$10 million loan will complete treatment plant construction

Interest rates for borrowers with good credit are still low, which prompted Cranberry – which carries a very high Aa1 Moody's rating – to seek funds for financing the remainder of its current $48 million project wastewater treatment plant upgrade and expansion. At its meeting on July 27, Cranberry's Board of Supervisors authorized the retention of PNC Capital Markets and Dinsmore & Shohl to begin preparations for a $10 million bond issue this fall, with $8 million for the plant expansion and $2 million for other capital projects. An earlier bond issue for the plant upgrade covered most of the cost, but its proceeds had to be spent within three years – about a year short of the project's construction schedule. Repayment of the bonds will involve raising customer sewer rates by 50¢ per 1,000 gallons, or about $2.50 a month for the average household. In a separate resolution setting various Township fees, the Board approved the rate increase.

Plans for reducing stormwater pollution examined
Current state permit scheduled to lapse in March

Pennsylvania's Department of Environmental Protection has determined that certain streams in and around Cranberry fall short of the state's water quality standards, particularly as they relate to sediment. As part of the effort to renew its 5-year permit an comply with DEP's federally-mandated Municipal Separate Storm Sewer System program, Cranberry is developing a required Pollution Reduction Plan, PRP, and studying cost-effective measures to stabilize stream bank erosion. At its July 27 meeting, Cranberry's Board of Supervisors heard Waterworks Coordinator Tim Schutzman explain alternative approaches to achieving the required sediment reduction. The PRP will be part of the Township's September application to secure renewal of its current permit, which expires in March. The primary stream pollution that DEP identified involves sediment and does not present risks to human health, Schutzman pointed out. Cranberry's cost of compliance with this mandate now approaches $1 million a year.

Plan for new Rochester Road turning lane right-of-way approved
Final result would give Rt. 19 traffic more green time

Plans to add a new left turn lane to Rochester Road at Rt. 19 took a step forward at the July 27 Board of Supervisors meeting. By adding another left turn-only lane from Rochester onto Rt. 19 northbound, the plan would enable traffic turning onto 19 from both Rochester and Wisconsin to take place concurrently rather than sequentially. The time saved would be added to the green light cycle for Rt. 19 traffic. At the Board meeting, Cranberry's Township Manager was authorized to sign a drawing of the project which anticipates acquiring right-of-way from the Meeder family farm. A consulting firm that specializes in navigating the multi-step PennDOT process will be retained to carry out the acquisition.

Grants for two PennDOT traffic light improvements accepted
80% of St. Francis Way and Rt. 19 traffic signal improvements funded

Two Green Light Go grants from PennDOT totaling $750,000 have been officially accepted by the Township. At its July 27 meeting, Cranberry's Board of Supervisors adopted separate motions to sign off on the grants hich will fund 80 percent of the two projects: a signal upgrade at St. Francis Way and Rt. 19, and software for transforming five other traffic lights along Rt. 19 into adaptive signals. Work to upgrade the Rt. 19 corridor will begin this year; reconstruction at the intersection of St. Francis and the Cranberry Mall with Rt. 19 won't begin until 2019.

North Boundary Road berm to be widened
Expansion to run from North Boundary Park to Franklin Road

A project involving the development of a safe walking corridor along North Boundary Road between North Boundary Park and Franklin Road took a step forward at the July 27 meeting of Cranberry's Board of Supervisors. The improvements, which will require the resolution of various environmental issues as well as utility relocation to create a five-foot wide berm, will also involve the acquisition of rights of way from several property owners. At its meeting, the Board adopted a resolution authorizing the Township to acquire those rights. Their action will bring a preliminary design adopted last year into the final design stage. A related improvement, involving enhancements to the pedestrian crossing from Pinehurst to the park, is also visualized. Constructed is expected to begin next year.

Don't even knock; registry allows residents to opt out of door-to-door solicitation
Opt-out does not apply to petitioners or Scouts selling cookies

Under a new Township ordinance, peddlers, vendors, and those canvasing neighborhoods to collect money can be barred from soliciting at certain addresses if the homeowner makes that preference a matter of record. At its July 27 meeting, Cranberry's Board of Supervisors approved the creation of a year-to-year Do Not Knock registry for residents as an amendment to current provisions of the Township's Code of Ordinances. The revision also extends by an hour – from 8:00 PM to 9:00 PM – th times during which door-to-door solicitation may be conducted. A Township-issued license is required for commercial solicitation, and anyone who solicits door-to-door will be required to wear an identification badge issued by the police department. Terms of the ordinance revisions take effect October 1.

Expires: 7/31/2017

Last Modified 7/28/2017 9:15 AM by Longini, Peter

AGENDA

Cranberry Township Board of Supervisors
Agenda Preparation Meeting
Thursday, July 27, 2017 6:30 PM

Call to Order Chairman Hadley

1. Pledge of Allegiance

2. Roll Call

3. ANNOUNCEMENT

252/2017

The Regular Meeting of August 3rd has been canceled. Action will be considered at tonight's meeting.

4. Public Comment (Any item on or off the Agenda except for Public Hearing Items)

5. Administration of Oath of Office-Fire Police Officer

203/2017

At tonight's meeting, the Oath of Office for a Fire Police Officer will be administered to Todd Rice and Jeffrey Schueler.

6. Cranberry C.U.P. Update

189/2017

Members of the Cranberry C.U.P. (Community Uniting People) will update the Board this evening on the upcoming C.U.P. activities, including the Golf Classic at the Cranberry Highlands Golf Course on Friday, August 4, followed by the Kick-Off Party at 6:00 pm, the 5K Run & Walk on Saturday, August 5 at 8:00 am at Graham Park and the Opening Ceremony at 10:00 am at Community Park. There will also be an overview of the organization's history and accomplishments.

29. **Township Manager**

30. Financing for Brush Creek Water Pollution Control Facility and other Capital Projects
244/2017

The Board will be asked this evening to authorize the process to begin to establish phase 2 of the financing for the multi-year renovation and expansion of the Brush Creek Water Pollution Control Facility and additional capital projects. This includes the appointment of Bond Counsel and the Investment Banker for this Issue, along with consideration of the needed revenue to support the Phase 2 financing. Staff, along with the Township's Investment Banker and Bond Counsel will outline the proposed process with the Board.

31. Resolution Authorizing preparations for a Bond Issue
254/2017

Consideration of the following motion:

Motion to adopt Resolution No. 2017-___, authorizing PNC Capital Markets, Investment Banker, and Dinsmore and Shohl, Bond Counsel, to begin the preparations for a 2017 Bond issue to complete the financing for the Brush Creek Water Pollution Control Facility expansion and upgrade and additional capital projects.

32. MS4 Program Update
250/2017

Tim Schutzman, P.E., with the Engineering & Environmental Services Department will present to the Board this evening an update on the MS4 Program. The MS4 Program, Municipal Separate Storm Sewer System, is a federally mandated program, administered through the PA DEP, requiring Cranberry Township to manage stormwater in terms of quantity and quality. The cost associated with this mandate, along with the new requirements, are approaching $1Million annually.

33. Fee Resolution Update
245/2017

Township Staff continue to review our various fees to ensure the fees charged for a particular service are reflective of the cost of providing that service.

Motion to adopt Resolution No. 2017-___, amending the fee schedule to include the following changes:

1. Fire Line Charges
2. Meter Quantity Charge rates
3. Deletion of Oil and Grit Separator Annual Fee
4. Street Name Signs
5. Duplication of Public Records
6. Deletion of Police Application/Testing and Mailing Fees







Small Municipal Separate Storm Sewer System (MS4)

Pollution Reduction Plan (PRP)

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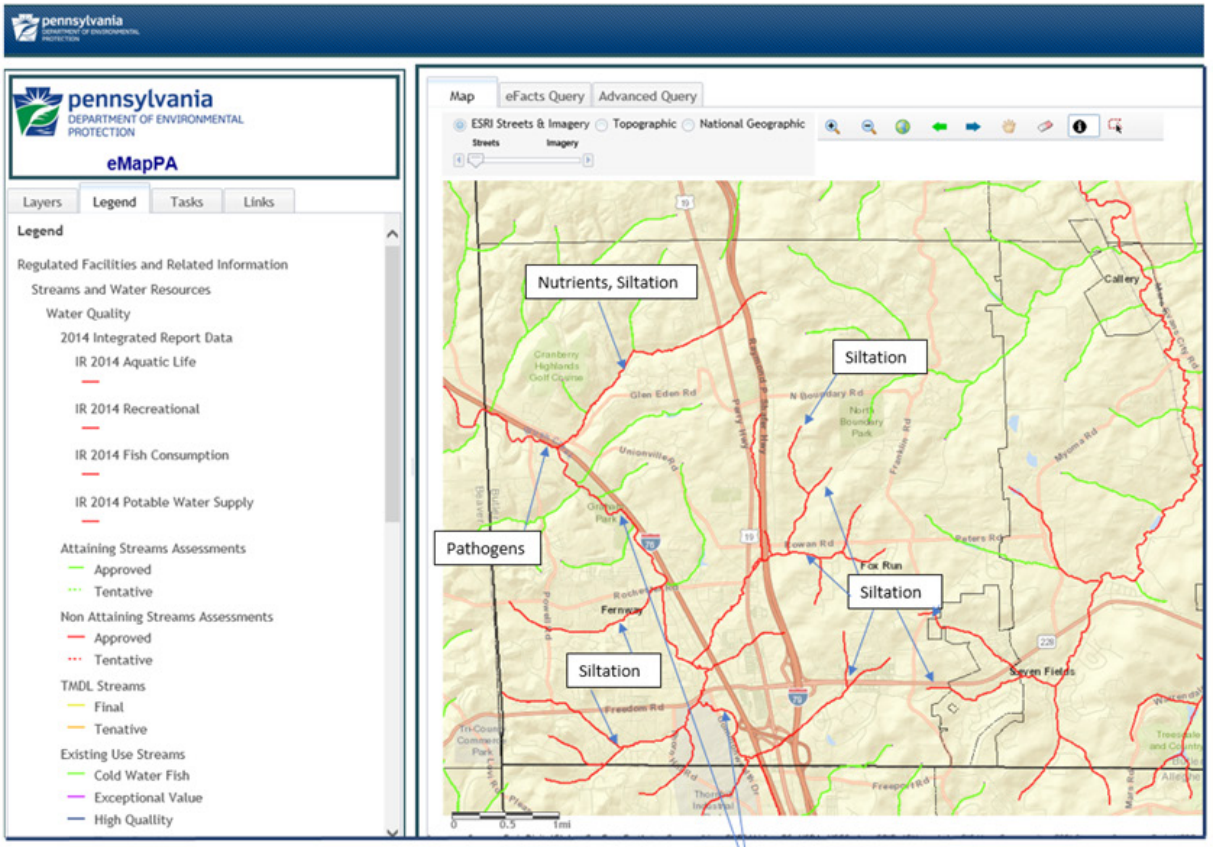
July 27, 2017


pennsylvania
DEPARTMENT OF ENVIRONMENTAL PROTECTION
eMapPA
Layers
Legend
Tasks
Links
Legend
Regulated Facilities and Related Information
Streams and Water Resources
Water Quality
2014 Integrated Report Data
IR 2014 Aquatic Life
IR 2014 Recreational
IR 2014 Fish Consumption
IR 2014 Potable Water Supply
Attaining Streams Assessments
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Non Attaining Streams Assessments
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TMDL Streams
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Tenative
Existing Use Streams
Cold Water Fish
Exceptional Value
High Quallity
Map
eFacts Query
Advanced Query
ESRI Streets & Imagery
Topographic
National Geographic
Nutrients, Siltation
Siltation
Pathogens
Siltation
Siltation
Siltation, Water/Flow Variability

CRANBERRY
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Pollution Reduction Plan

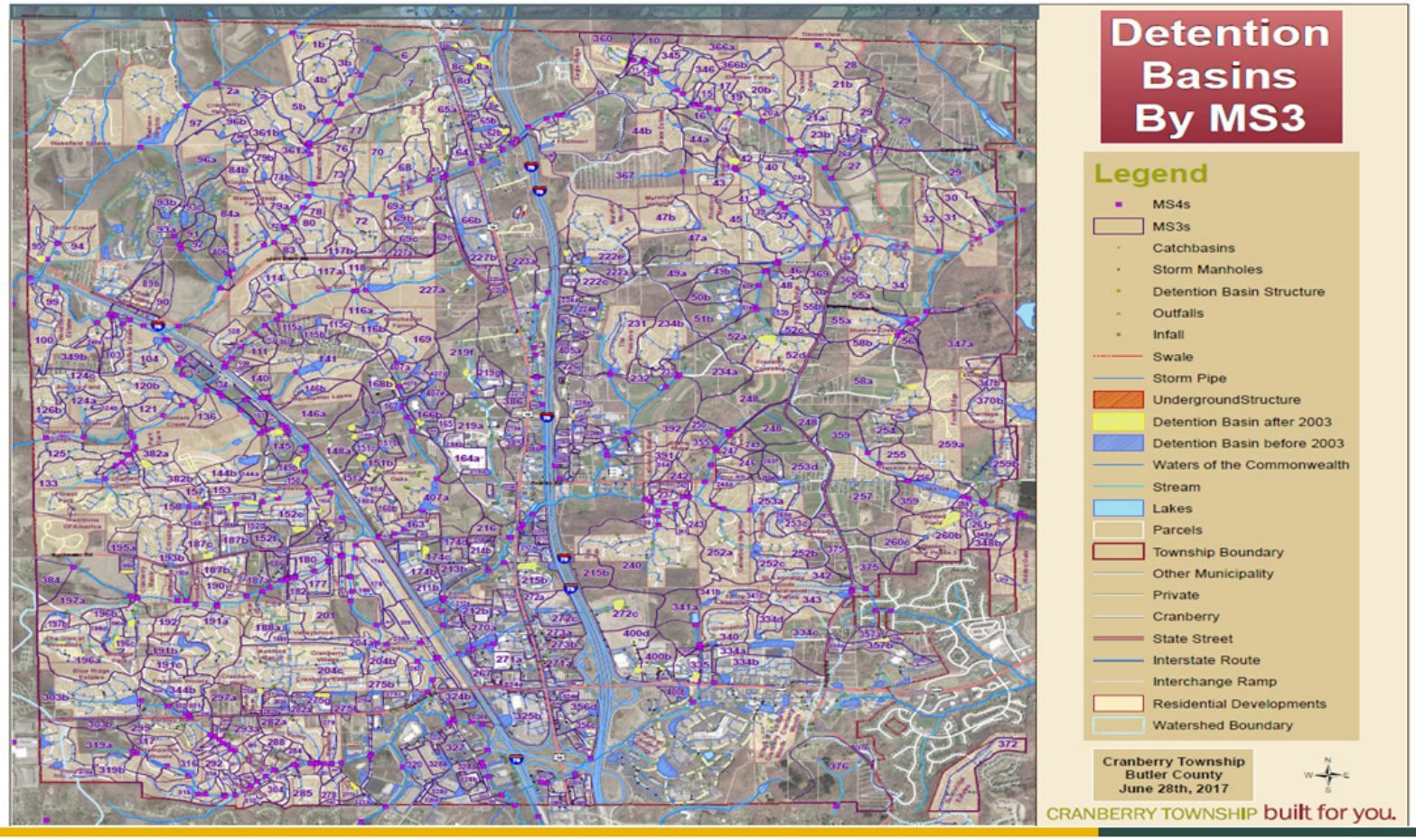
DRAFT



July 2017

PRP Requirements Elements

- Public Participation
- Map
- Pollutants of Concern
- Determine Existing Loading for Pollutants of Concern
- Select BMPs To Achieve the Minimum Required Reductions in Pollutant Loading
- Identify Funding Mechanism(s)
- Identify Responsible Parties for Operation and Maintenance (O&M) of BMPs



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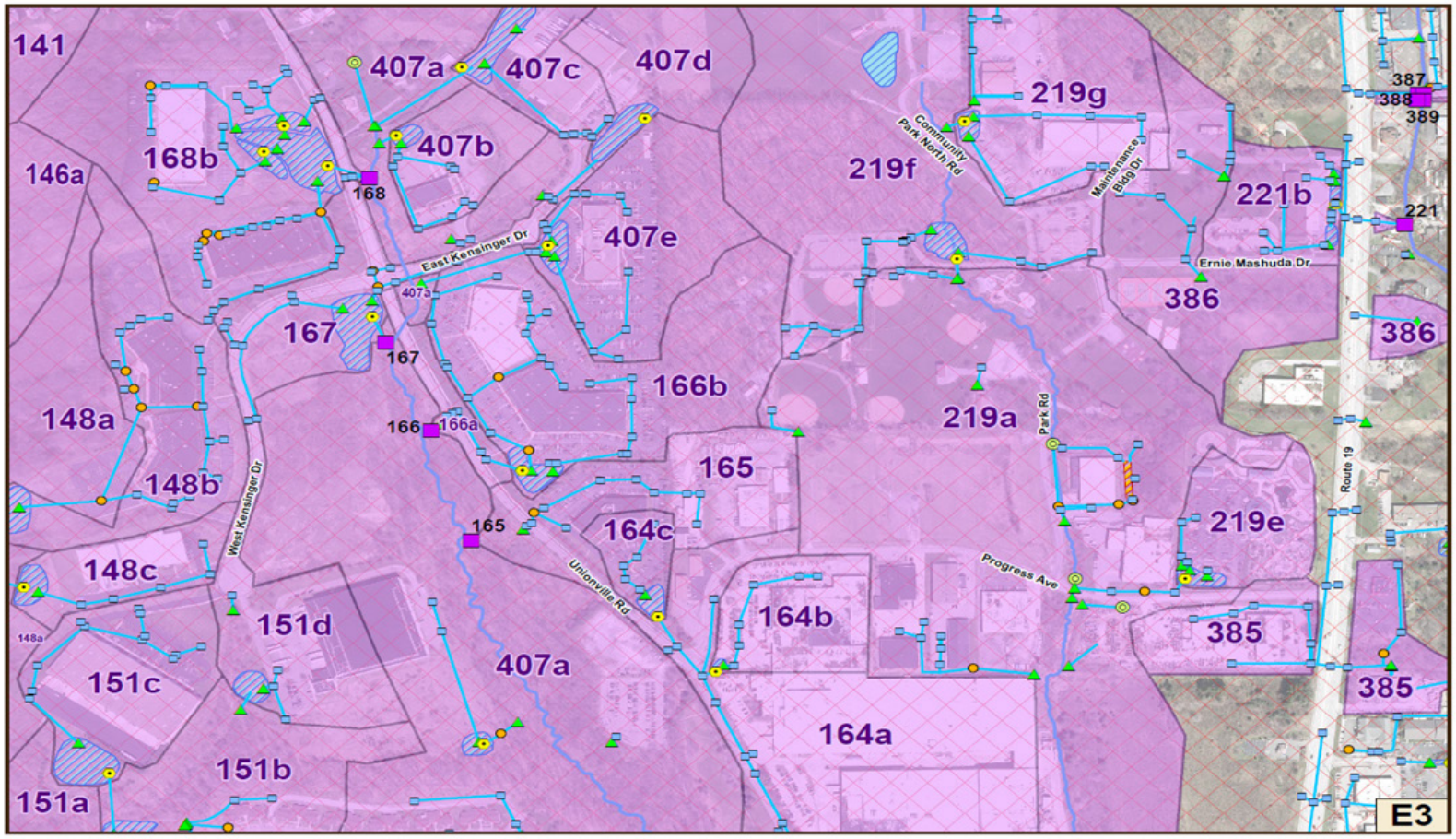


CRANBERRY TOWNSHIP

Determine Existing Loading for Pollutants of Concern

PA DEP Provided – Statewide MS4 Land Cover Estimates

County	Municipality	UA % Impervious	UA % Pervious	Outside of UA % Impervious	Outside of UA % Pervious	UA Acres
Butler	CRANBERRY TWP	23%	77%	22%	78%	13,665.2

PA DEP Provided – Loading Rates

County	Category	Acres	TN lbs/acre/yr	TP lbs/acre/yr	TSS (Sediment) lbs/acre/yr
All Other Counties	impervious developed	-	23.06	2.28	1,839
	pervious developed	-	20.72	0.84	264.96

PA DEP Provided Data

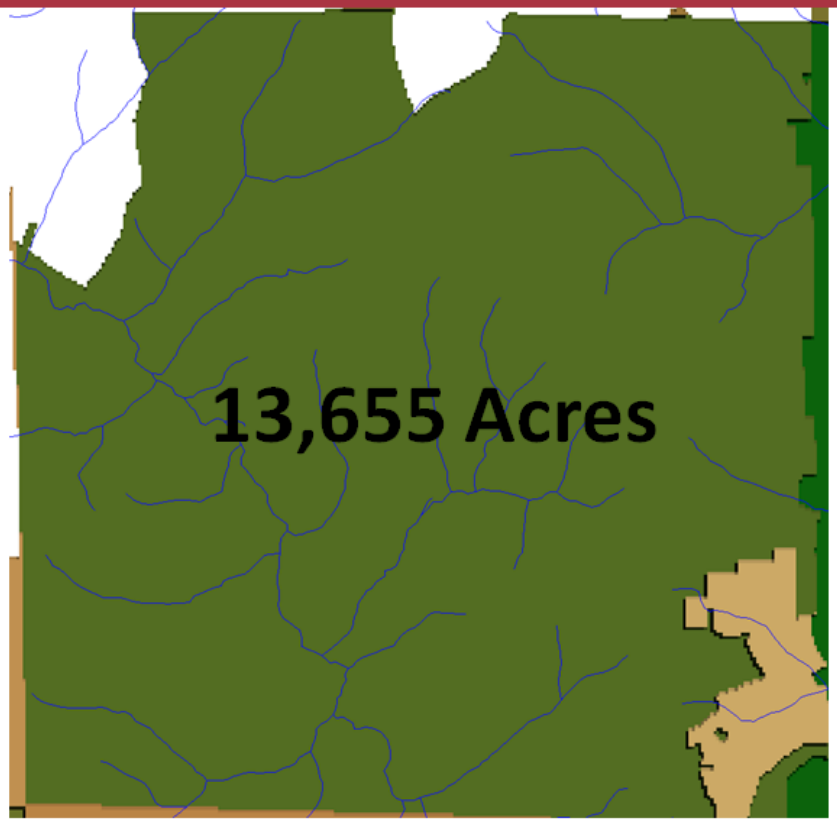
Total Developed Sediment Load = 8,561,663 lbs/yr

Required Reduction Percentage = 10%

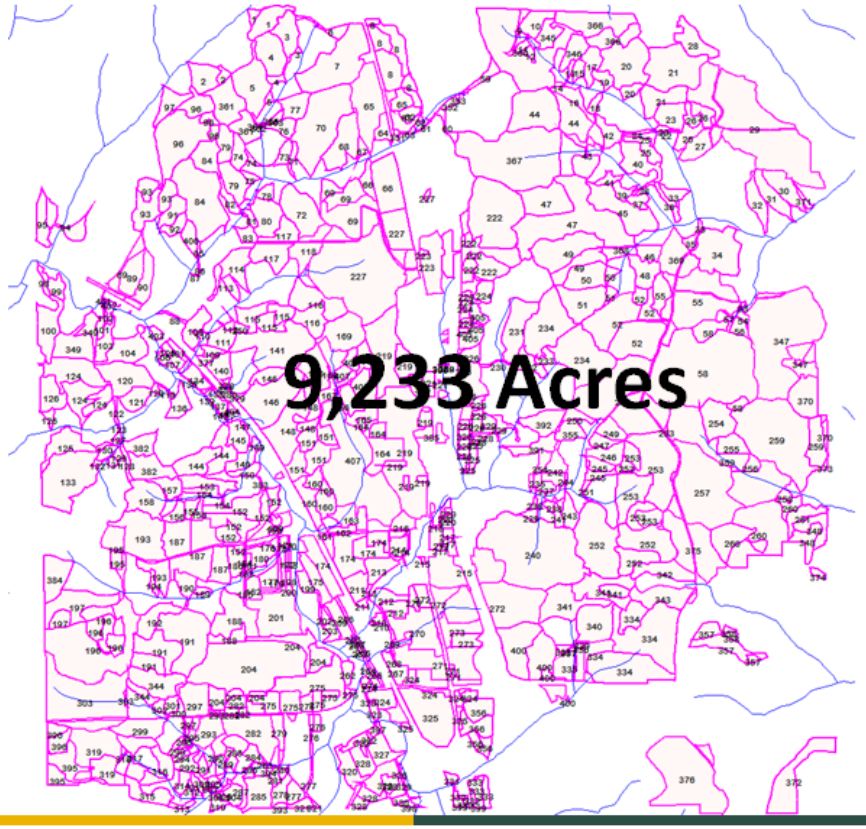
Permit Cycle Required Reduction = 856,166 lbs/yr

CRANBERRY TOWNSHIP

Urbanized Area - State vs Township Parsed Area



Mapshed Urbanized Area



Township GIS - Urbanized Area after parsing

CRANBERRY TOWNSHIP

Determine Existing Loading for Pollutants of Concern

PA DEP Provided Data

Required Reduction = 856,166 lbs/yr

Cranberry Township's GIS Data

Required Reduction (Parsing) = 545,848 lbs/yr

Required Reduction (Parsing and BMPs) = 345,014 lbs/yr

Proposed Best Management Practices Selection

BMP Effectiveness Values List	Sediment Removal Efficiencies
Wet Ponds and Wetlands	60%
Dry Extended Detention	60%
Infiltration Practices w/ Sand, Veg.	95%
Filtering Practices	80%
Filter Strip Runoff Reduction	56%
Filter Strip Stormwater Treatment	22%
Bioretention – Raingarden (C/D soils w/ underdrain)	55%
Vegetated Open Channels (C/D Soils)	50%
Bioswale	80%
Permeable Pavement w/o Sand or Veg. (C/D Soils w/ underdrain)	55%
Permeable Pavement w/o Sand or Veg. (A/B Soils w/o underdrain)	85%
Permeable Pavement w/ Sand or Veg. (C/D Soils w/ underdrain)	55%
Stream Restoration	44.88 lb/ft/yr
Forest Buffers	50%
Tree Planting	20%
Street Sweeping	9%
Storm Sewer System Solids Removal	

CRANBERRY TOWNSHIP

Proposed Best Management Practices Selection

Option #1 Cranberry Township Pollution Reduction Plan Proposed BMPs

BMP Effectiveness Values (EV) provided from DEP

Proposed BMP #	Proposed BMP Location	Proposed BMP	BMP EV	Proposed Limits (Acres)	Proposed Reduction (lbs/yr)
1	Brush Creek	Stream bank restoration along the Brush Creek	44.88 Ind/ft/yr	6,000 lf	269,280
2	Twp. Inlets	Storm Sewer System Solid Removal	Weight * PCF	---	2,500
3	Twp. Parks	Tree Planting	20%	2	610
4	Along Twp Roads	Vegetative Open Channels	50%	95	72,400
5	Twp. Streets	Street Sweeping (25 Times Annually)	9%	2	274
		Total Proposed TSS Reduction (lb/yr) =			345,064
		Required Reduction (lb/yr) =			345,014
		Excess TSS reduction (lb/yr)=			**50**

CRANBERRY TOWNSHIP

Cost Estimate

Proposed BMP

Proposed BMP #	Proposed BMP Location	Proposed BMP	Estimated Cost
1	Brush Creek	Stream bank restoration along the Brush Creek	$300,000
2	Twp. Parks	Tree Planting	$4,000
3	Twp Inlets	Filtering Practices	$10,000
4	Along Twp Roads	Vegetative Open Channels	$200,000
5	Twp. Streets	Street Sweeping (25 Times Annually)	$10,000
		Permit Cycle (5 Year) Estimated Total =	**$534,000**

Estimated Annual Cost = $107,000 / year

Operation and Maintenance of BMPs

CRANBERRY TOWNSHIP
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Pond & Swale Maintenance

A Guidebook for Private Owners in Cranberry Township



July 2017

Cranberry Township Water Basin Checklist

Date:_____ Pond Type: _____

Inspector:_____ Phone # _____

Pond Location :_____

Rating system based on visual inspection

Rating System:
Good – No Structural Deficiencies (No further action required during inspection)
Fair – Low Risk Structural Deficiencies (No immediate action required at this time)
Poor – High Risk Structural Deficiencies (Further action required)

A. Storm Outlet Structure Inspection	Good	Fair	Poor
1. Structural Condition (Concrete Deteriorating, Metal Frame Damaged)	___	___	___
2. Stability (Ground Settling, Structure Sinking, etc.)	___	___	___
3. Volume Capacity (Sediment Buildup, Debris, Obstructions, etc.)	___	___	___
4. Protrusions (Roots, Rebar, etc.)	___	___	___
5. Other:_____	___	___	___

Additional Comments:_____

B. Earth Pond Inspection	Good	Fair	Poor
1. Stability (Ground Settling, Slope Slide, Burrows in Embankment, etc.)	___	___	___
2. Protrusions (Tree Growing in Embankment, etc.)	___	___	___
3. Buffer Vegetation (Watering, Weeding, Mulching, Replanting)	___	___	___
4. Erosion (Maintain 85% Cover Emergent Vegetation Zone)	___	___	___
5. Landscaping (Trimming and/or Mowing to Remove Unwanted Growth)	___	___	___
6. Spillway (Overflow Unobstructed, Section of Embankment Stabilized)	___	___	___
7. Inlet Pipes (Unobstructed, Erosion Control Functioning)	___	___	___
8. Endwall (Structural, Stable, Attached to Pipe)	___	___	___
9. Other:_____	___	___	___

Additional Comments:_____

Annual inspection report should be sent to Tim Schutzman: email Tim.Schutzman@cranberry township.org or 2525 Rochester Road, Suite 400, Cranberry Township, PA 16066.

15

CRANBERRY TOWNSHIP

Key Dates

- July 27 — Presentation to BOS & Request Approval to Advertise
  (45 days prior to submittal of NOI) July 30 – Sept 12
- July 27 ~ Aug 28 — Required 30 Day Comment Period
- September 7 — Presentation to BOS for NOI
- September 15 — MS4 NOI & PRP Deadline
- March 16, 2018 — New MS4 Effective Starting Date

CRANBERRY TOWNSHIP

Questions



CRANBERRY TOWNSHIP

724 | 776 | 4806
724 | 776 | 5488
CranberryTownship.org

July 26, 2017

Butler Eagle
PO Box 271
Butler, PA 16003-271
Attn: Legal Notices

Please place the following legal notice in your newspaper on Sunday, July 30, 2017.

Sincerely,

Jason M. Kratsas, P.E., Director
Engineering & Environmental Services

JMK/dm

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Engineering & Environmental Services

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TX Result Report

P 1
07/26/2017 09:13
Serial No. AOP1011010659
TC: 1174373

Addressee	Start Time	Time	Prints	Result	Note
87242821280	07-26 09:12	00:00:29	002/002	OK	

Note TMR: Timer TX, POL: Polling, ORG: Original Size Setting, FME: Frame Erase TX, MIX: Mixed Original TX, CALL: Manual TX, CSRC: CSRC, FWD: Forward, PC: PC-Fax, BND: Double-Sided Binding Direction, SP: Special Original, FCODE: F-code, RTX: Re-TX, RLY: Relay, MBX: Confidential, BUL: Bulletin, SIP: SIP Fax, IPADR: IP Address Fax, I-FAX: Internet Fax

Result OK: Communication OK, S-OK: Stop Communication, PW-OFF: Power Switch OFF, TEL: RX from TEL, NG: Other Error, Cont: Continue, No Ans: No Answer, Refuse: Receipt Refused, Busy: Busy, M-Full:Memory Full, LOVR:Receiving length Over, POVR:Receiving page Over, FIL:File Error, DC:Decode Error, MDN:MDN Response Error, DSN:DSN Response Error.

CRANBERRY
•TOWNSHIP•

724 | 776 | 4806
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CranberryTownship.org

FAX

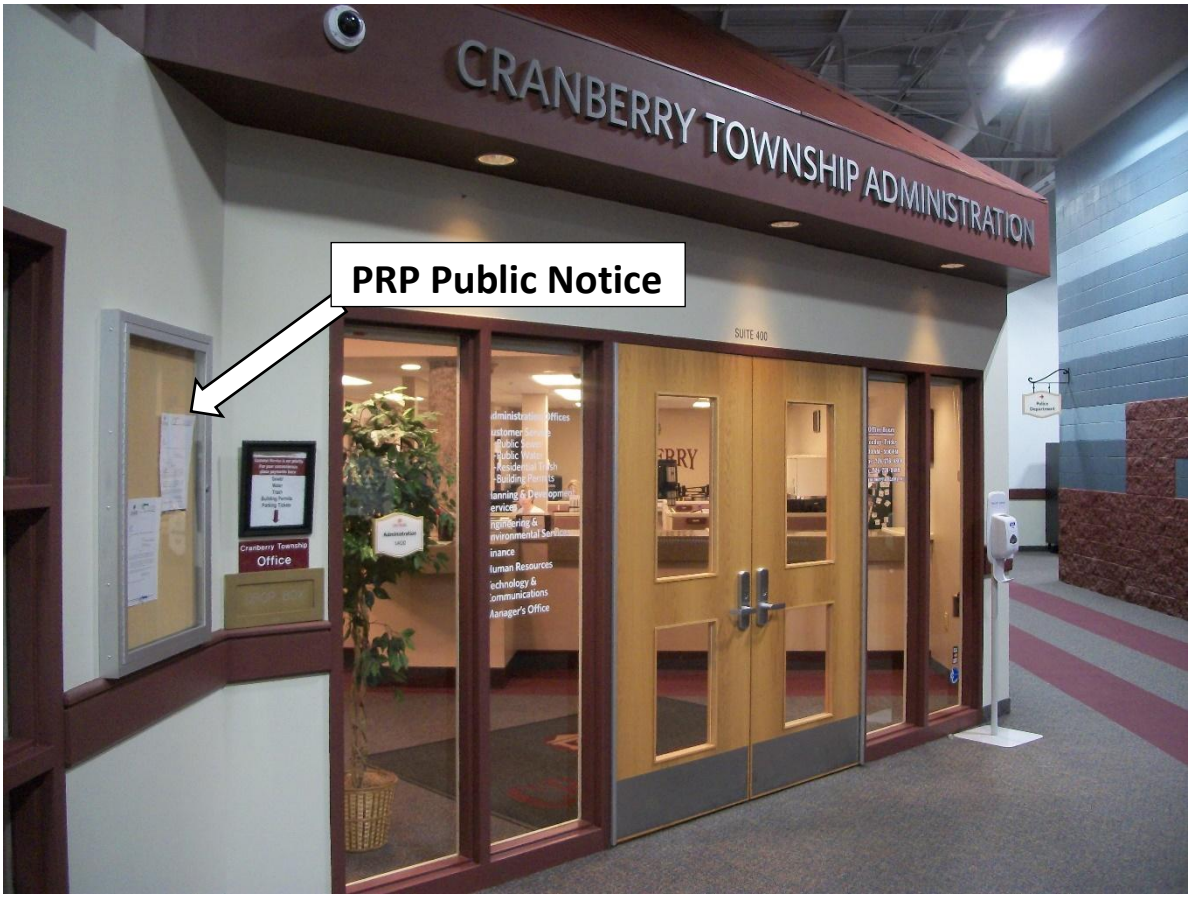
To:	Julie	From:	Donna McVeigh
Company:	Butler Eagle	Pages:	2
Fax:	724-282-1280	Date:	7.26.2017
Phone:	724-282-8000	Phone:	724-776-4806 ext. 1134
Re:	Public Notice – PRP draft plan/MS4 Program – notice of intent to renew		

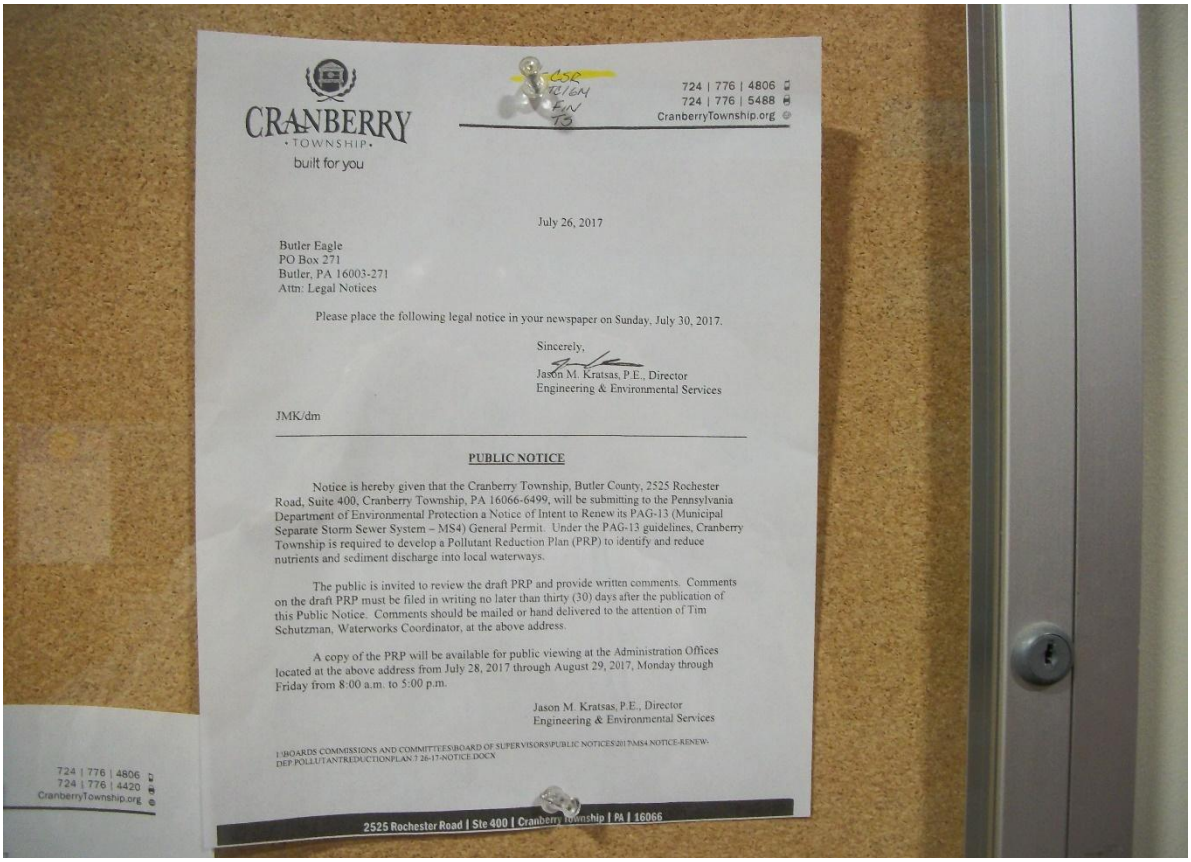
Comments:

**** I ALREADY E-MAILED YOU THIS – WE NEED CONFIRMATION FOR OUR RECORDS – SO I AM FAXING THIS ALSO

DISCLAIMER: The information contained in this facsimile message is intended for the sole confidential use of the designated recipients and may contain confidential information. If you have received this information in error, any review, dissemination, distribution or copying of this information is strictly prohibited. If you have received this communication in error, please notify us immediately by telephone and return the original message to us by mail or if electronic, reroute back to the sender. If you do not receive all pages, please call the sender at the above number. Thank you.

PRP Draft - Public Notice Posted Outside Administration Office on 7/27/2017





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724 | 776 | 5488
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Engineering & Environmental Services

I:\BOARDS COMMISSIONS AND COMMITTEES\BOARD OF SUPERVISORS\PUBLIC NOTICES\2017\MS4 NOTICE-RENEW-DEP POLLUTANTREDUCTIONPLAN 7 26-17-NOTICE.DOCX

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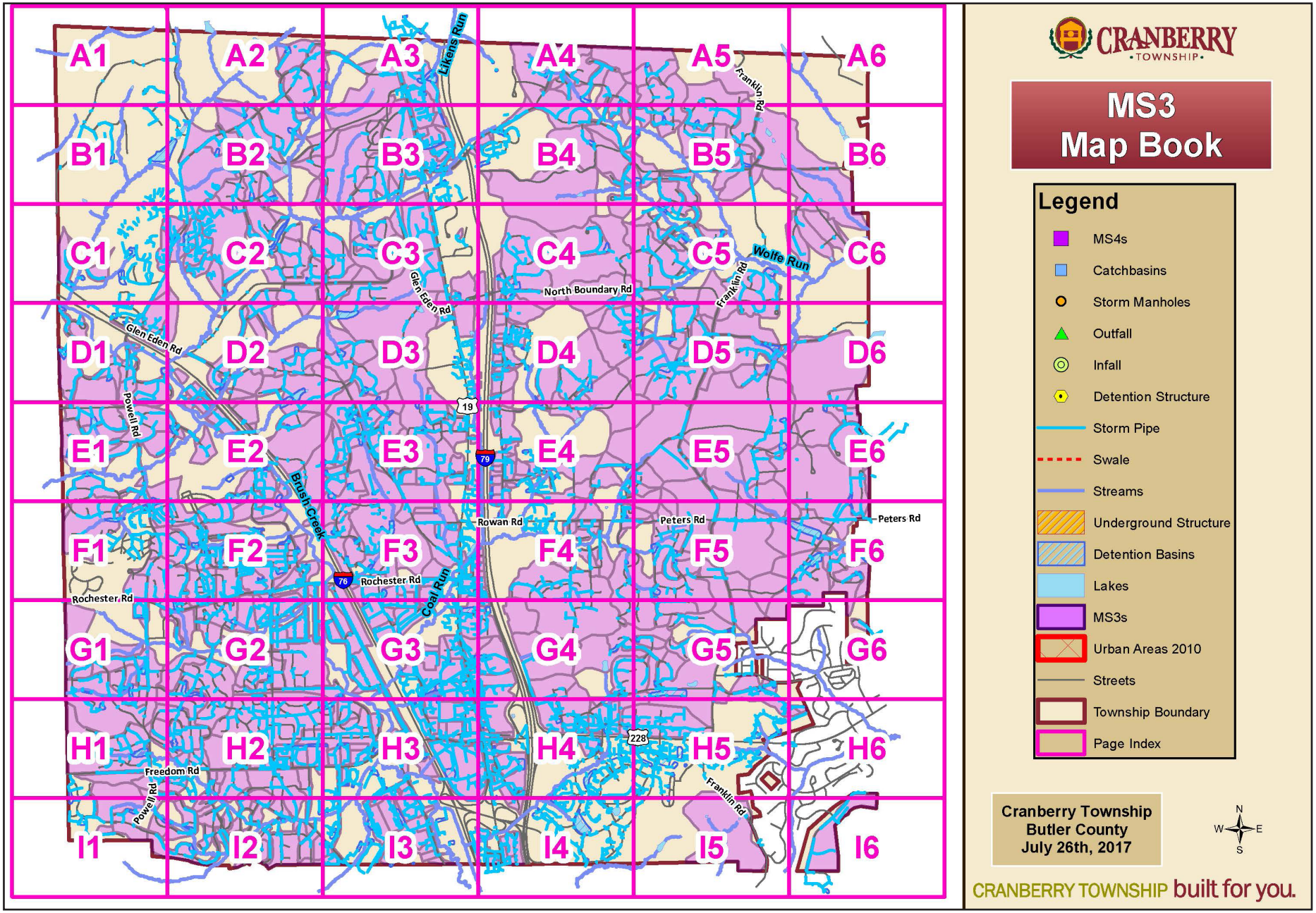
724 | 776 | 4420
CranberryTownship.org

2525 Rochester Road | Ste 400 | Cranberry Township | PA | 16066

APPENDIX 2

STORM SEWERSHED MAPS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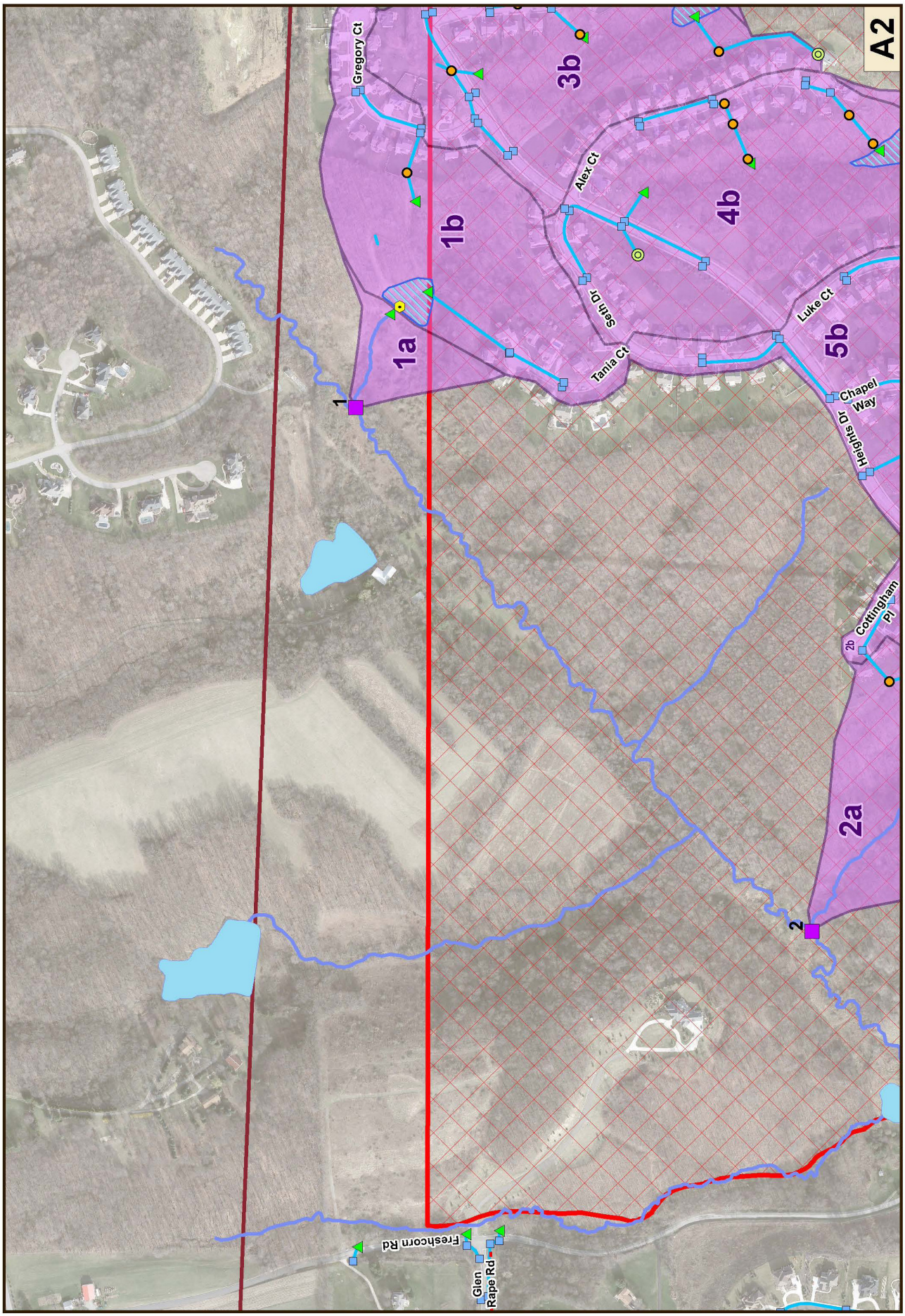
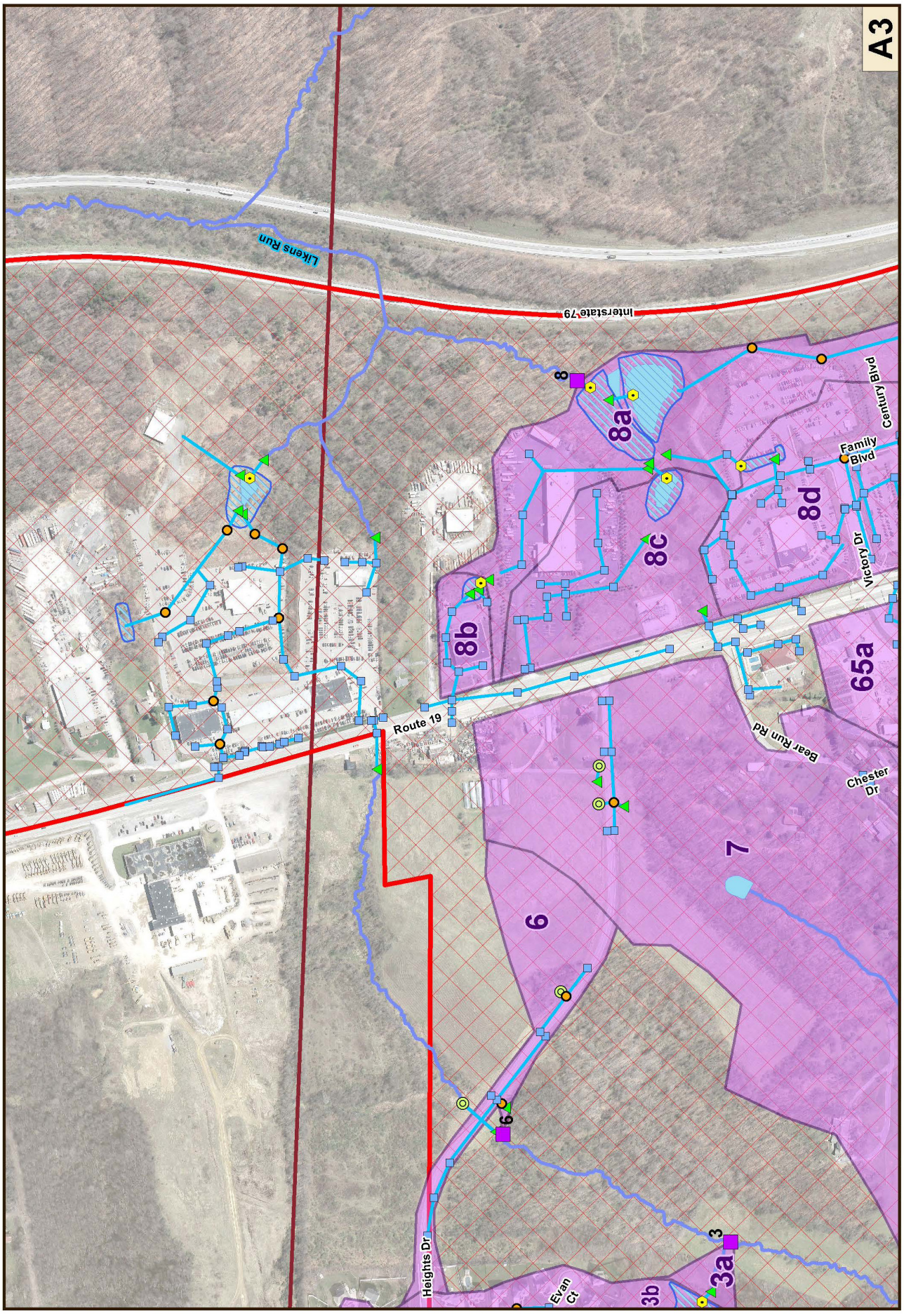
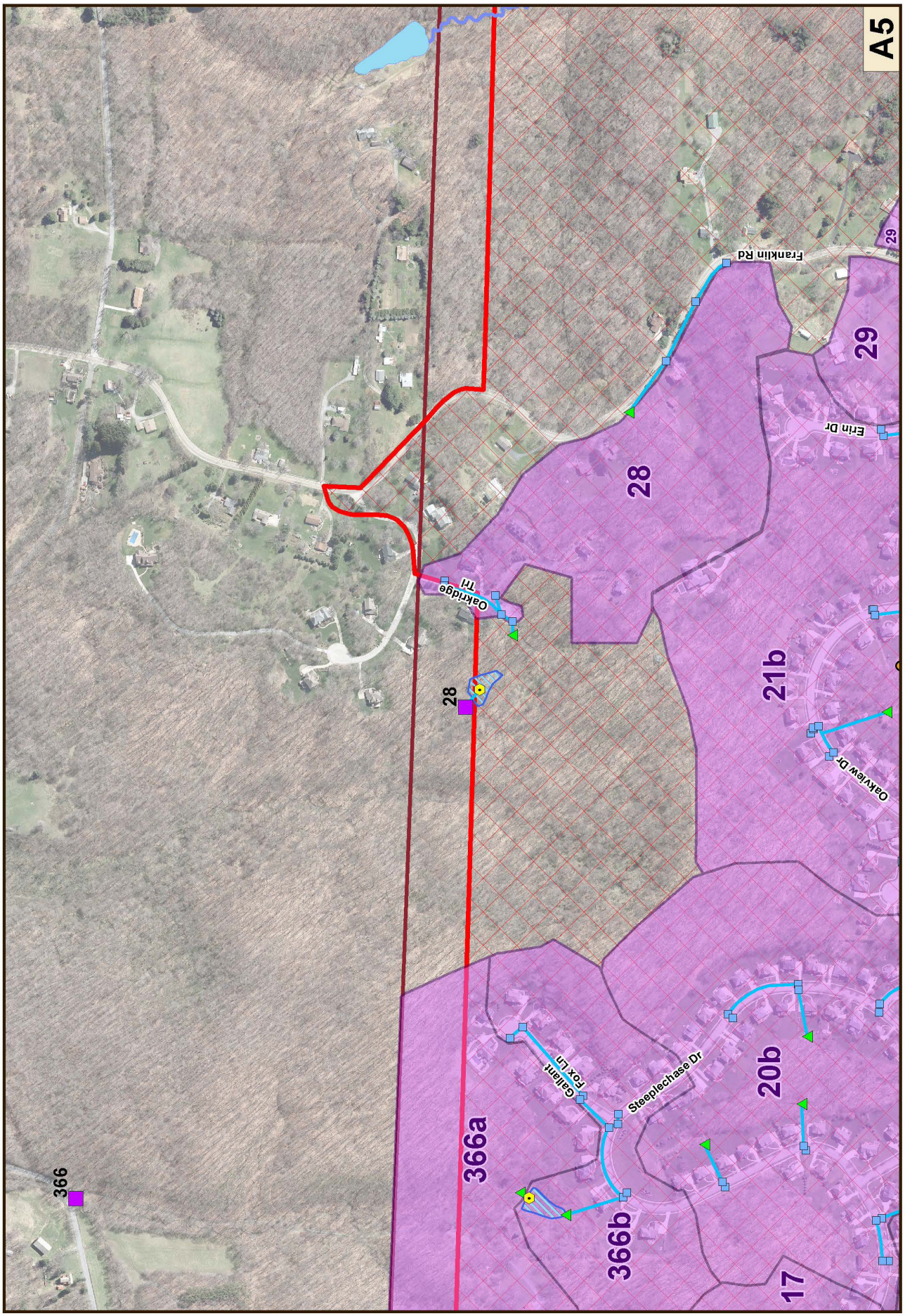
D5
D6
E1
E2
E3
E4
E5
E6
F1
F2
F3
F4
F5
F6
G1
G2
G3
G4
G5
G6
H1
H2
H3
H4
H5
H6
I1
I2
I3
I4
I5
I6
Likens Run
Franklin Rd
Wolfe Run
Glen Eden Rd
North Boundary Rd
Powell Rd
19
79
Brush Creek
Rowan Rd
Peters Rd
76
Rochester Rd
Coal Run
228
Freedom Rd
CRANBERRY
TOWNSHIP
MS3
Map Book
Legend
MS4s
Catchbasins
Storm Manholes
Outfall
Infall
Detention Structure
Storm Pipe
Swale
Streams
Underground Structure
Detention Basins
Lakes
MS3s
Urban Areas 2010
Streets
Township Boundary
Page Index
Cranberry Township
Butler County
July 26th, 2017
N
W
E
S
CRANBERRY TOWNSHIP built for you.

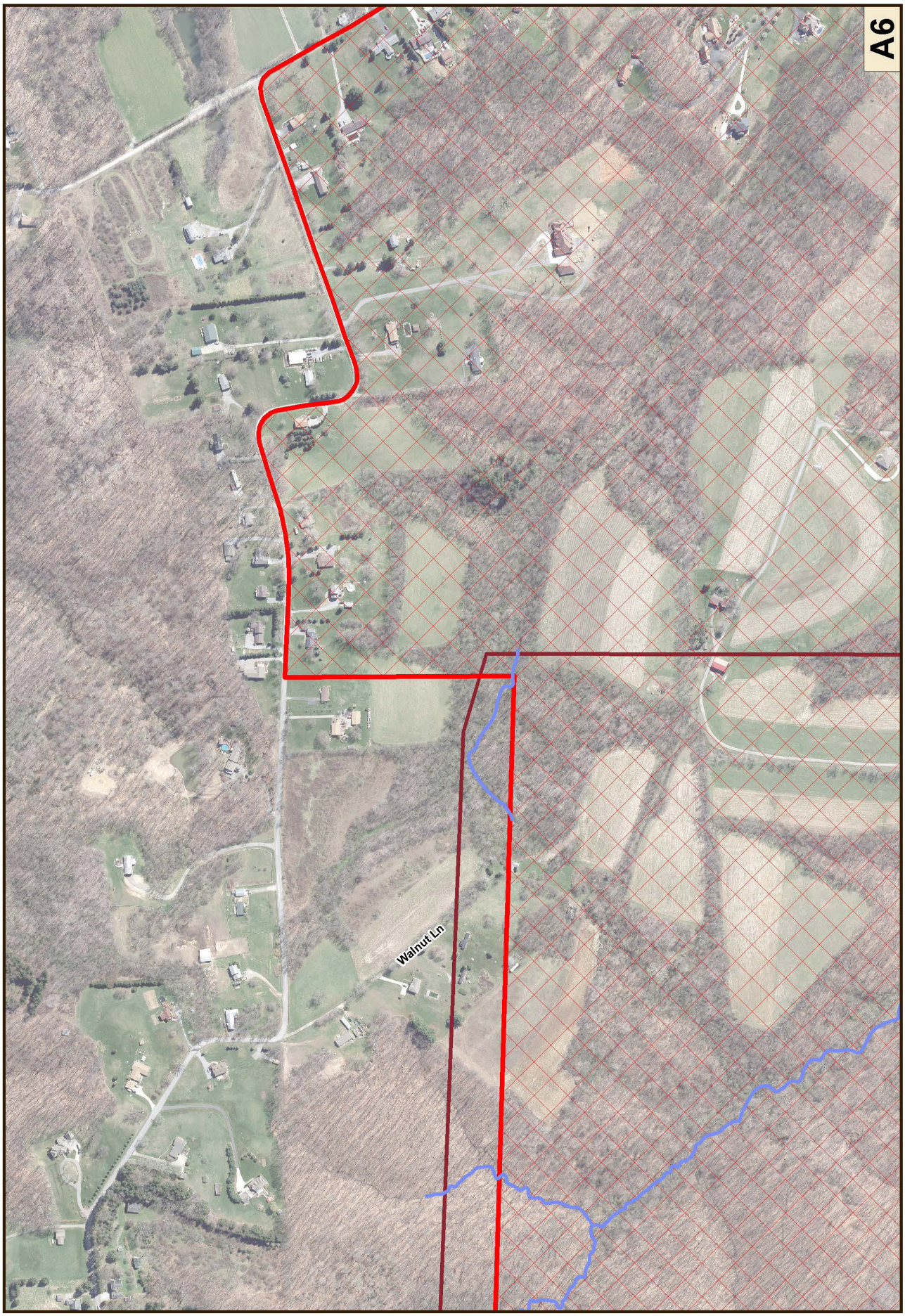

Freshcorn Rd
Glen Rape Rd
Kingston Ave
A1


A2
Gregory Ct
3b
1b
Alex Ct
4b
Seth Dr
Luke Ct
5b
1a
Tania Ct
Chapel Way
Highpointe Dr
1
Cottingham Pl
2b
2a
2
Freshcorn Rd
Glen Rapp Rd

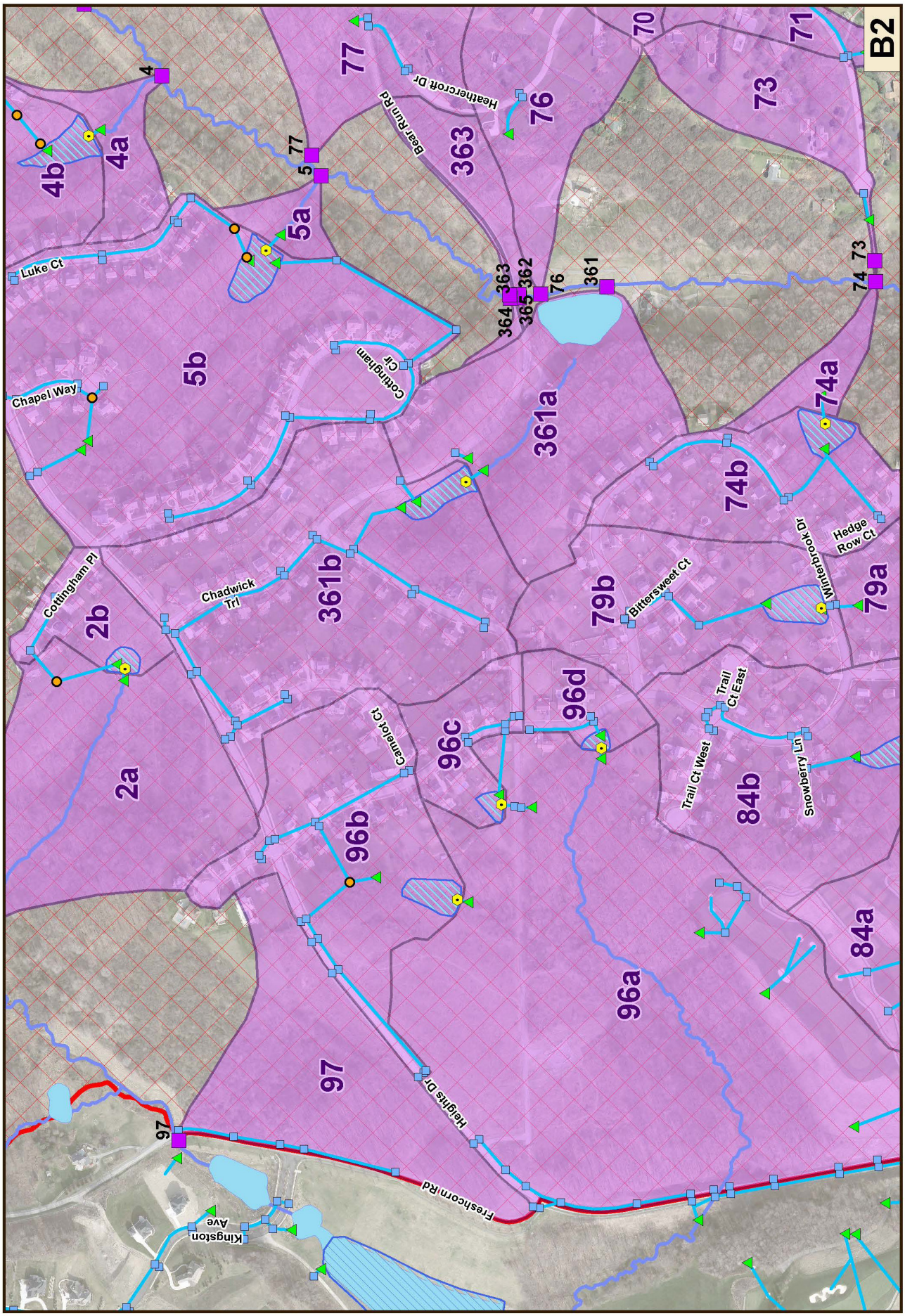

A3
Likens Run
Interstate 79
8
8a
8b
8c
8d
Century Blvd
Family Blvd
Victory Dr
65a
Route 19
Bear Run Rd
Chester Dr
7
6
9
Heights Dr
Evan Ct
3
3a
3b

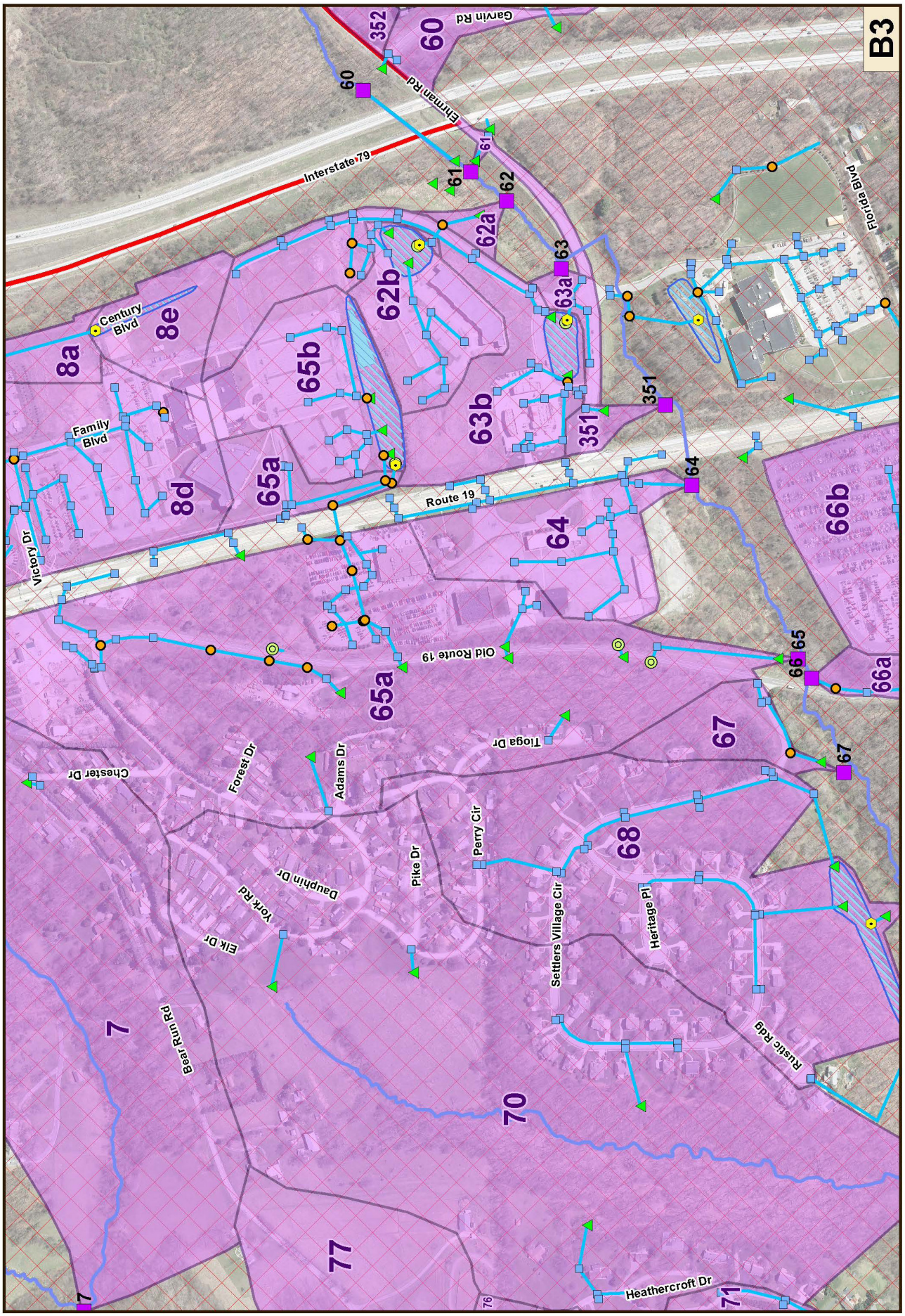
A4
366b
366a
346
345
360
17
15
13
12
11
10
9
Granville Pl
Gate Dancer Dr
Steeplechase Dr
North Ct
Riva Ridge Dr
Sword Dance Pl
Belmar Pl
Gallahadion Ct
Wolfe Run
Reigh Count Pl
Old Ehrman Rd
Grindstone Pl
Carry Back Ct
Eagle Ridge Rd
Falcon Ln
59


A5
Franklin Rd
29
29
Erin Dr
28
Oakridge Trl
28
21b
OakView Dr
Steeplechase Dr
Gallant Fox Ln
20b
366a
366b
17
366


A6
Walnut Ln


B1
96
Dawson Ave
Hudson Ave
Meridian Ln
Merylon Ln
Pemberley Dr
Glen Rape Rd


B2
4
4a
4b
5
5a
5b
2a
2b
77
76
363
361
361a
361b
70
71
73
74
74a
74b
79a
79b
84a
84b
96a
96b
96c
96d
97
Heathercroft Dr
Bear Run Rd
Luke Ct
Chapel Way
Cottingham Cir
Cottingham Pl
Chadwick Trl
Bittersweet Ct
Winterbrook Dr
Hedge Row Ct
Trail Ct East
Trail Ct West
Snowberry Ln
Camelot Ct
Heights Dr
Freshcorn Rd
Kingston Ave


B3
Interstate 79
Ehrman Rd
Garvin Rd
Century Blvd
Family Blvd
Victory Dr
Route 19
Old Route 19
Florida Blvd
Chester Dr
Forest Dr
Adams Dr
Tioga Dr
Perry Cir
Pike Dr
Dauphin Dr
York Rd
Elk Dr
Bear Run Rd
Settlers Village Cir
Heritage Pl
Rustic Rdg
Heathercroft Dr
60
61
62
62a
63
63a
62b
65b
63b
65a
8a
8e
8d
351
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66b
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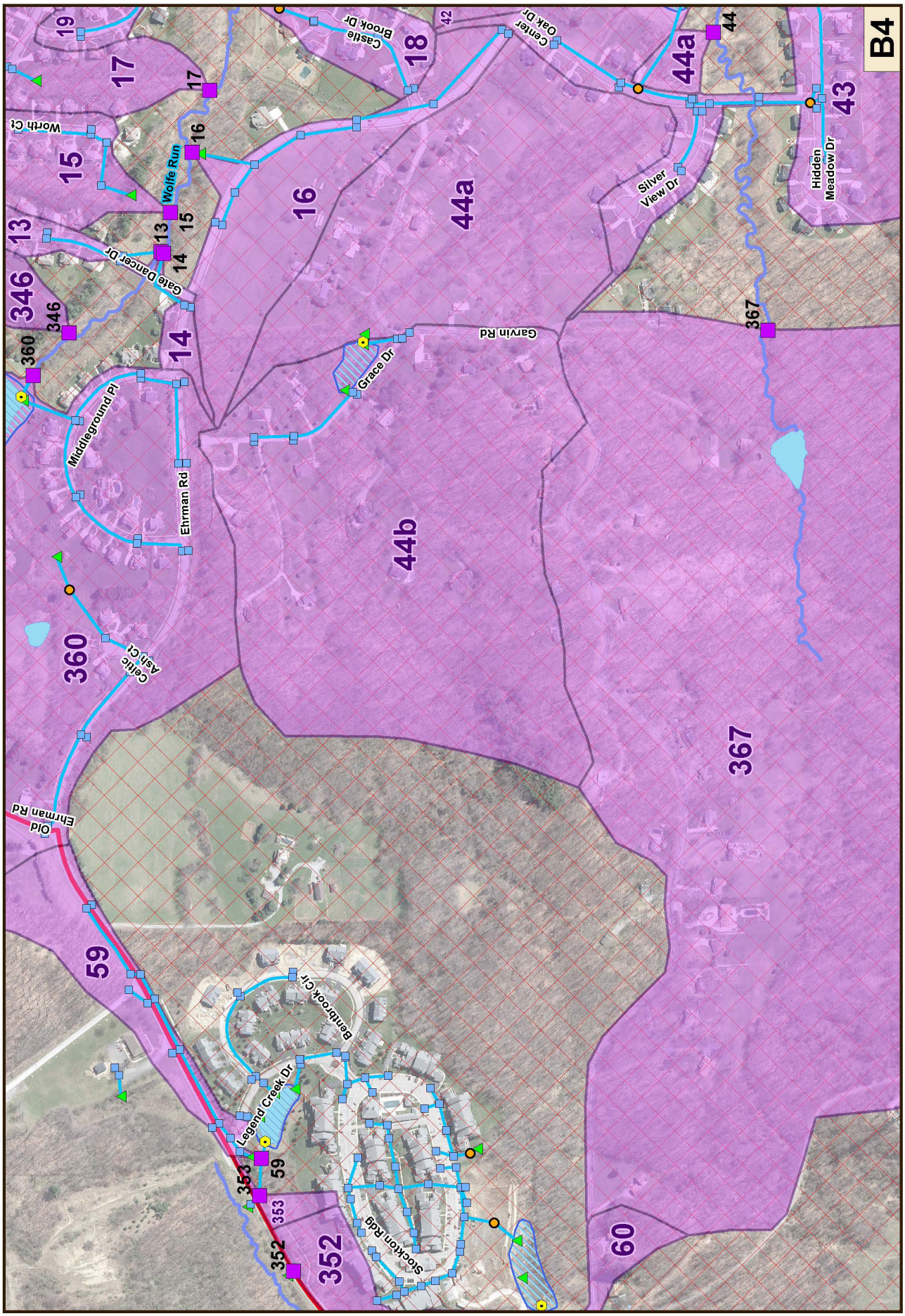
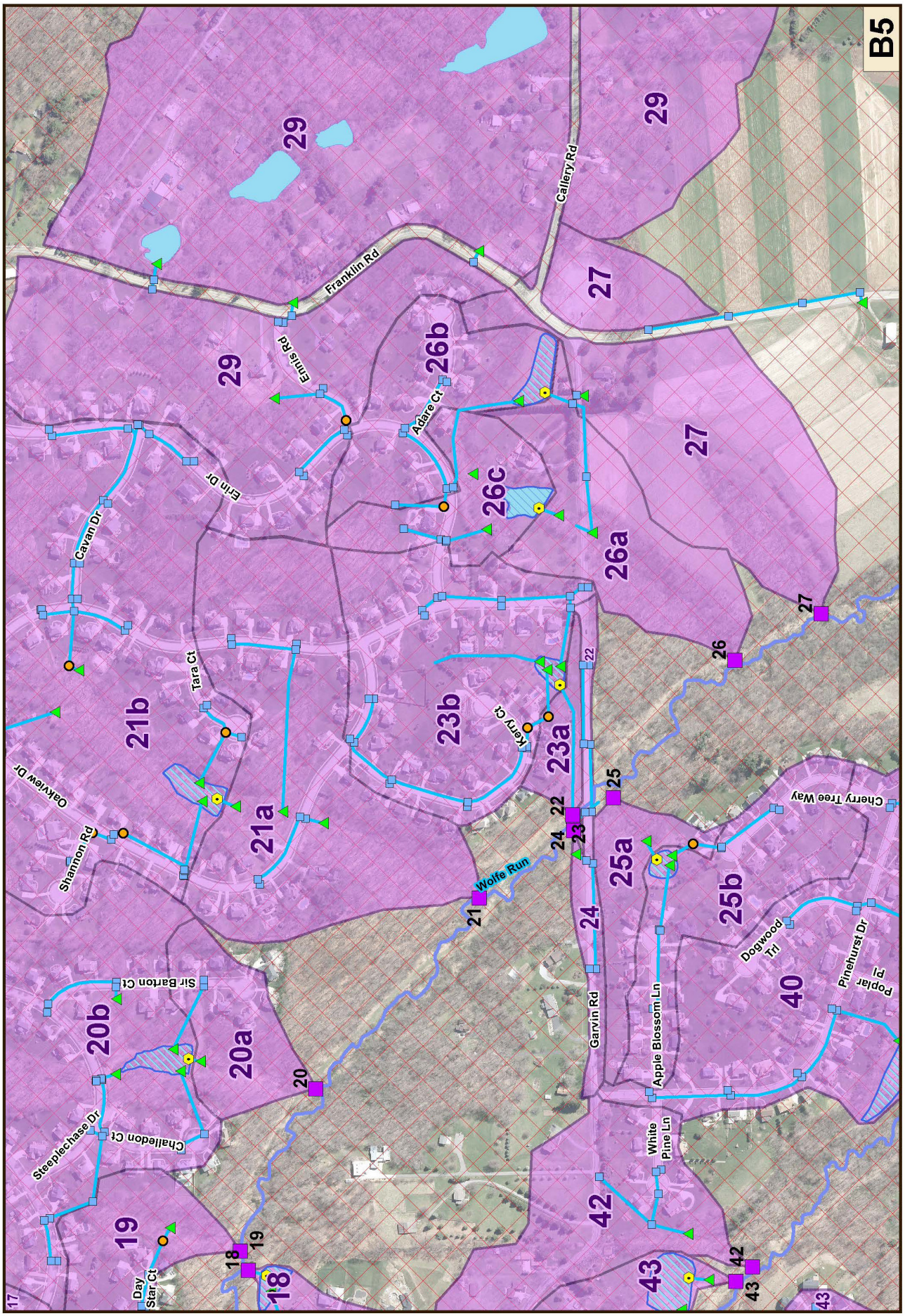
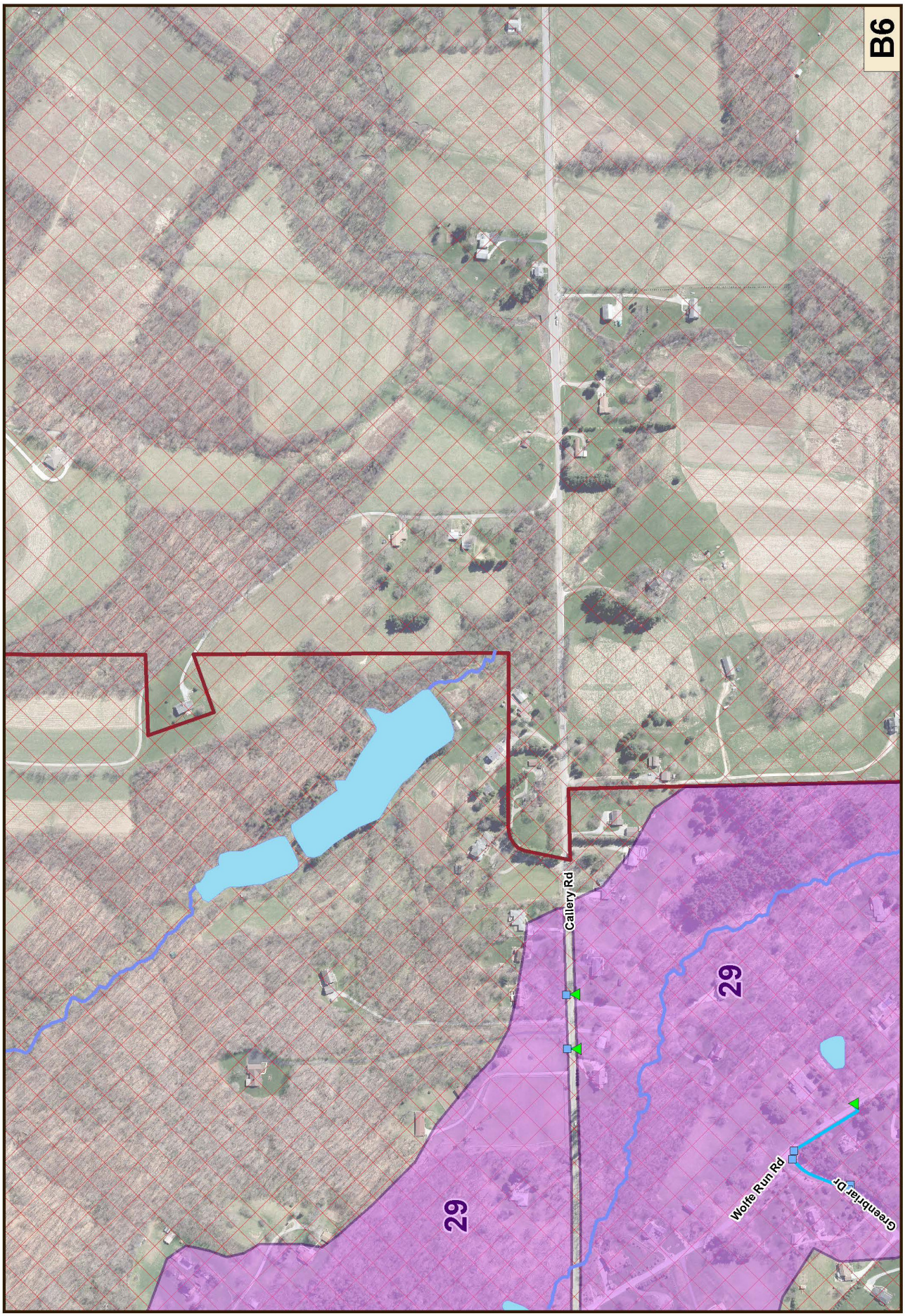
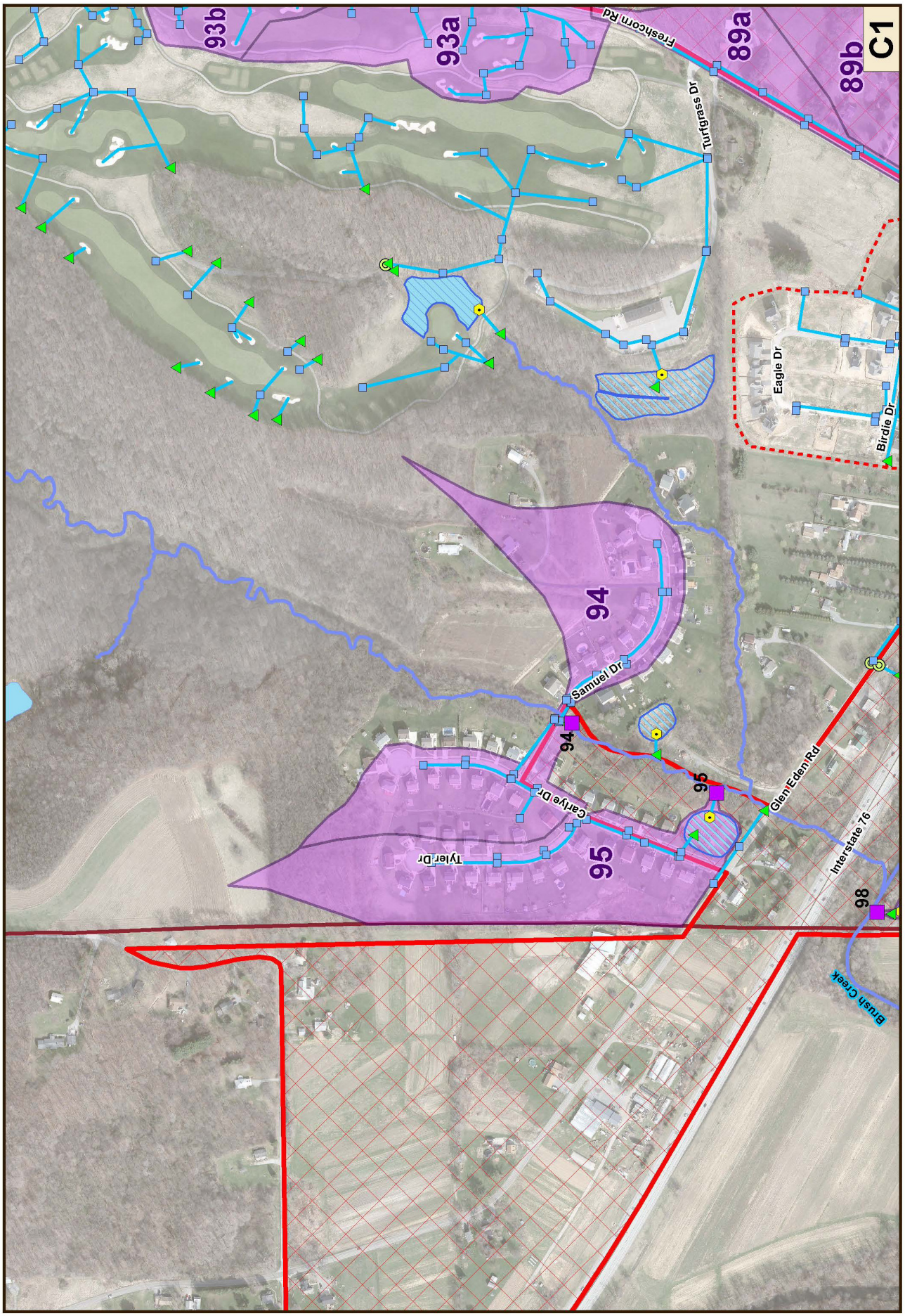
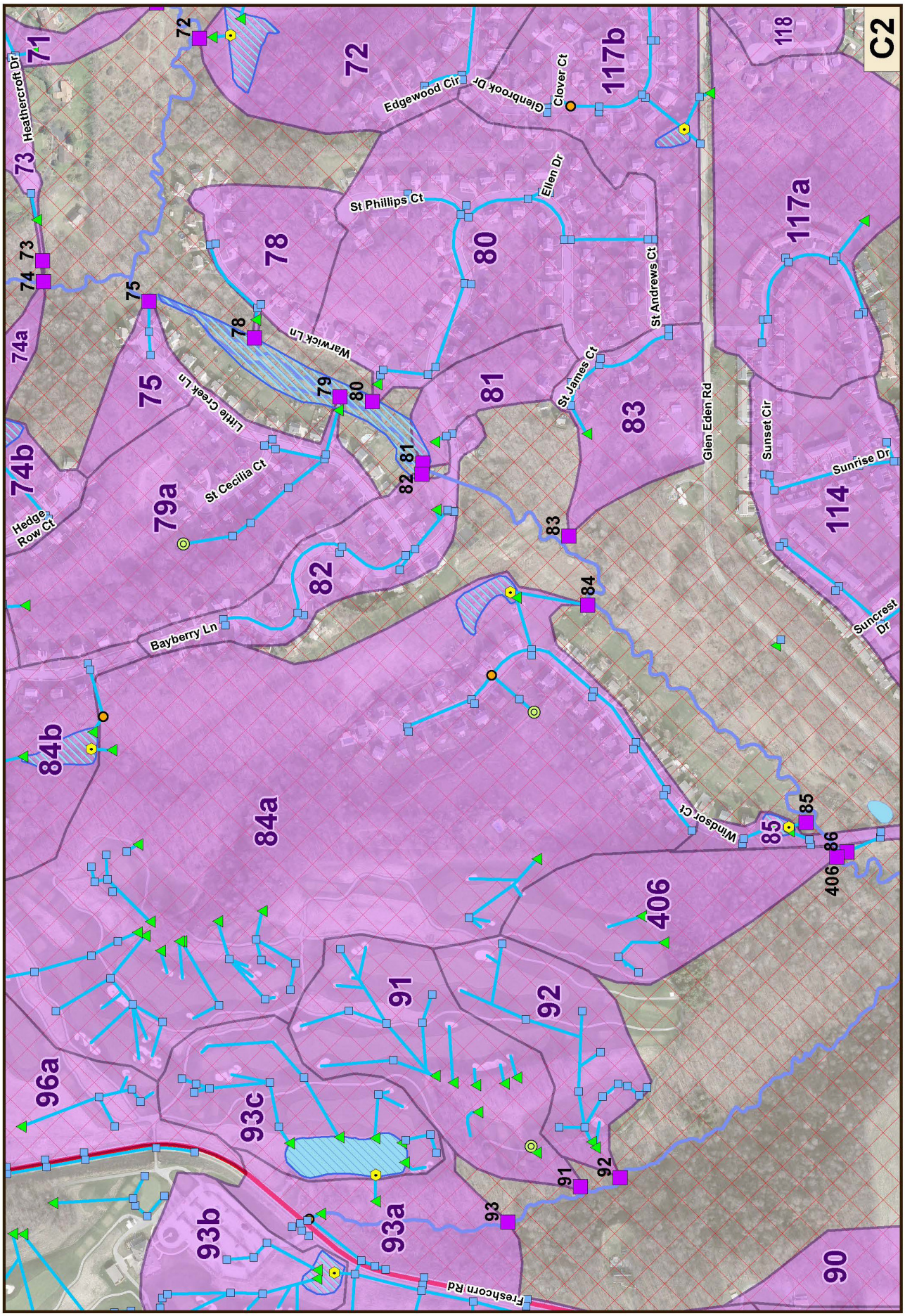
67
68
70
77
7
71

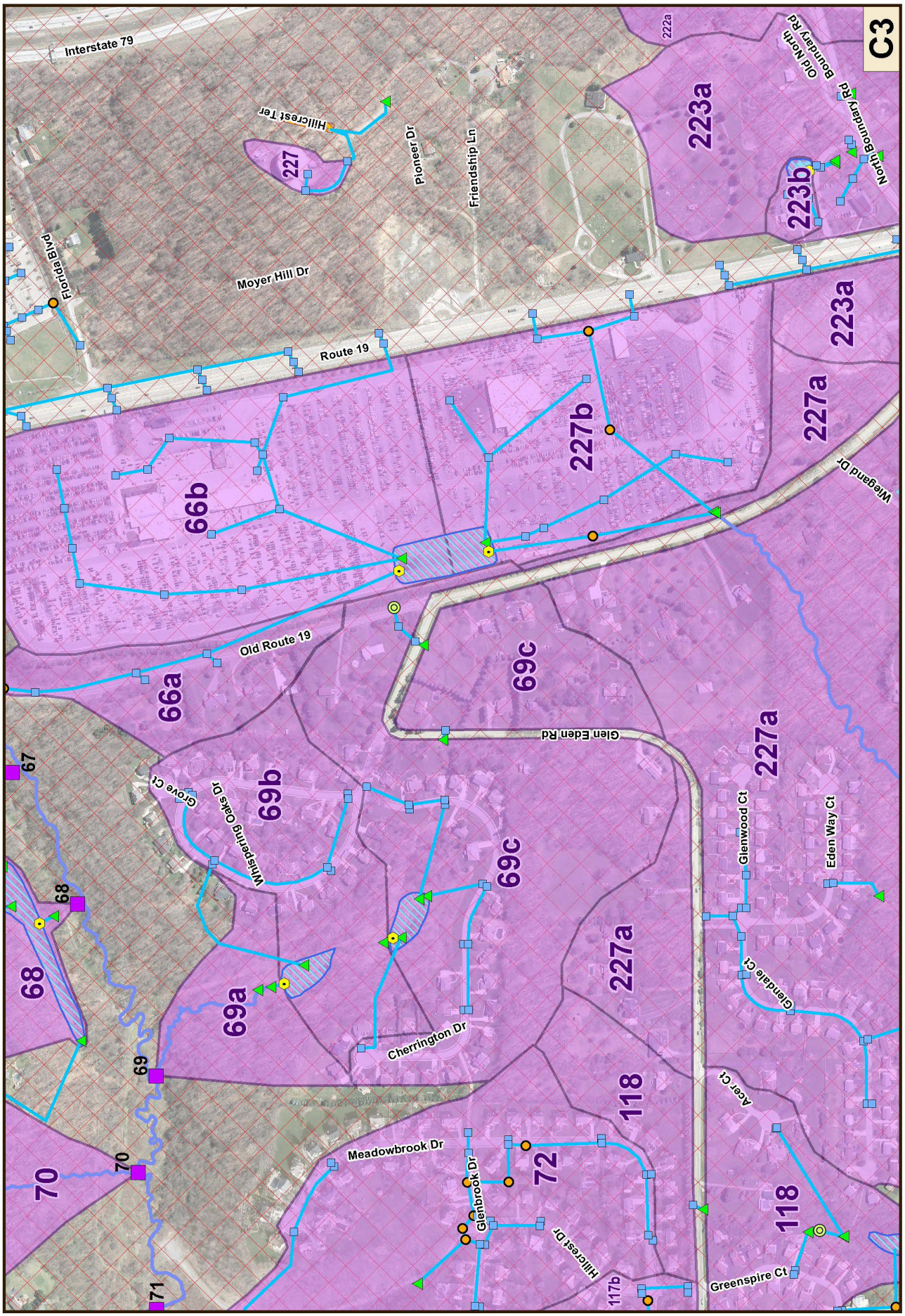

B4
19
17
17
18
42
Castle Brook Dr
Center Oak Dr
44
44a
43
Hidden Meadow Dr
Silver View Dr
Worth Ct
15
16
Wolfe Run
16
44a
13
15
13
14
Gate Dancer Dr
346
346
360
14
Garvin Rd
Grace Dr
367
Middleground Pl
Ehrman Rd
44b
360
Celtic Ash Ct
367
Old Ehrman Rd
59
Benbrook Cir
Legend Creek Dr
353
59
353
352
352
Stockton Rdg
60

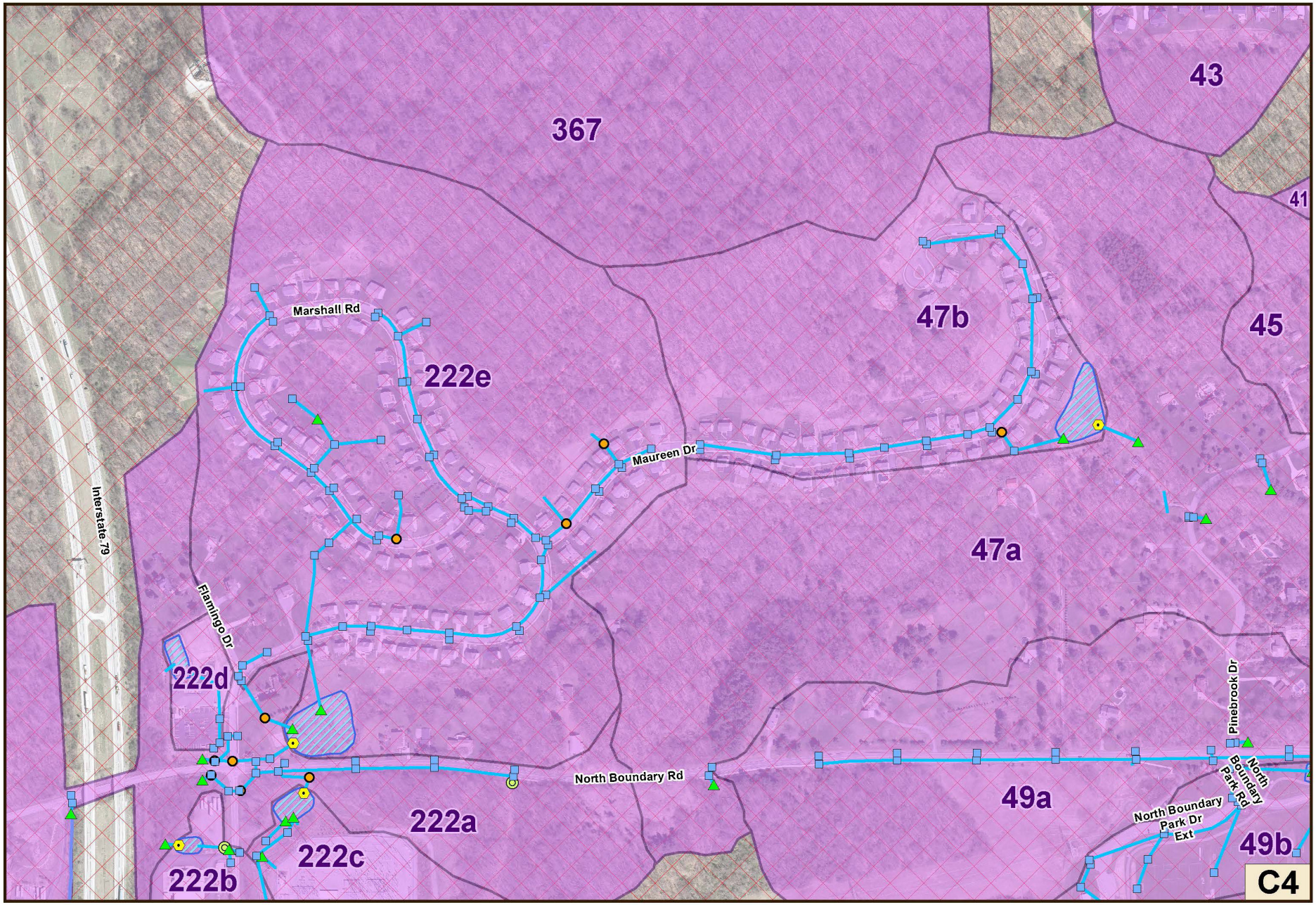

B5
29
29
29
27
27
27
Franklin Rd
Callery Rd
Ennis Rd
Adare Ct
26b
26c
26a
Erin Dr
Cavan Dr
Tara Ct
21b
21a
23b
23a
Kerry Ct
22
Oakview Dr
Shannon Rd
Wolfe Run
21
22
23
24
25
26
27
25a
24
Garvin Rd
Apple Blossom Ln
Cherry Tree Way
25b
Dogwood Trl
Pinehurst Dr
Poplar Pl
40
Sir Barton Ct
20b
20a
20
Steeplechase Dr
Challedon Ct
19
18
19
18
Day Star Ct
17
42
White Pine Ln
43
42
43
43

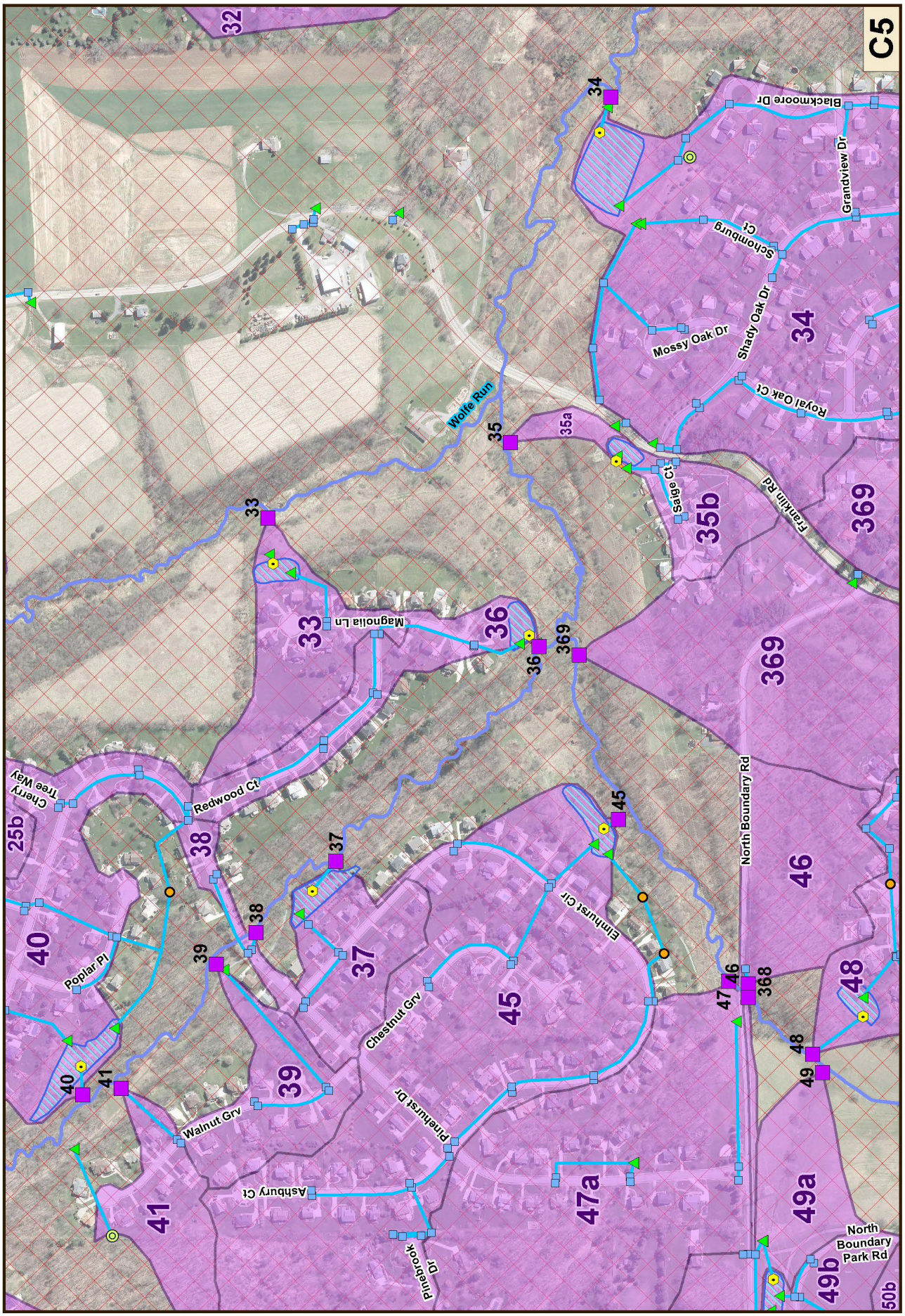

B6
Callery Rd
29
29
Wolfe Run Rd
Greenbriar Dr

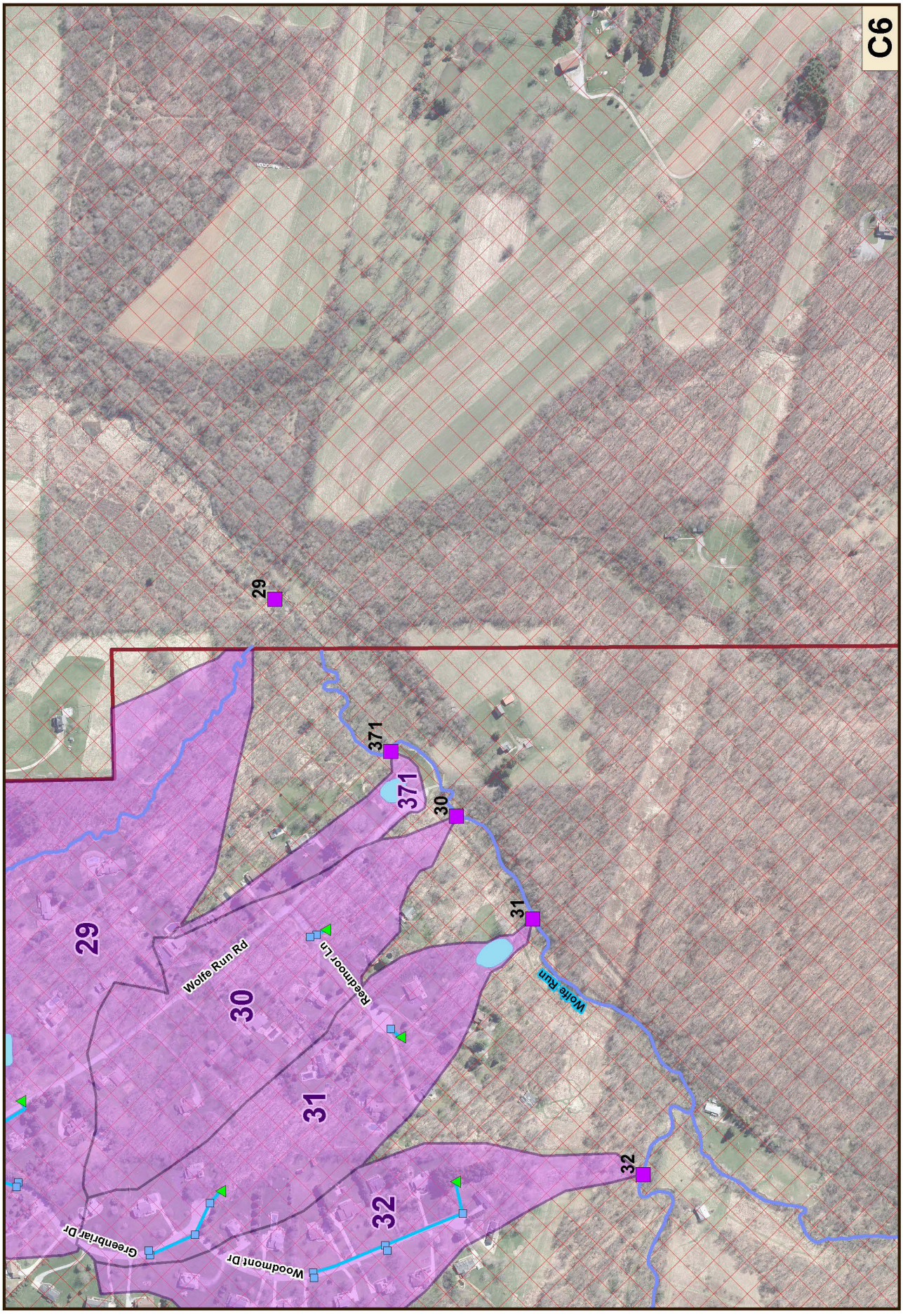

93b
93a
89a
89b
C1
Freshcorn Rd
Turfgrass Dr
Eagle Dr
Birdie Dr
94
Samuel Dr
94
95
Carlye Dr
Tyler Dr
95
Glen Eden Rd
Interstate 76
98
Rush Creek

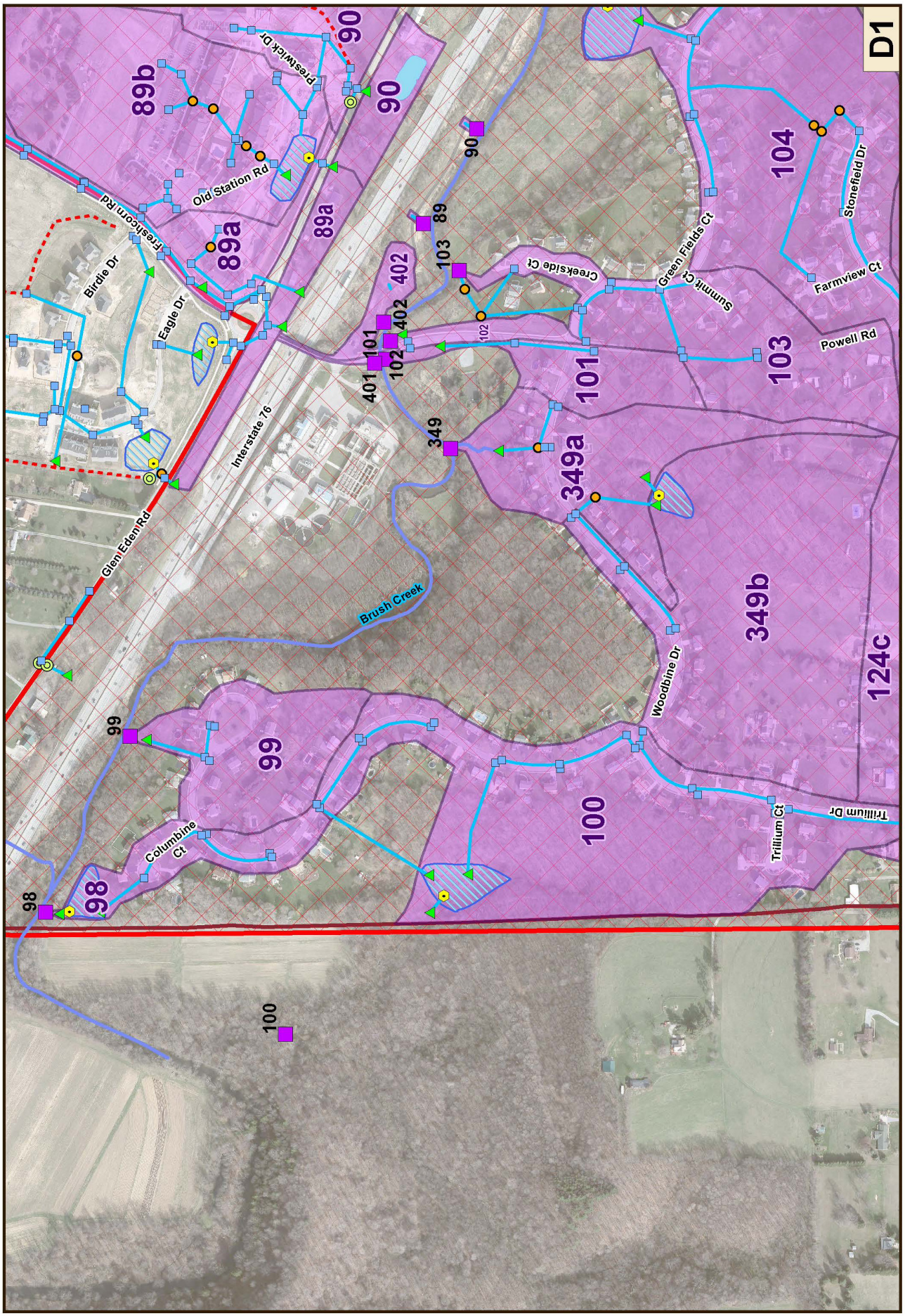

C2
Heathercroft Dr
Edgewood Cir
Glenbrook Dr
Clover Ct
St Phillips Ct
Ellen Dr
St Andrews Ct
Warwick Ln
Little Creek Ln
St James Ct
Glen Eden Rd
Sunset Cir
Sunrise Dr
Suncrest Dr
St Cecilia Ct
Hedge Row Ct
Bayberry Ln
Windsor Ct
Freshcorn Rd
71
72
73
74
74a
74b
75
78
79
79a
80
81
82
83
84
84a
84b
85
86
90
91
92
93
93a
93b
93c
96a
114
117a
117b
118
406

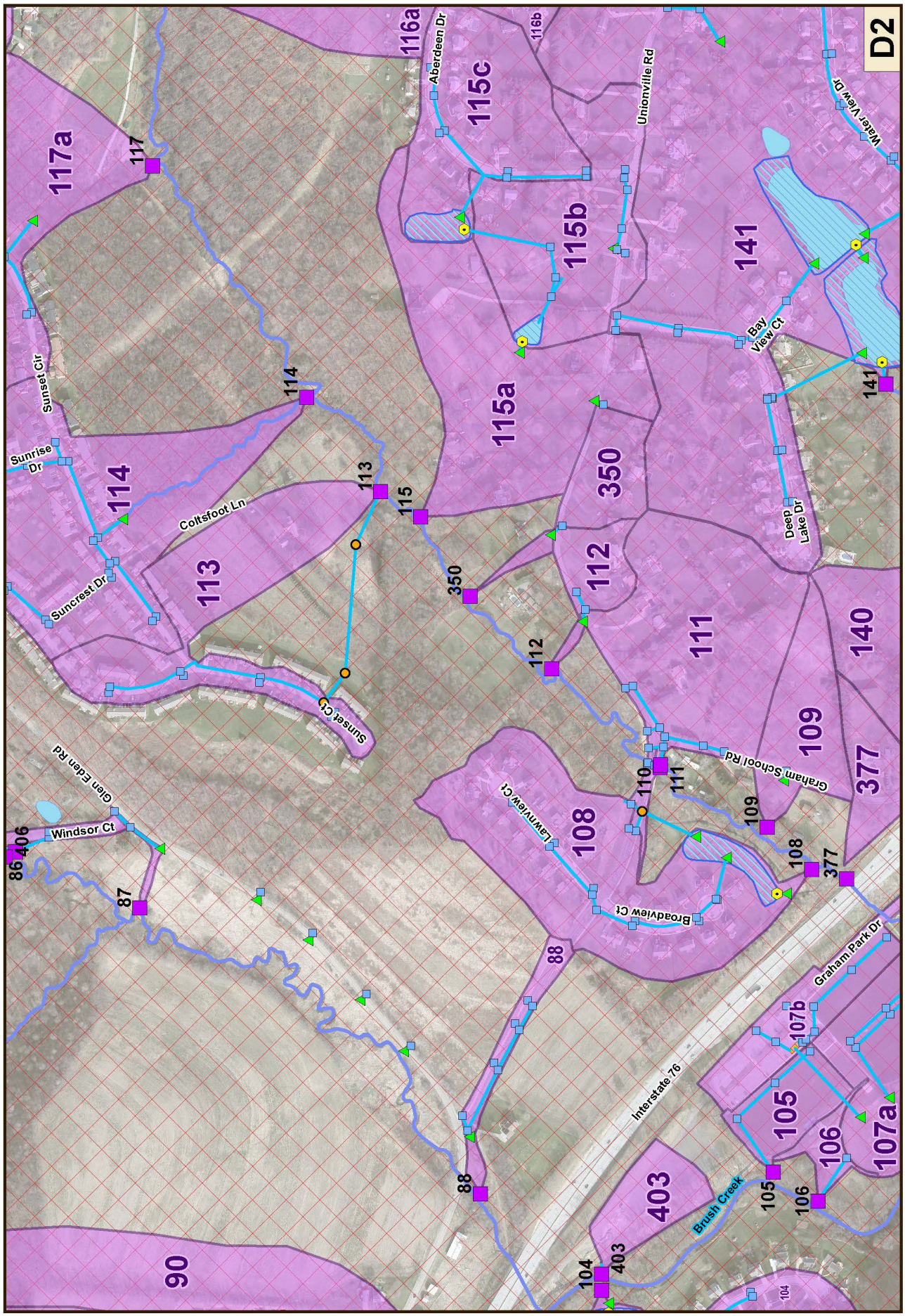

C3
Interstate 79
Hillcrest Ter
227
Pioneer Dr
Friendship Ln
222a
Old North Boundary Rd
North Boundary Rd
223a
223b
Florida Blvd
Moyer Hill Dr
Route 19
223a
227a
227b
66b
Wieand Dr
Old Route 19
66a
69c
Glen Eden Rd
67
Grove Ct
Whispering Oaks Dr
69b
227a
Glenwood Ct
Eden Way Ct
68
69c
68
69a
227a
Glendale Ct
Cherrington Dr
69
118
Acer Ct
Meadowbrook Dr
70
70
72
Glenbrook Dr
Hillcrest Dr
118
71
117b
Greenspire Ct

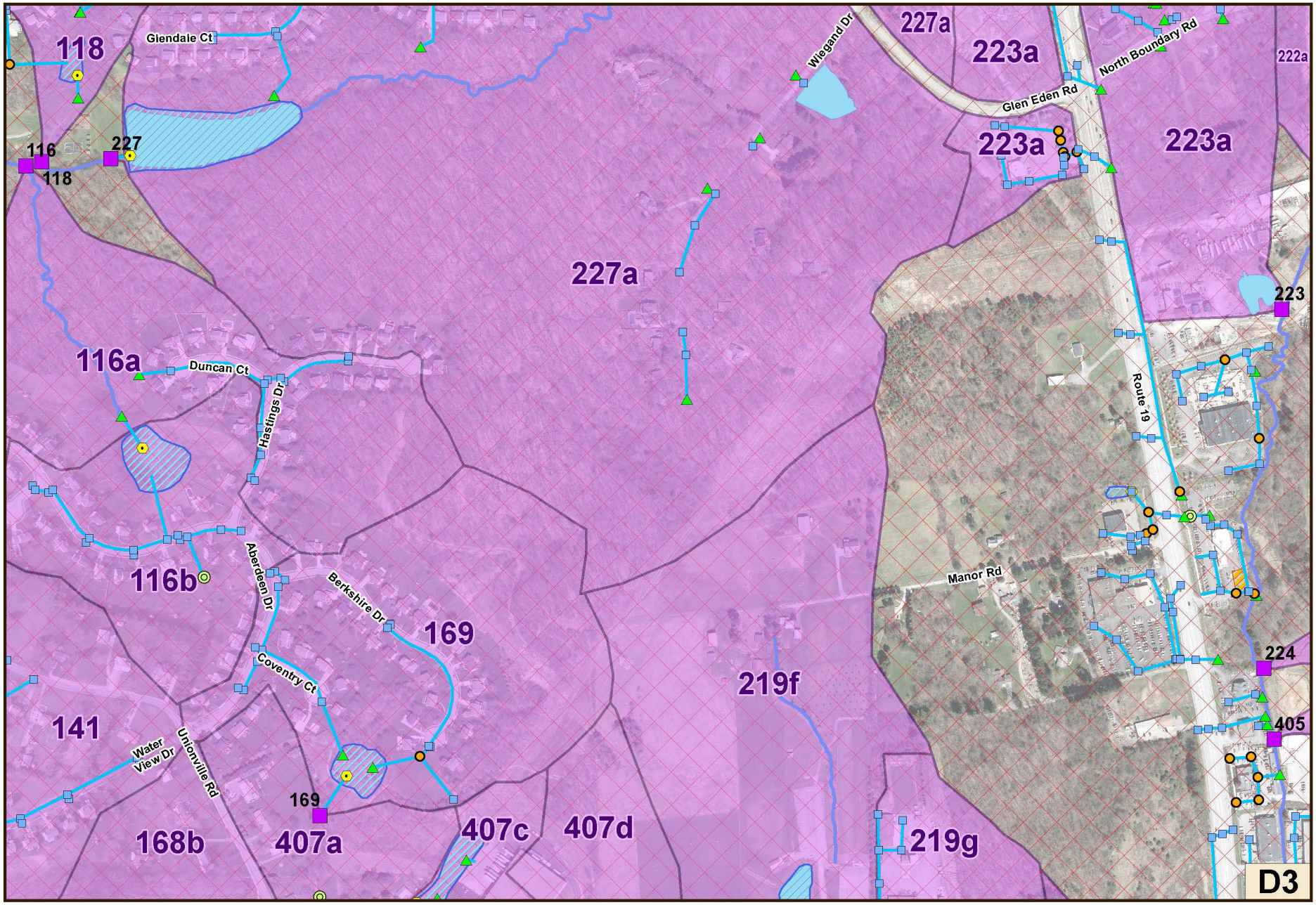

367
43
41
47b
45
47a
49a
49b
222e
222d
222a
222c
222b
Marshall Rd
Maureen Dr
Flamingo Dr
North Boundary Rd
Interstate 79
Pinebrook Dr
North Boundary Park Rd
North Boundary Park Dr Ext
C4

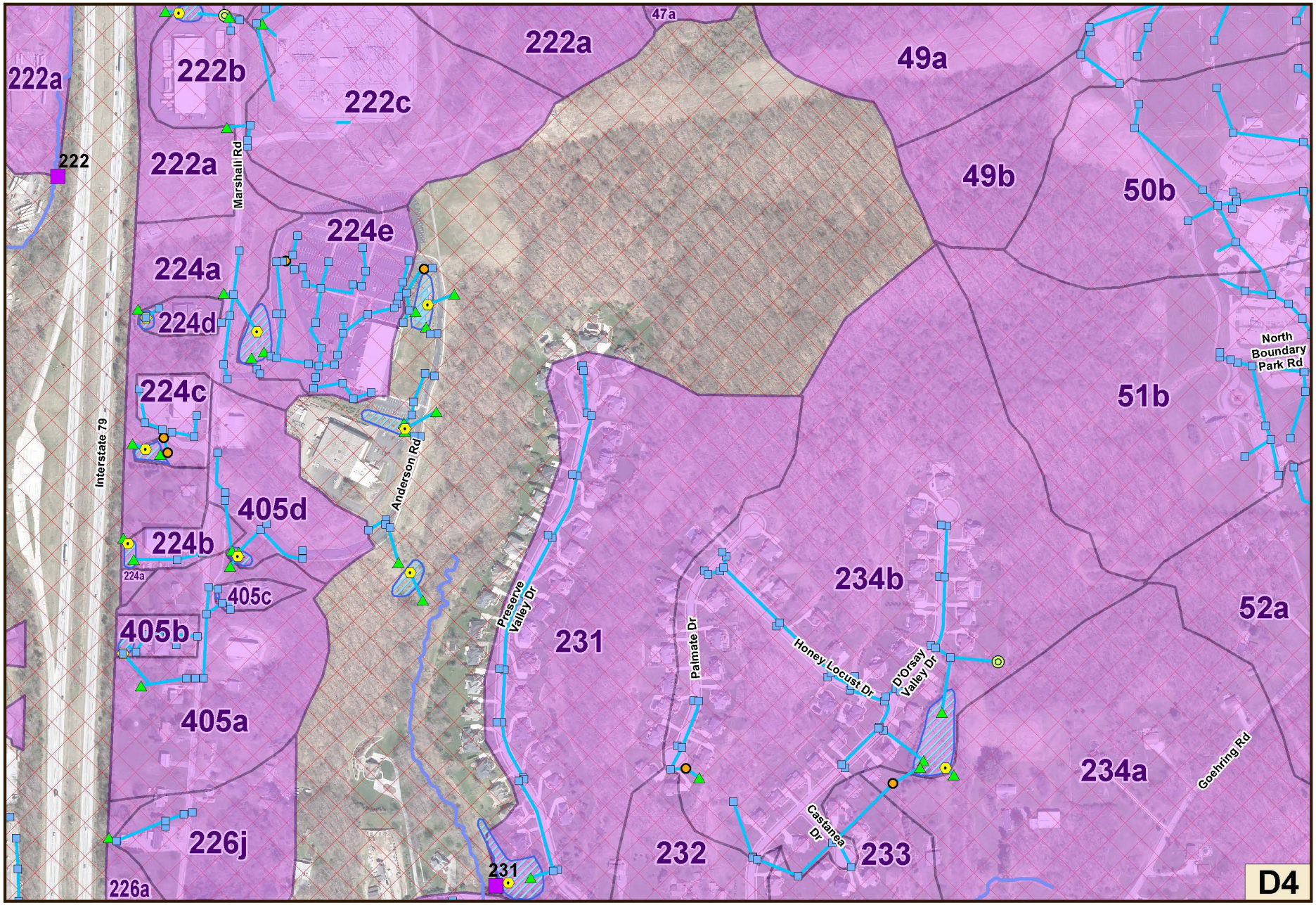

C5
Blackmoore Dr
Grandview Dr
Schomburg Ct
Shady Oak Dr
Mossy Oak Dr
Royal Oak Ct
Wolfe Run
Saige Ct
Franklin Rd
Magnolia Ln
Redwood Ct
Cherry Tree Way
Poplar Pl
Walnut Grv
Chestnut Grv
Elmhurst Cir
Pinehurst Dr
Ashbury Ct
Pinebrook Dr
North Boundary Rd
North Boundary Park Rd
32
34
35
35a
35b
33
36
369
38
37
39
40
41
45
46
47
47a
48
49
49a
49b
25b
50b
368

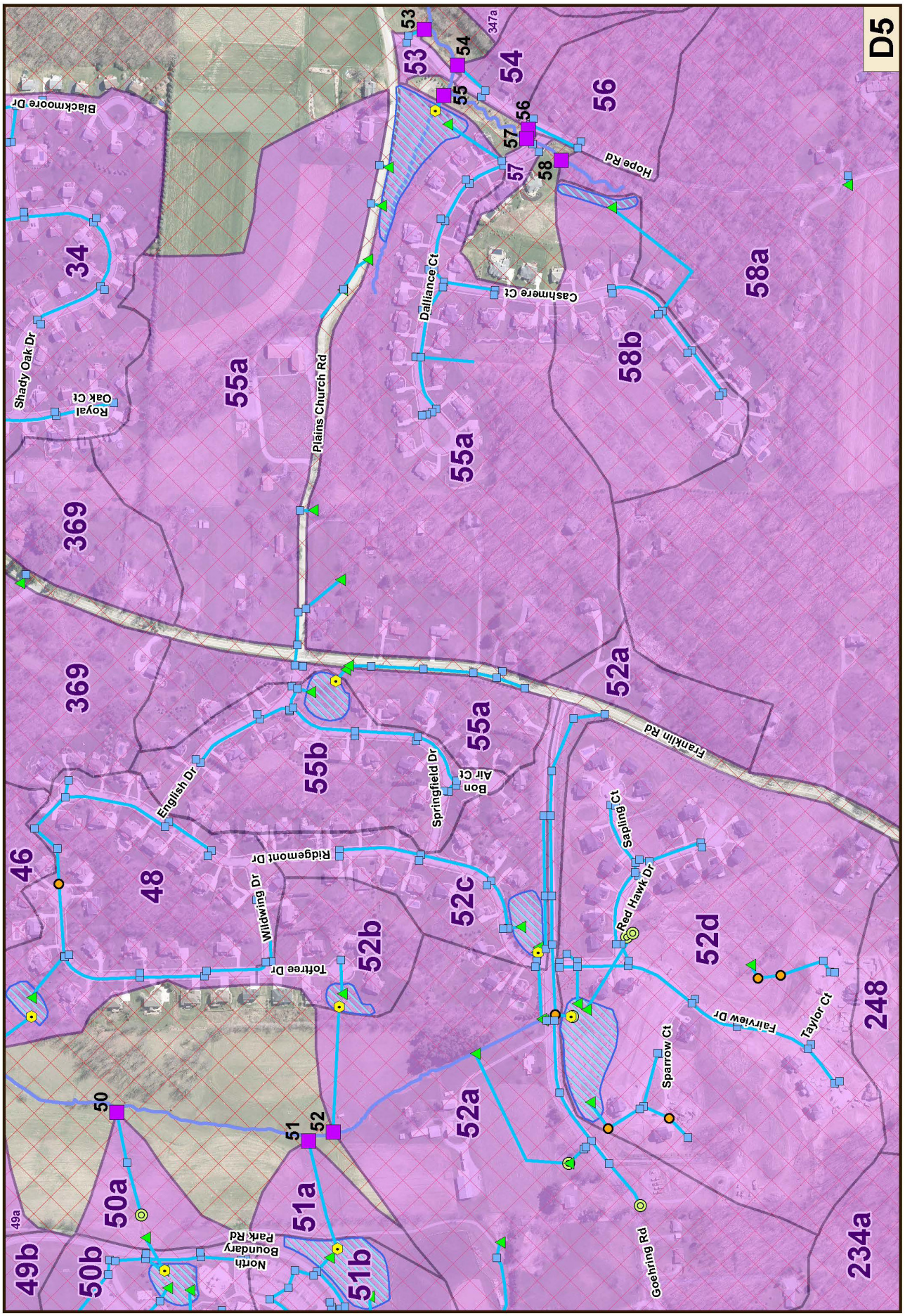

C6
29
371
371
30
31
29
Wolfe Run Rd
Reedmoor Ln
Wolfe Run
30
31
32
32
Greenbriar Dr
Woodmont Dr


D1
89b
90
Prestwick Dr
Old Station Rd
89a
Freshcorn Rd
Birdie Dr
Eagle Dr
Interstate 76
Glen Eden Rd
Brush Creek
99
98
Columbine Ct
100
89
103
Creekside Ct
402
101
102
401
349
Green Fields Ct
Summit Ct
104
Stonefield Dr
Farmview Ct
Powell Rd
349a
349b
124c
Woodbine Dr
Trillium Dr
Trillium Ct


D2
117a
117
116a
Aberdeen Dr
115c
116b
Unionville Rd
Water View Dr
115b
141
Bay View Ct
141
Sunset Cir
114
115a
Sunrise Dr
114
113
115
350
Coltsfoot Ln
Deep Lake Dr
Suncrest Dr
113
350
112
111
140
112
Sunset Ct
109
Graham School Rd
377
Glen Eden Rd
110
111
Lawnview Ct
108
109
Windsor Ct
406
86
87
108
377
Broadview Ct
88
Graham Park Dr
107b
Interstate 76
105
106
107a
88
403
Brush Creek
105
106
90
104
403
104


118
Glendale Ct
116
118
227
227a
223a
Wiegand Dr
North Boundary Rd
222a
Glen Eden Rd
223a
223a
223
116a
Duncan Ct
Hastings Dr
Route 19
116b
Aberdeen Dr
Berkshire Dr
169
Manor Rd
Coventry Ct
219f
224
405
141
Water View Dr
Unionville Rd
169
168b
407a
407c
407d
219g
D3


222a
222b
222c
222a
47a
49a
222
222a
Marshall Rd
49b
50b
224e
224a
224d
North Boundary Park Rd
224c
51b
Interstate 79
Anderson Rd
405d
224b
224a
405c
234b
52a
Preserve Valley Dr
231
405b
Palmate Dr
Honey Locust Dr
D'Orsay Valley Dr
405a
234a
Goehring Rd
Castanea Dr
226j
232
233
231
226a
D4


D5
Blackmoore Dr
Shady Oak Dr
Royal Oak Ct
Plains Church Rd
Dalliance Ct
Cashmere Ct
Hope Rd
Franklin Rd
English Dr
Springfield Dr
Bon Air Ct
Ridgemont Dr
Wildwing Dr
Tofree Dr
Sapling Ct
Red Hawk Dr
Fairview Dr
Taylor Ct
Sparrow Ct
Goehring Rd
North Boundary Park Rd
347a
49a
34
369
46
48
50
50a
50b
49b
51
51a
51b
52
52a
52b
52c
52d
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55a
55b
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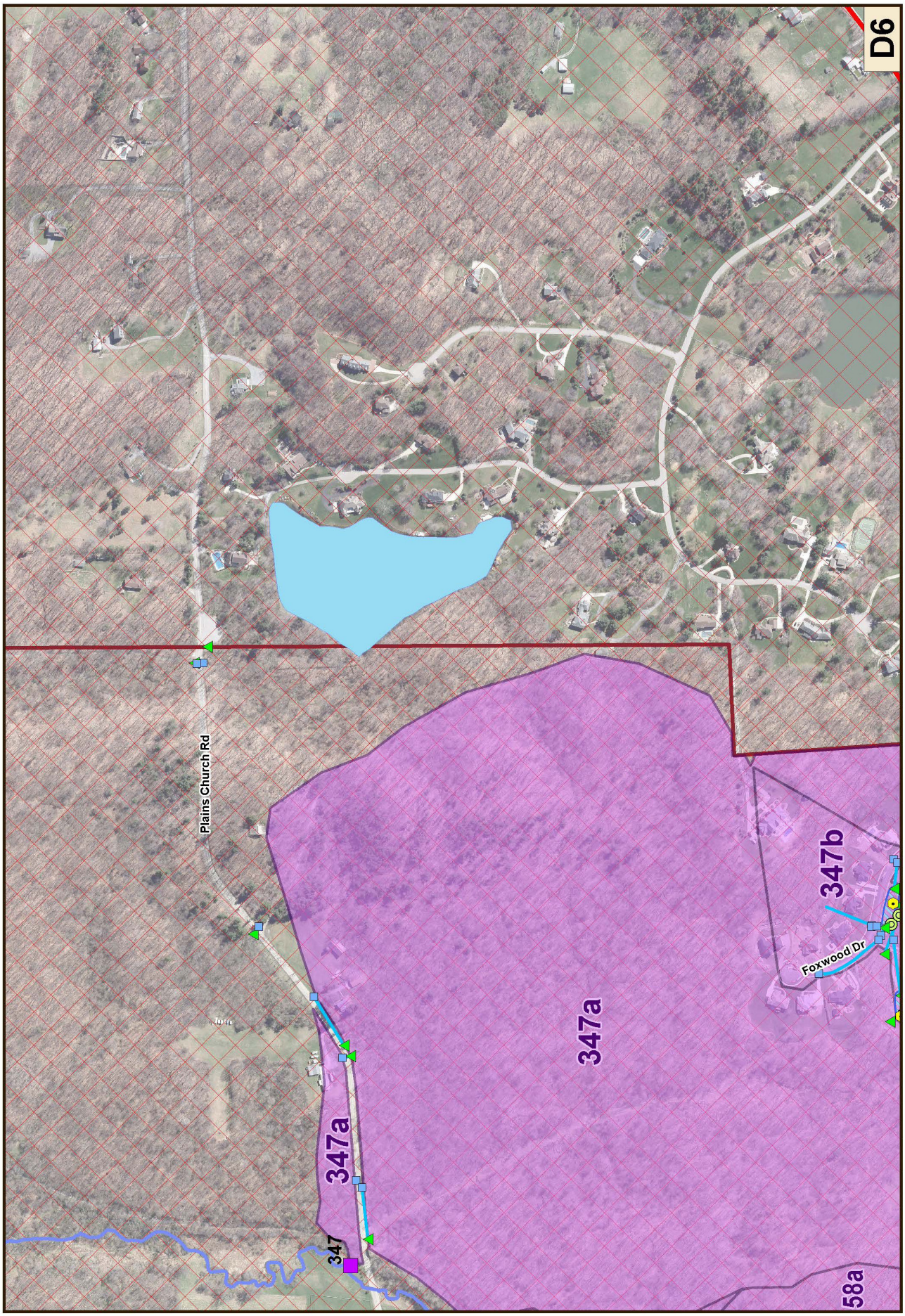
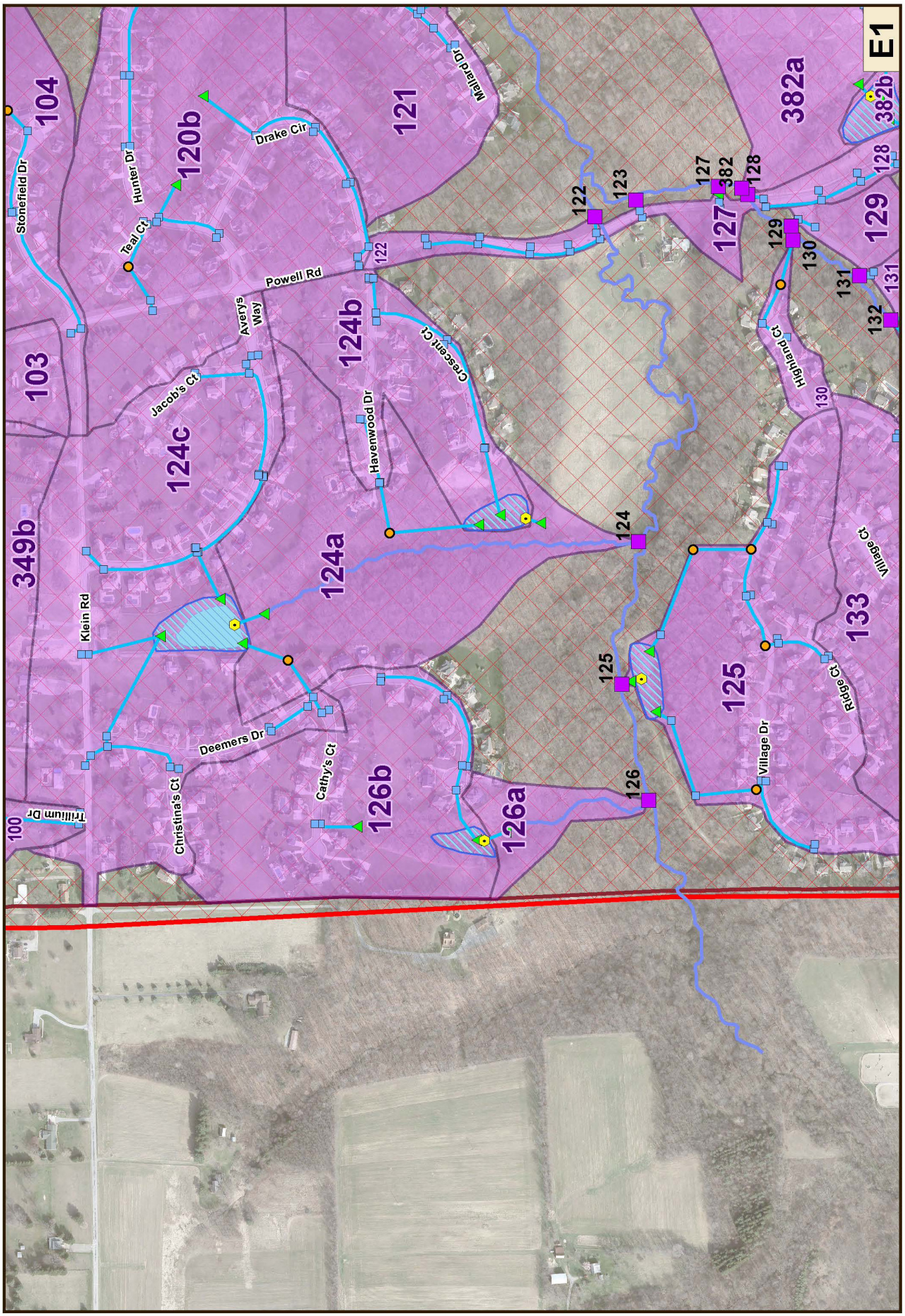
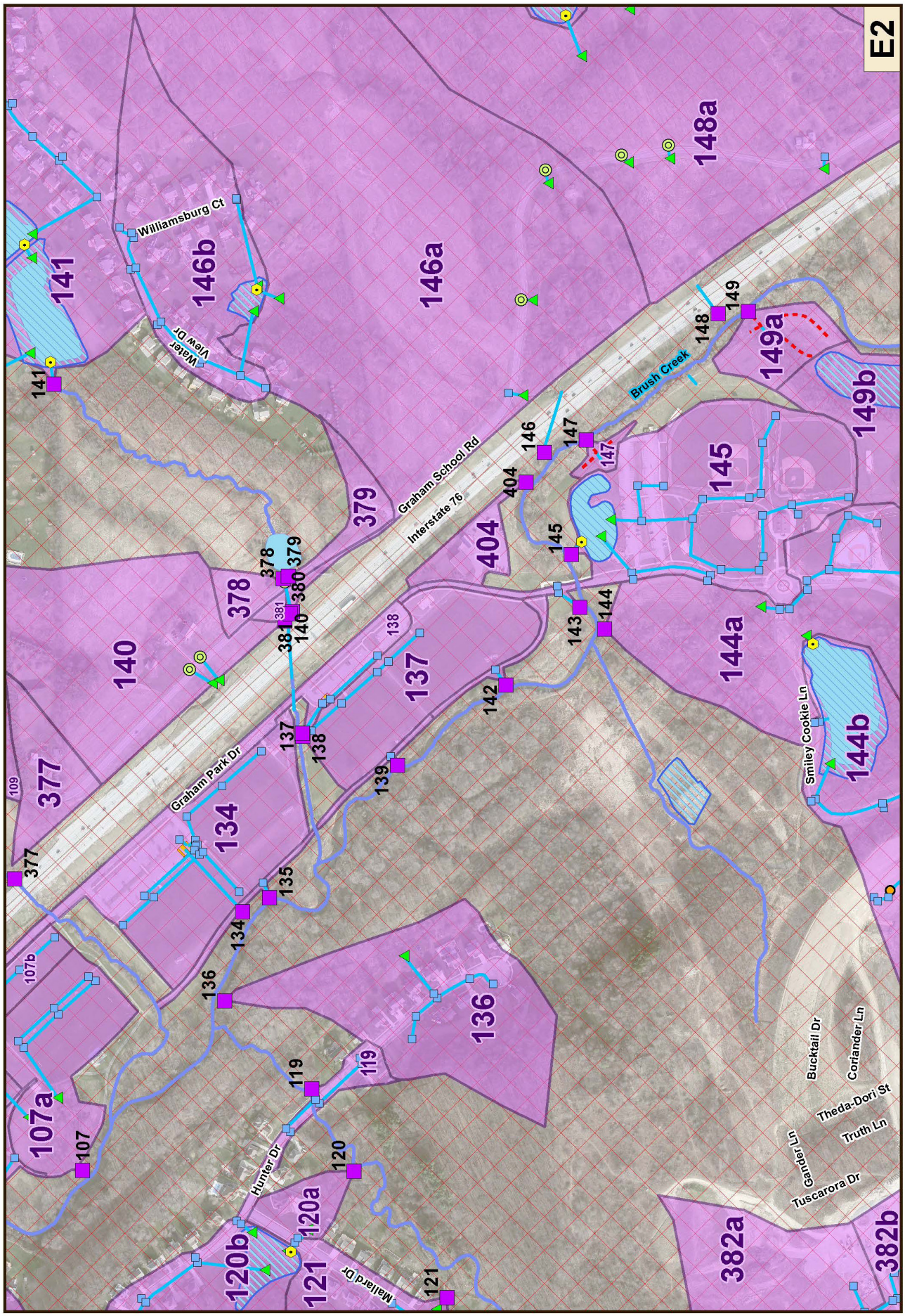
57
58
58a
58b
248
234a


D6
Plains Church Rd
347b
Foxwood Dr
347a
347a
347
58a


E1
104
103
349b
120b
121
124a
124b
124c
125
126a
126b
127
129
133
382a
382b
Stonefield Dr
Hunter Dr
Teal Ct
Drake Cir
Mallard Dr
Powell Rd
Averys Way
Jacob's Ct
Crescent Ct
Havenwood Dr
Klein Rd
Deemers Dr
Cathy's Ct
Christina's Ct
Trillium Dr
Highland Ct
Village Dr
Ridge Ct
Village Ct
100
122
123
124
125
126
127
128
129
130
131
132
133
382


E2
148a
146a
146b
141
149a
149b
145
144a
144b
404
379
378
140
137
134
136
377
107a
107
120a
120b
121
382a
382b
Williamsburg Ct
Water View Dr
Graham School Rd
Interstate 76
Brush Creek
Graham Park Dr
Smiley Cookie Ln
Hunter Dr
Mallard Dr
Bucktail Dr
Coriander Ln
Theda-Dori St
Truth Ln
Gander Ln
Tuscarora Dr
109
107b
381
138
147
146
148
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379
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381
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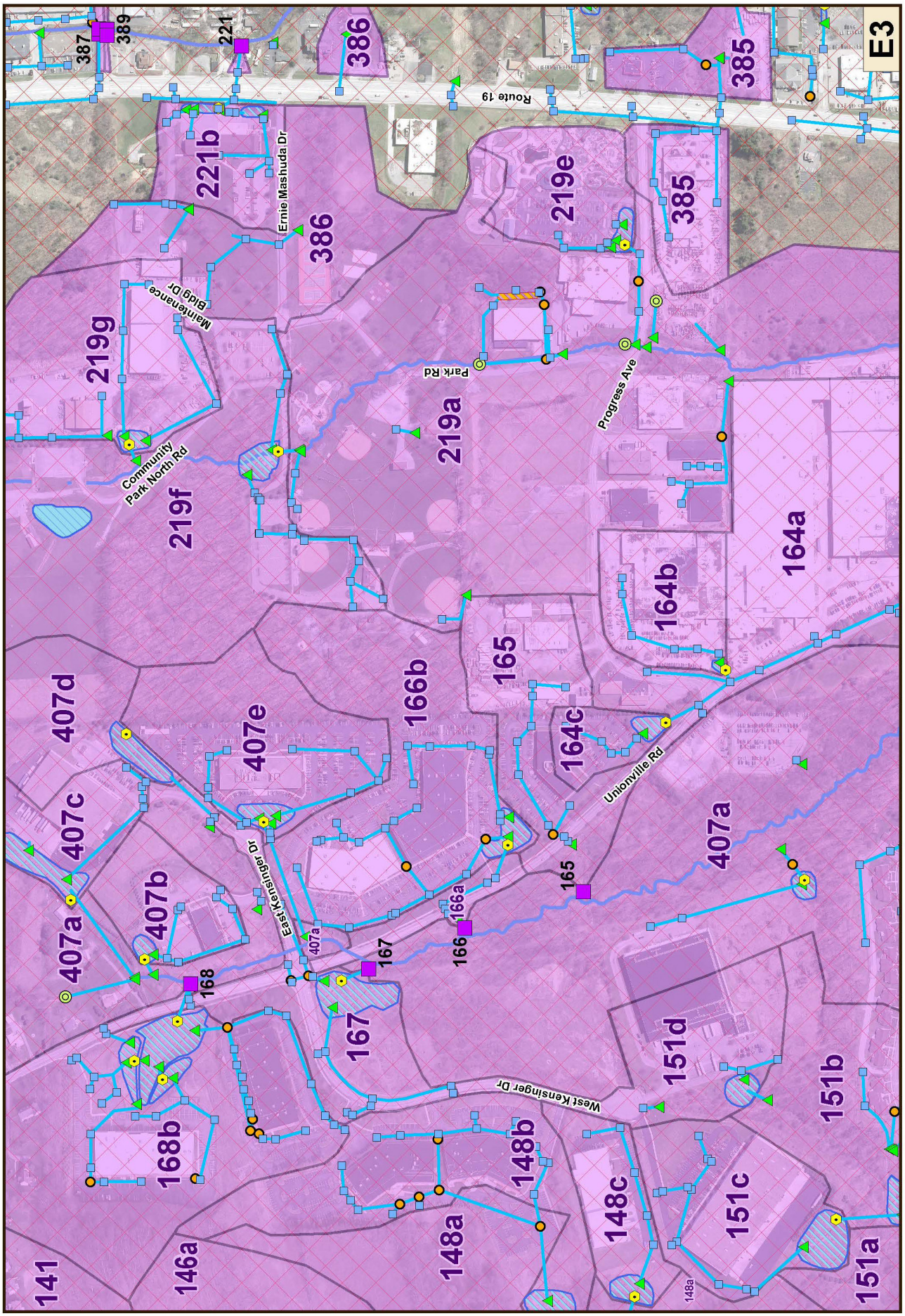
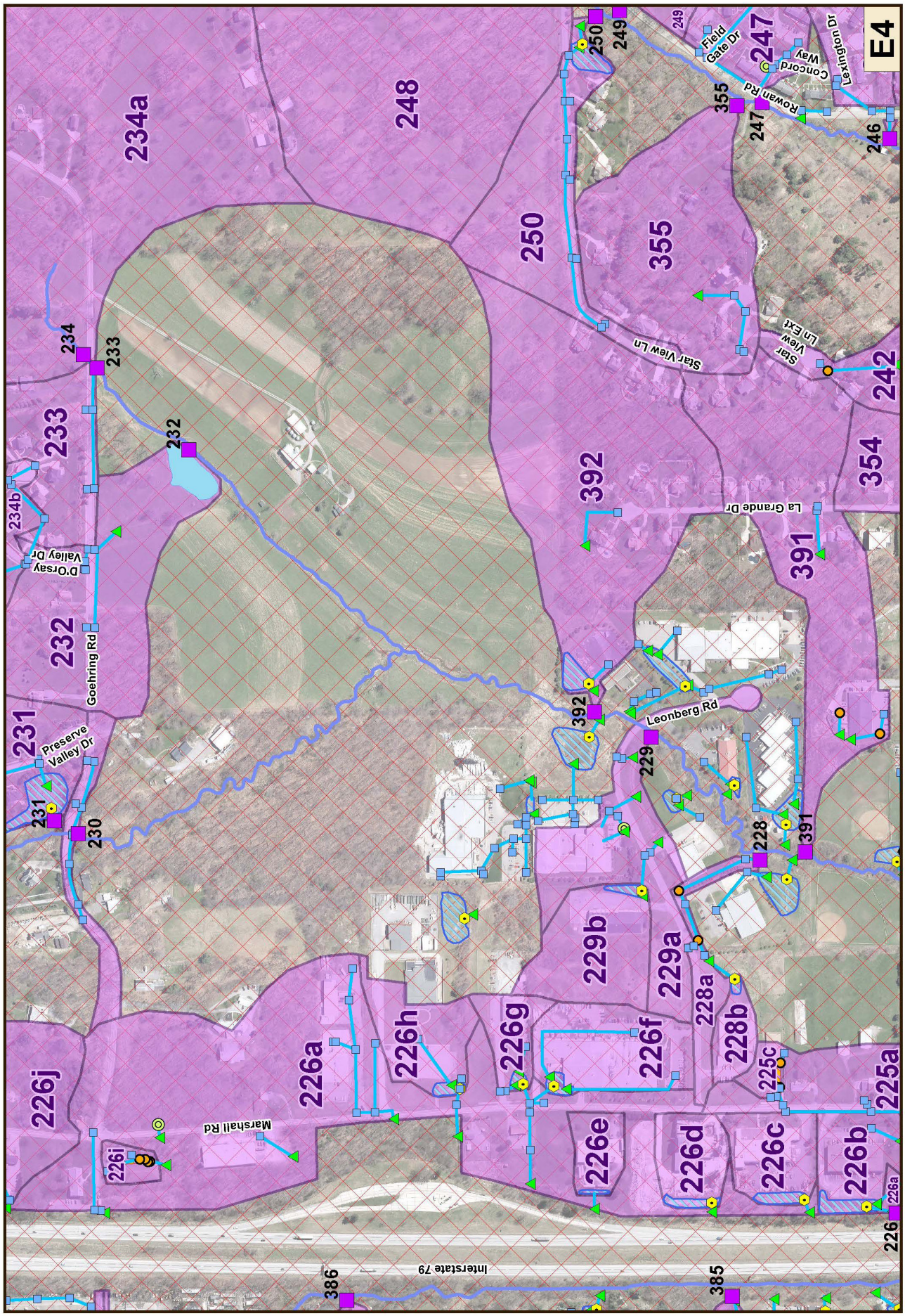
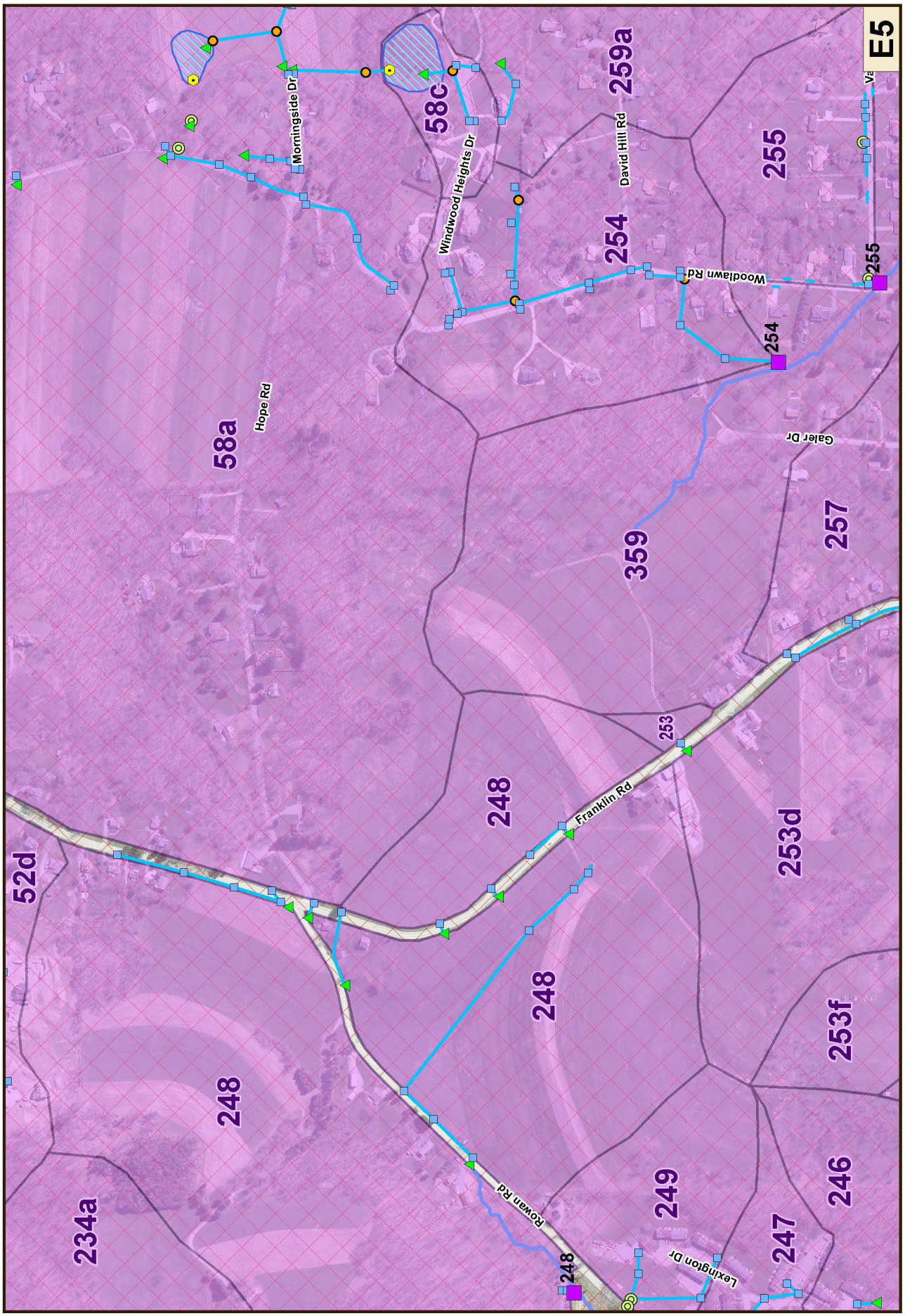
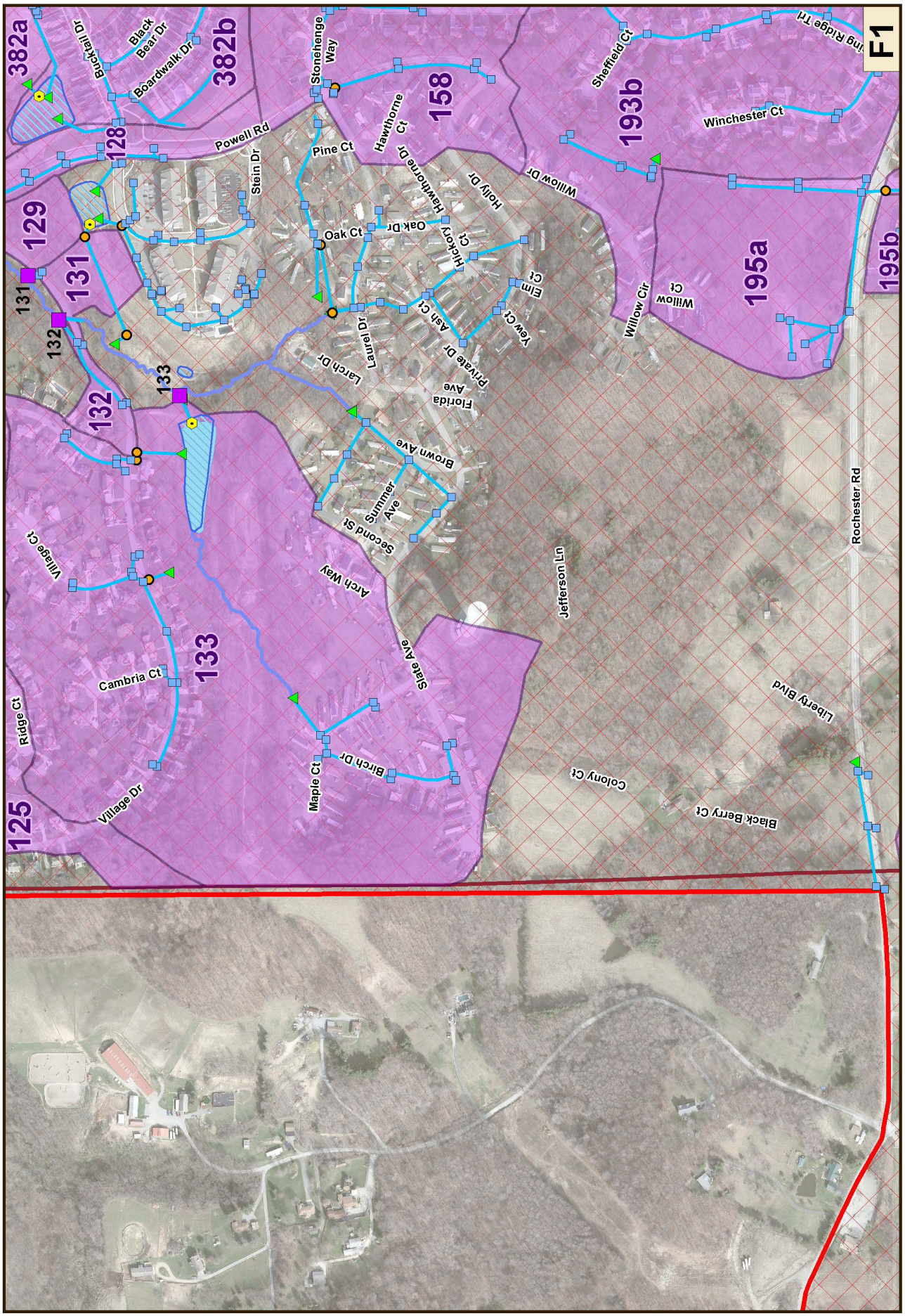
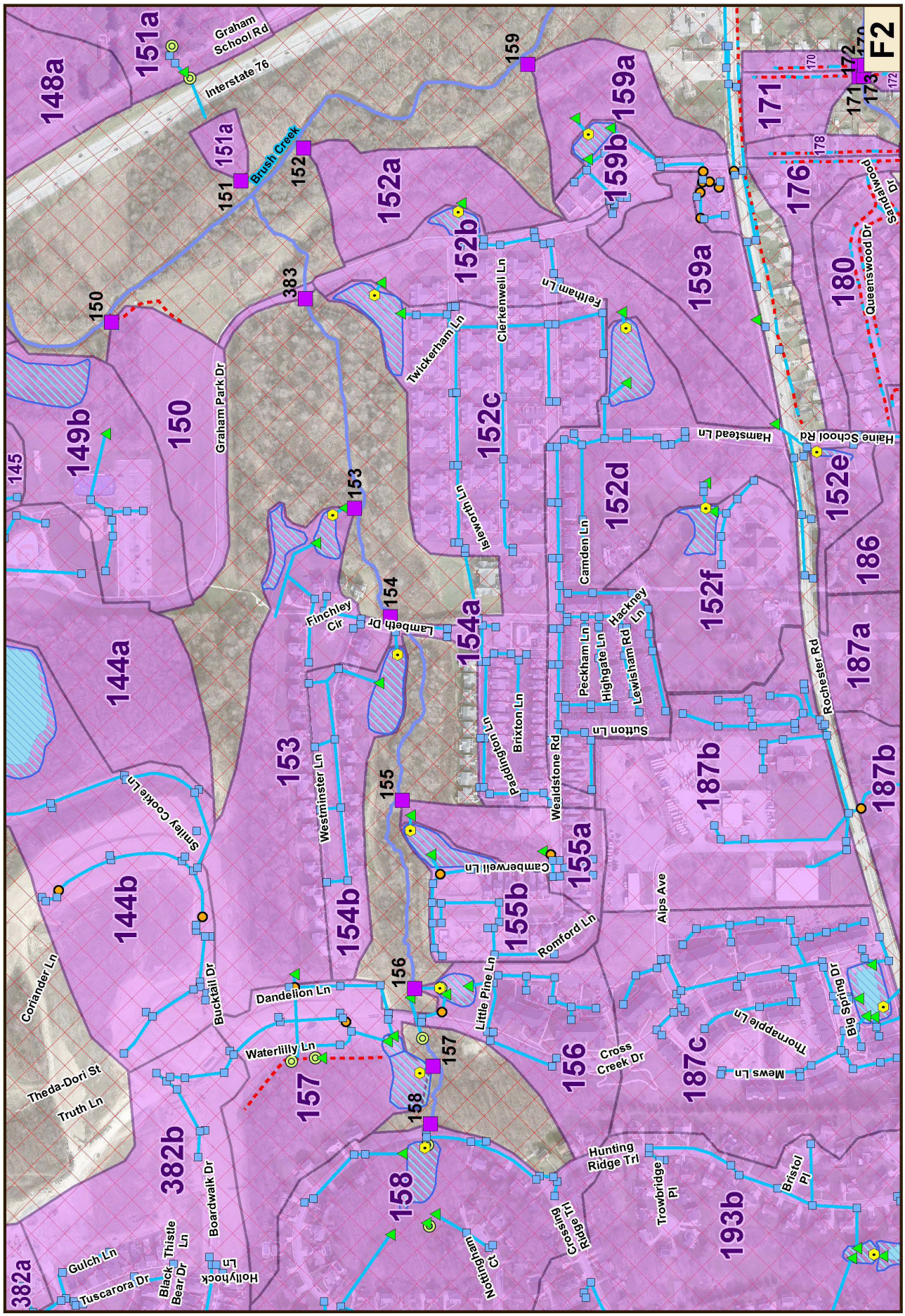

E3
387
389
221
386
385
Route 19
221b
Ernie Mashuda Dr
219e
385
386
Maintenance Bldg Dr
219g
Park Rd
Progress Ave
219a
Community Park North Rd
219f
164a
164b
165
166b
407d
407e
164c
Unionville Rd
407c
407a
407b
East Kensinger Dr
407a
165
166a
166
167
168
167
151d
151b
West Kensinger Dr
168b
148b
148c
151c
148a
146a
141
151a
148a


E4
234a
248
250
355
247
249
Field Gate Dr
Concord Way
Lexington Dr
Rowan Rd
Star View Ln
Star View Ln Ext
242
354
392
391
La Grande Dr
Leonberg Rd
229
228
229a
229b
228a
228b
225c
225a
226a
226b
226c
226d
226e
226f
226g
226h
226i
226j
226
Marshall Rd
Interstate 79
386
385
233
234
232
234b
D'Orsay Valley Dr
Goehring Rd
231
Preserve Valley Dr
230


E5
58c
259a
255
254
Morningside Dr
Windwood Heights Dr
David Hill Rd
Woodlawn Rd
255
254
Hope Rd
58a
Galer Dr
257
359
253
248
Franklin Rd
253d
52d
248
253f
248
249
246
234a
Rowan Rd
247
Lexington Dr
248

E6
347a
347b
347a
370b
370a
259b
259a
347a
58a
Quarter Horse Ln
Majestic Dr
Foxwood Dr
Boxwood Dr
Mirage Dr
Evergreen Ter
Morningside Dr
Timber Ridge Ct
Lee Dr
Vandivort Dr
256


F1
382a
382b
Buckeye Trl
Black Bear Dr
Boardwalk Dr
Stonehenge Way
158
Sheffield Ct
193b
Winchester Ct
Powell Rd
128
Stein Dr
Pine Ct
Hawthorne Ct
Hawthorne Dr
Holly Dr
Willow Dr
129
131
131
132
133
Oak Ct
Oak Dr
Hickory Ct
Elm Ct
Yew Ct
Ash Ct
Laurel Dr
Larch Dr
Private Dr
Florida Ave
Brown Ave
Summer Ave
Second St
Willow Ct
Willow Cir
195a
195b
Rochester Rd
Jefferson Ln
Village Ct
Arch Way
Slate Ave
Cambria Ct
Ridge Ct
Village Dr
Birch Dr
Maple Ct
125
Liberty Blvd
Colony Ct
Black Berry Ct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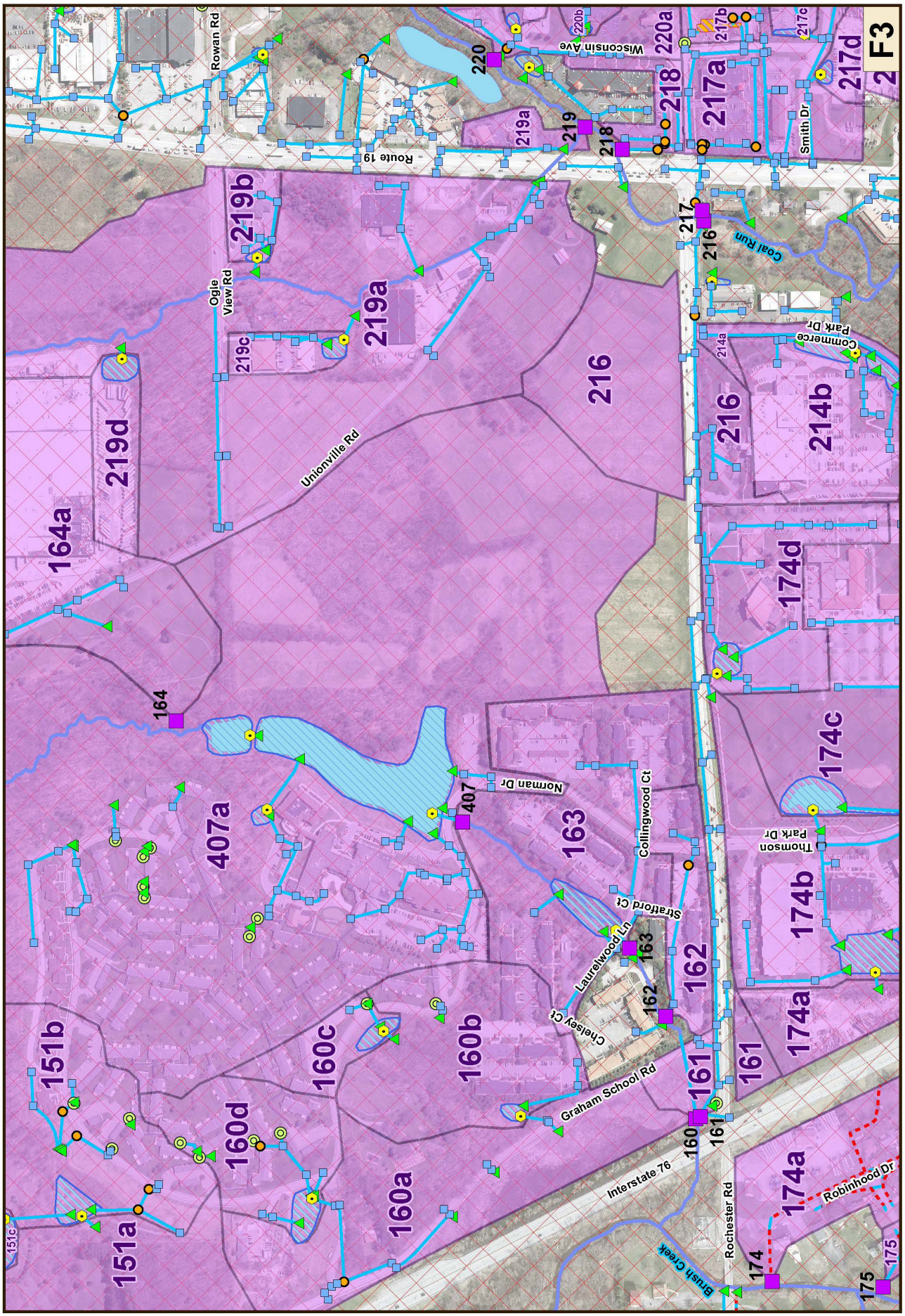
151a
Graham School Rd
Interstate 76
151a
Brush Creek
151
152
159
159a
159b
152a
152b
171
172
173
176
180
Sandalwood Dr
Queenswood Dr
383
150
Graham Park Dr
Twickerham Ln
Clerkenwell Ln
Feltham Ln
149b
150
152c
Hamstead Ln
Haine School Rd
145
153
Isleworth Ln
152d
152e
186
Camden Ln
Finchley Cir
154
Lambeth Dr
154a
Hackney Ln
152f
Peckham Ln
Highgate Ln
Lewisham Rd
187a
Rochester Rd
144a
Brixton Ln
Paddington Ln
Sutton Ln
Wealdstone Rd
187b
153
Westminster Ln
155
Smiley Cookie Ln
Camberwell Ln
155a
144b
154b
155b
Alps Ave
Romford Ln
Coriander Ln
Bucktail Dr
Dandelion Ln
156
Little Pine Ln
Big Spring Dr
Thornapple Ln
Waterlilly Ln
157
156
Cross Creek Dr
187c
Mews Ln
Theda-Dori St
Truth Ln
157
158
382b
Hunting Ridge Trl
Trowbridge Pl
Bristol Pl
158
193b
Boardwalk Dr
Crossing Ridge Trl
Nottingham Ct
Gulch Ln
Thistle Ln
Black Bear Dr
Hollyhock Ln
Tuscarora Dr
382a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Wisconsin Ave
Smith Dr
Coal Run
Commerce Park Dr
Ogle View Rd
Unionville Rd
Norman Dr
Collingwood Ct
Stratford Ct
Laurelwood Ln
Chelsey Ct
Graham School Rd
Interstate 76
Rochester Rd
Brush Creek
Robinhood Dr
Thomson Park Dr
151c
151a
151b
160a
160b
160c
160d
161
162
163
164
164a
174
174a
174b
174c
174d
175
214a
214b
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217b
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219d
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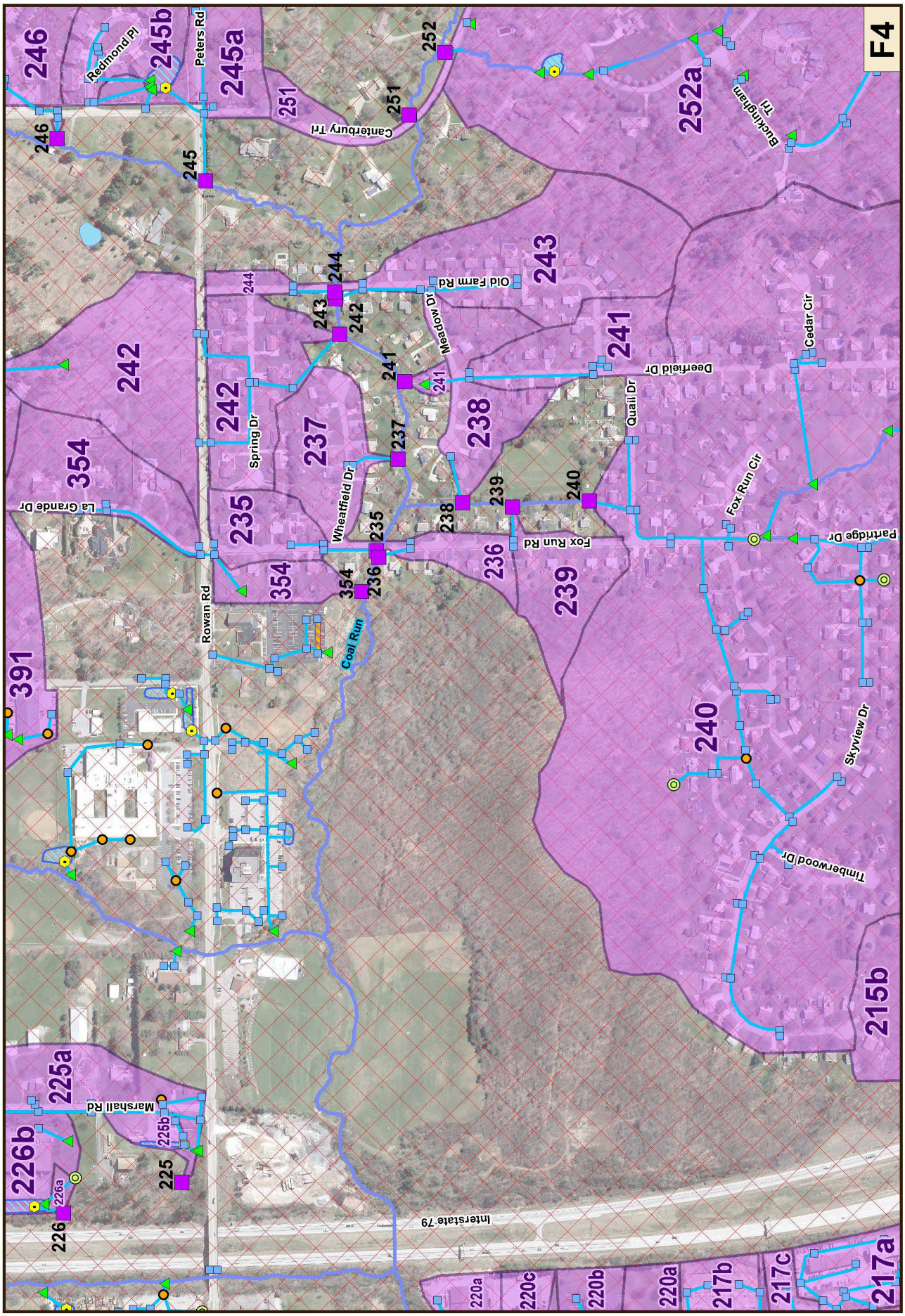
220a
220b
407
407a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Peters Rd
Redmond Pl
Canterbury Trl
Buckingham Trl
Old Farm Rd
Meadow Dr
Spring Dr
Wheatfield Dr
Deerfield Dr
Quail Dr
Cedar Cir
Fox Run Cir
Fox Run Rd
Partridge Dr
Skyview Dr
Timberwood Dr
La Grande Dr
Rowan Rd
Coal Run
Marshall Rd
Interstate 79
246
245b
245a
245
251
252
252a
244
243
242
241
238
237
239
240
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226b
225a
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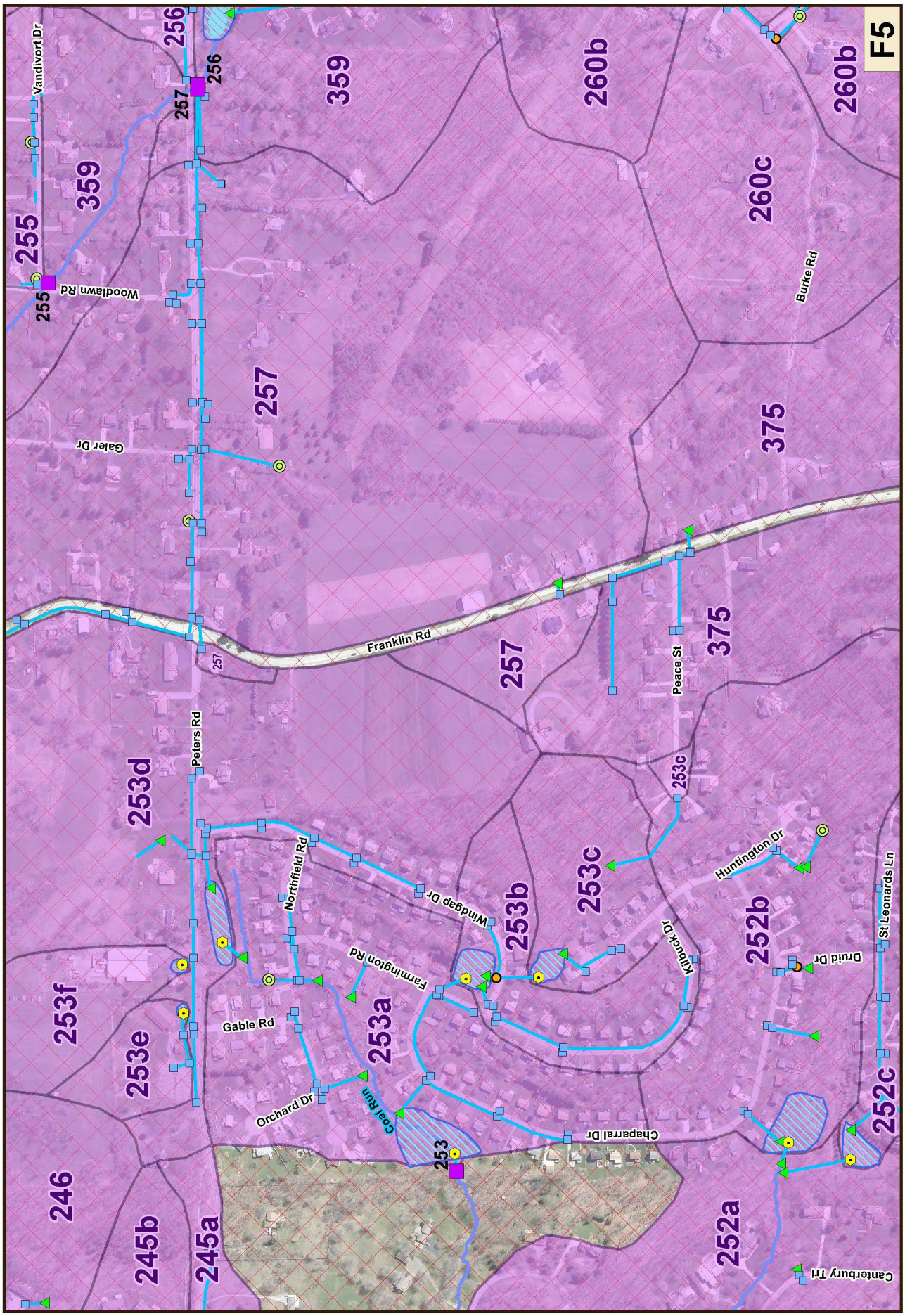
226a
215b
220a
220c
220b
217b
217c
217a


F5
Vandivort Dr
Woodlawn Rd
Galer Dr
Franklin Rd
Peters Rd
Northfield Rd
Windgap Dr
Farmington Rd
Gable Rd
Orchard Dr
Coal Run
Chaparral Dr
Peace St
Burke Rd
Huntington Dr
Kilbuck Dr
Druid Dr
St Leonards Ln
Canterbury Trl
255
256
257
253
359
260b
260c
375
253d
253f
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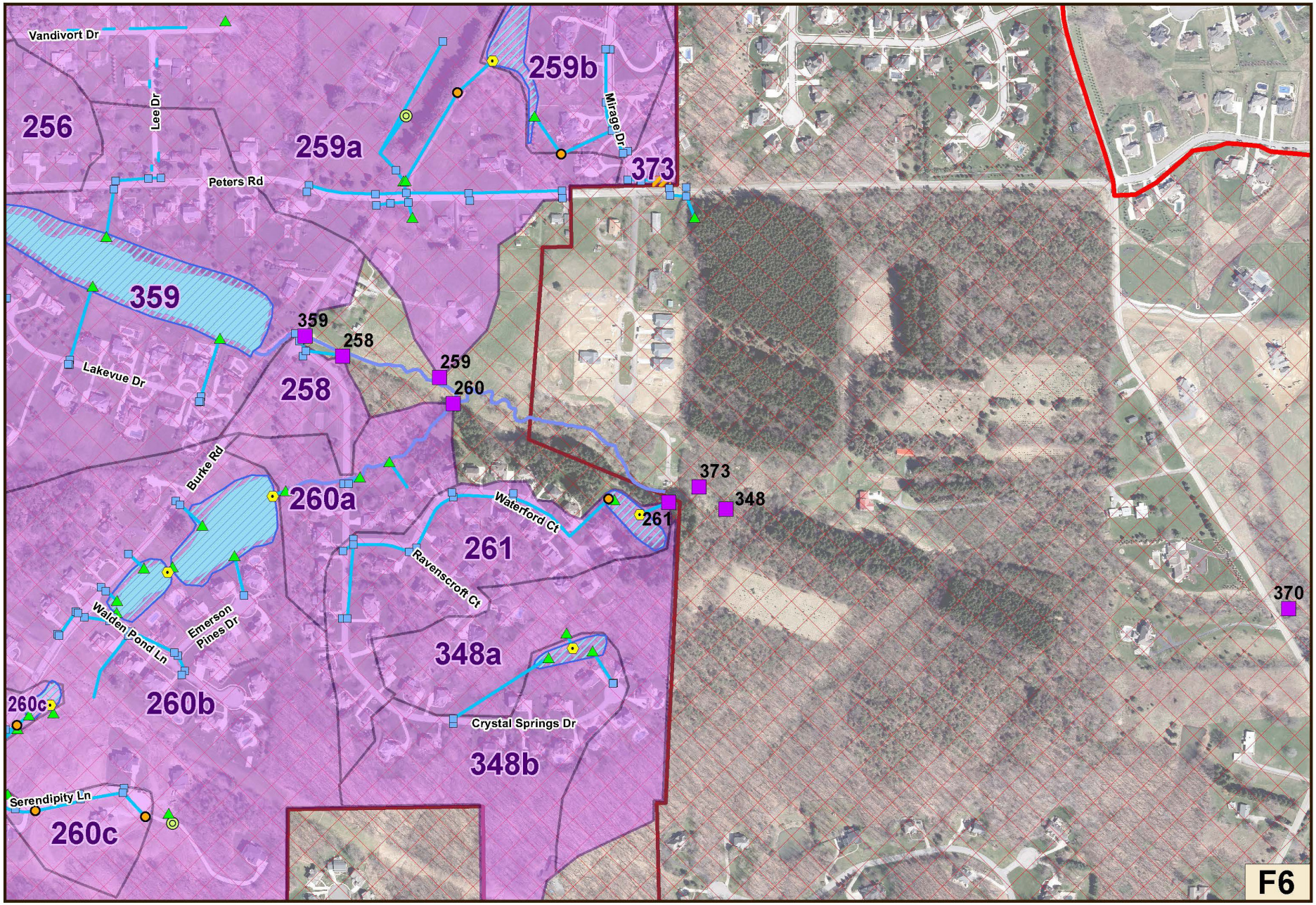
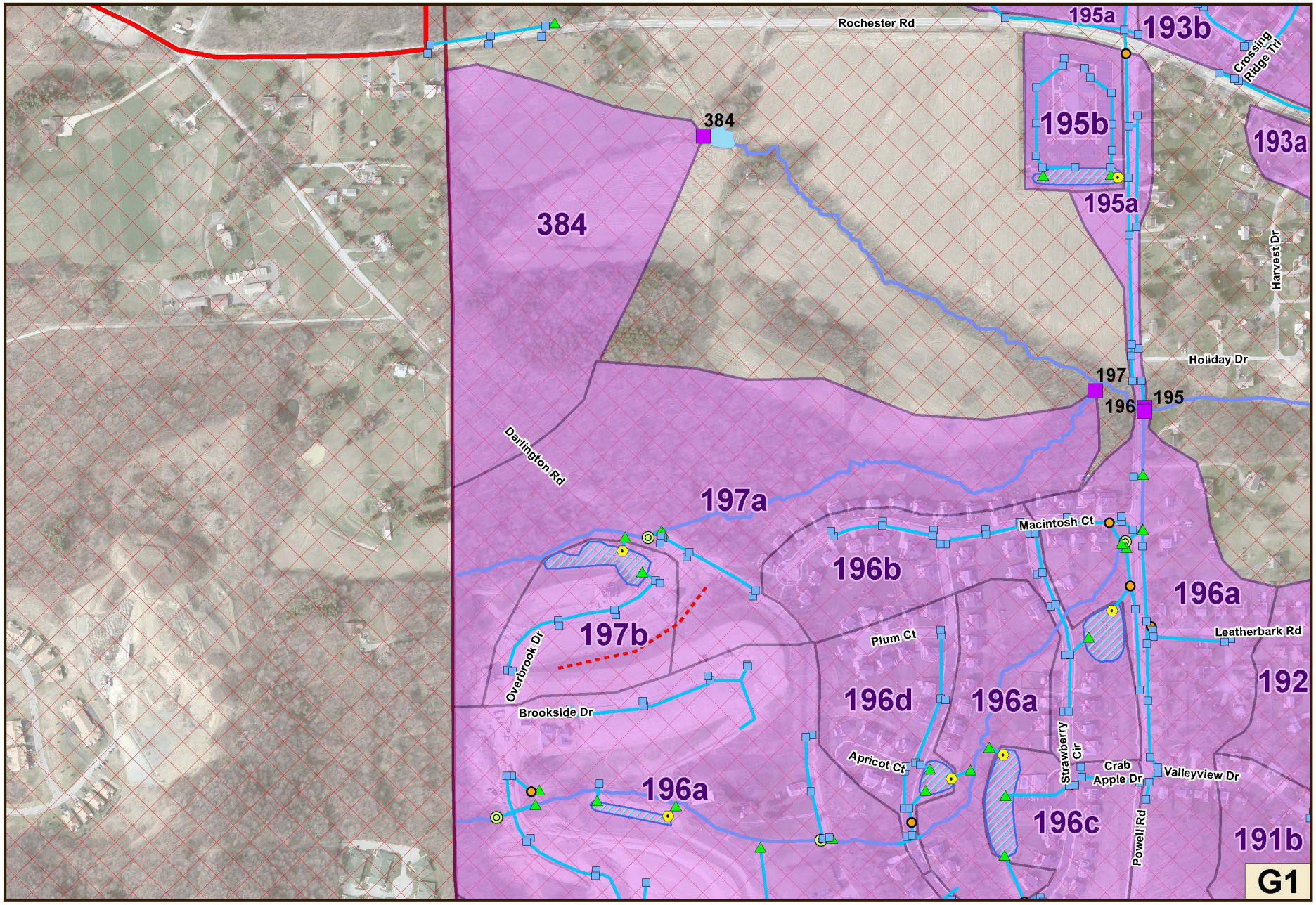
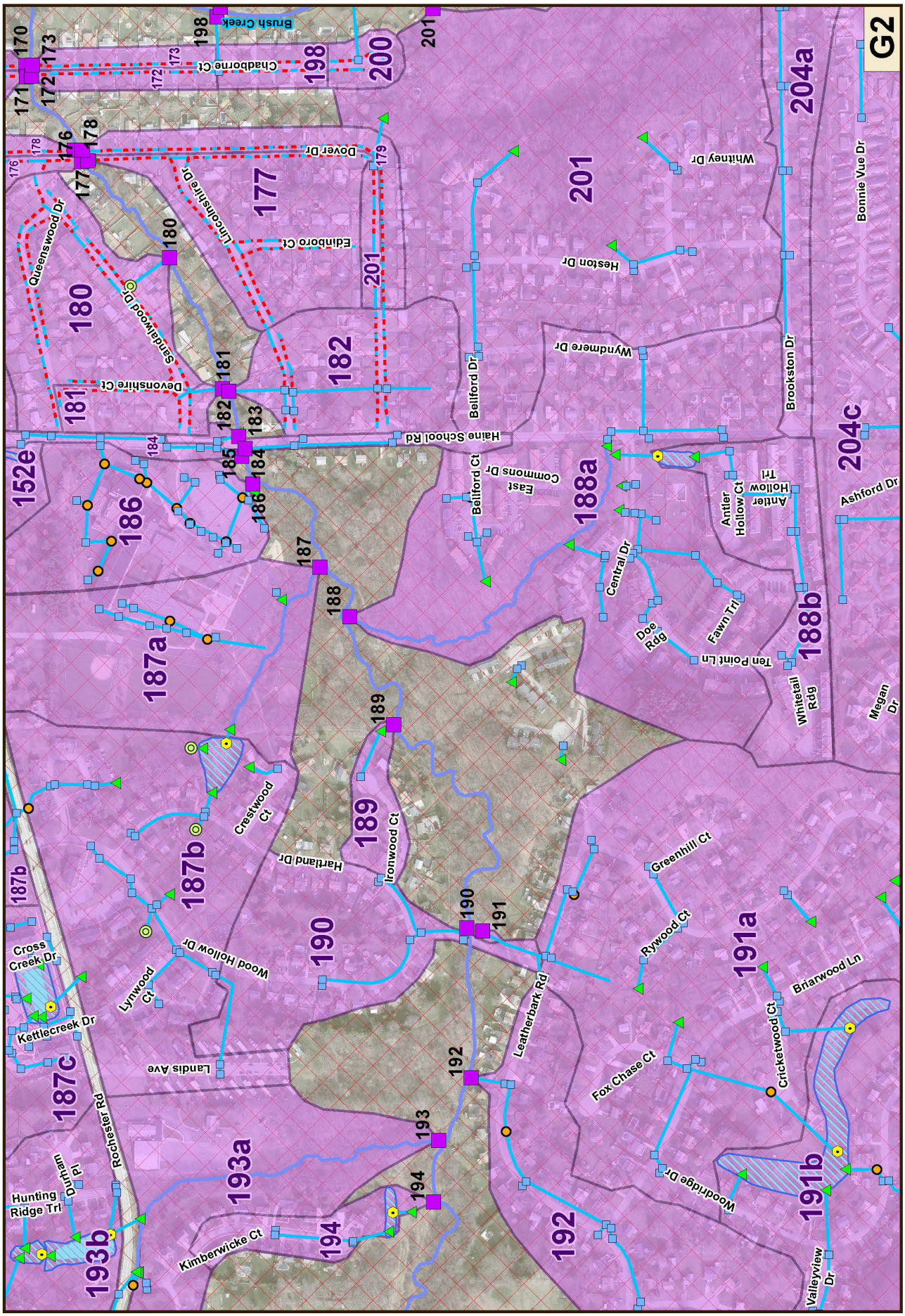
252c
252a
246
245b
245a


Vandivort Dr
Lee Dr
256
259a
259b
Mirage Dr
373
Peters Rd
359
359
258
259
260
Lakevue Dr
258
Burke Rd
260a
373
348
261
Waterford Ct
Ravenscroft Ct
261
370
Walden Pond Ln
Emerson Pines Dr
348a
260c
260b
Crystal Springs Dr
348b
Serendipity Ln
260c
F6


Rochester Rd
195a
193b
Crossing Ridge Trl
384
195b
193a
195a
384
Harvest Dr
Holiday Dr
197
196
195
Darlington Rd
197a
Macintosh Ct
196b
196a
197b
Plum Ct
Leatherbark Rd
Overbrook Dr
192
196d
196a
Brookside Dr
Strawberry Cir
Apricot Ct
Crab Apple Dr
Valleyview Dr
196a
196c
Powell Rd
191b
G1


G2
Brush Creek
Chadborne Ct
Dover Dr
Lincolnshire Dr
Edinboro Ct
Queenswood Dr
Sandalwood Dr
Devonshire Ct
Haine School Rd
Bellford Dr
Bellford Ct
East Commons Dr
Whitney Dr
Heston Dr
Wyndmere Dr
Brookston Dr
Bonnie Vue Dr
Antler Hollow Ct
Antler Hollow Trl
Ashford Dr
Central Dr
Doe Rdg
Fawn Trl
Ten Point Ln
Whitetail Rdg
Megan Dr
Crestwood Ct
Hartland Dr
Ironwood Ct
Greenhill Ct
Rywood Ct
Wood Hollow Dr
Cross Creek Dr
Kettlecreek Dr
Lynwood Ct
Landis Ave
Leatherbark Rd
Briarwood Ln
Cricketwood Ct
Fox Chase Ct
Woodridge Dr
Valleyview Dr
Rochester Rd
Hunting Ridge Trl
Durham Pl
Kimberwicke Ct
152e
170
171
172
173
176
177
178
179
180
181
182
183
184
185
186
187
187a
187b
187c
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188b
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193a
193b
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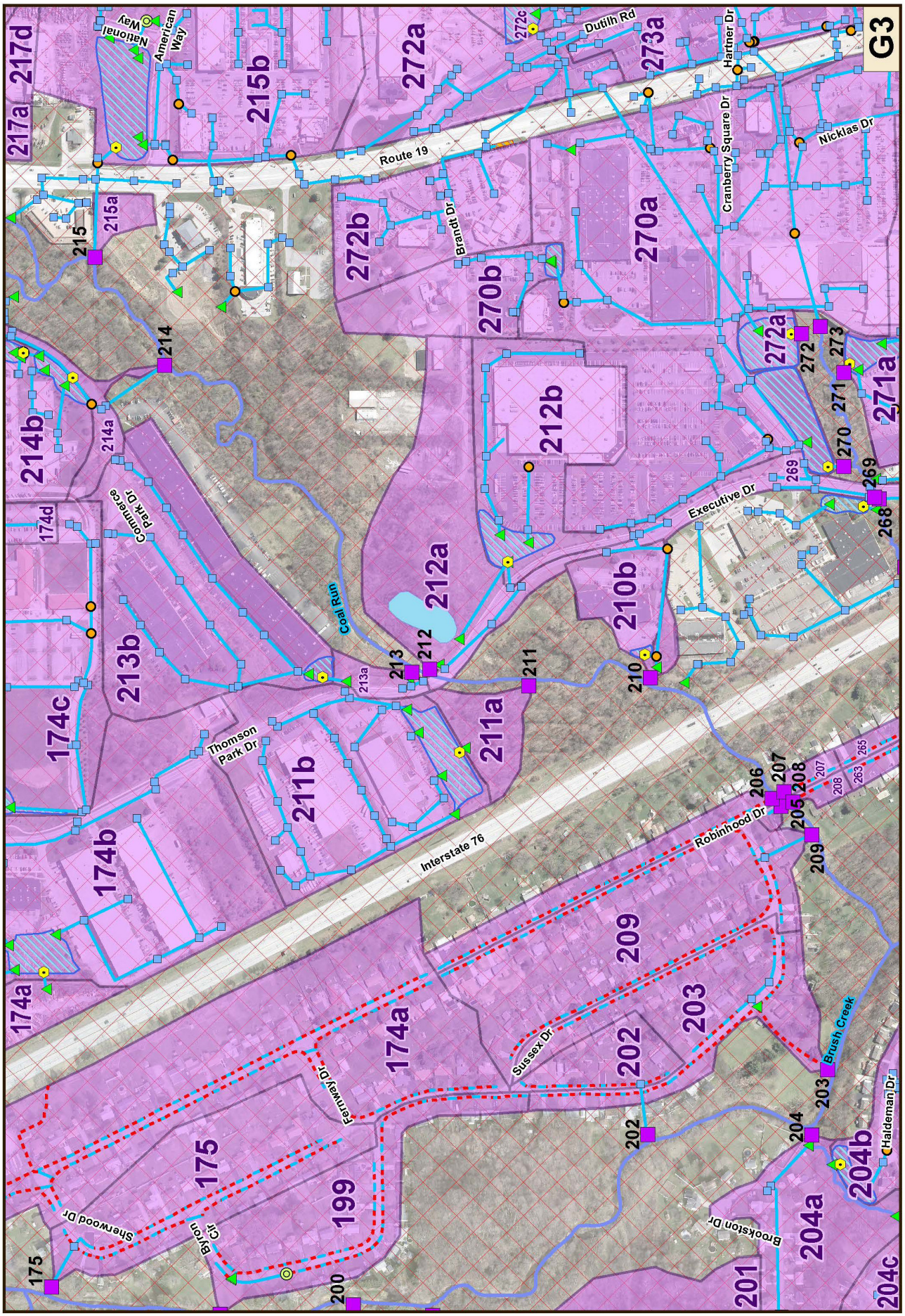
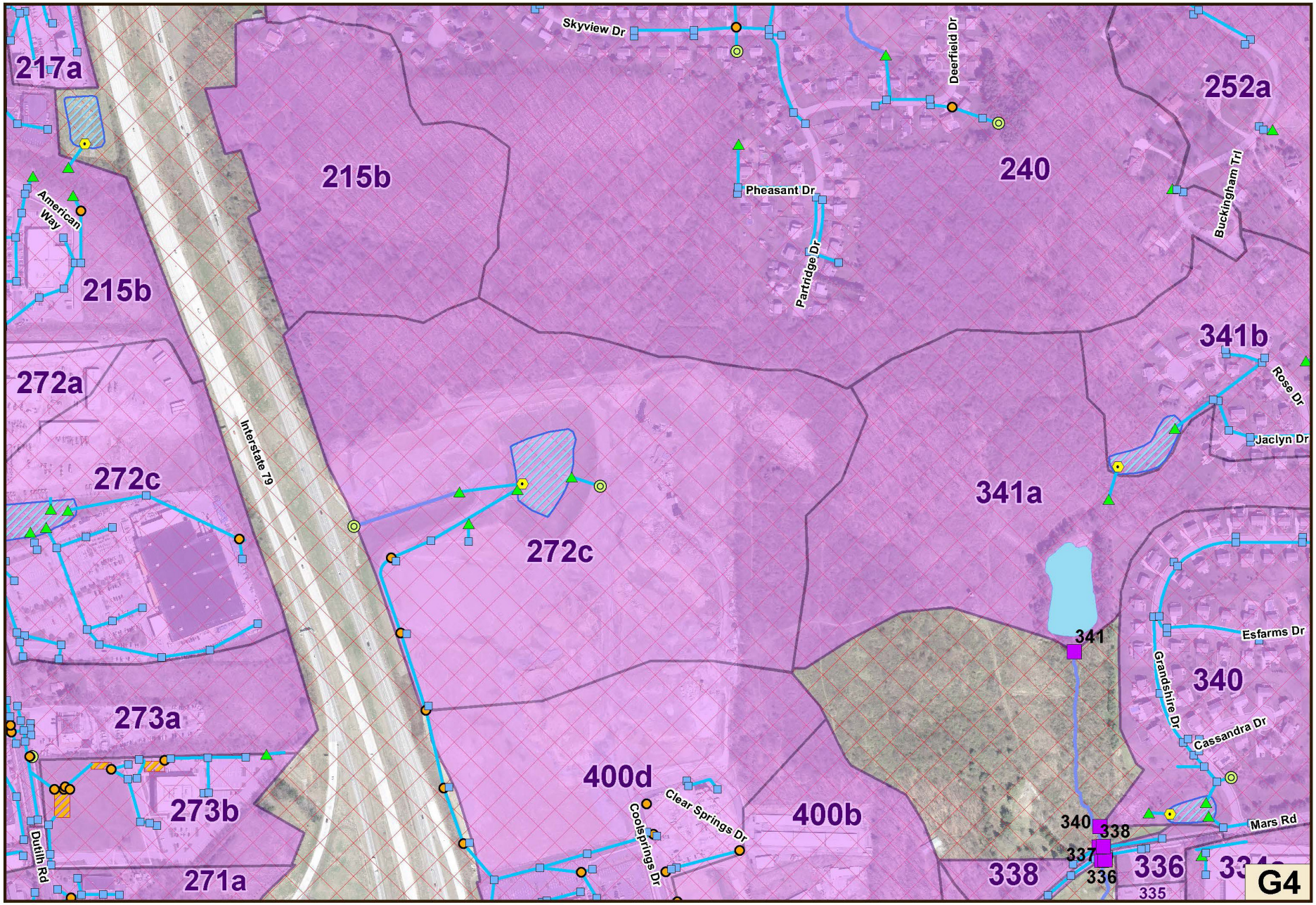
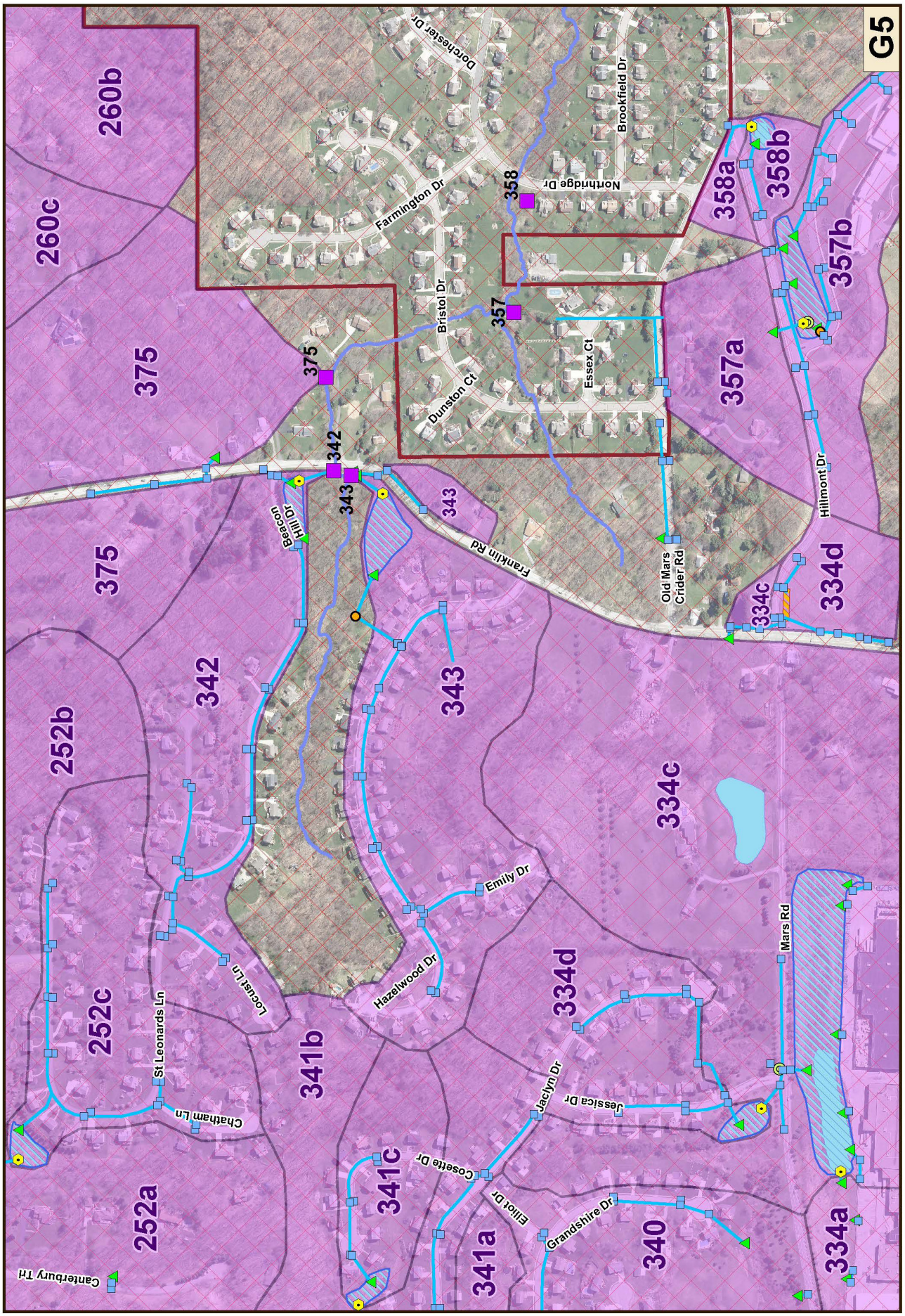
201
204a
204c


G3
217d
217a
National Way
American Way
215b
272a
272c
Dutilh Rd
273a
Hartner Dr
Route 19
Cranberry Square Dr
Nicklas Dr
215a
215
272b
Brandt Dr
270a
270b
214
272a
272
273
271
271a
214b
214a
212b
270
269
269
268
Executive Dr
174d
Commerce Park Dr
212a
210b
Coal Run
213b
213
212
211
210
213a
174c
211a
Thomson Park Dr
211b
206
207
208
207
208
265
263
205
209
Robinhood Dr
Interstate 76
174b
209
174a
203
174a
Sussex Dr
202
Brush Creek
Fernway Dr
203
202
204
204b
Haldeman Dr
175
199
Sherwood Dr
Byron Cir
Brookston Dr
204a
175
200
201
204c


217a
215b
215b
272a
272c
272c
273a
273b
271a
400d
400b
338
341a
341b
240
252a
340
Skyview Dr
Deerfield Dr
Pheasant Dr
Partridge Dr
Buckingham Trl
American Way
Interstate 79
Rose Dr
Jaclyn Dr
Esfarms Dr
Grandshire Dr
Cassandra Dr
Mars Rd
Clear Springs Dr
Coolsprings Dr
Dutlin Rd
341
340
338
337
336
335
G4


G5
260b
260c
375
375
342
343
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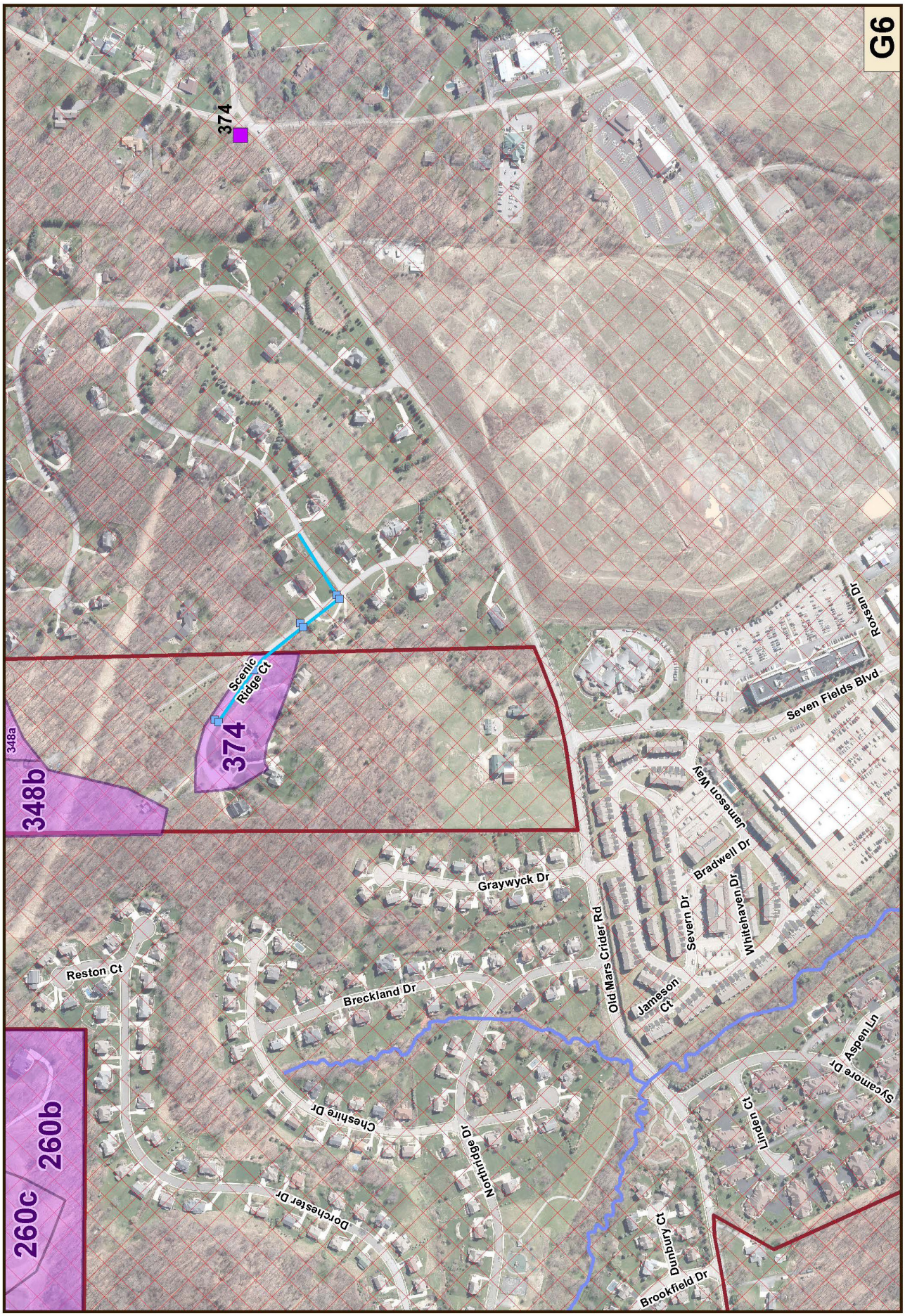
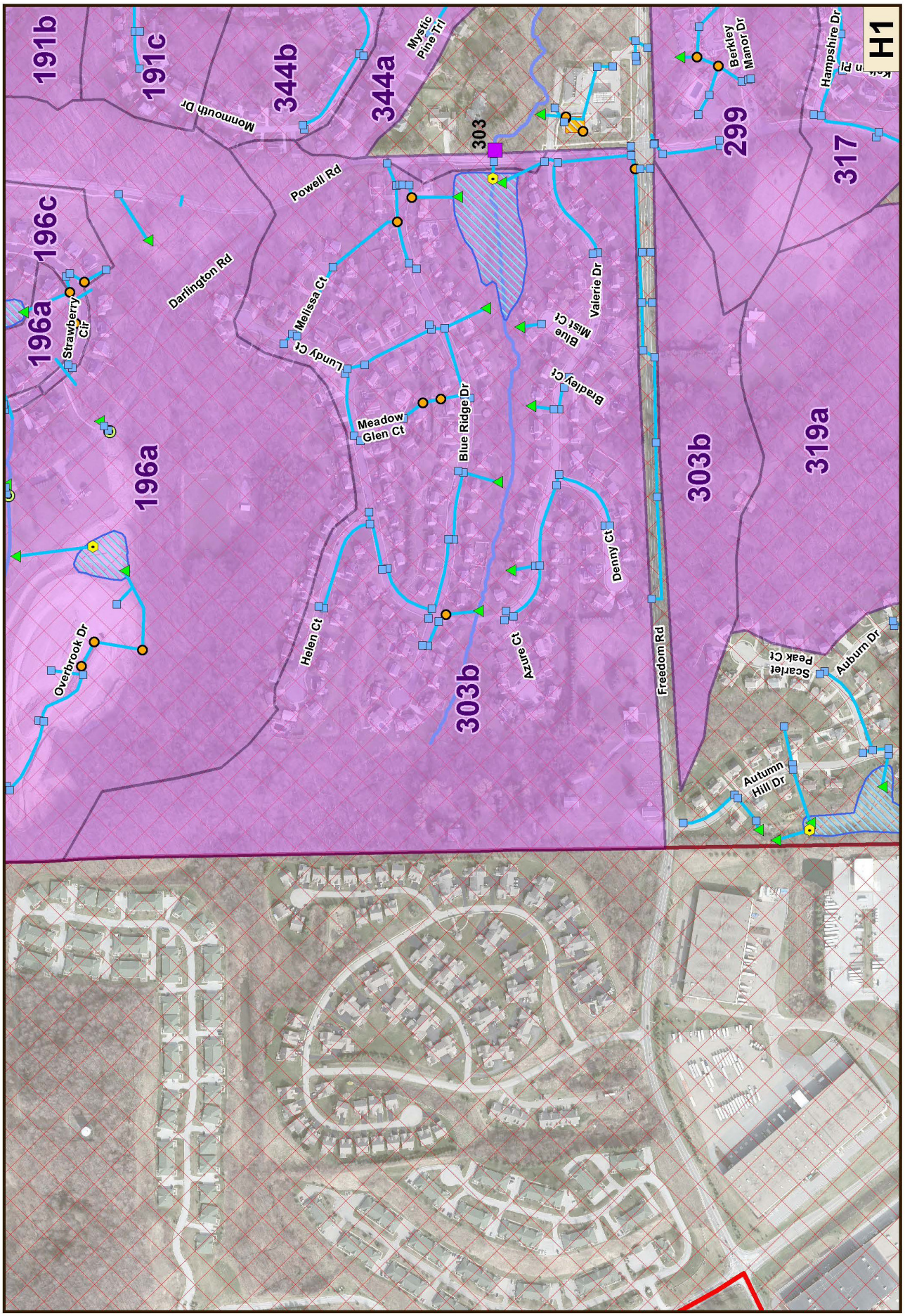
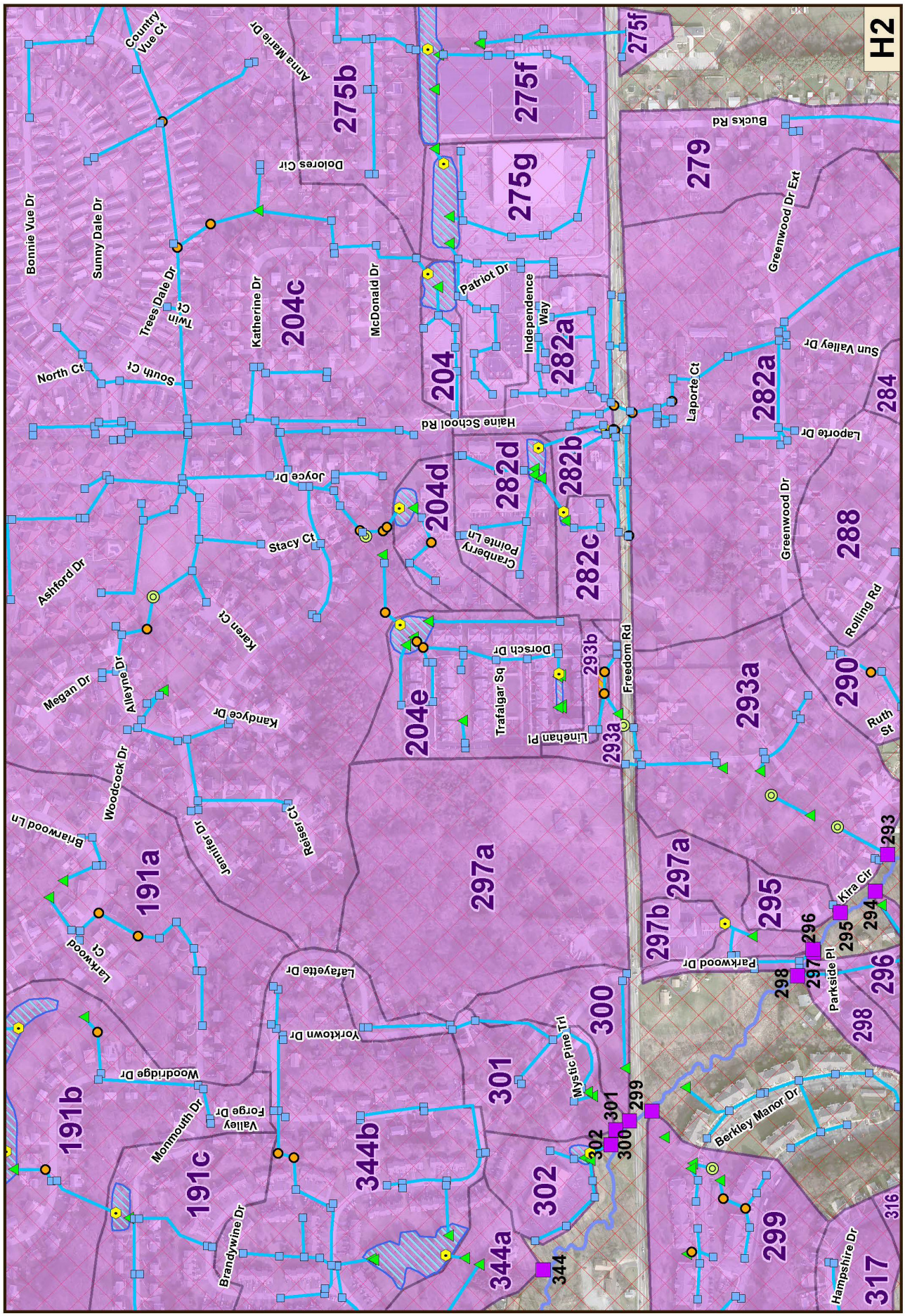
342
343
252b
252c
252a
341b
341c
341a
340
334a
334c
334d
334c
334d
357a
357b
358a
358b
358
357
375
Dorchester Dr
Brookfield Dr
Farmington Dr
Northridge Dr
Bristol Dr
Essex Ct
Dunston Ct
Beacon Hill Dr
Franklin Rd
Old Mars Crider Rd
Hillmont Dr
Emily Dr
Hazelwood Dr
Locust Ln
St Leonards Ln
Chatham Ln
Jaclyn Dr
Jessica Dr
Mars Rd
Cosette Dr
Elliot Dr
Grandshire Dr
Canterbury Trl


G6
374
Scenic Ridge Ct
374
348a
348b
Roxsan Dr
Seven Fields Blvd
Jameson Way
Bradwell Dr
Graywyck Dr
Old Mars Crider Rd
Severn Dr
Whitehaven Dr
Jameson Ct
Reston Ct
Breckland Dr
Aspen Ln
Sycamore Dr
Linden Ct
Cheshire Dr
Northridge Dr
Dorchester Dr
Dunbury Ct
Brookfield Dr
260b
260c


H1
191b
191c
344b
344a
303
299
317
196c
196a
303b
319a
Mystic Pine Trl
Berkley Manor Dr
Hampshire Dr
Monmouth Dr
Powell Rd
Darlington Rd
Strawberry Cir
Melissa Ct
Lundy Ct
Valerie Dr
Blue Mist Ct
Bradley Ct
Meadow Glen Ct
Blue Ridge Dr
Denny Ct
Helen Ct
Azure Ct
Overbrook Dr
Freedom Rd
Scarlet Peak Ct
Auburn Dr
Autumn Hill Dr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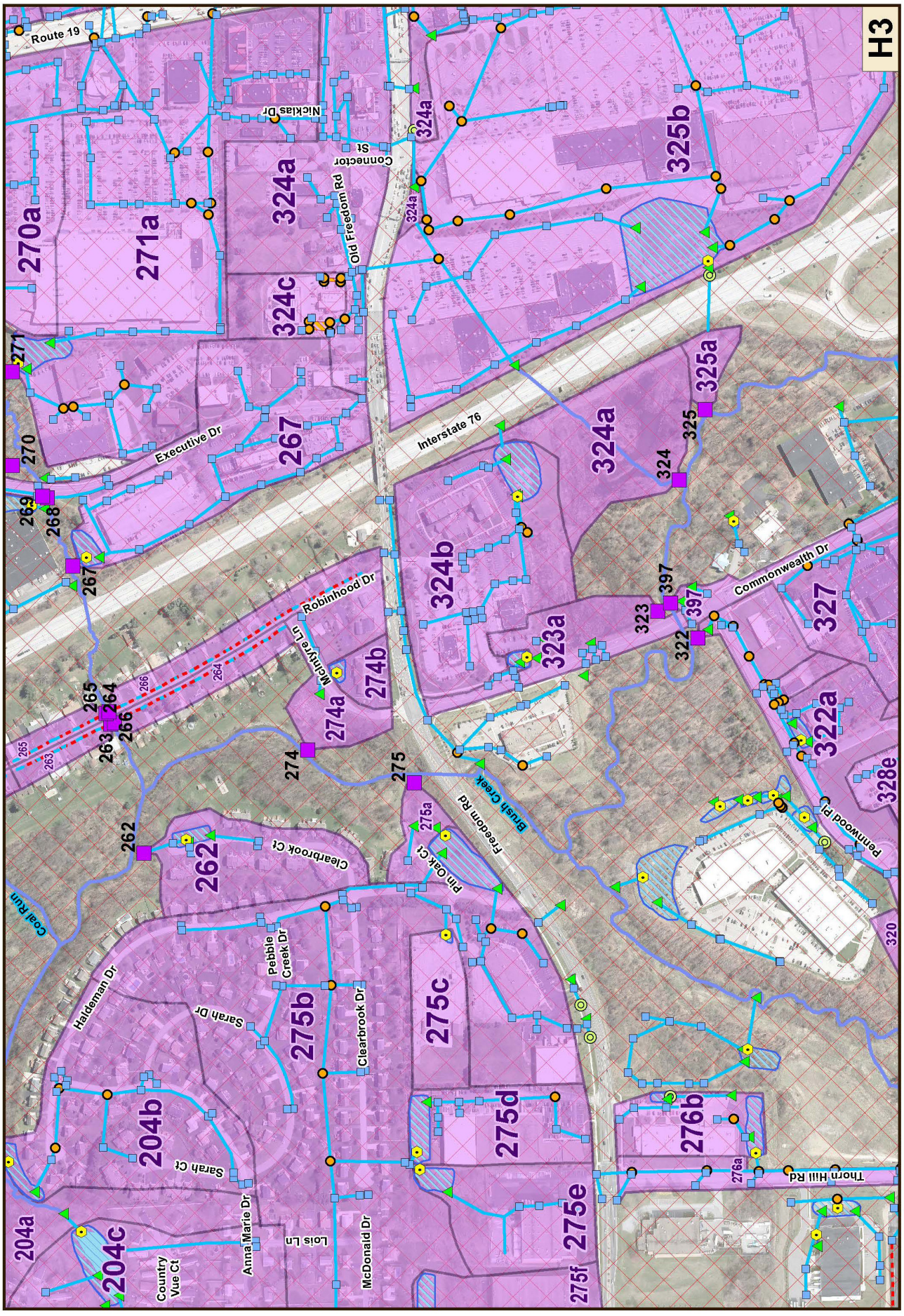
275b
275f
275g
279
204c
204
282a
282d
282b
282c
204d
204e
288
290
293a
297a
297b
295
300
301
302
344a
344b
191a
191b
191c
299
317
284
293
294
296
298
316
Country Vue Ct
Anna Marie Dr
Dolores Cir
Bucks Rd
Greenwood Dr Ext
Bonnie Vue Dr
Sunny Dale Dr
Trees Dale Dr
Twin Ct
Katherine Dr
McDonald Dr
Patriot Dr
Independence Way
Sun Valley Dr
North Ct
South Ct
Laporte Ct
Laporte Dr
Haine School Rd
Joyce Dr
Greenwood Dr
Stacy Ct
Cranberry Pointe Ln
Ashford Dr
Karen Ct
Rolling Rd
Dorsch Dr
Freedom Rd
Megan Dr
Alleyne Dr
Trafalgar Sq
Kandyce Dr
Linehan Pl
Ruth St
Woodcock Dr
Briarwood Ln
Jennifer Dr
Reiser Ct
Kira Cir
Parkwood Dr
Parkside Pl
Larkwood Ct
Lafayette Dr
Yorktown Dr
Mystic Pine Trl
Woodridge Dr
Valley Forge Dr
Monmouth Dr
Berkley Manor Dr
Brandywine Dr
Hampshire Dr


H3
Route 19
Nicklas Dr
Connector St
Old Freedom Rd
Executive Dr
Interstate 76
Robinhood Dr
McIntyre Ln
Commonwealth Dr
Brush Creek
Freedom Rd
Pin Oak Ct
Clearbrook Ct
Pennwood Pl
Coal Run
Haldeman Dr
Pebble Creek Dr
Sarah Dr
Clearbrook Dr
Sarah Ct
Anna Marie Dr
Lois Ln
McDonald Dr
Country Vue Ct
Thorn Hill Rd
270a
271a
324a
324c
325b
325a
324a
324b
323a
327
322a
328e
267
274b
274a
262
275b
275c
275d
275e
275f
276b
204b
204c
204a
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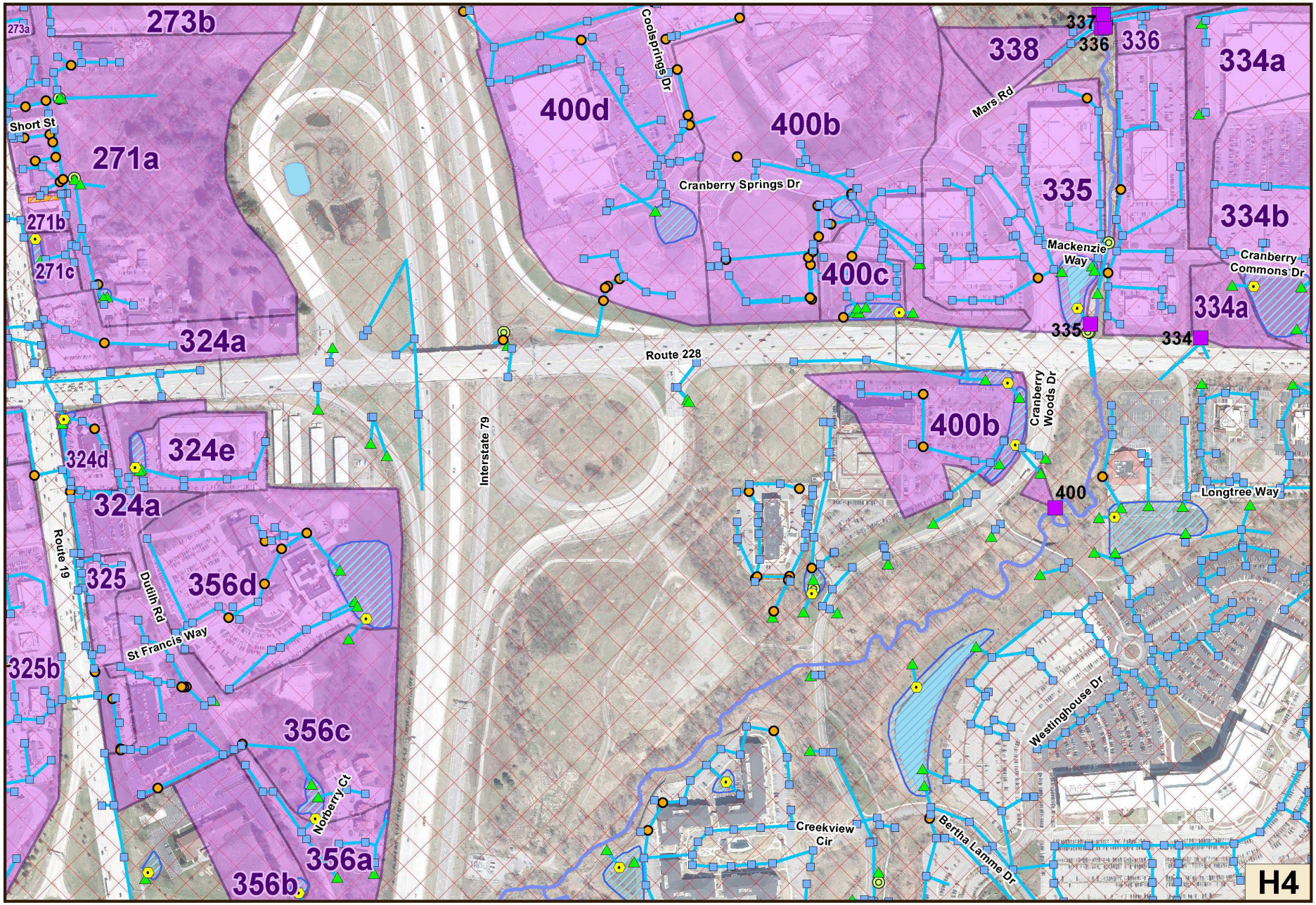
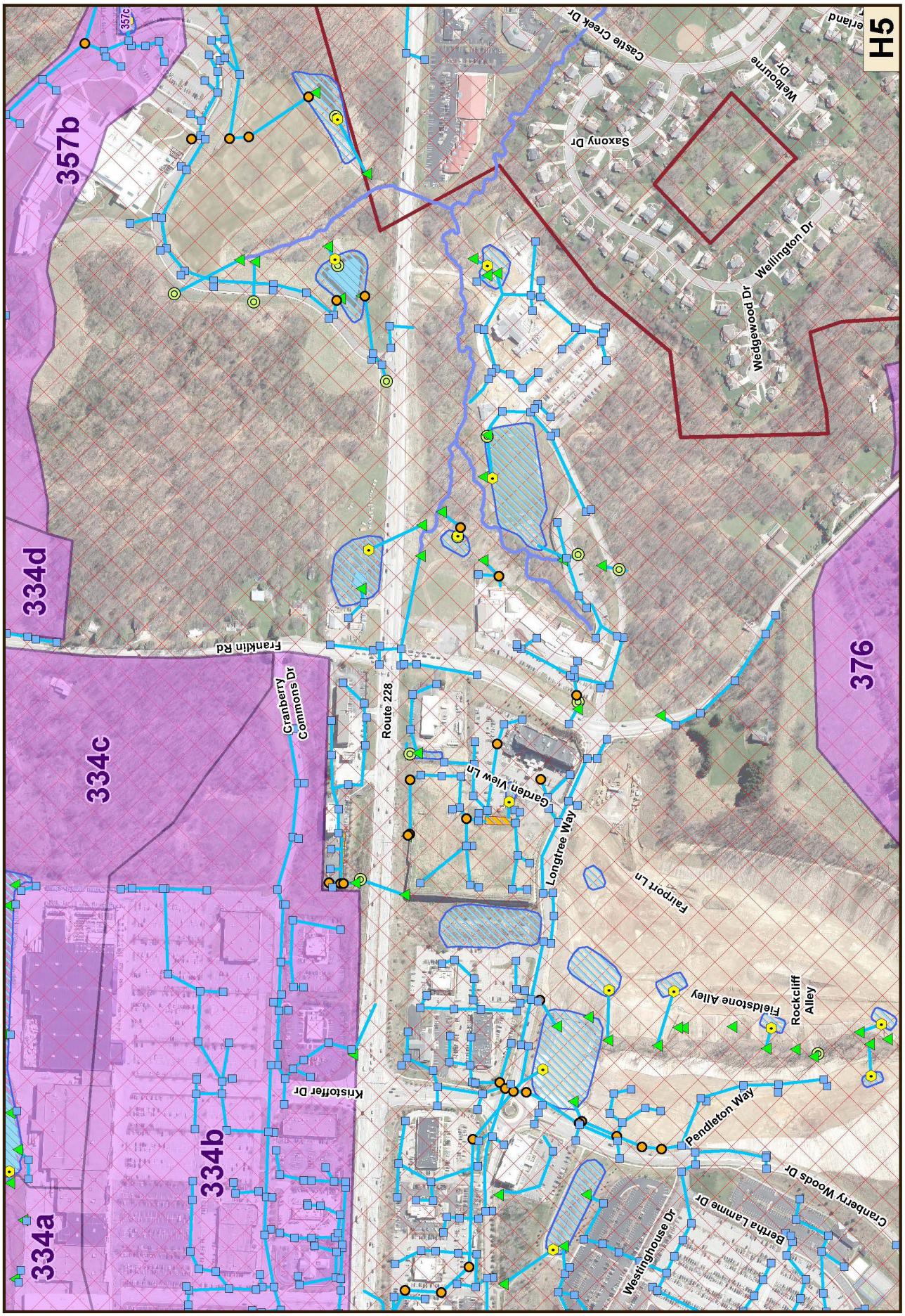
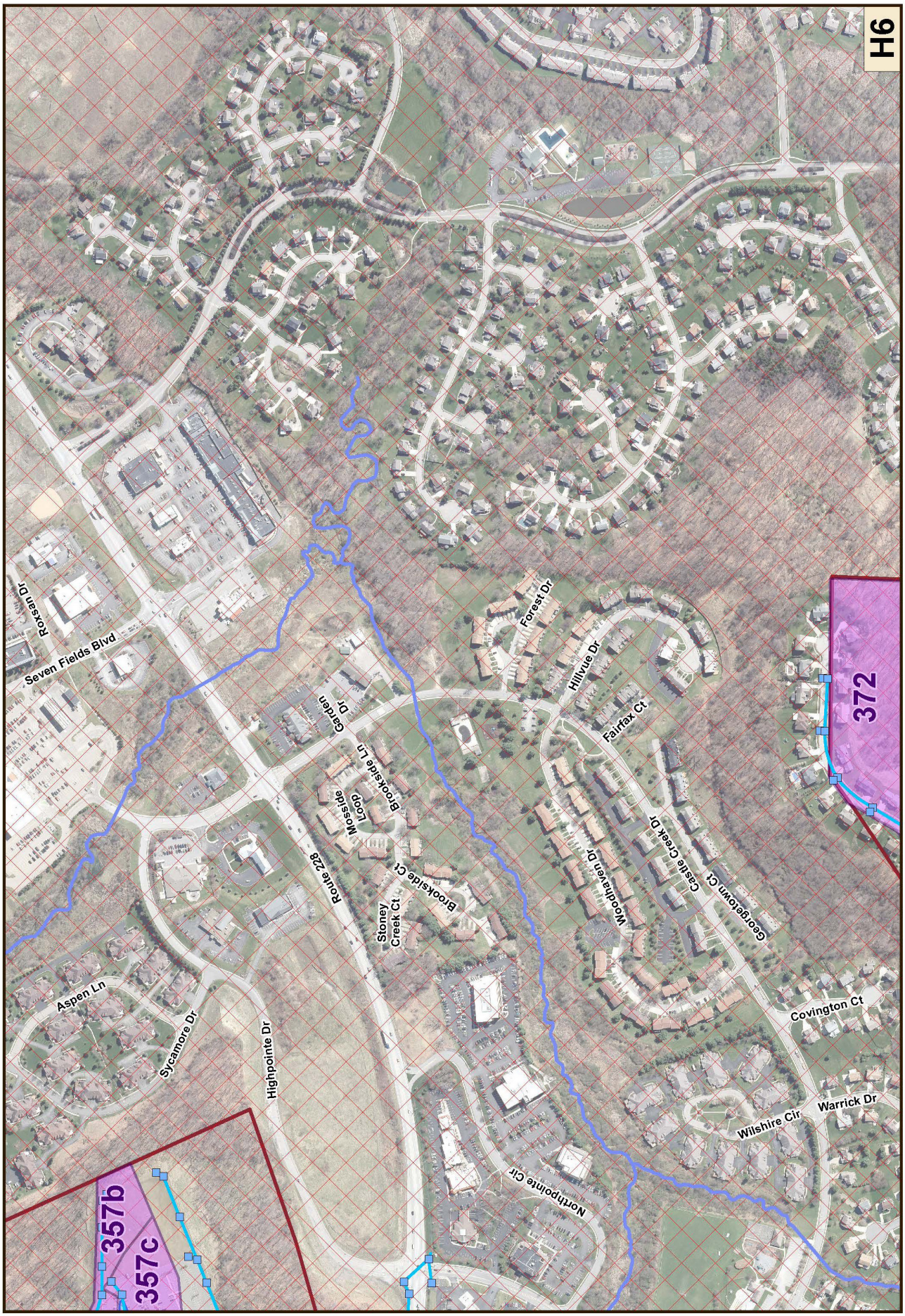
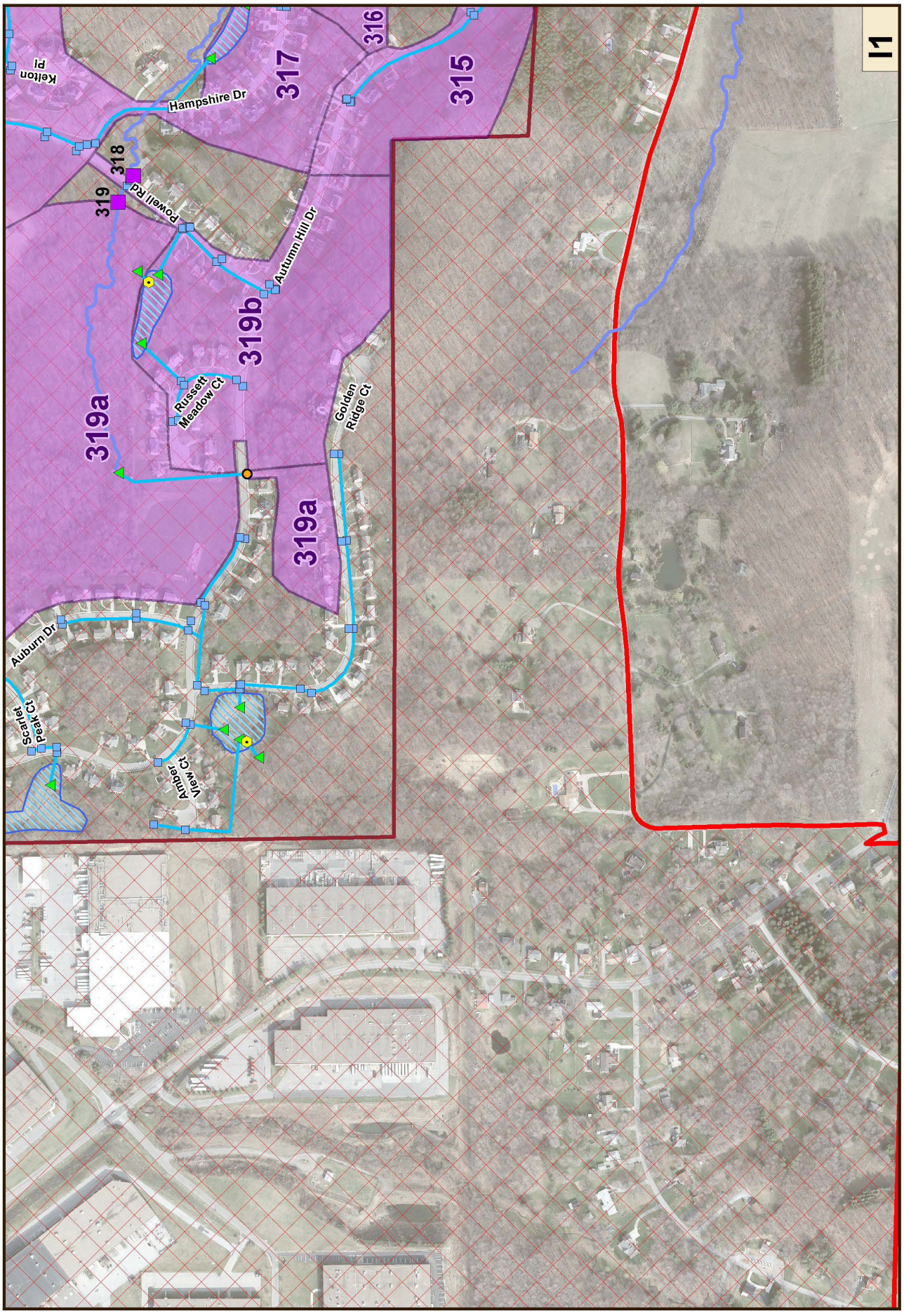
276a


273b
273a
Short St
271a
271b
271c
324a
400d
Coolsprings Dr
400b
Cranberry Springs Dr
400c
338
337
336
336
Mars Rd
334a
335
334b
Mackenzie Way
Cranberry Commons Dr
334a
335
334
Route 228
Interstate 79
400b
Cranberry Woods Dr
400
Longtree Way
324d
324e
324a
Route 19
325
Dutilh Rd
356d
St Francis Way
325b
356c
Norberry Ct
356a
356b
Creekview Cir
Bertha Lamme Dr
Westinghouse Dr
H4


H5
357c
357b
334d
334c
334b
334a
376
Castle Creek Dr
Saxony Dr
Weibourne Dr
Wellington Dr
Wedgewood Dr
Franklin Rd
Cranberry Commons Dr
Route 228
Garden View Ln
Longtree Way
Fairport Ln
Fieldstone Alley
Rockcliff Alley
Kristoffer Dr
Pendleton Way
Cranberry Woods Dr
Bertha Lamme Dr
Westinghouse Dr


H6
372
357b
357c
Roxsan Dr
Seven Fields Blvd
Forest Dr
Hillvue Dr
Fairfax Ct
Garden Dr
Brookside Ln
Mossside Loop
Brookside Ct
Route 228
Stoney Creek Ct
Woodhaven Dr
Castle Creek Dr
Georgetown Ct
Aspen Ln
Sycamore Dr
Highpointe Dr
Northpointe Cir
Covington Ct
Warrick Dr
Wilshire Cir


I1
316
317
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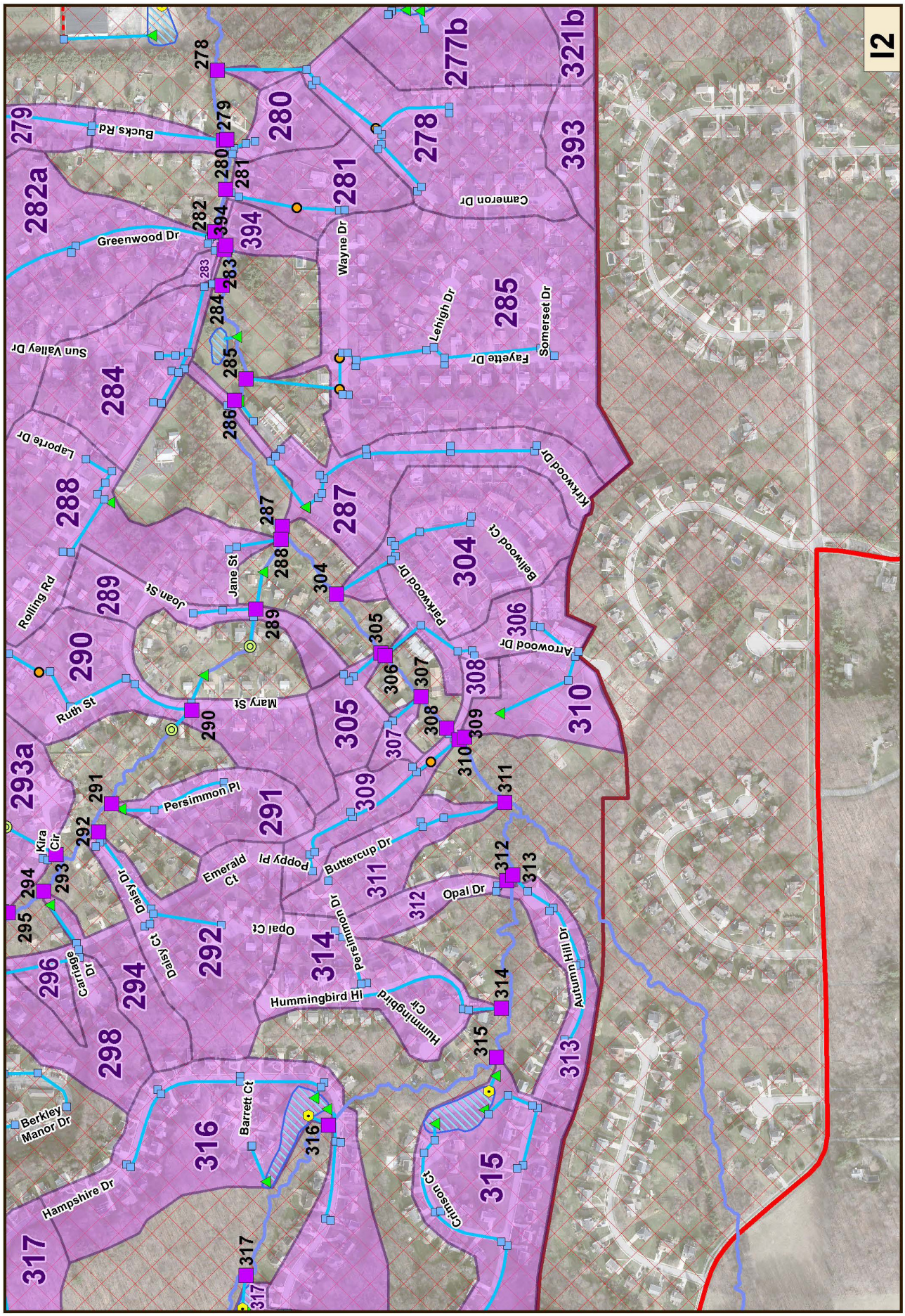
318
319
Powell Rd
Hampshire Dr
Kelton Pl
Autumn Hill Dr
319b
Russett Meadow Ct
Golden Ridge Ct
319a
319a
Auburn Dr
Scarlet Peak Ct
Amber Ct
View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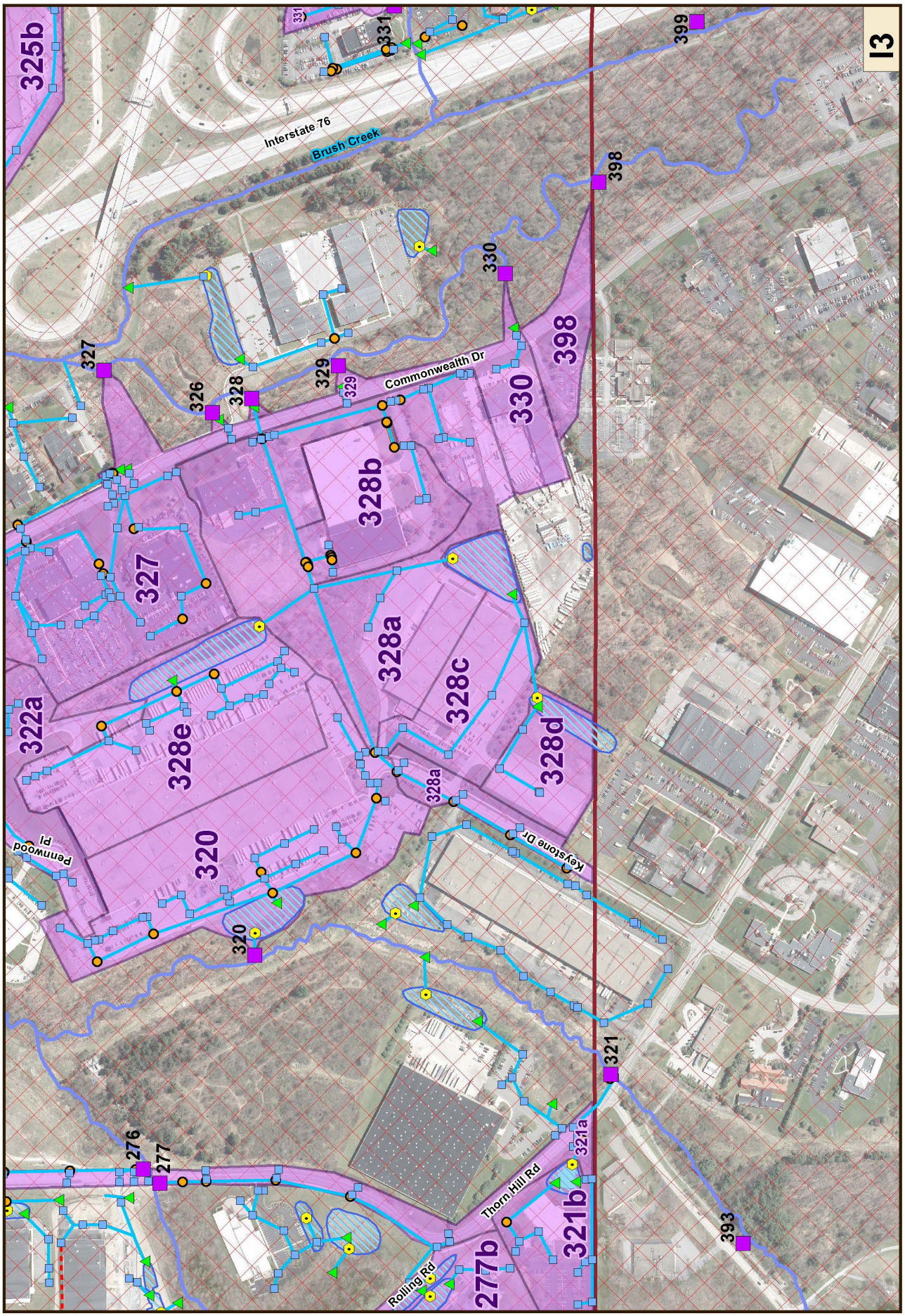
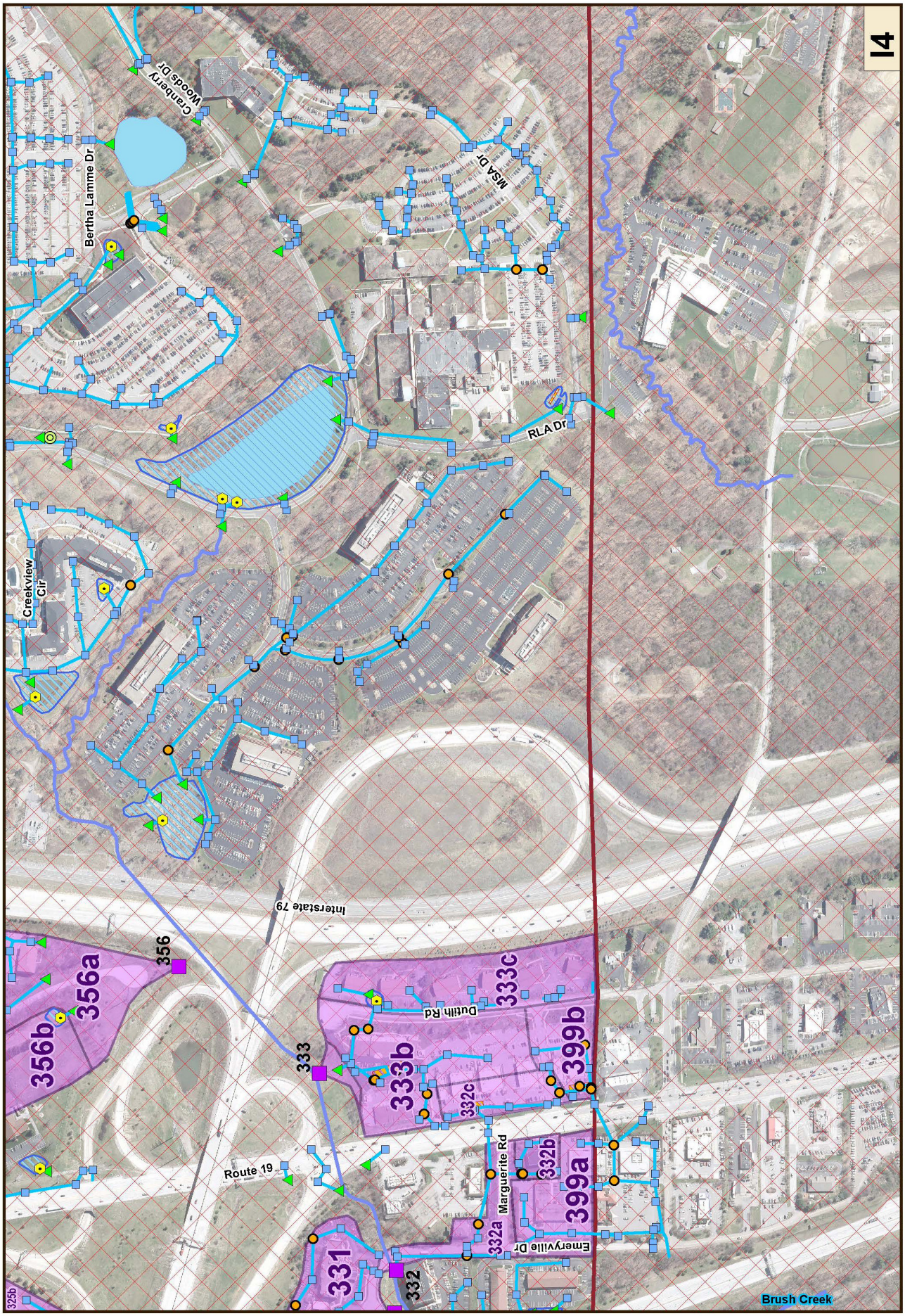
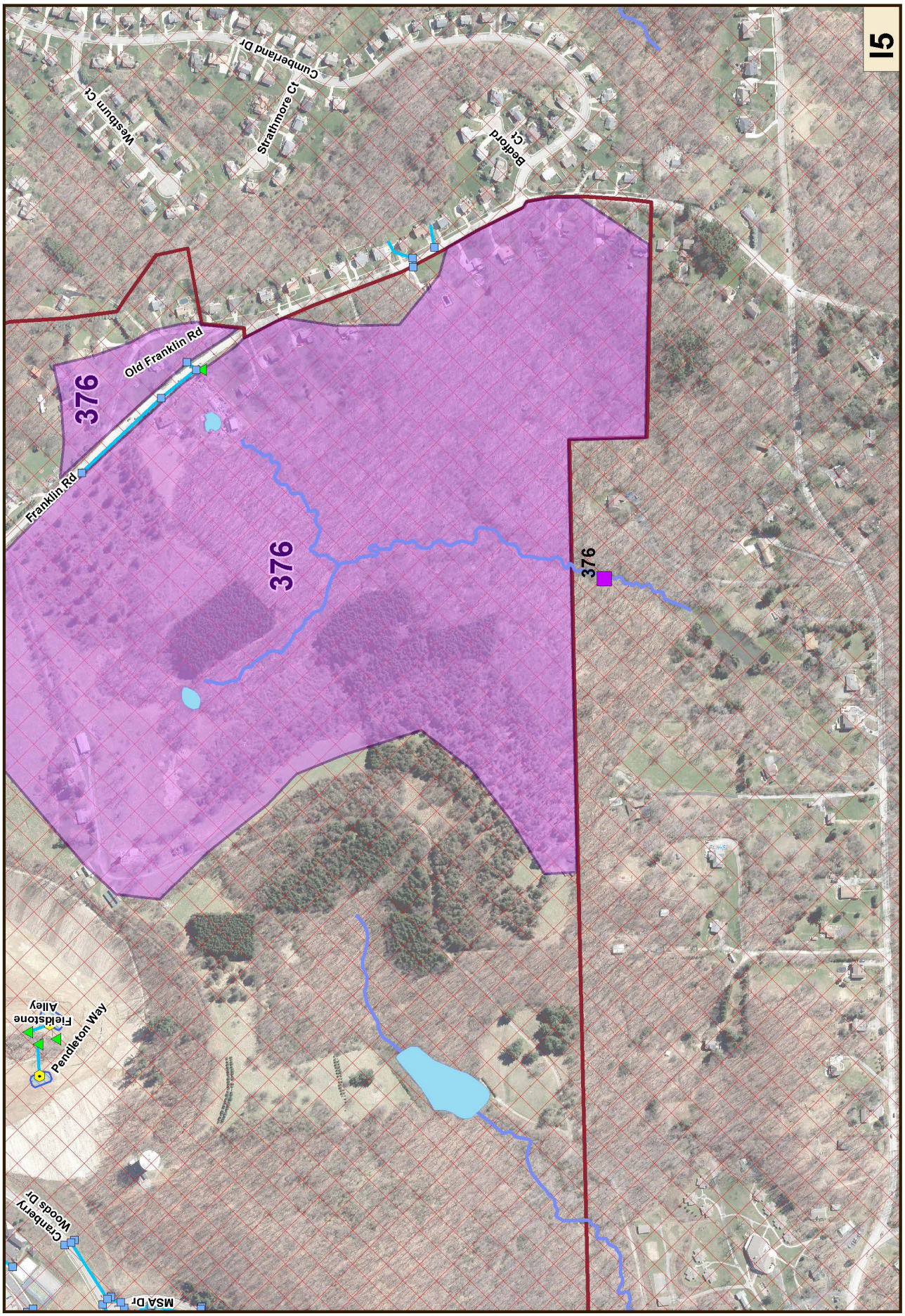
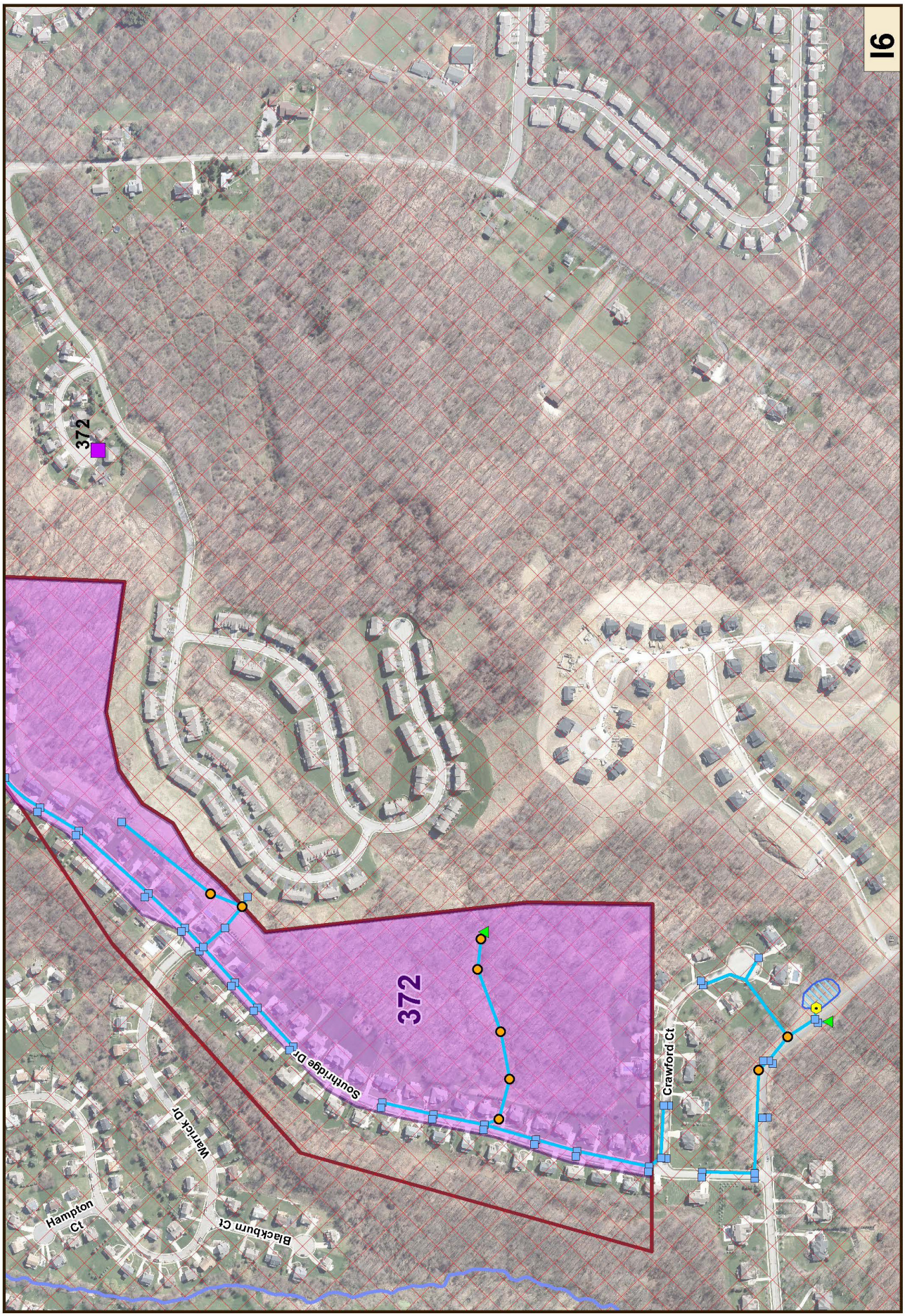
293a
294
295
296
298
304
305
306
307
308
309
310
311
312
313
314
315
316
317
277b
321b
393
394
Bucks Rd
Greenwood Dr
Sun Valley Dr
Laporte Dr
Rolling Rd
Joan St
Jane St
Mary St
Ruth St
Persimmon Pl
Kira Cir
Daisy Dr
Daisy Ct
Carriage Dr
Emerald Ct
Poppy Pl
Buttercup Dr
Opal Ct
Opal Dr
Persimmon Dr
Hummingbird Hl
Hummingbird Cir
Autumn Hill Dr
Barrett Ct
Berkley Manor Dr
Hampshire Dr
Crimson Ct
Wayne Dr
Cameron Dr
Lehigh Dr
Fayette Dr
Somerset Dr
Kirkwood Dr
Bellwood Ct
Parkwood Dr
Arrowood Dr


I3
325b
Interstate 76
Brush Creek
331
399
398
330
327
329
326
328
Commonwealth Dr
328b
327
328a
328c
328d
328e
322a
320
Pennwood Pl
Keystone Dr
276
277
Thorn Hill Rd
321a
321b
277b
Rolling Rd
393


I4
Cranberry Woods Dr
Bertha Lamme Dr
MSA Dr
RLA Dr
Creekview Cir
Interstate 79
356
356a
356b
333
333b
333c
Dutilh Rd
332c
399b
Route 19
Marguerite Rd
332b
399a
332a
Emeryville Dr
331
332
Brush Creek
325b


15
Cumberland Dr
Strathmore Ct
Westburn Ct
Bedford Ct
Old Franklin Rd
Franklin Rd
376
376
376
Fieldstone Alley
Pendleton Way
Cranberry Woods Dr
MSA Dr


I6
372
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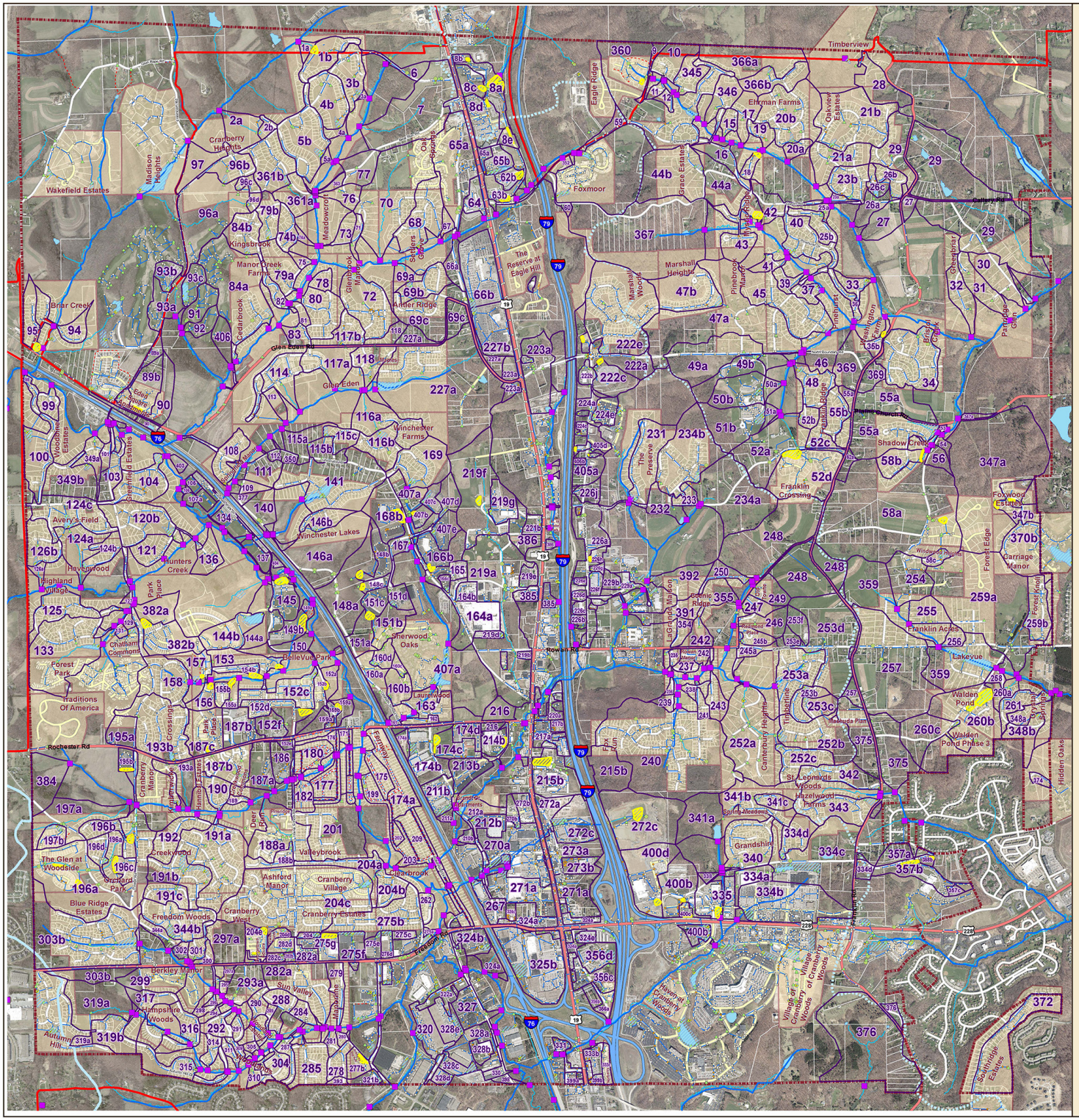
Southridge Dr
Crawford Ct
Warrick Dr
Hampton Ct
Blackburn Ct



Detention Basins By MS3

Legend

- MS4s
- MS3s
- Catchbasins
- Storm Manholes
- Detention Basin Structure
- Outfalls
- Infall
- Swale
- Storm Pipe
- UndergroundStructure
- Detention Basin after 2003
- Detention Basin before 2003
- Urban Areas 2010
- Waters of the Commonwealth
- Stream
- Lakes
- Parcels
- Township Boundary
- Other Municipality
- Private
- Cranberry
- State Street
- Interstate Route
- Interchange Ramp
- Residential Developments
- Watershed Boundary

Cranberry Township
Butler County
July 26th, 2017

N
W E
S

CRANBERRY TOWNSHIP built for you.

APPENDIX 3

LOADING RATE CALCULATIONS

Pollution Reduction Plan

Existing Loading Calculation Based of the Simplified Method

Pennsylvaia DEP						TN	TP	TP	TSS	TSS
					Acres	lbs/acre/yr	lbs/acre/yr	lbs/yr	lbs/acre/yr	lbs/yr
Urban Area % Impervious =	23%	x	13,655	=	3,141	23	2	7,161	1,839	5,775,740
Urban Area % pervious =	77%	x	13,655	=	10,515	21	1	8,832	265	2,785,923
Total Developed Load =										8,561,663
Required Reduction % =										10%
Required Reduction (lb/yr)=										856,166

Ref: PA DEP Statewide MS4 Land Cover Estimates

Cranberry Township : Urban Area =13,655.2 Acres

Required Reduction = TSS (Sediment reduction) 10%, & TP (Low D.O.) reduction 5%

Cranberry Township GIS						TN	TP	TP	TSS	TSS
Parsing Without BMPs					Acres	lbs/acre/yr	lbs/acre/yr	lbs/yr	lbs/acre/yr	lbs/yr
Urban Area % Impervious =	21%	x	9,233.62	=	1,914	23	2	4,363	1,839	3,518,940
Urban Area % pervious =	79%	x	9,233.62	=	7,320	21	1	6,149	265	1,939,536
Total Developed Load =										5,458,476
Required Reduction % =										10%
Required Reduction (lb/yr)=										545,848

Parsing With BMPs					Acres	lbs/acre/yr	lbs/acre/yr	lbs/yr	lbs/acre/yr	lbs/yr
Urban Area % Impervious =	21%	x	9,233.62	=	1,914	23	2	4,363	1,839	3,518,940
Urban Area % pervious =	79%	x	9,233.62	=	7,320	21	1	6,149	265	1,939,536
Total Developed Load =										5,458,476
TSS Removed through BMPs (See Sediment Loading and Reduction Chart) =										2,008,332
Reduction due to BMPs (See Attached Sheets)										3,450,144
Required Reduction % =										10%
Required Reduction (lb/yr)=										345,014

Reduction must be implemented within 5 years of DEP approval

Parsing

1 NPDES Permits

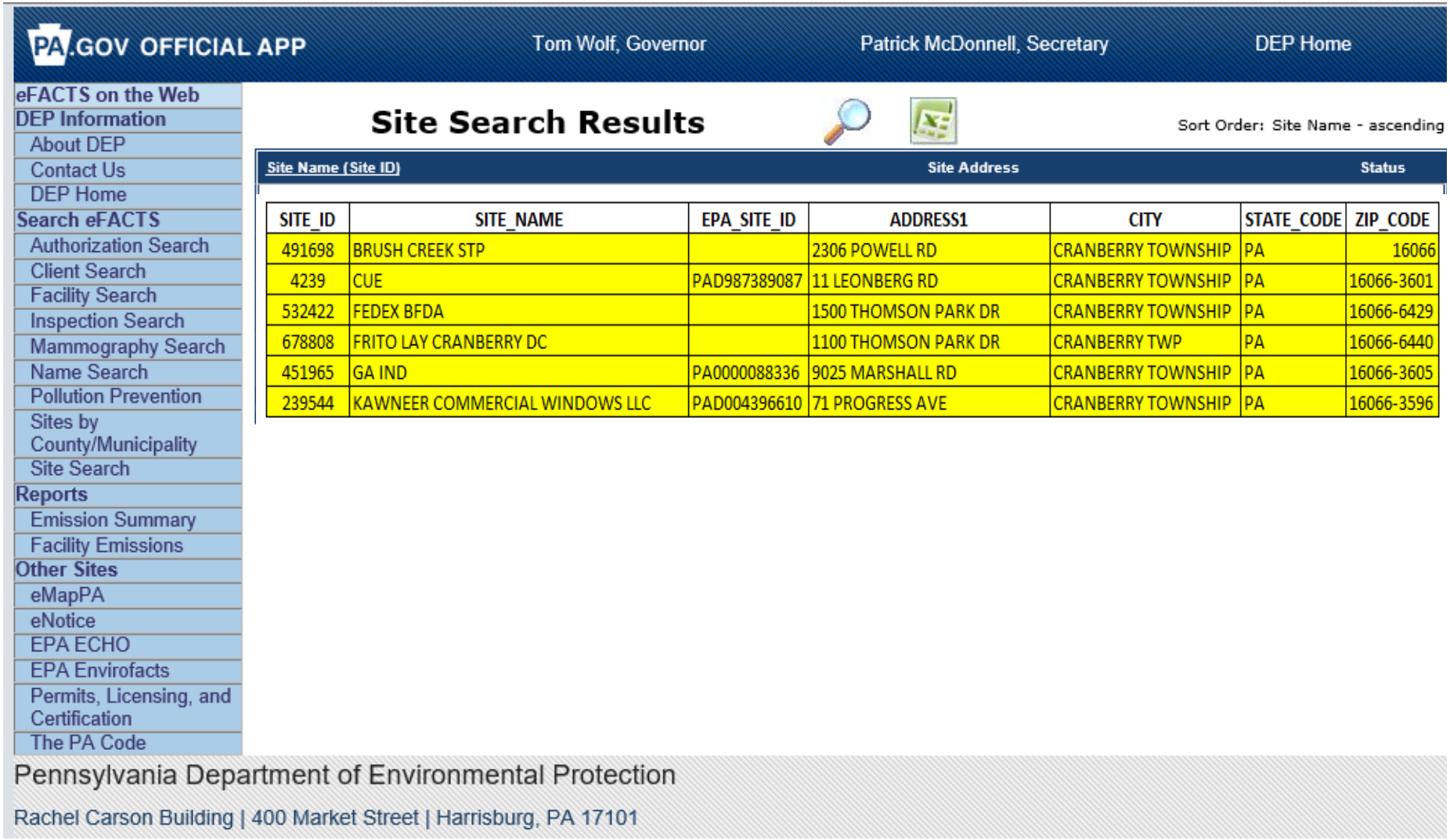
2 Penn DOT Roadways & PA Turnpike (ROW)

3 Land Area in which stormwater runoff does not enter the MS4

7/20/2017

PAG-03 Discharge of Stormwater Assoc w Industrial Activities Permits

Located Within Cranberry Township (7/18/2017)



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  - eNotice
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  - EPA Envirofacts
  - Permits, Licensing, and Certification
  - The PA Code

Site Search Results

Sort Order: Site Name - ascending

Site Name (Site ID) | Site Address | Status

SITE_ID	SITE_NAME	EPA_SITE_ID	ADDRESS1	CITY	STATE_CODE	ZIP_CODE
491698	BRUSH CREEK STP		2306 POWELL RD	CRANBERRY TOWNSHIP	PA	16066
4239	CUE	PAD987389087	11 LEONBERG RD	CRANBERRY TOWNSHIP	PA	16066-3601
532422	FEDEX BFDA		1500 THOMSON PARK DR	CRANBERRY TOWNSHIP	PA	16066-6429
678808	FRITO LAY CRANBERRY DC		1100 THOMSON PARK DR	CRANBERRY TWP	PA	16066-6440
451965	GA IND	PA0000088336	9025 MARSHALL RD	CRANBERRY TOWNSHIP	PA	16066-3605
239544	KAWNEER COMMERCIAL WINDOWS LLC	PAD004396610	71 PROGRESS AVE	CRANBERRY TOWNSHIP	PA	16066-3596

Pennsylvania Department of Environmental Protection

Rachel Carson Building | 400 Market Street | Harrisburg, PA 17101

CRANBERRY TOWNSHIP
built for you

Pollution Reduction Plan 2017 - Sediment Loading and Reduction Chart

BMPs Owner Classification Identifier Color Chart	
NPDES Permit Issued (2003 to Present)	
Home Owner Association (Before 2003)	
Buisness, Church, Private Owner, etc. (Before 2003)	
Cranberry Township	
Development with BMP but No HOA	
Municipal Storm Sewer Shed (MS3) with No BMP Reduction	

Simplified Method: Date: 7/6/2017

Existing Sediment Loading From Sewersheds Discharging To Impaired Stream

Sewer shed	MS3 Area (ac)	Impervious Area	Sediment Loading w/o BMP (lb/yr)	Existing Type of BMP & Effective Values	TSS Removal (lb/yr)	Final Sediment Loading with BMP (lb/yr)	BMP Owner	Year Built
1a	3.01	0.02	829.01	No BMP	0.00	829.01	Cranberry Heights	
1b	18.08	3.51	10,315.02	Dry Pond (60%)	6,189.01	4,126.01	Cranberry Heights	2004
2a	17.50	0.38	5,228.85	No BMP	0.00	5,228.85	Cranberry Heights	
2b	3.77	0.88	2,383.05	Dry Pond (60%)	1,429.83	953.22	Cranberry Heights	1995
3a	0.88	0.00	234.47	No BMP	0.00	234.47	Cranberry Heights	
3b	19.37	4.08	11,558.77	Dry Pond (60%)	6,935.26	4,623.51	Cranberry Heights	1995
4a	3.35	0.38	1,486.87	No BMP	0.00	1,486.87	Cranberry Heights	
4b	24.77	4.85	14,201.58	Dry Pond (60%)	8,520.95	5,680.63	Cranberry Heights	
5a	1.62	0.00	430.00	No BMP	0.00	430.00	Cranberry Heights	
5b	36.67	8.48	23,059.82	Dry Pond (60%)	13,835.89	9,223.93	Cranberry Heights	1995
6	6.82	0.98	3,350.44	No BMP	0.00	3,350.44	Heights Drive	
7	64.44	4.73	24,514.23	No BMP	0.00	24,514.23	Heights Drive	
8a	15.24	4.91	11,764.35	Dry Pond (60%)	7,058.61	4,705.74	Victory Christian	After 2003
8b	1.98	1.05	2,173.35	Dry Pond (60%)	1,304.01	869.34	2098 Holding Co LLC	After 2003
8c	9.97	3.19	7,669.56	Dry Pond (60%)	4,601.73	3,067.82	Victory Christian	After 2003
8d	19.34	13.15	25,829.09	Dry Pond (60%)	15,497.45	10,331.63	McGowen Equity LP	After 2003
8e	3.98	0.61	2,015.16	Dry Pond (60%)	1,209.10	806.06	Victory Christian	After 2003
9	3.89	1.02	2,632.52	Dry Pond (60%)	1,579.51	1,053.01	Ehrman Farms	1998
10	14.82	2.46	7,794.87	Dry Pond (60%)	4,676.92	3,117.95	Ehrman Farms	1998
11	2.93	1.09	2,490.22	Dry Pond (60%)	1,494.13	996.09	Ehrman Farms	1998
12	3.12	1.08	2,518.89	Dry Pond (60%)	1,511.33	1,007.56	Ehrman Farms	1998
13	2.03	1.15	2,342.81	No BMP	0.00	2,342.81	Ehrman Farms	
14	0.95	0.26	666.46	No BMP	0.00	666.46	Ehrman Farms	
15	5.27	1.34	3,502.75	No BMP	0.00	3,502.75	Ehrman Farms	
16	10.89	1.36	5,024.43	No BMP	0.00	5,024.43	Ehrman Road	
17	11.98	1.93	6,206.01	No BMP	0.00	6,206.01	Ehrman Farms	
18	4.19	1.51	3,490.88	Dry Pond (60%)	2,094.53	1,396.35	Mystic Ridge	2007
19	6.58	1.45	4,017.25	No BMP	0.00	4,017.25	Ehrman Farms	
20a	5.34	0.96	2,929.24	Dry Pond (60%)	1,757.55	1,171.70	Ehrman Farms	1998
20b	43.91	8.89	25,629.38	Dry Pond (60%)	15,377.63	10,251.75	Ehrman Farms	1998
21a	21.91	4.03	12,150.83	No BMP	0.00	12,150.83	Oakview Estates	

Sewer shed	MS3 Area (ac)	Impervious Area	Sediment Loading w/o BMP (lb/yr)	Existing Type of BMP & Effective Values	TSS Removal (lb/yr)	Final Sediment Loading with BMP (lb/yr)	BMP Owner	Year Built
21b	52.50	11.24	31,610.05	Dry Pond (60%)	18,966.03	12,644.02	Oakview Estates	1997
22	1.06	0.60	1,228.34	No BMP	0.00	1,228.34	Garvin Road	
23a	1.97	0.17	789.29	No BMP	0.00	789.29	Oakview Estates	
23b	17.11	5.32	12,911.52	Dry Pond (60%)	7,746.91	5,164.61	Oakview Estates	1997
24	1.71	0.53	1,281.21	No BMP	0.00	1,281.21	Garvin Road	
25a	3.94	0.36	1,604.69	No BMP	0.00	1,604.69	Pinehurst	
25b	10.06	3.32	7,893.31	Dry Pond (60%)	4,735.99	3,157.32	Pinehurst	1991
26a	9.93	0.54	3,479.44	No BMP	0.00	3,479.44	Garvin Road	
26b	8.48	2.16	5,645.19	Dry Pond (60%)	3,387.11	2,258.07	Oakview Estates	1997
26c	5.89	0.79	2,805.78	**Private Pond**	0.00	2,805.78	Richard&Linda Fleming	Before 2003
27	19.37	0.30	5,603.66	No BMP	0.00	5,603.66	Trib to Wolfe Run	
28	19.95	1.26	7,263.51	Dry Pond (60%)	4,358.11	2,905.40	Timberview	
29	163.39	10.29	59,496.35	**Private Pond**	0.00	59,496.35	Callery Road	
30	19.19	1.89	8,062.79	No BMP	0.00	8,062.79	Partridge Glen	
31	16.97	2.07	7,760.59	No BMP	0.00	7,760.59	Partridge Glen	
32	15.41	2.52	8,053.42	No BMP	0.00	8,053.42	Greenbriar	
33	6.55	1.42	3,969.51	Dry Pond (60%)	2,381.70	1,587.80	J & J Monteleone Jr	1991
34	44.14	10.09	27,580.27	Dry Pond (60%)	16,548.16	11,032.11	Bristol Creek	2002
35a	0.83	0.00	219.03	No BMP	0.00	219.03	Washington Farms	
35b	3.77	1.03	2,623.14	Dry Pond (60%)	1,573.88	1,049.26	FMZ Construction Inc	2004
36	5.55	1.98	4,582.38	Dry Pond (60%)	2,749.43	1,832.95	Pinehurst	1991
37	5.92	1.70	4,251.71	Dry Pond (60%)	2,551.03	1,700.68	Pinehurst	1991
38	1.53	0.80	1,665.31	No BMP	0.00	1,665.31		
39	5.79	1.54	3,962.12	No BMP	0.00	3,962.12		
40	22.54	7.45	17,694.43	Dry Pond (60%)	10,616.66	7,077.77	Pinehurst	1991
41	5.07	0.94	2,818.91	No BMP	0.00	2,818.91		
42	11.02	2.13	6,267.53	Dry Pond (60%)	3,760.52	2,507.01	Mystic Ridge	2002
43	21.50	4.92	13,449.09	Dry Pond (60%)	8,069.46	5,379.64	Mystic Ridge	2007
44a	25.13	2.04	9,876.65	No BMP	0.00	9,876.65		
44b	43.73	3.60	17,254.04	No BMP	0.00	17,254.04		
45	40.21	9.24	25,190.92	Dry Pond (60%)	15,114.55	10,076.37	Pinehurst	1991
46	8.30	0.67	3,253.66	No BMP	0.00	3,253.66		
47a	97.95	6.98	36,942.90	No BMP	0.00	36,942.90		
47b	32.28	4.50	15,637.46	Dry Pond (60%)	9,382.48	6,254.98	Marshall Heights	2008
48	16.82	4.61	11,717.27	Dry Pond (60%)	7,030.36	4,686.91	Franklin Ridge	2002
49a	45.97	3.40	17,523.19	No BMP	0.00	17,523.19		
49b	16.90	1.98	7,597.99	Dry Pond (60%)	4,558.79	3,039.20	CT NB Park	Before 2003
50a	3.51	0.03	979.58	No BMP	0.00	979.58		
50b	22.73	4.09	12,466.10	Dry Pond (60%)	7,479.66	4,986.44	CT NB Park	Before 2003
51a	3.12	0.08	955.63	No BMP	0.00	955.63		
51b	30.45	4.23	14,730.57	Dry Pond (60%)	8,838.34	5,892.23	CT NB Park	Before 2003
52a	47.13	3.36	17,777.67	No BMP	0.00	17,777.67		
52b	5.49	1.07	3,138.50	Dry Pond (60%)	1,883.10	1,255.40	Franklin Ridge	2002
52c	9.23	2.87	6,970.62	Dry Pond (60%)	4,182.37	2,788.25	Franklin Ridge	2002
52d	41.57	2.78	15,390.38	Dry Pond (60%)	9,234.23	6,156.15	SCI Development Co	2014
53	0.65	0.22	510.75	No BMP	0.00	510.75		
54	2.70	0.23	1,080.35	No BMP	0.00	1,080.35		
55a	73.93	7.31	31,091.26	Dry Pond (60%)	18,654.76	12,436.51	Shadow Creek	
55b	12.57	3.27	8,480.13	Dry Pond (60%)	5,088.08	3,392.05	Franklin Ridge	2002
56	6.24	0.39	2,260.27	No BMP	0.00	2,260.27		
57	0.68	0.37	766.63	No BMP	0.00	766.63		
58a	169.50	7.15	56,170.83	Dry Pond (60%)	33,702.50	22,468.33	Forest Edge LP	2016

Sewer shed	MS3 Area (ac)	Impervious Area	Sediment Loading w/o BMP (lb/yr)	Existing Type of BMP & Effective Values	TSS Removal (lb/yr)	Final Sediment Loading with BMP (lb/yr)	BMP Owner	Year Built
58b	12.32	2.03	6,452.96	Dry Pond (60%)	3,871.78	2,581.19	Shadow Creek	2003
58c	4.32	1.06	2,812.68	Dry Pond (60%)	1,687.61	1,125.07	Windwood Heights	2002
59	6.48	1.26	3,699.57	No BMP	0.00	3,699.57		
60	3.89	0.87	2,403.44	No BMP	0.00	2,403.44	Garvin/Ehrman Roads	
61	0.98	0.70	1,358.81	No BMP	0.00	1,358.81	Ehrman Road	
62a	0.79	0.00	211.41	No BMP	0.00	211.41	Victory Christian	
62b	5.74	2.44	5,364.56	Dry Pond (60%)	3,218.74	2,145.82	Ehrman LP	After 2003
63a	1.23	0.62	1,297.19	Dry Pond (60%)	778.32	518.88	Sheetz	
63b	12.51	2.86	7,815.52	Dry Pond (60%)	4,689.31	3,126.21	Ehrman LP	After 2003
64	7.92	2.27	5,668.57	No BMP	0.00	5,668.57		
65a	48.90	13.18	33,700.51	Dry Pond (60%)	20,220.31	13,480.21	Victory Christian	
65b	8.34	4.93	9,968.08	Dry Pond (60%)	0.00	9,968.08	Butler Auto Auction	
66a	8.34	1.35	4,341.72	No BMP	0.00	4,341.72		
66b	35.19	32.41	60,344.85	Dry Pond (60%)	36,206.91	24,137.94	Butler Auto Auction	
67	3.31	0.29	1,338.64	No BMP	0.00	1,338.64	Settlers Grove	
68	31.07	7.57	20,142.25	Dry Pond (60%)	12,085.35	8,056.90	Settlers Grove	1992
69a	6.85	0.20	2,134.22	No BMP	0.00	2,134.22		
69b	15.59	3.53	9,693.78	Dry Pond (60%)	5,816.27	3,877.51	Settlers Grove	1992
69c	39.06	5.00	18,215.82	Dry Pond (60%)	10,929.49	7,286.33	Antler Ridge	1998
70	74.57	9.62	34,904.26	No BMP	0.00	34,904.26		
71	4.26	0.80	2,388.03	No BMP	0.00	2,388.03		
72	34.28	7.31	20,593.48	Dry Pond (60%)	12,356.09	8,237.39	Glenbrook Manor	1987
73	6.90	1.24	3,778.80	No BMP	0.00	3,778.80		
74a	2.15	0.06	656.79	No BMP	0.00	656.79		
74b	10.33	2.61	6,844.31	Dry Pond (60%)	4,106.59	2,737.73	Kingsbrook	1994
75	2.95	0.68	1,850.11	No BMP	0.00	1,850.11		
76	9.06	0.98	3,947.15	No BMP	0.00	3,947.15		
77	14.91	1.30	6,001.76	No BMP	0.00	6,001.76		
78	5.36	1.23	3,361.27	No BMP	0.00	3,361.27		
79a	18.54	3.14	9,850.70	No BMP	0.00	9,850.70		
79b	12.76	2.75	7,711.00	Dry Pond (60%)	4,626.60	3,084.40	Kingsbrook	1994
80	23.15	6.42	16,234.90	No BMP	0.00	16,234.90		
81	3.50	0.47	1,666.46	No BMP	0.00	1,666.46		
82	7.17	2.91	6,482.60	Dry Pond (60%)	3,889.56	2,593.04	Manor Creek	
83	6.65	1.04	3,406.05	No BMP	0.00	3,406.05		
84a	65.65	3.83	23,421.91	Dry Pond (60%)	14,053.15	9,368.76	Cedarbrook	2002
84b	18.23	4.30	11,605.30	Dry Pond (60%)	6,963.18	4,642.12	Kingsbrook	1994
85	1.41	0.58	1,286.03	Dry Pond (60%)	771.62	514.41	Cedarbrook	2002
86	0.37	0.24	481.44	No BMP	0.00	481.44		
87	0.21	0.04	119.28	No BMP	0.00	119.28		
88	1.54	0.47	1,154.61	No BMP	0.00	1,154.61		
89a	11.66	2.29	6,687.32	Underground (60%)	4,012.39	2,674.93	CT Freshcorn Rd	Before 2003
89b	18.89	0.70	6,111.50	Wet Pond (60%)	3,666.90	2,444.60	Vista Apartments	2014
90	16.58	0.50	5,177.27	No BMP	0.00	5,177.27		
91	11.93	0.00	3,161.64	No BMP	0.00	3,161.64		
92	7.83	0.00	2,075.89	No BMP	0.00	2,075.89		
93a	18.04	1.12	6,547.63	No BMP	0.00	6,547.63		
93b	8.17	1.88	5,127.62	Dry Pond (60%)	3,076.57	2,051.05	CT Golf Course	Before 2003
93c	9.59	0.01	2,550.06	Wet Pond (60%)	1,530.03	1,020.02	CT Golf Course	Before 2003
94	15.21	4.05	10,409.65	No BMP	0.00	10,409.65	Briar Creek	
95	13.13	2.46	7,344.87	Dry Pond (60%)	4,406.92	2,937.95	Briar Creek	2003
96a	56.52	1.28	16,982.99	No BMP	0.00	16,982.99		

Sewer shed	MS3 Area (ac)	Impervious Area	Sediment Loading w/o BMP (lb/yr)	Existing Type of BMP & Effective Values	TSS Removal (lb/yr)	Final Sediment Loading with BMP (lb/yr)	BMP Owner	Year Built
96b	15.20	3.49	9,525.60	Dry Pond (60%)	5,715.36	3,810.24	Cranberry Heights	1995
96c	4.12	1.25	3,062.00	Dry Pond (60%)	1,837.20	1,224.80	Cranberry Heights	1995
96d	3.09	0.62	1,790.89	Dry Pond (60%)	1,074.54	716.36	Kingsbrook	
97	14.24	0.70	4,881.97	No BMP	0.00	4,881.97		
98	3.79	1.35	3,123.39	Dry Pond (60%)	1,874.04	1,249.36	Woodbine Estate	1989
99	7.32	1.67	4,570.68	Dry Pond (60%)	2,742.41	1,828.27	Woodbine Estate	1989
100	24.63	4.99	14,382.86	Dry Pond (60%)	8,629.72	5,753.14	Woodbine Estate	1989
101	3.80	0.82	2,295.85	No BMP	0.00	2,295.85		
102	1.24	0.46	1,049.75	No BMP	0.00	1,049.75		
103	11.84	3.08	7,988.05	No BMP	0.00	7,988.05		
104	23.89	5.35	14,747.27	Dry Pond (60%)	8,848.36	5,898.91	Fagan Enterprise Dev	1992
105	2.57	0.08	807.16	No BMP	0.00	807.16		
106	0.98	0.17	529.08	No BMP	0.00	529.08		
107a	6.09	0.32	2,117.95	No BMP	0.00	2,117.95		
107b	3.62	1.60	3,484.74	Dry Pond (60%)	0.00	3,484.74	CT Graham Strmtech	
108	15.00	3.18	8,977.33	Dry Pond (60%)	5,386.40	3,590.93	Springfield Manor	
109	4.44	0.26	1,581.25	No BMP	0.00	1,581.25		
110	0.41	0.23	467.82	No BMP	0.00	467.82		
111	12.07	1.26	5,174.10	No BMP	0.00	5,174.10		
112	2.07	0.57	1,446.42	No BMP	0.00	1,446.42		
113	9.97	2.47	6,522.76	No BMP	0.00	6,522.76		
114	19.58	6.07	14,739.20	No BMP	0.00	14,739.20		
115a	13.34	1.46	5,826.77	No BMP	0.00	5,826.77		
115b	9.94	1.70	5,312.69	**Private Pond**	0.00	5,312.69		
115c	8.94	1.88	5,328.26	Dry Pond (60%)	3,196.96	2,131.30	Winchester Farms	1993
116a	28.38	3.24	12,620.89	No BMP	0.00	12,620.89		
116b	17.92	3.72	10,595.61	Dry Pond (60%)	6,357.37	4,238.24	Winchester Farms	1993
117a	20.32	3.28	10,546.59	No BMP	0.00	10,546.59		
117b	13.59	3.72	9,451.22	Dry Pond (60%)	5,670.73	3,780.49	Glenbrook Manor	1987
118	20.70	3.55	11,071.98	Dry Pond (60%)	6,643.19	4,428.79	Glen Eden	1981
119	1.27	0.81	1,605.68	No BMP	0.00	1,605.68		
120a	1.53	0.35	958.11	No BMP	0.00	958.11		
120b	31.86	7.58	20,377.55	Dry Pond (60%)	12,226.53	8,151.02	Hunters Creek	1994
121	12.72	2.51	7,325.69	No BMP	0.00	7,325.69		
122	1.83	0.65	1,501.65	No BMP	0.00	1,501.65		
123	0.20	0.12	242.18	No BMP	0.00	242.18		
124a	20.63	1.78	8,269.84	No BMP	0.00	8,269.84		
124b	10.87	2.84	7,346.41	Dry Pond (60%)	4,407.84	2,938.56	Havenwood	1992
124c	32.42	8.46	21,903.09	Dry Pond (60%)	13,141.86	8,761.24	Avery's Field	
125	21.74	4.76	13,253.08	Dry Pond (60%)	7,951.85	5,301.23	Highland Village	
126a	3.09	0.12	1,006.18	No BMP	0.00	1,006.18		
126b	17.95	3.66	10,520.47	Dry Pond (60%)	6,312.28	4,208.19	Avery's Field	1994
127	1.46	0.32	882.30	No BMP	0.00	882.30		
128	4.03	1.46	3,361.37	No BMP	0.00	3,361.37		
129	2.16	0.28	1,017.34	No BMP	0.00	1,017.34		
130	1.74	0.68	1,525.66	No BMP	0.00	1,525.66		
131	2.07	0.17	811.62	No BMP	0.00	811.62		
132	1.33	0.43	1,034.98	No BMP	0.00	1,034.98		
133	61.00	10.92	33,343.77	Dry Pond (60%)	20,006.26	13,337.51	Highland Village	1988
134	9.60	2.14	5,907.67	Dry Pond (60%)	3,544.60	2,363.07	CT Graham Strmtech	
135	0.49	0.11	309.41	No BMP	0.00	309.41		
136	11.50	1.65	5,641.16	No BMP	0.00	5,641.16		

Sewer shed	MS3 Area (ac)	Impervious Area	Sediment Loading w/o BMP (lb/yr)	Existing Type of BMP & Effective Values	TSS Removal (lb/yr)	Final Sediment Loading with BMP (lb/yr)	BMP Owner	Year Built
137	6.80	0.20	2,120.18	No BMP	0.00	2,120.18		
138	2.10	1.57	3,024.13	Dry Pond (60%)	1,814.48	1,209.65	CT Graham Strmtech	
139	0.30	0.08	210.93	No BMP	0.00	210.93		
140	12.56	0.54	4,171.79	No BMP	0.00	4,171.79		
141	61.67	9.35	31,059.41	Wet Pond (60%)	18,635.65	12,423.77	Winchester Lakes	1997
142	0.44	0.12	311.42	No BMP	0.00	311.42		
143	0.43	0.37	703.38	No BMP	0.00	703.38		
144a	19.22	0.74	6,259.81	No BMP	0.00	6,259.81		
144b	20.30	0.00	5,377.84	Wet Pond (60%)	3,226.70	2,151.13	Park Place	
145	13.52	2.70	7,836.48	Wet Pond (60%)	4,701.89	3,134.59	CT Fish Pond	After 2003
146a	51.31	1.48	15,924.88	No BMP	0.00	15,924.88		
146b	10.64	2.58	6,879.76	Dry Pond (60%)	4,127.85	2,751.90	Winchester Lakes	1997
147	0.42	0.00	113.82	No BMP	0.00	113.82		
148a	39.21	1.98	13,513.40	No BMP	0.00	13,513.40		
148b	12.10	5.58	11,991.92	Dry Pond (60%)	7,195.15	4,796.77	CBP 220 LP	After 2003
148c	4.43	1.94	4,231.36	Dry Pond (60%)	2,538.82	1,692.54	Barkley Enterprises LLC	After 2003
149a	2.29	0.00	605.54	Vegetative Swale (50%)	302.77	302.77	CT Graham Swale	
149b	10.42	1.05	4,418.26	Wet Land (60%)	2,650.96	1,767.30	CT Graham Wetland	After 2003
150	6.46	0.63	2,700.38	No BMP	0.00	2,700.38		
151a	12.53	0.44	4,014.42	No BMP	0.00	4,014.42		
151b	15.10	2.79	8,393.54	Dry Pond (60%)	5,036.12	3,357.42	Pgh Lifetime Care Com	1994
151c	8.94	5.46	10,962.94	Dry Pond (60%)	6,577.77	4,385.18	CBP 250 LP	After 2003
151d	8.12	4.30	8,922.16	No BMP	0.00	8,922.16		
152a	5.55	0.00	1,471.45	No BMP	0.00	1,471.45		
152b	9.58	2.84	7,017.08	Dry Pond (60%)	4,210.25	2,806.83	Bellvue Park Master Assn	2009
152c	20.43	12.02	24,325.40	Dry Pond (60%)	14,595.24	9,730.16	Bellevue Park	2009
152d	17.29	6.82	15,316.90	Dry Pond (60%)	9,190.14	6,126.76	Bellevue Park	After 2003
152e	2.00	0.44	1,229.14	Dry Pond (60%)	737.49	491.66	All Saints Aglican Ch	Before 2003
152f	9.02	2.22	5,879.59	Dry Pond (60%)	3,527.75	2,351.84	B & F Straessley	Before 2003
153	14.99	1.78	6,780.29	Dry Pond (60%)	4,068.18	2,712.12	Bellevue Park	2009
154a	0.52	0.26	547.98	No BMP	0.00	547.98		
154b	5.90	2.13	4,914.21	Dry Pond (60%)	2,948.52	1,965.68	Bellevue Park	2009
155a	3.88	0.79	2,266.75	No BMP	0.00	2,266.75		
155b	5.34	1.28	3,428.03	Dry Pond (60%)	2,056.82	1,371.21	Bellevue Park	2009
156	7.53	1.70	4,666.96	Dry Pond (60%)	2,800.18	1,866.79	Park Place	2009
157	11.30	0.46	3,719.05	Dry Pond (60%)	2,231.43	1,487.62	Park Place	2009
158	27.91	8.11	20,160.15	Dry Pond (60%)	12,096.09	8,064.06	Cranberry Crossings	1986
159a	9.92	0.13	2,833.89	No BMP	0.00	2,833.89		
159b	3.76	2.43	4,826.23	Dry Pond (60%)	2,895.74	1,930.49	Bellevue Park	After 2003
160a	14.85	2.00	7,085.44	No BMP	0.00	7,085.44		
160b	10.56	2.94	7,422.34	Dry Pond (60%)	4,453.40	2,968.93	Stephen S West Trs	1992
160c	2.62	1.12	2,464.89	Dry Pond (60%)	1,478.94	985.96		
160d	6.65	2.19	5,204.08	Dry Pond (60%)	3,122.45	2,081.63		
161	2.38	0.20	950.04	No BMP	0.00	950.04		
162	3.57	1.94	3,999.98	No BMP	0.00	3,999.98		
163	16.68	6.62	14,840.23	Dry Pond (60%)	8,904.14	5,936.09	Stephen S West Trs	1992
164a	26.07	18.96	36,748.18	No BMP	0.00	36,748.18		
164b	5.50	4.66	8,796.01	Dry Pond (60%)	5,277.60	3,518.40	ALCOA Comm Window	Before 2003
164c	2.18	1.12	2,335.68	Dry Pond (60%)	1,401.41	934.27	100 Cranberry Park LLC	Before 2003
165	9.07	4.48	9,448.46	No BMP	0.00	9,448.46		
166a	1.92	0.83	1,810.62	No BMP	0.00	1,810.62		
166b	17.20	8.11	17,319.42	Dry Pond (60%)	10,391.65	6,927.77	Cranberry Business Pk	After 2003

Sewer shed	MS3 Area (ac)	Impervious Area	Sediment Loading w/o BMP (lb/yr)	Existing Type of BMP & Effective Values	TSS Removal (lb/yr)	Final Sediment Loading with BMP (lb/yr)	BMP Owner	Year Built
167	7.39	2.22	5,447.72	Dry Pond (60%)	3,268.63	2,179.09	Cranberry Business Pk	Before 2003
168a	0.42	0.24	492.75	No BMP	0.00	492.75		
168b	23.37	8.46	19,501.76	Dry Pond (60%)	11,701.05	7,800.70	CBP 300 LP	After 2003
169	30.67	4.58	15,328.90	Dry Pond (60%)	9,197.34	6,131.56	Winchester Farms	1993
170	0.74	0.23	559.42	No BMP	0.00	559.42		
171	2.09	0.72	1,688.41	No BMP	0.00	1,688.41		
172	1.30	0.59	1,278.23	No BMP	0.00	1,278.23		
173	1.29	0.55	1,205.59	No BMP	0.00	1,205.59		
174a	23.88	7.59	18,279.19	Vegetative Swale (50%)	9,139.59	9,139.59	CT Fernway Plan	
174b	25.06	12.29	25,991.81	Dry Pond (60%)	15,595.09	10,396.73	Betty J Thomson	Before 2003
174c	13.71	3.88	9,747.07	Wet Pond (60%)	5,848.24	3,898.83	St Ferdinand Church	After 2003
174d	7.87	3.95	8,301.21	Dry Pond (60%)	4,980.72	3,320.48	St Ferdinand Church	Before 2003
175	14.29	4.56	10,965.12	Vegetative Swale (50%)	5,482.56	5,482.56	CT Fernway Plan	
176	3.56	1.07	2,635.27	No BMP	0.00	2,635.27		
177	9.57	3.55	8,130.30	No BMP	0.00	8,130.30		
178	1.01	0.36	833.61	No BMP	0.00	833.61		
179	3.53	1.56	3,388.17	No BMP	0.00	3,388.17		
180	11.06	4.00	9,228.99	No BMP	0.00	9,228.99		
181	2.37	0.82	1,925.47	No BMP	0.00	1,925.47		
182	8.20	2.61	6,279.66	No BMP	0.00	6,279.66		
183	0.26	0.12	255.51	No BMP	0.00	255.51		
184	1.27	0.71	1,455.53	No BMP	0.00	1,455.53		
185	1.29	0.92	1,789.53	No BMP	0.00	1,789.53		
186	9.93	5.37	11,086.52	No BMP	0.00	11,086.52		
187a	15.57	3.05	8,932.79	Dry Pond (60%)	5,359.67	3,573.11	Creekwood Commons	
187b	40.33	14.73	33,870.62	Dry Pond (60%)	20,322.37	13,548.25	Creekwood Commons	
187c	22.59	7.11	17,181.81	Dry Pond (60%)	10,309.09	6,872.72	Park Place	2009
188a	35.55	10.59	26,093.27	Dry Pond (60%)	15,655.96	10,437.31	Deer Run / Pineridge	
188b	8.69	4.21	8,934.38	No BMP	0.00	8,934.38		
189	2.19	0.75	1,754.58	No BMP	0.00	1,754.58		
190	10.85	3.31	8,092.14	No BMP	0.00	8,092.14		
191a	54.35	14.37	37,014.31	No BMP	0.00	37,014.31		
191b	25.25	5.33	15,075.26	Dry Pond (60%)	0.00	15,075.26	Creekwood	1975
191c	12.71	4.08	9,787.49	Dry Pond (60%)	5,872.50	3,915.00	Freedom Woods	1986
192	17.65	4.50	11,760.21	No BMP	0.00	11,760.21		
193a	13.84	2.19	7,118.60	No BMP	0.00	7,118.60		
193b	45.83	11.96	30,962.03	Wet Pond (60%)	18,577.22	12,384.81	Cranberry Crossings	1986
194	3.06	1.21	2,708.10	No BMP	0.00	2,708.10		
195a	15.11	2.11	7,326.31	No BMP	0.00	7,326.31		
195b	4.89	2.65	5,465.64	Dry Pond (60%)	3,279.38	2,186.26	Church of Jesus Christ	After 2003
196a	104.29	9.51	42,606.76	Dry Pond (60%)	25,564.06	17,042.70	Glen Woodside LP	2015
196b	12.52	3.91	9,477.95	Dry Pond (60%)	5,686.77	3,791.18	Orchard Park	2009
196c	7.75	2.34	5,734.78	Dry Pond (60%)	3,440.87	2,293.91	Orchard Park	2009
196d	7.85	2.79	6,477.34	No BMP	0.00	6,477.34		
197a	33.15	1.22	10,711.76	No BMP	0.00	10,711.76		
197b	7.92	0.00	2,098.82	No BMP	0.00	2,098.82		
198	1.63	0.70	1,528.17	No BMP	0.00	1,528.17		
199	7.72	2.70	6,296.69	Vegetative Swale (50%)	3,148.34	3,148.34	CT Fernway Plan	
200	1.25	0.62	1,308.14	No BMP	0.00	1,308.14		
201	45.96	7.83	24,498.86	No BMP	0.00	24,498.86		
202	2.50	0.87	2,028.71	Vegetative Swale (50%)	1,014.35	1,014.35	CT Fernway Plan	
203	7.89	2.71	6,358.22	Vegetative Swale (50%)	3,179.11	3,179.11	CT Fernway Plan	

Sewer shed	MS3 Area (ac)	Impervious Area	Sediment Loading w/o BMP (lb/yr)	Existing Type of BMP & Effective Values	TSS Removal (lb/yr)	Final Sediment Loading with BMP (lb/yr)	BMP Owner	Year Built
204	1.86	0.93	1,961.10	Dry Pond (60%)	1,176.66	784.44	CT Haine School FS	Before 2003
204a	14.48	4.15	10,367.80	No BMP	0.00	10,367.80		
204b	11.85	4.58	10,345.88	Dry Pond (60%)	6,207.53	4,138.35	Clearbrook	
204c	114.41	36.14	87,195.43	Dry Pond (60%)	52,317.26	34,878.17	UMH PA Cranberry Village LLC	1970
204d	3.13	1.57	3,299.08	Dry Pond (60%)	1,979.45	1,319.63	Marcliff Bear Creek	1993
204e	9.33	3.30	7,665.74	Dry Pond (60%)	4,599.44	3,066.29	Georgetown Square	2004
205	0.17	0.08	171.06	No BMP	0.00	171.06		
206	2.79	1.28	2,752.11	No BMP	0.00	2,752.11		
207	0.47	0.20	441.81	Vegetative Swale (50%)	220.91	220.91	CT Fernway Plan	
208	0.38	0.16	355.54	Vegetative Swale (50%)	177.77	177.77	CT Fernway Plan	
209	12.25	4.22	9,886.08	Vegetative Swale (50%)	4,943.04	4,943.04	CT Fernway Plan	
210a	1.32	0.57	1,241.21	No BMP	0.00	1,241.21		
210b	2.54	1.74	3,409.67	Dry Pond (60%)	2,045.80	1,363.87	Cranberry Corp Center	Before 2003
211a	2.11	0.00	560.17	Dry Pond (60%)	336.10	224.07	U.S. Post Office	Before 2003
211b	13.14	7.77	15,718.46	Dry Pond (60%)	9,431.07	6,287.38	North Suburban Land	Before 2003
212a	10.11	1.30	4,722.71	No BMP	0.00	4,722.71		
212b	9.27	6.39	12,508.66	Dry Pond (60%)	7,505.19	5,003.46	Costco Wholesale Corp	Before 2003
213a	0.90	0.25	624.00	No BMP	0.00	624.00		
213b	13.49	8.30	16,645.69	No BMP	0.00	16,645.69		
214a	2.33	0.92	2,073.61	No BMP	0.00	2,073.61		
214b	8.59	5.13	10,346.20	Dry Pond (60%)	6,207.72	4,138.48	Cranberry Township	After 2003
215a	0.80	0.00	212.90	No BMP	0.00	212.90		
215b	47.10	13.83	34,254.12	Dry Pond (60%)	20,552.47	13,701.65	Inland American C S LP	After 2003
216	10.68	0.85	4,164.50	No BMP	0.00	4,164.50		
217a	9.72	6.26	12,430.20	Underground (60%)	7,458.12	4,972.08	Gigliotti Holdings	2003
217b	2.38	0.00	631.00	Underground (60%)	378.60	252.40	Woodspring Suites Pgh	2016
217c	1.16	0.83	1,611.38	Dry Pond (60%)	966.83	644.55	Am Resp Alliance W PA	Before 2003
217d	1.20	0.97	1,842.37	Dry Pond (60%)	1,105.42	736.95	Condo Parcel	Before 2003
218	1.63	0.65	1,460.48	No BMP	0.00	1,460.48		
219a	95.72	21.04	58,485.96	No BMP	0.00	58,485.96		
219b	1.57	0.90	1,827.89	No BMP	0.00	1,827.89		
219c	1.55	0.88	1,795.36	No BMP	0.00	1,795.36		
219d	2.95	2.24	4,301.93	No BMP	0.00	4,301.93		
219e	5.26	3.33	6,636.54	Dry Pond (60%)	3,981.92	2,654.61	Fun For All	
219f	53.79	5.65	23,154.37	Wetland (60%)	13,892.62	9,261.75	CT Com Park Wetland	Before 2003
219g	13.18	7.22	14,855.85	Dry Pond (60%)	8,913.51	5,942.34	CT Maint Facility	Before 2003
220a	4.73	2.01	4,419.98	No BMP	0.00	4,419.98		
220b	1.40	0.56	1,253.11	No BMP	0.00	1,253.11	Patrick J Boylan	Before 2003
220c	0.94	0.68	1,313.38	No BMP	0.00	1,313.38		
221a	0.10	0.00	29.32	No BMP	0.00	29.32		
221b	4.76	2.27	4,828.78	Dry Pond (60%)	2,897.27	1,931.51	CT SR 19 Fire/EMS	Before 2003
222a	39.35	3.42	15,805.02	No BMP	0.00	15,805.02		
222b	5.42	2.77	5,793.88	No BMP	0.00	5,793.88	HGH Holdings LLC	Before 2003
222c	15.73	6.08	13,737.93	Dry Pond (60%)	8,242.76	5,495.17	American Trans System	After 2003
222d	2.31	0.00	610.74	Dry Pond (60%)	366.44	244.30	Bindra Real Estate LP	After 2003
222e	76.68	11.34	38,173.25	Dry Pond (60%)	22,903.95	15,269.30	Marshall Woods	2002
223a	37.28	3.15	14,841.10	No BMP	0.00	14,841.10		
223b	1.10	0.40	913.59	No BMP	0.00	913.59		
224a	9.85	0.73	3,750.99	No BMP	0.00	3,750.99		
224b	1.49	0.69	1,488.43	Dry Pond (60%)	893.06	595.37	Yott Properties LLC	After 2003
224c	2.08	1.14	2,350.68	Dry Pond (60%)	1,410.41	940.27	9151 Marshall Rd LP	Before 2003
224d	0.90	0.55	1,102.90	No BMP	0.00	1,102.90		

Sewer shed	MS3 Area (ac)	Impervious Area	Sediment Loading w/o BMP (lb/yr)	Existing Type of BMP & Effective Values	TSS Removal (lb/yr)	Final Sediment Loading with BMP (lb/yr)	BMP Owner	Year Built
224e	8.37	5.56	10964.23	Dry Pond (60%)	6,578.54	4385.69		
225a	5.57	1.33	3,577.46	No BMP	0.00	3,577.46		
225b	0.74	0.29	650.68	No BMP	0.00	650.68		
225c	0.61	0.00	168.40	Underground (60%)	101.04	67.36	Butler Cnty Comm.	2015
226a	27.46	5.26	15,550.31	No BMP	0.00	15,550.31		
226b	2.70	1.51	3,096.50	Dry Pond (60%)	1,857.90	1,238.60	Sweeney Family Prop	Before 2003
226c	2.54	1.56	3,127.67	Dry Pond (60%)	1,876.60	1,251.07	GA Industries Inc	Before 2003
226d	2.09	0.15	789.64	Dry Pond (60%)	473.78	315.86	Thrower John W Inc	Before 2003
226e	1.34	0.60	1,296.57	Dry Pond (60%)	777.94	518.63	James E Roth	Before 2003
226f	4.29	3.40	6,490.97	Dry Pond (60%)	3,894.58	2,596.39	Cue Inc	Before 2003
226g	1.55	0.75	1,587.84	Dry Pond (60%)	952.70	635.13	Ditch Witch Int Inc	Before 2003
226h	2.93	0.99	2,338.98	Dry Pond (60%)	1,403.39	935.59	United States of America	After 2003
226i	0.68	0.45	892.09	Underground (60%)	535.25	356.84	David M. Elliott	Before 2003
226j	6.62	0.74	2,927.00	No BMP	0.00	2,927.00	Keith Fries	Before 2003
227	1.13	1.00	1,867.57	Underground (60%)	0.00	1,867.57	CT North Tank	
227a	145.34	10.37	54,825.70	Dry Pond (60%)	32,895.42	21,930.28	Glen Eden	1981
227b	24.72	22.09	41,312.00	No BMP	0.00	41,312.00		
228a	1.78	0.45	1,184.86	No BMP	0.00	1,184.86		
228b	1.14	0.64	1,315.40	Dry Pond (60%)	789.24	526.16	Michel Real Estate	Before 2003
229a	6.37	2.43	5,516.65	No BMP	0.00	5,516.65		
229b	4.22	0.99	2,678.61	Dry Pond (60%)	1,607.17	1,071.45	Joel C Chrostowski	Before 2003
230	1.80	0.87	1,842.77	No BMP	0.00	1,842.77		
231	31.23	5.54	16,998.12	Dry Pond (60%)	10,198.87	6,799.25	Preserve	
232	11.46	1.10	4,764.31	No BMP	0.00	4,764.31		
233	5.63	1.39	3,680.54	No BMP	0.00	3,680.54		
234a	56.38	2.29	18,550.56	No BMP	0.00	18,550.56		
234b	50.06	7.50	25,075.51	Dry Pond (60%)	15,045.31	10,030.21	LBHB Assoc Dorsay	2002
235	2.42	0.75	1,816.23	No BMP	0.00	1,816.23		
236	1.73	0.75	1,641.01	No BMP	0.00	1,641.01		
237	4.08	1.36	3,220.89	No BMP	0.00	3,220.89		
238	3.97	1.10	2,788.54	No BMP	0.00	2,788.54		
239	3.56	0.65	1,972.22	No BMP	0.00	1,972.22		
240	141.66	21.43	71,265.24	No BMP	0.00	71,265.24		
241	4.42	1.42	3,407.60	No BMP	0.00	3,407.60		
242	14.25	2.18	7,211.23	No BMP	0.00	7,211.23		
243	9.75	1.95	5,657.13	No BMP	0.00	5,657.13		
244	0.67	0.34	719.38	No BMP	0.00	719.38		
245a	5.87	1.18	3,413.51	No BMP	0.00	3,413.51		
245b	6.86	1.67	4,446.60	Dry Pond (60%)	2,667.96	1,778.64	Redmond Place	
246	13.12	1.24	5,423.83	No BMP	0.00	5,423.83		
247	6.92	2.49	5,750.64	No BMP	0.00	5,750.64		
248	107.98	1.09	30,326.60	No BMP	0.00	30,326.60		
249	11.08	1.18	4,798.85	No BMP	0.00	4,798.85		
250	7.38	0.95	3,446.37	Dry Pond (60%)	2,067.82	1,378.55	Scenic Ridge	1993
251	1.48	0.55	1,263.14	No BMP	0.00	1,263.14		
252a	62.83	9.07	30,921.55	No BMP	0.00	30,921.55	Canterbury Heights	1973
252b	35.38	5.92	18,697.99	Dry Pond (60%)	0.00	18,697.99	Timberline	Before 2003
252c	17.58	3.90	10,788.12	Dry Pond (60%)	6,472.87	4,315.25	Jonathan J Unico	1988
253	0.80	0.00	212.65	No BMP	0.00	212.65		
253a	28.53	8.29	20,602.07	Dry Pond (60%)	0.00	20,602.07	Timberline	1978
253b	9.80	2.47	6,489.48	Dry Pond (60%)	3,893.69	2,595.79	Timberline	1978
253c	9.61	1.31	4,609.50	Dry Pond (60%)	2,765.70	1,843.80	Timberline	1978

Sewer shed	MS3 Area (ac)	Impervious Area	Sediment Loading w/o BMP (lb/yr)	Existing Type of BMP & Effective Values	TSS Removal (lb/yr)	Final Sediment Loading with BMP (lb/yr)	BMP Owner	Year Built
253d	60.18	5.17	24,082.56	Dry Pond (60%)	14,449.53	9,633.02	Timberline	1978
253e	3.45	0.63	1,899.19	Dry Pond (60%)	1,139.51	759.68	Beaver Butler Presby	Before 2003
253f	7.83	0.66	3,114.90	Dry Pond (60%)	1,868.94	1,245.96	Taggart Family Trust	Before 2003
254	25.60	2.91	11,364.07	No BMP	0.00	11,364.07		
255	12.90	1.85	6,325.84	No BMP	0.00	6,325.84		
256	5.90	1.40	3,762.01	No BMP	0.00	3,762.01		
257	100.67	6.90	37,533.14	No BMP	0.00	37,533.14		
258	3.29	0.62	1,854.16	No BMP	0.00	1,854.16		
259a	111.03	6.02	38,897.23	No BMP	0.00	38,897.23		
259b	18.48	4.39	11,804.34	Dry Pond (60%)	7,082.60	4,721.73	Forest Knoll Estates	
260a	7.38	0.79	3,205.07	No BMP	0.00	3,205.07		
260b	59.96	5.81	25,023.29	Wet Pond (60%)	15,013.97	10,009.31	Walden Pond	2003
260c	26.41	2.81	11,414.20	No BMP	0.00	11,414.20		
261	12.29	3.31	8,459.83	Dry Pond (60%)	5,075.90	3,383.93	Crystal Springs	1993
262	5.32	2.39	5,170.34	Dry Pond (60%)	3,102.21	2,068.14	Clearbrook	1985
263	0.77	0.33	726.39	Vegetative Swale (50%)	363.19	363.19	CT Fernway Plan	
264	1.60	0.73	1,575.92	Vegetative Swale (50%)	787.96	787.96	CT Fernway Plan	
265	0.75	0.31	689.48	Vegetative Swale (50%)	344.74	344.74	CT Fernway Plan	
266	2.45	1.01	2,241.99	Vegetative Swale (50%)	1,120.99	1,120.99	CT Fernway Plan	
267	10.57	7.13	14,019.39	No BMP	0.00	14,019.39		
268	0.46	0.32	632.54	No BMP	0.00	632.54		
269	1.59	1.08	2,126.29	No BMP	0.00	2,126.29		
270a	39.38	30.42	58,310.69	Dry Pond (60%)	34,986.42	23,324.28	Inland Western Crnbry	Before 2003
270b	4.53	1.70	3,878.37	No BMP	0.00	3,878.37		
271a	46.86	24.63	51,175.98	Dry Pond (60%)	30,705.59	20,470.39	Wal Mart Real Estate	Before 2003
271b	0.57	0.45	851.77	Underground (60%)	511.06	340.71	Auto zone	2014
271c	0.95	0.55	1,118.52	No BMP	0.00	1,118.52	Green Valley Inc	Before 2003
272a	11.60	4.30	9,840.90	No BMP	0.00	9,840.90		
272b	6.76	4.76	9,278.77	No BMP	0.00	9,278.77		
272c	76.94	11.21	38,026.16	Dry Pond (60%)	22,815.70	15,210.46	Sippel Enterprises LP	After 2003
273a	15.92	7.19	15,529.23	No BMP	0.00	15,529.23		
273b	8.66	3.15	7,258.55	No BMP	0.00	7,258.55		
274a	3.60	1.26	2,944.73	No BMP	0.00	2,944.73		
274b	1.00	0.64	1,271.60	Dry Pond (60%)	762.96	508.64	USX FCU	Before 2003
275a	1.34	0.33	876.16	No BMP	0.00	876.16		
275b	43.57	14.76	34,776.86	No BMP	0.00	34,776.86		
275c	2.83	1.86	3,679.42	Dry Pond (60%)	2,207.65	1,471.77	Commonwealth of PA	Before 2003
275d	4.65	3.42	6,616.31	Dry Pond (60%)	3,969.79	2,646.53	39th St Commons LLC	Before 2003
275e	5.31	2.77	5,765.77	No BMP	0.00	5,765.77		
275f	11.53	6.84	13,817.21	Dry Pond (60%)	8,290.32	5,526.88	Iron Mtn Info Mgmt	Before 2003
275g	11.01	7.67	14,986.34	Dry Pond (60%)	8,991.81	5,994.54	Haine Freedom Retail	After 2003
276a	3.06	1.79	3,626.68	No BMP	0.00	3,626.68		
276b	3.06	1.82	3,679.18	No BMP	0.00	3,679.18		
277a	2.29	1.17	2,447.35	No BMP	0.00	2,447.35		
277b	7.79	1.89	5,040.04	Dry Pond (60%)	3,024.03	2,016.02	Rollin Road Regency	2003
278	8.98	3.09	7,237.77	No BMP	0.00	7,237.77		
279	8.31	2.45	6,052.33	No BMP	0.00	6,052.33		
280	3.25	1.20	2,756.47	No BMP	0.00	2,756.47		
281	3.72	0.86	2,342.81	No BMP	0.00	2,342.81		
282a	41.42	11.30	28,762.37	No BMP	0.00	28,762.37		
282b	1.50	0.48	1,156.61	No BMP	0.00	1,156.61		
282c	2.47	1.39	2,846.88	Dry Pond (60%)	1,708.13	1,138.75	Keith R Caro	Before 2003

Sewer shed	MS3 Area (ac)	Impervious Area	Sediment Loading w/o BMP (lb/yr)	Existing Type of BMP & Effective Values	TSS Removal (lb/yr)	Final Sediment Loading with BMP (lb/yr)	BMP Owner	Year Built
282d	5.24	2.53	5,374.36	Dry Pond (60%)	3,224.61	2,149.74	Marcliff Bear Creek	1993
283	0.41	0.15	346.67	No BMP	0.00	346.67		
284	5.77	1.86	4,461.73	No BMP	0.00	4,461.73		
285	20.50	5.52	14,125.04	No BMP	0.00	14,125.04		
286	0.43	0.30	583.08	No BMP	0.00	583.08		
287	6.20	3.05	6,447.34	No BMP	0.00	6,447.34		
288	11.30	2.88	7,531.57	No BMP	0.00	7,531.57		
289	3.02	1.21	2,703.68	No BMP	0.00	2,703.68		
290	9.13	2.57	6,462.90	No BMP	0.00	6,462.90		
291	3.63	1.45	3,242.52	No BMP	0.00	3,242.52		
292	8.05	2.95	6,774.68	No BMP	0.00	6,774.68		
293a	17.73	3.09	9,558.01	No BMP	0.00	9,558.01		
293b	1.04	0.57	1,168.75	No BMP	0.00	1,168.75		
294	2.60	0.59	1,623.53	No BMP	0.00	1,623.53		
295	1.51	0.50	1,193.68	No BMP	0.00	1,193.68		
296	1.99	0.93	1,984.40	No BMP	0.00	1,984.40		
297a	24.20	1.14	8,210.49	No BMP	0.00	8,210.49		
297b	1.55	1.00	1,979.85	No BMP	0.00	1,979.85	Marquis Development	1973
298	4.28	1.24	3,082.38	No BMP	0.00	3,082.38		
299	21.00	5.33	13,949.63	Dry Pond (60%)	8,369.78	5,579.85	Berkley Manor	
300	3.32	0.59	1,810.20	No BMP	0.00	1,810.20		
301	6.23	1.98	4,776.44	No BMP	0.00	4,776.44		
302	3.09	1.91	3,819.61	Dry Pond (60%)	2,291.77	1,527.84	Three Trees Ministries	Before 2003
303a	0.90	0.54	1,091.21	No BMP	0.00	1,091.21		
303b	99.20	20.37	58,344.84	Dry Pond (60%)	35,006.90	23,337.94	Blue Ridge Estates	1989
304	8.13	3.47	7,611.33	No BMP	0.00	7,611.33		
305	2.01	0.54	1,389.53	No BMP	0.00	1,389.53		
306	2.33	1.31	2,677.06	No BMP	0.00	2,677.06		
307	0.67	0.26	590.90	No BMP	0.00	590.90		
308	0.78	0.55	1,073.83	No BMP	0.00	1,073.83		
309	2.73	1.26	2,710.54	No BMP	0.00	2,710.54		
310	4.50	1.35	3,318.32	No BMP	0.00	3,318.32		
311	3.40	1.34	3,013.27	No BMP	0.00	3,013.27		
312	1.52	0.78	1,624.08	No BMP	0.00	1,624.08		
313	2.82	1.02	2,359.85	No BMP	0.00	2,359.85		
314	5.68	2.41	5,292.55	No BMP	0.00	5,292.55		
315	15.57	3.50	9,637.74	Dry Pond (60%)	5,782.64	3,855.09	Autumn Hill	1992
316	15.17	4.52	11,128.14	Dry Pond (60%)	6,676.88	4,451.25	Hampshire Woods	
317	17.79	4.59	11,937.43	Dry Pond (60%)	7,162.46	4,774.97	Hampshire Woods	1993
318	0.45	0.30	587.79	No BMP	0.00	587.79		
319a	37.29	1.49	12,227.18	No BMP	0.00	12,227.18		
319b	17.17	2.87	9,064.39	Dry Pond (60%)	5,438.63	3,625.75	Autumn Hill	1992
320	15.16	11.44	22,026.67	Dry Pond (60%)	13,216.00	8,810.67	NW Mutual Life Ins Co	Before 2003
321a	0.93	0.45	961.32	No BMP	0.00	961.32		
321b	4.63	2.17	4,648.92	Dry Pond (60%)	2,789.35	1,859.57	Assoc for Iron & Steel	Before 2003
322a	8.95	4.06	8,753.03	Dry Pond (60%)	5,251.82	3,501.21	Blue Hole LP	Before 2003
322b	0.57	0.27	577.60	No BMP	0.00	577.60		
323a	3.17	1.09	2,561.12	No BMP	0.00	2,561.12		
323b	0.64	0.46	888.30	No BMP	0.00	888.30		
324a	26.55	10.58	23,688.24	No BMP	0.00	23,688.24		
324b	10.95	5.91	12,212.41	Dry Pond (60%)	7,327.45	4,884.96	AHIP PA Cranberry Pro	Before 2003
324c	2.47	1.17	2,502.33	No BMP	0.00	2,502.33		

Sewer shed	MS3 Area (ac)	Impervious Area	Sediment Loading w/o BMP (lb/yr)	Existing Type of BMP & Effective Values	TSS Removal (lb/yr)	Final Sediment Loading with BMP (lb/yr)	BMP Owner	Year Built
324d	1.28	0.92	1,783.39	Dry Pond (60%)	1,070.03	713.36	UPMC Health System	Before 2003
324e	3.30	2.35	4,579.98	Dry Pond (60%)	2,747.99	1,831.99	UPMC Health System	Before 2003
325	2.12	1.31	2,631.49	No BMP	0.00	2,631.49		
325a	0.93	0.00	245.26	No BMP	0.00	245.26		
325b	52.36	43.78	82,790.02	Dry Pond (60%)	49,674.01	33,116.01	Gumberg Associates	Before 2003
326	0.65	0.53	1,002.09	No BMP	0.00	1,002.09		
327	15.35	9.41	18,874.66	No BMP	0.00	18,874.66		
328a	20.19	8.87	19,319.07	No BMP	0.00	19,319.07		
328b	6.07	4.09	8,037.86	No BMP	0.00	8,037.86		
328c	6.44	4.16	8,249.52	Dry Pond (60%)	4,949.71	3,299.81	UPMC	Before 2003
328d	3.48	1.34	3,034.32	Dry Pond (60%)	1,820.59	1,213.73		
328e	12.94	10.36	19,727.50	Dry Pond (60%)	11,836.50	7,891.00	NW Mutual Life Ins Co	Before 2003
329	0.71	0.43	866.38	No BMP	0.00	866.38		
330	3.26	2.59	4,937.79	No BMP	0.00	4,937.79		
331	2.66	1.96	3,785.12	No BMP	0.00	3,785.12		
332a	1.93	1.19	2,389.89	Dry Pond (60%)	1,433.94	955.96	CT Pennwood Pump	
332b	0.61	0.45	863.69	No BMP	0.00	863.69		
332c	1.50	1.13	2,174.49	No BMP	0.00	2,174.49		
333a	0.31	0.00	81.35	No BMP	0.00	81.35		
333b	5.85	3.93	7,728.26	No BMP	0.00	7,728.26		
333c	4.83	2.41	5,070.64	Dry Pond (60%)	3,042.38	2,028.26	Condo Parcel	1985
334a	11.46	5.69	11,990.66	No BMP	0.00	11,990.66		
334b	52.70	34.57	68,376.47	Dry Pond (60%)	41,025.88	27,350.59	Cranberry Commons	1986
334c	70.71	12.43	38,297.58	Wet Pond (60%)	22,978.55	15,319.03	Lowes Home Centers	Before 2003
334d	4.26	0.35	1,678.61	Dry Pond (60%)	1,007.16	671.44	Spring Meadows	1994
335	20.76	14.36	28,109.01	Dry Pond (60%)	16,865.41	11,243.60	Echo Cranberry Assoc	After 2003
336	1.09	0.31	774.70	No BMP	0.00	774.70		
337	0.29	0.18	361.78	No BMP	0.00	361.78		
338	1.87	0.14	722.28	No BMP	0.00	722.28		
339	0.35	0.12	275.32	No BMP	0.00	275.32		
340	31.43	8.85	22,263.99	Dry Pond (60%)	13,358.39	8,905.60	Grandshire	2002
341a	32.14	0.43	9,185.93	No BMP	0.00	9,185.93		
341b	27.42	4.86	14,914.57	Dry Pond (60%)	8,948.74	5,965.83	Spring Meadows	1994
341c	7.03	1.46	4,156.74	Dry Pond (60%)	2,494.04	1,662.70	Spring Meadows	
342	20.04	3.99	11,587.12	Dry Pond (60%)	6,952.27	4,634.85	St. Leonards Woods	1988
343	26.24	5.98	16,369.59	Dry Pond (60%)	9,821.76	6,547.84	Hazelwood Farms	2001
344a	6.61	1.61	4,285.83	No BMP	0.00	4,285.83		
344b	27.68	9.64	22,510.13	Dry Pond (60%)	13,506.08	9,004.05	Freedom Woods	
345	11.86	2.36	6,851.67	No BMP	0.00	6,851.67		
346	13.42	1.69	6,215.82	No BMP	0.00	6,215.82		
347a	140.73	1.13	39,065.80	No BMP	0.00	39,065.80		
347b	16.47	2.63	8,499.22	Dry Pond (60%)	5,099.53	3,399.69	Foxwood Estates	2013
348a	13.03	1.46	5,749.66	No BMP	0.00	5,749.66		
348b	13.11	1.80	6,311.51	Dry Pond (60%)	3,786.91	2,524.60	Crystal Springs	
349a	9.39	1.66	5,103.10	No BMP	0.00	5,103.10		
349b	24.79	2.45	10,419.80	Dry Pond (60%)	6,251.88	4,167.92	Woodbine Estate	1989
350	3.03	0.72	1,937.88	No BMP	0.00	1,937.88		
351	0.89	0.19	528.40	No BMP	0.00	528.40		
352	3.00	0.66	1,840.86	No BMP	0.00	1,840.86		
353	0.70	0.20	494.00	No BMP	0.00	494.00		
354	6.88	1.48	4,151.91	No BMP	0.00	4,151.91		
355	11.25	1.33	5,074.32	No BMP	0.00	5,074.32		

Sewer shed	MS3 Area (ac)	Impervious Area	Sediment Loading w/o BMP (lb/yr)	Existing Type of BMP & Effective Values	TSS Removal (lb/yr)	Final Sediment Loading with BMP (lb/yr)	BMP Owner	Year Built
356a	5.23	1.45	3,667.66	Dry Pond (60%)	2,200.59	1,467.06	Condo Parcel	1985
356b	3.83	1.23	2,949.31	Dry Pond (60%)	1,769.59	1,179.73	Dutilh Methodist Ch	Before 2003
356c	13.37	4.11	10,004.83	Dry Pond (60%)	6,002.90	4,001.93	Dutilh Methodist Ch	Before 2003
356d	13.07	7.45	15,193.21	Dry Pond (60%)	9,115.92	6,077.28	UPMC Health System	Before 2003
357a	7.99	0.64	3,122.85	No BMP	0.00	3,122.85		
357b	17.96	5.30	13,105.49	Dry Pond (60%)	7,863.30	5,242.20	CWNC High School	After 2003
357c	1.91	0.93	1,976.34	No BMP	0.00	1,976.34		
358a	1.38	0.35	912.96	No BMP	0.00	912.96		
358b	2.25	0.31	1,086.25	Dry Pond (60%)	651.75	434.50	CWNC High School	After 2003
359	91.28	9.10	38,511.00	Dry Pond (60%)	23,106.60	15,404.40	Lakevue	1991
360	96.01	10.95	42,671.12	Dry Pond (60%)	25,602.67	17,068.45	Ehrman Farms	2015
361a	15.31	1.23	5,991.60	No BMP	0.00	5,991.60		
361b	27.37	5.81	16,402.64	Dry Pond (60%)	9,841.59	6,561.06	Cranberry Heights	1995
362	0.06	0.06	107.25	No BMP	0.00	107.25		
363	2.87	0.29	1,216.93	No BMP	0.00	1,216.93		
364	0.26	0.00	69.26	No BMP	0.00	69.26		
365	0.27	0.12	254.17	No BMP	0.00	254.17		
366a	35.69	1.72	12,165.90	No BMP	0.00	12,165.90	Ehrman Farms	
366b	17.46	2.73	8,917.64	Dry Pond (60%)	5,350.58	3,567.06	Ehrman Farms	1998
367	122.85	4.83	40,157.54	No BMP	0.00	40,157.54		
368	0.55	0.24	524.74	No BMP	0.00	524.74		
369	28.02	2.01	10,592.83	No BMP	0.00	10,592.83		
370a	2.73	0.89	2,119.63	No BMP	0.00	2,119.63		
370b	26.47	4.49	14,088.64	Dry Pond (60%)	8,453.19	5,635.46	Carriage Manor	
371	2.80	0.39	1,359.99	No BMP	0.00	1,359.99		
372	41.27	5.84	20,124.18	No BMP	0.00	20,124.18		
373	1.28	0.46	1,061.10	No BMP	0.00	1,061.10		
374	2.75	0.72	1,860.00	Dry Pond (60%)	1,116.00	744.00	Hidden Oaks	
375	54.06	3.62	20,012.65	No BMP	0.00	20,012.65		
376	97.66	2.72	30,151.26	No BMP	0.00	30,151.26		
377	2.72	0.27	1,148.38	No BMP	0.00	1,148.38		
378	0.97	0.07	367.92	No BMP	0.00	367.92		
379	1.41	0.16	622.03	No BMP	0.00	622.03		
380	0.28	0.11	249.18	No BMP	0.00	249.18		
381	0.22	0.04	127.74	No BMP	0.00	127.74		
382a	13.41	0.05	3,632.63	No BMP	0.00	3,632.63		
382b	22.12	5.55	14,602.82	Dry Pond (60%)	8,761.69	5,841.13	Park Place	2009
383	0.35	0.23	463.64	No BMP	0.00	463.64		
384	22.64	0.18	6,278.59	No BMP	0.00	6,278.59		
385	8.19	5.65	11,069.49	No BMP	0.00	11,069.49		
386	13.34	2.74	7,852.21	No BMP	0.00	7,852.21		
387	0.09	0.03	64.94	No BMP	0.00	64.94		
388	0.14	0.04	106.31	No BMP	0.00	106.31		
389	0.08	0.03	61.74	No BMP	0.00	61.74		
390	0.06	0.04	73.31	No BMP	0.00	73.31		
391	13.52	2.59	7,657.36	No BMP	0.00	7,657.36		
392	18.92	2.13	8,369.99	No BMP	0.00	8,369.99		
393	1.80	0.37	1,054.52	No BMP	0.00	1,054.52		
394	1.20	0.29	769.02	No BMP	0.00	769.02		
395a	8.86	0.59	3,271.43	No BMP	0.00	3,271.43		
395b	19.95	5.87	14,519.14	Dry Pond (60%)	8,711.48	5,807.66	Autumn Hill	1992
396a	5.79	0.99	3,093.29	No BMP	0.00	3,093.29		

Sewer shed	MS3 Area (ac)	Impervious Area	Sediment Loading w/o BMP (lb/yr)	Existing Type of BMP & Effective Values	TSS Removal (lb/yr)	Final Sediment Loading with BMP (lb/yr)	BMP Owner	Year Built
396b	9.58	2.24	6,071.21	Dry Pond (60%)	3,642.72	2,428.48	Autumn Hill	1992
397	0.84	0.57	1,127.02	No BMP	0.00	1,127.02		
398	2.46	0.89	2,051.81	No BMP	0.00	2,051.81		
399a	2.50	1.96	3,754.59	No BMP	0.00	3,754.59		
399b	1.76	1.16	2,288.88	No BMP	0.00	2,288.88		
400a	0.21	0.00	55.47	No BMP	0.00	55.47		
400b	32.52	9.42	23,444.79	Dry Pond (60%)	14,066.87	9,377.91	Kensa Cranberry Assoc	After 2003
400c	2.38	0.46	1,361.21	Dry Pond (60%)	816.72	544.48	Kensa Cranberry Assoc	After 2003
400d	36.27	3.42	14,999.26	Dry Pond (60%)	8,999.55	5,999.70	Gary Sippel Alleg Excav	After 2003
401	0.18	0.13	249.20	No BMP	0.00	249.20		
402	1.24	0.20	639.21	Vegetative Swale (50%)	319.60	319.60		
403	2.62	0.89	2,095.09	Wetland (60%)	1,047.54	1,047.54	CT Graham Trail	
404	1.54	0.78	1,644.02	No BMP	0.00	1,644.02		
405a	12.64	1.12	5,104.05	No BMP	0.00	5,104.05		
405b	1.15	0.40	926.72	Dry Pond (60%)	556.03	370.69	Kimberly & Brian Reuss	Before 2003
405c	0.65	0.33	697.48	Dry Pond (60%)	418.49	278.99	SPK Realty Assoc LP	After 2003
405d	5.85	1.18	3,403.69	Dry Pond (60%)	2,042.21	1,361.48	Grace Community Ch	Before 2003
406	9.28	0.03	2,505.82	Dry Pond (60%)	1,503.49	1,002.33	Cedarbrook	
407a	136.25	21.09	69,291.25	Dry Pond (60%)	41,574.75	27,716.50	Pgh Lifetime Care Com	1994
407b	4.47	1.67	3,810.68	Dry Pond (60%)	2,286.41	1,524.27	Schwans Home Srv Inc	After 2003
407c	5.65	2.84	5,971.97	Dry Pond (60%)	3,583.18	2,388.79	Bekins Hillside Venture	Before 2003
407d	9.40	1.11	4,242.92	Dry Pond (60%)	2,545.75	1,697.17	Bekins Hillside Venture	Before 2003
407e	10.40	4.81	10,328.01	Dry Pond (60%)	6,196.80	4,131.20	AVG-Coventry LLC	Before 2003
Total	9,233.62		**5,458,475.99**		1,931,665.41	**3,526,810.58**		

BMP Effectiveness Values List		Sediment Removal Efficiencies	BMP Used
A	Wet Ponds and Wetlands	60%	
B	Dry Detention Basins and Hydrodynamic Structures	10%	
C	Dry Extended Detention	60%	
D	Infiltration Practices w/ Sand, Veg.	95%	
E	Filtering Practices	80%	
F	Filter Strip Runoff Reduction	56%	
G	Filter Strip Stormwater Treatment	22%	
H	Bioretention – Raingarden (C/D soils w/ underdrain)	55%	
I	Bioretention / Raingarden (A/B soils w/ underdrain)	80%	
J	Bioretention / Raingarden (A/B soils w/o underdrain)	90%	
K	Vegetated Open Channels (C/D Soils)	50%	
L	Vegetated Open Channels (A/B Soils)	70%	
M	Bioswale	80%	
N	Permeable Pavement w/o Sand or Veg. (C/D Soils w/ underdrain)	55%	
O	Permeable Pavement w/o Sand or Veg. (A/B Soils w/ underdrain)	70%	
P	Permeable Pavement w/o Sand or Veg. (A/B Soils w/o underdrain)	85%	
Q	Permeable Pavement w/ Sand or Veg. (A/B Soils w/ underdrain)	70%	
R	Permeable Pavement w/ Sand or Veg. (A/B Soils w/ underdrain)	85%	
S	Permeable Pavement w/ Sand or Veg. (A/B Soils w/o underdrain)	85%	
T	Permeable Pavement w/ Sand or Veg. (C/D Soils w/ underdrain)	55%	
U	Stream Restoration	44.88 lnd/ft/yr	
V	Forest Buffers	50%	
W	Tree Planting	20%	
X	Street Sweeping	9%	
Y	Storm Sewer System Solids Removal		

APPENDIX 4

PROPOSED BMP INFORMATION

Option #1 Cranberry Township Pollution Reduction Plan Proposed BMPs

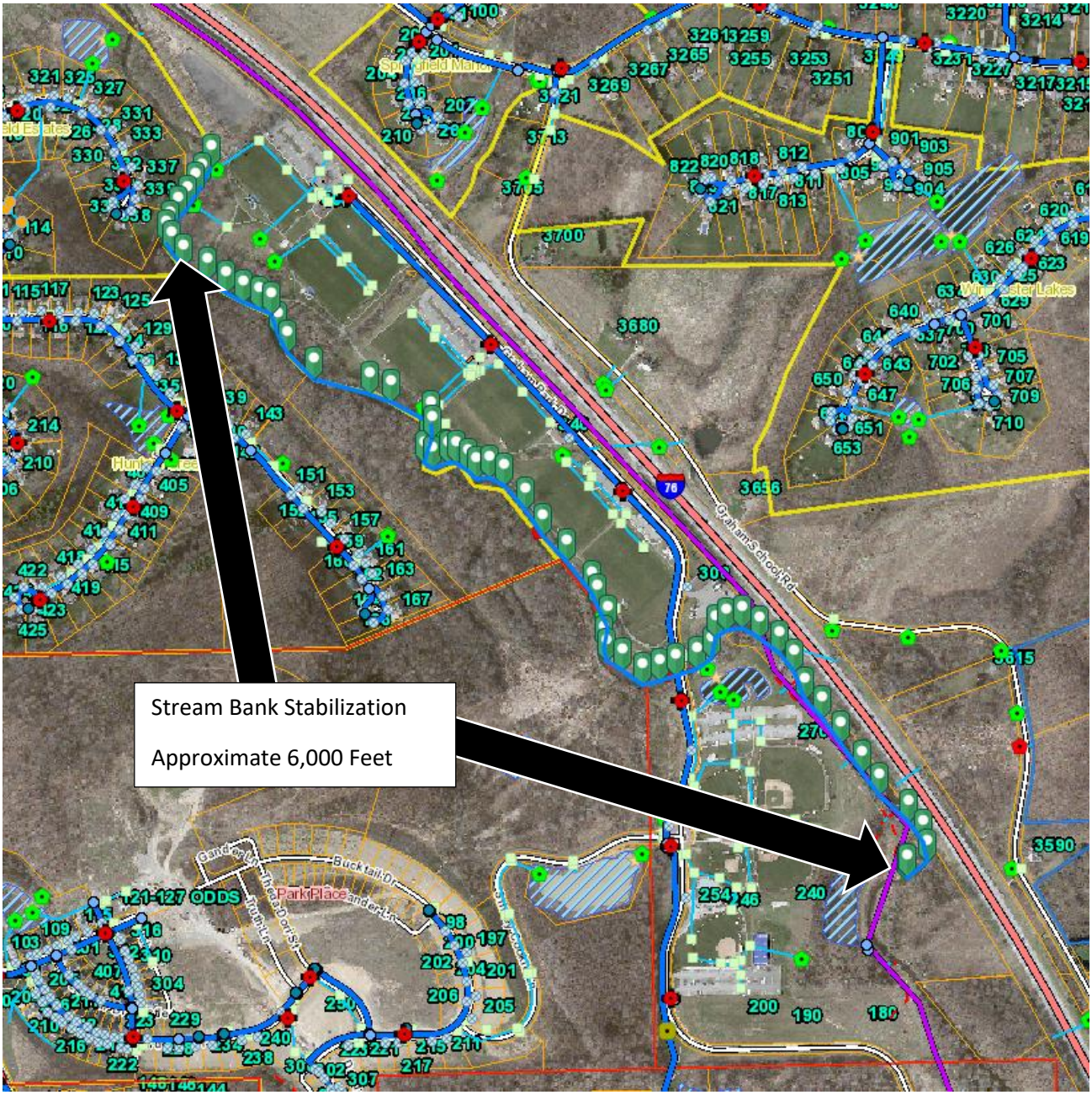
BMP Effectiveness Values (EV) provided from DEP

Proposed BMP #	Proposed BMP Location	Proposed BMP	BMP EV	Proposed Limits (Acres)	Proposed Reduction (lbs/yr)
1	Brush Creek	Stream bank restoration along the Brush Creek	44.88 lnd/ft/yr	6,000 lf	269,280
2	TBD	Requiring Future Developers to overdesign BMPs within MS3	60%	0	0
3	Twp. Inlets	Storm Sewer System Solid Removal	Weight * PCF	---	2,500
4	Twp. Parks	Tree Planting	20%	2	610
5	Twp. Parks	Raingarden Installation	55%	0	0
6	Twp Inlets	Filtering Practices	80%	0	0
7	Along Twp Roads	Vegetative Open Channels	50%	95	72,400
8	Creekwood	Private Residential Ponds	60%	---	0
9	Timberline	Private Residential Ponds (2 Ponds)	60%	---	0
10	Callery Road	Private Residential Ponds	60%	---	0
11	Twp. Streets	Street Sweeping (25 Times Annually)	9%	2	274
				Total Proposed TSS Reduction (lb/yr) =	345,064
				Required Reduction (lb/yr) =	345,014
				Excess TSS reduction (lb/yr)=	**50**

Pollution Reduction Plan

Proposed Stream Bank Stabilization

Approximate Location



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BMP Effectiveness Values
pennsylvania
DEPARTMENT OF ENVIRONMENTAL PROTECTION

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
BUREAU OF CLEAN WATER

NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES)
STORMWATER DISCHARGES FROM
SMALL MUNICIPAL SEPARATE STORM SEWER SYSTEMS
BMP EFFECTIVENESS VALUES

This table of BMP effectiveness values (i.e., pollutant removal efficiencies) is intended for use by MS4s that are developing and implementing Pollutant Reduction Plans and TMDL Plans to comply with NPDES permit requirements. The values used in this table generally consider pollutant reductions from both overland flow and reduced downstream erosion, and are based primarily on average values within the Chesapeake Assessment Scenario Tool (CAST) (www.casttool.org). Design considerations, operation and maintenance, and construction sequences should be as outlined in the Pennsylvania Stormwater BMP Manual, Chesapeake Bay Program guidance, or other technical sources. The Department of Environmental Protection (DEP) will update the information contained in this table as new information becomes available. Interested parties may submit information to DEP for consideration in updating this table to DEP's MS4 resource account, RA-EPPAMS4@pa.gov. Where an MS4 proposes a BMP not identified in this document or in Chesapeake Bay Program expert panel reports, other technical resources may be consulted for BMP effectiveness values. Note – TN = Total Nitrogen and TP = Total Phosphorus.

BMP Name	BMP Effectiveness Values			BMP Description
	TN	TP	Sediment	
Wet Ponds and Wetlands	20%	45%	60%	A water impoundment structure that intercepts stormwater runoff then releases it to an open water system at a specified flow rate. These structures retain a permanent pool and usually have retention times sufficient to allow settlement of some portion of the intercepted sediments and attached nutrients/toxics. Until recently, these practices were designed specifically to meet water quantity, not water quality objectives. There is little or no vegetation living within the pooled area nor are outfalls directed through vegetated areas prior to open water release. Nitrogen reduction is minimal.
Dry Detention Basins and Hydrodynamic Structures	5%	10%	10%	Dry Detention Ponds are depressions or basins created by excavation or berm construction that temporarily store runoff and release it slowly via surface flow or groundwater infiltration following storms. Hydrodynamic Structures are devices designed to improve quality of stormwater using features such as swirl concentrators, grit chambers, oil barriers, baffles, micropools, and absorbent pads that are designed to remove sediments, nutrients, metals, organic chemicals, or oil and grease from urban runoff.
Dry Extended Detention Basins	20%	20%	60%	Dry extended detention (ED) basins are depressions created by excavation or berm construction that temporarily store runoff and release it slowly via surface flow or groundwater infiltration following storms. Dry ED basins are designed to dry out between storm events, in contrast with wet ponds, which contain standing water permanently. As such, they are similar in construction and function to dry detention basins, except that the duration of detention of stormwater is designed to be longer, theoretically improving treatment effectiveness.

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BMP Effectiveness Values

BMP Name	BMP Effectiveness Values			BMP Description
	TN	TP	Sediment	
Infiltration Practices w/ Sand, Veg.	85%	85%	95%	A depression to form an infiltration basin where sediment is trapped and water infiltrates the soil. No underdrains are associated with infiltration basins and trenches, because by definition these systems provide complete infiltration. Design specifications require infiltration basins and trenches to be built in good soil, they are not constructed on poor soils, such as C and D soil types. Engineers are required to test the soil before approval to build is issued. To receive credit over the longer term, jurisdictions must conduct yearly inspections to determine if the basin or trench is still infiltrating runoff.
Filtering Practices	40%	60%	80%	Practices that capture and temporarily store runoff and pass it through a filter bed of either sand or an organic media. There are various sand filter designs, such as above ground, below ground, perimeter, etc. An organic media filter uses another medium besides sand to enhance pollutant removal for many compounds due to the increased cation exchange capacity achieved by increasing the organic matter. These systems require yearly inspection and maintenance to receive pollutant reduction credit.
Filter Strip Runoff Reduction	20%	54%	56%	Urban filter strips are stable areas with vegetated cover on flat or gently sloping land. Runoff entering the filter strip must be in the form of sheet-flow and must enter at a non-erosive rate for the site-specific soil conditions. A 0.4 design ratio of filter strip length to impervious flow length is recommended for runoff reduction urban filter strips.
Filter Strip Stormwater Treatment	0%	0%	22%	Urban filter strips are stable areas with vegetated cover on flat or gently sloping land. Runoff entering the filter strip must be in the form of sheet-flow and must enter at a non-erosive rate for the site-specific soil conditions. A 0.2 design ratio of filter strip length to impervious flow length is recommended for stormwater treatment urban filter strips.
Bioretention – Raingarden (C/D soils w/ underdrain)	25%	45%	55%	An excavated pit backfilled with engineered media, topsoil, mulch, and vegetation. These are planting areas installed in shallow basins in which the storm water runoff is temporarily ponded and then treated by filtering through the bed components, and through biological and biochemical reactions within the soil matrix and around the root zones of the plants. This BMP has an underdrain and is in C or D soil.
Bioretention / Raingarden (A/B soils w/ underdrain)	70%	75%	80%	An excavated pit backfilled with engineered media, topsoil, mulch, and vegetation. These are planting areas installed in shallow basins in which the storm water runoff is temporarily ponded and then treated by filtering through the bed components, and through biological and biochemical reactions within the soil matrix and around the root zones of the plants. This BMP has an underdrain and is in A or B soil.

BMP Name	BMP Effectiveness Values			BMP Description
	TN	TP	Sediment	
Bioretention / Raingarden (A/B soils w/o underdrain)	80%	85%	90%	An excavated pit backfilled with engineered media, topsoil, mulch, and vegetation. These are planting areas installed in shallow basins in which the storm water runoff is temporarily ponded and then treated by filtering through the bed components, and through biological and biochemical reactions within the soil matrix and around the root zones of the plants. This BMP has no underdrain and is in A or B soil.
Vegetated Open Channels (C/D Soils)	10%	10%	50%	Open channels are practices that convey stormwater runoff and provide treatment as the water is conveyed, includes bioswales. Runoff passes through either vegetation in the channel, subsoil matrix, and/or is infiltrated into the underlying soils. This BMP has no underdrain and is in C or D soil.
Vegetated Open Channels (A/B Soils)	45%	45%	70%	Open channels are practices that convey stormwater runoff and provide treatment as the water is conveyed, includes bioswales. Runoff passes through either vegetation in the channel, subsoil matrix, and/or is infiltrated into the underlying soils. This BMP has no underdrain and is in A or B soil.
Bioswale	70%	75%	80%	With a bioswale, the load is reduced because, unlike other open channel designs, there is now treatment through the soil. A bioswale is designed to function as a bioretention area.
Permeable Pavement w/o Sand or Veg. (C/D Soils w/ underdrain)	10%	20%	55%	Pavement or pavers that reduce runoff volume and treat water quality through both infiltration and filtration mechanisms. Water filters through open voids in the pavement surface to a washed gravel subsurface storage reservoir, where it is then slowly infiltrated into the underlying soils or exits via an underdrain. This BMP has an underdrain, no sand or vegetation and is in C or D soil.
Permeable Pavement w/o Sand or Veg. (A/B Soils w/ underdrain)	45%	50%	70%	Pavement or pavers that reduce runoff volume and treat water quality through both infiltration and filtration mechanisms. Water filters through open voids in the pavement surface to a washed gravel subsurface storage reservoir, where it is then slowly infiltrated into the underlying soils or exits via an underdrain. This BMP has an underdrain, no sand or vegetation and is in A or B soil.
Permeable Pavement w/o Sand or Veg. (A/B Soils w/o underdrain)	75%	80%	85%	Pavement or pavers that reduce runoff volume and treat water quality through both infiltration and filtration mechanisms. Water filters through open voids in the pavement surface to a washed gravel subsurface storage reservoir, where it is then slowly infiltrated into the underlying soils or exits via an underdrain. This BMP has no underdrain, no sand or vegetation and is in A or B soil.
Permeable Pavement w/ Sand or Veg. (A/B Soils w/ underdrain)	50%	50%	70%	Pavement or pavers that reduce runoff volume and treat water quality through both infiltration and filtration mechanisms. Water filters through open voids in the pavement surface to a washed gravel subsurface storage reservoir, where it is then slowly infiltrated into the underlying soils or exits via an underdrain. This BMP has an underdrain, has sand and/or vegetation and is in A or B soil.

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BMP Effectiveness Values

BMP Name	BMP Effectiveness Values			BMP Description
	TN	TP	Sediment	
Permeable Pavement w/ Sand or Veg. (A/B Soils w/o underdrain)	80%	80%	85%	Pavement or pavers that reduce runoff volume and treat water quality through both infiltration and filtration mechanisms. Water filters through open voids in the pavement surface to a washed gravel subsurface storage reservoir, where it is then slowly infiltrated into the underlying soils or exits via an underdrain. This BMP has no underdrain, has sand and/or vegetation and is in A or B soil.
Permeable Pavement w/ Sand or Veg. (C/D Soils w/ underdrain)	20%	20%	55%	Pavement or pavers that reduce runoff volume and treat water quality through both infiltration and filtration mechanisms. Water filters through open voids in the pavement surface to a washed gravel subsurface storage reservoir, where it is then slowly infiltrated into the underlying soils or exits via an underdrain. This BMP has an underdrain, has sand and/or vegetation and is in C or D soil.
Stream Restoration	0.075 lbs/ft/yr	0.068 lbs/ft/yr	44.88 lbs/ft/yr	An annual mass nutrient and sediment reduction credit for qualifying stream restoration practices that prevent channel or bank erosion that otherwise would be delivered downstream from an actively enlarging or incising urban stream. Applies to 0 to 3rd order streams that are not tidally influenced. If one of the protocols is cited and pounds are reported, then the mass reduction is received for the protocol.
Forest Buffers	25%	50%	50%	An area of trees at least 35 feet wide on one side of a stream, usually accompanied by trees, shrubs and other vegetation that is adjacent to a body of water. The riparian area is managed to maintain the integrity of stream channels and shorelines, to reduce the impacts of upland sources of pollution by trapping, filtering, and converting sediments, nutrients, and other chemicals. (Note – the values represent pollutant load reductions from stormwater draining through buffers).
Tree Planting	10%	15%	20%	The BMP effectiveness values for tree planting are estimated by DEP. DEP estimates that 100 fully mature trees of mixed species (both deciduous and non-deciduous) provide pollutant load reductions for the equivalent of one acre (i.e., one mature tree = 0.01 acre). The BMP effectiveness values given are based on immature trees (seedlings or saplings); the effectiveness values are expected to increase as the trees mature. To determine the amount of pollutant load reduction that can credited for tree planting efforts: 1) multiply the number of trees planted by 0.01; 2) multiply the acreage determined in step 1 by the pollutant loading rate for the land prior to planting the trees (in lbs/acre/year); and 3) multiply the result of step 2 by the BMP effectiveness values given.
Street Sweeping	3%	3%	9%	Street sweeping must be conducted 25 times annually. Only count those streets that have been swept at least 25 times in a year. The acres associated with all streets that have been swept at least 25 times in a year would be eligible for pollutant reductions consistent with the given BMP effectiveness values.

BMP Name	BMP Effectiveness Values			BMP Description
	TN	TP	Sediment	
Storm Sewer System Solids Removal	0.0027 for sediment, 0.0111 for organic matter	0.0006 for sediment, 0.0012 for organic matter	1 – TN and TP concentrations	This BMP (also referred to as "Storm Drain Cleaning") involves the collection or capture and proper disposal of solid material within the storm system to prevent discharge to surface waters. Examples include catch basins, stormwater inlet filter bags, end of pipe or outlet solids removal systems and related practices. Credit is authorized for this BMP only when proper maintenance practices are observed (i.e., inspection and removal of solids as recommended by the system manufacturer or other available guidelines). The entity using this BMP for pollutant removal credits must demonstrate that they have developed and are implementing a standard operating procedure for tracking the material removed from the sewer system. Locating such BMPs should consider the potential for backups onto roadways or other areas that can produce safety hazards. To determine pollutant reductions for this BMP, these steps must be taken: 1) Measure the weight of solid/organic material collected (lbs). Sum the total weight of material collected for an annual period. Note – do not include refuse, debris and floatables in the determination of total mass collected. 2) Convert the annual wet weight captured into annual dry weight (lbs) by using site-specific measurements (i.e., dry a sample of the wet material to find its weight) or by using default factors of 0.7 (material that is predominantly wet sediment) or 0.2 (material that is predominantly wet organic matter, e.g., leaf litter). 3) Multiply the annual dry weight of material collected by default or site-specific pollutant concentration factors. The default concentrations are shown in the BMP Effectiveness Values columns. Alternatively, the material may be sampled (at least annually) to determine site-specific pollutant concentrations. DEP will allow up to 50% of total pollutant reduction requirements to be met through this BMP. The drainage area treated by this BMP may be no greater than 0.5 acre unless it can be demonstrated that the specific system proposed is capable of treating stormwater from larger drainage areas. For planning purposes, the sediment removal efficiency specified by the manufacturer may be assumed, but no higher than 80%.

APPENDIX 5

POND MAINTENANCE GUIDEBOOK

CRANBERRY
• TOWNSHIP •
built for you

Pond Maintenance

A Guidebook for Private Owners in Cranberry Township



June 2017

Maintaining Your Detention Basin

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Detention Pond Maintenance Responsibility....4

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Cranberry Township Water Basin Checklist.... Appendix B

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Introduction

Detention (Dry) and retention (Wet) basins are a storm water Best Management Practice (BMP) designed to reduce the impacts of pollutants and increased storm water on local streams caused by development. Retention ponds are stormwater basins that include a permanent pool for water quality treatment and additional capacity above the permanent pool for temporary storage. A dry detention basin is an earthen structure that provides temporary storage of runoff and functions hydraulically to attenuate stormwater runoff peaks. The basins are designed to control runoff peak flow rates of discharge for the 1 year through the 100 year events. The Pennsylvania Department of Environmental Protection (PA-DEP) has recently mandated that every municipality inspect all detention and retention ponds annually. Cranberry Township wants to inform the homeowners how to properly maintain your ponds. Your storm water detention and/or retention pond is an essential part of Pennsylvania's efforts to improve the water quality of our streams, rivers, and lakes. But, we need your help to properly maintain the detention ponds so they don't fail prematurely. Once failed, it will no longer perform the way it was designed and may become very costly to replace.



This guidebook is to serve as a practical tool and aid the owner in the inspection and maintenance of the stormwater management facility. The individuals responsible for maintaining the facility may need to engage the services of a licensed professional engineer for additional site specific guidance.

Function of a Detention Pond

During precipitation (Rain, Snow) portions of the water soak into the ground, evaporate or flow over land. When a piece of land is altered to build homes and other developments, the natural system of trees and plants over relatively porous soil is replaced with harder surfaces like sidewalks, streets, decks, roofs, driveways and even lawns of compacted soils. As a result, less rain water is soaked up and more storm water flows off the land at a quicker rate. This can lead to stream bank erosion within the local streams and possible downstream flooding. As more development occurs, storm water runoff contains higher levels of pollutants.

Your detention basin is important because:

- It helps slow the rate of runoff from the neighborhood
- It improves the quality of storm water leaving the detention pond
- It collects and detains storm water; and
- It helps protect local creeks and private property

A detention pond is typically a man-made depression that collects and cleans storm water runoff. The pond collects and traps sediment from storm water that would otherwise clog our rivers and streams, and degrade the environment for fish, birds, and other wildlife.



The establishment of wetland vegetation within your basin as well as the creation of vegetated buffer zones around the basin will help improve water quality by filtering pollutants in storm water. This helps to reduce algae growth within the basin and in downstream rivers and streams. Reducing pollutants that may get to the basins is important in protecting water quality. Excess nutrients, including nitrogen and phosphorus, encourage algae growth. Maintaining your BMP is an important part of Cranberry Township's environmental protection efforts.

Detention Pond Maintenance Responsibility

Responsibility varies throughout the Township, but if your homeowner's association (HOA) or business owns the property where the pond is located and subject to a maintenance agreement, most likely you are the responsible party. If you are unsure, contact the Township.

Detention Pond Maintenance

A consistent maintenance program is the best way to ensure that a detention basin will continue to perform its water quality and flood control functions. The first step in a maintenance program is to obtain a copy of the stormwater facility plans from either the Butler County Courthouse Recorder of Deeds or the Engineering Department within the Township to determine how your basin was designed to function. Second step create an inspection plan that includes:

- General Site Condition
  - Monthly Inspection Frequency
  - Scope of Inspection
    - Trash and debris
    - Animals burrows
    - Vandalism
    - Dry Basins: If significant amount water remains in the basin longer than 3 days after a rain event, further investigation maybe required to inspect for blockage of outlet structure.

- Structural Condition
  - Annual Inspection Frequency and after 2-inch of rain under a 24 hour rain event
  - Scope of Inspection
    - Obstruction of outlet structure, spillway, pipes, and endwall
    - Outlet stabilization

- Earthwork
  - Annual Inspection
  - Scope of Inspection
    - Buffer Vegetation (Maintain 85% Cover, Weeding, Replanting)
    - Protrusion (Tree Growing in Embankment)
    - Landscaping (Trimming, Remove Unwanted Growth)

- Embankment and outlet stabilization
    - Annual Inspection
    - Scope of Inspection
        - Ground Sinking
        - Tension Cracks / Earth Material Pulling Apart
        - Ground Movement (Slow Creep)

- Reviews by a licensed professional engineer, if erosion or structural problem is observed)
    - On an As Needed Basis

- Reporting and Record Keeping
    - Annual Submittal
    - Complete checklist located in appendix "B" and submit to Township.
    - Report all inspection findings and maintenance activities.
    - Report any emergency maintenance required during the year.

The Township recommends pictures and/or videos be taken during the inspections and maintenance repairs. These images can assist with future comparisons of any changes with the stormwater facility. If the HOA members or facility owners may change over time, these images will provide valuable a record of what maintenance repairs have been performed. It is crucial to keep records of all your inspections, maintenance activities, repairs, and associated costs. A checklist is provided in Appendix "B" of this Guidebook for your use and assistance for documentation. Before starting any maintenance activities, check with the Township Engineering Department to determine, what, if any, approvals or permits may be necessary.



Long Term Maintenance

The regular inspection can be performed by visual observation of problem with the facility. Over time the sediment will eventually accumulate in the facility. The maintenance plan will need to also include the long term changes with the facility. The use the original design plans will enable the owner to determine how much sediment has settled into the facility over time. As a rule of thumb, detention ponds may need to be dredged every 10 to 15 years to restore the facility back to the original pond elevation. Pond dredging requires a permit from the Butler County Conservation District if the pond is 1 acre or larger.

When performing the dredging maintenance, care should be taken with the equipment accessing the site to minimize the excessive compaction which will result in the damage to underdrain system and reduce the infiltration.

Pond Enhancement

In addition to the inspection and maintenance the Township recommends the owner consider establishing activities to enhance the detention basin and minimize long-term maintenance. Example of these activities are described below:

- Do not use pesticides, herbicides, or fertilizers in your pond
- Do not place yard waste such as leaves, grass clippings, or brush in or near the detention pond or in the storm water inlets located on the roadways
- Do not dump or allow any materials, such as motor oil, into the storm sewer system
    - Yard waste releases excess nutrients as they decompose and will adversely affect the pond operation and may clog or reduce the capacity
- Pick up and dispose of pet waste with your weekly garbage
- Provide educational updates to property owners. Discuss maintenance plans at HOA meetings and relay information to our neighbors

Appendix "A"

Detention Pond Inspection Guidelines



Appendix "A"
DETENTION POND
INSPECTION GUIDELINES

CRANBERRY TOWNSHIP
built for you

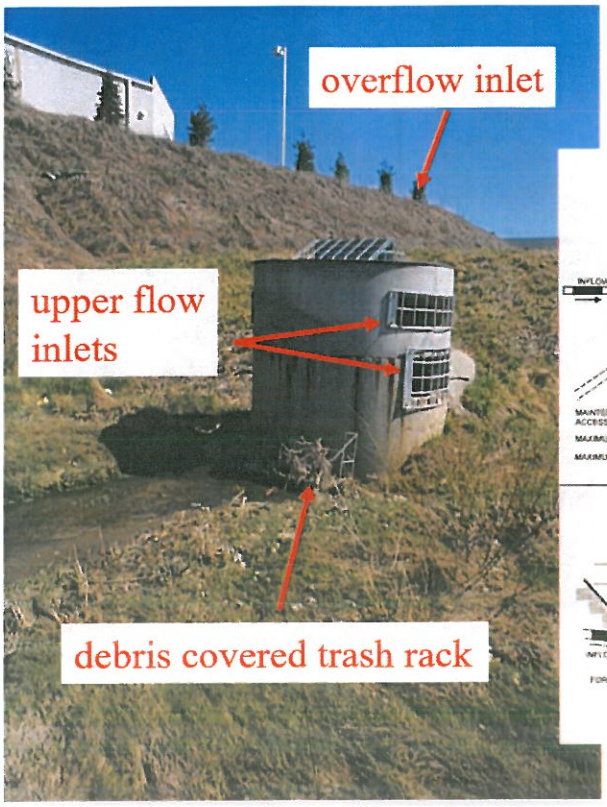
JUNE 2017

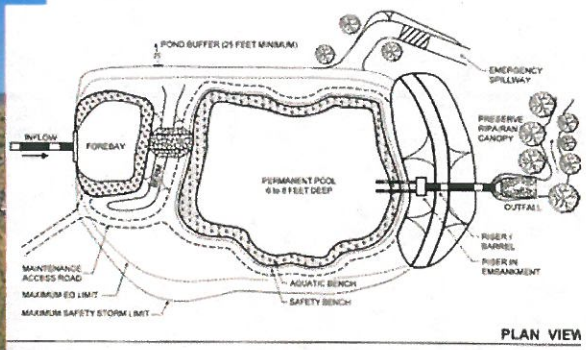
Detention Basin

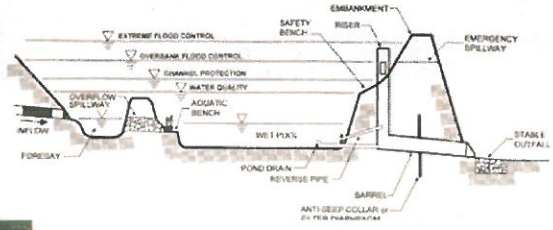
Maintenance should be performed as per PA Stormwater BMP Manual

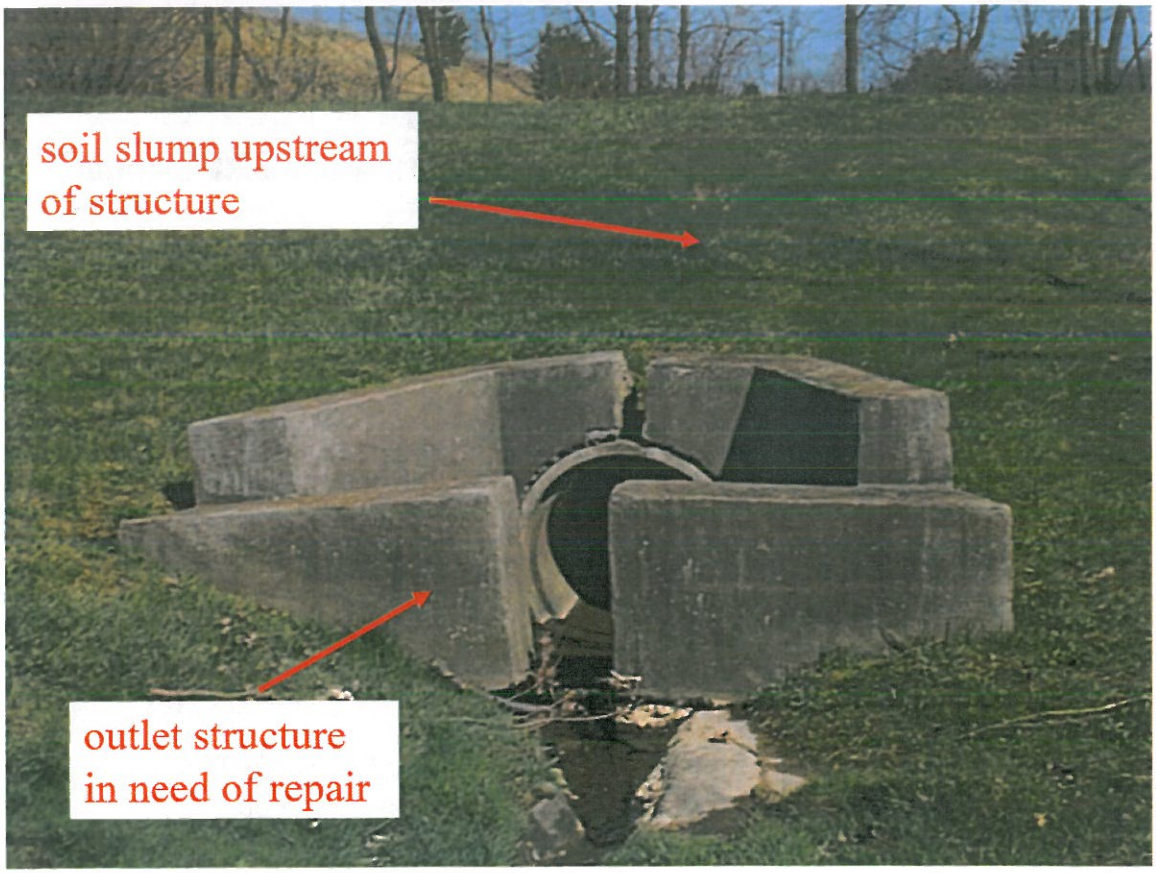
Maintenance reports should be provided Annually to the Township and includes the following measures:

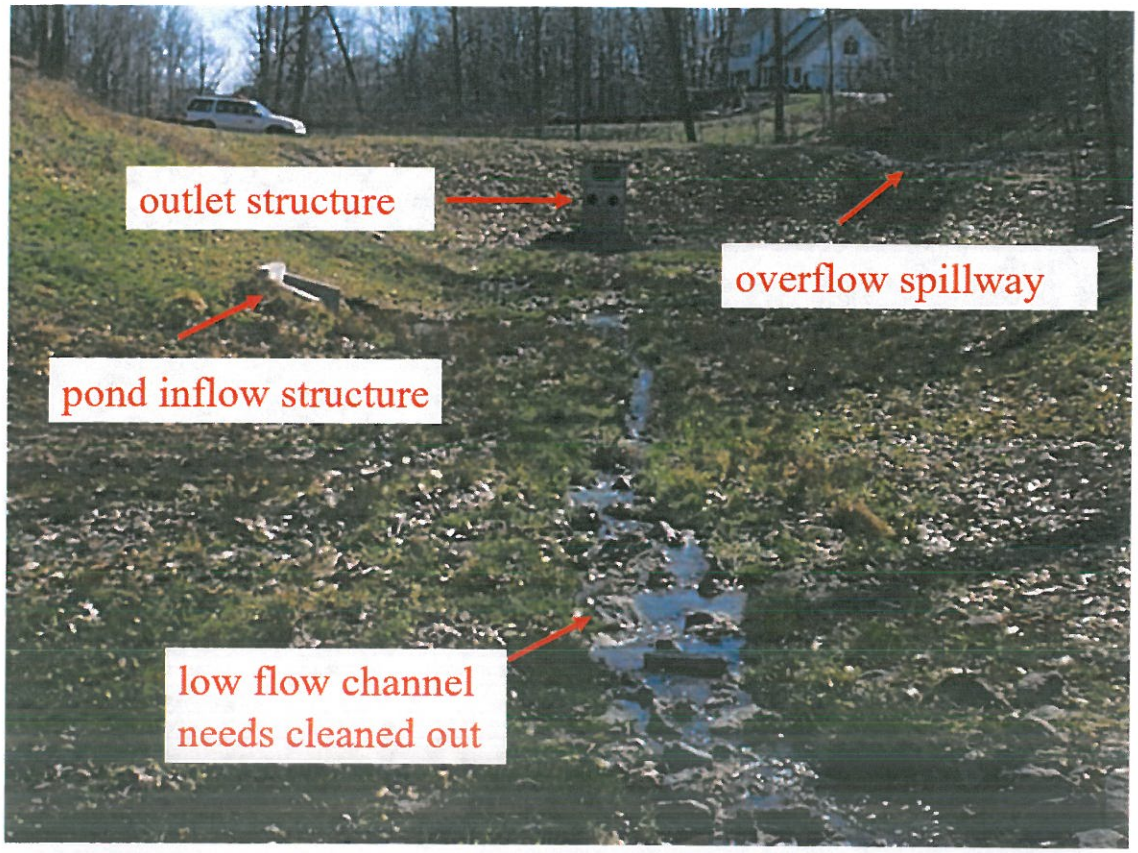
- All basin structures expected to receive and/ or trap debris and sediment should be inspected for clogging and excessive debris and sediment accumulation once per year, as well as after every storm greater than 2 inch.
- Sediment removal should be conducted when the basin is completely dry.
- Sediment should be disposed of properly and once sediment is removed, disturbed areas need to be immediately stabilized and revegetated.
- Mowing and/or trimming of vegetation should be performed as necessary to sustain the system, but all detritus should be removed from the basin.
- Vegetated areas should be inspected annually for erosion.
- Vegetated areas should be inspected annually for unwanted growth of exotic/invasive species.
- Vegetative cover should be maintained at a minimum of 85 percent. If vegetative cover has been reduced by 10%, vegetation should be reestablished.

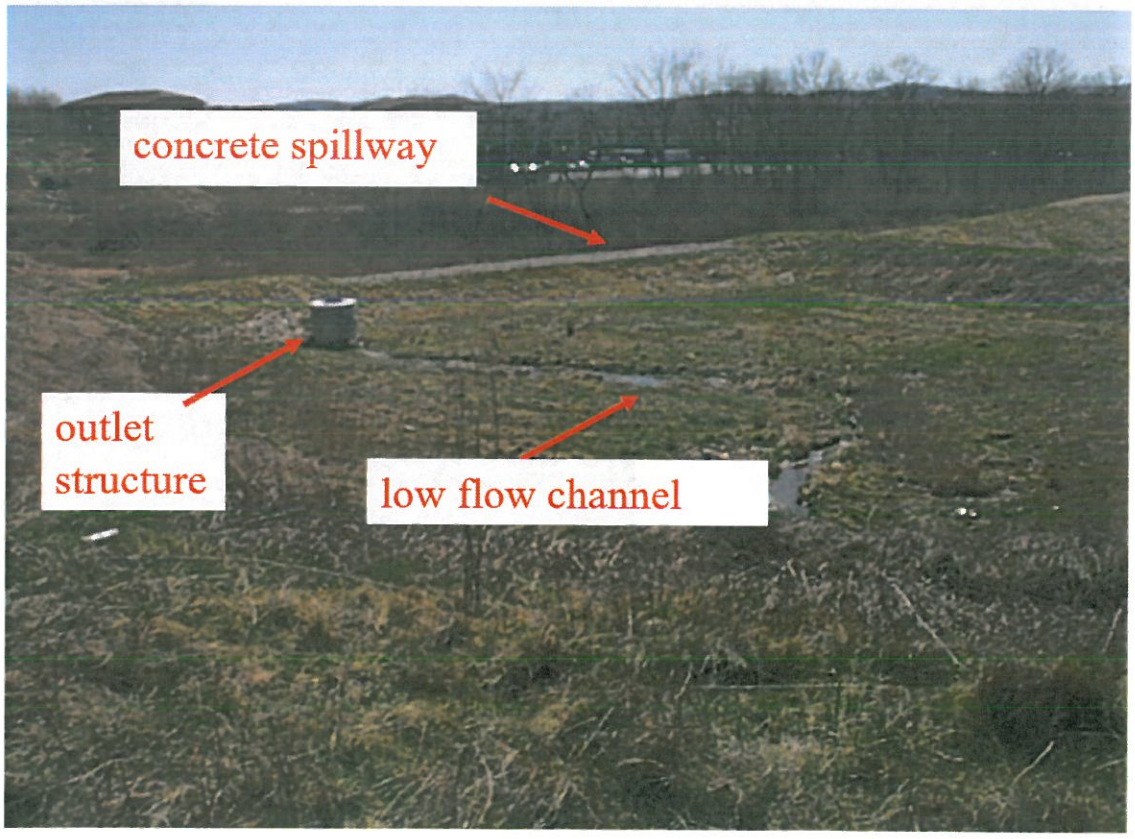

overflow inlet
upper flow inlets
debris covered trash rack


POND BUFFER (25 FEET MINIMUM)
EMERGENCY SPILLWAY
PRESERVE RIPA/RAN CANOPY
INFLOW
FOREBAY
PERMANENT POOL
6 to 8 FEET DEEP
OUTFALL
RISER / BARREL
RISER IN EMBANKMENT
MAINTENANCE ACCESS ROAD
MAXIMUM EQ LIMIT
MAXIMUM SAFETY STORM LIMIT
AQUATIC BENCH
SAFETY BENCH
PLAN VIEW

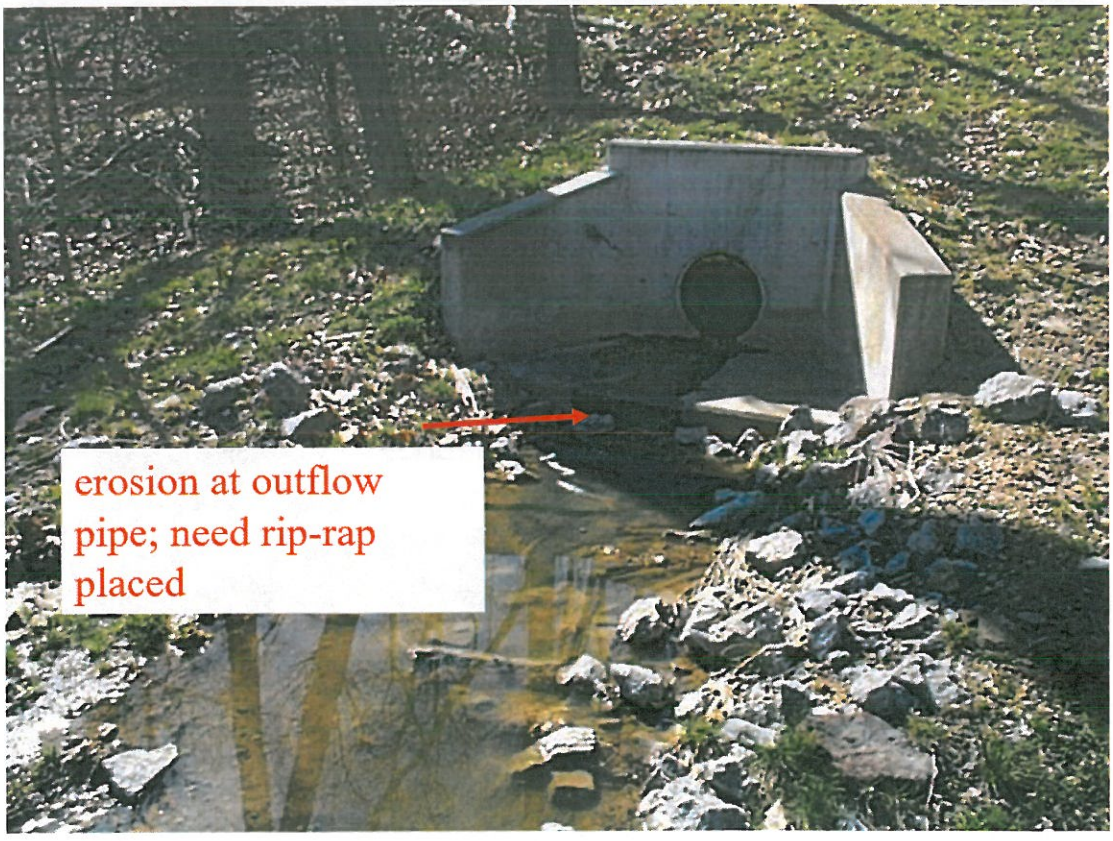

EMBANKMENT
SAFETY BENCH
RISER
EMERGENCY SPILLWAY
EXTREME FLOOD CONTROL
OVERBANK FLOOD CONTROL
CHANNEL PROTECTION
WATER QUALITY
OVERFLOW SPILLWAY
AQUATIC BENCH
INFLOW
WET POOL
FOREBAY
STABLE OUTFALL
POND DRAIN
REVERSE PIPE
BARREL


soil slump upstream of structure
outlet structure in need of repair


outlet structure
overflow spillway
pond inflow structure
low flow channel
needs cleaned out


concrete spillway
outlet
structure
low flow channel


pipe 75% full of sediment


erosion at outflow
pipe; need rip-rap
placed


rip-rap lined low flow channel


overflow inlet
low flow channel that needs cleaned

Appendix "B"

Inspection and Maintenance Checklist

Cranberry Township Water Basin Checklist

Date:_____ Pond Type: _____

Inspector:_____ Phone # _____

Pond Location :_____

Rating system based on visual inspection

Rating System:

Good – No Structural Deficiencies (No further action required during inspection)
Fair – Low Risk Structural Deficiencies (No immediate action required at this time)
Poor – High Risk Structural Deficiencies (Further action required)

A. Storm Outlet Structure Inspection	Good	Fair	Poor
1. Structural Condition (Concrete Deteriorating, Metal Frame Damaged)	____	____	____
2. Stability (Ground Settling, Structure Sinking, etc.)	____	____	____
3. Volume Capacity (Sediment Buildup, Debris, Obstructions, etc.)	____	____	____
4. Protrusions (Roots, Rebar, etc.)	____	____	____
5. Other:_____	____	____	____

Additional Comments:_____

B. Earth Pond Inspection	Good	Fair	Poor
1. Stabillity (Ground Settling, Slope Slide, Burrows in Embankment, etc.)	____	____	____
2. Protrusions (Tree Growing in Embankment, etc.)	____	____	____
3. Buffer Vegetation (Watering, Weeding, Mulching, Replanting)	____	____	____
4. Erosion (Maintain 85% Cover Emergent Vegetation Zone)	____	____	____
5. Landscaping (Trimming and/or Mowing to Remove Unwanted Growth)	____	____	____
6. Spillway (Overflow Unobstructed, Section of Embankment Stabilized)	____	____	____
7. Inlet Pipes (Unobstructed, Erosion Control Functioning)	____	____	____
8. Endwall (Structural, Stable, Attached to Pipe)	____	____	____
9. Other:_____	____	____	____

Additional Comments:_____

Annual inspection report should be sent to Tim Schutzman: email Tim.Schutzman@caranberry township.org or 2525 Rochester Road, Suite 400, Cranberry Township, PA 16066.

References

- Pennsylvania Department of Environmental Protection, Pennsylvaina Stormwater Best Management Practieces Manual December 2006.

- Public Involvement and Education Committee of the Assembly of Rouge Communities, Maintaining Your Detention Basin.

- Van Cleef Engineering Associates, Detention Basin Inspection and Maintenance Guidelines, September 16, 2016

APPENDIX 6

BMP RESPONSIBLE PARTY LIST

CRANBERRY TOWNSHIP
built for you

Municipal Stormshed (MS3) - Detention Basin Owners (7/3/2017)

OBJECTID	Basin Area (SF)	MS3 Basin	Year Built	Owner
1	22356	1b	1/1/2004	CRANBERRY HEIGHTS HOMEOWNERS ASSOCIATION
2	18290	3b	1/1/1995	CRANBERRY HEIGHTS HOMEOWNERS ASSOCIATION
3	6035	8b	after 2003	2098 HOLDING CO LLC
7	27472		after 2003	ASSESSED IN JACKSON TWP
11	21913	26b	1/1/1997	OAKVIEW HEIGHTS DEVELOPMENT COMPANY
15	8836	25b	1/1/1991	PINEHURST HOMEOWNERS ASSN
16	9565	23b	1/1/1997	OAKVIEW HEIGHTS DEVELOPMENT COMPANY
22	54895		after 2003	VICTORY CHRISTIAN FELLOWSHIP N PGH
35	26248	95	1/1/2003	BRIAR CREEK HOMEOWNERS ASSN INC
49	13628	222c	after 2003	AMERICAN TRANSMISSION SYSTEMS INC
58	11057	58b	1/1/2003	SHADOW CREEK HOMEOWNERS ASSOCIATION
62	24768	52c	1/1/2002	FRANKLIN RIDGE HOME OWNERS ASSN
68	377	405c	after 2003	SPK REALTY ASSOC LP
69	550	226j	before 2003	KEITH FRIES
154	46028	211b	before 2003	NORTH SUBURBAN LAND COMPANY
158	35132	174b	before 2003	BETTY J THOMSON
163	23733		before 2003	PennDOT
228	1974		before 2003	BARTON B WILLIAMS
245	16755	26c	before 2003	RICHARD FLEMING & LINDA FLEMING
249	278158		1/1/2004	HAMILTON HEIGHTS DEVELOPMENT COMPANY INC
285	1470	226e	before 2003	JAMES E ROTH
304	4826	160b	1/1/1992	STEPHEN S WEST TRS & JAMES A WEST
6	41521	8a	after 2003	VICTORY CHRISTIAN FELLOWSHIP N PGH
5	55118	8a	after 2003	VICTORY CHRISTIAN FELLOWSHIP N PGH
4	18514	8c	after 2003	VICTORY CHRISTIAN FELLOWSHIP N PGH
21	10311	8e	after 2003	Victory Christian Fellowship N PGH
311	3180		before 2003	SENECA VALLEY SCHOOL DISTRICT
12	21837	21b	1/1/1997	OAKVIEW HEIGHTS DEVELOPMENT COMPANY
32	24350		1/1/2007	WAKEFIELD ESTS PLANNED COMMUNITY HOMEOWNERS ASSN INC
31	29856		1/1/2007	WAKEFIELD ESTS PLANNED COMMUNITY HOMEOWNERS ASSN INC
29	7592		1/1/1995	CRANBERRY HEIGHTS HOMEOWNERS ASSOCIATION
28	6232		1/1/1994	C/O DAVID R EKEY KINGSBROOK HOMEOWNERS ASSOCIATION
30	10098	2b	1/1/1995	CRANBERRY HEIGHTS HOMEOWNERS ASSOCIATION
26	24143	361b	1/1/1995	CRANBERRY HEIGHTS HOMEOWNERS ASSOCIATION
80	22867		after 2003	BUTLER COUNTY FAMILY YMCA
17	34450	43	1/1/2007	MYSTIC RIDGE HOMEOWNERS ASSN LLC
18	11885	18	1/1/2007	MYSTIC RIDGE HOMEOWNERS ASSN INC
9	41874		1/1/1998	EHRMAN FARMS HOMEOWNERS ASSOCIATION INC
247	19556		1/1/1984	RUTH A HELWIG & MICHAEL W HELWIG
13	19911	20b	1/1/1998	EHRMAN FARMS HOMEOWNERS ASSOCIATION INC
20	23881		1/1/2003	FOXMOOR HOMEOWNERS ASSOCIATION INC
19	34209		1/1/2003	FOXMOOR HOMEOWNERS ASSOCIATION INC
25	29948	5b	1/1/1995	CRANBERRY HEIGHTS HOMEOWNERS ASSOCIATION
34	13507		1/1/2003	BRIAR CREEK HOMEOWNERS ASSN INC
38	18945	98	1/1/1989	WOODBINE ESTATE HOMEOWNERS ASSOCIATION INC
39	38956	100	1/1/1989	WOODBINE ESTATE HOMEOWNERS ASSOCIATION INC
37	16387	349b	1/1/1989	WOODBINE ESTATE HOMEOWNERS ASSOCIATION INC
36	39538	104	1/1/1992	C/O FAGAN ENTERPRISE DEV INC
42	7289	85	1/1/2002	HOMEOWNERS ASSOCIATION OF CEDARBROOK INC
44	7572	117b	1/1/1987	GLENBROOK MANOR HOMES INC
248	26923	79b	1/1/1994	C/O DAVID R EKEY KINGSBROOK HOMEOWNERS ASSOCIATION
48	46777	222e	1/1/2002	MARSHALL WOODS COMMUNITY ASSOCIATION
50	5614	222b	before 2003	HGH HOLDINGS LLC
72	3696		after 2003	BONIDIE INVESTMENTS LLC

OBJECTID	Basin Area (SF)	MS3 Basin	Year Built	Owner
41	22328	84a	1/1/2002	HOMEOWNERS ASSOCIATION OF CEDARBROOK INC
33	68326		before 2003	CRANBERRY TOWNSHIP
24	26057		1/1/1995	CRANBERRY HEIGHTS HOMEOWNERS ASSOCIATION
47	6499		before 2003	20932 ROUTE 19 ASSOCIATES
71	3016		before 2003	WILLIAM JACK HOMES INC
290	4117	224b	after 2003	YOTT PROPERTIES LLC
67	3969	405d	before 2003	GRACE COMMUNITY CHURCH
70	3113	405b	before 2003	KIMBERLY L REUSS & BRIAN REUSS
260	5146	226h	after 2003	UNITED STATES OF AMERICA
259	3573	226g	before 2003	DITCH WITCH INTERNATIONAL INC
258	5987	226f	before 2003	CUE INC
109	6381	226d	before 2003	THROWER JOHN W INC
129	7638	226c	before 2003	GA INDUSTRIES INC
130	11356	226b	before 2003	SWEENEY FAMILY PROPERTIES LP
131	2770		after 2003	MARSHALL CROSSINGS LP
92	1944	164b	before 2003	ALCOA COMMERCIAL WINDOWS LLC
93	9211	164c	before 2003	100 CRANBERRY PARK LLC
94	17880	166b	after 2003	CRANBERRY BUS PARK ASSOC II LP
95	15561	407e	before 2003	AVG-COVENTRY LLC
88	20419	407d	before 2003	BEKINS HILLSIDE VENTURE LP
96	6906	407b	after 2003	SCHWANS HOME SERVICE INC
87	31859	407c	before 2003	BEKINS HILLSIDE VENTURE LP
73	29528	169	1/1/1993	WINCHESTER FARMS
90	10021		before 2003	C N C LLC
100	3621		before 2003	AROD HOLDINGS LLC
101	3338	221b	before 2003	CRANBERRY TOWNSHIP
102	4750	221b	before 2003	CRANBERRY TOWNSHIP
63	60796		before 2003	CRANBERRY TOWNSHIP
64	23722	50b	before 2003	CRANBERRY TOWNSHIP
52	11648	49b	before 2003	CRANBERRY TOWNSHIP
66	9717		before 2003	GRACE COMMUNITY CHURCH
89	8082	219g	before 2003	CRANBERRY TOWNSHIP
284	17468	219f	before 2003	CRANBERRY TOWNSHIP
244	8884		1/1/1989	Murray Family Partnershipp LLC
10	9825	366b	1/1/1998	EHRMAN FARMS HOMEOWNERS ASSOCIATION INC
312	6837		before 2003	108 Plunket Road LP
59	23364	55b	1/1/2002	FRANKLIN RIDGE HOME OWNERS ASSN
61	13723	52b	1/1/2002	FRANKLIN RIDGE HOME OWNERS ASSN
60	15150	48	1/1/2002	FRANKLIN RIDGE HOME OWNERS ASSN & TRIANGLE DEVELOPMENT COMPANY
57	72649		1/1/2003	SHADOW CREEK HOMEOWNERS ASSOCIATION
51	32969		1/1/2008	MARSHALL HEIGHTS HOMEOWNERS ASSOC
14	35955		1/1/1991	PINEHURST HOMEOWNERS ASSN
55	12881	33	1/1/1991	JOANNA MONTELEONE & JAMES R MONTELEONE JR
54	12758		1/1/1991	CHRISTOPHER T RILEY & AMY L RILEY
65	34862	234b	1/1/2002	C/O LBHB ASSOCIATES DORSAY ASSOCIATES
103	28480		1/1/2002	PRESERVE HOMEOWNERS ASSN
291	15711		after 2003	UNITED STATES OF AMERICA
104	1896		before 2003	STORE MASTER FUNDING V LLC
105	20252		before 2003	WARREN MERCER & DONALD INSLEY
110	9950		before 2003	TALAAT PROPERTIES LLC
106	4085		before 2003	VANEGAS PROPERTIES INC
111	11857		before 2003	HTM ASSOCIATES
132	16765		before 2003	TIMOTHY N ODONNELL & SALLY MARTIN & KEVIN ODONNELL
133	10943		before 2003	JACK C GLOVER & EILEEN M GLOVER
107	2145		before 2003	ELIZABETH RECTENWALD & ARTHUR RECTENWALD
108	2278	228b	before 2003	MICHEL REAL ESTATE
121	10457		1/1/2007	REDMOND PLACE HOMEOWNERS ASSOC
313	4742		after 2003	ABRAMOVIC HOLDINGS L L C
122	3706		after 2003	ABRAMOVIC HOLDINGS L L C
134	5795		before 2003	SENECA VALLEY SCHOOL DISTRICT
267	4411	252a	1/1/1973	CELESTE R PONTERI
301	2293		after 2003	CRANBERRY PARK ASSOCIATES

OBJECTID	Basin Area (SF)	MS3 Basin	Year Built	Owner
266	45677		1/1/1978	DENNIS R LANE & BARBARA V LANE
120	19019	253b	1/1/1978	TIMBERLINE PLAN 3
112	11677	250	1/1/1993	SCENIC RIDGE HOMEOWNERS ASSOC
113	45617	58c	1/1/2002	WINDWOOD HEIGHTS HOME OWNERS ASSN
261	208703		1/1/2005	Viola Rocco Jr and Patricia
118	2719	253f	before 2003	LOIS R TAGGART FAMILY TRUST & ROBERT E TAGGART FAMILY TRUST
119	1595	253e	before 2003	BEAVER BUTLER PRESBYTERY
117	20540	253d	1/1/1978	TIMBERLINE PLAN 3
265	12404	253c	1/1/1978	BARRY HIXSON
114	43260		1/1/2003	DOUGLAS R MATTHEWS & KIMBERLY D MATTHEWS
262	245002	359	1/1/1991	C/O WAYNE FOLEY LAKEVUE HOMEOWNERS ASSOCIATION
115	23120	261	1/1/1993	CRYSTAL SPRINGS HOMEOWNERS ASSOCIATION
264	34090	260b	1/1/2003	WALDEN POND HOMEOWNERS ASSN INC
263	101559	260b	1/1/2003	WALDEN POND HOMEOWNERS ASSN INC
116	18189		1/1/1993	CRYSTAL SPRINGS HOMEOWNERS ASSOCIATION
169	12229	342	1/1/1988	ST LEONARDS WOODS HOMEOWNERS ASSOCIATION
168	35712	343	1/1/2001	HAZELWOOD FARMS HOMEOWNERS ASSOCIATION INC
56	60080	34	1/1/2002	BRISTOL CREEK HOMEOWNERS ASSOCIATION
53	21573	45	1/1/1991	PINEHURST HOMEOWNERS ASSN
280	22480		1/1/1991	PINEHURST HOMEOWNERS ASSN
46	55829		before 2003	BUTLER AUTO AUCTION
251	20813	69c	1/1/1998	ANTLER RIDGE HOMEOWNERS ASSOC
99	13976	148c	after 2003	BARKLEY ENTERPRISES LLC
98	32372	151c	after 2003	CBP 250 LP
86	12260		before 2003	CORTOM LLC
85	23367	148b	after 2003	CBP 220 LP
314	12136	168b	after 2003	CBP 300 LP
83	46739	168b	after 2003	CBP 300 LP
315	9864	168b	after 2003	CBP 300 LP
256	89027	141	1/1/1997	WINCHESTER LAKES PLANNED COMMUNITY
255	95725		1/1/1997	WINCHESTER LAKES PLANNED COMMUNITY
82	15317	146b	1/1/1997	WINCHESTER LAKES PLANNED COMMUNITY
23	48323	68	1/1/1992	SETTLERS GROVE HOMEOWNERS ASSN
40	35070		1/1/2008	SPRINGFIELD MANOR HOMEOWNERS ASSOCIATION
43	33524	72	1/1/1987	GLENBROOK MANOR HOMES INC
286	18729		1/1/2009	CHATHAM COMMONS AT CRANBERRY LP
297	114431		1/1/2009	PARK PLACE MARKETING LLC
139	35965		1/1/2009	BELLEVUE PARK PARTNERS LP
143	12536	153	1/1/2009	BELLEVUE PARK PARTNERS LP
316	19037		1/1/2009	BELLEVUE PARK PARTNERS LP
144	32492	154b	1/1/2009	BELLEVUE PARK PARTNERS LP
145	25940	155b	1/1/2009	BELLEVUE PARK PARTNERS LP
140	13223	152b	1/1/2009	BELLEVUE PARK MASTER ASSN
148	19112	195b	after 2003	CHURCH OF JESUS CHRIST OF LATTER DAY SAINTS
81	40283	120b	1/1/1994	HUNTERS CREEK HOMEOWNERS ASSOC
79	58566		1/1/1994	AVERYS FIELD HOMEOWNERS ASSOCIATION
78	16501	126b	1/1/1994	AVERYS FIELD HOMEOWNERS ASSOCIATION
76	23312	124b	1/1/1992	HAVENWOOD HOMEOWNERS ASSOCIATION
250	25217	84b	1/1/1994	C/O DAVID R EKEY KINGSBROOK HOMEOWNERS ASSOCIATION
27	23400	74b	1/1/1994	C/O DAVID R EKEY KINGSBROOK HOMEOWNERS ASSOCIATION
45	20283	69b	1/1/1992	SETTLERS GROVE HOMEOWNERS ASSN
252	124822	227a	1/1/1981	C/O ACRI COMMERCIAL REALTY CO GLEN EDEN HOMES ASSOCIATION INC
253	10653	118	1/1/1981	C/O ACRI COMMERCIAL REALTY CO GLEN EDEN HOMES ASSOCIATION INC
75	24857	115c	1/1/1993	WINCHESTER FARMS
74	43896	116b	1/1/1993	WINCHESTER FARMS
254	8364		before 2003	MATTHEW, PETER, LINDA LUXTON
77	25540		1/1/1988	C/O PATRICK GAVAGHAN HIGHLAND VILLAGE OWNERS ASSOCIATION
150	36197	133	1/1/1988	HIGHLAND VILLAGE OWNERS ASSOCIATION C/O PATRICK GAVAGHAN
317	1719		1/1/2009	CHATHAM COMMONS AT CRANBERRY LP
147	35064	382b	1/1/2009	PARK PLACE CRANBERRY ASSOCIATION INC
272	27426	158	1/1/1986	CRANBERRY CROSSINGS HOMEOWNERS ASSOCIATION
136	11626		before 2003	ALCOA COMMERCIAL WINDOWS LLC

OBJECTID	Basin Area (SF)	MS3 Basin	Year Built	Owner
137	6728		before 2003	THOMAS J MARX
138	16906		1/1/1994	PITTSBURGH LIFETIME CARE COMMUNITY
276	18654	151b	1/1/1994	PITTSBURGH LIFETIME CARE COMMUNITY
270	164887	407a	1/1/1994	PITTSBURGH LIFETIME CARE COMMUNITY
269	23295	407a	1/1/1994	PITTSBURGH LIFETIME CARE COMMUNITY
300	4727	407a	1/1/1994	PITTSBURGH LIFETIME CARE COMMUNITY
8	3597		before 2003	PF COOK LP
318	22554	96b	1/1/1995	CRANBERRY HEIGHTS HOMEOWNERS ASSOCIATION
277	10265		1/1/1994	PITTSBURGH LIFETIME CARE COMMUNITY
97	8102	407a	before 2003	CORTOM LLC
128	1502		before 2003	TETONS LP
127	3395		before 2003	MGD PROPERTY HOLDINGS LLC
126	2690		before 2003	ENE LLC
310	2261		before 2003	JSWB HOLDINGS LLC
309	2656	220b	before 2003	PATRICK J BOYLAN
124	6154		after 2003	GIGLIOTTI HOLDINGS
287	8227	193b	1/1/1986	CRANBERRY CROSSINGS HOMEOWNERS ASSOCIATION
151	25358	193b	before 2003	VIRGINIA MAJEWSKI
153	7158		1/1/1996	KIMBERWICKE HOMEOWNERS ASSOCIATION INC
142	12779	159b	after 2003	BELLEVUE PARK COMMONS LP
141	39077	152d	after 2003	BELLEVUE PARK PARTNERS LP
146	17582	152f	before 2003	BARBARA M STRAESSLEY & FREDERICK J STRAESSLEY
152	24500		1/1/1979	CREEKWOOD COMMONS COMMUNITY SERV ASSOCIATION INC
279	3358	152e	before 2003	ALL SAINTS ANGLICAN CHURCH
159	30919	174c	after 2003	ST FERDINAND CHURCH
135	11442	174d	before 2003	ST FERDINAND CHURCH
157	15540	214b	after 2003	CRANBERRY TOWNSHIP
288	1868		before 2003	KEITH R CARO
160	8011		before 2003	PARK WEST ASSOCIATES
155	29494	212b	before 2003	COSTCO WHOLESALE CORPORATION
162	46991		before 2003	SMAIL FAMILY LTD PTNRSHIP
161	7671		after 2003	WILLIAM C CHRISTIE
164	73420	215b	after 2003	INLAND AMERICAN CRANBERRY SPECIALTY LP
165	3948	217d	before 2003	CONDO PARCEL
271	26603	163	1/1/1992	STEPHEN S WEST TRS & JAMES A WEST
282	38429	252b	before 2003	JOHN E FRANCIS & DOROTHY M FRANCIS
170	15532	252c	1/1/1988	JONATHAN J UNICO
167	11992		1/1/1994	SPRING MEADOWS HOMEOWNERS ASSOCINC
166	27219	341b	1/1/1994	SPRING MEADOWS HOMEOWNERS ASSOCINC
174	17851	334d	1/1/1994	SPRING MEADOWS HOMEOWNERS ASSOCINC
180	14393	340	1/1/2002	GRANDSHIRE HOMEOWNERS ASSOCIATION INC
212	39491	196c	1/1/2009	ORCHARD PARK HOMEOWNERS ASSN
211	12952		1/1/2009	ORCHARD PARK HOMEOWNERS ASSN
149	26552	196b	1/1/2009	ORCHARD PARK HOMEOWNERS ASSN
278	106220	191b	1/1/1975	ANDREW SASSAMAN & KELLY SASSAMAN
207	10881	191c	1/1/1986	FREEDOM WOODS HOMEOWNERS
208	46242	344b	1/1/1986	FREEDOM WOODS HOMEOWNERS
213	100336	303b	1/1/1989	BLUE RIDGE ESTATES
210	17442	204e	1/1/2004	GEORGETOWN SQUARE HOMEOWNERS ASSOCIATION
209	4612	302	before 2003	THREE TREES MINISTRIES
201	9771	204d	1/1/1993	MARCLIFF BEAR CREEK CRANBERRY POINTE TOWNHOMES LLC
200	8068		1/1/1973	JBR DEVELOPMENT COMPANY INC
274	31378	275g	after 2003	HAINE FREEDOM RETAIL ASSOCIATES
206	43087	275f	before 2003	IRON MOUNTAIN INFORMATION MANAGEMENT LLC
202	9464	282d	1/1/1993	MARCLIFF BEAR CREEK CRANBERRY POINTE TOWNHOMES LLC
299	879		before 2003	FATBOY DEVELOPMENT LLC
203	1595	282c	before 2003	KEITH R CARO
273	3607	274b	before 2003	USX FEDERAL CREDIT UNION
302	2607		before 2003	ALLEGHENY PLASTICS INC
195	18310	275d	before 2003	39TH ST COMMONS LLC
319	11662		before 2003	MAJICK PARTNERS
197	7845	262	1/1/1985	CLEARBROOK COMMUNITY SERVICE ASSOCIATION

OBJECTID	Basin Area (SF)	MS3 Basin	Year Built	Owner
303	1431	275c	before 2003	COMMONWEALTH OF PA
196	30177		1/1/1985	CLEARBROOK COMMUNITY SERVICE ASSOCIATION
220	950	297b	1/1/1973	MARQUIS DEVELOPMENT LP
221	13459	277b	1/1/2003	ROLLING ROAD REGENCY L L P
320	10693	277b	1/1/2003	ROLLING ROAD REGENCY L L P
223	25854		after 2003	XTO ENERGY INC
321	9951		after 2003	XTO ENERGY INC
222	11514	321b	before 2003	ASSOCIATION FOR IRON & STEEL TECHNOLOGY
230	25827		before 2003	WESCO
199	34446	204c	1/1/1970	UMH PA CRANBERRY VILLAGE LLC
198	13089		1/1/1985	CLEARBROOK COMMUNITY SERVICE ASSOCIATION
217	27855	315	1/1/1992	AUTUMN HILL HOMEOWNERS ASSOCIATION
215	38741	395b	1/1/1992	AUTUMN HILL HOMEOWNERS ASSOCIATION
214	53204	396b	1/1/1992	AUTUMN HILL HOMEOWNERS ASSOCIATION
216	25248	319b	1/1/1992	AUTUMN HILL HOMEOWNERS ASSOCIATION
218	20798	317	1/1/1993	HAMPSHIRE WOODS INC HOMEOWNERS ASSOCIATION
219	28412		1/1/1993	HAMPSHIRE WOODS INC HOMEOWNERS ASSOCIATION
231	21902		before 2003	FFIII PA WARRENDALE LLC
229	26569		before 2003	UPMC
227	42911	328c	before 2003	UPMC
237	4028		before 2003	BW RRI II LLC
232	37586	320	before 2003	NORTHWESTERN MUTUAL LIFEINSURANCE COMPANY
226	52691		before 2003	NORTHWESTERN MUTUAL LIFEINSURANCE COMPANY
225	6121	322a	before 2003	BLUE HOLE L P
322	5152		after 2003	PENNWOOD COMMONS II LLC
323	2442		after 2003	PENNWOOD COMMONS II LLC
295	5110		after 2003	PENNWOOD COMMONS II LLC
224	33740		after 2003	PENNWOOD COMMONS II LLC
294	996		before 2003	LIBBY COMMONWEALTH ASSOCIATES LP
293	4404		before 2003	QSL RE LLC
189	28009	324b	before 2003	AHIP PA CRANBERRY PROPERTIES LP
186	97929	325b	before 2003	GUMBERG ASSOCIATES
233	10747	356c	before 2003	DUTILH METHODIST CHURCH
305	4511		before 2003	DUTILH METHODIST CHURCH
306	3363	356b	before 2003	DUTILH METHODIST CHURCH
236	3241	333c	1/1/1985	CONDO PARCEL
296	80665		after 2003	ROMAN CATHOLIC DIOCESE OF PGH
171	13196		after 2003	ROMAN CATHOLIC DIOCESE OF PGH
172	40485		before 2003	MAUREEN B GRABENSTEIN & CHARLES W GRABENSTEIN
175	53514		after 2003	KNOCKOUT DEVELOPMENT ASSOCIATES
324	5125		1/1/2011	VC WOODS ASSOCIATES LP
325	23223		1/1/2011	VC WOODS ASSOCIATES LP
176	77059		1/1/2011	VC WOODS ASSOCIATES LP
193	9374		before 2003	CRANBERRY CORPORATE CENTER LLC
183	59777	356d	before 2003	UPMC HEALTH SYSTEM
283	430	356a	1/1/1985	CONDO PARCEL
173	201505	334c	before 2003	LOWES HOME CENTERS INC
178	51387	334b	before 2003	CRANBERRY COMMONS CTR II LTD PARTNERSHIP
182	18846		after 2003	NORTH PITTSBURGH HOTEL LLC
326	10088		after 2003	NORTH PITTSBURGH HOTEL LLC
234	54650		after 2003	MCKNIGHT CRANBERRY LP
242	224901		before 2003	GC NET LEASE CRANBERRY INVESTORS LLC
327	1636		after 2003	GC NET LEASE CRANBERRY INVESTORS LLC
240	34108		after 2003	WELLS REIT II - CRANBERRY WOODS DEVELOPMENT INC
177	52119		after 2003	WELLS REIT II - CRANBERRY WOODS DEVELOPMENT INC
239	78842		after 2003	WELLS REIT II - CRANBERRY WOODS DEVELOPMENT INC
184	1720	271a	before 2003	BRUCE J THALER & PHYLLIS J THALER
188	5780	271c	before 2003	GREEN VALLEY INC
185	6807		before 2003	UPMC HEALTH SYSTEM
307	3059	324d	before 2003	UPMC HEALTH SYSTEM
289	2494	210b	before 2003	CRANBERRY CORPORATE CENTER LLC
190	21387	271a	before 2003	CRANBERRY CORPORATE CENTER LLC

OBJECTID	Basin Area (SF)	MS3 Basin	Year Built	Owner
192	50586	270a	before 2003	INLAND WESTERN CRANBERRY
191	39061		before 2003	INLAND WESTERN CRANBERRY
194	10362		before 2003	CRANBERRY CORPORATE CENTER LLC
328	6783		1/1/1973	WOODLAND HOMEOWNERS ASSOCIATION INC
329	14099	214b	before 2003	CRANBERRY TOWNSHIP
330	8861		after 2003	GRACE COMMUNITY CHURCH
331	12423		after 2003	GRACE COMMUNITY CHURCH
332	37616	167	before 2003	CRANBERRY BUSINESS PARK ASSOCIATES L P
333	2951		before 2003	MARY ANN KELLY & ANN F KROME
334	7494		after 2003	CRANBERRY NP HOTEL CO
335	4506		before 2003	MINE SAFETY APPLIANCES CO
336	4652		after 2003	GC NET LEASE CRANBERRY INVESTORS LLC
337	20661		before 2003	CRANBERRY TOWNSHIP
275	11244		after 2003	Southridge Estates Homeowners
281	8483	35b	1/1/2004	FMZ CONSTRUCTION & DEVELOPMENT INC
338	19004		after 2003	GRACE COMMUNITY CHURCH
339	4617	229b	before 2003	JOEL C CHROSTOWSKI
340	6972	347b	1/1/2013	FOXWOOD LP
341	19236	347b	1/1/2013	FOXWOOD LP
342	6103	224c	before 2003	9151 MARSHALL ROAD PROPERTIES LP
343	27179	335	after 2003	ECHO CRANBERRY ASSOCIATES LP
344	7046	8d	after 2003	MCGOWEN EQUITY PARTNERS III LP
345	26188		1/1/2009	PARK PLACE MARKETING LLC
346	16754	93b	before 2003	CRANBERRY TOWNSHIP
349	27539	187c	1/1/2009	PARK PLACE PITTSBURGH LLC
350	14412	156	1/1/2009	PARK PLACE PITTSBURGH LLC
351	12852		after 2003	ALLEGHENY PLASTICS INC
352	3283	204e	1/1/2004	GEORGETOWN SQUARE HOMEOWNERS ASSOCIATION
353	5768		after 2003	PENNWOOD COMMONS II LLC
753	28405		after 2003	CW DEV LP
754	27372	63b	after 2003	EHRMAN LP
755	25690	62b	after 2003	EHRMAN LP
756	3089		1/1/2011	CRANBERRY WOODS HOTEL ASSOCIATES LP
757	6807		1/1/2011	VC WOODS ASSOCIATES LP
758	4625		1/1/2011	GMH CRANBERRY HOLDINGS LP
759	4872		1/1/2011	GMH CRANBERRY HOLDINGS LP
760	3188		1/1/2011	RBK Holdings LLC
1156	3263	217c	before 2003	AMERICAN RESPIRATORY ALLIANCE W PA
1157	12196	400c	after 2003	KENSA CRANBERRY ASSOC LP
1158	7186		after 2003	PETER E ARMSTRONG SR REVOCABLE TRUST
1159	43317	357b	after 2003	CARDINAL WUERL NORTH CATHOLIC HIGH SCHOOL
1160	33274		after 2003	CARDINAL WUERL NORTH CATHOLIC HIGH SCHOOL
1161	6354		after 2003	CARDINAL WUERL NORTH CATHOLIC HIGH SCHOOL
1162	33810		after 2003	CARDINAL WUERL NORTH CATHOLIC HIGH SCHOOL
1163	9930	358b	after 2003	CARDINAL WUERL NORTH CATHOLIC HIGH SCHOOL
1164	69803	52d	1/1/2014	SCI DEVELOPMENT CO INC
1562	9932		after 2003	CRANBERRY HILL PARTNERSHIP LLC
1563	757		after 2003	CRANBERRY HILL PARTNERSHIP LLC
1962	3975		after 2003	FARMERS NATIONAL BANK OF EMLENTON
2362	9854		1/1/2014	JESSICA L JONES & ROBERT W SPITHALER
2363	15751		after 2003	CW DEV LP
2762	40341		before 2003	CRANBERRY TOWNSHIP
2763	62687	93c	before 2003	CRANBERRY TOWNSHIP
2764	38271	145	after 2003	CRANBERRY TOWNSHIP
2765	18834	219f	after 2003	CRANBERRY TOWNSHIP
2766	5010		1/1/2013	CRANBERRY WOODS APARTMENTS LLC
2767	23731		1/1/2013	CRANBERRY WOODS APARTMENTS LLC
2768	3403		1/1/2013	CRANBERRY WOODS APARTMENTS LLC
3166	18719		after 2003	GLEN EDEN ROAD PARTNERS LLC
3167	14198		after 2003	GLEN EDEN ROAD PARTNERS LLC
3168	9929	360	1/1/2015	EHRMAN FARMS L P
3566	31227		1/1/2015	GLEN WOODSIDE LP

OBJECTID	Basin Area (SF)	MS3 Basin	Year Built	Owner
3567	19184	400d	after 2003	GARY SIPPEL ALLEGHENY EXCAVATING
3568	23895	89b	1/1/2014	CRANBERRY VISTA APARTMENTS LLC
3968	10188	222d	after 2003	BINDRA REAL ESTATE PARTNERS LP
3969	21569		after 2003	BURNS PROPERTIES & LEASING LLC
3972	5635	400b	after 2003	KENSA CRANBERRY ASSOCIATES
3973	56122	149b	after 2003	CRANBERRY TOWNSHIP
3974	27864	196a	1/1/2015	GLEN WOODSIDE LP
3975	10176	196a	1/1/2015	GLEN WOODSIDE LP
3977	22098	58a	1/1/2016	FOREST EDGE LP
3978	5295	157	1/1/2009	PARK PLACE MARKETING LLC
3979	27567		1/1/2009	PARK PLACE MARKETING LLC
3980	10236		after 2003	201 NINTH STREET ASSOCIATES LP & MARKET FIRST LLC
3982	57810	272c	after 2003	SIPPEL ENTERPRISES LP

APPENDIX 7

DEFINITIONS

Definitions (Pennsylvania Code § 92a.2.)

Baseline Load - The pollutant load discharged by an MS4 as reported in an Impaired Stream.

BOD5 - Biochemical oxygen demand, 5-day—The 5-day measure of the pollutant parameter biochemical oxygen demand.

BMP - Best Management Practices—

(i) Schedules of activities, prohibitions of practices, maintenance procedures and other management practices to prevent or reduce pollutant loading to surface waters of this Commonwealth.

(ii) The term includes treatment requirements, operating procedures and practices to control plant site runoff, spillage or leaks, sludge or waste disposal, or drainage from raw material storage. The term includes activities, facilities, measures, planning or procedures used to minimize accelerated erosion and sedimentation and manage stormwater to protect, maintain, reclaim, and restore the quality of waters and the existing and designated uses of waters within this Commonwealth before, during and after earth disturbance activities.

Discharge - An addition of any pollutant to surface waters of this Commonwealth from a point source.

Disturbed area - As defined in Chapter 102 (relating to erosion and sediment control).

Intermittent stream - A body of water flowing in a channel or bed composed primarily of substrates associated with flowing water, which, during periods of the year, is below the local water table and obtains its flow from both surface runoff and groundwater discharges.

MS3 - Municipal Storm Sewershed - The land area which drains to the municipal separate storm sewer from within the jurisdiction of the MS4 permittee.

MS4 - Municipal Separate Storm Sewer System—A separate storm sewer (including roads with drainage systems, municipal streets, catch basins, curbs, gutters, ditches, manmade channels or storm drains) which is all of the following:

(i) Owned or operated by a State, city, town, borough, county, district, association or other public body (created by or under State law) having jurisdiction over disposal of sewage, industrial wastes, stormwater or other wastes, including special districts under state law such as a sewer district, flood control district or drainage district, or similar entity, or a designated and approved management agency under section 208 of the Federal Act (33 U.S.C.A. § 1288) that discharges to surface waters of this Commonwealth.

(ii) Designed or used for collecting or conveying stormwater.

(iii) Not a combined sewer.

(iv) Not part of a POTW.

Municipality - A city, town, borough, county, township, school district, institution, authority or other public body created by or pursuant to State law and having jurisdiction over disposal of sewage, industrial wastes or other wastes.

NOI - Notice of Intent—A complete form submitted for NPDES general permit coverage which contains information required by the terms of the permit and by § 92a.54 (relating to general permits). An NOI is not an application.

NPDES - National Pollutant Discharge Elimination System.

NPDES form - An issued NPDES permit, the application, NOI or any DMR reporting form.

NPDES general permit or general permit - An NPDES permit that is issued for a clearly described category of point source discharges, when those discharges are substantially similar in nature and do not have the potential to cause significant adverse environmental impact.

NPDES permit - An authorization, license or equivalent control document issued by the Administrator or the Department to implement the requirements of 40 CFR Parts 122—124 (relating to EPA administered permit programs: the National Pollutant Discharge Elimination System; state program requirements; and procedures for decision making) and the Federal Act.

Outfall - A "Point Source" as defined by 40 CFR § 122.2 is the point where an MS4 discharges stormwater to other surface waters of this Commonwealth. This does not include open conveyances connecting two municipal separate storm sewers, or pipes, tunnels or other conveyances which connect segments of the same stream and are used to convey waters of the Commonwealth (40 CFR § 122.26 (b) (9)). [PAG-13]

Parsing - A process resulting in the determination of the portion of WLA(s) that are applicable to stormwater entering the municipal separate storm sewer (MS3)

Perennial stream - A body of water flowing in a channel or bed composed primarily of substrates associated with flowing waters and capable, in the absence of pollution or other manmade stream disturbances, of supporting a benthic macroinvertebrate community which is composed of two or more recognizable taxonomic groups of organisms which are large enough to be seen by the unaided eye and can be retained by a United States Standard No. 30 sieve (28 meshs per inch, 0.595 mm openings) and live at least part of their life cycles within or upon available substrates in a body of water or water transport system.

Pollutant - Any contaminant or other alteration of the physical, chemical, biological, or radiological integrity of surface water which causes or has the potential to cause pollution as defined in section 1 of The Clean Streams Law (35 P. S. § 691.1).

Point source - A discernible, confined and discrete conveyance, including, but not limited to, any pipe, ditch, channel, tunnel, conduit, well, discrete fissure, container, rolling stock, CAAP, CAFO, landfill leachate collection system, or vessel or other floating craft, from which pollutants are or may be discharged.

Separate storm sewer - A conveyance or system of conveyances (including pipes, conduits, ditches and channels) primarily used for collecting and conveying stormwater runoff.

Small municipal separate storm sewer system - A municipal separate storm sewer system as defined in 40 CFR 122.26(b)(16).

Stormwater - Runoff from precipitation, snow melt runoff and surface runoff and drainage.

Stormwater discharge associated with construction activity - The discharge or potential discharge of stormwater from construction activities into waters of this Commonwealth, including clearing and grubbing, grading and excavation activities involving 1 acre (0.4 hectares) or more of earth disturbance activity, or an earth disturbance activity on any portion, part or during any stage of, a larger common plan of development or sale that involves 1 acre (0.4 hectares) or more of earth disturbance activity over the life of the project.

Surface waters - Perennial and intermittent streams, rivers, lakes, reservoirs, ponds, wetlands, springs, natural seeps and estuaries, excluding water at facilities approved for wastewater treatment such as wastewater treatment impoundments, cooling water ponds, and constructed wetlands used as part of a wastewater treatment process.

TMDL - Total maximum daily load —The sum of individual waste load allocations for point sources, load allocations for nonpoint sources and natural quality and a margin of safety expressed in terms of mass per time, toxicity or other appropriate measures.

Urbanized Area (UA) - Land area comprising one or more places (central place(s)) and the adjacent densely settled surrounding area (urban fringe) that together have a residential population of at least 50,000 and an overall population density of at least 1,000 people per square mile, as defined by the United States Bureau of the Census and as determined by the latest available decennial census.

WLA - Wasteload allocation — The portion of a surface water's loading capacity that is allocated to existing and future point source discharges.

Water quality standards - The combination of water uses to be protected and the water quality criteria necessary to protect those uses.

WETT - Whole Effluent Toxicity Testing -

(i) A test, survey, study, protocol or assessment which includes the use of aquatic, bacterial, invertebrate or vertebrate species to measure acute or chronic toxicity, and any biological or chemical measure of bioaccumulation, bioconcentration or impact on established aquatic and biological communities.

(ii) The term includes any established, scientifically defensible method that is sufficiently sensitive to measure toxic effects.